

COLORADO RIVER BOARD OF CALIFORNIA

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April 3, 2015

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

NOTICE IS HEREBY GIVEN pursuant to the call of the Chairperson, Dana B. Fisher, Jr., 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, April 15, 2015
Time: 10:00 a.m.
Place: Vineyard Room Holiday Inn Ontario Airport 2155 East Convention Center Way Ontario, CA 91764-4452 Tel: (909) 212-8000; FAX: (909) 418-6703

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 and written comments may be sent to Mr. Dana B. Fisher, Jr., Chairperson, Colorado River Board of California, 770 Fairmont Avenue, Suite 100, Glendale, California, 91203-1068.

An Executive Session may be held in accordance with 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 in accordance with 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.

Requests for additional information may be directed to: Ms. Tanya M. Trujillo, 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.

Tanya M. Trujillo
Executive Director

attachment: Agenda

Regular Meeting
COLORADO RIVER BOARD OF CALIFORNIA
Wednesday, April 15, 2015
10:00 a.m.

Vineyard Room
Holiday Inn Ontario Airport
2155 East Convention Center Way
Ontario, CA 91764-4452

AGENDA

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 as required by Government Code, Section 54954.3(a) (limited to 5 minutes)
3. Administration
 - a. Consideration and Approval of the Minutes of the Meeting held March 11, 2015 **(Action)**
 - b. Review and approval of a revised budget for the Colorado River Board of California and request for authorization of the Executive Director to execute the Standard Agreement Amendment **(Action)**
 - c. Review status of selection of Colorado River Board Vice-Chair **(Possible Action)**
4. Presentation by Denise Hosler, with the Bureau of Reclamation's Technical Service Center's Environmental Applications and Research Group regarding the status of Quagga mussel research and ongoing control efforts
5. Presentation from the Central Arizona Water Conservation District regarding proposed plan for creation of Intentionally Created Surplus
6. Colorado River Basin Water Reports
 - a. Reports on current reservoir storage, reservoir releases, projected water use, and forecasted river flows
 - b. State and Local Water Reports
7. Update regarding the California Drought
8. Staff Reports regarding Colorado River Basin Programs
 - a. Review status of the Basin States Drought Contingency Programs

- b. Review status of the Colorado River Basin Water Supply and Demand Study
- c. Review status of the implementation of Minute 319
- d. Review status of the Salinity Control Forum, Workgroup, and Advisory Council
- e. Review status of the Glen Canyon Dam Adaptive Management Work Group and Long-Term Experimental Management Plan EIS
- f. Review status of the Lower Colorado River Multi-Species Conservation Program

9. Announcements/Notices

10. 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.

11. Other Business

- a. Next Board Meeting: May 13, 2015
10:00 a.m.
San Diego County Water Authority
4677 Overland Ave
San Diego, CA 92123

Minutes of Meeting
COLORADO RIVER BOARD OF CALIFORNIA
Wednesday, March 11, 2015

A meeting of the Colorado River Board of California was held on Wednesday, March 11, 2015.

Board Members and Alternates Present

Dana Bart Fisher, Jr., Chairman
Henry Kuiper
Glen Peterson
David Pettijohn
Jack Seiler

Michael Touhey
David Vigil
Doug Wilson
Jeanine Jones, Designee
Department of Water Resources

Board Members and Alternates Absent

Stephen Benson
James Hanks
John Powell Jr.

Chris Hayes, Designee
Department of Fish and Wildlife

Others Present

Steve Abbott
Brian Brady
Robert Cheng
Matt Dessert
Christopher Harris
Bill Hasencamp
Michael Hughes
Lisa Johansen
Lori Jones
Kevin Kelley
Lindia Liu
Jan Matusak
Peter Nelson
Jessica Neuwerth
Thang (Vic) Nguyen
Keith Nobriga
Kevin Pearson
Autumn Plourd
Angela Rashid
Eric Ruckdaschel
Tina Shields
Peter Silva
Philip Southern

Mark Stuart
Gary Tavetian
Tanya Trujillo
Mark Van Vlack
Meena Westford
John Wuerth
Jerry Zimmerman

CALL TO ORDER

Chairman Fisher announced the presence of a quorum and called the meeting to order at 1:01 P.M.

OPPORTUNITY FOR THE PUBLIC TO ADDRESS THE BOARD

Chairman Fisher asked if there was anyone in the audience who wished to address the Board on items on the agenda or matters related to the Board. Hearing none, Chairman Fisher moved to the next agenda item.

Chairman Fisher reported that Mr. Randy Record Chairman, Chairman of the Board of Directors, at The Metropolitan Water District of Southern California was unable to attend the meeting due to other obligations.

ADMINISTRATION

Chairman Fisher asked for a motion to approve the February 11 minutes. Mr. Wilson moved that the minutes be approved, seconded by Ms. Jones. Chairman Fisher asked if there were any additions or corrections. Hearing none and by unanimous support, the February 11 meeting minutes were approved.

Ms. Trujillo announced the proposal to hold the May 14, 2015 Board meeting in San Diego to coincide with the bi-national Minute 319 meetings scheduled on May 13 and 14.

Ms. Trujillo previewed the budget presentation that would be made at the April 15, 2105 Board meeting that would ask for an increase in the Colorado River Board's budget to accommodate a state-wide two percent cost of living increase to all State employees, cover vacation leave payouts for two retiring employees and accurately cover operating expenses. The Six Agency Committee would be asked to allocate funds from an unused category of expenses to the Colorado River Board expenses category. The Six Agency Committee would also seek refunds from the State for excess payments in the past two years. No additional assessments from the agencies will be requested. Chairman Fisher noted that there would no longer be vacancy savings, which have previously created a budget surplus.

COLORADO RIVER BASIN WATER REPORTS

Colorado River Basin Water Report

Ms. Trujillo reported that as of March 2, the water level at Lake Powell was 3,592 feet with 11.03 million acre-feet (MAF) of storage, or 45% of capacity, while the water level at Lake Mead was 1,089 feet with 10.77 MAF of storage, or 41% of capacity. The

total system content is 29.22 MAF, or 49% of capacity, which is about 450,000 acre-feet more than last year. As of March 1, the Upper Colorado River Basin reservoirs with the exception of Lake Powell ranged from 61% to 94% of their capacities.

Ms. Trujillo noted that as of March 2, the precipitation was at 81% of average and the snowpack was at 84% of average. The snowpack had improved in recent weeks but is still below normal and below the level compared to last year. The Colorado Basin River Forecast Center basin snow condition map generally depicts that the snowpack is below normal basin wide as of March 2. The National Weather Service monthly precipitation maps for January showed significant precipitation in the San Juan and Arizona/Mexico border areas; however, the February map indicated precipitation was below normal throughout the basin except in the San Juan area. The U.S. Drought Monitor map indicates that about 40% of California is still in the Exceptional Drought category.

State Report

The DWR Southern District Chief, Mark Stuart, reported that L.A. Civic Center precipitation is at 6.5 inches as of March 5 and is slightly better than last year. The L.A. precipitation station received about 0.83 inches in February, which is quite below about 3 inches that would be received in a normal year. The six major stations in Southern California ranged from 30 to 68% of average. The National Weather Service map as of March 5 shows that precipitation in the southern San Joaquin and southern Sierras are below 50%. There are a few wet spots in the upper part of the state, but California is generally significant below normal. The Northern Sierra Precipitation-8 Station Index shows a cumulative precipitation of 30.7 inches, or slightly below the historical average, which was an improvement due to significant precipitation in February. On the other hand, the Southern Sierra Precipitation Index is at about 50% of normal.

Mr. Stuart stated that the snow water equivalent in the Northern, Central, and Southern Sierra were 14%, 18%, and 18% of normal, respectively, as of March 5. With respect to the State Water Project (SWP) storage, Lake Oroville has improved by about 300,000 acre-feet from last year, and is currently at 49% of capacity. San Luis reservoir increased more than 600,000 acre-feet since last year and is almost full at 88% of capacity. Overall the SWP total storage improved about 700,000 acre-feet to 3.2 MAF, or 58% of capacity. The SWP allocation was recently increased to 20% while the federal allocation is at zero. The current reservoir elevations are generally below their historical average. The major reservoirs of Shasta and Lake Oroville are at 58% of capacity (79% of historical average) and 49% of capacity (70% of historical average), respectively.

Board Member Pettijohn asked for an update on the State Water Project allocations and Board Member Jones replied that the snowpack is less than 20%, and the state would try not to reduce the allocation.

Local Reports

Board Member Peterson reiterated that the State Water Project allocation is at 20%. MWD's total reservoir storage is at 50% of capacity and the Colorado River diversions this year would be about 1.1 MAF.

Mr. Pettijohn reported that the current precipitation total is only slightly above the historical low for snowpack in Mammoth Pass, which is the primary indicator of water delivery from the Eastern Sierra. A very low yield is expected from the L.A. Aqueduct, which would mean the L.A. Department of Water and Power would buy a large portion of its water supply from MWD. Ms. Jones noted that the snowpack also set a record low in the western slope of the Sierra.

2015 CALIFORNIA DROUGHT UPDATE

Ms. Trujillo reported that the State of Emergency Proclamations and outdoor watering restrictions still remain in effect. Although the SWP has an allocation of 20%, a zero allocation had been issued for the Central Valley Project managed by the Bureau of Reclamation. Ms. Jones added that the State Water Resources Control Board recently announced its intent to consider new drought restrictions. In addition to handling the State's ongoing drought issues, the State Water Board has been working on issues of water rights and implementing new groundwater legislation.

Ms. Trujillo reported that development of Proposition 1 guidelines is underway and indicated that member agencies should track and apply for funding when it becomes available.

STAFF REPORTS REGARDING COLORADO RIVER BASIN PROGRAMS

Basin States Drought Contingency Program

Ms. Trujillo reported on the most recent drought contingency planning efforts. The Basin States Principals held a meeting on February 18, 2015 in Las Vegas, NV. The meeting focused on two primary objectives: hearing updates on the current status of the drought contingency planning process and on the progress of the implementation of Minute 319. Reclamation confirmed the projected release of 9.0 MAF from Lake Powell for the 2015 water year. Ms. Trujillo noted that currently the release from Lake Powell is scheduled to be 8.23 MAF, but it is anticipated that Reclamation will officially increase the Powell release to 9.0 MAF. However, notwithstanding the 9.0 MAF release, there is still a 21% chance of shortage in the Lower Basin in 2016. In 2017, the probability for shortage increases to about 54%. The shortage triggers were developed based upon the elevations of Lakes Powell and Mead in the 2007 Interim Guidelines. If the shortage triggers are reached, Arizona and Nevada will take reductions to deliveries to their systems. Ms. Trujillo noted that the 21% probability of shortage has caused water users in the Basin to continue to support the on-going drought contingency planning efforts.

Ms. Trujillo explained that the Lower Basin States have been focusing on expanding some of the existing programs and looking for additional flexibilities within those programs to develop conservation programs. In 2014, Reclamation and the municipal funding agencies initiated the \$11 million system conservation program and Reclamation is reviewing applications to fund system conservation projects that can be implemented in the Lower Basin. In the Upper Basin, the Upper Colorado River Commission is in the process of implementing its own system conservation program. In addition to these efforts, Ms. Trujillo reminded the Board that at the February Board Meeting, Don Ostler, Executive Director of the Upper Colorado River Commission, spoke about examining Upper Basin reservoir operations and demand management in an effort to further protect Lake Powell elevations.

Colorado River Basin Water Supply and Demand Study

Ms. Trujillo reported that the Phase 1 report is expected to be released in April 2015. Reclamation will provide an updated draft in the coming weeks. The next step is to determine how to structure the next phase of the study through perhaps the development of pilot projects.

Review of implementation of Minute 319

Ms. Trujillo reported that during the Basin States Principals meeting held on February 18 in Las Vegas, NV, Reclamation provided an overview of the progress of Minute 319, which is about half way through its implementation process. One component of Minute 319 was the extension of Minute 318, which allowed Mexico to store water in the U.S to deal with water delivery delays due to infrastructure damage from the 2010 Baja California earthquake. This agreement benefited both nations as it allowed Mexico to store water in Lake Mead. Ms. Trujillo stated that the next process was to think about what the next round of bi-national negotiations would entail and what some win-win situations for both countries might look like.

Ms. Trujillo noted that Minute 319 is a five-year agreement and it is in the best interest of both nations to continue to work collaboratively and support provisions such as the Intentionally Created Mexican Allocation and opportunities for the U.S. to fund conservation projects in Mexico in exchange for water to be used in the U.S. The U.S. is anticipating receiving more information about the conservation projects to be funded under the agreement in Mexico in the near future. Ms. Trujillo noted that the element of Minute 319 that has been completed is the Pulse Flow, through the release of approximately 105,000 acre-feet approximately a year ago through Morelos Dam in Mexico for the benefit of the delta. Currently, bi-national workgroups are evaluating the benefits of the pulse flow. Ms. Jessica Neuwerth, CRB staff environmental scientist, will be attending a workshop in Mexico to evaluate the status of habitat development connected to the pulse flow event. Additional Minute 319 updates will be heard during the bi-national meeting scheduled for May 14 in San Diego.

Salinity Control Forum, Workgroup, and Advisory Council

Board staff member, Ms. Lindia Liu, gave an update on the recent Salinity Control Forum Work Group meeting February 17-19 at MWD's Diamond Valley Lake facilities. Ms. Liu reported that Reclamation gave an update on operations at the Paradox Valley Unit, which is currently operating at 4,750 psi. The estimated annual salinity control has been reduced by 11,000 tons due to a lower injection rate. There were 50 seismic events in 2014, compared to 124 in the previous year, due to the decreased pumping rate and more frequent shutdowns.

The Paradox Valley Unit EIS process is scheduled to be completed in 2018. A preliminary study from the Review Board finds that the earthquakes in the Paradox Valley were induced by the injections and the maximum magnitude of future large earthquakes will most likely be in the 4.5 to 5.0 magnitude range. An Evaporation Pond Review Board is scheduled to meet from March 17-19 to review the possibilities associated with use of a surface disposal system at the Paradox site as opposed to a second injection well. The separate Review Board evaluated whether re-working of the current well may be a possible alternative, but determined it was not due to the large amount of pressure buildup at the current injection. This Review Board will continue to investigate potential replacement well sites by refining subsurface geologic models and evaluating suitability and feasibility of the potential sites. A preliminary drilling feasibility study is expected from this Review Board by September 2015, and a report on site selection and siting is expected in October 2016. The Review Board will recommend a second well site in December 2016. The completed well design is expected in December 2018. Reclamation is planning to issue a revised Request For Information to identify potential commercial interest for the brine. Reclamation has stated that it will have sufficient funding to complete the EIS and anticipates spending \$450,000 in FY2015, \$1.1 million in FY2016, \$450,000 in FY2017, and \$45,000 in FY2018.

Ms. Liu reported that Reclamation is updating its salinity economic damages model. At the Work Group meeting, Mr. Harry Ruzgerian of MWD gave an update on a Subcommittee that has been established to ensure that Reclamation has accurate and complete information on urban and agricultural water uses to base its analysis on. The new model is expected to have higher damage numbers and a draft is expected in October 2016 in time for the next Triennial Review.

Ms. Liu reported that Reclamation performed an analysis to project revenues from the sale of power generated at Hoover Dam during shortage conditions and to evaluate the potential impact of lower power production on the Salinity Program revenues over the next ten years. Based on the October 2014 24-month study, this modeling exercise showed a six percent decrease in energy generated during a first tier shortage, a thirteen percent decrease during a second tier shortage, and a twenty-one percent decrease during a third tier shortage. The corresponding reductions in revenues ranged from \$447,000 to \$1.5 million.

Ms. Liu reported that Reclamation started 2015 with \$11.2 million in the Lower Basin Fund balance, compared to \$10.1 million at the beginning of 2014. Reclamation will make a graph to show projected revenue versus expected withdrawal. Ms. Liu reported that the Work Group is planning to start the next Triennial Review by end of the year. The next Forum and Advisory Council meetings are scheduled for May 20-21 in Salt Lake City, Utah, with the Work Group meeting there as well.

Mr. Peterson stated his concern that Reclamation had not located a commercial source interested in the salt/brine. Mr. Wilson asked about the cost of the evaporation pond versus drilling a second well. Ms. Trujillo responded that the EIS will contain that comparison. She added that the alternatives under review are re-working the well (which is probably not a viable option), drilling a second well, building a surface evaporation pond and potentially commercial disposal. There has been a historic wildlife concern with the evaporation pond option, but the Forum is recommending a thorough analysis of this option. She stated that the Forum shares Mr. Wilson's concern that the evaporation ponds were discounted offhand because of migratory bird issues, and explained that the Forum members will help ensure that this alternative remains part of the evaluation process.

Glen Canyon Dam Adaptive Management Work Group and Long-Term Experimental and Management Plan EIS

Ms. Neuwerth reported that the Glen Canyon Dam Adaptive Management Work Group (AMWG) held its biannual meeting on February 25-26, followed by a High Flow Experiment (HFE) Workshop on February 26-27. Basin hydrology reports estimate a 9.0 MAF release from Lake Powell in WY15, and the most likely scenario for WY16 also indicates a 9.0 MAF release. The AMWG received updates on the charter, socioeconomic and public outreach ad hoc groups, the fiscal year 2015 budget, and the Lee's Ferry trout fishery management plan.

Ms. Neuwerth reported that new modeling for the Glen Canyon Dam Long-Term Experimental and Management Plan (LTEMP) EIS was recently completed and presented to AMWG members. Ms. Neuwerth noted that the modeling has become quite complex and the most recent modeling runs centered on in-depth analyses of hydropower impacts under various alternatives. HFEs were one of the factors considered in assessing power revenue impacts, because bypassing water for the flows means a reduction in power generation capacity. Modeling also considered factors such as sand load, trout management, and the impact on humpback chub. Ms. Neuwerth reported that with this modeling, the LTEMP EIS process is one step closer to completion, and negotiations on the initial draft of the EIS are expected to be wrapping up within the next few months.

Ms. Neuwerth reported that the HFE workshop held on February 26-27 provided an overview of what has been learned through the last three HFEs. Researchers reported that on average, the size of sandbars increases after an HFE, although the sand bars tend to erode between HFEs. Researchers reported that the fall HFEs do not appear to be

increasing the aquatic food base or affecting the populations of trout or humpback chub in the river.

Ms. Neuwerth noted that the Basin States and the Department of the Interior will meet to discuss the LTEMP and recent modeling on March 19 in Phoenix, Arizona, and the Technical Work Group will meet April 21-22 also in Phoenix.

Lower Colorado River Multi-Species Conservation Program

Ms. Neuwerth reported that the Lower Colorado River Multi-Species Conservation Program (LCR MSCP) is planning a ten-year anniversary tour on April 7-9. The tour will start in Yuma, Arizona, on April 7 with the dedication of Laguna Division Conservation Area, the program's newest conservation area. The MSCP is also planning a work group meeting on April 6 in Yuma.

Ms. Trujillo noted that although the Secretary of the Interior will not attend the tour, Ms. Jennifer Gimbel, the Principal Deputy Assistant Secretary for Water and Science, and the Commissioner of Reclamation, Mr. Estevan Lopez, are scheduled to attend the dedication ceremony.

ANNOUNCEMENTS / NOTICES

Ms. Trujillo reported that an upcoming workshop hosted by the State Water Resources Control Board is scheduled for March 18 in response to the petition that was filed by Imperial Irrigation District relating to Salton Sea issues.

Ms. Trujillo noted that a tour from Colorado irrigation districts made stops at the Palo Verde Irrigation District, IID and in San Diego. Presentations on urban and agricultural issues were given and overall the tour was a success. Ms. Trujillo reported that the tour was a great example of continued dialogue with the Upper Basin water users.

In the New Business category, Board member Peterson asked whether there could be an election for a Vice Chair. Chairman Fisher noted that Coachella Valley Water District and Los Angeles Department and Water and Power do not have their permanent members in place yet.

The next Board meeting will be on April 15 at the Holiday Inn in Ontario, and then on May 13 in San Diego.

Adjournment

With no further items to be brought before the Board, Chairman Fisher asked for a motion to adjourn the meeting. Upon the motion of Mr. Pettijohn seconded by Ms. Jones, and unanimously carried, the meeting was adjourned at 2:06 p.m.

STANDARD AGREEMENT AMENDMENT

STD. 213 A (Rev 6/03)

 CHECK HERE IF ADDITIONAL PAGES ARE ATTACHED _____ Pages

AGREEMENT NUMBER 47	AMENDMENT NUMBER 1
REGISTRATION NUMBER	

1. This Agreement is entered into between the State Agency and Contractor named below:
- STATE AGENCY'S NAME
Colorado River Board of California
- CONTRACTOR'S NAME
Six Agency Committee
2. The term of this Agreement is **May 1, 2015** through **June 30, 2015**
3. The maximum amount of this Agreement after this amendment is: **\$1,871,000.00**
4. The parties mutually agree to this amendment as follows. All actions noted below are by this reference made a part of the Agreement and incorporated herein:

Standard Agreement No. 47 is being increased by \$220,000 to a maximum total of \$1,871,000.

The purpose of the amendment is to reflect actual anticipated payroll and OE&E expenses for fiscal year 2014/2015.

This Amended Agreement with the Six Agency Committee will provide for 100% of CRB's reimbursement funding, as set forth in the original agreement.

All other terms and conditions shall remain the same.

IN WITNESS WHEREOF, this Agreement has been executed by the parties hereto.

CONTRACTOR		CALIFORNIA Department of General Services Use Only
CONTRACTOR'S NAME (If other than an individual, state whether a corporation, partnership, etc.) Six Agency Committee		
BY (Authorized Signature) 	DATE SIGNED (Do not type)	
PRINTED NAME AND TITLE OF PERSON SIGNING Dana B. Fisher, Jr., Chairman		
ADDRESS c/o 770 Fairmont Ave., Suite 100, Glendale, CA 91203		
STATE OF CALIFORNIA		
AGENCY NAME Colorado River Board of California		<input type="checkbox"/> Exempt per:
BY (Authorized Signature) 	DATE SIGNED (Do not type)	
PRINTED NAME AND TITLE OF PERSON SIGNING Tanya M. Trujillo, Executive Director		
ADDRESS 770 Fairmont Ave., Suite 100, Glendale, CA 91203		

AMENDED EXHIBIT A

WHEREAS, pursuant to Part 5 of Division 6 of the California Water Code, the Colorado River Board of California has the duty and responsibility to protect the rights and interests of the State of California, its agencies and citizens in the water and power resources of the Colorado River System; and

WHEREAS, Standard Agreement No. 47, dated July 3, 2014, provides for reimbursement of the State Agency up to the amount of \$1,651,000.00; and

WHEREAS, the State Agency and Contractor desire to increase the reimbursement amount to \$1,871,000.00; and

NOW, THEREFORE, State Agency and Contractor hereby agree to the terms and conditions set forth in amended Exhibit B.

AMENDED EXHIBIT B

The State Agency shall provide the program set forth in the 2014-15 State Budget within the total expenditure of \$1,871,000.00 as modified by subsequent adjustments pursuant to the Budget Act of 2014 and Executive Orders of the Governor;

The Contractor shall pay the sum of \$1,871,000.00 toward said 2014-15 State Budget, such payment to be made no later than August 30, 2015. Said funds will be used to pay California's share of the funding of the seven-state Colorado River Basin Salinity Control Forum, and related activities, the Lower Colorado River Multi-Species Conservation Program and salaries, benefits and operating expenses to support activities of the Colorado River Board.

In the event at the end of the 2014-15 FY there remains an unexpended balance of the sum set forth in the 2014-15 State Budget for the Colorado River Board plus any additional funds advanced to the State Agency, State Agency shall reimburse to Contractor a sum equal to the said balance.

RESOLUTION
OF
COLORADO RIVER BOARD

WHEREAS, the Colorado River Board of California's Fiscal Year 2014-15 expenditures are expected to be approximately \$1,871,000; and

WHEREAS, Standard Agreement No. 47 provides for reimbursement of monies to the State of California's General Fund from the Six Agency Committee in support of 100 percent of the costs of the Colorado River Board of California's Fiscal Year 2014-15 budget in the amount of \$1,651,000 – and Standard Agreement Amendment is necessary to increase the reimbursement to \$1,871,000;

NOW THEREFORE BE IT RESOLVED THAT, the Colorado River Board of California authorizes the Executive Director to execute the Standard Agreement Amendment, between the Colorado River Board of California and the Six Agency Committee.

Adopted this 15th day of April 2015.

Dana B. Fisher, Jr.
Chairman

Current Research Activities

Monitoring & Detection

- **Improvement of optical techniques for the detection of larval mussels** – This project is intended to improve methods for detecting zebra and quagga mussels in water samples using microscopy. Researchers are evaluating scanning electron microscopy (SEM) to validate findings from cross polarization microscopy. The outcomes are expected to assist with the identification of suspect organisms and improve confidence for early detection. *Reclamation contact:* Denise Hosler (dhosler@usbr.gov)
- **Enumeration method validation for larval mussels** – This project seeks to develop improved methods and protocols for quantifying the number of larval mussel veligers in water samples. Enumeration in the sample analysis process will assist response planning efforts by providing, in the early stages, further information on level of infestation for response planning. *Reclamation contact:* Denise Hosler (dhosler@usbr.gov)
- **Early detection of zebra and quagga mussels using Polymerase Chain Reaction (PCR)** – PCR is a method being developed and applied for confirmation of the presence of zebra and quagga mussels in water samples. The advantage of PCR is that it potentially represents a highly sensitive method for confirming the presence of mussel DNA in samples where mussel larvae (veligers) have been detected using microscopy. *Reclamation contact:* Dr. Kevin Kelly (kkelly@usbr.gov)

Control

- **Antifouling and foul-release coatings evaluations** – In partnership with Reclamation's LC Dams Office various commercially available protective coatings are being evaluated at Reclamation's Parker Dam. While this study is expected to expand in scope and continue for several years, promising coatings solutions are being identified and our current understanding regarding the effectiveness of different coatings systems in the context of invasive mussel fouling has improved. *Reclamation contact:* Dr. Allen Skaja (askaja@usbr.gov)
- **Filtration evaluations at Parker and Hoover Dams** – Although filtration has limited application due to the relatively low capacity, there are many situations where filtration appears promising. Reclamation researchers, in partnership with Reclamation's LC Dams Office, are evaluating 40- and 80-micron self cleaning filtration systems developed for ballast water applications. The purpose is to demonstrate the practicality and effectiveness of filtration in either excluding or preventing settlement in water supply lines and cooling water systems. The added advantage of filtration is that it eliminates the need for conventional oxidizing chemicals. *Reclamation contacts:* Fred Nibling (fnibling@usbr.gov) & Leonard Willett (lwillett@usbr.gov)
- **Ultraviolet (UV) treatment evaluations at Hoover Dam** – Reclamation researchers will be evaluating ultraviolet (UV) treatment as a means for impeding mussel settlement in water supply lines and potentially power plant cooling water systems. The primary advantage of this treatment method is that it would eliminate the need for conventional oxidizing chemicals and as such it represents an environmentally safe alternative to mussel control. An added advantage of UV is the known effective treatment for other waterborne organisms in drinking water systems. *Reclamation contacts:* Fred Nibling (fnibling@usbr.gov) & Leonard Willett (lwillett@usbr.gov)

- **Field trials using *Pseudomonas fluorescens*** – In partnership with Marrone Bio Innovations (MBI), field demonstration of Zequanox™, a bacterial product made from dead *Pseudomonas fluorescens* in controlling adult quagga mussels is being pursued. This new product is lethal only to quagga and zebra mussels, it potentially offers an environmentally friendly alternative to many conventional molluscicides, and it is expected to have wide-ranging applications for treatment of systems exposed to mussels. Reclamation is developing a Cooperative Research and Development Agreement with MBI. *Reclamation contacts:* Fred Nibling (fnibling@usbr.gov) & Leonard Willett (lwillett@usbr.gov)
- **Modifications to Davis Dam service water intake to enable field evaluations** – For field testing of Zequanox® and other promising treatment methods, it was necessary to modify the service water intake at Davis Dam to isolate service water system. Under this same project, Reclamation took the opportunity to demonstrate the effectiveness of high pressure water jetting for cleanout of a heavily infested service water line. This project was completed in December 2008. *Reclamation contacts:* Dr. Allen Skaja (askaja@usbr.gov) & Aaron Muehlberg (amuehlberg@usbr.gov)
- **Investigation of fish screening technologies to reduce mussel impacts** – Many Reclamation facilities throughout the Western United States have large investments in fish protection facilities. Recognizing the potential future impacts that invasive mussels pose to fish screen facilities, Reclamation is proactively studying promising screening technologies that can operate effectively and efficiently in the presence mussel infestations. To identify and develop solutions for fish screen facilities, Reclamation will be field-testing commercially available screen systems in mussel-infested water along the lower reaches of the Colorado River. *Reclamation contact:* Steve Hiebert (shiebert@usbr.gov)
- **Controlling mussels with natural predators** – A variety of potential natural predators exist for control of invasive mussel populations. This project seeks, as an initial or scoping level effort, to identify those species that may have application to water delivery systems (e.g., canals) and provide recommendations for future research toward implementation. *Reclamation contact:* Cathy Karp (ckarp@usbr.gov) & Fred Nibling (fnibling@usbr.gov)
- **Quagga mussel control using copper-ion generators** – The use of copper-ion generators for facilities protection from mussel settlement has been identified as having potential. Through this scoping-level effort, recommendations will be made regarding applicability and value of this technology for future field demonstration. *Reclamation contact:* Roger Turcotte (rturcotte@usbr.gov)

Ecological impacts

- **Effects and spread of invasive mussels in lotic environments** – Recent infestations in the Western United States are expected to have significant ecological impacts similar to those experienced in the Great Lakes. However, an improved understanding of those impacts in the West is needed. The findings from this project are expected to highlight issues and assist in future prioritization of actions for mitigating invasive mussel impacts on natural resources. *Reclamation contact:* S. Mark Nelson (snelson@usbr.gov)

- **Impact of zebra mussels on the physical, chemical, and biological attributes of Lake Pueblo, Colorado** – In 2008, zebra mussels were detected in Lake Pueblo, Colorado. Having discovered these mussels in the very early stage of infestation affords the opportunity to track limnological changes in the water body as the infestation progresses. This is expected to provide further information regarding the manifestation and ecological impacts attributable to mussels. *Reclamation contacts:* Denise Hosler (dhosler@usbr.gov) & Davine Lieberman (dlieberman@usbr.gov).

Apr 06, 2015

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	45%	10,909	3590.97	10,300
* LAKE MEAD	40%	10,350	1084.06	17,000
LAKE MOHAVE	93%	1,684	642.45	18,000
LAKE HAVASU	93%	574	447.67	13,600
TOTAL SYSTEM CONTENTS **	48%	28,758		
As of 04/05/2015				
SYSTEM CONTENT LAST YEAR	47%	28,075		
* Percent based on capacity of 26,120 kaf or elevation 1219.6 feet.				
** TOTAL SYSTEM CONTENTS includes Upper & Lower Colorado River Reservoirs, less Lake Mead exclusive flood control space.				
Salt/Verde System	58%	1,333		
Painted Rock Dam	0%	0	530.00	0
Alamo Dam	7%	67	1094.59	25
Forecasted Water Use for Calendar Year 2015 (as of 04/06/2015) (values in kaf)				
NEVADA			280	
SOUTHERN NEVADA WATER SYSTEM				246
OTHERS				33
CALIFORNIA			4,345	
METROPOLITAN WATER DISTRICT OF CALIFORNIA				812
IRRIGATION DISTRICTS				3,394
OTHERS				139
ARIZONA			2,800	
CENTRAL ARIZONA PROJECT				1,571
OTHERS				1,229
TOTAL LOWER BASIN USE				7,425
DELIVERY TO MEXICO - 2015 (Mexico Scheduled Delivery + Preliminary Yearly Excess ¹)				1,524
OTHER SIGNIFICANT INFORMATION				
UNREGULATED INFLOW INTO LAKE POWELL - APRIL FINAL FORECAST DATED 04/02/2015				
		MILLION ACRE-FEET	% of Normal	
FORECASTED WATER YEAR 2015		7.182	66%	
FORECASTED APRIL-JULY 2015		3.750	52%	
MARCH OBSERVED INFLOW		0.552	83%	
APRIL INFLOW FORECAST		0.720	68%	
		Upper Colorado Basin	Salt/Verde Basin	
WATER YEAR 2015 PRECIP TO DATE		74% (13.8")	71% (11.9")	
CURRENT BASIN SNOWPACK		61% (9.8")	NA% (NA)	

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

**U.S. BUREAU OF RECLAMATION
LOWER COLORADO REGION
CY 2015**

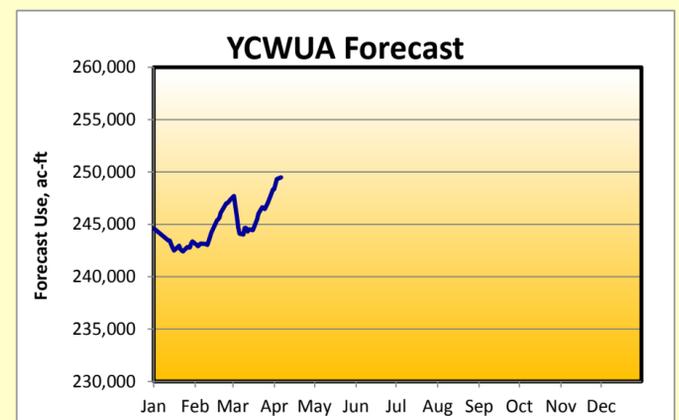
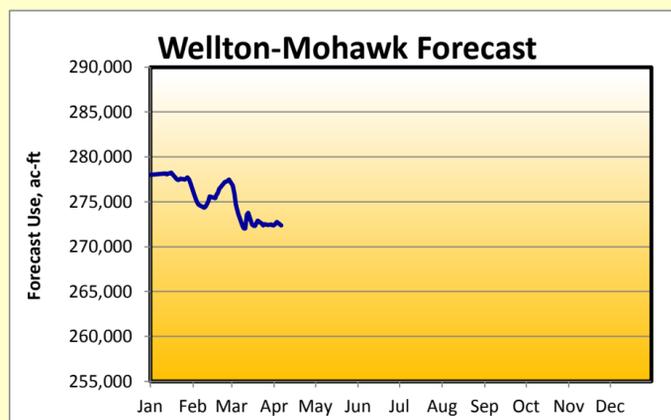
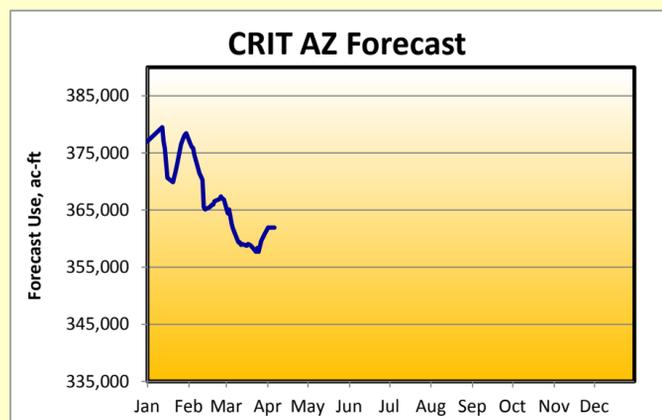
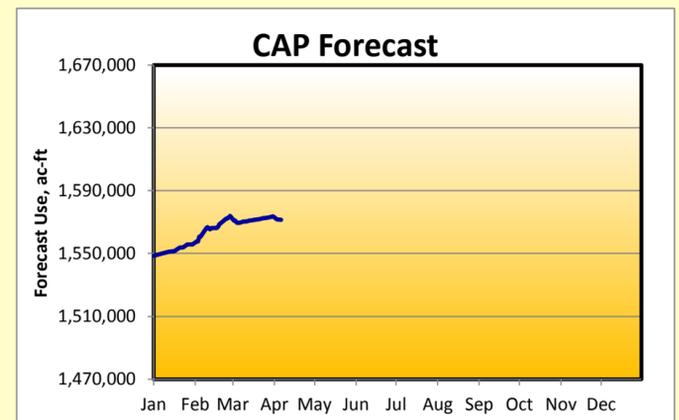
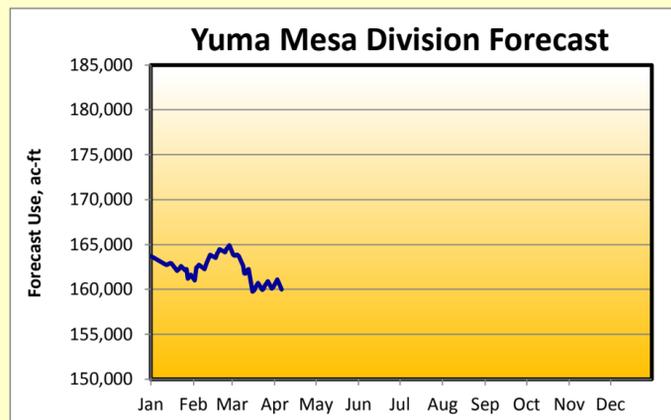
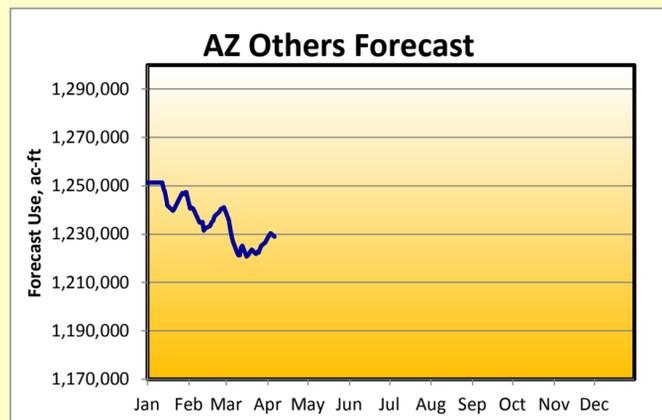
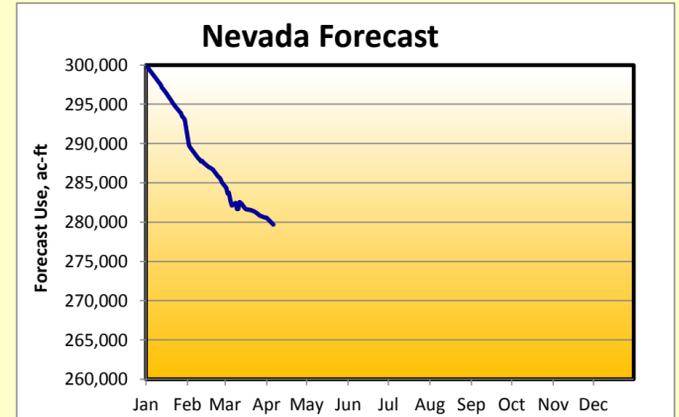
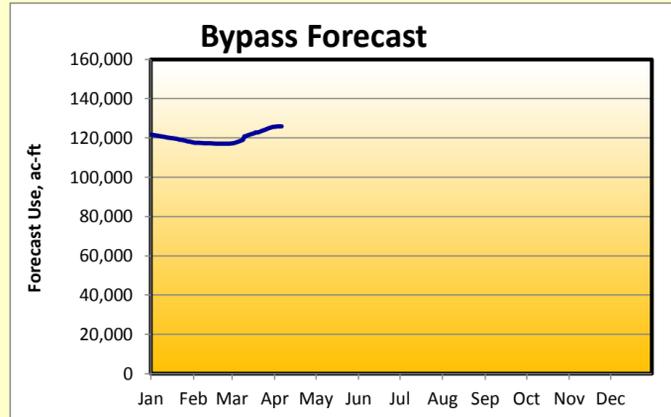
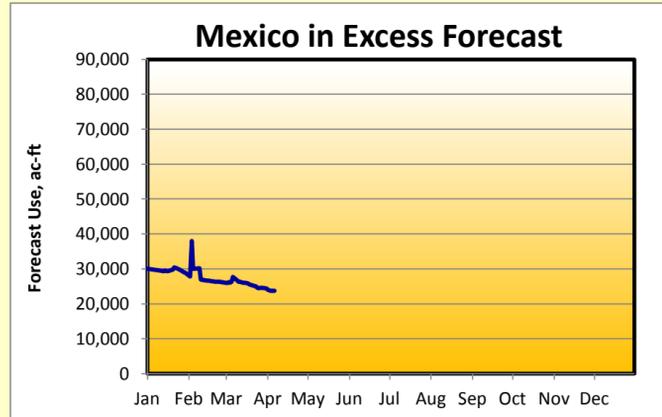
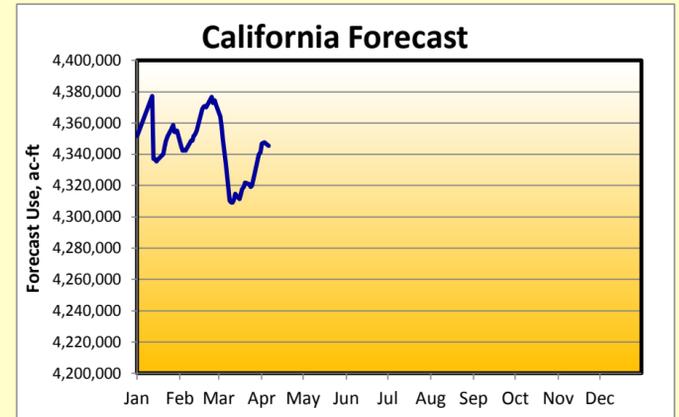
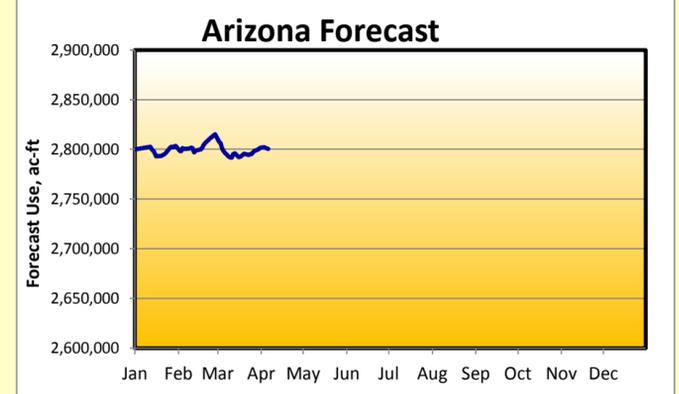
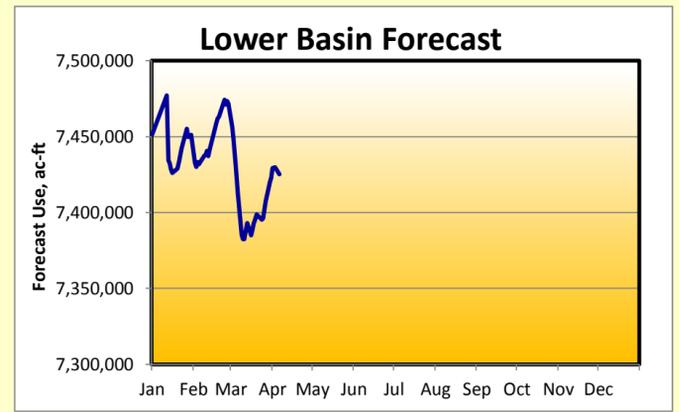
ARIZONA, CALIFORNIA, NEVADA, MEXICO
FORECAST OF END OF YEAR CONSUMPTIVE USE
FORECAST BASED ON USE TO DATE AND APPROVED ANNUAL WATER ORDERS¹
(ACRE-FEET)

WATER USE SUMMARY	Use To Date CY2015	Forecast Use CY2015	Approved Use² CY2015	Excess to Approval CY2015
ARIZONA	697,646	2,800,373	2,799,878	495
CALIFORNIA	969,731	4,345,317	4,351,727	-6,410
NEVADA	31,823	279,662	300,000	-20,338
STATES TOTAL³	1,699,200	7,425,352	7,451,605	-26,253
MEXICO IN SATISFACTION OF TREATY (Including downward delivery) TO MEXICO AS SCHEDULED	575,440 573,810	1,523,713 1,500,000	1,500,000	23,713
MEXICO IN EXCESS OF TREATY BYPASS PURSUANT TO MINUTE 242	1,630 30,698	23,713 125,808		
TOTAL LOWER BASIN & MEXICO	2,305,338	9,074,873		

1/ Incorporates Jan-Jan 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 2015**

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	Forecast	Estimated	Excess to	Diversion	Forecast	Approved	Excess to
	To Date	Use	Use	Estimated	To Date	Diversion	Diversion	Approved
	<u>CY2015</u>	<u>CY2015</u>	<u>CY2015</u>	<u>CY2015</u>	<u>CY2015</u>	<u>CY2015</u>	<u>CY2015</u>	<u>CY2015</u>
CALIFORNIA PUMPERS	404	1,680	1,680	---	732	3,047	3,047	0
FORT MOJAVE INDIAN RESERVATION, CA	2,150	8,662	8,996	---	3,996	16,099	16,720	-621
CITY OF NEEDLES (includes LCWSP use)	464	1,931	1,931	0	654	2,720	2,720	0
METROPOLITAN WATER DISTRICT	262,445	812,475	768,208	---	263,244	815,519	771,299	---
COLORADO RIVER INDIAN RESERVATION, CA	780	3,246	3,246	---	1,293	5,378	5,378	0
PALO VERDE IRRIGATION DISTRICT	65,199	431,774	431,782	---	180,092	935,592	946,750	-11,158
YUMA PROJECT RESERVATION DIVISION	14,277	51,144	48,586	---	25,566	104,716	104,200	516
YUMA PROJECT RESERVATION DIVISION - INDIAN UNIT	---	---	---	---	12,283	50,266	50,200	66
YUMA PROJECT RESERVATION DIVISION - BARD UNIT	---	---	---	---	13,283	54,450	54,000	450
YUMA ISLAND PUMPERS	1,121	4,665	4,665	---	2,032	8,452	8,452	0
FORT YUMA INDIAN RESERVATION - RANCH 5	162	675	675	---	294	1,221	1,221	0
IMPERIAL IRRIGATION DISTRICT	529,294	2,546,000	2,602,481	-56,481	536,154	2,637,947	2,706,070	---
SALTON SEA SALINITY MANAGEMENT	16,812	121,636	121,636	0	18,189	126,826	126,826	---
COACHELLA VALLEY WATER DISTRICT	76,421	360,588	357,000	3,588	80,331	376,837	371,671	---
OTHER LCWSP CONTRACTORS	161	671	671	---	256	1,066	1,066	0
CITY OF WINTERHAVEN	16	68	68	---	25	103	103	0
CHEMEHUEVI INDIAN RESERVATION	25	102	102	---	2,726	11,340	11,340	0
TOTAL CALIFORNIA	969,731	4,345,317			1,115,584	5,046,863	5,076,863	

CALIFORNIA ADJUSTED APPORTIONMENT CALCULATION

California Basic Apportionment	4,400,000
Conservation for Salton Sea Restoration - 2010 ¹	-23,273
Creation of Extraordinary Conservation ICS (IID)	-25,000
Creation of Extraordinary Conservation ICS (MWD)	
Total State Adjusted Apportionment	4,351,727
Excess to Total State Adjusted Apportionment	-6,410

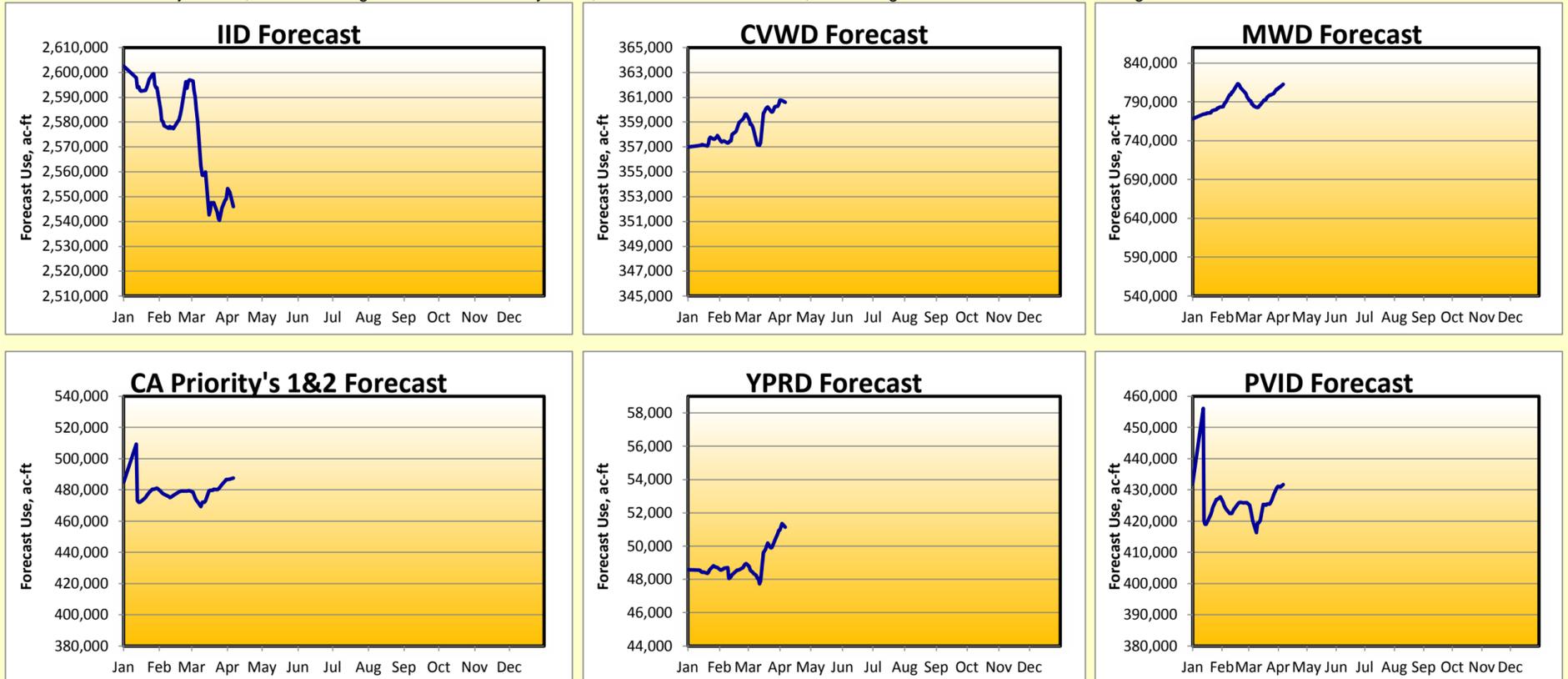
ISG ANNUAL TARGET COMPARISON CALCULATION

Priorities 1, 2, 3b Use (PVID+YPRD+Island+PVID Mesa)	487,583
MWD Adjustment	-67,583
Total California Agricultural Use (PVID+YPRD+Island+IID+CVWD)	3,394,171
California Agricultural Paybacks	23,273
Misc. PPRs Covered by IID and CVWD	14,500
California ICS Creation (IID ICS)	25,000
Total Use for Target Comparison ²	3,389,361
ISG Annual Target (Exhibit B)	3,448,000
Amount over/(under) ISG Annual Target	-58,639

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

1/ Pending approval by Imperial Irrigation District's Board of Directors.

2/ Includes MWD Adjustment, California Agricultural Use and Paybacks, IID-CVWD covered PPRs, and taking out the MWD-CVWD Exchange



**U.S. BUREAU OF RECLAMATION
LOWER COLORADO REGION
CY 2015**

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 \(Water Accounting Reports\)](#)

<u>WATER USER</u>	<u>Use To Date CY2015</u>	<u>Forecast Use CY2015</u>	<u>Estimated Use CY2015</u>	<u>Excess to Estimated Use CY2015</u>	<u>Diversion To Date CY2015</u>	<u>Forecast Diversion CY2015</u>	<u>Approved Diversion CY2015</u>	<u>Excess to Approved Diversion CY2015</u>
ARIZONA PUMPERS	4,222	17,561	17,561	---	6,534	27,181	27,181	0
LAKE MEAD NRA, AZ - Diversions from Lake Mead	27	150	150	---	27	150	150	0
LAKE MEAD NRA, AZ - Diversions from Lake Mohave	34	177	177	---	34	177	177	0
DAVIS DAM PROJECT	0	2	2	---	18	75	75	0
BULLHEAD CITY	1,677	8,370	8,523	---	2,503	12,492	12,720	-228
MOHAVE WATER CONSERVATION	134	556	556	---	200	831	831	0
BROOKE WATER LLC	50	207	207	---	75	311	311	0
MOHAVE VALLEY IDD	4,403	21,526	22,260	---	8,153	39,860	41,220	-1,360
FORT MOJAVE INDIAN RESERVATION, AZ	7,615	41,725	42,390	---	13,911	77,078	78,500	-1,422
GOLDEN SHORES WATER CONSERVATION DISTRICT	76	316	316	---	114	473	473	0
HAVASU NATIONAL WILDLIFE REFUGE	830	3,653	3,563	---	6,918	40,048	41,820	-1,772
LAKE HAVASU CITY	1,912	8,830	8,928	---	3,084	14,242	14,400	-158
CENTRAL ARIZONA PROJECT	462,609	1,571,441	1,548,550	---	462,609	1,571,441	1,548,550	---
TOWN OF PARKER	59	356	352	---	181	913	920	-7
COLORADO RIVER INDIAN RESERVATION, AZ	51,751	361,887	376,964	---	125,759	663,339	662,402	937
EHRENBURG IMPROVEMENT ASSOCIATION	62	256	256	---	87	361	361	0
CIBOLA VALLEY IRRIGATION DISTRICT	4,075	16,951	16,951	---	5,699	23,707	23,707	0
CIBOLA NATIONAL WILDLIFE REFUGE	3,063	12,741	12,741	0	4,940	20,550	20,550	0
IMPERIAL NATIONAL WILDLIFE REFUGE	629	2,616	2,616	0	1,015	4,224	4,224	0
YUMA PROVING GROUND	71	542	550	---	71	542	550	-8
GILA MONSTER FARMS	1,005	4,730	5,244	---	1,707	8,320	9,156	-836
WELLTON-MOHAWK IDD	51,448	272,361	278,000	-5,639	83,891	418,714	424,350	---
CITY OF YUMA	2,797	15,524	17,051	-1,527	5,301	25,435	27,318	-1,883
MARINE CORPS AIR STATION YUMA	305	1,378	1,305	---	305	1,378	1,305	73
UNION PACIFIC RAILROAD	7	24	24	---	13	48	48	0
UNIVERSITY OF ARIZONA	141	743	764	---	141	743	764	-21
YUMA UNION HIGH SCHOOL DISTRICT	24	192	193	---	30	251	253	-2
DESERT LAWN MEMORIAL	22	91	91	---	31	129	129	0
NORTH GILA VALLEY IDD	2,649	9,989	10,099	---	11,748	43,248	41,000	2,248
YUMA IRRIGATION DISTRICT	10,017	41,722	42,581	---	17,203	74,536	75,900	-1,364
YUMA MESA IDD	18,598	108,297	111,022	---	32,887	194,237	204,904	-10,667
UNIT "B" IRRIGATION DISTRICT	3,068	17,762	17,330	---	4,583	27,541	28,050	-509
FORT YUMA INDIAN RESERVATION	336	1,396	1,396	---	517	2,149	2,149	0
YUMA COUNTY WATER USERS' ASSOCIATION	62,666	249,459	244,599	---	99,771	394,771	388,000	6,771
COCOPA INDIAN RESERVATION	1,236	6,726	6,457	---	1,317	9,685	9,840	-155
RECLAMATION-YUMA AREA OFFICE	28	116	116	---	28	116	116	0
RETURN FROM SOUTH GILA WELLS								
TOTAL ARIZONA	697,646	2,800,373	2,799,885		901,405	3,699,296	3,692,404	
CAP	462,609	1,571,441				1,571,441		
ALL OTHERS	235,037	1,228,932	1,251,335			2,127,855	2,143,854	
YUMA MESA DIVISION, GILA PROJECT	31,264	160,008	350,000	-189,992		312,021		

ARIZONA ADJUSTED APPORTIONMENT CALCULATION

Arizona Basic Apportionment	2,800,000
Payback of IOPP overruns - (Cocopah and Beattie)	-122
CAGR/YMIDD Pilot Conservation Program ¹	
Total State Adjusted Apportionment	2,799,878
Excess to Total State Adjusted Apportionment	495
Estimated Allowable Use for CAP	1,576,674

1/ CAWCD has agreed to forebear 9,000 acre-feet during phase one of the study, during which time CAGR/YMIDD will refine the estimate of the actual conservation yield of the program.
 NOTES: Click on Arizona Schedules and Approvals above for incoming diversion schedules and approvals.

**U.S. BUREAU OF RECLAMATION
LOWER COLORADO REGION
CY 2015**

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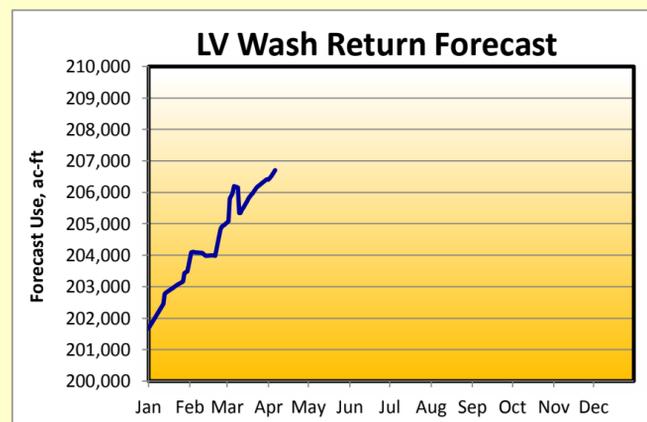
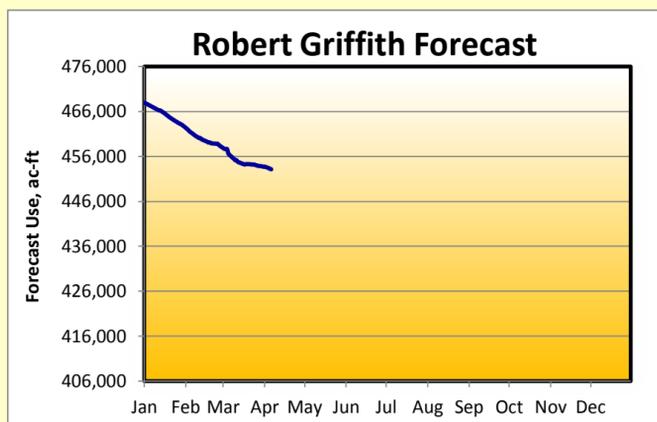
**NEVADA WATER USERS
FORECAST OF END OF YEAR CONSUMPTIVE USE
FORECAST BASED ON USE TO DATE AND APPROVED ANNUAL WATER ORDERS**

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

WATER USER	Use To Date CY2015	Forecast Use CY2015	Estimated Use CY2015	Excess to Estimated Use CY2015	Diversion To Date CY2015	Forecast Diversion CY2015	Approved Diversion CY2015	Excess to Approved Diversion CY2015
ROBERT B. GRIFFITH WATER PROJECT (SNWS)	84,979	453,129	467,935	-14,806	84,979	453,129	467,935	-14,806
LAKE MEAD NRA, NV - Diversions from Lake Mead	69	417	422	---	69	417	422	-5
LAKE MEAD NRA, NV - Diversions from Lake Mohave	35	169	166	---	35	169	166	3
BASIC MANAGEMENT INC.	1,268	8,111	8,211	---	1,268	8,111	8,211	-100
CITY OF HENDERSON (BMI DELIVERY)	3,476	15,838	15,878	---	3,476	15,838	15,878	-40
NEVADA STATE DEPT. OF FISH & GAME	3	12	12	0	82	370	363	---
PACIFIC COAST BUILDING PRODUCTS INC.	219	912	923	---	219	912	923	-11
BOULDER CANYON PROJECT	42	174	174	---	73	302	302	0
BIG BEND WATER DISTRICT	447	3,950	4,061	---	1,627	9,568	10,000	-432
FORT MOJAVE INDIAN TRIBE	577	3,659	3,886	---	860	5,460	5,800	-340
LAS VEGAS WASH RETURN FLOWS	-59,292	-206,709	-201,668	---				
TOTAL NEVADA	31,823	279,662	300,000	-14,806	92,688	494,276	510,000	-15,731
SOUTHERN NEVADA WATER SYSTEM (SNWS)	25,687	246,420				453,129		
ALL OTHERS	6,136	33,242				41,147		
NEVADA USES ABOVE HOOVER	30,799	272,053				479,248		
NEVADA USES BELOW HOOVER	1,024	7,609				15,028		

Tributary Conservation & Imported Intentionally Created Surplus	
Total Requested Tributary Conservation Intentionally Created Surplus	37,000
Total Requested Imported Conservation Intentionally Created Surplus	9,000
5% System Cut for Creation of Intentionally Created Surplus	-2,300
Total Intentionally Created Surplus Left in Lake Mead	43,700

NEVADA ADJUSTED APPORTIONMENT CALCULATION	
Nevada Basic Apportionment	300,000
Excess to Total State Adjusted Apportionment	-20,338



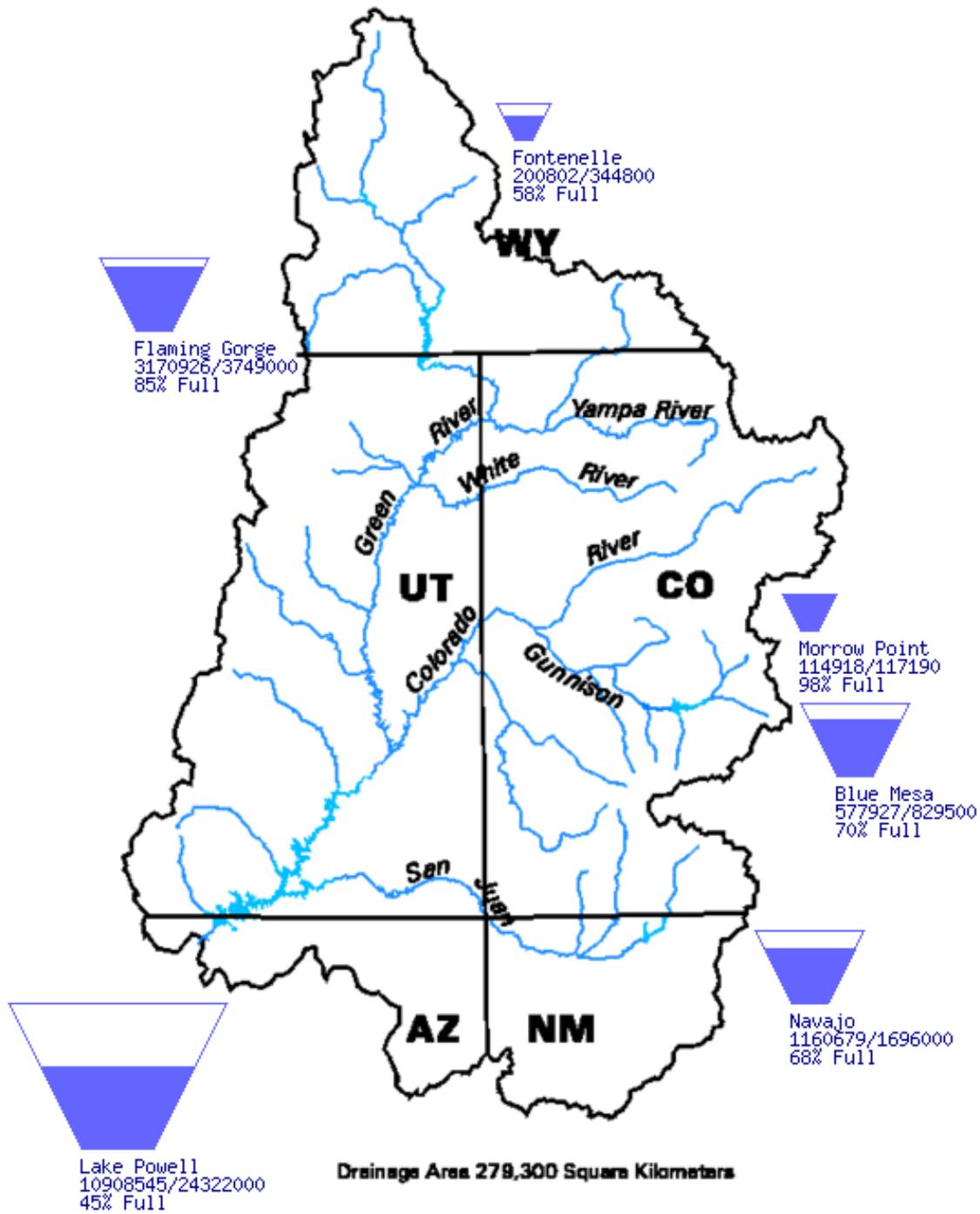
NOTES: Click on Nevada Schedules and Approvals above for incoming diversion schedules and approvals.

Upper Colorado Region Water Resources Group

River Basin Tea-Cup Diagrams

Data Current as of:
04/05/2015

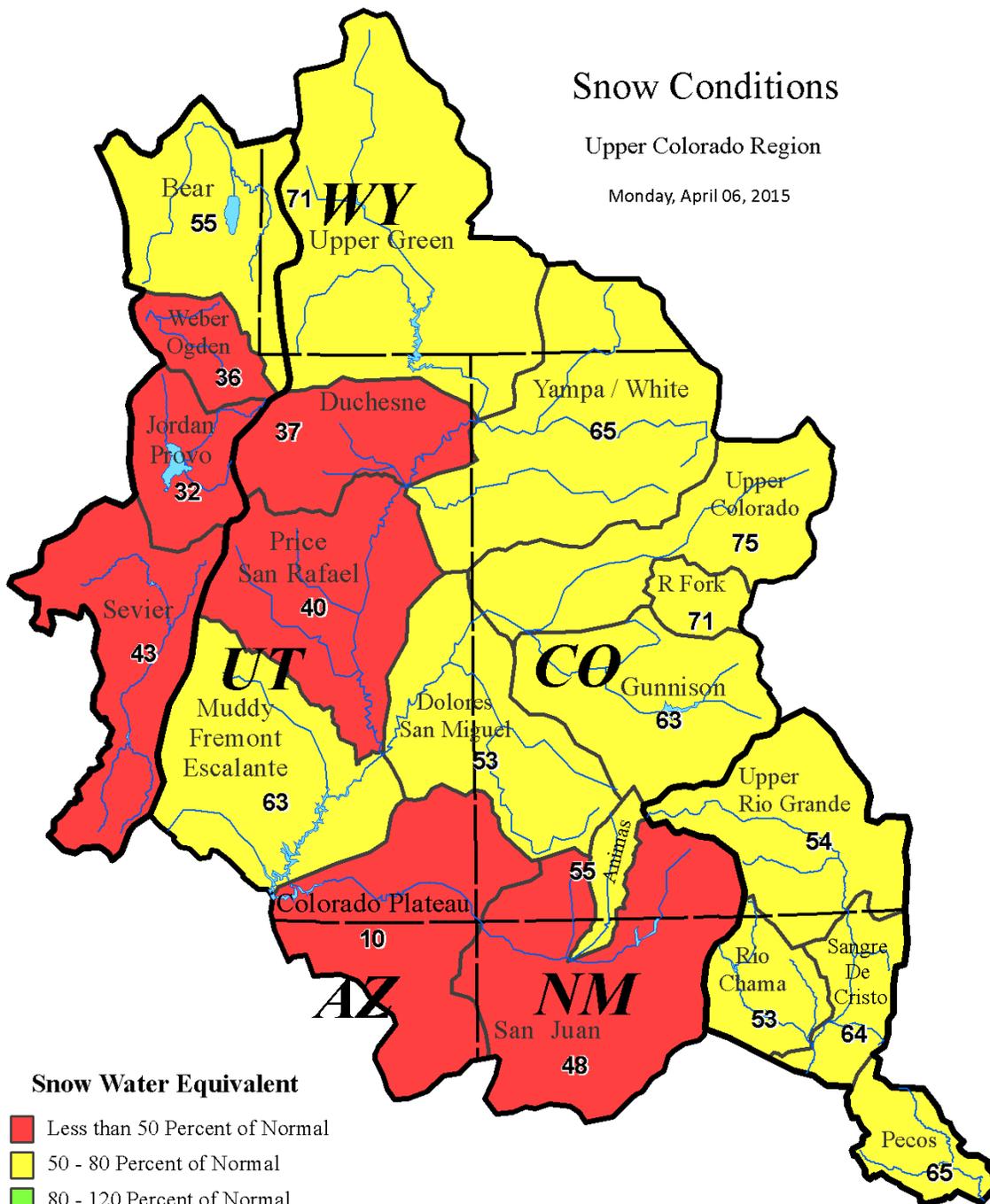
Upper Colorado River Drainage Basin



Snow Conditions

Upper Colorado Region

Monday, April 06, 2015

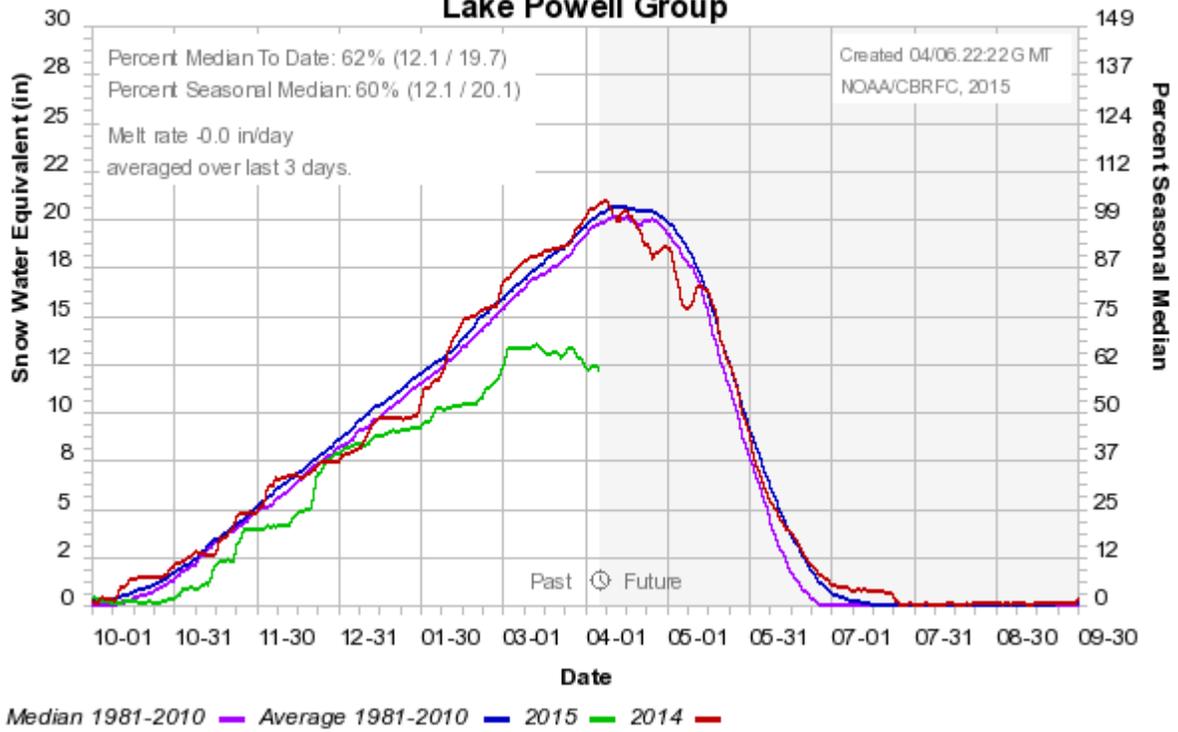


Snow Water Equivalent

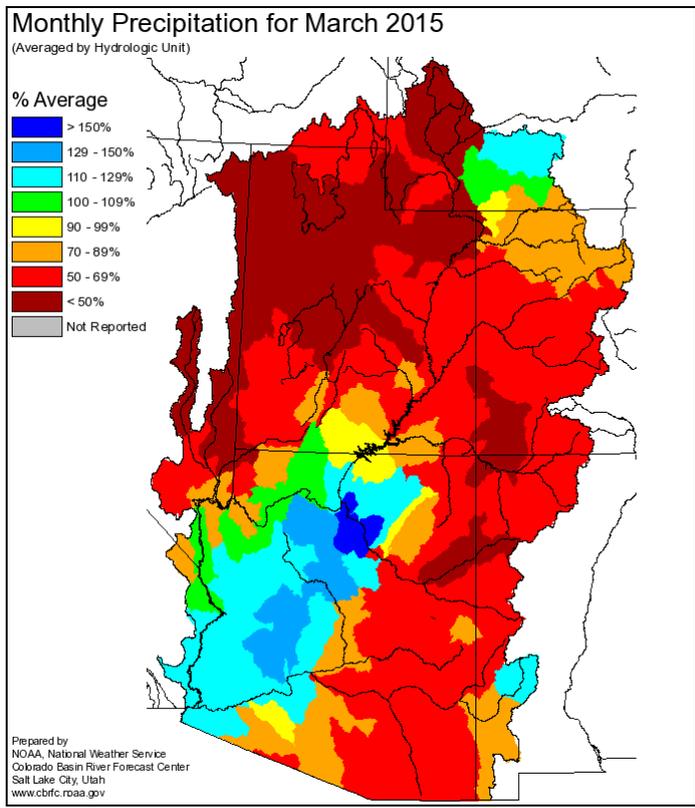
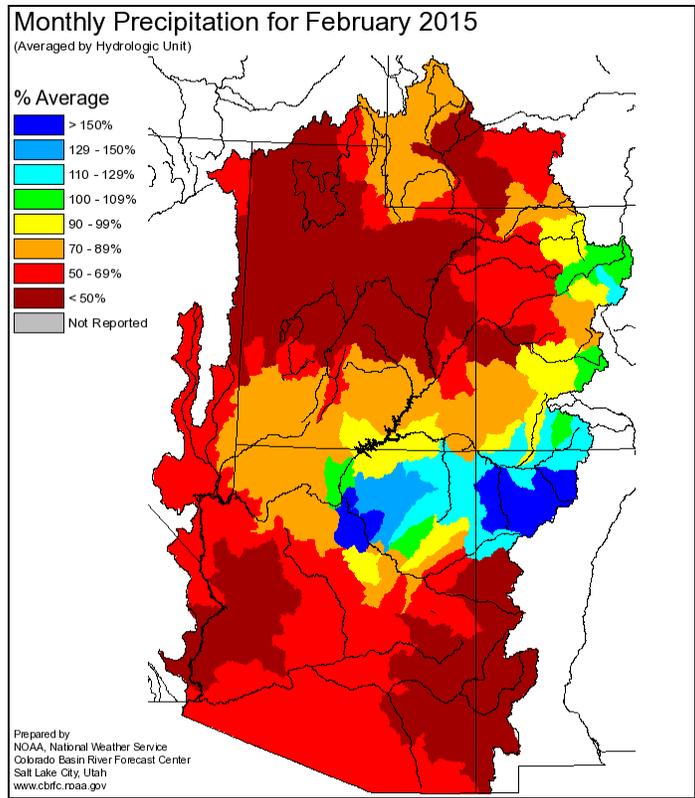
- Less than 50 Percent of Normal
- 50 - 80 Percent of Normal
- 80 - 120 Percent of Normal
- 120 - 150 Percent of Normal
- Greater than 150 Percent of Normal

Upper Colorado
GIS
Region

Colorado Basin River Forecast Center Lake Powell Group



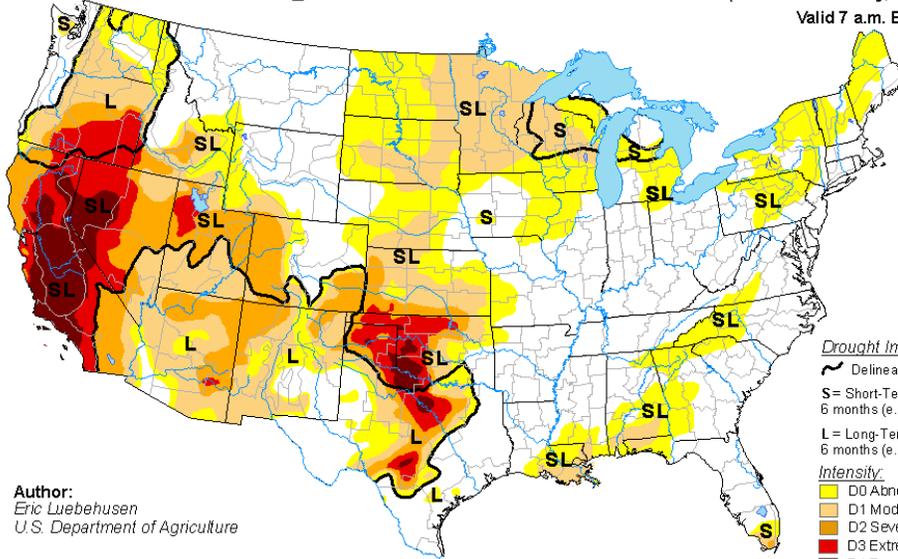
NOAA National Weather Service Monthly Precipitation Maps for February and March 2015



USDA United States Drought Monitor Map

U.S. Drought Monitor

March 31, 2015
 (Released Thursday, Apr. 2, 2015)
 Valid 7 a.m. EST

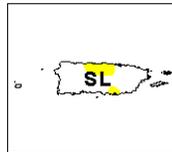
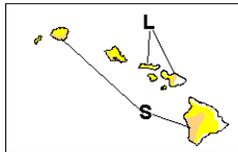
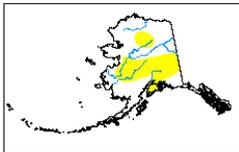


Author:
 Eric Luebbehusen
 U.S. Department of Agriculture

Drought Impact Types:
 ~ Delineates dominant impacts
 S= Short-Term, typically less than 6 months (e.g. agriculture, grasslands)
 L = Long-Term, typically greater than 6 months (e.g. hydrology, ecology)

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

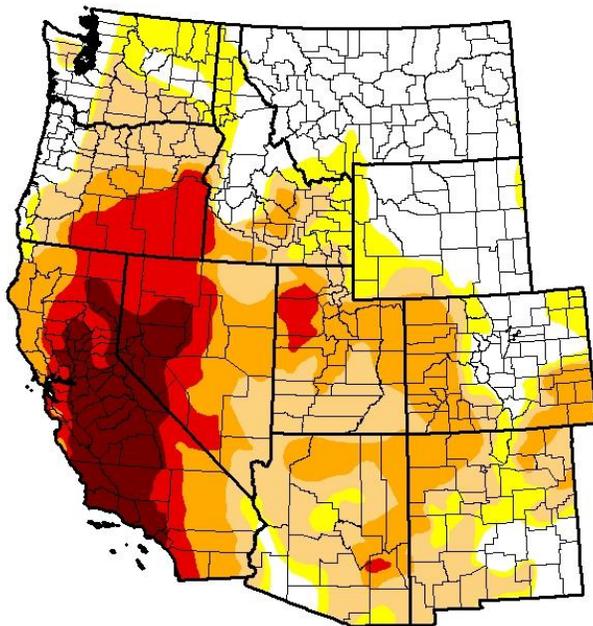
The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.



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

U.S. Drought Monitor West

March 31, 2015
 (Released Thursday, Apr. 2, 2015)
 Valid 7 a.m. EST



Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	28.49	71.51	59.80	36.89	17.04	7.23
Last Week 3/24/2015	28.74	71.26	59.79	32.85	17.04	7.23
3 Months Ago 12/30/2014	34.76	65.24	54.48	33.50	18.68	5.40
Start of Calendar Year 12/30/2014	34.76	65.24	54.48	33.50	18.68	5.40
Start of Water Year 9/30/2014	31.48	68.52	55.57	35.65	19.95	8.90
One Year Ago 4/2/2014	28.11	71.89	60.21	41.95	16.03	4.03

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.

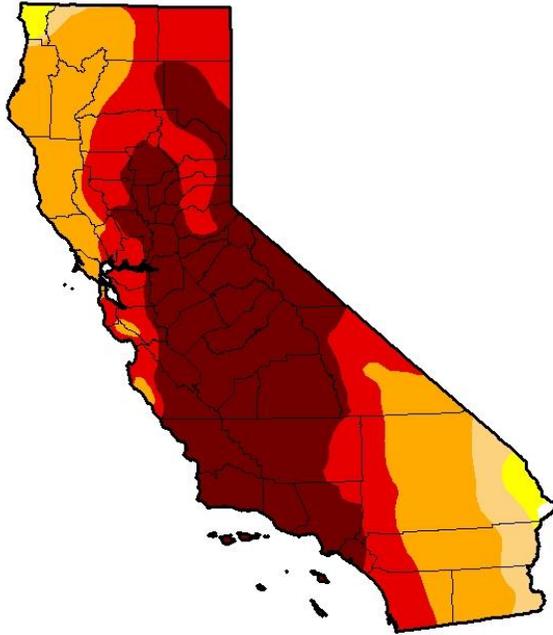
Author:
 Eric Luebbehusen
 U.S. Department of Agriculture



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

U.S. Drought Monitor California

March 31, 2015
(Released Thursday, Apr. 2, 2015)
Valid 7 a.m. EST



Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	0.15	99.85	98.11	93.44	66.60	41.41
Last Week 3/24/2015	0.15	99.85	98.11	93.44	66.60	41.41
3 Months Ago 12/30/2014	0.00	100.00	98.12	94.34	77.94	32.21
Start of Calendar Year 12/31/2014	0.00	100.00	98.12	94.34	77.94	32.21
Start of Water Year 9/30/2014	0.00	100.00	100.00	95.04	81.92	58.41
One Year Ago 4/2/2014	0.00	100.00	99.81	95.21	68.76	23.49

Intensity:

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

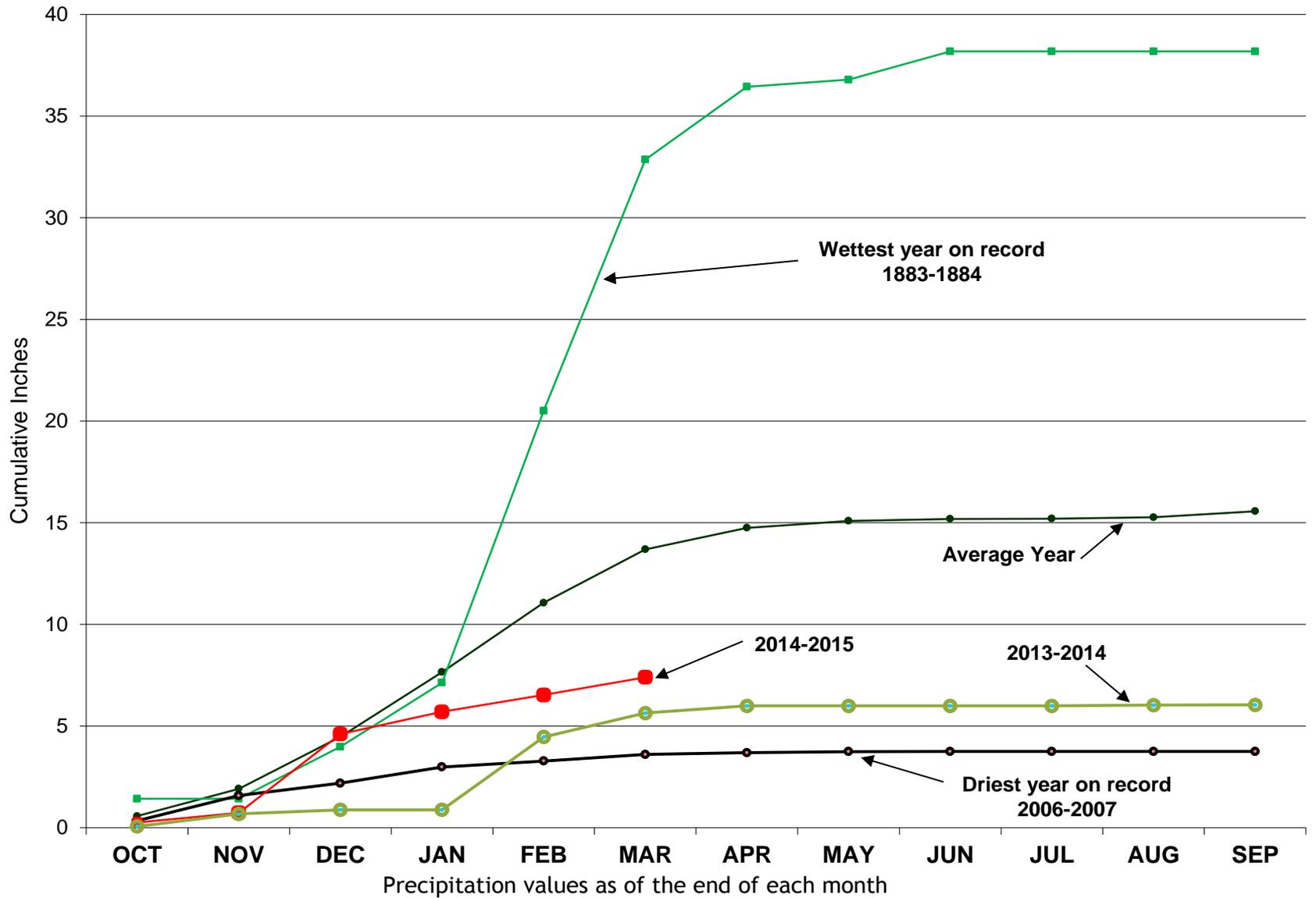
The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author:
Eric Luebbehusen
U.S. Department of Agriculture



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

Los Angeles Civic Center Precipitation

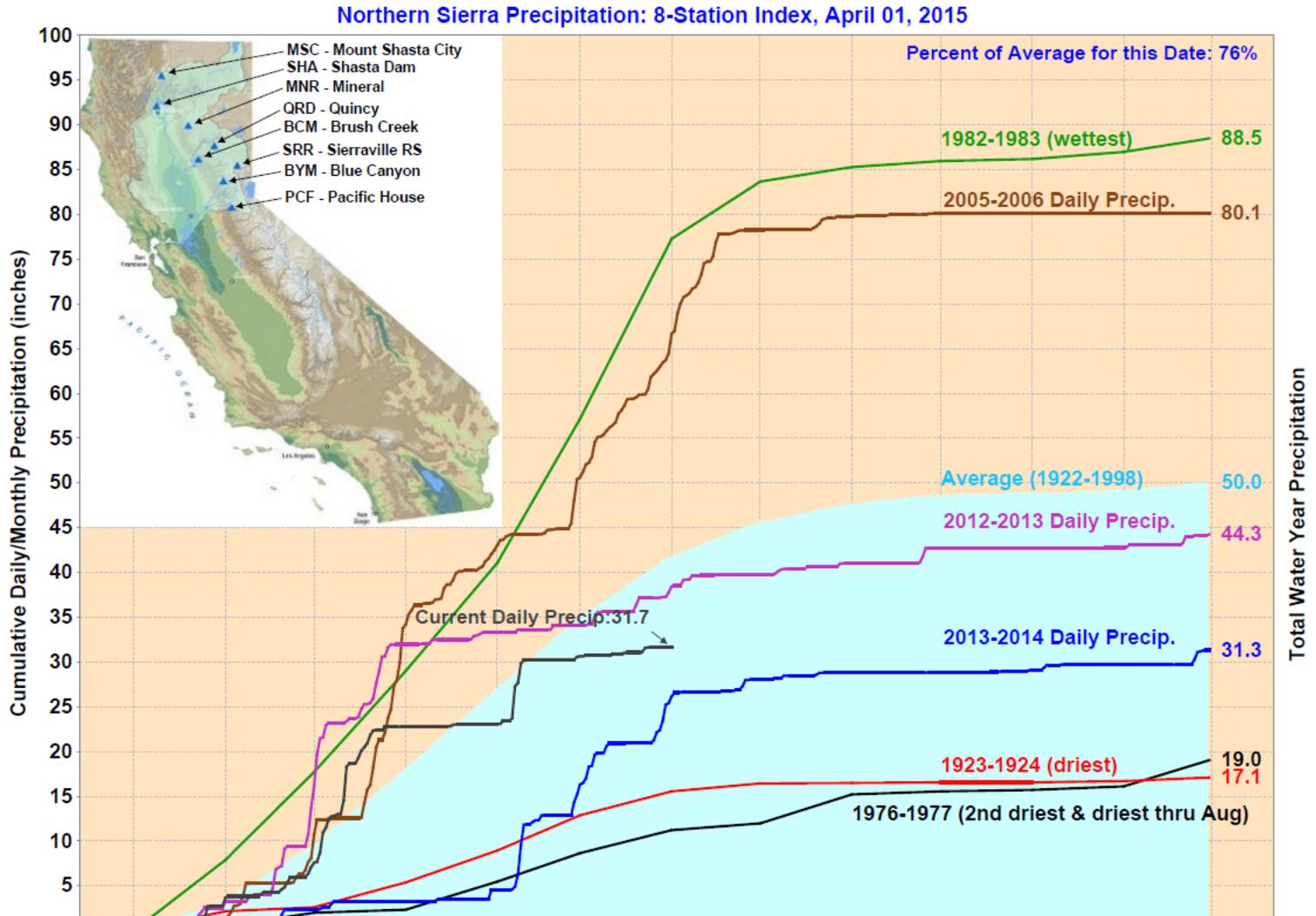


Precipitation at Six Major Stations in Southern California

From October 1, 2014 to March 31, 2015

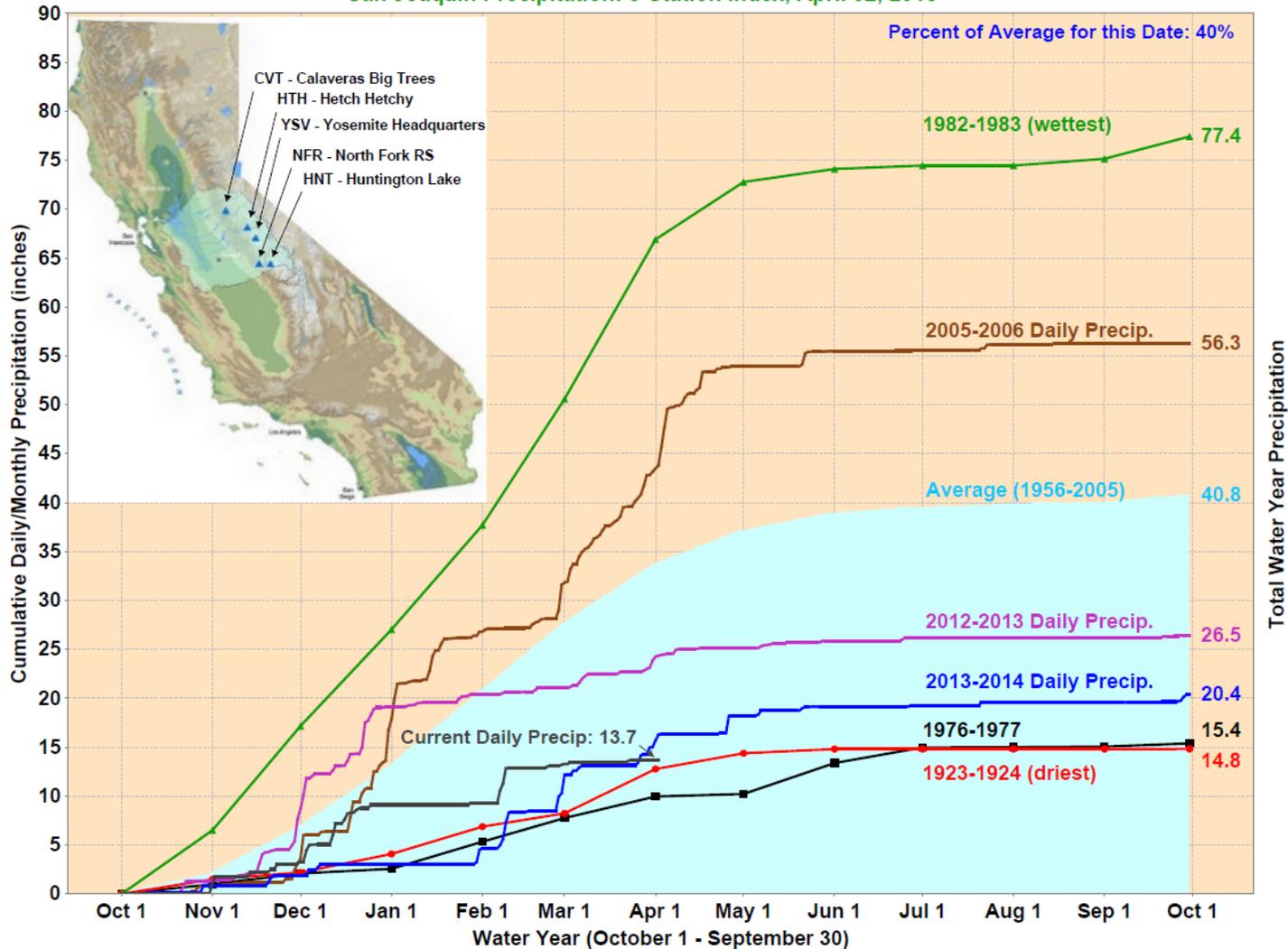
Station	Precipitation in inches		Average to Date	Percent of Average
	Mar	Oct 1 to Mar 31		
San Luis Obispo	0.23	6.51	20.07	32%
Santa Barbara	0.30	8.82	15.88	56%
Los Angeles	0.87	7.40	13.69	54%
San Diego	0.89	5.67	8.87	64%
Blythe	1.02	2.44	2.42	101%
Imperial	0.45	1.00	2.06	49%

Northern Sierra Precipitation-8 Station Index

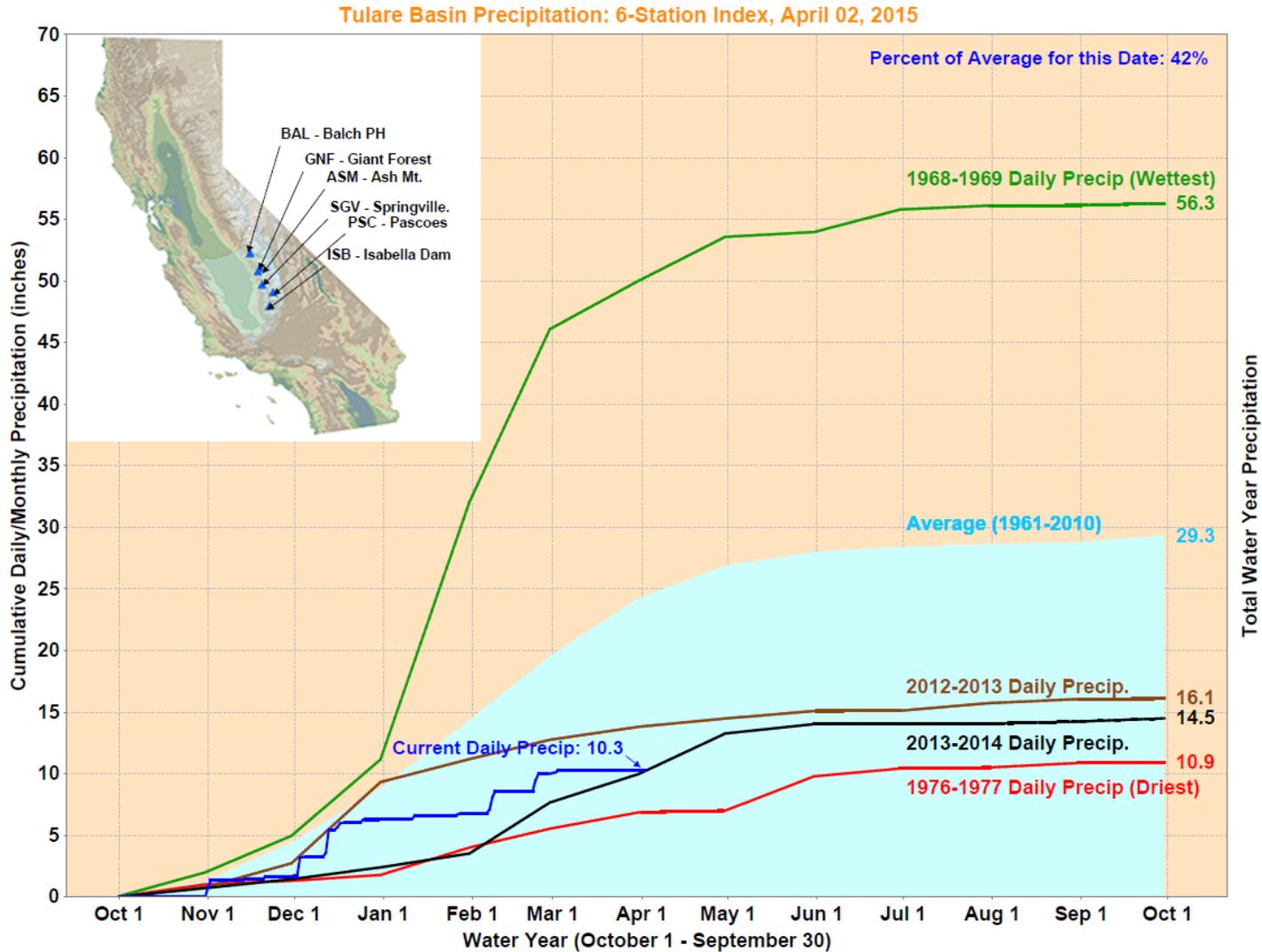


San Joaquin Precipitation-5 Station Index

San Joaquin Precipitation: 5-Station Index, April 02, 2015



Tulare Basin Precipitation-6 Station Index



Snow Water Equivalents (inches)

% of April 1 Average / % of Normal for This Date



Data as of April 1, 2015

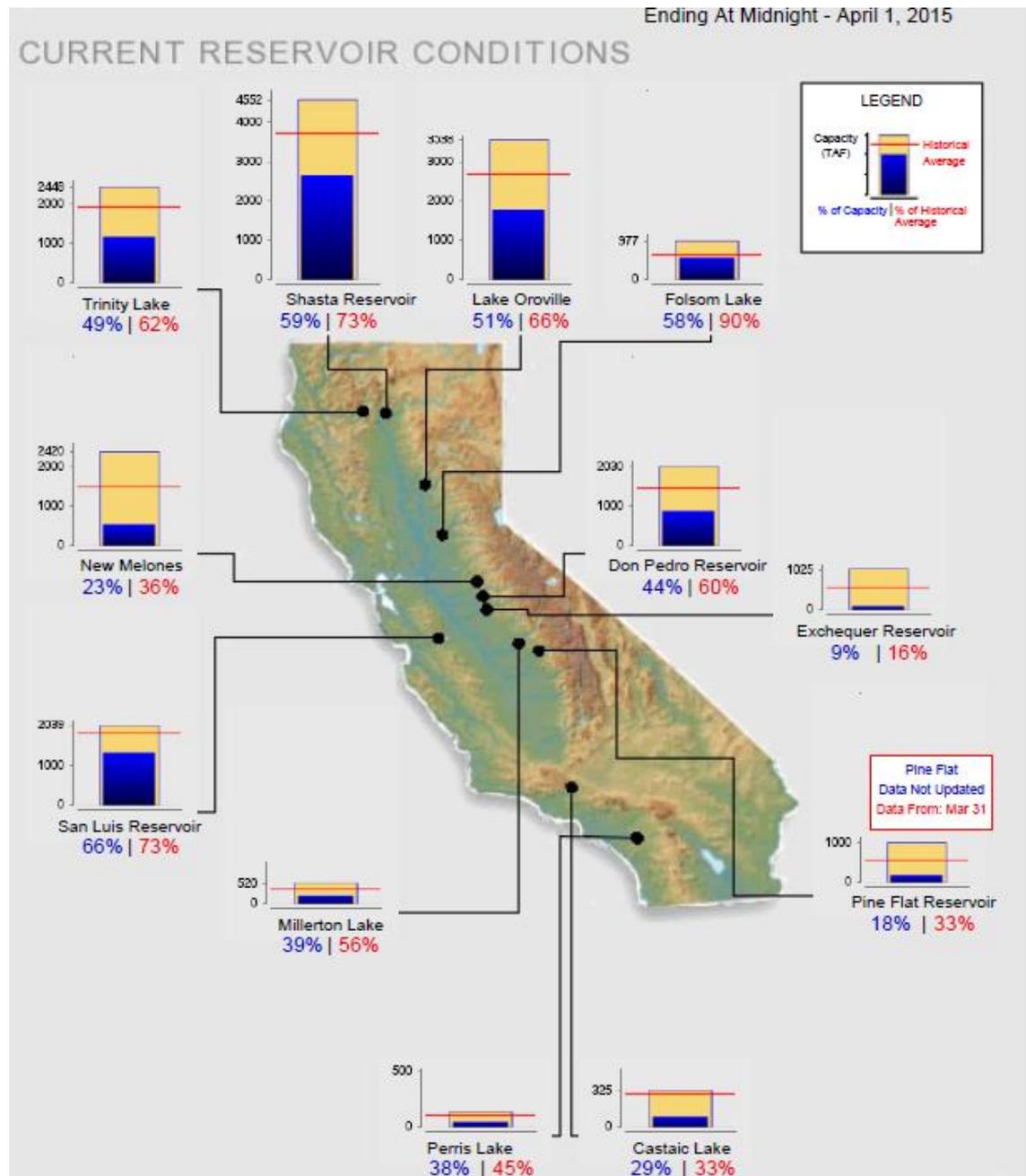
Comparison of SWP Water Storage

Reservoir	Capacity	2014 Storage (acre-feet)		2015 Storage (acre-feet)	
		As of April 1	% of Cap.	As of April 1	% of Cap.
Frenchman	55,475	28,094	51%	20,234	36%
Lake Davis	84,371	56,776	67%	47,719	57%
Antelope	22,564	21,206	94%	22,797	101%
Oroville	3,553,405	1,730,944	49%	1,793,611	50%
TOTAL North	3,715,815	1,837,020	49%	1,884,361	51%
Del Valle	39,914	39,302	98%	36,548	92%
San Luis (DWR)	1,062,180	387,843	37%	958,684	90%
Pyramid	169,901	168,935	99%	165,663	98%
Castaic	319,247	269,364	84%	93,255	29%
Silverwood	74,970	69,603	93%	67,752	90%
Perris	126,841	69,381	55%	50,269	40%
TOTAL South	1,793,053	1,004,428	56%	1,372,171	77%
TOTAL SWP	5,508,868	2,841,448	52%	3,256,532	59%

State Water Project Projected Deliveries:

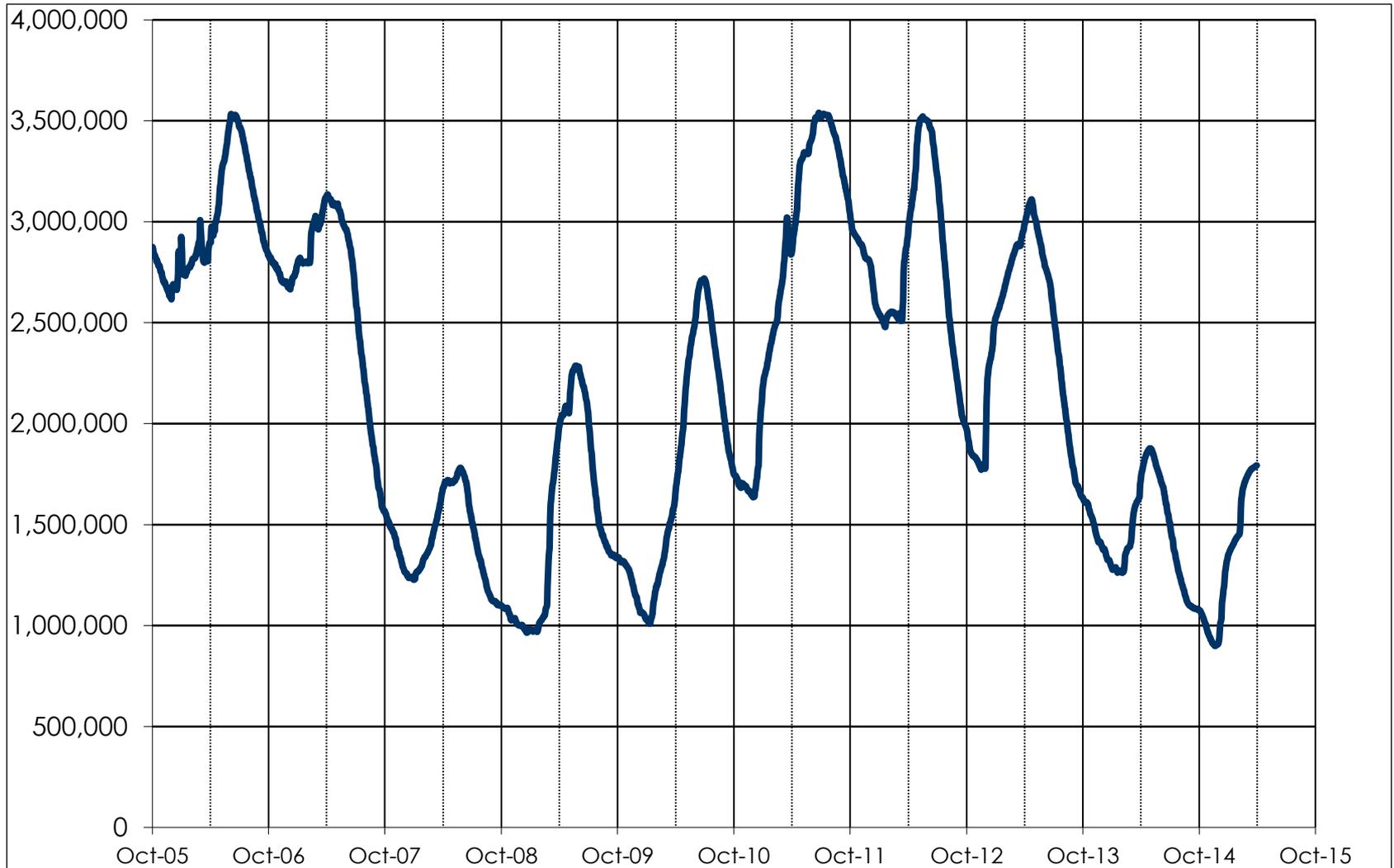
As of March 2, 2015, the Table-A allocations for 2015 is 20%

Current Reservoir Conditions



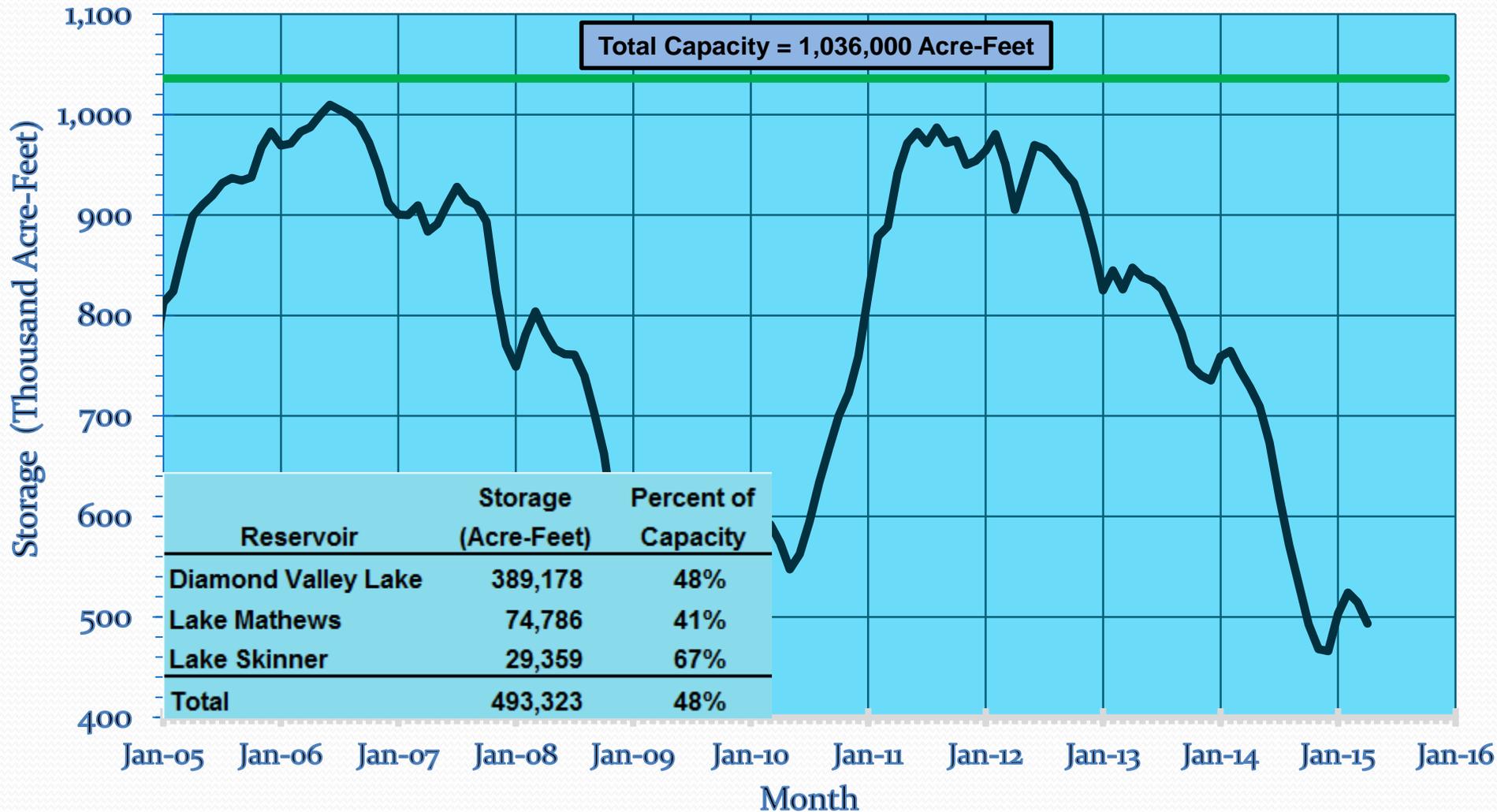
Oroville Storage (acre-feet)

October 1, 2005 - March 31, 2015



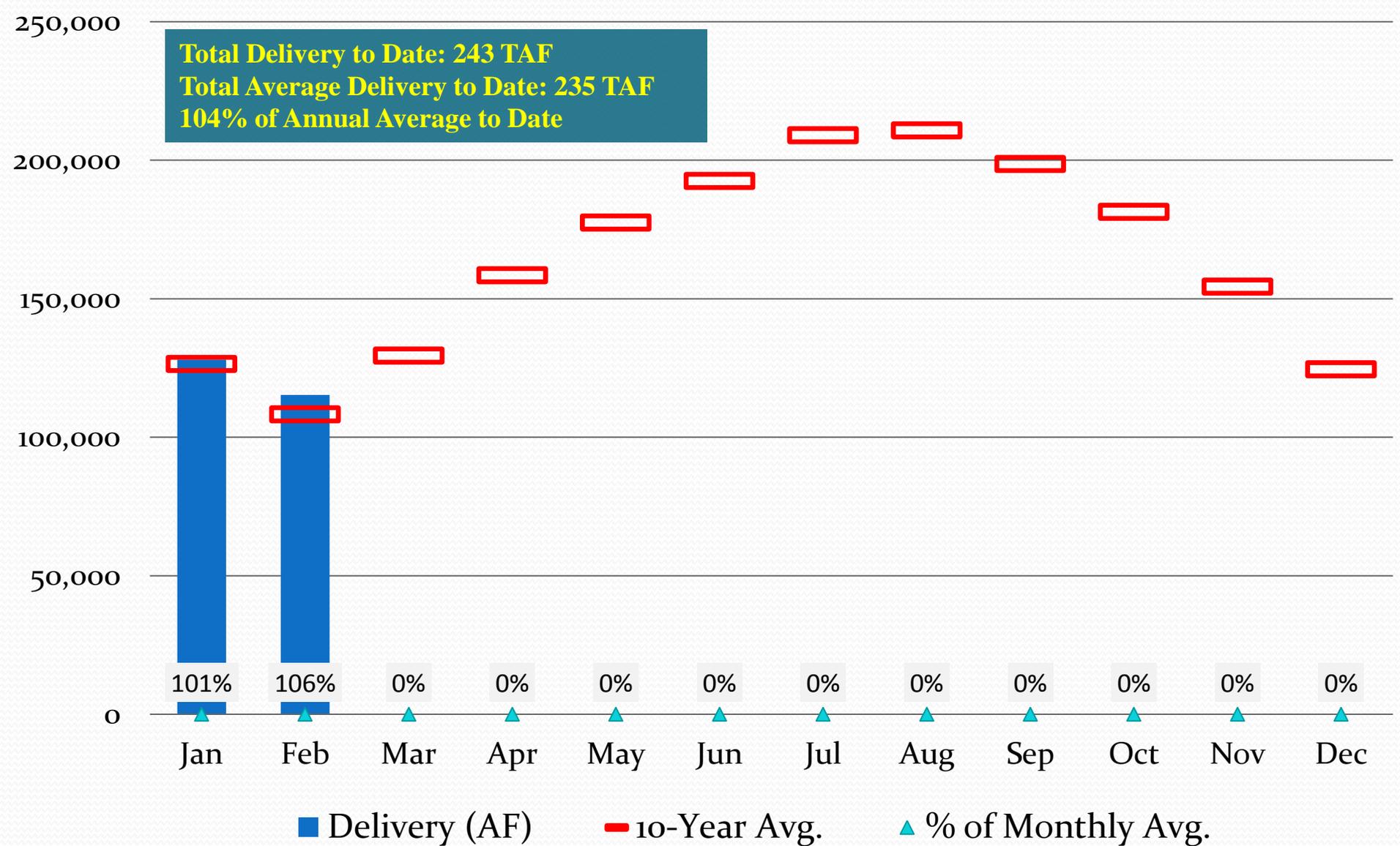
MWD's Combined Reservoir Storage as of April 1, 2015

Lake Skinner, Lake Mathews, and Diamond Valley Lake

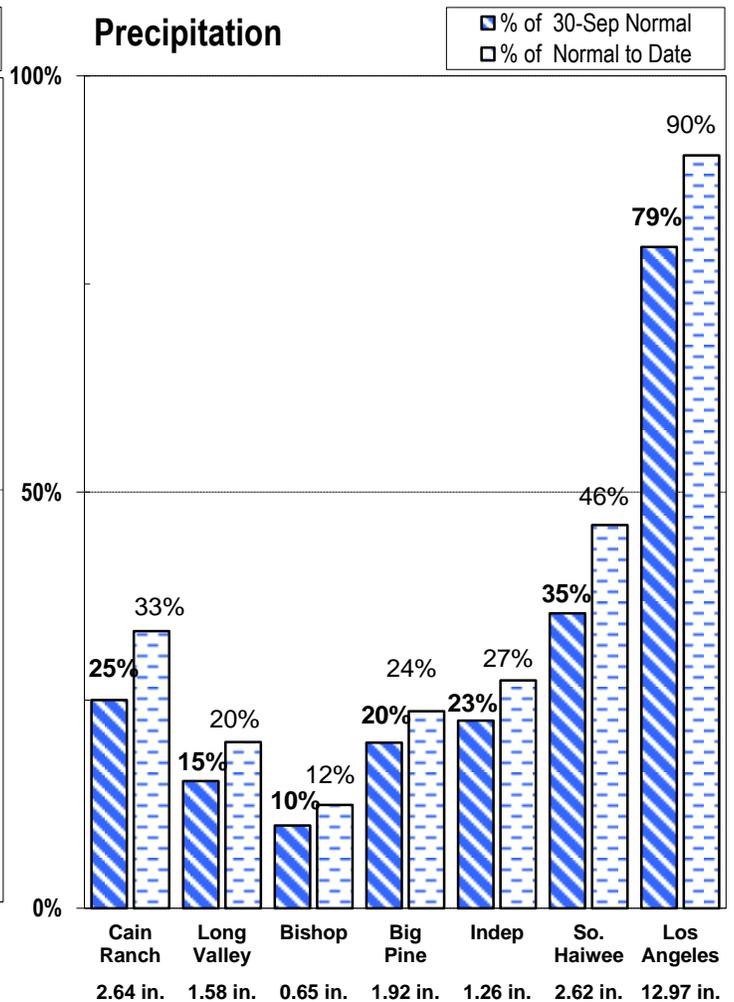
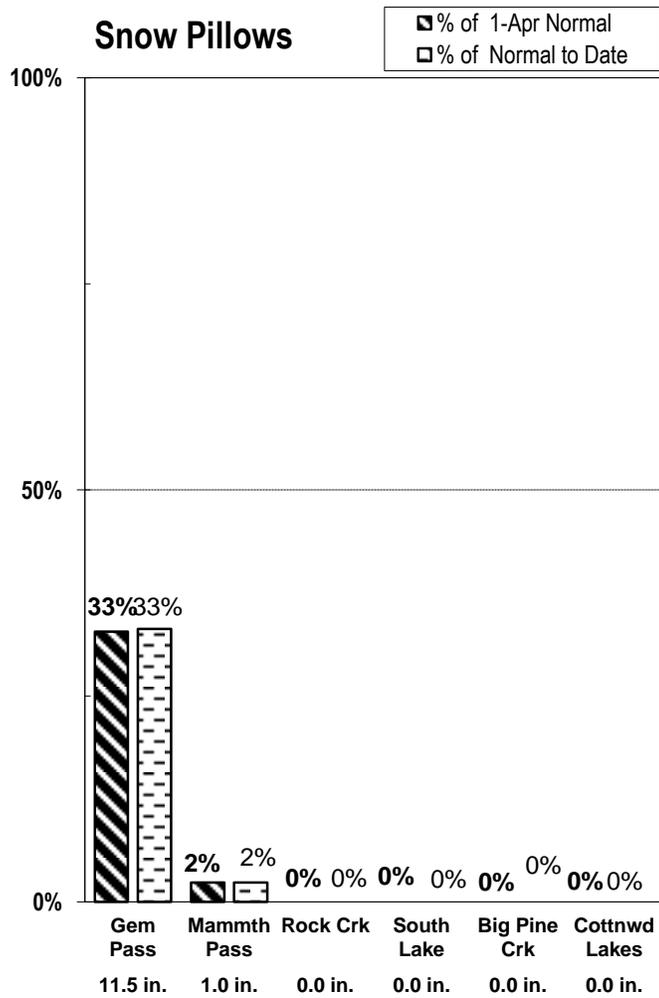
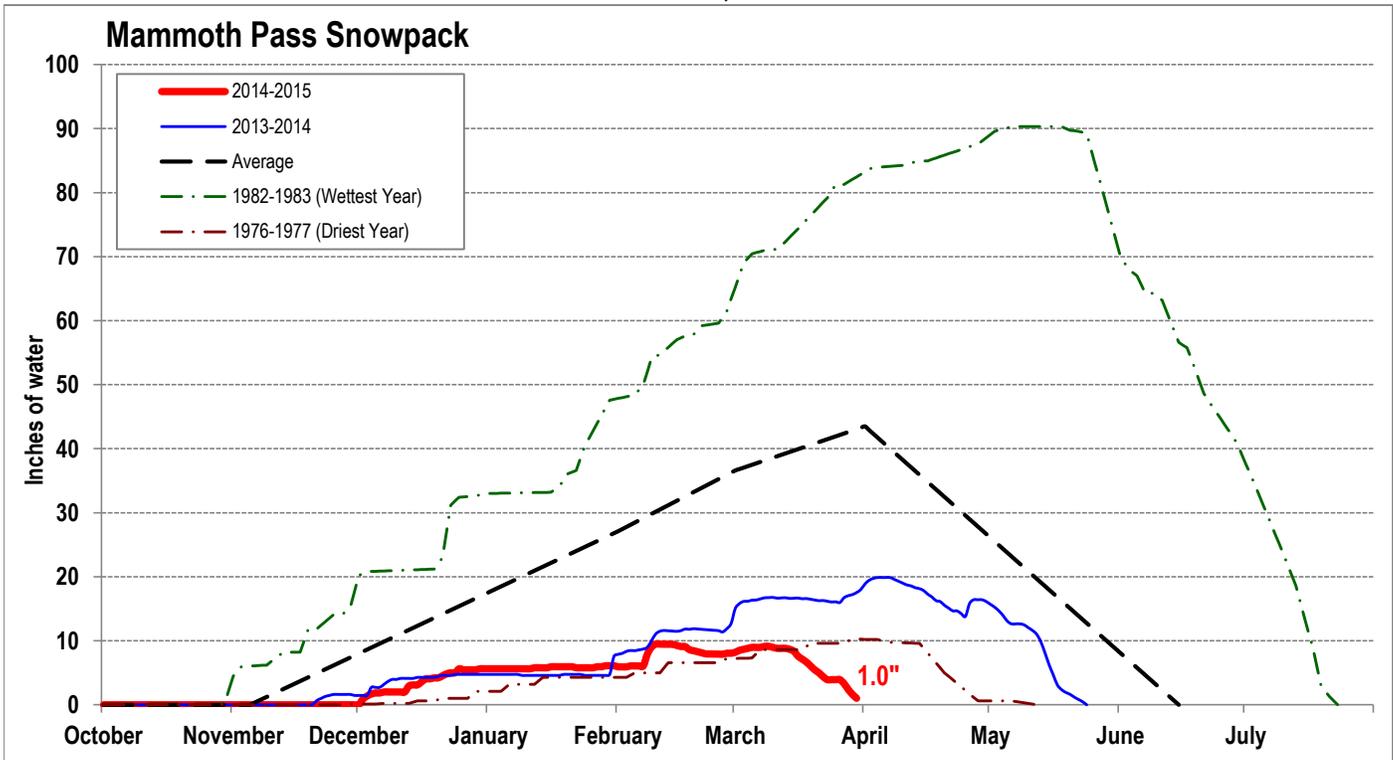


2015 Water Deliveries to Member Agencies (AF)

Total Delivery to Date: 243 TAF
Total Average Delivery to Date: 235 TAF
104% of Annual Average to Date



EASTERN SIERRA CURRENT PRECIPITATION CONDITIONS March 30, 2015



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

Executive Department
State of California

EXECUTIVE ORDER B-29-15

WHEREAS on January 17, 2014, I proclaimed a State of Emergency to exist throughout the State of California due to severe drought conditions; and

WHEREAS on April 25, 2014, I proclaimed a Continued State of Emergency to exist throughout the State of California due to the ongoing drought; and

WHEREAS California's water supplies continue to be severely depleted despite a limited amount of rain and snowfall this winter, with record low snowpack in the Sierra Nevada mountains, decreased water levels in most of California's reservoirs, reduced flows in the state's rivers and shrinking supplies in underground water basins; and

WHEREAS the severe drought conditions continue to present urgent challenges including: drinking water shortages in communities across the state, diminished water for agricultural production, degraded habitat for many fish and wildlife species, increased wildfire risk, and the threat of saltwater contamination to fresh water supplies in the Sacramento-San Joaquin Bay Delta; and

WHEREAS a distinct possibility exists that the current drought will stretch into a fifth straight year in 2016 and beyond; and

WHEREAS new expedited actions are needed to reduce the harmful impacts from water shortages and other impacts of the drought; and

WHEREAS the magnitude of the severe drought conditions continues to present threats beyond the control of the services, personnel, equipment, and facilities of any single local government and require the combined forces of a mutual aid region or regions to combat; and

WHEREAS under the provisions of section 8558(b) of the Government Code, I find that conditions of extreme peril to the safety of persons and property continue to exist in California due to water shortage and drought conditions with which local authority is unable to cope; and

WHEREAS under the provisions of section 8571 of the California Government Code, I find that strict compliance with various statutes and regulations specified in this order would prevent, hinder, or delay the mitigation of the effects of the drought.

NOW, THEREFORE, I, EDMUND G. BROWN JR., Governor of the State of California, in accordance with the authority vested in me by the Constitution and statutes of the State of California, in particular Government Code sections 8567 and 8571 of the California Government Code, do hereby issue this Executive Order, effective immediately.

IT IS HEREBY ORDERED THAT:

1. The orders and provisions contained in my January 17, 2014 Proclamation, my April 25, 2014 Proclamation, and Executive Orders B-26-14 and B-28-14 remain in full force and effect except as modified herein.

SAVE WATER

2. The State Water Resources Control Board (Water Board) shall impose restrictions to achieve a statewide 25% reduction in potable urban water usage through February 28, 2016. These restrictions will require water suppliers to California's cities and towns to reduce usage as compared to the amount used in 2013. These restrictions should consider the relative per capita water usage of each water suppliers' service area, and require that those areas with high per capita use achieve proportionally greater reductions than those with low use. The California Public Utilities Commission is requested to take similar action with respect to investor-owned utilities providing water services.
3. The Department of Water Resources (the Department) shall lead a statewide initiative, in partnership with local agencies, to collectively replace 50 million square feet of lawns and ornamental turf with drought tolerant landscapes. The Department shall provide funding to allow for lawn replacement programs in underserved communities, which will complement local programs already underway across the state.
4. The California Energy Commission, jointly with the Department and the Water Board, shall implement a time-limited statewide appliance rebate program to provide monetary incentives for the replacement of inefficient household devices.
5. The Water Board shall impose restrictions to require that commercial, industrial, and institutional properties, such as campuses, golf courses, and cemeteries, immediately implement water efficiency measures to reduce potable water usage in an amount consistent with the reduction targets mandated by Directive 2 of this Executive Order.
6. The Water Board shall prohibit irrigation with potable water of ornamental turf on public street medians.
7. The Water Board shall prohibit irrigation with potable water outside of newly constructed homes and buildings that is not delivered by drip or microspray systems.

8. The Water Board shall direct urban water suppliers to develop rate structures and other pricing mechanisms, including but not limited to surcharges, fees, and penalties, to maximize water conservation consistent with statewide water restrictions. The Water Board is directed to adopt emergency regulations, as it deems necessary, pursuant to Water Code section 1058.5 to implement this directive. The Water Board is further directed to work with state agencies and water suppliers to identify mechanisms that would encourage and facilitate the adoption of rate structures and other pricing mechanisms that promote water conservation. The California Public Utilities Commission is requested to take similar action with respect to investor-owned utilities providing water services.

INCREASE ENFORCEMENT AGAINST WATER WASTE

9. The Water Board shall require urban water suppliers to provide monthly information on water usage, conservation, and enforcement on a permanent basis.
10. The Water Board shall require frequent reporting of water diversion and use by water right holders, conduct inspections to determine whether illegal diversions or wasteful and unreasonable use of water are occurring, and bring enforcement actions against illegal diverters and those engaging in the wasteful and unreasonable use of water. Pursuant to Government Code sections 8570 and 8627, the Water Board is granted authority to inspect property or diversion facilities to ascertain compliance with water rights laws and regulations where there is cause to believe such laws and regulations have been violated. When access is not granted by a property owner, the Water Board may obtain an inspection warrant pursuant to the procedures set forth in Title 13 (commencing with section 1822.50) of Part 3 of the Code of Civil Procedure for the purposes of conducting an inspection pursuant to this directive.
11. The Department shall update the State Model Water Efficient Landscape Ordinance through expedited regulation. This updated Ordinance shall increase water efficiency standards for new and existing landscapes through more efficient irrigation systems, greywater usage, onsite storm water capture, and by limiting the portion of landscapes that can be covered in turf. It will also require reporting on the implementation and enforcement of local ordinances, with required reports due by December 31, 2015. The Department shall provide information on local compliance to the Water Board, which shall consider adopting regulations or taking appropriate enforcement actions to promote compliance. The Department shall provide technical assistance and give priority in grant funding to public agencies for actions necessary to comply with local ordinances.
12. Agricultural water suppliers that supply water to more than 25,000 acres shall include in their required 2015 Agricultural Water Management Plans a detailed drought management plan that describes the actions and measures the supplier will take to manage water demand during drought. The Department shall require those plans to include quantification of water supplies and demands for 2013, 2014, and 2015 to the extent data is available. The Department will provide technical assistance to water suppliers in preparing the plans.

13. Agricultural water suppliers that supply water to 10,000 to 25,000 acres of irrigated lands shall develop Agricultural Water Management Plans and submit the plans to the Department by July 1, 2016. These plans shall include a detailed drought management plan and quantification of water supplies and demands in 2013, 2014, and 2015, to the extent that data is available. The Department shall give priority in grant funding to agricultural water suppliers that supply water to 10,000 to 25,000 acres of land for development and implementation of Agricultural Water Management Plans.
14. The Department shall report to Water Board on the status of the Agricultural Water Management Plan submittals within one month of receipt of those reports.
15. Local water agencies in high and medium priority groundwater basins shall immediately implement all requirements of the California Statewide Groundwater Elevation Monitoring Program pursuant to Water Code section 10933. The Department shall refer noncompliant local water agencies within high and medium priority groundwater basins to the Water Board by December 31, 2015, which shall consider adopting regulations or taking appropriate enforcement to promote compliance.
16. The California Energy Commission shall adopt emergency regulations establishing standards that improve the efficiency of water appliances, including toilets, urinals, and faucets available for sale and installation in new and existing buildings.

INVEST IN NEW TECHNOLOGIES

17. The California Energy Commission, jointly with the Department and the Water Board, shall implement a Water Energy Technology (WET) program to deploy innovative water management technologies for businesses, residents, industries, and agriculture. This program will achieve water and energy savings and greenhouse gas reductions by accelerating use of cutting-edge technologies such as renewable energy-powered desalination, integrated on-site reuse systems, water-use monitoring software, irrigation system timing and precision technology, and on-farm precision technology.

STREAMLINE GOVERNMENT RESPONSE

18. The Office of Emergency Services and the Department of Housing and Community Development shall work jointly with counties to provide temporary assistance for persons moving from housing units due to a lack of potable water who are served by a private well or water utility with less than 15 connections, and where all reasonable attempts to find a potable water source have been exhausted.
19. State permitting agencies shall prioritize review and approval of water infrastructure projects and programs that increase local water supplies, including water recycling facilities, reservoir improvement projects, surface water treatment plants, desalination plants, stormwater capture, and greywater systems. Agencies shall report to the Governor's Office on applications that have been pending for longer than 90 days.

20. The Department shall take actions required to plan and, if necessary, implement Emergency Drought Salinity Barriers in coordination and consultation with the Water Board and the Department of Fish and Wildlife at locations within the Sacramento - San Joaquin delta estuary. These barriers will be designed to conserve water for use later in the year to meet state and federal Endangered Species Act requirements, preserve to the extent possible water quality in the Delta, and retain water supply for essential human health and safety uses in 2015 and in the future.
21. The Water Board and the Department of Fish and Wildlife shall immediately consider any necessary regulatory approvals for the purpose of installation of the Emergency Drought Salinity Barriers.
22. The Department shall immediately consider voluntary crop idling water transfer and water exchange proposals of one year or less in duration that are initiated by local public agencies and approved in 2015 by the Department subject to the criteria set forth in Water Code section 1810.
23. The Water Board will prioritize new and amended safe drinking water permits that enhance water supply and reliability for community water systems facing water shortages or that expand service connections to include existing residences facing water shortages. As the Department of Public Health's drinking water program was transferred to the Water Board, any reference to the Department of Public Health in any prior Proclamation or Executive Order listed in Paragraph 1 is deemed to refer to the Water Board.
24. The California Department of Forestry and Fire Protection shall launch a public information campaign to educate the public on actions they can take to help to prevent wildfires including the proper treatment of dead and dying trees. Pursuant to Government Code section 8645, \$1.2 million from the State Responsibility Area Fire Prevention Fund (Fund 3063) shall be allocated to the California Department of Forestry and Fire Protection to carry out this directive.
25. The Energy Commission shall expedite the processing of all applications or petitions for amendments to power plant certifications issued by the Energy Commission for the purpose of securing alternate water supply necessary for continued power plant operation. Title 20, section 1769 of the California Code of Regulations is hereby waived for any such petition, and the Energy Commission is authorized to create and implement an alternative process to consider such petitions. This process may delegate amendment approval authority, as appropriate, to the Energy Commission Executive Director. The Energy Commission shall give timely notice to all relevant local, regional, and state agencies of any petition subject to this directive, and shall post on its website any such petition.

26. For purposes of carrying out directives 2–9, 11, 16–17, 20–23, and 25, Division 13 (commencing with section 21000) of the Public Resources Code and regulations adopted pursuant to that Division are hereby suspended. This suspension applies to any actions taken by state agencies, and for actions taken by local agencies where the state agency with primary responsibility for implementing the directive concurs that local action is required, as well as for any necessary permits or approvals required to complete these actions. This suspension, and those specified in paragraph 9 of the January 17, 2014 Proclamation, paragraph 19 of the April 25, 2014 proclamation, and paragraph 4 of Executive Order B-26-14, shall remain in effect until May 31, 2016. Drought relief actions taken pursuant to these paragraphs that are started prior to May 31, 2016, but not completed, shall not be subject to Division 13 (commencing with section 21000) of the Public Resources Code for the time required to complete them.
27. For purposes of carrying out directives 20 and 21, section 13247 and Chapter 3 of Part 3 (commencing with section 85225) of the Water Code are suspended.
28. For actions called for in this proclamation in directive 20, the Department shall exercise any authority vested in the Central Valley Flood Protection Board, as codified in Water Code section 8521, et seq., that is necessary to enable these urgent actions to be taken more quickly than otherwise possible. The Director of the Department of Water Resources is specifically authorized, on behalf of the State of California, to request that the Secretary of the Army, on the recommendation of the Chief of Engineers of the Army Corps of Engineers, grant any permission required pursuant to section 14 of the Rivers and Harbors Act of 1899 and codified in section 48 of title 33 of the United States Code.
29. The Department is directed to enter into agreements with landowners for the purposes of planning and installation of the Emergency Drought Barriers in 2015 to the extent necessary to accommodate access to barrier locations, land-side and water-side construction, and materials staging in proximity to barrier locations. Where the Department is unable to reach an agreement with landowners, the Department may exercise the full authority of Government Code section 8572.
30. For purposes of this Executive Order, chapter 3.5 (commencing with section 11340) of part 1 of division 3 of the Government Code and chapter 5 (commencing with section 25400) of division 15 of the Public Resources Code are suspended for the development and adoption of regulations or guidelines needed to carry out the provisions in this Order. Any entity issuing regulations or guidelines pursuant to this directive shall conduct a public meeting on the regulations and guidelines prior to adopting them.

31. In order to ensure that equipment and services necessary for drought response can be procured quickly, the provisions of the Government Code and the Public Contract Code applicable to state contracts, including, but not limited to, advertising and competitive bidding requirements, are hereby suspended for directives 17, 20, and 24. Approval by the Department of Finance is required prior to the execution of any contract entered into pursuant to these directives.

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

I FURTHER DIRECT that as soon as hereafter possible, this Order be filed in the Office of the Secretary of State and that widespread publicity and notice be given to this Order.

IN WITNESS WHEREOF I have hereunto set my hand and caused the Great Seal of the State of California to be affixed this 1st day of April 2015.

EDMUND G. BROWN JR.
Governor of California

ATTEST:

ALEX PADILLA
Secretary of State

Summary of 2015 Drought Package

- Over \$1 billion for drought relief and infrastructure projects to make the state's water infrastructure more resilient.
- Acceleration of \$267 million from Proposition 1 Water Bond funding for safe drinking water and water recycling from the Governor's January budget proposal.
- Acceleration of drought related expenditures from the Governor's January budget proposal augmented by \$31 million in targeted additional expenditures (\$132 million total), including efforts to implement the Water Action Plan and provide direct assistance to workers and communities impacted by drought.
- The additional \$31 million in new targeted expenditure items which were not included in the Governor's January budget proposal include the following:
 - \$17 million in additional funding to support emergency food aid to drought impacted communities.
 - \$4 million for emergency drinking water in disadvantaged communities.
 - \$5 million to the Department of Water Resources to provide emergency drinking water support for small communities, including addressing private wells.
 - \$1.4 million to the Department of Water Resources to increase advertising and public relations related to the Save Our Water campaign.
 - \$2.8 million to the Department of Water Resources and Department of Fish and Wildlife for additional modeling support and species tracking in the Delta and greater Central Valley to support efficient management of the state's water system.
 - \$1 million to address critical infrastructure deficiencies at remote fire stations that have run out of water.
- Acceleration of \$660 million from the Governor's January budget proposal of Proposition 1e bond monies for flood protection in urban and rural areas to make the state's infrastructure more resilient to climate change and flood events.

Accelerated Drought Package

Appropriations		Drought Package		General Fund		Other Funds	
Proposition 1 Funding							
Water Recycling		\$131.7	-		\$131.7		
Drinking Water Quality		\$135.5	-		\$135.5		
Subtotal		\$267.2	\$0.0		\$267.2		
Accelerated Drought Funding							
DFW - Protect fish and wildlife		\$16.6	\$13.4		\$3.2		
DWR - Emergency water supply and education		\$19.0	\$19.0		-		
Water Board - Emergency regulations and enforcement		\$6.7	\$6.7		-		
Water Board - Emergency drinking water		\$19.9	-		\$19.9		
OES - Drought response coordination, guidance		\$4.4	\$4.4		-		
DWR - Cap and Trade		\$20.0	-		\$20.0		
CDFA - Cap and Trade		\$10.0	-		\$10.0		
Food Assistance		\$24.0	\$24.0		-		
CAL FIRE - Water Shortages at Fire Stations		\$3.0	3.0		-		
DWR - BBL for Removal of Barriers		-	-		-		
Boating - Water Hyacinths		\$4.0	-		\$4.0		
CDFA - Drought Study		\$0.2	\$0.2		-		
Water Board - Instream Flows		\$2.4	\$2.4		-		
DFW - Instream Flows		\$1.6	\$1.6		-		
Subtotal		\$131.8	\$74.7		\$57.1		
Proposition 1E							
Urban Capital Outlay		\$320.0	-		\$320.0		
Rural Capital Outlay		\$118.0	-		\$118.0		
Local Assistance		\$222.0	-		\$222.0		
Subtotal		\$660.0	\$0.0		\$660.0		
Total		\$1,059.0	\$74.7		\$984.3		



CALIFORNIA DEPARTMENT OF WATER RESOURCES

NEWS FOR IMMEDIATE RELEASE

NEWS FOR IMMEDIATE RELEASE

March 25, 2015

Contact:

Jeanine Jones, Interstate Resources Manager - (916) 653-8126

Jeanine.Jones@water.ca.gov

Ted Thomas, Information Officer - (916) 653-9712

Ted.Thomas@water.ca.gov

DWR Report Describes Past and Ongoing Droughts

Wealth of Information in Comparison of California's Worst Historical Droughts

SACRAMENTO -- Severe droughts are nothing new to California, home to the highest variable precipitation in the United States. In the midst of a fourth dry year, the California Department of Water Resources (DWR) has released an in-depth report comparing the severity and impacts of California's most significant droughts, which stretched from 1929 to 1934, 1976 to 1977 and 1987 to 1992. The report also details the ongoing drought, which began in 2012.

"California's Most Significant Droughts: Comparing Historical and Recent Conditions," available [here](http://www.water.ca.gov/waterconditions/publications.cfm) <http://www.water.ca.gov/waterconditions/publications.cfm> presents a wealth of information about California's climate; federal, state, and local water systems; surface and groundwater resources; and historical precipitation. It also provides a summary of lessons learned from previous droughts and highlights the need for better data about groundwater conditions, improved drought prediction capability, and better drought preparedness for small water systems.

The report also describes:

- The atmosphere-ocean dynamics that influence drought in California;
- Highlights of past droughts, such as the extremely severe 1929-34 dry spell that occurred when irrigated acreage in the state was relatively small and the population was less than six million people;
- The setting for past droughts in terms of major water project development, population, and irrigated acreage in the state;

- Historical attempts to cope with drought, such as the temporary emergency pipeline constructed across the San Rafael Bridge to bring imported water to southern Marin County in 1976-77;
- Estimated economic loss data, where available, from the historical droughts, including farmland fallowing and timberland destroyed by wildfire and bark beetle infestation;
- Changes in institutional settings that affect California’s response to drought, such as environmental protection laws that have modified water project operations; and
- Historical deliveries made by the State Water Project and the Central Valley Project from 1977 to the present.

The appendix of the report includes a copy of each gubernatorial executive order or emergency proclamation issued related to drought since 1977.

Charts, maps, and graphs in the report illustrate such information as the at-risk small water systems around the state, a comparison of storage in key reservoirs during various drought years, changes in the Colorado River total system storage over time, changes in California’s statewide mean temperature departure since 1900, and maximum salinity intrusion into the Sacramento-San Joaquin Delta in previous droughts.

The report was prepared by DWR Deputy Drought Manager and Interstate Resources Manager Jeanine Jones.

“The water years of 2012-14 stand as California’s driest three consecutive years in terms of statewide precipitation,” said Jones, “and we do not know how long this drought will last. It’s important for Californians to remember that drought is a part of life in California and we can learn from history as we try to emerge from each drought better prepared for the next.”

In January 2014, Governor Edmund G. Brown Jr. declared a drought state of emergency and asked Californians to voluntarily curb their water use by 20 percent. Vast tracts of farmland have been fallowed and some communities have been short on drinking water.

Every Californian can help stretch the state’s limited supplies by using water carefully. Outdoor landscaping needs little water in the winter, so shut off sprinklers, especially for the first couple of weeks after a rain. Replace washers in leaking faucets or make other repairs to stop leaks. Run dishwashers and clothes washers only with full loads. For more water-saving tips, visit saveourwater.com.

Executive Summary

The water years of 2012-14 stand as California's driest three consecutive years in terms of statewide precipitation, and as of this writing in February 2015 the drought is continuing on. This report was prepared to compare the hydrology and impacts experienced during 2012-2014 with those of California's largest historical droughts, in response to questions from local water agencies and others regarding the drought's relative severity and the changed conditions since our prior major droughts. California's immediately prior drought of statewide scale occurred in 2007-09; it was the first drought for which a statewide proclamation of emergency was issued. The 2012-14 period now marks the second time a statewide proclamation of emergency has been issued for drought.

California's most significant historical statewide droughts were the six-year drought of 1929-34, the two-year drought of 1976-77, and the six-year event of 1987-92. These droughts stand out in the observed record due to their duration or severe hydrology. The 1929-34 event occurred within the climatic context of a decades-plus dry period in the 1920s-30s whose hydrology rivaled that of the most severe dry periods in more than a millennium of reconstructed Central Valley paleoclimate data. The drought's impacts were small by present-day standards, however, since the state's urban and agricultural development was far less than that of modern times. The 1976-77 drought, although brief in duration, was notable for the severity of its hydrology. The 1987-92 drought was California's first extended dry period since the 1920s-30s, and provides the closest comparison for drought impacts

under a present-day level of development.

The 2012-14 event set other records in addition to that of driest three-year period of statewide precipitation. The drought occurred at a time of record warmth in California, with new climate records set in 2014 for statewide average temperatures. Records for minimum annual precipitation were set in many communities in calendar year 2013. Calendar year 2014 saw record-low water allocations for State Water Project and federal Central Valley Project contractors. Reduced surface water availability triggered increased groundwater pumping, with groundwater levels in many parts of the state dropping 50 to 100 feet below their previous historical lows. These record-setting conditions speak to the need for continued improvement of our ability to respond to dry conditions. Knowledge of the impacts historically experienced in our past large droughts and the lessons learned during those events can help us be better prepared.



United States Department of the Interior

BUREAU OF RECLAMATION
Lower Colorado Regional Office
P.O. Box 61470
Boulder City, NV 89006-1470

IN REPLY REFER TO:

MAR 26 2015

LC-2620
ENV-6.00

Interested Parties

Subject: Draft Environmental Assessment (EA) for Planet Ranch Lease

Dear Ladies and Gentlemen:

The Bureau of Reclamation is issuing a Draft EA for the Planet Ranch Lease (Lease) for public review and comment. The Draft EA was prepared in compliance with the National Environmental Policy Act. The Draft EA will be available on Reclamation's website April 1, 2015, at: <http://www.usbr.gov/lc/region/g2000/envdocs.html>. Comments must be postmarked by Friday, May 1, 2015.

Reclamation is proposing to lease 3,418 acres of land and 5,549 acre-feet of water per year within Planet Ranch in Mohave and La Paz Counties, Arizona, from the Freeport Minerals Corporation to benefit the Lower Colorado River Multi-Species Conservation Program. After issuing the Lease, Freeport Minerals Corporation would donate the land and water rights to the State of Arizona, represented by the Arizona Game and Fish Commission, who would then acquire the Lease with Reclamation. This action is authorized and directed by the Bill Williams River Water Rights Settlement Act of 2014.

Please send written comments to the Bureau of Reclamation, Attn: LC 2620, P.O. Box 61470, Boulder City, NV 89006. Electronic comments may be submitted to planetrancheasea@usbr.gov. To request a compact disk or paper copy of the Draft EA or for questions, please contact Ms. Faye Streier, Reclamation National Environmental Policy Act Coordinator, at 702-293-8132.

Sincerely,

Valerie E. Simon, Chief
Resources Management Office

Commissioner's Office
Washington, D.C.
Media Contact:
Dan DuBray
202-513-0574

Released On: March 26, 2015

Brent Rhees Named Regional Director for Reclamation's Upper Colorado Region
WASHINGTON - Bureau of Reclamation Commissioner Estevan López today announced the selection of Brent Rhees, P.E., as Upper Colorado Regional Director. Rhees has served as the Salt Lake City-based region's deputy regional director since October 2007.

"Brent Rhees has extensive knowledge and more than three decades of experience with the complex challenges in this important region," Commissioner López said today. "Through his strong leadership and his ability to build solid partnerships, Brent is more than prepared to lead the Upper Colorado Region into the future."

In his new role, Rhees will oversee all Reclamation operations in most of Utah, New Mexico and western Colorado, as well as northern Arizona, a portion of west Texas, the southeast corner of Idaho and southwestern Wyoming. The responsibility includes oversight of Reclamation programs, projects, and facilities and encompasses 62 dams with a reservoir capacity of more than 32 million acre feet, 28 hydroelectric powerplants that meet electricity needs of more than 1.3 million people, and multiple recreation opportunities for about 12 million annual visitors.

As deputy regional director, Rhees managed several complex and high profile issues, including the Middle Rio Grande Endangered Species Collaborative Program, dam safety modifications, implementation of the Navajo-Gallup Water Supply Project, the Colorado River Salinity Control Program and completion of the Animas La-Plata Project. Rhees has 35 years of federal service. He started in Reclamation's Denver Office in 1980 as a rotation engineer, moved to the Upper Colorado Regional Office in 1981 to serve as Engineering Services Office supervisor and construction liaison. He transferred to the Provo Area Office in March 1993 to serve in several key management positions including three division manager positions and as the deputy area manager from June 2004 to October 2007.

Rhees is a recipient of the DOI's Superior Service Award in recognition of his significant contributions and leadership in Western water issues. He holds a bachelor's degree in civil and environmental engineering from Utah State University and is a registered Professional Engineer in the State of Utah.

Basin States Technical Committee Meeting

April 28, 2015

10:00 am to 3:00 pm Pacific Time

McCarran airport Mezzanine rooms 4 and 5

Las Vegas, Nevada

Draft Agenda

10:00 Welcome and Introductions

10:05 Review Agenda / Plans for the Day

10:10 Update on Colorado River Basin Reservoir Operations and Hydrology (USBR)

11:00 Update From the Colorado River Basin Forecast Center – Paul Miller

Update on WY 2015 Hydrology - CRBFC

Update on Forecast Improvement Opportunities –CRBFC/BOR

11:20 Update on Reclamation Modeling Activities

CRSS – changes to approach for refining first year projections

Mid-Term Operations Model

Summary of recent LC Region 24–Month Study and AOP process overview workshop

11:55 Lunch

12:25 Discussion of Lower and Upper Basin activity to improve consumptive use estimation – Paul Matuska/Jim Prairie

12:45 Update on USGS Colorado River Basin Studies – Breton Bruce

1:10 Improved Localized Weather Forecasting – Panasonic Weather Solutions

1:40 Update on the Upper and Lower Basin System Conservation Pilot Program – Chuck Cullom/Karen Kwon

1:55 CAP proposal for a new ICS project – Chuck Cullom

2:15 Discussion of Drought Contingency Planning Strategy – Colby Pellegrino/Ted Kowalski

2:30 Report on the California drought – Tanya Trujillo

2:40 Status Reports:

a. Key dates pertaining to Reclamation–led activities

Minute 32X, Basin Study Next Steps, LTEMP

b. Inadvertent Overruns and Payback

c. IID Salton Sea discussions

d. Other items?

3:00 Next Meeting and Adjourn