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"An independent, scientific voice for the future of the Colorado River"

A LOOK AT THE INTERIM GUIDELINES AT THEIR MID-POINT: HOW ARE WE DOING?

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In 2007, the Secretary of the Interior adopted guidelines on an interim basis (until the end of 2026) to guide water deliveries from the Colorado River—both from the Upper to the Lower Basin and within the Lower Basin.[1] At that time, the Colorado River Basin had been experiencing a multi-year drought that began in 1999. Long-festering disagreements over the meaning of certain aspects of the Colorado River Compact of 1922 and other pieces of the Law of the River had threatened to provoke litigation. Instead, the States and the Department of the Interior negotiated a 20-year truce, spelling out how the two big storage units—Lake Powell and Lake Mead—would be managed during this period, putting in place ways in which some additional water could be made available for use, and defining what deliveries would be made if there was insufficient water to meet basic entitlements.

Few expected the basin would still be experiencing drought conditions in 2015. The good news is that there has been enough water available in the system during this period to enable continued consumptive use of 7.5 million acre-feet annually in Arizona, California, and Nevada while meeting our treaty obligations to Mexico. It was a close call, however, made possible by record precipitation in the Upper Basin in May 2015 that forestalled the otherwise likely declaration of shortage conditions in 2016.

This fifteen-year period has highlighted several serious problems either not considered or not resolved in the drafting of the Interim Guidelines. First, it highlighted the problem of what is now called the "structural deficit" of at least 1.2 million acre-feet built into the rules that determine supply and demand of water in the Lower Basin. Second, the lengthy period of below average runoff made clear how quickly storage levels in Lake Mead drop under these conditions and how slowly storage recovers as conditions improve.

The math is simple. Under what has traditionally been considered normal conditions, Lake Mead receives about 9 million acre-feet of water annually from Lake Powell and downstream tributaries. To supply users in the three states and Mexico, and because of evaporation, Lake Mead loses at least 10.2 million acre-feet per year.[2] The resulting deficit of about 1.2 million acre-feet produces a 12 foot drop in Lake Mead storage levels each year. Prior to this period, extra deliveries of water from Lake Powell offset this deficit. All indications are that—with extended drought and other impacts of climate change—there will likely be fewer periods with extra water in the years ahead.

In this paper, we look here at the provisions of the Interim Guidelines and how they have been applied since 2007. We examine the structural deficit—the excess of depletions over supplies available in the Lower Basin, including Mexico, resulting from multiple years of below average water supplies and from excess depletions. And we call for a concerted effort to eliminate the deficit as part of a process that would produce revised guidelines premised on a realistic water budget for the basin.

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[1] *Colorado River Interim Guidelines for Lower Basin Shortages and the Coordinated Operations for Lake Powell and Lake Mead*, December 2007. *See*: http://www.usbr.gov/lc/region/programs/strategies/FEIS/.

[2] Releases enable the consumptive use of 4.4 million acre-feet (MAF) annually in California, 2.8 MAF in Arizona, and 0.3 MAF in Nevada. The Treaty with Mexico requires delivery of 1.5 MAF annually to the Mexican border.

Background

The Bureau of Reclamation has entered into contracts with users in Arizona, California, and Nevada for the delivery of water sufficient to enable 7.5 million acre-feet of consumptive use annually. Interim Surplus Guidelines, adopted by the Secretary in 2001 and continued in modified form in 2007, authorize additional consumptive use when sufficient water is available in Lake Mead. The 2007 guidelines address deliveries of water when storage elevations in Lake Mead are regarded as representing surplus, normal, or shortage conditions.

To allow the banking of water as insurance against future shortages, the Interim Guidelines used a creative legal construct called "intentionally-created surplus" (ICS), under which parties developing additional consumable water from the same supply would be able to bank that water in Lake Mead and use it outside of the ordinary allocation system.[3] An example is the water saved by construction of a reservoir at the Drop 2 site on the All American Canal to enable use of water that otherwise would have passed to Mexico in excess of treaty obligations. At the end of 2014, users in the three states had stored about 837,000 acre-feet of ICS water in Lake Mead under this program.[4]

The Interim Guidelines established a Lake Mead elevation level of 1075 feet above mean sea level on January 1 of any year as the point at which shortage conditions would apply for that year.[5] The Guidelines allocated shortages between Arizona and Nevada of up to 500,000 acre-feet at elevation level 1025 feet.[6] The Guidelines also established elevation levels in Lake Powell and Lake Mead at which additional water could pass from the Upper Basin to the Lower Basin.[7]

There has been an effort, beginning in 2014, to improve storage levels in Lake Mead and Lake Powell by not taking or using full deliveries of water through forbearance or conservation and leaving the water in storage to serve as "system" water—that is, water retained in storage to support reservoir levels but not available for consumptive use in the year it was conserved, thus building reservoir elevation levels each year. The major water suppliers in the Lower Basin entered into a Pilot Drought Response MOU with the Department of the Interior, committing "best efforts" to put in storage in Lake Mead between 1.5 and 3.0 million acre-feet of system water by 2019.[8] Additionally, many of these same parties, joined by Denver

[3] Ordinarily any apportioned but unused water would be available to the next priority user, but under the Guidelines, users that create ICS water retain the right to use it later.

[4] *Colorado River Accounting and Water Use Report*, 2014.

[5] In June 2015, Lake Mead's storage elevation briefly dropped below 1075 feet before the record-setting precipitation from May made its way downstream and boosted storage levels.

[6] When Lake Mead is at elevation 1075' on January 1st, consumptive uses are reduced from 7.5 to 7.167 million acre-feet (MAF); at elevation 1050', consumptive uses are reduced to 7.083 MAF; at elevation 1025', consumptive uses are reduced to 7.0 MAF. To get federal funding for the $4.5 billion Central Arizona Project, Arizona agreed in 1968 to subordinate its 1.2 MAF CAP diversion rights to those of all other senior mainstream rights. Thus, users of CAP water are most at risk from a shortage declaration.

[7] In addition to the equalization releases previously established, the Guidelines established three "balancing" levels or tiers at which additional water could be released from Lake Powell under certain conditions.

[8] MEMORANDUM OF UNDERSTANDING AMONG THE UNITED STATES OF AMERICA, THROUGH THE DEPARTMENT OF THE INTERIOR, BUREAU OF RECLAMATION, THE CENTRAL ARIZONA WATER CONSERVATION DISTRICT, THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA, THE SOUTHERN NEVADA WATER AUTHORITY, THE ARIZONA DEPARTMENT OF WATER RESOURCES, THE COLORADO RIVER BOARD OF CALIFORNIA AND THE COLORADO RIVER COMMISSION OF NEVADA FOR PILOT DROUGHT RESPONSE ACTIONS, Dec. 10, 2014. To date, this water has come from voluntary forbearance from use of water allocated to Arizona and Nevada.

Water in the Upper Basin, are currently implementing a System Conservation Pilot Program designed to fund conservation projects that will produce additional water for the system conservation pool.[9]

Nevertheless, the structural deficit remains. According to one estimate, the parties in the Lower Basin in the U.S. need to put together, on a long-term basis, a combination of increased supplies (augmentation), reduced system losses (water not being beneficially consumptively used), and reduced consumption that totals at least 900,000 acre-feet annually to bring the system more into balance, assuming normal conditions and assuming no change in the inflow pattern from Lake Powell.[10]

Next Steps

The Interim Guidelines have bought some time for decision makers in the basin. These Guidelines acknowledged the possibility of shortages and defined a storage level in Lake Mead at which reductions in consumptive use would begin. The parties hoped that a shortage declaration would not actually be needed, however, and only provided for reductions up to 500,000 acre-feet.[11] In fact, we came close to a shortage declaration for Water Year 2016. And as evidence grows of a warming-induced, long-term reduction in basin water supplies, the likelihood of shortages greater than 500,000 acre-feet increases.

It seems likely that we will need to adjust our ideas about what constitutes "normal" conditions of water supply in the Colorado River basin. Correspondingly, we will need to rethink assumptions about our ability to continue the present level of depletions in the basin and reduce delivery obligations and/or adjust the reservoir levels in both Lake Powell and Lake Mead that determine releases and uses. The Colorado River Research Group already has called into question plans in all basin states anticipating increased consumption of basin water.[12] We believe it is time to think about ways to reduce depletions in a manner that will enable a more sustainable basin water budget.

We must deal now with the structural deficit in the Lower Basin. At present, the parties seem focused primarily on keeping water levels in Lake Mead above 1075 feet. If, however, depletions increase in the Upper Basin and climate change continues to diminish the amounts of water historically available in this region, this task of permanently eliminating the structural deficit will become increasingly difficult.

The basin states and the Department of the Interior should establish and implement a plan to permanently reduce uses and losses of water in the Lower Basin. Considerations should include options for replacing the supply of water for some uses with water from other sources, such as desalination. It should include

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[9] These projects are intended to help demonstrate ways that existing consumptive water uses, both agricultural and urban, can be reduced to help support storage levels in Lake Powell and Lake Mead.

[10] Central Arizona Project, *Briefing Paper for Arizona Delegation*, Agenda No. 9, April 2014 at 8: "Reclamation's modeling indicates that the deficit must be reduced by at least 900,000 acre-feet per year to 'bend the curve'—that is, to stop the automatic decline in Lake Mead water elevation under normal hydrologic conditions." Arizona has suggested that evaporation losses in Lake Mead (about 600,000 acre-feet annually) be subtracted from the consumptive use entitlements held by the three states. The effect would be to reduce California's 4.4 million acre-foot entitlement by 354,000 acre-feet (59% of 600,000), Arizona's 2.8 million acre-foot entitlement by 220,000 acre-feet (37% of 600,000), and Nevada's 300,000 acre-foot entitlement by 24,000 acre-feet (4% of 600,000).

[11] With the adoption of Minute 319 to the Treaty with Mexico, a shortage declaration would also reduce required deliveries to Mexico up to 125,000 acre-feet.

[12] Colorado River Research Group, *The First Step in Repairing the Colorado River's Broken Water Budget* (2014).

ways to reduce some existing losses, including ways to account for unavoidable losses such as reservoir evaporation in consumptive use decisions.[13] It should include ways to reduce the amounts of water presently needed for agricultural, industrial, and urban uses through conservation. It should include ways to permanently reduce a portion of existing consumptive uses, such as by voluntarily purchasing and retiring some water rights. Finally, it should include consideration of ways to ensure continued flows from the Upper Basin at adequate levels.[14] Eliminating the structural deficit presents major challenges and will require strong leadership and concerted action among all parties. It is time to deal with this pressing problem and move the system closer to balance.

Simultaneously, discussions should begin on making necessary changes to the Interim Guidelines. In our view, these discussions should be premised on the assumption that, under *normal* conditions, total depletions in the Lower Basin (uses and losses) would be no more than 9.3 million acre-feet per year (10.2 – 0.9). We would only provide for "surplus" uses under very limited and short-term conditions, favoring instead the storage of water in high flow years to avoid painful shortages in extended drought periods. And we would favor establishing a higher storage level in Lake Mead than presently exists to begin reducing deliveries in the Lower Basin.

The Lower Basin states have moved cautiously into interstate banking of water for future use. To the extent this water is actually stored underground and can be retrieved, we support increased use of this mechanism. More importantly, however, these efforts, together with the adoption of intentionally created surplus, have opened the door to more flexible use of water in the Lower Basin, based more on actual need than on entitlements.[15]

We believe this is the future. We encourage more efforts to incentivize conservation in existing uses, and more efforts to establish mechanisms that can enable short-term movements of water during shortages, based on voluntary transactions. And we also encourage consideration of mechanisms that enable long-term movements of water to better align supply and demand within this region.

Conclusion

The Interim Guidelines established a creative management program that appears to have given us time to work out a longer-term and more sustainable approach. The needed new approach depends on readjusting our assumptions about basin water availability and the uses it can support. It requires a redefinition of normal—one that is based on a realistic, and likely changing, basin water budget. It means protecting water in storage to reduce the risk of catastrophic shortages. It means adding increased flexibility in the manner in which basin water can meet basin needs. We need to get started now on a process to eliminate the structural deficit and to develop next generation guidelines.

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[13] Determinations about the best locations for storage of water could be made according to evaporative and other water management considerations.

[14] These releases need to be managed to be consistent with maintenance of environmental and recreational benefits in the river between Lake Powell and Lake Mead.

[15] Similarly, Colorado interests are actively pursuing creation of a water bank on the state's west slope to meet flow obligations to the Lower Basin in the event of an Upper Basin curtailment.