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In Reply Refer to:
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September 25, 2020

Memorandum

To: John Swett, Program Manager, Lower Colorado River Multi-Species Conservation Program, Bureau of Reclamation, Boulder City, Nevada (LC-8000)

Seth Shanahan, Steering Committee Chairperson, Lower Colorado River Multi-Species Conservation Program, Nevada

From: Field Supervisor, Arizona Ecological Service Field Office

Subject: Acceptance of Supplemental White Paper Clarifying Flow Related Activities during Water Year 2019

This responds to your email dated September 21st, 2020, requesting review and response to the Supplemental White Paper to clarify non-Federal flow related activities for Reach 2 (Hoover Dam to Davis Dam) during water year 2019. The Fiscal Year 2019 Accomplishment Report (Annual Report) details activities undertaken by the Bureau of Reclamation (Reclamation) to implement the LCR MSCP in accordance with the section 10 permit and biological opinion. The report also lists the Federal actions and non-Federal activities included in the LCR MSCP as covered actions that were implemented during Fiscal Year 2019 covered by the LCR MSCP (October 1, 2018-September 31, 2019), including the reporting of incidental take that occurred during this period. The LCR MSCP Steering Committee voted to approve the report and submission to the Service on June 24, 2020. This combined document encompasses the reporting requirements of the LCR MSCP section 10(a)(1)(B) permit dated April 4, 2005, (TE-086834-0) and the biological and conference opinion dated March 4, 2005 (2005 Biological Opinion), as amended March 5, 2018.

In the Steering Committee approved Annual Report, there was a discrepancy reported between the overall allowed reduction of flow for Reach 2 and the reported reduction of flow in this reach during calendar year 2019. The overall reduction of flow for Reach 2 is 845,000 acre-foot (AF) annually and is covered under the program's Endangered Species Act compliance; and impacts of this amount of reduction of flow was analyzed under the 2005 Biological Opinion. In the Annual Report, *Attachment B-Description of Take, Table B-1: Federal Flow-Related Covered Actions and Accomplishments. Calendar Year 2019, Row: Flow Changes Below Hoover Dam to*

Davis Dam, the initial estimated amount of flow reduction in Reach 2 was specified as a range up to 852,244 AF, resulting in an estimated overage of 7,244 AF beyond what was analyzed as part of the issuance of the 10(a)1(B) permit and 2005 Biological Opinion. The maximum AF volume in this range for calendar year 2019 appeared to exceed the limits allowed in the 2005 Biological Opinion by 7,244 AF, beyond what was analyzed as part of the issuance of the 10(a)1(B) permit and 2005 Biological Opinion. Subsequently, each LCR MSCP permittee evaluated their actions to validate the information provided in Attachment B and determine whether the limit had been exceeded. This type of overage in Flow-Related Activities and Take has not occurred in the 15-year history of this program. As a condition of the 10(a)1(B) permit and 2005 Biological Opinion, annual reporting of take must be finalized and not conditional on later decision making.

As a result of this reporting, LCR MSCP Leadership and appropriate Permittees have provided further details regarding this information in the form of a White Paper (attached) to; explain the flow-related events of 2019, analyze the possible flow exceedance in greater detail, report if an exceedance occurred, and outline future steps to limit the possibility of exceedance in the future. The White Paper provides further analysis of flow related activities and finds that the overall annual reduction in flow for Reach 2 did not exceed 845,000 AF during 2019.

The overall reduction of flow for Reach 2 is 845,000 AF and is covered under the program's 10(a)1(B) permit and 2005 Biological Opinion*; and impacts of this amount of flow reduction was analyzed under the 2005 Biological Opinion, as amended. Through the White Paper analysis; the estimated overage was found to be incorrect by the State permittees. The determination of impacts to fish species caused by this flow reduction was insignificant and discountable in this river reach (2005 Biological Opinion, p. 33). Had the initial estimated reduction of flow of 852,244 AF been accurate, this would have resulted in an estimated overage of 7,244 AF that was beyond what was analyzed as part of the issuance of the 10(a)1(B) permit and 2005 Biological Opinion. The analysis in this white paper outlines that impacts to listed species in Reach 2 during 2019, from flow related activities, remained at an insignificant level, consistent with the initial determination in the 2005 Biological Opinion (p. 33). Therefore, this does not meet the criterion of any reinitiation trigger listed under 50 CFR § 402.16.

> "(a) Reinitiation of consultation is required and shall be requested by the Federal agency or by the Service, where discretionary Federal involvement or control over the action has been retained or is authorized by law and:
> (1) If the amount or extent of taking specified in the incidental take statement is exceeded;
> (2) If new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered;
> (3) If the identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in the biological opinion or written concurrence; or
> (4) If a new species is listed or critical habitat designated that may be affected by the identified action.'

*Overall flow reduction, and changes in points of divergence, are a surrogate measures used to quantify effects and take of listed species; found on page 31 of the 2005 Biological Opinion.

Recognizing that Lower Colorado River operations and management programs have evolved to proactively address the risks posed by drought and climate change, Reclamation and non-federal parties implementing those programs are committed to broader and deeper collaboration and cooperation with regards to potential future reductions in flow. This collaboration and cooperation will avoid exceedance of flow related activities and potential effects to listed species under this program's care. To aid in this process, the Permittees have committed to the following plan for short-term needs. These planned activities are listed in the White Paper and outlined here.

- In 2020, these parties formalized that collaboration to ensure compliance with the Drought Contingency Plan (DCP) rules by establishing a monthly meeting to discuss and coordinate operational and other water management issues that arise during the year. LCR MSCP compliance issues could be discussed at these monthly meetings, or separate meetings could be established to address LCR MSCP compliance issues.
- Specific to this White Paper, reductions in flow will be discussed and tracked through these meetings to ensure that there is sufficient time to consider adjusting water orders to stay within limits outlined in the 2005 Biological Opinion and the 10(a)1(B) HCP permit.
- Reduction in flow tracking summaries will be shared and discussed with the Service at least twice a year in meetings to be scheduled during December and May.
- Further, as part of the LCR MSCP Steering Committee process, Reclamation and the parties will provide updates on water management activities related to flow reductions as appropriate. Coordination activities by the parties will include:
    - Sharing and reviewing operational plans prior to submitting annual water orders (October prior to the year of operations) to review potential conservation, interstate banking, and Intentionally Created Surplus (ICS) activities that could result in reductions in flow.
    - Coordinating water operations as needed during the year to address planned changes in water orders, conservation, interstate banking, ICS creation or delivery, any additional voluntary system contributions, and any other actions that may impact flows in the Colorado River to ensure continued compliance with the MSCP. The actions that could result in reductions in flow that will be monitored include:
        - Repayment of overruns according to the Inadvertent Overrun and Payback Policy
        - Authorized reductions due to 2007 Interim Guidelines
        - Authorized reductions due to Lower Colorado Basin Regional Director Agreement, including commitments to convert ICS for DCP contributions
        - Pilot System Conservation Program agreements
        - Approved ICS creation
        - Interstate water banking repayments (Intentionally Created Unused Apportionment)
        - Additional voluntary system contributions

Additionally, the White Paper outlines a plan for the long-term need to meet their requirements under the ESA. The non-Federal Permittees provide the following;

> "The federal and non-federal parties are committed to collaborating with the Service on the need for additional long-term endangered species compliance and an approach for seeking and obtaining such coverage when the need arises. There are several important factors that permittees will consider moving forward. The 2007 Interim Guidelines and LBDCPA [Lower Basin Drought Contingency Plan Agreement] expire on December 31, 2025. In 2020, Reclamation initiated a formal review of the effectiveness of the 2007 Interim Guidelines, otherwise known as the "7.D. Review." The 7.D. Review will evaluate past operations and actions under the 2007 Interim Guidelines and may provide additional insight into Colorado River operations. Following that effort, Reclamation and the Colorado River Basin States (along with other stakeholders) will begin a process to develop new operating rules for the Colorado River to be implemented at the expiration of the 2007 Interim Guidelines and LBDCPA in 2026. This process is anticipated to take several years to complete, with the new operating rules having additional implications for incidental take authorization from the Service for flow reductions above those currently allowed under the LCR MSCP. Therefore, it may be prudent for the LCR MSCP parties to engage with the Service once we have more certainty on a potential framework for the new operating rules and prior to termination of the existing Guidelines."

We strongly recommend the topic of reinitiation/amendment of the LCR MSCP become part of the twice-annual meeting between the MSCP partners and the Service. If the LCR MSCP partners request reinitiation or an amendment of the LCR MSCP the consultation process needs to be finalized in time for 2026 implementation because the 2007 Interim Guidelines and LBDCPA expire in 2026. The LCR MSCP partners and the Service need to work along a parallel process with the development of new Colorado River rules and not wait until all decisions and agreements are in place to work on the process needed for ESA compliance. As a reminder the initial program development took 10 years to complete.

We appreciate the positive working relationship between the Service and the LCR MSCP. The White Paper represents the Program's commitment to accurate reporting and overall commitment to working toward recovery of the listed species that we are collectively responsible for protecting. Thank you for your significant efforts to conserve listed and special-status species through the LCR MSCP.

If there are any questions or concerns about this response, please contact me at (602) 242-0210.

cc (electronic):
Regional Director, Fish and Wildlife Service, Albuquerque, NM (ARD-ES, Marty Tuegel)
DOI Solicitor (Justin Tade)

Supporting Materials for Attachment B to the
Lower Colorado River Multi-Species Conservation Program
Final Implementation Report,
Fiscal Year 2021 Work Plan and Budget,
Fiscal Year 2019 Accomplishment Report

White Paper

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Executive Summary

Each year the Bureau of Reclamation (Reclamation), as implementing agency for the Lower Colorado River Multi-Species Conservation Program (LCR MSCP), produces a Draft Implementation Report, Work Plan and Budget, and Accomplishment Report and provides this report to the LCR MSCP Steering Committee for approval by consensus. Once approved by the Steering Committee, a letter is sent to the U.S. Fish and Wildlife Service asking for its concurrence with the final report. This report details federal and non-federal actions and activities that receive Endangered Species Act (ESA) compliance through the LCR MSCP. Each LCR MSCP partner agency that receives either its Section 7 or Section 10 compliance from the program provides Reclamation with a description of its covered activities from the prior year; this information is listed in Attachment B of the annual report. The listing and description of these covered activities are the responsibility of the agency or entity conducting these activities. In this white paper, Reclamation has described ESA Section 7 actions in Section 2.0 while non-federal partners have described ESA Section 10 activities in Section 3.0.

The *Final Implementation Report, Fiscal Year 2021 Work Plan and Budget, Fiscal Year 2019 Accomplishment Report* (2019 Final Implementation Report) was approved by the LCR MSCP Steering Committee on June 24, 2020. In Attachment B, the amount of flow reduction in Reach 2 (Hoover to Davis Dam) was listed as a range. The maximum acre-foot (AF) volume in this range appeared to exceed the ESA compliance limit by 7,244 AF. Subsequently, each LCR MSCP permittee evaluated their actions to validate the information provided in Attachment B and determine whether the limit had been exceeded.

In terms of non-federal activities, in 2019 the Central Arizona Water Conservation District (CAWCD) intended to limit water diversions to only those necessary to meet existing 2019 water orders, forgoing its contract rights to increase diversions to capture extra water made available by senior water users. This intentional activity was estimated to reduce flows below Hoover Dam by 85,953 AF. CAWCD was unable to divert and deliver at least 33,989 AF of Arizona Colorado River supply in 2019 because the water was identified as available after CAWCD could have reasonably diverted the water. In the 2019 Final Implementation Report, the total amount of water left in Lake Mead by CAWCD to protect lake elevations was listed as the sum of the above two actions. In addition, the Metropolitan Water District of Southern California (MWD) and the Imperial Irrigation District (IID), noted that each agency created, and left in Lake Mead, excess extraordinary conservation in CY 2019. IID and MWD have proposed that this excess extraordinary conservation remain in Lake Mead with the possibility of being credited as EC ICS (provisionally, 41,826 AF to IID and 40,140 AF to MWD) at a future date. While the amounts identified by IID and MWD have not been verified and cannot at this time be credited as EC ICS, the volumes have been included in the reduction in flow computation recognizing the nature of the reduction and the potential for future inclusion as EC ICS volumes. Consequently, reducing CAWCD's unused apportionment voluntarily left in Lake Mead to 85,953 AF would adjust the flow range to 736,289 AF if none of California's unused apportionment was determined to be Intentionally Created Surplus (ICS) or to 818,255 AF if some or all of California's provisional unused apportionment was determined to be ICS.

1.0 Introduction and Background

The purpose of this White Paper is to provide supplemental information to the U.S. Fish and Wildlife Service (Service) beyond what was reported in the Lower Colorado River Multi-Species Conservation Program (LCR MSCP or Program) *Final Implementation Report, Fiscal Year 2021 Work Plan and Budget, Fiscal Year 2019 Accomplishment Report* (2019 Final Implementation Report) submitted on July 1, 2020. According to the LCR MSCP program documents, the Service has 60 days (i.e., September 1, 2020) to review and submit a written evaluation to the LCR MSCP Program Manager that determines the consistency of the past, current, and future implementation plans with the terms of the Conservation Plan and the Permit. Pursuant to the 2005 LCR MSCP Biological Opinion (LCR MSCP BO p. 31), the 2019 Final Implementation Report uses surrogate measures to describe species take. In Attachment B, a range of values were presented for the surrogate measure known as "Flow Changes Below Hoover Dam to Davis Dam" (Attachment B, p. B-9; note, this reach of the river is referred to as Reach 2). This White Paper provides supplemental information for the Service to consider and to better understand

the meaning of those reported values.

The LCR MSCP Habitat Conservation Plan (HCP) provides ESA coverage for on-going and future operations and maintenance activities on the lower Colorado River through the year 2055. The planning area for the Program spans from full pool elevation of Lake Mead to the Southerly International Border with Mexico, spanning over 400 miles and encompassing portions of seven counties in the three Lower Basin States. Reclamation is the implementing agency for the Program, with representation on the LCR MSCP Steering Committee comprised of state and federal agencies, regional water and power users, municipalities, Native American tribes and conservation organizations, among others, who provide collaborative input and oversight in support of LCR MSCP implementation.

The LCR MSCP is a unique program that was created to meet the need for a comprehensive species conservation program on the Lower Colorado River (LCR) that could address broad and long-term issues related to water and power activities. Many activities along the LCR, especially those relating to water delivery and diversions, are interrelated and interdependent, to the extent that separating out the effects of all specific actions and assigning each to a particular Federal or non-Federal is not feasible. In addition, many of Reclamation's nondiscretionary covered actions occur as a result of contracts with non-federal parties and arguably might be included as part of the ESA Section 10(a)(1)(B) permit. To eliminate any uncertainty regarding which method of take authorization, Section 7 or Section 10(a)(1)(B), is more appropriate under the Program, the LCR MSCP participants requested that the Service authorize take under both Section 7 and Section 10(a)(1)(B). The LCR MSCP therefore describes the effects of all covered federal and non-federal activities.

The LCR MSCP also utilized habitat impacts as a proxy for species impacts, as direct species effects were difficult to accurately and appropriately quantify. This was done through the creation of a modeling process that relates habitat extent to hydrologic changes resulting from flow-related covered activities. Conservation measures were then developed from the results of this modeling.

As a 50-year program that covers a wide variety of activities, the LCR MSCP parties sought to provide coverage for foreseeable future activities. The LCR MSCP currently provides coverage for flow-related activities including power production and changes to the points of diversion of Colorado River water and associated reduction in water releases from Hoover, Davis and Parker dams. Reductions in flow of 845,000 acre-feet per year (AFY) below Hoover Dam to Davis Dam (Reach 2), 860,000 AFY below Davis Dam to Parker Dam (Reach 3) and 1,574,000 AFY below Parker Dam to Imperial Dam (Reaches 4 and 5) are currently covered under the LCR MSCP.

The past fifteen years of actual program implementation have affirmed the importance of flexible and forward-looking program coverage. In addition to transfers from one water user to another, various voluntary water conservation mechanisms have been implemented to proactively address potential future imbalances in water supply and demand in the Colorado River system due to prolonged drought and climate change. These mechanisms include, but are not limited to, the Intentionally Created Surplus (ICS) program, implemented through the 2007 Record of Decision for the *Colorado River Interim Guidelines for Lower Basin Shortages and the Coordinated Operations for Lake Powell and Lake Mead* (2007 Interim Guidelines). [1] The ICS program allows water users to invest in conservation programs to reduce existing uses, thereby conserving water to be temporarily stored in Lake Mead. The increasing risk of Lake Mead falling into critical elevations in the past decade also prompted additional federal and state water conservation efforts, such as the 2014 Memorandum of Understanding for Pilot Drought Response Actions[2] and the Pilot System Conservation Program.[3]

2.0 Reclamation Procedures for Tracking Take

The LCR MSCP BA and HCP describe the future flow-related federal actions and future flow-related non-federal activities covered by the incidental take authorization. Reclamation specifically received coverage for changes in the storage and delivery of State entitlement waters through various administrative actions (LCR MSCP BA p. 2-25) and the non-federal parties received coverage for changes to points of diversion, new points of diversion, interstate water banking, water marketing, and water transfers, or any other actions as made possible from any future agreements and/or measures taken by Arizona, California, Nevada or a contract holder (LCR MSCP HCP p.2-6, p.

[1] Available online: https://www.usbr.gov/lc/region/programs/strategies/RecordofDecision.pdf.

[2] Available at https://www.usbr.gov/lc/region/g4000/LB_DroughtResponseMOU.pdf.

[3] Information available at: https://www.usbr.gov/lc/region/programs/PilotSysConsProg/pilotsystem.html.

2-13, and p. 2-17). Because the administrative details of these future flow-related actions were not known at the time the LCR MCSP was prepared, the LCR MSCP BA acknowledged that "[at] the time of any specific proposed action, a review of changes in flow below each identified dam in Table 2-13 will be undertaken to ensure coverage under the LCR MSCP" (LCR MSCP BA p. 2-15). Section 2.1 describes how Reclamation tracked changes in flow for proposed actions for 2019.

After the Colorado River Accounting and Water Use Report: Arizona, California, and Nevada is completed, the LCR MSCP Steering Committee has the opportunity to review how Reclamation uses the water accounting information to describe take in the 2019 Final Implementation Report. The Steering Committee then approves the Program Manager to submit the 2019 Final Implementation Report to the Service. Section 2.2 provides a description of the take that was reported in the 2019 Final Implementation Report.

2.1 Overview of Colorado River Water Accounting – Calendar Year (CY) 2019

2.1.1 Background

Pursuant to Title 43, Code of Federal Regulations, Part 417 (Part 417), prior to the beginning of each CY, Reclamation consults with water users in Arizona, California, and Nevada (Lower Division States) regarding their proposed diversion and beneficial use of Colorado River water for the ensuing calendar year.[4] As part of the Part 417 process, water users are required to submit to Reclamation an annual "water order" representing the water user's best estimate of its Colorado River diversions (and in some cases beneficial consumptive use) for the ensuing CY. When developing its diversion estimate, a water user may incorporate estimates of water conserved, acquired, unused by others, and/or exchanged pursuant to various programs and agreements including, but not limited to, the ICS program, agreements to create System Conservation Water, and the Lower Basin Drought Contingency Plan Agreement (LBDCPA).[5] In accordance with Part 417, the Lower Colorado Basin Regional Director (Regional Director) reviews and approves water users' diversion requests to ensure that diversions are consistent with and do not exceed its Colorado River entitlement and that deliveries of Colorado River water to each water user will not exceed those reasonably required for beneficial use. Reclamation refers to such approvals as "approved water orders."

Approved water orders are subject to modification within the year pursuant to 43 CFR § 417.4 or § 417.5(b). To request the modification, the water user must submit, in writing, a revised water order, to the Regional Director. A water user may request to modify its approved water order at any time during the year.

During the year, Reclamation monitors and projects diversions and consumptive use of Colorado River water in an effort to assist water users in ensuring their diversions/consumptive uses do not exceed their annual approval amount (this effort also serves to monitor each state's projected water uses to ensure its relevant annual apportionment is not exceeded). Reclamation's projections are available to water users each day on its website: www.usbr.gov/lc/region/g4000/hourly/forecast.pdf. While this forecast is a tool that may be used by water users to monitor their uses and to adjust diversions to remain within approved annual quantities (or seek modification of the approval as appropriate), due to inherent limitations with water orders, weather, real-time gage data and other factors, all data are considered provisional and subject to change.

In accordance with Article V of the Consolidated Decree of the United States Supreme Court in Arizona *v.* California, 547 U.S. 150 (2006) (Consolidated Decree), the Bureau of Reclamation is required to account for the diversion, return flow, and consumptive use of Colorado River water from the Lower Division States. The official record of this information is documented and published in Reclamation's annual *Colorado River Accounting and Water Use Report: Arizona, California, and Nevada* (Water Accounting Report).[6] The Water Accounting Report is generally published in May of the following year.

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[4] In accordance with 43 CFR §417.1, water users for small quantities of water, as determined by the Regional Director, may be excluded from the Part 417 process. Pursuant to 43 CFR §417.5, the Commissioner of the Bureau of Indian Affairs (BIA) is responsible for conducting Part 417 consultations with tribes and other water users on Indian Reservations. Reclamation works closely with the BIA regarding the scheduling and delivery of water to tribal reservations in the Lower Division States.

[5] The Colorado River Basin Drought Contingency Plans (DCPs) and related agreements, including the LBDCPA, were executed on May 20, 2019; and are available online at: https://www.usbr.gov/lc/region/programs.dcp.html.

[6] Available at: https://www.usbr.gov/lc/region/g4000/wtracct.html.

2.1.2 CY 2019 – Initial Water Order Approvals

Based on the initial approved water orders for CY 2019, it was anticipated that, of the 7.5 million acre-feet (AF) apportioned for use in CY 2019 to the Lower Division States, 7,489,535 AF would be consumptively used[7] and 10,465 AF would intentionally remain in Lake Mead. The 10,465 AF anticipated to remain in Lake Mead was collectively comprised of 10,465 AF of System Conservation Water to be created pursuant to System Conservation Implementation Agreements (SCIA) executed between Reclamation and: the Colorado River Indian Tribes' (CRIT) MTA Farms,[8] the City of Bullhead City (BHC),[9] the Coachella Valley Water District (CVWD),[10] and the City of Needles (Needles).[11] The term "System Conservation Water" is used to describe water that remains in Lake Mead to benefit system storage that results from the voluntary implementation of extraordinary conservation projects.
In a typical year, ICS creation amounts, as per approved ICS Plans of Creation (ICS Plans), are incorporated into a water user's initial water order and corresponding approval. For CY 2019, approval of ICS Plans was delayed due to the pending finalization of the LBDCPA, which included updated provisions regarding the creation and delivery of ICS. Due to these unique circumstances, initial CY 2019 approved water orders did not incorporate any ICS creation.

2.1.2.1 Reductions in Flow – Based on Initial CY 2019 Approved Water Orders

Based upon the information described above regarding initial water order approvals for CY 2019, prepared in December 2018, Reclamation projected that the Endangered Species Act (ESA) compliance coverage amount provided by the LCR MSCP program for the Hoover Dam to Davis Dam reach (Reach 2) would not be exceeded (Table 1). As demonstrated in Sections 2.1.3 and 2.1.4 below, this expectation did not change throughout CY 2019 based on actual operating experience.

Table 1. Total potential reduction in flow, Hoover Dam to Davis Dam (Reach 2), based on initial CY 2019 approved water orders. (Values in AF.)

Description of Flow Changes Below Hoover Dam to Davis Dam	Potential Reduction in Flow
System Conservation Water Created Pursuant to Executed SCIAs	10,465
Total Potential Reduction in Flow	**10,465**
LCR MSCP Total Reduction in Flow Coverage Amount	**845,000**

2.1.3 CY 2019 – Mid-Year Updates and Revisions

2.1.3.1 Creation of Additional System Conservation Water

Early to mid-year 2019, agreements to create additional System Conservation Water were implemented with Bard Water District (Bard),[12] CRIT-Quail Mesa Farm,[13] and Fort McDowell Yavapai Nation[14] for a total System Conservation Water amount of 34,742 AF. When combined with the prior agreements noted above, implementation of these additional agreements brought the anticipated total amount of System Conservation Water to be created in 2019 by water users downstream of Hoover Dam[15] to 45,207 AF (see Table 3 below).

2.1.3.2 Creation of Extraordinary Conservation (EC) ICS

On May 20, 2019, the LBDCPA was executed which, among other things, authorized new EC ICS exhibits for the

[7] Calculated as: 4,399,692 AF by California; 2,789,843 AF by Arizona; and 300,000 AF by Nevada.
[8] SCIA No. 18-XX-30-W0634, for a total conservation amount of 9,317 AF.
[9] SCIA No. 15-XX-30-W0587, as amended, for an estimated conservation amount of 840 AF.
[10] SCIA No. 15-XX-30-W0593, for a total conservation amount of 163 AF.
[11] SCIA No. 15-XX-30W0596, for an estimated conservation amount of 145 AF.
[12] SCIA No. 18-XX-30-W0637, for a total conservation of 3,571 AF.
[13] SCIA No. 19-XX-30-W0647, for a total conservation of 17,488 AF.
[14] SCIA No. 18-XX-30-W0642, for a total conservation of 13,683 AF.
[15] SNWA had also implemented an SCIA to create System Conservation Water in 2019; however, this did not result in reduction in flow below Hoover Dam because this conservation occurs above Hoover Dam.

Central Arizona Water Conservation District (CAWCD); CRIT; Gila River Indian Community (GRIC); Mohave Valley Irrigation and Drainage District (MVIDD); Wellton-Mohawk Irrigation and Drainage District; Southern Nevada Water Authority (SNWA); and The Metropolitan Water District of Southern California (MWD).
In June 2019, CAWCD, CRIT, GRIC, IID, MVIDD, MWD and SNWA submitted new or revised 2019 ICS Plans. After consulting with the Upper and Lower Division States, Reclamation approved the submitted 2019 EC ICS Plans on August 13, 2019, in the amounts shown in Table 2.

Table 2. Maximum EC ICS creation amounts, per approved 2019 ICS Plans. (All values in AF.)

Water User	Maximum Approved EC ICS Creation Amount
CAWCD (AZ)	26,146
CRIT (AZ)	6,274
GRIC (AZ)	117,000
AZ subtotal	**149,420**
IID (CA)	62,000
MWD (CA)	450,000
CA subtotal	**512,000**
SNWA (NV)	100,000*
NV subtotal	**100,000**
Requested Total ICS Creation Conditionally Approved by Reclamation (AZ+CA+NV)	**761,420**
Actual Total ICS Creation Conditionally Approved by Reclamation (AZ+CA+NV)	**Not-to-Exceed 625,000**

* The ICS Plan for SNWA created ICS above Hoover Dam, which does not result in a reduction in flow below Hoover Dam.

The amounts shown in Table 2 represent the *maximum* amount of EC ICS Reclamation approved each water user to create in 2019. The approvals were subject to the following conditions and limitations:

(1) The maximum total amount of EC ICS that could be created by the Lower Division States in CY 2019 was limited to 625,000 AF as set forth in Section XI.G.3.B.4 of the 2007 Interim Guidelines. In accordance with Section IV.B of Exhibit1 to the LBCDPA (Lower Basin Drought Contingency Operations [LBOps]),[16] if a Lower Division State reached its annual EC ICS creation limit in CY 2019, and additional EC ICS creation capacity existed within the 625,000 AF limit, then that state could utilize any unused creation capacity, subject to authorization by the Secretary of the Interior (Secretary).

(2) As shown in Table 2 above, ICS Plans submitted by ICS creators in the State of Arizona collectively sought approval to create up to 149,420 AF in CY 2019, exceeding the state's 100,000 AF maximum EC ICS creation amount set forth in Section XI.G.3.B.4 of the 2007 Interim Guidelines by 49,420 AF. In accordance with Section IV.B of LBOps, and as authorized by the Secretary, the State of Nevada committed to provide ICS creators in the State of Arizona up to 50,000 AF of additional EC ICS creation capacity in CY 2019 to cover the creation in excess of 100,000 AF. Incorporating the 49,420 AF of EC ICS creation capacity that would be utilized by the State of Arizona effectively reduced SNWA's maximum EC ICS creation amount in CY 2019 from 125,000 AF to 75,580 AF (125,000 AF - 49,420 AF = 75,580 AF).

(3) While Reclamation approved IID to create *up to* 62,000 AF of EC ICS, due to limitations set forth in the *California Agreement for the Creation and Delivery of Extraordinary Conservation Intentionally Created Surplus,* as amended (California ICS Agreement),[17] the actual amount of EC ICS IID could store in its Lake Mead ICS account during CY 2019 was limited such that its end-of-year EC ICS balance could not exceed 50,000 AF. Because IID's Lake Mead EC ICS account was nearly full at the beginning of the year, its EC ICS creation was limited to 1,579 AF in CY 2019. Additionally, any agreement to store excess

[16] Available at: https://www.usbr.gov/lc/region/g4000/dcpdocs/Attachment-B-Exhibit-1-LB-Drought-Operations.pdf.
[17] Available at: https://www.usbr.gov/lc/region/programs/strategies/agreements/CAICS.pdf.

conservation in Lake Mead as ICS or with MWD required prior written approval by Reclamation and MWD.

(4) While Reclamation approved MWD to create *up to* 450,000 AF of EC ICS, ICS creation in excess of the State of California's 400,000 AF maximum annual limit was contingent upon additional EC ICS creation capacity becoming available to MWD within the 625,000 AF limit. It also required the Secretary's authorization in accordance with LBOps. (In CY 2019, additional EC ICS creation capacity could only become available should the State of Arizona create less than 149,420 AF or the State of Nevada create less than 75,580 AF of EC ICS.) Additionally, per the terms of the California ICS Agreement, the actual amount of EC ICS MWD could create during CY 2019 was further dependent upon the amount of EC ICS created by IID.

2.1.3.3 Creation of Other Water

By letter dated July 24, 2019,[18] CAWCD submitted a revised CY 2019 water order which, among other things, notified Reclamation of its intent to adjust its planned Colorado River diversion and forbear its right to divert 276,701 AF in 2019 to reflect voluntary efforts to protect Lake Mead and approved ICS plans for 2019. This volume included CAWCD's planned contribution of 85,953 AF to Lake Mead which was CAWCD's estimate of voluntary contributions that could be made while diverting sufficient water to meet planned deliveries to Central Arizona Project (CAP) water users. CAWCD requested that this water be left in system storage and be treated as Protection Volume[19] for Lake Mead. CAWCD's letter further noted that, "If forecasts indicate that additional water is available to CAP in 2019, that water will remain in the system and be additive to the current planned contribution volume." Reclamation approved CAWCD's revised CY 2019 water order by letter on August 13, 2019, in which Reclamation acknowledged CAWCD's request that unused Arizona basic apportionment that became available to CAWCD in excess of the amount needed to satisfy CAP demands be considered Protection Volume for Lake Mead.

By letter dated December 19, 2019,[20] IID submitted a revised CY 2019 water order notifying Reclamation of its intent to conserve and leave in Lake Mead 46,546 AF to resolve its previous commitment to offset the depletion of Colorado River system storage resulting from the 2010 pre-delivery to the Salton Sea. IID's revised water order incorporated a revised estimate of Additional Conserved Water in the amount of 48,125 AF: 46,546 AF for resolution of the Salton Sea pre-delivery; and 1,579 AF for creation of EC ICS to be stored in Lake Mead. Reclamation approved IID's revised water order by letter dated March 10, 2020.[21]

2.1.3.4 Reductions in Flow – Based on Mid-Year Updates and Revisions

Based upon the information described above regarding mid-year updates and revisions, Reclamation projected that the ESA compliance coverage amount provided by the LCR MSCP program for the Hoover Dam to Davis Dam reach (Reach 2) would not be exceeded (Table 3).

Table 3. Total potential reduction in flow, Hoover Dam – Davis Dam (Reach 2) based on CY 2019 mid-year updates and revisions for creation of ICS, System Conservation Water, and other water. (All values in AF.)

Description of Potential Flow Changes Below Hoover Dam to Davis Dam	Potential Reduction in Flow
System Conservation Water Created Pursuant to Executed SCIAs	45,207
Creation of EC ICS – Arizona	149,420
Creation of EC ICS – California*	400,000
Creation of Other Water (CAWCD Protection Volume)	85,953
Creation of Other Water (IID Resolution of 2010 Salton Sea Pre-delivery)	46,546
Total Potential Reduction in Flow	**727,126**
LCR MSCP Total Reduction in Flow Coverage Amount	**845,000**

*The amount shown here is the maximum amount of EC ICS that the State of California could create based on the projection

[18] Available at: https://www.usbr.gov/lc/region/g4000/4200Rpts/DecreeRpt/2019/41.pdf.

[19] The term "Protection Volume" refers to the voluntary development of additional quantities of water stored in Colorado River reservoirs, in particular Lake Mead, necessary to reduce the risk of Lake Mead reaching critical reservoir elevations. See 2014 Memorandum of Understanding for Pilot Drought Response Actions.

[20] Available at: https://www.usbr.gov/lc/region/g4000/4200Rpts/DecreeRpt/2019/33.pdf.

[21] Given the scale of operations on the Lower Colorado River with deliveries and releases totaling approximately 10,000,000 AF in a normal year, it is not atypical that particular approvals occur after the end of the CY.

that the State of Arizona would create 149,420 AF of EC ICS and the anticipation that the State of Nevada would fully utilize its available creation capacity of 75,580 AF of EC ICS.

2.1.4 CY 2019 – Hydrology and End-of-Year Forecast

During the months of November and December 2019, unusually high precipitation events occurred within the Lower Basin. As a result of this precipitation, water demand downstream of Lake Mead decreased by 129,000 AF, when compared to the November 2019 24-Month Study projection.[22] The effects of this hydrology were reflected in Reclamation's forecast. The information below is based on information contained in Reclamation's end-of-year forecast dated December 31, 2019, included as Attachment 1 for reference.

2.1.4.1 Creation of System Conservation Water

Because the creation of System Conservation Water was not dependent upon hydrology, there were no anticipated changes to the amounts of conservation that would be created by this program. The December 31st forecast still estimated that the total System Conservation Water created by participants below Hoover Dam would be 45,207 AF.

2.1.4.2 Creation of EC ICS

As reflected in the December 31st forecast, it was anticipated that the State of Arizona would still create 149,420 AF of EC ICS and that the State of Nevada (SNWA) would create 65,797 AF of EC ICS in CY 2019. Although the December 31st forecast reflected a total EC ICS creation amount of 477,283 AF for the State of California (1,579 AF by IID and 475,704 AF by MWD), the actual maximum amount of EC ICS that could be created by the State of California to remain within the 625,000 AF limit was 409,783 AF (i.e. 625,000 AF - 149,420 AF - 65,797 AF= 409,783 AF).

2.1.4.3 Creation of Other Water

Due to the wet hydrological conditions experienced in November and December and resulting decreases in diversions by senior priority Arizona water users, by mid-December Reclamation's forecast reflected a significant increase in the amount of Arizona unused apportionment available to CAWCD as compared to previous forecasts. The term "available" does not necessarily mean that CAWCD could have diverted or would have diverted the water given that it became available so close to the end of the year. Based on the December 31st forecast and consistent with CAWCD's letter dated July 24, 2019, the voluntary contribution volume was estimated to be 132,575 AF. Additionally, the December 31st forecast estimated that IID had created approximately 60,000 AF of "Additional Conserved Water", an increase of 13,454 AF from its December 19th letter, of which IID intended to leave 46,546 AF of this conserved water in Lake Mead to resolve the 2010 Salton Sea pre-delivery. As noted in footnote 5 of the forecast, storage of any Additional Conserved Water by IID in excess of 46,546 AF (whether in Lake Mead or in MWD's system) required an executed amendment to the California ICS Agreement, which had not occurred at the time (and still has not yet occurred).

2.1.4.4 Reductions in Flow – Based on End-of-Year Forecasting

Based upon the information described above regarding end-of-year forecast data, Reclamation projected that the ESA compliance coverage amount provided by the LCR MSCP program for the Hoover Dam to Davis Dam reach (Reach 2) would not be exceeded (Table 4).

Table 4. Total potential reduction in flow, Hoover Dam to Davis Dam (Reach 2) based on CY 2019 end-of-year forecast for creation of ICS, System Conservation Water, and other water. (All values in AF.)

Description of Flow Changes Below Hoover Dam to Davis Dam	Potential Reduction in Flow
System Conservation Water Created Pursuant to Executed SCIAs	45,207
Creation of EC ICS – Arizona	149,420
Creation of EC ICS – California	409,783
Creation of Other Water (CAWCD Protection Volume)	132,575
Creation of Other Water (IID Resolution of 2010 Salton Sea Pre-delivery)	46,546
Total Potential Reduction in Flow	**783,531**
LCR MSCP Total Reduction in Flow Coverage Amount	**845,000**

2.1.5 CY 2019 – Final Accounting

[22] Decreased demand downstream of Lake Mead for November and December 2019 was calculated as the difference between the Hoover Dam projected outflow based on the November 2019 24-Month Study and the observed outflow for those months.

2.1.5.1 Creation of System Conservation Water

As reported in Tables 17 and 18 of the 2019 Water Accounting Report, the actual amount of System Conservation Water created by users downstream of Hoover Dam was 44,686 AF, 521 AF less than the projected amount. The 521 AF difference between the actual amount and the projected amount of 45,207 AF was due to a reduction in the amount created by BHC (actual creation amount was 306 AF vs. projected amount of 860 AF) and an increase in the amount created by the City of Needles (actual creation amount of 158 AF vs. projected amount of 145 AF).

2.1.5.2 Creation of EC ICS

As reported in Table 22 of the 2019 Water Accounting Report, the amount of EC ICS the State of Arizona created was 147,557 AF and the amount of EC ICS the State of Nevada created was 66,004 AF. After accounting for the 1,579 AF of EC ICS IID created, the remaining maximum amount of EC ICS creation capacity available to MWD, within the maximum 625,000 AF creation limit for the Lower Division States, was 409,860 AF.

2.1.5.3 Creation of Other Water

As reported in Table 11 of the 2019 Water Accounting Report, and consistent with CAWCD's July 24, 2019 letter, the amount of unused Arizona basic apportionment left in Lake Mead by CAWCD to benefit system storage was 119,942 AF,[23] which was 33,989 AF more than its originally planned amount of 85,953 AF. Also as reported in Table 11 of the 2019 Water Accounting Report, and consistent with its December 19, 2019 letter, IID conserved and left in Lake Mead 46,546 AF of conserved Colorado River water to resolve the 2010 Salton Sea pre-delivery.

2.1.5.3.1 Additional Information Provided to Reclamation in CY 2020

Additionally, as reported in Table 11 of the 2019 Water Accounting Report, Footnote 9, by separate letters dated May 13, 2020, IID[24] and MWD[25] notified Reclamation that, due to current limitations regarding the creation and storage of EC ICS, each agency created, and left in Lake Mead, excess extraordinary conservation in CY 2019. IID and MWD proposed that this excess extraordinary conservation remain in Lake Mead with the possibility of being credited as EC ICS (provisionally, 41,826 AF to IID and 40,140 AF to MWD) at a future date, subject to applicable conditions, including matters as outlined in their letters. While the amounts identified by IID and MWD have not been verified and cannot at this time be credited as EC ICS, the volumes have been included in the reduction in flow computation recognizing the nature of the reduction and the potential for future inclusion as EC ICS volumes.
As reported in Table 20 of the 2019 Water Accounting Report, over the course of the year, the Yuma Desalting Plant discharged 108 AF of treated (desalinated) water, originally diverted from the Main Outlet Drain Extension (MODE),[26] to the Colorado River upstream of Morelos Dam. Because this water was made available for consumptive use in the United States or delivered to Mexico in satisfaction of the Mexican Treaty Obligation, it resulted in an equivalent amount of water being retained in Lake Mead, and thus constitutes a reduction in flow below Hoover Dam.

2.1.5.4 Reductions in Flow – Based on CY 2019 Final Accounting

Based on the final accounting data as reported in the 2019 Water Accounting Report issued in May 2020 and as reflected in Attachment B of the 2019 Final Implementation Report issued in June 2020, for all covered actions, including the creation of ICS and System Conservation Water, and the creation of other water left in Lake Mead as discussed in Section 2.2 below.

2.2 Attachment B-1 Description of Take for 2019

In accordance with LCR MSCP Funding and Management Agreement (FMA) Section 7.4.1(F), any incidental take

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[23] This value reflects a reduction from the 132,575 AF projected value in the December 31st forecast due to finalization of 2019 water accounting data, including correcting a gage error related to measured return flows that were credited to CRIT. Completion of this process resulted in a decrease in the amount of unused Arizona basic apportionment left in Lake Mead to benefit system storage.

[24] Available at: https://www.usbr.gov/lc/region/g4000/4200Rpts/DecreeRpt/2019/42.pdf.

[25] Available at: https://www.usbr.gov/lc/region/g4000/4200Rpts/DecreeRpt/2019/43.pdf.

[26] The MODE conveys drainage from the Wellton-Mohawk Irrigation and Drainage District and Yuma area to points above or below Morelos Dam. Water passing through the MODE is generally discharged to the Ciénega de Santa Clara in Mexico through the Bypass Drain and is not accountable toward the Mexican Treaty Obligation.

known to have occurred during LCR MSCP implementation in CY 2019 is reported in the 2019 Final Implementation Report. Attachment B-1 (entitled for 2019, *Federal Flow-Related Covered Actions and Accomplishments, Calendar Year 2019)* includes both the federal covered actions and the non-federal activities in the same table.

The justification for combining the federal actions and non-federal activities into a single table is found within the LCR MSCP program documents. Section 2.1 of the LCR MSCP BA states, "[g]iven the combination of Federal actions, both discretionary and non-discretionary, and non-Federal actions carried out in the Lower Division of the Colorado River, it is not clear which parties could have specific responsibility under Section 9 of the ESA for any potential take of ESA-listed species" (LCR MSCP BA p. 2-1). So, to avoid any confusion, these actions/activities have historically been combined for reporting purposes. Table 5 is a replication of the Flow Changes Below Hoover Dam to Davis Dam (i.e., Reach 2) information presented on p. B-9 of Attachment B of the 2019 Final Implementation Report.

Table 5. Replication of the information presented on the table found on p. B-9 of Attachment B of the 2019 Final Implementation Report (with the addition of footnote 4 and 5 here)

2019 Accomplishments for Flow Changes Below Hoover Dam to Davis Dam	Change In Flow Acre-Feet
Pilot System Conservation Program Conservation:	
City of Bullhead City	306
Colorado River Indian Tribes, Arizona	26,805
Fort McDowell Yavapai Nation[4]	13,683
Bard Water District	3,571
City of Needles	158
Coachella Valley Water District	163
[4]Fort McDowell Yavapai Nation system conservation created by reduction of FMYN's CAP water delivery and a commensurate reduction in CAWCD diversions	
Arizona Unused Apportionment Voluntarily Left in Lake Mead	119,942
Intentionally Created Surplus – Creation of Extraordinary Conservation	
Central Arizona Water Conservation District	24,283
Colorado River Indian Tribes	6,274
Gila River Indian Community[1,5]	117,000
Metropolitan Water District of Southern California[1]	409,860
Imperial Irrigation District	1,579
[1] ICS creation amounts are provisional until verified by Reclamation.	
[5]Gila River Indian Tribe ICS created by reduction of Gila River Indian Community's CAP water delivery and a commensurate reduction in CAWCD diversions	
IID Conservation for Resolution of 2010 Salton Sea Pre-Delivery	46,546
Reclamation Yuma Desalting Plant	108
California Unused Apportionment Voluntarily Left in Lake Mead[2]	81,966

[2] Colorado River water apportioned to, but not consumptively used by, California in 2019. By separate letters dated May 13, 2020, the IID and Metropolitan notified Reclamation that, due to current limitations regarding the creation and storage of Extraordinary Conservation ICS, each agency created, and left in Lake Mead, excess extraordinary conservation. The IID and Metropolitan propose that this excess extraordinary conservation remain in Lake Mead with the possibility of being credited as Extraordinary Conservation ICS (provisionally, 41,826 acre-feet to the IID and 40,140

acre-feet to the Metropolitan) at a future date, subject to applicable conditions, including matters as outlined in their letters. Extraordinary Conservation ICS credited to the IID and Metropolitan under these proposals, if any, will be reflected in a future Colorado River Accounting and Water Use Report.

Collectively, these actions contributed to a net reduction in flow below Hoover Dam of 770,278 acre-feet if no California unused apportionment is ultimately determined to be ICS or up to 852,244 acre-feet if a portion of California's provisional unused apportionment is ultimately determined to be ICS[3]. Values are provided on a consumptive use basis.

[3] Compliance and other appropriate actions would need to be completed in the future if a portion of California's provisional unused apportionment is ultimately determined to be ICS.

3.0 Overview of Non-Federal Activities and Their Relationship to Covered Actions

To eliminate uncertainty regarding which method of take authorization, ESA Section 7 or Section 10 (a)(1)(B), is more appropriate, the LCR MSCP participants had requested that the Service authorize take under both Section 7 and Section 10 (a)(1)(B). As such, Attachment B-1 describes both federal and non-federal covered activities that occurred in 2019. Pursuant to the 2005 LCR MSCP BO, the description of take is reported as a surrogate measure. The 2019 Accomplishments for the surrogate measure known as Flow Changes below Hoover Dam to Davis Dam (see Table 6 and p. B-9 of the 2019 Final Implementation Report) show a range in flow reductions below Hoover Dam from 770,278 to 852,244 acre-feet. The high end of this range appears to exceed the 845,000 acre-feet maximum potential change in annual water releases below Hoover Dam that was analyzed in the LCR MSCP (LCR MSCP BA p. 2-25 and Table 2-13), for which an incidental take authorization was issued. However, upon further analysis and, as described in more detail below, there is no exceedance to the authorized annual water release below Hoover Dam because there was an adjustment in reporting Arizona's unused apportionment voluntarily left in Lake Mead. This volume should have been reported as 85,953 AF and not 119,942 AF. The revised reduction in flow from Hoover Dam to Davis Dam is 818,255 AF which is less than the LCR MSCP reduction in flow coverage amount of 845,000 AF.

3.1 Arizona Unused Apportionment Voluntarily Left in Lake Mead

On July 24, 2019, CAWCD, by letter, amended its Colorado River diversion schedule with the intent of voluntarily contributing 85,953 AF of Colorado River to Lake Mead by forgoing diversion of additional Colorado River water estimated to be available to CAWCD by its Colorado River diversion contract. CAWCD's letter provided notice to Reclamation that CAWCD intended to limit its Colorado River diversions to its existing planned delivery schedule to CAP users rather than increase its diversions to deliver additional Colorado River water that might be made available from the unused water of senior priority Arizona water users. For context, CAWCD's water delivery contract, Contract Between the United States and the Central Arizona Water Conservation District for Delivery of Water and Repayment of Costs of the Central Arizona Project, Contract No. 14-06-W-245 (Dec. 1, 1988), *as modified by* Stipulated Judgment, *Central Arizona Water Conservation Dist. v. United States*, Nos. CIV 95-625 TUC-WDB, CIV 95-1720- PHX-EHC (Consol.) (Nov. 21, 2007), allows CAWCD to divert and consume all of Arizona's Colorado River entitlement that is not consumed by higher priority users in Arizona. In its July 24, 2019 letter, CAWCD elected to forgo additional diversions. Based on information provided by Reclamation

(https://www.usbr.gov/lc/region/g4000/hourly/forecast.pdf), CAWCD estimated approximately 85,953 AF of additional Colorado River water would be available to CAWCD, in addition to other conservation actions. At that time, CAWCD firmed its year end operating schedule including power purchases, maintenance schedules (including a significant siphon repair and annual fall outage), and coordination with CAP customers based on current water availability as estimated by Reclamation.

By December 2019, CAWCD was informed by Reclamation of significant additional unused Arizona apportionment inadvertently becoming available to CAWCD. However, due to the timing of the availability, CAWCD did not have time to adjust its year end operating schedule, seek out new water users, and amend its water order to take advantage of additional available Arizona unused apportionment to increase its diversions. Therefore, CAWCD continued to limit its diversions to the amount provided in the July 24, 2019 letter and conserved 85,953 AF to protect Lake Mead elevations.

3.2 Summary of Non-Federal Activities for Adjusted Final Table

Table 6. Total reduction in flow, Hoover Dam – Davis Dam (Reach 2) based on final updates and revisions for creation of ICS, System Conservation Water, and other water. (All values in AF.)

Description of Flow Changes Below Hoover Dam to Davis Dam	Original Reduction in Flow	Adjusted Reduction in Flow
System Conservation Water Created Pursuant to Executed SCIAs*	44,686	44,686
Creation of EC ICS – Arizona	147,557	147,557
Creation of EC ICS – California**	411,439	411,439
Creation of Other Water (CAWCD Protection Volume)***	85,953	85,953
Creation of Other Water (Forecasted additive volume attributed to CAWCD)***	33,989	
Creation of Other Water (IID Resolution of 2010 Salton Sea Pre-delivery	46,546	46,546
Creation of Other Water (Water Conserved by the Yuma Desalting Plant)	108	108
Creation of Other Water (IID/MWD Excess Conservation left in Lake Mead)****	81,966	81,966
Total Reduction in Flow	**852,244**	**818,255**
LCR MSCP Total Reduction in Flow Coverage Amount	**845,000**	**845,000**

*Based on verified System Conservation Water creation amounts.

**Value shown reflects the amount of EC ICS that could be created by the State of California based on the actual EC ICS creation amounts by the states of Arizona (147,557 AF) and Nevada (66,004 AF), to remain within the 625,000 AF maximum creation limit.

***CAWCD originally estimated the Protection Volume to be 85,953 AF. Due to increased precipitation in November and December, an additional 33,989 AF inadvertently became available as increased Arizona unused apportionment which, due to timing, CAWCD had no opportunity to capture.

**** Value shown is consistent with IID's and MWD's 2019 ICS Plans approved by Reclamation in July 2019 to create up to 512,000 AF. While the amounts identified by IID and MWD have not been verified (nor have other items been checked) and cannot at this time be credited as EC ICS, the volumes have been included in the reduction in flow computation recognizing the nature of the reduction and the potential for future inclusion as EC ICS volumes. The Secretary has not yet taken action on IID or MWD's request

4.0 Potential Consequences of Reductions in Flow in Reach 2

4.1 Original LCR MSCP Analysis of Impacts from Reduction in Flow of 845,000 acre-feet

Affected area: Reach 2 extends from Hoover Dam (RM 342.2) to Davis Dam (RM 276.0) and includes Lake Mohave up to full-pool elevation, a distance of 66 miles. Davis Dam's primary purpose is to re-regulate Hoover Dam releases and aide in the delivery of water supplies to downstream U.S. Entitlement Holders and to Mexico. Other benefits of Davis Dam include flood protection and power production. The inflow into Lake Mohave is mostly discharge from Hoover Dam with some infrequent desert-wash flooding.

Reach 2 consists of a 12-mile riverine section below Hoover Dam, which is confined by steep canyon walls, and contains cold tailwater. The remaining 54 miles is dominated by the reservoir pool of Lake Mohave. Lake Mohave is clear, but highly productive. It supports warm water and cold water sport fisheries, as well as repatriated and remnant native fish populations of razorback sucker and bonytail.

Land cover types used in species habitat models: The LCR MSCP used a habitat-based approach for compliance with the ESA due to uncertainties in quantifying species impacts. To implement this approach, habitat models were developed for the covered species and the results of the application of the models were used in the assessment of impacts.

Because most covered species habitat had not been field delineated in the LCR MSCP planning area, habitat models were based on a land classification system developed by Ohmart and Anderson (1984) and Younker and Anderson (1986). This land classification system described three main land cover types used by LCR MSCP covered species. These are woody riparian land cover types (including cottonwood-willow and honey mesquite), marsh, and aquatic land cover (including river, backwater, and reservoir).

Table 7 shows the amount of land cover in Reach 2 as identified in the LCR MSCP HCP. Because Reach 2 is confined primarily by steep canyon walls and upland desert, there is little cottonwood-willow, mesquite, and marsh land cover. Most of Reach 2 is dominated by the reservoir pool of Lake Mohave.

Table 7.—Extent of Land Cover Type by River Reach[1]

Land Cover Type	Reach 2 (acres)
Cottonwood-Willow type I	1
Honey Mesquite type IV	4
Marsh type 7	22
River & Backwater	1
Reservoir	27,357

[1]From LCR MSCP HCP Table 3-8

Species habitat models and existing species habitat: Habitat models were developed for covered species whose habitats could be correlated to the physical and biological attributes associated with each of the LCR MSCP land cover types. The models define habitat for each covered species as the LCR MSCP land cover types that would be most likely to encompass the elements of each covered species habitat within the river reaches where each species was known or expected to occur based on known habitat requirements for the species. Table 8 shows covered species and their assumed distribution in Reach 2, land cover types that support species habitat, and the amount of existing species habitat in Reach 2. Existing species habitat acreage was based on both species' detections and land cover types that support species habitat.

Table 8.—Existing Habitat for Selected Species Habitat Based on LCR MSCP Habitat Models

Covered Species	Assumed Distribution Reach 2 HCP Table 3-9	Land Cover Types Assumed to Support Species Habitat HCP Table 3-9	Existing Habitat Reach 2 (acres) HCP Table 3-11
Yuma clapper rail	No detections	Marsh types 1-7	0
Southwestern willow flycatcher	No detections	Direct delineation of occupied and unoccupied habitat	0
Bonytail	X	River, Backwaters, and Reservoirs	27,358
Razorback sucker	X	River, Backwaters, and Reservoirs	27,358
Northern Mexican gartersnake	No detections	Marsh types 1-7 and adjacent CW-W types I-IV	0
Western red bat (roosting habitat)	X	Cottonwood-willow types I and II and honey mesquite type III	1
Western yellow bat (roosting habitat	X	Cottonwood-willow types I and II and honey mesquite type III	1
Colorado River cotton rat	No detections	Marsh types 1-7	0
Yuma hispid cotton rat	No detections	Cottonwood-willow types I-V	0
Western least bittern	No detections	Marsh types 1-7	0
California black rail	No detections	Marsh types 1-7	0
Yellow-billed cuckoo	No detection	Cottonwood-willow types I-III	0
Elf owl	No detections	Cottonwood-willow types I and II and honey mesquite type III	0
Gilded flicker	No detections	Cottonwood-willow types I-III	0
Gila woodpecker	No detections	Cottonwood-willow types I-III in patches at least 49 acres	0
Vermilion flycatcher	X	Cottonwood-willow types I-V and honey mesquite type III	1
Arizona Bell's vireo	X	Cottonwood-willow types III and IV and honey mesquite type III and IV	4
Sonoran yellow warbler	X	Cottonwood-willow types I-IV and extent of saltcedar, saltcedar honey mesquite, and saltcedar-screwbean mesquite delineated as occupied and unoccupied southwestern flycatcher habitat.	1
Summer tanager	No detections	CW-W types I and II	0
Flannelmouth sucker	No detections	River and backwaters	0
MacNeill's sootywing skipper	X	Adjoining patches of atriplex and honey mesquite land cover	0

Although there were 22 acres of marsh type 7 land cover delineated in Reach 2, it was not considered habitat for the Yuma clapper rail, California black rail, western least bittern, northern Mexican gartersnake, or the Colorado River cotton rat. Marsh type 7 land cover consists of small, isolated, emergent patches of marsh vegetation located on temporal sandbars, the confluence of washes, small sandy areas, and eddies. These patches were considered too small or ephemeral to support populations of Yuma clapper rail, California black rail, western least bittern, northern Mexican gartersnake, and Colorado River cotton rat. In addition, these species had not been documented during surveys or incidental observations within Reach 2.

Impacts resulting from reduction in flow: In the original LCR MSCP analysis, the hydrologic impacts of the 845,000 acre-feet reduction in flow in Reach 2 (Hoover Dam to Davis Dam) were determined to be insignificant and consequently were not modeled. The 12-mile riverine section below Hoover Dam is confined by steep canyon walls that provide little habitat for marsh and riparian associated covered species. The remaining 56 miles is dominated by the reservoir pool of Lake Mohave. There were no significant effects from fluctuations in river stage in Lake Mohave because operational aspects of Davis Dam would not change with the reduction in flow. As described in Section 6.2 below, Davis Dam continued to be operated in 2019 in accordance with the operations used in the original LCR MSCP analysis of impacts.

The original LCR MSCP analysis determined that there were no impacts in Reach 2 to existing western red bat roosting habitat, western yellow bat roosting habitat, Arizona Bell's vireo habitat and Sonoran yellow warbler habitat because the habitat was located within the reservoir pool of Lake Mohave.
The original LCR MSCP analysis also determined that impacts to razorback suckers and bonytail in the reservoir pool of Lake Mohave were minimized. The LCR MSCP Final Appendices (Appendix J.4.3.3), in describing Lake Mohave's operation for downstream water demand, noted that the razorback sucker backcove rearing program that began in 1994 limited the drawdown of Lake Mohave to no more than two feet in a ten-day period during the razorback sucker spawning season. The LCR MSCP also required that Lake Mohave surface elevation be maintained above elevation 640 feet mean sea level (msl) between March 15 and June 15 to provide sufficient depth for the backcove rearing areas. As described in Section 6.2 below, Davis Dam continued to be operated in 2019 in accordance with these provisions.

4.2 LCR MSCP Analysis of Impacts Resulting from the Maximum Reduction in Flow Range Reported in the 2019 Final Implementation Report

The 2019 Final Implementation Report described a range of potential flow reductions that could require ESA compliance. In order to fully understand any potential biological impacts for reduced flows within this range, Reclamation evaluated current knowledge, including operational constraints, to determine impacts.
The geographical and landcover descriptions in the original LCR MSCP analysis for Reach 2 remain the same. Recent aerial and satellite imagery documents that there is still little landcover in Reach 2. There is no documented presence of Yuma clapper rail, California black rail, western least bittern, northern Mexican gartersnake, or Colorado River cotton rat. There are no additional impacts to western red bat roosting habitat, western yellow bat roosting habitat, Arizona Bell's vireo habitat and Sonoran yellow warbler habitat in Reach 2 because the habitat was located within the reservoir pool of Lake Mohave. In 2019, Davis Dam was operated so that Lake Mohave met the operational criteria outlined in Appendix J.4.3.3 to minimize impacts to razorback sucker and bonytail spawning and rearing. Drawdown of Lake Mohave was limited to no more than two feet in a ten-day period during the razorback sucker spawning season and Lake Mohave surface elevation was maintained above elevation 640 feet mean sea level (msl) between March 15 and June 15 to provide sufficient depth for the backcove rearing areas. A de minimis increase in reduction of flow in Reach 2 would not have an impact on covered species listed in Table 8. (See Attachment 2 and Attachment 3).

5.0 Commitments to Improve Processes to Ensure Take is Not Exceeded from Flow-Related Covered Activities

Recognizing that Lower Colorado River operations and management programs have evolved to proactively address the risks posed by drought and climate change, Reclamation and non-federal parties implementing those programs are committed to broader and deeper collaboration and cooperation with regards to potential future reductions in flow. These parties have, for more than a decade, worked collaboratively on water management programs to address risks in the Colorado River system. They have routinely shared information on evolving water orders, ICS creation plans, interstate banking opportunities, and inadvertent overrun paybacks to ensure compliance with existing and evolving rules and regulations for Colorado River operations. In 2020, these parties formalized that collaboration to ensure compliance with the Drought Contingency Plan (DCP) rules by establishing a monthly meeting to discuss and coordinate operational and other water management issues that arise during the year. LCR MSCP compliance issues could be discussed at these monthly meetings, or separate meetings could be established

to address LCR MSCP compliance issues. Specific to this White Paper, reductions in flow will be discussed and tracked through regularly occurring meetings. The specific frequency and venue of these meetings (monthly, bimonthly, etc.) are yet to be determined. Tracking summaries will be shared and discussed with the Service at least twice a year in meetings to be scheduled during December and May. Further, as part of the LCR MSCP Steering Committee process, Reclamation and the parties will provide updates on water management activities related to flow reductions as appropriate. Coordination activities by the parties will include:

- Sharing and reviewing operational plans prior to submitting annual water orders (October prior to the year of operations) to review potential conservation, interstate banking, and ICS activities that could result in reductions in flow.
- Coordinating water operations as needed during the year to address planned changes in water orders, conservation, interstate banking, ICS creation or delivery, any additional voluntary system contributions, and any other actions that may impact flows in the Colorado River to ensure continued compliance with the MSCP. The actions that could result in reductions in flow that will be monitored include:
    - Repayment of overruns according to the Inadvertent Overrun and Payback Policy
    - Authorized reductions due to 2007 Interim Guidelines
    - Authorized reductions due to LBDCPA, including commitments to convert ICS for DCP contributions
    - Pilot System Conservation Program agreements
    - Approved ICS creation
    - Interstate water banking repayments (Intentionally Created Unused Apportionment)
    - Additional voluntary system contributions

Nothing in the foregoing shall affect a party's obligation to make DCP contributions consistent with the LBDCPA.

6.0 Opportunities to Address Future Take Coverage

The federal and non-federal parties are committed to collaborating with the Service on the need for additional long-term endangered species compliance and an approach for seeking and obtaining such coverage when the need arises. There are several important factors that permittees will consider moving forward. The 2007 Interim Guidelines and LBDCPA expire on December 31, 2025. In 2020, Reclamation initiated a formal review of the effectiveness of the 2007 Interim Guidelines, otherwise known as the "7.D. Review." The 7.D. Review will evaluate past operations and actions under the 2007 Interim Guidelines and may provide additional insight into Colorado River operations. Following that effort, Reclamation and the Colorado River Basin States (along with other stakeholders) will begin a process to develop new operating rules for the Colorado River to be implemented at the expiration of the 2007 Interim Guidelines and LBDCPA in 2026. This process is anticipated to take several years to complete, with the new operating rules having additional implications for incidental take authorization from the Service for flow reductions above those currently allowed under the LCR MSCP. Therefore, it may be prudent for the LCR MSCP parties to engage with the Service once we have more certainty on a potential framework for the new operating rules and prior to termination of the existing Guidelines.

While the past 15 years of Program implementation occurred in the face of reduced flows and reservoir storage in the Colorado River Basin, the Program has already seen remarkable successes, including the establishment of 6,437 acres of habitat on 17 conservation areas through FY 2019. Its success is rooted in the biologically effective, cost-efficient, and transparent manner in which the Program has been implemented and the regulatory foresight to include coverage for future reductions in flow.

Flow reductions in 2019 were mostly a byproduct of the implementation of water management strategies identified in the 2007 Interim Guidelines and LBDCPA to enhance conservation of water in the Colorado River System. Unfortunately, the long-term outlook for the Colorado River Basin consistently shows the potential for declining inflows. Therefore, the Colorado River Basin States and Reclamation are continuing their efforts to proactively

avert the potential for critically low elevations in Lake Mead and Lake Powell. To what extent the 2007 Interim Guidelines and LBDCPA operations will be expanded, extended, or altered is unknown at this time.

We intend to work collaboratively with the Service, meeting at least twice a year, as identified in Section 5. In these meetings, progress of the renegotiation will be discussed, as well as federal actions and non-federal activities, documentation needs, and schedules because these topics relate to reinitiating consultation with the Service under Section 7 of the ESA and seeking a permit amendment under Section 10 of the ESA. As details emerge from the 2007 Interim Guidelines renegotiation process on new water management proposals, the frequency and content of these meetings with the Service may change to ensure adequate ESA compliance in time for a post 2026 implementation. The parties are mindful that drought conditions may continue and even worsen, making pre-consultation and coordination necessary. For that reason, the parties are committed to closely monitoring the situation and working as diligently, efficiently and quickly as possible with each other and the Service to secure the necessary conservation actions and corresponding compliance needed to ensure lake elevations remain protected, while meeting our responsibility to species conservation and the ESA.

As noted above, to ensure continued compliance until the program is expanded, the parties will coordinate on the implementation of activities that may result in changes in flow, especially in Reaches 2-3, and discuss any potential need that may arise for amending the existing incidental take authorization, especially as progress is made in the development of new guidelines. This and other information will be discussed with the Service at least twice a year in meetings to be scheduled for December and May.

Attachment 1 – Reclamation's End-of-Year Forecast Dated December 31,2019

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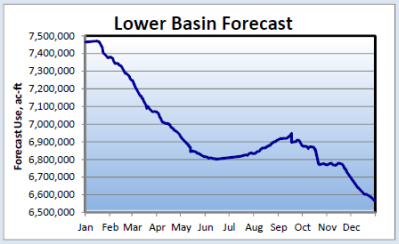
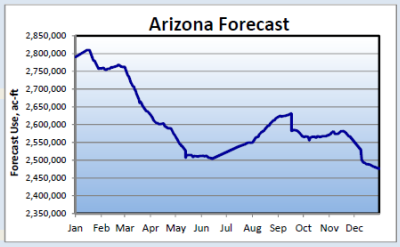
U.S. BUREAU OF RECLAMATION
LOWER COLORADO REGION
CY 2019

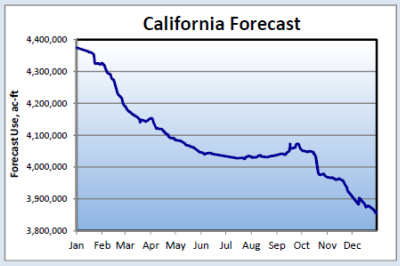
ARIZONA, CALIFORNIA, NEVADA, MEXICO
FORECAST OF END OF YEAR CONSUMPTIVE USE
FORECAST BASED ON USE TO DATE[1] AND APPROVED ANNUAL WATER ORDERS
(ACRE-FEET)

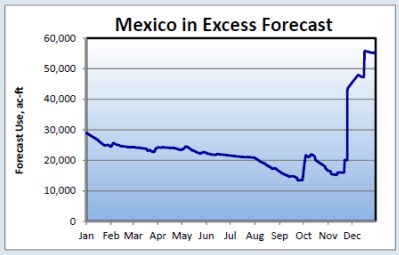
WATER USE SUMMARY	Use To Date CY2019	Forecast Use CY2019	Approved Use[2] CY2019	Excess to Approval CY2019
ARIZONA	2,472,988	2,476,677	2,476,677	0
CALIFORNIA	3,851,306	3,858,424	3,858,424	0
NEVADA	233,729	234,203	234,203	0
STATES TOTAL[3]	6,558,023	6,569,304	6,569,304	0
MEXICO IN SATISFACTION OF TREATY (Including downward delivery)	1,552,356	1,555,377	1,500,000	**55,377**
TO MEXICO AS SCHEDULED	1,497,034	1,500,000		
MEXICO IN EXCESS OF TREATY[4]	55,322	55,377		
BYPASS PURSUANT TO MINUTE 242[5]	96,253	96,560		
TOTAL LOWER BASIN & MEXICO	8,206,632	8,221,241		

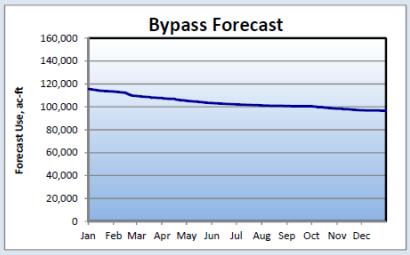
[1] Incorporates 80 daily reporting stations which may be revised after provisional data reports are distributed by the USGS. Use to date for monthly reporters incorporates provisional data through October. Use to date for users reporting annually is estimated.
[2] These values reflect adjusted apportionments. 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.
[4] Mexico excess forecast is based on the 5-year average for the period 2013-2017.
[5] Bypass forecast is based on the average for the period 1990-2017.

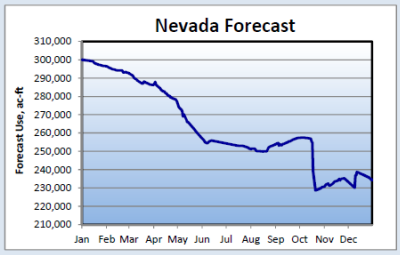


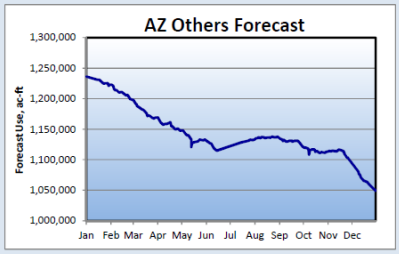


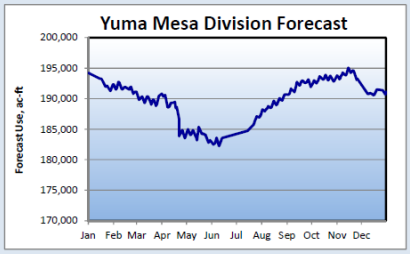


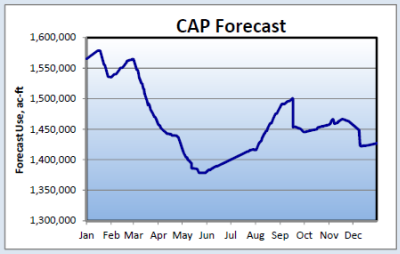


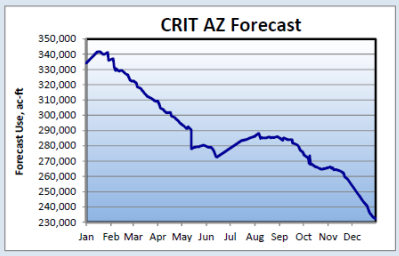


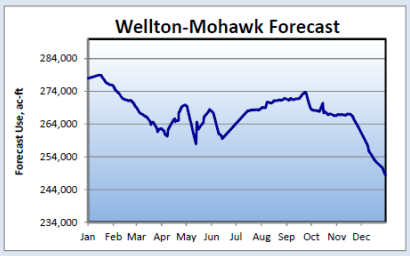


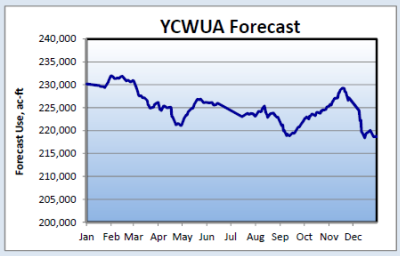












Graph notes: Jan 1 forecast use is scheduled use in accordance with the Annual Operating Plan's state entitlements, available unused entitlements, and overrun paybacks. A downward sloping line indicates use at a lower rate than scheduled, upward sloping is above schedule, and a flat line indicates a use rate equal to schedule. Lower priority users such as CAP, MWD, and Robert 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.

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U.S. BUREAU OF RECLAMATION
LOWER COLORADO REGION
CY 2019

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)

WATER USER	Use To Date CY2019	Forecast Use CY2019	Estimated Use CY2019	Excess to Estimated Use CY2019	Diversion To Date CY2019	Forecast Diversion CY2019	Approved Diversion CY2019	Excess to Approved Diversion CY2019
ARIZONA PUMPERS	14,444	14,444	14,444	---	22,255	22,255	22,255	0
LAKE MEAD NRA, AZ - Diversions from Lake Mead	70	70	111	---	70	70	111	-41
LAKE MEAD NRA, AZ - Diversions from Lake Mohave	196	196	196	---	196	196	196	0
DAVIS DAM PROJECT	2	2	2	---	20	20	20	0
BULLHEAD CITY	6,875	6,895	7,683	---	10,829	10,862	12,720	-1,858
MOHAVE WATER CONSERVATION DISTRICT	632	632	632	---	944	944	944	0
BROOKE WATER LLC	315	315	315	---	475	475	475	0
MOHAVE VALLEY IDD	19,949	19,990	21,464	---	36,939	37,015	39,746	-2,731
FORT MOJAVE INDIAN RESERVATION, AZ	33,112	33,147	44,550	---	61,319	61,384	82,500	-21,116
GOLDEN SHORES WATER CONSERVATION DISTRICT	268	268	268	---	402	402	402	0
HAVASU NATIONAL WILDLIFE REFUGE	2,486	2,489	3,563	---	20,730	20,759	41,820	-21,061
LAKE HAVASU CITY	7,741	7,761	8,928	---	12,485	12,517	14,400	-1,883
CENTRAL ARIZONA PROJECT	1,424,963	1,427,286		---	1,424,963	1,427,286		
TOWN OF PARKER	370	371	430	---	813	815	933	-118
COLORADO RIVER INDIAN RESERVATION, AZ	232,000	232,253	310,371	---	510,993	511,997	599,602	-87,605
EHRENBURG IMPROVEMENT ASSOCIATION	234	234	234	---	328	328	328	0
CIBOLA VALLEY [1]	15,685	15,685	15,685	---	21,929	21,929	21,929	0
CIBOLA NATIONAL WILDLIFE REFUGE	9,667	9,673	14,016	-4,343	15,591	15,600	22,605	-7,005
IMPERIAL NATIONAL WILDLIFE REFUGE	2,752	2,762	3,799	-1,037	4,436	4,452	6,128	-1,676
BLM PERMITEES (PARKER DAM to IMPERIAL DAM)	1,093	1,093	1,093		1,680	1,680	1,680	
CHA CHA, LLC	1,085	1,087	1,365	---	1,670	1,674	2,100	-426
BEATTIE FARMS	569	570	724	---	873	875	1,110	-235
YUMA PROVING GROUND	320	321	479	---	320	321	479	-158
GILA MONSTER FARMS	4,432	4,441	5,254	---	7,766	7,782	9,156	-1,374
WELLTON-MOHAWK IDD	248,024	248,373	278,000	-29,627	367,615	368,283	412,965	-44,682
BLM PERMITEES (BELOW IMPERIAL DAM)	97	97	97	0	148	148	148	0
CITY OF YUMA	13,028	13,068	15,962	-2,894	23,125	23,196	26,700	-3,504
MARINE CORPS AIR STATION YUMA	1,260	1,262	1,359	---	1,260	1,262	1,359	-97
UNION PACIFIC RAILROAD	24	24	24	---	48	48	48	0
UNIVERSITY OF ARIZONA	949	951	951	---	949	951	951	0
YUMA UNION HIGH SCHOOL DISTRICT	128	128	151	---	175	175	200	-25
DESERT LAWN MEMORIAL	17	17	17	---	23	23	23	0
NORTH GILA VALLEY IRRRIGATION DISTRICT	8,915	8,929	12,141	---	40,104	40,185	44,200	-4,015
YUMA IRRIGATION DISTRICT	36,077	36,143	39,007	---	66,084	66,210	71,900	-5,690
YUMA MESA IDD	145,862	146,035	143,060	---	221,543	221,962	239,724	-17,762
UNIT "B" IRRIGATION DISTRICT	19,082	19,096	21,483	---	25,473	25,505	29,400	-3,895
FORT YUMA INDIAN RESERVATION	1,258	1,258	1,258	---	1,937	1,937	1,937	0
YUMA COUNTY WATER USERS' ASSOCIATION	218,401	218,702	230,166	---	321,661	322,371	360,400	-38,029
COCOPAH INDIAN RESERVATION	515	518	1,691	---	805	810	2,580	-1,770
RECLAMATION-YUMA AREA OFFICE	91	91	91	---	91	91	91	0
RETURN FROM SOUTH GILA WELLS								
TOTAL ARIZONA	2,472,988	2,476,677	2,628,962		3,229,067	3,234,795	3,502,163	
CAP	1,424,963	1,427,286				1,427,286		
ALL OTHERS	1,048,025	1,049,391	1,201,064			1,807,509	2,074,265	
YUMA MESA DIVISION, GILA PROJECT	190,854	191,107	171,610	19,497		328,357		

ARIZONA ADJUSTED APPORTIONMENT CALCULATION

Arizona Basic Apportionment	2,800,000
Creation of Extraordinary Conservation ICS (Approved) [2]	(149,420)
System Conservation Water - Pilot System Conservation Program [3]	(41,328)
CAWCD Voluntary Contribution to Lake Mead (Estimated) [4]	(132,575)
Total State Adjusted Apportionment	2,476,677
Excess to Total State Adjusted Apportionment	0
Estimated Allowable Use for CAP	**1,559,861**

[1] Includes the following water users: Cibola Valley IDD; Arizona Game and Fish Commission; GSC Farms, LLC; Red River Land Company, LLC; Western Water, LLC; and the Hopi Tribe.

[2] Pursuant to the 2007 Interim Guidelines, the state of Arizona may create up to 100,000 AF of Extraordinary Conservation (EC) ICS annually. Pursuant to Section IV.B of Exhibit 1 to the *Lower Basin Drought Contingency Plan Agreement*, SNWA has committed to provide 50,000 AF of ICS creation capacity in 2019 for ICS creators in the state of Arizona. The following EC ICS creation amounts have been approved for 2019: CAWCD - up to 26,146 AF; Colorado River Indian Tribes (CRIT) - up to 6,274 AF; and Gila River Indian Community - up to 117,000 AF. Actual ICS creation amounts will be based on final accounting and verification.

[3] System Conservation Water to be conserved by Bullhead City, Fort McDowell Yavapai Nation, and CRIT pursuant to System Conservation Implementation Agreements executed under the Pilot System Conservation Program. This water will remain in Lake Mead to benefit system storage.

[4] By letter dated July 24, 2019, CAWCD notified Reclamation of its intent not to divert 85,953 AF of Arizona unused apportionment in 2019 to effect a voluntarily contribution to Lake Mead. This water will remain in Lake Mead to benefit system storage. The amount shown above is the **estimated** amount of voluntary contribution CAWCD will make based on the current forecast. This value is updated daily. The actual amount of CAWCD's voluntary contribution will be based on final accounting, and will be limited to the amount that, when added to CAWCD's consumptive use, does not result in an inadvertent overrun.

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

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CY 2019

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

CALIFORNIA WATER USERS
FORECAST OF END OF YEAR CONSUMPTIVE USE
FORECAST BASED ON USE TO DATE AND APPROVED ANNUAL WATER ORDERS
California Schedules and Approvals
Historic Use Records (Water Accounting Reports)

WATER USER	Use To Date CY2019	Forecast Use CY2019	Estimated Use CY2019	Excess to Estimated Use CY2019	Diversion To Date CY2019	Forecast Diversion CY2019	Approved Diversion CY2019	Excess to Approved Diversion CY2019
CALIFORNIA PUMPERS	1,824	1,824	1,824	---	3,300	3,300	3,300	0
FORT MOJAVE INDIAN RESERVATION, CA	5,381	5,390	8,996	---	10,002	10,019	16,720	-6,701
CITY OF NEEDLES (includes LCWSP use)	1,051	1,054	1,605	-551	1,854	1,858	2,261	-403
METROPOLITAN WATER DISTRICT	535,367	536,726		---	538,199	539,568		---
COLORADO RIVER INDIAN RESERVATION, CA	2,548	2,548	2,548	---	4,220	4,220	4,220	0
PALO VERDE IRRIGATION DISTRICT	352,397	352,761	422,468	---	798,300	799,752	856,000	-56,248
YUMA PROJECT RESERVATION DIVISION	39,932	40,002	47,045	---	80,319	80,501	98,928	-18,427
YUMA PROJECT RESERVATION DIVISION - INDIAN UNIT	---	---	---	---	41,937	42,025	46,128	-4,103
YUMA PROJECT RESERVATION DIVISION - BARD UNIT	---	---	---	---	38,382	38,476	52,800	-14,324
YUMA ISLAND PUMPERS	2,673	2,673	2,673	---	4,833	4,833	4,833	0
FORT YUMA INDIAN RESERVATION - RANCH 5	523	523	523	---	945	945	945	0
IMPERIAL IRRIGATION DISTRICT [1]	2,562,101	2,566,431	2,677,800	-111,369	2,539,386	2,544,113	2,781,074	---
SALTON SEA SALINITY MANAGEMENT [2]	16	16	7	**9**	17	17	7	---
COACHELLA VALLEY WATER DISTRICT	346,438	347,408	368,837	-21,429	358,116	359,180	384,855	---
OTHER LCWSP CONTRACTORS	819	829	829	---	1,281	1,296	1,296	0
CITY OF WINTERHAVEN	66	67	67	---	98	99	99	0
CHEMEHUEVI INDIAN RESERVATION	170	172	172	---	11,209	11,340	11,340	0
TOTAL CALIFORNIA	3,851,306	3,858,424			4,352,079	4,361,041	4,702,241	

CALIFORNIA ADJUSTED APPORTIONMENT CALCULATION

California Basic Apportionment	4,400,000
Salton Sea Mitigation - Residual Delivery [2]	7
System Conservation Water - Pilot System Conservation Program [3]	(3,879)
IID Creation of Extraordinary Conservation ICS - Stored in Lake Mead (Estimated) [4]	(1,579)
IID Creation of Additional Conserved Water (Estimated) [5]	(60,421)
MWD Creation of Extraordinary Conservation ICS (Estimated) [6]	(475,704)
Total State Adjusted Apportionment	3,858,424
Excess to Total State Adjusted Apportionment	0
Estimated Allowable Use for MWD	**1,012,430**

[1] As shown here, IID's Approved Diversion and Estimated Use values reflect the maximum amount of Colorado River water available to IID in 2019.

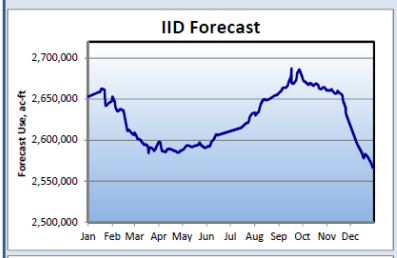
[2] In 2019, IID is required to deliver 7 AF of previously conserved water to the Salton Sea to meet the residual balance of its 2017 Salton Sea mitigation obligation (see Table 18, Footnote 4 of the 2018 Water Accounting Report for additional details). Provisonal data indicate that IID delivered 16 AF to the Salton Sea during the month of September for this purpose, exceeding the required volume by 9 AF. The additional 9 AF has been deducted from IID's Additional Conserved Water.

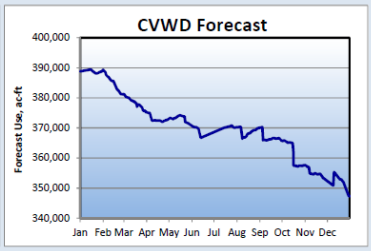
[3] System Consevation Water to be conserved by the City of Needles, the Coachella Valley Water District, and Bard Water District pursuant to System Conservation Implementation Agreements executed under the Pilot System Conservation Program. This water will remain in Lake Mead to benefit system storage.

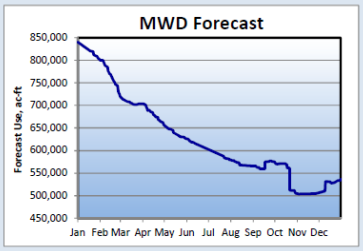
[4] IID has been approved to create up to 62,000 AF of Extraordinary Conservation (EC) ICS in 2019; however, due to limitations set forth in the California ICS Agreement, may only store up to 1,579 AF in its Lake Mead ICS Account. The amount shown above is the **estimated** amount of EC ICS IID will create and store in its Lake Mead ICS Account based on the current forecast. This value is updated daily. The actual amount of EC ICS created by IID and stored in its Lake Mead ICS Account will be based on final accounting and verification, and will be limited to the amount that, when added to IID's consumptive use, does not result in an inadvertent overrun.

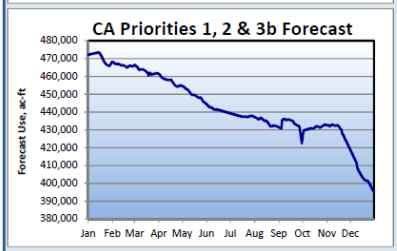
[5] IID intends to use Additional Conserved Water for purposes including, but not limited to, the creation of ICS for storage in Lake Mead. As noted above, IID has been approved to create up to 62,000 AF of EC ICS in 2019, however, may only store up to 1,579 AF in its Lake Mead ICS Account. Storage of Additional Conserved Water in excess of this amount will require an executed amendment to the California ICS Agreement, which has not occurred as of the date of this forecast. The amount of Additional Conserved Water shown above is the **estimated** amount IID will create based on the current forecast. This value is updated daily. The actual amount of Additional Conserved Water created by IID in 2019 will be based on final accounting and verification, and will be limited to the amount that, when added to IID's consumptive use, does not result in an inadvertent overrun.

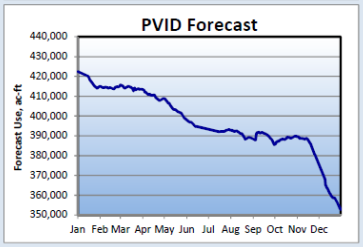
[6] MWD has been approved to create up to 450,000 AF of EC ICS in 2019, less the amount of EC ICS created by IID, and further limited to the amount that, when added to the EC ICS created by the states of Arizona and Nevada, does not exceed 625,000 AF. The amount shown above is the **estimated** amount of EC ICS MWD will create based on the current forecast. This value is updated daily. The actual amount of EC ICS created by MWD will be based on final accounting and verification, and will be limited to the amount that, when added to MWD's consumptive use, does not result in an inadvertent overrun.











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

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U.S. BUREAU OF RECLAMATION
LOWER COLORADO REGION
CY 2019

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.

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 CY2019	Forecast Use CY2019	Estimated Use CY2019	Excess to Estimated Use CY2019	Diversion To Date CY2019	Forecast Diversion CY2019	Approved Diversion CY2019	Excess to Approved Diversion CY2019
ROBERT B. GRIFFITH WATER PROJECT (SNWS)	443,599	444,591		---	443,599	444,591		---
LAKE MEAD NRA, NV - Diversions from Lake Mead	424	427	1,500	---	424	427	1,500	-1,073
LAKE MEAD NRA, NV - Diversions from Lake Mohave	219	220	500	---	219	220	500	-280
BASIC MANAGEMENT INC.	5,477	5,499	8,208	---	5,477	5,499	8,208	-2,709
CITY OF HENDERSON (BMI DELIVERY)	12,721	12,754	15,878	---	12,721	12,754	15,878	-3,124
NEVADA DEPARTMENT OF WILDLIFE	10	10	12	-2	783	785	1,000	---
PACIFIC COAST BUILDING PRODUCTS INC.	914	917	928	---	914	917	928	-11
BOULDER CANYON PROJECT	173	173	173	---	300	300	300	0
BIG BEND WATER DISTRICT	1,997	2,007	4,619	---	4,453	4,474	10,000	-5,526
FORT MOJAVE INDIAN TRIBE	2,804	2,808	4,020	---	4,184	4,190	6,000	-1,810
LAS VEGAS WASH RETURN FLOWS	-234,609	-235,203	-231,904	---				
TOTAL NEVADA	233,729	234,203	251,973		473,074	474,157	492,353	
SOUTHERN NEVADA WATER SYSTEM (SNWS)	208,990	209,388				444,591		
ALL OTHERS	24,739	24,815				29,566		
NEVADA USES ABOVE HOOVER	228,928	229,388				465,493		
NEVADA USES BELOW HOOVER	4,801	4,815				8,664		

Tributary Conservation Intentionally Created Surplus (ICS)

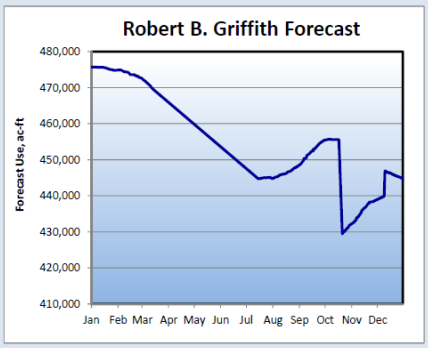
SNWA Creation of Tributary Conservation ICS (Approved) [1]	42,000

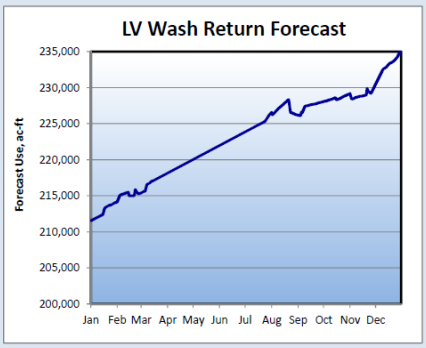
NEVADA ADJUSTED APPORTIONMENT CALCULATION

Nevada Basic Apportionment	300,000
SNWA Creation of Extraordinary Conservation ICS (Estimated) [2]	(65,797)
Total State Adjusted Apportionment	234,203
Excess to Total State Adjusted Apportionment	0

[1] SNWA has been approved to create up to 42,000 AF of Tributary Conservation (TC) ICS in 2019. The actual amount of TC ICS created by SNWA will be based on final accounting and verification.

[2] Pursuant to the 2007 Interim Guidelines, the state of Nevada may create up to 125,000 AF of Extraordinary Conservation (EC) ICS annually. SNWA has been approved to create up to 100,000 AF of EC ICS in 2019; however, pursuant to Section IV.B of Exhibit 1 to the *Lower Basin Drought Contingency Plan Agreement*, SNWA has committed to provide 50,000 AF of EC ICS creation capacity in 2019 for ICS creators in the state of Arizona. Should the state of Arizona fully utilize this 50,000 AF, the maximum amount of EC ICS that may be created by SNWA in 2019 is 75,000 AF. The amount shown above is the **estimated** amount of EC ICS SNWA will create based on the current forecast. This value is updated daily. The actual amount of EC ICS created by SNWA will be based on final accounting and verification.





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

Attachment 2 – Status of Razorback Sucker and Bonytail in Reach 2

Razorback Sucker

Monitoring of the razorback sucker population in Reach 2 has occurred on an annual basis for over 30 years. Studies conducted in the early 1990s suggested that this was the largest known population of wild razorback suckers within the species' range, with annual abundance estimates exceeding 40,000 individuals (Marsh et al. 2003). The wild population in Reach 2 experienced considerable decline since the mid-1990s (Dowling et al. 2014); however, a population of genetically diverse adult fish has been maintained through ongoing augmentation efforts.

Prior to 2005, approximately 98,000 razorback suckers were released into Reach 2 to conserve the extant population and its genetic diversity. As of September 2019, the LCR MSCP has released over 132,000 additional razorback suckers to augment this population. A relatively new method for population monitoring (i.e., remote passive integrated transponder [PIT] scanning) has been used since 2011 to successfully contact razorback suckers throughout Reach 2. The number of unique razorback suckers contacted annually by this method has trended upward since 2014 (Table 1). These monitoring efforts have greatly increased contact and recontact rates for native fishes, allowing for more accurate population estimates to be generated on an annual basis. Population estimates for the 2014–2019 monitoring years are presented in Table 2.

Table 1.—Razorback suckers contacted via remote PIT scanning; LCR MSCP Reach 2, 2014–2019

Year	Number of Unique Razorback Suckers
2014	2,632
2015	2,872
2016	3,128
2017	3,490
2018	3,471
2019	4,408

Table 2.—Razorback Sucker Population Estimates; LCR MSCP Reach 2, 2014–2019

Year	Population Estimate	95% CI
2013-14	3,284	3,067–3,516
2014-15	3,572	3,341–3,818
2015-16	3,656	3,418–3,912
2016-17	3,815	3,573–4,073
2017-18	3,471	3,365–3,576
2018-19	3,649	3,552-3,745

Spawning habitat for razorback suckers is characterized by relatively shallow, flat to gently sloping shoreline areas with clean gravel, cobble, or mixed substrates (Bestrewn 1990; Mueller and Marsh 1998; Kegerries et al. 2009; Kesner et al. 2012; Albrecht et al. 2013). Spawning typically occurs in 0.5–2 meters of water, but it has also been reported at depths of 10–20 meters in LCR reservoirs (Minckley et al. 1991; Holden et al. 1997, 1999; Valdez et al .2012). Four known spawning locations (i.e., attracting spawning groups of ≥ 100 fish) are currently monitored in Reach 2 on an annual basis (Table 3).

Table 3.—Razorback Sucker Spawning Locations; LCR MSCP River Reach 2

Name	UTM (E)	UTM (N)	Latitude	Longitude	River Mile
Black Bar	706780	3977568	35.920593	-114.708181	334
Yuma Cove	712669	3933587	35.523115	-114.654613	300
Tequila Cove	710610	3928238	35.475360	-114.678687	297
Halfway Wash	710652	3922776	35.426146	-114.679641	293

Bonytail

As of fiscal year 2019, the LCR MSCP has released 2,330 bonytail into Reach 2. These releases were initiated in fiscal year 2016 to gather information on post-stocking distribution, habitat selection, habitat use, and survival, with the goal of using this information to (1) indicate locations that may be better suited for stocking native fishes, (2) assist in developing a more robust monitoring network in terms of where to locate remote sensing equipment or other sampling gear to increase contact probabilities, and (3) to identify locations where native fishes aggregate. Research and monitoring efforts have returned only short-term recontact data, and few individuals have been contacted greater than 12 months post release. Due to the limited number of long-term recontacts, no population estimate is available for this reach.

Bonytail spawning habitat has generally been described as relatively shallow, near-shore areas with loose substrates of various sizes. In Reach 2, bonytail were historically observed spawning over gravel, cobble, and rocky substrates at depths of 1.5–3.5 meters (Jonez and Sumner 1954). Bonytail have rarely been contacted following stockings in the LCR, and no observations of physical spawning condition or activity have been documented in Reach 2. There are currently no know spawning locations for bonytail in the LCR.

Attachment 3 – Other Covered Species and Effects

Other Covered Species	Reason For No Effect From Increased Reduction In Flow Reach 2
Desert Tortoise *Gopherus agassizii*	Is not affected by flow related covered activities.
Humpback chub *Gila elegans*	The original LCR MSCP mitigated for impacts to Humpback chub in Lake Mead from full pool elevation down to water surface elevation 950 ft. Slight increase in water surface elevation changes from the additional storage would be within that range.
Flat-tailed horned lizard *Phrynosoma mcalli*	No existing habitat in reach 2 and Is not affected by flow related covered activities.
Relict leopard frog *Rana onca*	The original LCR MSCP analysis noted that the mainstem of the LCR in Reach 2 likely served as a movement corridor for the Relict leopard frog, and that changes in flow releases from Hoover Dam associated with implementation of flow-related covered activities could disrupt use of the corridor (e.g. cold water releases). The increase in reduction in flow would not affect the temperature of river flow beyond what was already analyzed.
Sticky buckwheat *Eriogonum viscidulum*	The original LCR MSCP mitigated for impacts to Sticky buckwheat in Lake Mead from full pool elevation down to water surface elevation 950 ft. Water surface elevation changes from this incremental analysis would be within that range.
Threecorner milkvetch *Astragalus geyeri* var. *triquetrus*	The original LCR MSCP mitigated for impacts to Threecorner milkvetch in Lake Mead from full pool elevation down to water surface elevation 950 ft. Water surface elevation changes from this incremental analysis would be within that range.