

June 22, 2016

**Attention: Imported Water Committee**

**Basin States and Colorado River hydrology update. (Information)**

**Purpose**

This report provides an update on recent Basin States activities, current hydrologic conditions, and updated shortage predictions on the Colorado River.

**Background**

Prolonged drought conditions in the Colorado River Basin recently caused Lake Mead to drop to a record low elevation. Shortages on the river are declared under procedures set in the “2007 Colorado River Interim Guidelines for Lower Basin Shortages and Coordinated Operations for Lake Powell and Lake Mead” (Interim Guidelines), which define cutbacks at three distinct Lake Mead elevations. A shortage declaration under the Interim Guidelines would result in reduced allocations to Arizona and Nevada as well as restrict the ability to take water from Intentionally Created Surplus (ICS) storage accounts in Lake Mead for all Lower Basin States. In addition to the shortage criteria established in the Interim Guidelines, in 2010 an amendment to the 1944 Treaty between the United States and the Republic of Mexico (Minute 319), authorized a period in which Mexico also agreed to share in cutbacks to its annual Colorado River apportionment from 2013 - 2017. Under the current “law of the river,” while California’s access to storage in Lake Mead would be curtailed by a technical shortage declaration, it would not reduce California’s 4.4 million acre-foot (MAF) Colorado River entitlement.

With an “official” shortage on the river seemingly imminent within the next five years, efforts to create “system water” and “build elevation” have emerged as the preferred alternative to the Secretary of the Interior’s requirement to curtail deliveries to junior water rights holders once Lake Mead reaches elevation 1,075 feet. What began in 2014 as an open and shared effort amongst stakeholders has recently converted into closed-door negotiations involving a new agreement among the Lower Basin States and the Bureau of Reclamation (Reclamation) to establish additional “voluntary” cutbacks to Colorado River entitlements that would be in addition to those specified in the Interim Guidelines. While no agreement has been executed, implications that California would now voluntarily share in the cutbacks on the Colorado River could have far-reaching impacts on State water rights, the Salton Sea, and a direct impact on the Water Authority’s Quantification Settlement Agreement (QSA) supplies through stipulations in the Imperial Irrigation District (IID) Water Transfer Agreement.

**Discussion**

*Hydrology and Reservoir Operations*

The combination of hydrology projections, existing storage conditions, and reservoir operational decisions feed into the determination of a Lower Basin shortage, which is ultimately triggered by Lake Mead elevation projections falling below specified trigger levels. The Interim Guidelines incorporate criteria for equalizing flows between Lake Powell and Lake Mead based on annual runoff projections to balance the storage levels between these two major reservoirs. Reservoir releases from Lake Powell (which supplies Lake Mead) and Lake Mead (which supplies California, Arizona, Nevada and Mexico) are determined based on hydrology modeling performed by Reclamation in August for the upcoming year. Similarly, a shortage condition is

also determined by these August projections of lake elevations and not necessarily the actual lake level itself.

Total system storage has been on a downward trend for the past fifteen years and is currently at 50 percent of capacity. In mid-May Lake Mead fell to its lowest elevation since filling and dropped below elevation 1,075 feet, which is a critical elevation in regards to shortages. While there is no hydrologic restriction to reservoir operations at 1,075 feet, the elevation represents a demarcation point as the first shortage trigger elevation in Lake Mead based on the projected elevation of the lake on January 1 of the upcoming year. Reclamation’s most recent modeling from June 2016 indicates that Lake Mead’s elevation will continue to drop through the end of this month to 1,072 feet but will recover to 1,079 feet by the end of the calendar year, which is above the 1,075 feet shortage trigger elevation. Table 1 represents the most recent five-year shortage projection from Reclamation.

**Table 1. Five-Year Outlook of Projected Shortage Probabilities**

2017	2018	2019	2020	2021
10%	56%	64%	64%	61%

Shortage Allocations

In addition to defining reservoir operations and how a shortage is declared, the Interim Guidelines (and Minute 319 for the period 2013-2017) establish the rules for shortage allocations on the Colorado River. The elevation triggers mark the degree of shortage and determine the reductions in water apportioned to California, Arizona, Nevada, and Mexico. While Arizona, Nevada, and Mexico would face reduced allocations in a declared shortage, California’s allocation is not affected due to its senior water rights on the river. California’s annual allocation remains at 4.4 MAF in any level of shortage defined in the Interim Guidelines (Table 2).

**Table 2. Interim Guidelines and Minute 319  
 Shortage Reductions for Lower Basin States and Mexico**

Colorado River Entitlement Water (acre-feet)	Lake Mead Elevation (feet)			
	1,075	1,050	1,025	
California	4,400,000	-	-	-
Arizona	2,800,000	(320,000)	(400,000)	(480,000)
Nevada	300,000	(13,000)	(17,000)	(20,000)
Mexico	1,500,000	(50,000)	(70,000)	(125,000)
<b>Total</b>	<b>9,000,000</b>	<b>(383,000)</b>	<b>(487,000)</b>	<b>(625,000)</b>

Drought Contingency Planning

To date, an official shortage has never been declared in the Lower Basin, however should such a declaration become necessary, the Interim Guidelines and Minute 319 are the guiding policies for shortage operations. In recent years Reclamation and principal representatives from California, Arizona, and Nevada began meeting to discuss options to prevent or delay a shortage declaration by the Secretary of the Interior. These drought contingency planning meetings tiered-off previous Interim Guidelines sentiments of staving off “mandatory reductions” through voluntary conservation. As such, Reclamation and large municipal water agencies including the Metropolitan District of Southern California (MWD), the Central Arizona Water Conservation

District (CAWCD), Denver Water, and the Southern Nevada Water Authority (SNWA) entered into an agreement to fund a Pilot System Conservation Program for the creation of Colorado River “system water” through voluntary water use efficiency measures. That program (“Phase 1”) created 65,000 AF of water conserved through land fallowing, farmland irrigation improvements, deficit irrigation, turf removal, and other water use reduction projects at a cost of \$9 million. In March 2016, Reclamation announced a second phase of the Pilot System Conservation Program aimed at the Lower Basin. In May 2016, the Colorado River Board of California (CRB) was asked to participate in project funding at a \$500,000 level. Although supportive of efforts to help the Colorado River Basin water management, the Water Authority voted against the funding based on the recent developments as described in what follows.

In concert with the Pilot System Conservation Program efforts, there have been recent closed door discussions to expand the idea of elevation building and creating system water through negotiations that involve potential “voluntary” cutbacks to Lower Basin water users. These reductions would be in addition to the contractual reductions laid out in the Interim Guidelines and ostensibly would mean an amendment to the 1944 U.S./ Mexico Treaty. Details on the potential plan developed during these discussions were released to the public at a CAWCD Board of Directors meeting on May 5, 2016 and corroborated at a MWD Member Agency Managers meeting the following week. Updates to the CRB have only recently followed suit, during which the Water Authority has consistently voiced concerns with the dubious closed-door process and the direct involvement of the CRB in negotiations. Under these Lower Basin Drought Contingency Planning (LBDCP) reductions, new trigger elevations are being proposed with California potentially agreeing to take a 200,000-350,000 AF cut to its annual apportionment starting at elevation 1,045 feet (Attachment 1).

Recall that under the Interim Guidelines, California is not required to make any reductions to its annual apportionment under any of the three established shortage levels due to its senior priority water rights on the river. Through the negotiations that authorized the Central Arizona Project (CAP), which is Arizona’s municipal Colorado River delivery aqueduct, Arizona agreed that the CAP would maintain a junior status on the Colorado River relative to California’s 4.4 million AF allocation; meaning that when a shortage is declared in the Lower Basin, CAP would be cut before California. Nevada similarly maintains lower priority rights on the river to California and will experience shortages as Lake Mead elevation drops below 1,075 feet.

The current status of these new negotiations is unclear but no agreement has been executed. If California did agree to take a voluntary cutback to its senior Colorado River allocation, it is unknown which users would take the cuts and in what proportions, or what California would receive in return for giving its water away to other states. While MWD has the lowest priority water rights among California’s users, it is anticipated that the agricultural districts with large annual apportionments such as IID would likely bear the majority of the reductions if administered on a basis that is proportional to an agency’s water rights. As such, a reduction to IID supplies may directly impact the Water Authority’s QSA supplies. Per the terms of the IID/Water Authority Water Transfer Agreement, the Water Authority would be required to take a pro-rata reduction in its water transfer supplies if the Secretary of the Interior declares an “official” shortage in the Lower Colorado River Basin. While discussions are being framed as “voluntary” in nature, should these discussions mature into a signed agreement that is endorsed by the Secretary of the Interior, as has been stated publically by CAP and MWD, the Water Authority’s transfer water may be at risk. Although the Water Authority fully supports reasonable efforts to work with the California parties, the Lower Basin states, and the federal

government to develop long term solutions on the Colorado River, the Water Authority has not been afforded the opportunity to participate in recent drought contingency planning discussions. This is despite the potential impacts to the San Diego region's QSA supplies and with disregard for the Water Authority's unique status on the river as the only non-Section 5 Contractor under the Boulder Canyon Project Act<sup>1</sup> that holds a Delivery Agreement for water with the Secretary of the Interior.

As to the reasoning behind California negotiating away some portion of its senior Colorado River water rights, it appears that the motivation involves the potential for expansion of existing ICS storage for IID and access to ICS at lower Lake Mead elevations for MWD – all occurring under the auspices that a “structural deficit” exists on the Colorado River and that California should once again reduce its Colorado River water diversions as it did in the California Colorado River Water Use Plan (“4.4 Plan”) and the framework established in the 2003 QSA.

#### *Structural Deficit on the Colorado River*

For the past several years drought has intensified the conversation that the Colorado River is over-allocated each year by approximately 1.2 MAF based on the hydrologic inflows being outweighed by water use and system losses. This structural deficit is said to be based on the Colorado River water rights being established during a time when the river was experiencing a very wet period, which in-turn created a built-in deficit into river operations. In dry years the deficit is intensified, causing a further decline in total storage. It is important to note, however that the Lower Basin State annual allocations were set back in 1928 through the Boulder Canyon Project Act and that the current drought period, to which the “structural deficit” is most readily identifiable, began in the year 2000. From 1928 to 2000 Lake Mead has been operated in a manner allowing full allocations to all users. As previously mentioned, even during the current period of prolonged drought –the post 2000 era, a shortage has yet to be declared. Further, the Interim Guidelines were established in 2007, halfway through the current drought –a time when Colorado River hydrology was well-known and the monumental water use reductions to agricultural and urban supplies via the 2003 QSA were firmly in place for California.

California water users should be particularly receptive to this piece of history, especially as water users statewide attempt to simultaneously live within existing drought conditions and recover from the gubernatorial water use restrictions imposed over the past couple of years. With changes to senior Colorado River water rights at stake, Californians who have already experienced decades of multiple dry years, spent billions on local water supply development, and invested unmatched ratepayer money on storage—all to reduce California's Colorado River diversions—are now being asked to give away California's higher priority water. It is unclear why California, which fought so hard over many decades to ensure the high priority of its 4.4 MAF Colorado River entitlement, and which has required its residents to significantly reduce water use, would now voluntarily surrender such valuable water, particularly when other states expressly agreed to take the first reductions in a declared shortage in return for concessions previously granted by California.

The shortage criteria and reservoir balancing procedures outlined in the 2007 Interim Guidelines were developed and agreed to by all of the Lower Basin parties with the specter of drought firmly in mind. As such, the resulting guidelines were determined to be the best alternative by all parties, which consequently meant that some users would face reductions first. It is only now that

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<sup>1</sup> See: <http://www.usbr.gov/lc/region/g4000/contracts/whatcontract.html> for further information regarding Lower Colorado River Water Delivery Contracts.

a shortage is probable and parties are facing imminent cutbacks and other restrictions that a new deal is being suddenly negotiated, as if to say a river shortage, or a “structural deficit” was never contemplated in 2007.

Intentionally Created Surplus (ICS) Storage

ICS storage accounts are the mechanism for the creation, accounting, and delivery of conserved water with the goals of encouraging conservation programs, and promoting storage in the lake rather than curtailments to users. Under the ICS storage program, water users are allowed to store conserved water in Lake Mead through approved conservation programs according to set criteria for annual and cumulative storage and delivery limitations. While the Interim Guidelines are silent on the ability to take ICS deliveries in a shortage, it is understood that there is the moratorium on ICS deliveries during a declared shortage condition on the river.

As the Lower Basin rapidly moves towards a shortage declaration, the restriction on ICS deliveries has emerged as a critical component of the Interim Guidelines and LBDCP discussions. While under normal circumstances use of the ICS program serves to help build elevation in Lake Mead and help prevent shortage, because the Interim Guidelines are silent on ICS take restrictions during shortage, a paradox has been created where users are discouraged from expanding their storage accounts with the looming threat of stranded supplies during shortage. This has resulted in the LBDCP efforts that create system water to build elevation with funding by Reclamation and water agencies, rather than water users funding their own ICS storage with their name on the water for later use.

Apparently, the key California “asks” in any re-negotiation of Interim Guidelines would be for MWD’s to have access to ICS during shortage and expansion of IID’s relatively small amount of authorized capacity in the reservoir. MWD currently has the greatest access to ICS with a total storage capacity of 1.45 MAF. The remaining 50,000 AF of California’s 1.5 MAF of ICS potential belongs to IID. Annual storage limits for MWD and IID are 375,000 AF and 25,000 AF, respectively. In the current drought MWD has stored a cumulative 700,000 AF from the period 2006 to 2015, and delivered or faced evaporative losses of the majority of that ICS water throughout that time period. Through Minute 319, Mexico can create Intentionally Created Mexican Allocation (ICMA) in Lake Mead with the ability to store 250,000 AF or delivery 200,000 AF per year through the terms of the Minute. Current ICS and ICMA volumes are depicted in Table 3 for the Lower Basin and Mexico.

**Table 3. ICS/ICMA Storage Account Information**

<b>Volume (acre-feet)</b>	<b>Cumulative Storage Limit</b>	<b>Annual Storage Limit</b>	<b>Annual Delivery Limit</b>	<b>Current Account Balance<sup>2</sup></b>
<b>California</b>	<b>1,500,000</b>	<b>400,000</b>	<b>400,000</b>	<b>97,791</b>
MWD	1,450,000	375,000 <sup>1</sup>	350,000 <sup>1</sup>	80,405
IID	50,000	25,000	50,000	17,386
<b>Arizona</b>	<b>300,000</b>	<b>100,000</b>	<b>300,000</b>	<b>103,050</b>
<b>Nevada</b>	<b>300,000</b>	<b>125,000</b>	<b>300,000</b>	<b>511,023</b>
<b>Mexico</b>	<b>1,250,000<sup>3</sup></b>	<b>250,000</b>	<b>200,000</b>	<b>230,528</b>
<b>Total</b>	<b>3,350,000</b>	<b>875,000</b>	<b>1,200,000</b>	<b>942,392</b>

<sup>1</sup>If IID doesn’t use its full storage or delivery capacity, MWD is allowed to use the difference for that year, up to the California limit.

<sup>2</sup>Account Balance as of the end of calendar year 2015 per the 2015 Reclamation Decree Accounting Report.

<sup>3</sup>Mexico’s annual storage limit is 250,000 acre-feet, for the 5 year duration of Minute 319.

Since the Interim Guidelines were approved in 2007, the Water Authority has been working on the establishment of an ICS account in Lake Mead for the ability to store conserved Colorado River water supplies. While not a Section 5 Contractor, the Water Authority has the ability to participate in the ICS program via its Delivery Agreement with the Secretary of the Interior. In addition, all of the Water Authority's annual 277,700 AF worth of annual QSA supplies has been deemed eligible for inclusion in the ICS program via "forbearance agreements" with the other California contractors. While eligible as a participating entity with approved supplies, the Water Authority does not have an ICS account. In 2007, the Water Authority and MWD signed a Memorandum of Agreement (MOA) to work towards establishing a sub account to MWD's 1.45 MAF capacity in Lake Mead. The concept was to take advantage of a portion of what has been one MAF of unused California (MWD) capacity in Lake Mead. The MOA term expired in July 2015 without the execution of a Water Authority ICS subaccount.

*Impacts on the QSA Contracts, Environmental Coverage, and Next Steps*

Consideration must be given to the unique jurisdictional requirements that span the entire Lower Basin. In California, this most certainly involves the State Water Resources Control Board (State Water Board) and compliance with the California Environmental Quality Act. Under the Interim Guidelines, plans to create additional water through ICS are subject to environmental compliance. This includes "documentation regarding any state or federal permits or other regulatory approvals that have already been obtained by the Contractor or that need to be obtained prior to the creation of ICS." The guidelines therefore do not preempt State Water Board jurisdiction. In addition, Section 8 of the Reclamation Act ensures that state law governs the "control, appropriation, use or distribution of water used in irrigation, or any vested right acquired thereunder." If water is "voluntarily" left in the river, similar restrictions apply to IID, which holds a consumptive use permit issued by the State Water Board that requires approval to store water in Lake Mead.

To date the Governor's Office and the State as a whole have not been involved in LBDCP discussions, nor has the State Water Board been approached with regard to environmental compliance and approvals needed for "change in point of diversion" requirements that would place water in Lake Mead as opposed to it remaining in the IID service area. This last point is a notable omission in the LBDCP process, which appears to have turned a blind eye towards the environmental impacts the proposed actions could have on the Salton Sea. As previously noted, it has been proposed that California provide up to 350,000 AF to boost Lake Mead elevation. Setting aside the utility of the proposed action and the positive impact it will create for the Lower Basin as a whole, the unmitigated impacts this action will have on the Salton Sea is absent from the conversation. IID currently has an entitlement to 3.1 MAF of California's 4.4 MAF, or 70 percent. Suppose California's share of the proposed 350,000 AF is proportional to an agency's entitlement, thus requiring IID contribute 247,000 AF to Lake Mead. If created through efficiency conservation, the reduced inflows to the Salton Sea would be one-for-one, nearly matching the 300,000 AF impact IID's current QSA conservation programs with CVWD, MWD, and the Water Authority have on the Salton Sea.

While some will argue that the impacts on the Salton Sea are "temporal" in nature by characterizing the transaction as "storage," the State Water Board has maintained that a transaction not completed in one year is a long-term reallocation of water among users and therefore under State Water Board jurisdiction, which is precisely what is proposed by the LBDCP. IID has indicated that the district will not contribute water to Lake Mead unless there is a clear path forward for the Salton Sea in the larger context of State restoration. Similarly, MWD

has advocated for a Bay Delta solution in exchange for concessions it would make for the LBDCP. In any case, much remains unknown regarding the impact the LBDCP have on the QSA contracts. Although the stated goals of the current parties participating in the negotiations is to protect the QSA contracts, how that plays out in relation to the possible renegotiation of the Interim Guidelines remains unclear. In 2007 the Water Authority was part of the group that helped craft the California component of the Interim Guidelines. This was on the heels of signing the QSA, which gave the San Diego region a considerable stake in future river operations, which remains true today. Regardless of Section 5 Contractor status, the San Diego region stands to use 280,000 AF Colorado River water once the QSA is fully ramped up in 2021. This volume is comparable to the consumptive Colorado River water use for the State of Nevada. If the Water Authority were to be required to take a reduction in its water transfer with IID, that volume would track proportionally with the volumetric reductions from Nevada as shown in Table 2.

Considering the volume associated with the QSA programs, the financial investments that have now surpassed one billion dollars, and the environmental impacts associated with the Salton Sea, the Water Authority has a vested interest in the success and failures of Lower Basin States negotiations and Colorado River operations.

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Attachment 1: Proposed Drought Contingency Planning Reductions presented by CAP