

## **Comments Submitted By Special Interest Groups and Non-Governmental Organizations**

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This section contains comment letters submitted by the following special interest groups and non-governmental organizations:

- G-1 Arizona Municipal Water Users Association
- G-2 Santa Cruz Water & Power District's Association
- G-3 Western Business Council for New Energy Technologies
- G-4 Southern California Water Committee
- G-5 Defenders of Wildlife, Environmental Defense, National Wildlife Federation, Pacific Institute, Sierra Club, Sonoran Institute, Western Resources Advocates
- G-6 Glen Canyon Institute
- G-7 Irrigation and Electrical Districts Association of Arizona
- G-8 Living Rivers
- G-9 Colorado River Energy Distributors Association

**arizona municipal water users association**

4041 north central avenue • suite 900 • phoenix, arizona 85012 • phone • (602) 248-8482 • fax (602) 248-8423

April 30, 2007

Regional Director  
Attn: BCOO-1000  
Lower Colorado Region  
U.S. Bureau of Reclamation  
P.O. Box 61470  
Boulder City, NV 89006

Dear Sir or Madame:

The Arizona Municipal Water Users Association (AMWUA) has reviewed the “Draft Environmental Impact Statement for Colorado River Interim Guidelines for Lower Basin Shortages and Coordinated Operations for Lake Powell and Lake Mead” (DEIS). For the reasons set forth in these comments, AMWUA supports selection of the Basin States Alternative as the preferred alternative in the final environmental impact statement and implementation of the Basin States Alternative through the final record of decision. Additionally, AMWUA endorses and supports the comments of the Arizona Department of Water Resources (ADWR) submitted on behalf of the State of Arizona.

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**Interest of AMWUA**

The AMWUA members--the Arizona Cities of Avondale, Chandler, Goodyear, Glendale, Mesa, Peoria, Phoenix, Scottsdale and Tempe, and the Town of Gilbert--collectively represent 3.29 million persons, or over 87% of the population of Maricopa County, Arizona. The AMWUA members have allocations for Central Arizona Project (CAP) Municipal and Industrial (M&I) priority water totaling 297,267 acre-feet, which is 46% of the total allocation of 638,823 acre-feet of CAP M&I priority water. The CAP is vital to the continuing economic growth and health of central Arizona in general and the AMWUA members in particular. Consequently, the AMWUA members have an especial concern regarding the frequency and magnitude of shortages for the lower Colorado River basin.

**AMWUA Supports the Basin States Alternative as the Preferred Alternative**

The Basin States Alternative, developed by the seven Colorado River Basin States, is a compromise alternative acceptable to each of these States. In selecting the preferred alternative and finalizing the record of decision, the Secretary of the Interior (Secretary) should recognize the value of this unique compromise. The Basin States Alternative does not require any additional statutory authorization and it is the only alternative that can be implemented immediately after the Secretary issues the final record of decision.

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A voluntary, non-profit corporation established by cities in the urban area of Maricopa County for the development of an urban water policy.

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The DEIS indicates, and the Bureau's presentation at the public hearings held in early April reiterated, that the Secretary's preferred alternative may be a hybrid of some or all of the alternatives identified in the DEIS. AMWUA does not support a hybrid of the DEIS alternatives. For example, a hybrid that prioritizes power generation over water supply is flawed or unacceptable for the reasons explained below. A hybrid alternative that provides for the land fallowing provisions of the Conservation Before Shortage Alternative is problematic from a funding perspective since the DEIS does not indicate or analyze how a land fallowing program described in the Conservation Before Shortage Alternative will be funded.

#### **AMWUA Water Management Programs**

The AMWUA members' location in the Sonoran Desert has historically required them to conservatively manage their water supplies. With enactment of the Arizona Groundwater Management Act of 1980 (GMA) and the GMA's restrictions on groundwater use, the AMWUA members initiated extensive and costly efforts to comprehensively:

- a. Evaluate the amount and reliability of their individual sources of renewable supplies;
- b. Augment their supplies; and,
- c. Develop and implement demand management programs related to both ongoing water conservation and drought response.

For decades, the AMWUA members have been actively planning and preparing to address water shortages. Indeed, the AMWUA members' water management plans are recognized nationally as models of effective planning to conserve water and ease the negative impacts of drought on the customers of municipal water systems. Adoption of the Basin States Alternative as the preferred alternative in the final environmental impact statement will provide the certainty necessary for the AMWUA members to continue the responsible planning necessary to address the adverse impacts that could occur during Colorado River shortages.

#### **Record of Decision Guidelines**

AMWUA's members expect and need the final record of decision to clearly and unambiguously set forth the guidelines that the Secretary will use to declare a shortage in the lower basin. The record of decision should identify and adopt guidelines consistent with implementation of the Basin States Alternative that the Secretary must follow in formulating each of the annual operating plans through 2026 to:

- a. Determine the conditions under which a shortage will be declared in the lower Colorado River basin;
- b. Determine the amount of water which will be released from Lake Powell to the lower basin;

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- c. Determine how much of the shortage will be borne by each of the three lower basin States and Mexico; and,
- d. Determine how much of the Arizona shortage will be borne by each of the Priority 4 water contractors located in Arizona pursuant to the Arizona recommendations identified below in the Lower Basin Shortage Sharing section of this letter.

The Basin States Alternative requires that the record of decision acknowledge that the lower basin States must agree to the terms and conditions for forbearing, if necessary, their rights to delivery of Colorado River water in order to allow for the development, storage and delivery of any Intentionally Created Surplus (ICS) as defined by the DEIS. AMWUA would object if the Secretary issued a unilateral authorization that allowed for the creation of an ICS.

Finally, the record of decision should state that the Secretary will consult with the seven basin States if the Secretary is considering declaring a shortage to the lower basin States exceeding 500,000 acre-feet. The goal of this consultation should be to minimize the impacts on the lower basin States in general, and on Arizona and the CAP in particular.

**Lower Basin Shortage Sharing**

As contemplated by the Basin States Alternative, Arizona and Nevada have finalized and executed a Shortage Sharing Agreement dated February 9, 2007. The preferred alternative and the record of decision must be consistent with this Shortage Sharing Agreement.

In 2004, ADWR established an intrastate process involving all interested and affected parties in Arizona to develop an Arizona position regarding shortage sharing between the CAP and the other Arizona Priority 4 Colorado River contractors located along the River. The Arizona position regarding intrastate shortage sharing is described in the “Director’s Shortage Sharing Workgroup Recommendation, October 24, 2006, (Revised) Final” and it is AMWUA’s understanding that the October 24, 2006 Recommendation has been transmitted to the Bureau by ADWR prior to the issuance of the DEIS, and that another copy is being transmitted by ADWR in their comments on the DEIS. The preferred alternative and the record of decision must also be consistent with this Recommendation.

**Statutory Considerations**

The Secretary should not adopt an alternative that prioritizes power generation ahead of water supply. Historically, and contrary to law, the Bureau’s models of Colorado River operations, the results of which have been used to develop the annual operating plans, have “protected” the minimum power pool at Lake Powell. Operation of Lakes Powell and Mead for generation of electrical energy at the expense of water supply is inconsistent with the provisions of the Colorado River Compact of 1922, the Boulder Canyon Project Act of 1928 and the Colorado River Storage Project Act of 1956. This reason alone argues against selection of the Reservoir Storage Alternative as the preferred alternative.

Like the Reservoir Storage Alternative, the Conservation Before Shortage Alternative requires statutory changes in order to be implemented. Creation of an ICS in Mexico would require a change in the 1944 water treaty between the United States and Mexico if the net effect is to provide for the delivery of water to Mexico in excess of the United States' treaty obligation. Moreover, any water released as a result of land fallowing in Arizona is subject to diversion by the CAP absent any agreement to forbear by the State of Arizona and the Central Arizona Water Conservation District (CAWCD).

#### The Yuma Desalting Plant

The DEIS analysis assumes that the Yuma Desalting Plant is not operating, thereby ignoring a water source of almost 100,000 acre-feet that could minimize the impact of future shortages. AMWUA's November 30, 2005 letter to the Bureau during the scoping process stated that the DEIS should assume full operation of the Yuma Desalting Plant, yet the DEIS does not indicate why the Bureau made the no operation assumption for the DEIS. Additionally, if there is an obligation to replace the bypass flows, then the final environmental impact statement should describe the obligation and cite the relevant requirement(s) establishing the obligation.

#### Economic Impacts on CAP Municipal Water Users

The DEIS is woefully inadequate in its explanation of the economic effects that would result from changes in deliveries of Colorado River water to municipal water users in Arizona. The DEIS all but dismisses these effects by concluding that "implementing statewide and local demand-side and supply-side strategies are expected to minimize adverse socioeconomic effects occurring during the maximum M&I shortage." (DEIS at p. 4-283)

As pointed out earlier, the AMWUA members have already taken aggressive and costly steps to address water shortages. Since enactment of the 1980 Groundwater Management Act, they have spent more than \$33 million on water conservation programs that include ordinances governing landscaping, plumbing retrofit rebate programs, leak detection and control programs, grant programs, and water rate increases. Consequently, the opportunity to make up for shortages in deliveries of CAP water through conservation programs is very limited.

Additionally, to ensure that adequate water supplies are available for their customers, the AMWUA members have also implemented comprehensive effluent reuse programs, adopted development impact fees, and established extensive recharge programs. All of these programs come at considerable expense. For example, the Arizona Water Bank (AWB) is storing water underground to firm the basic CAP M&I priority allocation. According to its 2006 Plan of Operation, the Arizona Water Banking Authority (AWBA) will have spent over \$62,000,000 through 2006 to store water in Maricopa County. These funds are a combination of ad valorem taxes collected in Maricopa County, pump taxes collected in the Phoenix Active Management Area, and a modest contribution from the State's general fund.

AMWUA members also rely on CAP Indian priority and CAP Non-Indian Agricultural priority water for a portion of their renewable water supplies. The members have been storing water independently of the AWB to firm this portion of their CAP supplies.

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The AWBA and the CAWCD have been working with local interests to develop a plan for recovery of the water stored by the AWB. When the recovery plan is developed and finalized, there will be additional costs incurred to recover the stored water. Moreover, the AMWUA members will incur significant costs to replace the shortfall in their CAP Indian and NIA priority supplies. 28  
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In summary, it is incorrect to assume that the socioeconomic impacts on the AMWUA members from changes in deliveries of CAP water can be minimized in any material way by demand-side and supply-side strategies. 30

**Other Issues**

1. The final environmental impact statement should recognize that the Southern Nevada Water Authority is planning on modifying its intakes at Lake Mead to provide the capability to withdraw water at an elevation of 856 feet starting in 2011. 31
2. The final environmental impact statement should note that while the guidelines that are the subject of the DEIS are considered interim and expire at the end of 2026, the impacts, especially the economic impacts, will carry over post-2026. 32

We appreciate the opportunity to comment on the DEIS. For the record, this letter is being transmitted via email with a paper original to follow.

Sincerely,

*Steven L Olson*  
Steven L. Olson  
Executive Director

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## Reponses to Comment Letter G-1

### G-1-1

Your comment is noted. No change to the Final EIS was necessary.

### G-1-2

Your comment is noted. No change to the Final EIS was necessary.

### G-1-3

Your comment is noted. No change to the Final EIS was necessary.

### G-1-4 through G-1-6

Your comment is noted. While Reclamation acknowledges that some of the elements considered in the action alternatives may require additional statutory authority to fully implement, we note that most do not and that they were all developed to address the purpose and need for the proposed federal action. Further, Reclamation notes that the Preferred Alternative can be implemented without additional statutory authority.

### G-1-7

As noted in Section 2.4.5 of the EIS, the Conservation Before Shortage proposal postulated several potential funding sources which the Department currently does not have the authority to implement in their entirety absent additional legislation. As such, the viability of this funding proposal is not known at this time and therefore there is some uncertainty as to whether all of the elements of the Conservation Before Shortage proposal can be implemented.

### G-1-8

Your comment is noted. The action alternatives, including the Basin States Alternative, all include a shortage guideline operational element that would specify when, and by how much, water deliveries will be reduced to water users in the Lower Basin during drought and low reservoir conditions thereby providing a greater degree of certainty to those water users and managers of the Colorado River Basin than continuing without the benefit of such guidelines.

### G-1-9 through G-1-12

The information requested is provided in Appendix S of the Final EIS. Reclamation has developed draft operational guidelines that are included in Appendix S of the Final EIS. The guidelines are anticipated to be finalized and adopted through the Record of Decision for this action. Following publication of this Final EIS, additional and updated information regarding the content and development of guidelines is anticipated to be provided to the public through the dedicated project website, (<http://www.usbr.gov/lc/region/programs/strategies.html>).



**G-1-13**

Your comment is noted. The Basin States Alternative, the Preferred Alternative and the proposed draft operational guidelines (Appendix S) include a provision for undertaking appropriate consultation, including with the Basin States, to discuss further measures that may be undertaken when Lake Mead is below elevation 1,025 feet msl.

**G-1-14**

Your comment is noted. The modeling assumptions in Section 4.2.7.1 of the EIS are consistent with the Arizona and Nevada Shortage Sharing Agreement.

**G-1-15**

Information presented in the Draft EIS has been modified in the Final EIS pursuant to this specific comment, as well as other public comments. As noted in Section G.4.6, the Shortage Allocation Model has been updated to reflect the Arizona Department of Water Resources Director's Shortage Sharing Workgroup recommendations.

**G-1-16 through G-1-18**

Your comments are noted. No change to the Final EIS was necessary.

**G-1-19**

See response to Comment No. G-1-4.

**G-1-20**

See response to Comment No. F-5-2.

**G-1-21**

Your comment is noted.

**G-1-22 through G-1-24**

See response to Comment No. F-4-9

**G-1-25 through G-1-30**

Your comments are noted. As described in Section 4.14.1.2 in the EIS, potential socioeconomic consequences of shortages occurring in the M&I sector were qualitatively assessed since it was not known to what degree a specific economic sector considered an M&I use would be affected. The effects on individual cities or communities are indeterminate for various reasons. Each city or community has a different mix of water supplies, and in most cases, have formulated a shortage or drought response plan that is specific to their respective community. Also, individual

response plans typically include varying combinations of demand-side and supply-side actions and these differ by community.

Several Arizona communities noted in their respective comments that their communities have invested in actions to offset future shortages and are contemplating further as yet undefined investments. Additionally, they expressed the importance that preferred alternative adopt the Director's Shortage Sharing Workgroup Recommendation. The recommendation represents the culmination of an intrastate public effort that established the appropriate, manageable volume of shortages for Arizona and process for allocating shortages between the CAP and equivalent priority Arizona mainstream water users. As noted in Section 3.4.6.1 and Appendix G of the EIS, the modeling assumptions and analysis for the distribution of shortages within Arizona are consistent with that recommendation. The recommendation coupled with Arizona's existing statewide and local demand-side and supply-side strategies would minimize the impacts of shortages to the M&I sector.

**G-1-31**

Your comment is noted. As described in Section 5.2.2 and analyzed in Section 5.2.7 of the EIS, SNWA's proposed Intake No. 3 project is being constructed to ensure that SNWA can maintain full system capacity at lake levels as low as 1,000 feet msl. As such, the modeling assumptions with respect to SNWA's ability to pump from Lake Mead below an elevation of 1,000 feet msl are still appropriate.

**G-1-32**

The information requested is provided in Section 4.2.2. of the Final EIS.

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**SANTA CRUZ WATER & POWER DISTRICTS ASSOCIATION**

41630 W. Louis Johnson Dr., Maricopa, AZ 85239  
Phone (520) 876-4982 • Fax (520) 424-3281

Central Arizona Irrigation and Drainage District  
Maricopa-Stanfield Irrigation and Drainage District  
Electrical District No. 3  
Electrical District No. 4



Dan Thelander, President  
Bryan Hartman, Vice-President  
DeWitt Weddle, Vice-President  
Mark Hamilton, Secretary/Treasurer  
Grant R. Ward, General Manager  
Paul R. Orme, General Counsel

April 27, 2007

Ms. Jayne Harkins, Acting Regional Director  
U. S. Bureau of Reclamation  
Lower Colorado Region  
Attn.: BCOO-1000  
P. O. Box 61470  
Boulder City, NV 89006-1470

RE: Santa Cruz Water & Power Districts Association's Comments Regarding the Draft Environmental Impact Statement, Colorado River Interim Guidelines for Lower Basin Shortages and Coordinated Operations for Lake Powell and Lake Mead ("Draft EIS")

Dear Ms. Harkins:

The purpose of this letter is to provide comments on the above referenced Draft EIS. The Santa Cruz Water & Power Districts Association (SCWPDA) consists of two irrigation districts and two electrical districts, which combined represent over 200,000 acres, all located in Pinal County, Arizona. The two member irrigation districts (Maricopa-Stanfield Irrigation & Drainage District and Central Arizona Irrigation & Drainage District) are the largest Central Arizona Project ("CAP") agricultural excess water contractors, and together are allocated more than 50 percent of the 400,000 acre foot CAP Agricultural Pool.

SCWPDA's concerns about the Colorado River Interim Shortage Guidelines in general, and the Draft EIS in particular, stem from the vulnerable position of its member irrigation districts to Colorado River Lower Basin shortages. Given CAP's lower priority with respect to California, and agriculture's lower priority within the CAP, these shortage concerns are self-evident. For this reason, SCWPDA was an active participant in the Arizona Department of Water Resources Director's Shortage Sharing Workshop which led to Arizona's contribution to the Basin States Alternative set forth in the Draft EIS. Consequently, SCWPDA urges that Reclamation adopt the Basin States Alternative as the Preferred Alternative in the final EIS and Record of Decision.

G-2

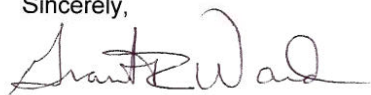
Ms. Jayne Harkins, Acting Regional Director  
U. S. Bureau of Reclamation, Lower Colorado Region  
April 27, 2007  
Page 2

Of the various alternatives considered in the Draft EIS, the "Reservoir Shortage Alternative" is of most concern to our Districts. This Alternative would clearly violate Article IV (b) of the Colorado River Compact which subordinates the impoundment of water for generation of electrical power to direct consumption of water for "agricultural and domestic purposes". The proposed cuts to Lower Basin water supplies would have an enormous negative impact on CAP agriculture. 2 3

SCWPDA supports the official comments of ADWR Director, Herbert R. Guenther, on the discussion of the various alternatives discussed in the Draft EIS and will not elaborate further on these comments. In addition, SCWPDA supports the anticipated comments of the Arizona Municipal Water Users Association ("AMWUA") and the Colorado River Energy Distributors Association ("CREDA). We support CREDA's views that power users should not be required to fund non-power water conservation programs such as is suggested in the Conservation Before Storage Draft EIS Alternative. 4 5 6

In conclusion, SCWPDA supports the Basin States Alternative as the Preferred Alternative to be adopted in the final EIS and Record of Decision.

Sincerely,



Grant R. Ward  
General Manager

- c: Robert W. Johnson, Commissioner, U. S. Bureau of Reclamation
- Rick Gold, Regional Director, U. S. Bureau of Reclamation, Upper Colorado Regional Office
- Larry Walkoviak, Deputy Regional Director, U. S. Bureau of Reclamation, Lower Colorado Regional Office
- Herbert Guenther, Director, Arizona Department of Water Resources
- Sid Wilson, General Manager, Central Arizona Water Conservation District
- Leslie James, Executive Director, Colorado River Energy Distributors Association
- Steve Olson, Executive Director, Arizona Municipal Water Users Association

G-2

## Reponses to Comment Letter G-2

### **G-2-1**

Your comment is noted. No change to the Final EIS was necessary.

### **G-2-2**

Your comment is noted. No change to the Final EIS was necessary.

### **G-2-3**

Your comment is noted. No change to the Final EIS was necessary.

### **G-2-4**

Your comment is noted. No change to the Final EIS was necessary.

### **G-2-5**

Your comment is noted. No change to the Final EIS was necessary.

### **G-2-6**

Your comment is noted. No change to the Final EIS was necessary.



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**Colorado River Draft EIS  
Comments from the Western Business Council for New Energy Technologies**

Penelope Purdy  
Director, Clean Energy Programs  
WBCNET  
1625 Broadway Suite 950  
Denver CO 80202  
(303) 592-4066 (office)

**Introduction**

The U.S. Department of Interior and its bureaus and agencies deserve applause for tackling the very difficult issue of how the Colorado River Basin states should share the pain of future droughts. Government officials at the federal and state levels displayed the political courage by trying to resolve the potential resource conflicts before the next crisis arrives.

The Western Business Council for New Energy Technologies believes that economic prosperity and environmental protection go hand in hand. Our members work in Arizona, Colorado, Nevada, New Mexico, Utah and Wyoming, which also are six of the seven Colorado River Interstate Compact states. For the American West, the proper use of water is fundamental to the concept of sustainable, environmentally responsible business.

In this regard, we are concerned that there are significant omissions in the U.S. Bureau of Reclamation’s draft environmental impact statement of February 2007, dealing with the Colorado River Interim Guidelines for Lower Basin Shortages and Coordinated Operations for Lakes Powell and Mead.

Our overarching criticism is that the document is not forward-looking, but instead shows that the Bureau assumes climate conditions will remain more or less similar to ones found in the historical climate records. However, new scientific data prove the Bureau’s assumption to be a risky one that could render the EIS’ conclusions invalid, undermining the proposed alternative plans.

We are further concerned that the Bureau and the Western Area Power Administration have not considered the interplay of water supply and energy resources. Specifically, many states in the Colorado River drainage, including the lower basin states, continue to rely on, and are considering additional construction of, conventional coal-fired power plants, whose water demands are both large and inflexible. The increased energy demands for water from the Colorado River and other regional sources could reduce the region’s ability to respond to changing water use patterns and climate conditions.

The Bureau itself has noted that doing nothing is unrealistic, as outlined in the No Action Alternative in Section 2.2. The Water Supply Alternative, detailed in Section 2.5, is similarly unacceptable because it only delays the inevitable need for the Bureau and the Basin states to make tough decisions.

G-3

Ultimately, we believe that a final record of decision should be based on the Conservation Before Shortage Alternative, as shown in Section 2.4. This alternative could be blended with the Basin States Alternative described in Section 2.3, which also acknowledges the need for better conservation of resources. Indeed, with the prospect of looming shortages, efficient water use is simply prudent business.

**Climate change**

The EIS fundamentally errs by not adequately considering how changing climate conditions will affect water supply and water use in the Colorado River basin. In Chapter 1, covering the EIS' Purpose and Need, the Bureau says that there will be no effect on climate change. In Chapter 3, the EIS also says that there will be no cumulative impacts. Both statements are wrong.

Only in Appendix N does the EIS discuss climate change in any depth. Even then, the document only considers data produced from tree rings and other past climate research. It does not discuss the numerous studies showing that future climate conditions may be much drier and hotter in the Southwest than they have been anytime in the past.

The dearth of discussion is surprising in an organization such as the Bureau, which prides itself on sound engineering and scientific principles.

The omission is especially puzzling because credible climate change studies are readily available in the public domain, such as *the U.S. Climate Change Research Program of 2002*. In spring 2007 the respected journal *Science* (Jian Lu & Seeger 2007) warned that future droughts associated with climate change will be unlike anything the region has previously experienced. Instead, droughts could become a near-permanent fixture in the Southwest. "It will be like a permanent 1930s or 1950s drought." (Seeger, quoted by reporter Katy Human, *the Denver Post*, April 6, 2007 p. 2B)

Arrayed against such warnings, it is inexcusable for the most important EIS on water shortages in our region to ignore the climate change issue.

**Energy use**

Energy policy is the proverbial elephant in the room regarding Western water supplies. Basin states have some of the fastest-growing populations in the country, with Nevada and Arizona among the top two. As the states' populations grow so will their demands for water and energy resources. Moreover, if the Southwest does, as predicted, enter into chronic drought conditions then demand for electricity likely will increase as more residents and businesses turn up their air conditioners.

Realistically, water policy cannot be separated from energy use. The Bureau, cooperating federal agencies such as WAPA and the governments of the Basin states clearly have a responsibility for determining energy resources and use patterns, so the EIS should analyze how their decisions on water use relate to their similarly important decisions regarding energy production and consumption.

We applaud efforts by some basin states to embrace alternative energy sources: Arizona has stepped up its use of solar and Colorado has boosted its commitment to wind power, for example. These projects will enable states to meet their energy needs without consuming large quantities of the arid region's limited water supplies.

By contrast, water devoted to coal-fired power plants will make it harder for water managers at the federal, state or local levels to also meet the demands of other industries

such as tourism, agriculture, light manufacturing and housing developments. Unlike tourism, agriculture and municipal use, water use by coal-fired power plants is inflexible unless the plants reduce their power output. Water use by coal plants thus represents a hard demand that is at odds with the need for flexibility in water supply from the Colorado River and non-system sources, as described in the Basin States and the Conservation before Shortage alternatives. The EIS should analyze whether the construction of new conventional coal-fired power plants in the Basin states will reduce the sought-after flexibility in water supplies.

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There are many to make electricity: wind, solar, biomass and hydro, as the Bureau and WAPA have done for years. But in our arid region, there are only a limited number of places to find water for uses other than energy production, and even those supplies may be at risk as the climate changes. The EIS needs to reflect these realities.

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G-3

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## Reponses to Comment Letter G-3

### G-3-1 through G-3-3

Your comment is addressed in the general response pertaining to climate changes and hydrologic variability in the introduction to Volume IV of the Final EIS. Section 4.2 of the Final EIS has been enhanced and two new appendices (Appendix T and Appendix U) have been added to provide additional information regarding the potential impacts of climate change and hydrologic variability.

### G-3-4 through G-5

As noted in Section 2.6 of the EIS, the Reservoir Storage Alternative was developed in coordination with the cooperating agencies and other stakeholders. This alternative would keep more water in storage in Lake Powell and Lake Mead to benefit power and recreation interests and protect against future shortages. Section 4.2 addresses information regarding the potential impacts of climate change and hydrologic variability, Section 4.11 discusses the potential effects on electrical power resources, and Chapter 5 discusses the potential cumulative impacts of the proposed federal action.

### G-3-6 and G-3-7

Your comment is noted. No change to the Final EIS was necessary.

### G-3-8 and G-3-9

Your comments are noted. No change to the Final EIS was necessary.

### G-3-10 through G-3-14

Your comment is addressed in the general response pertaining to climate changes and hydrologic variability in the introduction to Volume IV of the Final EIS. Section 4.2 of the Final EIS has been enhanced and two new appendices (Appendix T and Appendix U) have been added to provide additional information regarding the potential impacts of climate change and hydrologic variability.

### G-3-15 through G-3-19

Your comments are noted. Section 4.11 describes the potential impacts to energy production from the proposed federal action. An analysis of current and future energy use and patterns in the West, the effects of construction of new conventional coal-fired power plants, and alternative energy sources are outside the scope of this study.



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Kenneth Petersen

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Water Quality Task Force

Stacy Roscoe

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Dee Zinke

Calleguas Municipal Water District

Legislative Task Force

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**EXECUTIVE DIRECTOR**

Joan Anderson Dym

April 23, 2007

Ms. Jayne Harkins  
Acting Regional Director  
Lower Colorado Region  
Bureau of Reclamation  
Attention: BCOO-1000  
P.O. Box 61470  
Boulder City, Nevada 89006-1470

4/25/07  
BCOO/AC  
1003



10184 Sixth Street - Suite C  
Rancho Cucamonga, CA 91730  
Phone (909) 980-4760  
Fax (909) 980-2628

**Draft EIS Colorado River Interim Guidelines for Lower Basin Shortages and Coordinated Operations for Lake Powell and Lake Mead**

Dear Ms. Harkins:

On behalf of the Southern California Water Committee (SCWC), I am please to submit our comments on the Draft EIS on the proposed adoption of specific Colorado River interim guidelines for Lower Basin shortages and operations for Lake Powell and Lake Mead. With the purpose of proposed federal action to improve Reclamation's management of the Colorado River, the SCWC supports the Basin States Alternative as the preferred action alternative. 1

Important to California is the ability to coordinate the operations of Lake Powell and Lake Mead because, with that coordination, water shortages would be minimized in the Lower Basin, while also avoiding the risk of curtailments of Colorado River water in the Upper Basin. In addition, the Basin States Alternative allows for water storage in Lake Mead, which benefits not only California, but also Arizona and Nevada. Water stored in Lake Mead stays in the Colorado River system, rather than that water being diverted by Metropolitan Water District of Southern California to Diamond Valley Reservoir for storage. 2 3 4 5

The Basin States Alternative calls for an extension of the Interim Surplus Guidelines for water deliveries from Lake Mead to 2026 which would provide assurances that Metropolitan Water District could access supplies above California's basin apportionment of 4.4 million acre-feet of water. Given the potential for water supply shortages in the Sacramento-San Joaquin Delta, the other major source of water for Southern California, the Basin States Alternative would provide a measure of insurance in case of a catastrophic loss of water in the Delta. 6 7

The Southern California Water Committee appreciates the opportunity to comment on the draft EIS and look forward to a preferred alternative that will provide California a greater degree of predictability in the amount of water that can be delivered from the Colorado River in future years. 8

Very truly yours,

*Joan Anderson Dym*  
Joan Anderson Dym  
Executive Director

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## Responses to Comment Letter G-4

### **G-4-1 through G-4-5**

Your comments are noted. No change to the Final EIS was necessary.

### **G-4-6 through G-4-8**

See response to Comment No. G-1-8.

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DEFENDERS OF WILDLIFE · ENVIRONMENTAL DEFENSE · NATIONAL WILDLIFE FEDERATION  
PACIFIC INSTITUTE · SIERRA CLUB · SONORAN INSTITUTE · WESTERN RESOURCE ADVOCATES

April 30, 2007

VIA ELECTRONIC DELIVERY ([strategies@lc.usbr.gov](mailto:strategies@lc.usbr.gov)) AND U.S. MAIL

Regional Director  
Lower Colorado Region  
Bureau of Reclamation  
Attention: BCOO-1000  
PO Box 61470  
Boulder City, NV 89006

**Re: Comments of NGO “Conservation Before Shortage” Consortium on Colorado River Interim Guidelines for Lower Basin Shortages and Coordinated Operations for Lake Powell and Lake Mead, Draft Environmental Impact Statement**

Dear Regional Director:

We greatly appreciate the inclusion of the “Conservation Before Shortage” Alternative by the U.S. Bureau of Reclamation (Reclamation) as one of the five alternatives under consideration in the “Draft Environmental Impact Statement on Colorado River Interim Guidelines for Lower Basin Shortages and Coordinated Operations for Lake Powell and Lake Mead,” dated February, 2007 (DEIS). We also greatly appreciate Reclamation’s technical support and assistance, including its extensive modeling work, as we developed and revised the Conservation Before Shortage proposal.

We offer the following comments on the DEIS on behalf of Defenders of Wildlife, Environmental Defense, National Wildlife Federation, Pacific Institute, Sierra Club, Sonoran Institute, and Western Resource Advocates, collectively representing more than four million members nationwide.

**I. Critical Preferred Alternative Components**

The importance of developing shortage guidelines for Colorado River management cannot be overstated. System storage has decreased steadily through the past eight years of drought, while basin-wide uses continue to increase. We commend Reclamation’s efforts to develop shortage guidelines, and urge Reclamation to adopt a policy that will facilitate increased flexibility in water use.

We point Reclamation specifically to two key elements of the “Conservation Before Shortage” alternative (CBS) that we believe should clearly be incorporated into the preferred alternative for the “Colorado River Interim Guidelines for Lower Basin Shortages and Coordinated Operations for Lakes Powell and Mead.” As discussed further in our comments below, the analysis provided in the DEIS supports the inclusion of both of these elements in the preferred alternative.

First, the preferred alternative should allow for a program of *voluntary and compensated forbearance* as the volume of water in storage at Lake Mead drops below key thresholds. The

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benefits of this approach, relative to the involuntary and uncompensated water shortages proposed in all other alternatives, are multiple. Rather than cutting water deliveries to the same users each time, the voluntary program would be available to all Lower Basin and Mexican water users, dispersing the impacts of reduced water use. Participants would be compensated for forbearance, decreasing or eliminating the economic impacts of the guidelines. Finally, the federal government would replace bypass flows in times of decreased reservoir storage, when they are most needed. This approach, which was recommended as a part of the YDP/Ciénega de Santa Clara Workgroup recommendations,<sup>1</sup> offers a more efficient way to meet the bypass flow obligation.

Second, the preferred alternative should accommodate an *extended program for Intentionally Created Surplus* (ICS), including the reservation of additional banking capacity in Lake Mead for this purpose. This program should expressly allow for the participation of the U.S. federal government, entities other than existing Colorado River contractors (including U.S. NGOs), and should leave the door open to future participation by Mexico in the event that the United States and Mexico adopt an appropriate international framework for this participation.

By allowing the U.S. federal government to participate in the ICS program, Reclamation will introduce critically-needed flexibility into the Lower Colorado River system, allowing a mechanism by which water could be acquired for a variety of purposes – including accumulation of bypass flow replacement credits, water for environmental purposes, shortage mitigation, and other needs. Similarly, by allowing entities other than just existing Colorado River contractors to participate in the ICS program, the federal government would open the door to private conservation efforts to dedicate water to environmental restoration projects. Perhaps most importantly, by leaving the door open for Mexico to create and deliver ICS credits, Reclamation would not preclude new water exchanges that could benefit water users in both the United States and Mexico, the Mexican creation of pulse flows for the Colorado River Delta, and binational agreements about shortage sharing on the Colorado River that might not be politically feasible in the absence of a binational ICS program.

We urge Reclamation to define a preferred alternative and final guidelines in the Final Environmental Impact Statement and Record of Decision that include these two policies.

## II. Comments on CBS

In the following comments we further discuss the benefits of certain elements of CBS, identify various legal and technical issues associated with the alternatives presented in the DEIS and the presentation of CBS, and discuss several ways that the analysis of environmental and socioeconomic impacts of the various alternatives presented in the DEIS could be improved.

### *Relative Benefits of an Expanded ICS Program*

In their proposal for ICS, the basin states have taken an important step forward in Colorado River management. With the river over-allocated, the best way to accommodate new uses (and

<sup>1</sup> See *Balancing Water Needs on the Lower Colorado River: Recommendations of the Yuma Desalting Plant/Ciénega de Santa Clara Workgroup* (April 22, 2005), available at [http://cals.arizona.edu/AZWATER/publications/YDP\\_report\\_042205.pdf](http://cals.arizona.edu/AZWATER/publications/YDP_report_042205.pdf).

existing municipal and industrial (M&I) uses that are not predicated on firm supplies) is to re-allocate water. ICS will be an important new tool facilitating this re-allocation. The three basic premises of the ICS mechanism, that water can be transferred between a seller/lessor and a buyer (as allowed by the forbearance agreements), that it can be stored over time in Lake Mead (as allowed by the proposed banking arrangements), and that it can be delivered upon request, are critical to developing a water market in the Lower Colorado River basin.

Although the basin states have proposed limiting the creation of ICS to existing contractors, CBS proposes that other entities should be able to participate in the ICS mechanism, including U.S. federal agencies; state agencies; private entities, including U.S. non-governmental organizations; Mexican federal agencies; and Mexican water users and non-governmental organizations.

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The benefits of expanding the ICS mechanism are multiple, including a probable increase in water stored in Lake Mead, opportunities for improving riparian habitats throughout the Lower Colorado River through dedicated instream flows, as well as an opportunity for Mexico to improve its management of Colorado River water. The benefits of this approach are partially, but not completely, discussed in the DEIS. Reclamation’s analysis illustrates the first two of these benefits:

- **More water remains in storage, decreasing the probability of shortages, and increasing hydropower generation.** Reclamation’s analyses consistently suggest that the greater the potential size of the ICS mechanism, the higher the probable elevation at Lake Mead (table 4.3-25) and the lower the probability of shortages in any given year (figure 4.4-2 and table 4.4-4). Reclamation’s analysis also suggests that CBS would result in modest increases in hydropower generation at both the Glen Canyon power plant and the Hoover power plant when CBS is compared to both the no action and the Basin States alternatives (tables 4.11-4 and 4.11-10).
- **New opportunities to create and improve Colorado River riparian habitats.** An extended ICS policy could allow an entity such as a conservation organization or the Mexican government to generate ICS for the purpose of creating a dedicated pulse flow below Morelos Dam, which would result in a considerable improvement in riparian conditions on the southernmost reach of the Colorado River. The DEIS analysis notes this benefit (tables 4.8-1 and 4.8-8) as the greatest possible positive impact to biological resources for any of the contemplated alternatives, with “relatively high flows expected past Morelos Diversion Dam, which would benefit the riparian corridor” (DEIS at 4-172) including the neotropical migratory birds that rely on native riparian forest, such as the endangered Southwestern willow flycatcher and Yuma clapper rail. As discussed further below, we believe this analysis should be expanded.

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There are additional benefits to an expanded ICS mechanism that are not discussed in the DEIS:

- **Mexico gains ability to improve Colorado River management.** As discussed in detail elsewhere below, at present, Mexico does not have the ability to store Colorado River water, and must use its entire allocation on an annual basis. Multiple examples can be found in the Lower Basin states demonstrating the advantages of storage for water management. Offering

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Mexico this benefit would allow Mexico to address urban water supply challenges, and could open the door to U.S. entities purchasing temporary ICS credits in Mexico. 13

- **United States enters negotiations with Mexico over Colorado River shortages with something to discuss beyond unilateral imposition of shortage guidelines.** While noting that any determination of shortages with respect to deliveries to Mexico is not a part of the proposed federal action, and that any such determination would be made in accordance with the 1944 Treaty, Reclamation acknowledged the probability of a shortage agreement with Mexico by incorporating it into modeling assumptions. As Reclamation develops new rules for domestic shortages, the State Department will need to negotiate new rules for shortages to Mexico. An expanded ICS program may well be perceived by Mexican negotiators as a benefit, and may help negotiators for the United States reach a satisfactory agreement regarding Mexican shortages. 14

*Benefits of Voluntary, Compensated Forbearance Compared to Involuntary, Uncompensated Shortage*

CBS would provide compensation to willing sellers/lessors of water to forbear use, while the Basin States alternative would eliminate water deliveries, without compensation, to water users with low priority rights. The benefits of the CBS approach are numerous, and are only partially discussed in the DEIS:

- **Involuntary shortages are rare.** During the term of the guidelines, Reclamation’s analysis projects that the probability of involuntary shortages under CBS remains less than 10%, while the probability under the Basin States’ alternative is as high as 35% (figure 4.4-1 and table 4.4-2). 15
- **The economic impact of reduced water use is significantly diminished or eliminated completely.** Because of the low probability of involuntary shortages under CBS, any reductions in water use are likely to be compensated. Although Reclamation has not yet analyzed the economic impact of compensated forbearance (see further comments below), we expect that such analysis would show that the income received by water users for forbearance would substantially offset any negative impacts of reduced water use. Because CBS would solicit proposals for forbearance from willing sellers, water users would be able to choose whether or not to participate, and could make this decision based on whether or not participation would benefit them economically. 16
- **Reductions in water use are spread among a larger pool of water users.** Under the Basin States’ alternative, reductions in water use would always be imposed on the same water users, in the same order of priority. In a stage 1 shortage (by far the most probable, see tables 4.4-5 through 4.4-9), California water users are not included in the pool of impacted water users, and prescribed shortage volumes would be imposed repeatedly on select water users in Arizona, Nevada, and Mexico. Under CBS, water users throughout the Lower Basin and Mexico would have the opportunity to participate in a voluntary and compensated forbearance program, and water users could choose whether or not to participate in the forbearance program in any given year. As discussed further below, these benefits are not adequately recognized in the DEIS. 17

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- **The low rates of return on some crops suggest that the cost of the forbearance program could be less than \$75/acre-foot.** Reclamation’s analysis suggests that Arizona water users growing wheat, cotton, and alfalfa hay produce varied economic results with every acre-foot of water used generating anywhere from a loss of \$46.43 to a profit of \$70.48 (see table H-2). These and other water users could have an economic incentive to participate in such a forbearance program. As discussed below, Reclamation’s analysis on this subject could be substantially improved. 18
- **Decreased probability of shortages imposed on urban water users with low priority rights.** While Reclamation’s analysis of impacts to urban water users with low priority rights is limited, the DEIS notes that shortages to municipal and industrial water users of up to 283,000 acre-feet (af) could occur (DEIS at 4.14.3.1). Because of the very small probability of shortages under CBS, it is unlikely that urban water users would be denied water under that alternative. However, there is a considerable probability of shortages to urban users under the Basin States alternative. 19
- **The federal government would replace bypass flows in a cost-efficient manner.** CBS would have the volume of water conserved by the federal government under voluntary forbearance agreements count as bypass flow replacement. Reclamation has acknowledged the federal obligation to replace bypass flows (see letter from Reclamation to interested public, September 22, 2005) and is studying how the agency should proceed. By implementing a program during conservation conditions (as defined in CBS) to conserve water through payments to voluntary participants in a forbearance program, Reclamation could ensure that bypass flow replacement would occur during times of low water supply, and that bypass flow replacement water would not be lost during flood control releases. Moreover, Reclamation could avoid other, more costly alternatives for bypass flow replacement. 20

The remainder of this letter addresses changes Reclamation could make to improve the DEIS.

*Characterization of CBS Alternative in the DEIS*

Apart from Appendix K, in many instances the DEIS does not accurately or fully present CBS, which materially limits the comparison and analysis of CBS. Accordingly, we ask that Reclamation properly characterize and analyze CBS in the Final EIS and formulate the preferred alternative only after CBS has been properly characterized as follows: 21

- As discussed above, CBS proposes that involuntary and uncompensated water shortages on the lower Colorado River should be managed and avoided through voluntary conservation or reductions in water deliveries that are compensated through market mechanisms. In Chapter 2 and Appendix M that fundamental concept is properly expressed as “voluntary conservation” or “voluntary, compensated reductions in water use,” but in Chapter 4 and elsewhere CBS is improperly characterized as the imposition of “voluntary shortages.” Compensated reductions in deliveries under CBS should be consistently termed as “voluntary water conservation” or “compensated reductions in water use” where appropriate in any discussion of the preferred alternative and the final EIS. 22

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An essential component of CBS is that the mechanism for ICS would be opened up to federal and state agencies, to non-governmental organizations in the U.S., and to federal and state agencies, traditional water users, and non-governmental, conservation water users in Mexico. Clearly, any international extension of this market mechanism to Mexico must go through diplomatic channels, as is repeatedly recognized by CBS and Reclamation's commentary. The DEIS does not fully disclose this key difference between CBS and the Basin States' alternative (see, for example, reference to "unassigned" ICS credits in table 2.4-1). That first discussion of CBS should disclose the other entities that could participate in the more extensive water banking proposed by CBS. To the extent such international water banking could be beyond the scope of the proposed action it should not be precluded; such up-front disclosure could be qualified and footnoted in the same way as the modeling assumptions specific to CBS in the chapter on environmental consequences (DEIS at 4-11) and in Appendix M (page M-1). In addition, to fully serve its informational role, an EIS should identify all relevant, reasonable mitigation measures that could improve the project, even if they are outside the jurisdiction of the agency. See 40 C.F.R. §§ 1502.16(h), 1502.14(c).

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- The DEIS should clarify that under CBS up to 600,000 acre-feet of ICS could be generated by federal agencies just to avoid that magnitude of shortage in the U.S., while up to 325,000 acre-feet of ICS could be generated by other entities in any one year to restore environmental flows in both the U.S. and Mexico, and possibly to avoid shortages to municipal, industrial, and irrigation uses in Mexico. The total amount of ICS that can be banked by such other entities in any one year including all banking by federal agencies to avoid shortages should therefore be corrected to 925,000 acre-feet (Tables 2.4-1 and M-4). To the extent that the banking of ICS by current contractors under the Basin States Alternative reduces the need for banking by federal agencies to avoid shortages, however, this cap will not be reached under CBS.

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This greater scope of water banking as proposed by CBS should be not be obscured, as it is by Table M-5, whose headings indicate that such ICS generation is limited to environmental flow restoration. The heading for the second column of that table should be corrected to illustrate the international water banking proposed by ICS to meet municipal, industrial, and irrigation water needs in Mexico, and so that the last column illustrates banking to provide environmental flows in the U.S., including the limitrophe below Morelos Dam. Figure P-61 should be clarified to separate out the deliveries of banked water to municipal, industrial, and water users who would divert such deliveries at Morelos Dam, from all water that would flow past Morelos Dam as deliveries of ICS water or otherwise.<sup>2</sup>

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- We also understand that the interplay of the CBS proposal to generate 600,000 acre-feet of ICS to avoid that magnitude of shortage in the U.S., while at the same time maintaining the elevation of Lake Mead above 1000 feet so as to not cut-off the physical supply to Las Vegas, has not been modeled correctly. That is, the modeling now simply imposes involuntary shortages whenever necessary to keep Lake Mead above 1,000 feet, without first

<sup>2</sup> When Figure P-61 is so clarified, we expect to see the dramatic reduction of flows past Morelos Dam under the Basin States alternative to be contrasted with the delivery of banked water to maintain critical flood pulses to the Delta's river ecosystem.

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seeking to develop up to a full 600,000 acre-feet of ICS to avoid involuntary shortages. This modeling assumption overstates the shortage volumes that could be required under CBS and understates its benefits in comparison to other alternatives.<sup>3</sup> To properly characterize CBS, the model should assume that the ‘absolute protect 1000’ involuntary shortage provision would be triggered only if 600,000 acre-feet of voluntary conservation would not be sufficient to keep Mead above an elevation of 1000 feet. 29

Moreover, involuntary water shortages in the U.S. greater than 600,000 acre-feet may be implied in the Basin States alternative in the event that Lake Mead would be drawn below 1000 feet of elevation during an extreme drought and the physical supply to Las Vegas is cut-off. This alternative cannot be fairly compared to CBS unless the involuntary shortages greater than 600,000 acre-feet inherent in the Basin States alternative are added to the operational modeling and all related analyses. 30

- To assess the longest possible stretches of river where flows might be reduced, the operational modeling for the DEIS creates the impression that all ICS proposed by CBS is generated in Mexico even for the replacement of bypass flows in the U.S (DEIS at M-8 and 9). So that the actual parameters of CBS are not mistaken with that analytical assumption, those parameters should be disclosed simultaneously. 31

CBS proposes that the ICS to replace bypass flows could be generated in both the U.S. and in Mexico. CBS also presumes that ICS for environmental flows in the U.S. or Mexico or to meet other Mexican water needs can be generated in either the U.S. or Mexico, and for such ICS to be delivered for use in either the U.S. or Mexico, as illustrated in Appendix K.3.<sup>4</sup> One might expect that most ICS generated in the U.S. would be applied to manage U.S. shortages, and most ICS generated in Mexico to be applied to flow restoration and other water needs in Mexico, but CBS would not be unilateral and would keep the door open to substantial cross-border investments, water banking, and transactional innovations. We recommend that the FEIS include a sensitivity analysis of changes that would occur if ICS were distributed more broadly across users downstream of Lake Mead. 32 33

- Along with leaving the impression that ICS would only be generated in Mexico, the DEIS fails to explain a basic mechanism in CBS. When ICS is generated in Mexico in one year for delivery back to Mexico in another, the deliveries to Mexico under the Treaty with the U.S. should be reduced by the amount of the ICS in the year that it was generated, but then in the year that it was delivered back to Mexico, the amount of the ICS delivered would be in addition to all deliveries obligated by the Treaty. 34
- The modeling of CBS may properly apply the 5% system charge by not assessing this charge against the bypass flow account until ICS is generated to avoid water shortages in the U.S., 35

<sup>3</sup> This mis-modeling may explain much of the difference between CBS and the Basin States alternative in the probabilities of involuntary shortages and consequent socio-economic impacts summarized in Tables 4.14-3 and 4.14-4.

<sup>4</sup> CBS does not include water transactions entirely within Mexico to restore base flows, but such transactions could be combined with CBS and riparian land restoration for a comprehensive plan to conserve the river dependent ecology of the Delta.



and not assessing it against any ICS that is generated and delivered to meet Mexican river flow or other needs, but that modeling assumption could be confirmed. The assessment of the 5% system charge against all other generation of ICS under CBS might then be footnoted as it is for the Basin States alternative in Table M-3, or the 5% charge added to Table M-3, as it was for Table M-4, so that is clear that the system charge is not applied differently across these alternatives.

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- The DEIS misses several important aspects of the approach to funding forbearance when the water surface elevation at Lake Mead declines, which evolved after we submitted the original CBS proposal in 2005 and is described in the proposal we submitted in 2006 (CBS II). Federal funding would not be limited to the volume of voluntary water conservation needed to replace bypass flows in any year in which such conservation was triggered (page 2-13), but would be sought for all such conservation up to the maximum storage of 1.5 million acre-feet of ICS generated by federal agencies, because of the benefits of both bypass flow replacement and environmental flow restoration. The funding for banking additional ICS beyond that maximum for U.S. agencies would then be shared 50/50 by U.S. agencies and Lower Basin power and water users, and the water and power users would split their share 50/50 (see Appendix K, page K-5). Such cost sharing offers a strong incentive for state, private, and international investment in ICS for environmental flow restoration and provides an initial basis for discussion of how to distribute such costs equitably.

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It appears that the DEIS misapplies this funding concept to suggest that CBS would impose a \$20-\$100 surcharge for every acre foot of hydropower generation in the Lower Basin, which is incorrect. The concept of hydropower users sharing in perhaps 25% of the cost of generating ICS for environmental flow restoration is only applicable after a maximum of 1.5 million acre-feet of ICS is banked by federal agencies, and therefore would not be automatically applied or at all times. Such cost sharing also is illustrative and needs to be adjusted in proportion to the benefit to hydropower generation associated with the greater water banking at Lake Mead proposed by CBS, as indicated by Table 4.11-29,<sup>5</sup> and all other benefits of ICS, as properly characterized.

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### III. Comments on the Draft Environmental Impact Statement

#### *Legal Considerations*

As demonstrated in CBS, we encourage efforts to increase flexibility in Colorado River management. Such flexibility, however, should not come at the expense of the Secretary of the Interior's environmental authorities and obligations nor should the Secretary relinquish his role as water master in lower Colorado River management to achieve such flexibility. If Reclamation and this EIS make clear that the creation, storage, and delivery of ICS is within its authority to oversee and implement, then Reclamation should adopt the ICS program that is most environmentally beneficial. Reclamation must also expand the scope of the EIS to include the direct, indirect, and cumulative impacts of all who may participate in the ICS program.

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<sup>5</sup> Per Table 4.11-29, 13% more hydropower energy is generated under CBS than the Basin States alternative and the present value is about \$14 million more. The benefits to hydropower generation mostly at Lake Mead could also be greater over the interim period.

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Both the DEIS and this letter note that various aspects of the alternatives, such as funding mechanisms in CBS, may require additional legislative authority. What has not been addressed is the potential need for additional federal rules or guidelines administering the ICS program as proposed in the CBS, Basin States, and Reservoir Storage Alternatives. The DEIS implicitly assumes that each alternative would implement the ICS program consistently, not altering the rules under which an entity would participate in ICS, change the relative size of any of the states' ICS banks, or, fundamentally, interpret the Law of the River differently than another alternative.

The DEIS, however, largely is silent as to how the Secretary would administer the ICS program. The Secretary has a prominent role in managing the Colorado River and will play a decisive role in implementing any of the alternatives, including ICS. An ICS program will entail a range of federal actions, from oversight and accounting to storage and delivery, possibly in the form of agreements to reduce water use and create ICS credits, to store ICS credits, and to delivery ICS credits. To ensure that this EIS process enables the adoption of the ICS program in CBS and sets the stage for future site-specific actions under the ICS program, it is critical that Reclamation expand the scope of the EIS.

*Scope of the DEIS*

The scope of an EIS depends not only on the range of actions and alternatives, but on the range of impacts resulting from each alternative, including direct, indirect, and cumulative impacts. 40 C.F.R. § 1508.25. The scope of the DEIS is particularly important for those actions which may require additional NEPA analysis and which may wish to tier to the instant EIS. See 40 C.F.R. §§ 1502.20, 1508.28 (Tiering is a process of addressing a broad program or proposal in a programmatic environmental impact statement and analyzing a site-specific proposal related to the initial proposal in a subsequent NEPA document).

The DEIS overlooks several geographic regions, and thus environmental resources, that potentially may be affected by the alternatives and their direct, indirect and cumulative impacts. For example, CBS contemplates voluntary conservation by any water user within the Lower Basin or Mexico. Because the conservation would be voluntary, and not based strictly on relative priorities of water entitlements, the impacts analyses must consider reductions in water use across the entire spectrum of water uses and users in the Lower Basin and Mexico. These omissions are most pronounced in the discussion of the affected environment and environmental consequences for biological resources, socio-economics, and land use. See e.g., DEIS at 3-3 (including a narrow set of service areas in the affected environment); DEIS at 3-27 (expecting no change to Yuma area drainage flows); DEIS at 3-127 (limiting study area to those where "shortage" may occur); DEIS at 3-131 (limiting study area to MWD service area); DEIS at 4-261 (excluding Nevada and California from analysis); DEIS at Table 4.14-1; DEIS at 4-281 (concluding no effect to agricultural production in California or Nevada because no shortage); DEIS at 4-282; DEIS at 5-14 (exclusion of decreased flows and altered timing of flows in the Muddy River due pumping of groundwater under Coyote Spring Valley that may then be wheeled through or banked as ICS in Lake Mead); and DEIS at Table M-4 (exclusion of decreased river and spring flows, altered timing of flows, and significant wetland impacts from pumping 80,000 acre-feet/year of groundwater whose return flow credits are then banked as ICS at Lake Mead). The discussions of the affected environment and environmental consequences

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are presently deficient because the full scope of the alternatives and their impacts are not examined.

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### *Climate Change*

As Reclamation considers various policies to manage droughts in the Lower Basin, it would be useful to have an understanding of how climate change might impact water supply. The Intergovernmental Panel on Climate Change issued a report<sup>6</sup> in early 2007 documenting the high level of scientific confidence in projections that the Colorado River basin will change significantly over the next century, both warming and drying. Under all scenarios, the report suggests an increase of one-to-two degrees Celsius for the southwestern United States from 2020-2029, as compared to 1980-1989. Such a rise in temperature will increase evaporative losses and evapotranspiration demand throughout the basin, coinciding with the proposed term of Reclamation's surplus and shortage guidelines. Moreover, the report documents that more than 90% of the models examined agree that winter precipitation in the southwestern United States will decline by 10-20% by 2090-2099, as compared to 1980-1989. While this timeframe is longer than that contemplated by the shortage guidelines, it suggests that precipitation changes might occur within the period of the guidelines. Some models show a significant drying of the Southwest U.S. as soon as the 2021-2040 period.<sup>7</sup> As the United States Geological Survey recently said, "We need to look at a large range of possible futures for water and [evaluate] how well will our designs, plans and allocations work under a whole range of climate scenarios – because we can't narrow it down."<sup>8</sup>

It would be useful for Reclamation to include in the FEIS a robust attempt to consider the impacts of all alternatives in consideration of the projected impacts of climate change. Moreover, we suggest that this analysis not be buried in an appendix, but that it should be discussed in the central text of the EIS, concomitant with the absolutely paramount importance of planning realistically for climate change.

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The sensitivity analysis presented in appendix N (Analysis of Hydrologic Variability Sensitivity) is useful, as it expands the hydrologic variability modeled based on recent historic and paleo-hydrologic data. However, it is not adequate as a substitute for meaningful modeling that represents the expected impacts of climate change.

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### *Term of the Proposed Guidelines*

In our scoping comments we suggested that shortage guidelines should not be interim. However, recent IPCC and other climate change projections suggest that hydrologic assumptions driving

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<sup>6</sup> International Panel on Climate Change, 2007. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change, Summary for Policymakers, available at [http://www.ipcc.ch/WG1\\_SPM\\_17Apr07.pdf](http://www.ipcc.ch/WG1_SPM_17Apr07.pdf). See also: P.C.D. Milly, K. A. Dunne, and A. V. Vecchia, 2005. Global pattern of trends in streamflow and water availability in a changing climate. *Nature* **438**: 347-350; M. Hoerling and J. Eischeid, 2007. Past Peak Water in the West. *Southwest Hydrology* **6**: 18-19,35; and N. Christensen and D.P. Lettenmaier, 2007 (in review). A multimodel ensemble approach to assessment of climate change impacts on the hydrology and water resources of the Colorado River basin. *Hydrology and Earth System Sciences*.

<sup>7</sup> Seager, et. al., 2007. Model projections of an imminent transition to a more arid climate in southwestern North America. *Science Express*. April 5.

<sup>8</sup> Lucy Kafanov, *Water Managers Must Gird for Extreme Conditions*, E&E News PM (April 27, 2007).

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the current analysis (namely, that past hydrology is a reasonable predictor of future flows) might not be reasonable or informative. Given the potential for climate change to dramatically alter Colorado River hydrology – probably for the worse – we now believe that the limited lifespan of the shortage policy will be appropriate. 49

Nonetheless, it would have been useful to see the effects of leaving the alternatives in place past 2026. Projecting hydrologic impacts out to 2060 while arbitrarily assuming that shortage guidelines would not be extended only masks the likely conditions of the system beyond 2026. 50

**Salinity**

The DEIS neglects to explain why the CRSS salinity module (DEIS at 4-131 and F.1) was not expanded or modified to analyze changes in salinity below Imperial Dam. Projected salinities at the Northerly International Boundary (NIB) should be included in the final EIS, as it bears directly on salinity management measures in the Yuma area. As noted on Figure ES-1, the NIB clearly falls within the geographic scope of the action; salinity itself is a recognized water quality parameter analyzed for upstream reaches. 51

Pursuant to Minute 242, the United States has agreed to deliver Colorado River water to Mexico upstream of Morelos Dam with an annual average salinity of no more than 115 ppm ± 30 ppm over the annual average salinity of the Colorado River waters which arrive at Imperial Dam. Projecting the salinity at NIB would very likely distinguish among the alternatives, and would also be of great value in projecting the ability of the U.S. to meet a recognized treaty obligation. Whether an alternative may or may not adversely affect the ability to meet legal obligations would aid in the selection of a preferred alternative; the extent of adverse impact would also contribute to the significance of the impact. See 40 C.F.R. § 1508.27(b)(10). 52

The single greatest factor increasing the salinity of the Colorado River between Imperial Dam and NIB is the return of agricultural drainage to the river. In recent years, the salinity differential has approached the maximum value set by Minute 242. Diminishing the volume of ‘non-storable flows’ at the border will further increase the challenge of meeting the differential. CBS presumably could reduce the volume of these drainage flows or increase the delivery of water to Mexico from Lake Mead, thereby decreasing the river’s salinity at NIB and facilitating Reclamation’s ability to meet the salinity differential. Modeling a range of sources of voluntary reductions under ICS and CBS, including some that would otherwise discharge brackish return flows to the Colorado River between Imperial Dam and NIB, would provide better information to the reader and allow for better analysis of the alternatives. 53

Table ES-2 (DEIS at ES-18) should include a row describing projected salinities at NIB under each of the alternatives, and/or the salinity differential relative to Imperial Dam. The discussion of salinity at the NIB in Section 3.5.1 should be expanded, and should include a figure depicting annual salinities and flow at the border, similar to the figures included for other points along the river. 54  
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**Biological Resources**

We recognize that Reclamation has taken the position that it is under no obligation pursuant to NEPA to evaluate the impacts of this federal action on environmental values in Mexico. 56

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However, we nevertheless suggest that some consideration of these impacts is warranted, if nothing else as a matter of international comity. This is particularly true in light of the fact that, of all of the portions of the Colorado River most likely to be directly affected by this action, the limitrophe and the Mexican portions of the Colorado River Delta will likely bear the greatest risk. 57

Conservation groups have defined restoration of the riparian corridor of the Colorado River delta as a major priority,<sup>9</sup> and have identified restoration of pulse flows to the delta as a central requirement for success. There are long-standing debates over how this water should be supplied, but no disagreement about the benefits of such pulse flows. By adopting an ICS program that leaves the door open to an international agreement that would allow for the generation and delivery of ICS as dedicated flow for the delta, the federal government would facilitate the best remaining opportunity to restore native habitat on the Colorado River, impacting the 23 miles of the delta's riparian corridor in Arizona, and the final miles of the river down to its outlet in the Upper Gulf of California. 55

The significance of restoring the riparian corridor below Morelos Dam is immense, as this is one of the only reaches of the Lower Colorado River where an opportunity exists to use pulse flows to create overbank flooding necessary to sustain viable native cottonwood and willow habitat. Above Morelos Dam, scheduled year-round water deliveries create high base flows in a relatively large channel, such that very large floods would be necessary to re-create such floods throughout most of the corridor. Below Morelos Dam, there are no scheduled deliveries for water users, base flows are low in a relatively small channel, such that relatively small floods, such as those contemplated in the CBS proposal, could provide the necessary overbank flows. Please see our letter to Reclamation, dated February 15, 2007, regarding the Environmental Assessment for the Lower Colorado River Drop 2 Storage Reservoir Project, for additional information on the environmental resources and affected environment in the limitrophe reach.<sup>10</sup> 59 60

Several existing and planned habitat restoration projects would benefit directly from pulse flows in the delta, including 20 acres already planted with native vegetation between the railroad bridge and the Carranza Crossing, with 4,400 more acres planned for restoration, 90 acres planned in the near term for Hunters Hole, and 100 acres planned for the near term on the Cocopah Reservation. The entire riparian corridor of the Colorado River below Morelos Dam has been identified as a priority for restoration in the long term.<sup>11</sup> 61

Of particular concern for Mexico in the Basin States alternative will be the provisions related to the implementation of shortages on the Lower Colorado. Although the 1944 Treaty provides that Mexico is to share "proportionately" with U.S. users in times of "extraordinary drought," the precise meaning of this provision remains unclear, and it has never been invoked since the time 62

<sup>9</sup> Sonoran Institute et al., 2005. Conservation Priorities in the Colorado River Delta: Mexico and the United States.

<sup>10</sup> The exceedingly brief description of baseline conditions for wildlife in the limitrophe yields a similarly deficient impact analysis. For example, the DEIS (at 4-200) states that there will be no impacts to special status fish, plants or amphibians from the NIB to SIB because none exist. There are, however, several special status species in this reach, as demonstrated in Table 3.2-4 of the Drop 2 EA. The DEIS is also completely silent as to special status birds, such as the Southwestern willow flycatcher and the Yuma clapper rail. The EIS must account for impacts – adverse and beneficial – to these species.

<sup>11</sup> Conservation Priorities in the Colorado River Delta: Mexico and the United States (2005; Sonoran Institute et al).

of the Treaty’s execution. The Basin States Alternative unilaterally and precisely defines a set of proposed parameters under which shortages would be implemented against the Mexican allocation. We recognize that Reclamation has not itself proposed any specific shortage amount to Mexico; it has only adopted a potential shortage value as a modeling assumption. However, this modeling assumption demonstrates that Mexico will bear a significant risk of shortage under the Basin States Alternative (as well as other alternatives).

Because Mexico has no readily available mechanisms to reduce or mitigate against shortage impacts on its users (such as reservoir storage or water banking), shortages in Mexico will generate impacts as significant, if not more significant, than those that would arise among low-priority users in the U.S. These impacts would translate directly to environmental impacts in the Colorado River delta, which relies primarily on excess deliveries and agricultural drainage flows for its water supply.

Just as significantly, both the Basin States alternative and CBS will create incentives to further increase the efficiency of U.S. water delivery systems by providing opportunities to receive ICS credits for the funding of these projects (e.g., Southern Nevada Water Authority’s proposed funding of the Drop 2 reservoir). On an individual and cumulative basis, these projects will reduce normal-year deliveries to Mexico by decreasing the volume of non-storable flows. Combined with gradually increasing efficiency in agricultural water use throughout the system, the restriction of ICS as proposed by the Basin States will continue to pose challenges for the maintenance of critical environmental values in the delta, which receive virtually all of their current water supplies from agricultural return flows, excess deliveries, canal leakage, and occasional flood events.

Regardless of whether Reclamation is required to consider environmental impacts south of the border, Reclamation need not ignore environmental benefits that might be associated with a given alternative, particularly where those benefits would implicate endangered species and migratory birds in the United States. Indeed, a primary advantage of CBS is that it would provide a storage mechanism that could be used to improve environmental conditions in Mexico (assuming the adoption of appropriate international agreements), some consideration of these benefits, however speculative, seems appropriate.

We urge Reclamation to expand the discussion of biological resources in section 3.8.1.4 and potential negative and positive impacts of the proposed alternatives in section 4.8.4.7. For your consideration, we include the following relevant information.

*Biological resources below NIB*  
The remnant riparian and marsh wetlands areas in the Colorado River delta in Mexico, and the limitrophe area in the U.S. provide crucial habitat to several threatened and endangered species listed in Mexico and the U.S. and a key stopover along the Pacific Flyway. These wetlands provide habitat essential to over 350 species of land and aquatic migratory birds on their seasonal traverse of the continent. A recent survey of birds found densities to be 10 times higher in the Colorado River delta, than on the river above Morelos Dam.<sup>12</sup> Endangered species, including

<sup>12</sup> Hinojosa-Huerta, 2006. Conservation of Birds in the Lower Colorado River Delta, Mexico. Dissertation from the University of Arizona, Tucson.

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the Yuma clapper rail and the Southwestern willow flycatcher, as well as the Yellow-billed cuckoo (under consideration for federal protection) rely on Colorado River habitat south of NIB, as do a number of species listed as wildlife of special concern by the state of Arizona. Ten species of breeding birds and fourteen species that use the Colorado River south of NIB as stopover or wintering ground have acquired legal protection status under Mexican laws (Endangered, Threatened, or Special Protection).<sup>13</sup>

**Table 1.**<sup>14</sup> Bird species under a protection category in Mexico or of conservation concern in the Colorado River delta.

Species	Protection Category	Breeding Status	Relative Abundance	Temporal Presence
Least Grebe	SP	NB	CA	SU
Laysan Albatross	TH	NB	RA	SP
Black Storm-Petrel	TH	NB	CO	PE
Least Storm-Petrel	TH	NB	CO	PE
Reddish Egret	SP	BR	RA	SU
Roseate Spoonbill	NP	NB	EX	WI
Fulvous Whistling-Duck	NP	BR	EX	SU
Brant	TH	NB	UN	WI
Bald Eagle	EN	NB	UN	WI
Sharp-shinned Hawk	SP	NB	UN	WI
Cooper's Hawk	SP	NB	UN	WI
Harris' Hawk	SP	NB	UN	WI
Red-shouldered Hawk	SP	NB	CA	WI
Swainson's Hawk	SP	NB	UN	WI
Ferruginous Hawk	SP	NB	RA	WI
Peregrine Falcon	SP	NB	UN	WI
Prairie Falcon	SP	NB	RA	WI
California Black Rail	EN	BR	RA	PE
Yuma Clapper Rail	TH	BR	CO	PE
Virginia Rail	SP	BR	CO	PE
Sandhill Crane	NP	NB	EX	WI
Snowy Plover	TH	BR	UN	SU
Heermann's Gull	SP	NB	CO	PE
Gull-billed Tern	NP	BR	CO	PE
Elegant Tern	SP	BR	RA	SU
Least Tern	SP	BR	UN	SU
Yellow-billed Cuckoo	NP	BR	UN	SU
Western Screech-Owl	NP	BR	RA	SU
Short-eared Owl	SP	NB	RA	WI
Gilded Flicker	NP	BR	EX	SU
Southwestern Willow Flycatcher	NP	BR	EX	SU
Bell's Vireo	NP	BR	RA	SU
Lucy's Warbler	NP	BR	EX	SU
Summer Tanager	NP	BR	EX	SU
Large-billed Savannah Sparrow	SP	BR	CO	SU

<sup>13</sup> See Table 2 in Diario Oficial de la Federación (DOF), 2002. Norma Oficial Mexicana NOM-059-ECOL-2001, Protección ambiental-Especies nativas de México de flora y fauna silvestres-Categorías de riesgo y especificaciones para su inclusión, exclusión o cambio-Lista de especies en riesgo. Secretaría de Medio Ambiente y Recursos Naturales. México, D.F. Marzo 6.

<sup>14</sup> From Hinojosa-Huerta, 2006. Four codes are given for each species: **Protection Category** in Mexico (SP – Special Protection, TH – Threatened, EN – Endangered, NP – No Protection), **Breeding Status** (NB – Non-breeding, BR – Breeding), **Relative Abundance** (EX – Extirpated, CA – Casual, RA – Rare, UN – Uncommon, CO – Common), and **Temporal Presence** (WI – Winter, SP – Spring, SU – Summer, PE – Perennial). Abundance categories follow M.A. Patten, E. Mellink, H. Gómez de Silva, and T.E. Wurster. 2001. Status and taxonomy of the Colorado Desert avifauna of Baja California. *Monographs in Field Ornithology* 3:29-63.

The importance of the Colorado River riparian corridor south of NIB for the conservation of birds has been recognized both nationally and internationally. In Mexico, a portion of the delta's wetlands are protected by the Upper Gulf of California and Colorado River Delta Biosphere Reserve.<sup>15</sup> The delta is also an Important Bird Area in Mexico, and a priority site for the conservation of biodiversity as decreed by the National Commission on Biodiversity.<sup>16</sup> This ecosystem has additionally been recognized as a wetland of international importance by the Ramsar Convention,<sup>17</sup> and is part of the Western Hemisphere Shorebird Reserves Network.<sup>18</sup>

A century ago, the cottonwood-willow forest was very common in the Colorado River delta. Currently, only approximately 7,500 acres of cottonwood-willow forest remain. Most of the present vegetation in the riparian corridor has been regenerated by flood releases from the U.S. over the last 20 years. These areas of native vegetation have been maintained by non-storable flows from the U.S. and Mexico. Reclamation estimates an average of more than 70,000 acre-feet/year of deliveries in excess of Treaty requirements at NIB (see Drop 2 Draft Environmental Assessment, November 2006), some of which are passed directly below Morelos Dam, and some of which reach the riparian corridor via wasteways.

The riparian corridor is used by migrating species, and thus its ecological value cannot be considered in isolation. Neotropical migratory songbirds travel through this region on their journey to northern breeding areas in the U.S. and Canada and to their wintering grounds in southern Mexico and Central America. These species migrate along the Sonoran coast of the Gulf of California, and the Colorado River delta provides their first opportunity to stop in native riparian habitat where food and cover are abundant. The rarity of cottonwood-willow forest in this reach of the migration route—populations of riparian obligates have been significantly reduced on the Lower Colorado River—adds significantly to the importance of the remaining Colorado River riparian corridor below Morelos Dam.

While there is a distinct difference between the quality of Colorado River riparian habitats below and above Morelos Dam, it remains important to recognize the connectivity of the water source and the potential for connectivity in habitat. The abundance of water birds in the delta's riparian corridor has been increasing during recent years, with the creation of lagoons and marshes. Several species of waterfowl are now common in the area, with an estimated 2,000-4,000 thousand individuals each winter, in particular Mallard, American Widgeon, Northern Pintail, Green-winged Teal, and Cinnamon Teal. The riparian corridor also provides unique habitat types (freshwater river banks) for some sensitive species, such as the Spotted Sandpiper.

Flood control releases and over-deliveries, as well as groundwater and local agricultural returns are all important water sources for the Colorado River riparian corridor south of NIB, and each of these water supplies might be impacted as system efficiency improvements are implemented.

<sup>15</sup> SEMARNAP. 1995. Programa de Manejo Reserva de la Biosfera del Alto Golfo de California y Delta del Río Colorado. Secretaria del Medio Ambiente, Recursos Naturales y Pesca, Publicacion Especial 1, México D.F.

<sup>16</sup> M. Cervantes, M.J. Román, y E. Mellink. 1999. AICA: NO-17 Delta del Río Colorado. En: Benítez, H., C. Arizmendi, y L. Márquez. Base de datos de las AICAS. CIPAMEX, CONABIO, FMCN y CCA. (<http://www.conabio.gob.mx>).

<sup>17</sup> Ramsar Convention Bureau. 1998. See [http://www.iucn.org/themes/ramsar/about\\_infopack-2e.htm](http://www.iucn.org/themes/ramsar/about_infopack-2e.htm)

<sup>18</sup> Western Hemisphere Shorebird Reserve Network. 1993. Western Hemisphere Reserve Network Site Profiles. WA publication No. 4, Wetlands for the Americas, Manomet and Buenos Aires.



Significantly, the CBS alternative creates a mechanism to deliver conserved water to the riparian corridor south of NIB. 74

*Socio-Economic Impacts*

One significant benefit of CBS as compared to any other alternative under consideration in the DEIS is that the first 600,000 acre-feet of potential “shortages” are avoided under CBS through voluntary, compensated forbearance rather than involuntary shortages imposed on lower-priority users. The existence of a compensation mechanism clearly limits the extent of economic impact that will be associated with a “water delivery reduction,” since the individual farmer or water user that experiences the reduction receives fair market compensation for voluntarily undertaking the reduction. Properly designed, such a mechanism should have the effect of mitigating economic impacts to individual farmers, local farm economies and labor markets, and local tax bases. 75  
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Under market conditions, forbearance should be distributed preferentially to those uses of water that produce the lowest economic returns. As such, one would anticipate that low-value crops would be fallowed before any higher-value crops or municipal uses. To the extent that farmers or other users seeking to participate in such a program might be able to obtain higher returns for their water via forbearance than they could via the normal use of that water, these users would realize greater economic benefits from voluntary conservation than they would otherwise receive.

These same assumptions cannot be made for involuntary shortages, since these will be governed by the water right and contract priority systems within each state. Within Arizona, for example, the existing system of priorities among CAP and the various on-river users would leave on-river municipalities exposed to significant shortages well before lower-value, higher-priority agricultural uses, and virtually every user on the CAP canal would be exposed to shortages prior to any of the present perfected right holders in the state. Moreover, even within the agricultural community, agricultural users would be reduced based on the relative priority of their rights. As such, CAP contracts for high-value agricultural users could be reduced before contracts or higher priority on-river rights dedicated to low-value agricultural crops. A market based program could also reflect the additional value of senior water right or contract priorities and tends towards the reduction of the lowest value and lowest priority users, but those choices would be made in the marketplace. 77

In addition, the benefits and/or costs of voluntary conservation efforts would not necessarily accrue in just one state – for example, although few if any involuntary shortages would ever reach California under the Basin States alternative, farmers and other water users in any of the Lower Basin states could potentially participate in voluntary fallowing, depending on market demand. Under CBS, the door would be left open to potential Mexican participation as well – mitigating the socio-economic and environmental impacts from involuntary shortages in Mexico and avoiding international conflict over the unilateral imposition of shortages. 78  
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The DEIS makes clear that once shortages occur, there is a significant likelihood that they will be sustained over multiple years. Involuntary shortages will necessarily be distributed to low-priority users for long periods, causing sustained economic disruptions in the communities where

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those users are located. By contrast, voluntary conservation will not necessarily fall on the same users year after year, since individual users will be able to decide whether or not they can and should participate in voluntary conservation or fallowing efforts each year. 80

Insofar as the DEIS has followed existing priority schedules within Arizona when assigning involuntary shortages and has not evaluated the greater geographic and more flexible distribution of voluntary conservation, it has underestimated both the economic impacts associated with involuntary shortages under the Basin States alternative and the relative benefits of voluntary conservation under CBS. In analyzing socio-economic impacts, the DEIS implies that data on cost of water and on market prices for irrigation forbearance are needed to compare the Basin States alternative and CBS (DEIS at 4-264 through 266). In fact, no cost of water or market data were considered in analyzing the impacts of the involuntary shortages imposed under either alternative, while the same partial farm budgets that were applied to compare the socio-economic impacts of involuntary shortages in the agricultural sector in Arizona, could be applied to quantify a monumental difference in the socio-economic impact of these two alternatives. That is, the net agricultural income from voluntary conservation at a large scale would not be lost under CBS, and would offset such direct socio-economic losses from the involuntary shortages that could be imposed under the Basin States alternative. Institutionalizing the rotational elements of voluntary conservation and not permanently retiring irrigation would also offset much more of the indirect socio-economic losses. 81  
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Although it may not be possible to quantify all the socio-economic benefits of CBS, the preferred alternative should not be formulated without recognizing them clearly and concretely. 85

**CBS Funding**

The DEIS notes that “the viability of the Conservation Before Shortage program funding proposal is not known at this time. Reclamation does not have the authority to implement all facets of this proposal and additional legislation would be necessary to gain such authority.” (DEIS at 2-13). While we fully recognize that some aspects of CBS would require new legislative authority to implement, we would also note that with year-to-year appropriations, the funding viability of any federal program is not known with certainty. Key aspects of both CBS and the Basin States alternative are contingent on the outcome of future international diplomacy, which is currently unknown. 86

This blanket statement also fails to recognize the fact that the authority and funding for one major element of CBS – the bypass flow replacement component – is better known. Reclamation does have a mandate, or at least authority and some annual funding, to engage in compensated water reductions on the Lower Colorado River. Under the Colorado River Basin Salinity Control Act, 43 U.S.C. § 1574, the replacement of the annual MODE bypass flow is a “national obligation” for which Reclamation is responsible. Until recently, this obligation was satisfied by the lining of the Coachella Valley Canal; however, at this point it is once again an active federal obligation. As such, the consideration of a compensated mechanism for reducing water use - at least to the extent of the national bypass flow replacement obligation – is entirely consistent with the existing requirements of federal law. We note that Reclamation is currently considering several potential mechanisms for bypass flow replacement resulting from the work 87  
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of the YDP/Ciénega de Santa Clara Working Group. These include a voluntary fallowing program that would operate in a manner essentially similar to that proposed by CBS. 90

Moreover, Reclamation has the ability in a NEPA analysis to consider alternatives that are outside its jurisdiction, *see* 40 C.F.R. § 1502.14(c), or require legislation for implementation. *See City of Sausalito v. O'Neill*, 386 F.3d 1186, 1208-09 (9<sup>th</sup> Cir. 2004) (cautioning that an alternative may be reasonable and not excluded from an EIS even if it requires additional legislative action); *Natural Resources Defense Council v. Morton*, 458 F.2d 827, 837 (D.C. Cir. 1972) (reasoning that “[t]he mere fact that an alternative requires legislative implementation does not automatically establish it as beyond the domain of what is required for discussion, particularly since NEPA was intended to provide a basis for consideration and choice by the decision-makers in the legislative as well as the executive branch”). 91

#### *Environmental Justice*

The action alternatives’ potential environmental justice impacts merit greater consideration and description in the FEIS. Other sections in the DEIS assess potential impacts over a range of shortage volumes. Instead, section 4.15 uses only one example, of the potential job loss of a 500,000 acre-foot shortage, in an effort to suggest that potential effects on environmental justice communities would be negligible. This is insufficient and unsubstantiated. 92

#### *Expanded Opportunities for Bi-National Conservation*

The inclusion of an expanded ICS program and a federally-controlled bank allotment in Lake Mead that would allow for U.S. federal, future Mexican participation, and/or non-contractor participation in ICS will also produce a series of potential benefits that deserve consideration in the NEPA process. 93

The Basin States alternative is largely concerned with water delivery operations between and among the Basin states, particularly the states of the Lower Basin. However, there are other interests that could potentially be met through U.S. federal participation in a Lake Mead banking program, including obtaining temporary water supplies for federal reservations, environmental programs (including MSCP), salinity control needs, protection of the power head at Hoover Dam or of recreational values, speculative accumulation of bypass flow replacement or other credits, or providing a reserve supply for water exchanges. This same mechanism could be used by current non-contractors to meet private water supply needs as well.

Reclamation’s modeling clearly demonstrates that there would be no net increase in shortage risk associated with the maintenance of a federal bank allotment; quite to the contrary, the modeling shows a net benefit from the existence of such a bank insofar as this would tend to keep reservoir levels in Mead somewhat higher than would be expected with the smaller banking allotments provided by the Basin States Alternative. Given this net benefit to water users and the significant ancillary benefits that could be realized through a federal allotment, the inclusion of such a mechanism in the final preferred alternative adopted through the NEPA process is appropriate. 94

It should also be noted that the inclusion of a federal banking allotment and ICS program would be consistent with and build on the Basin States Alternative, as it would not alter the rules under which the Basin States would participate in ICS, change the relative size of any of the states’ ICS 95

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banks, or require interpretations of the various provisions of the Law of the River different than those implicated by the Basin States Alternative. All of the activities discussed above would seem to be well within Reclamation’s inherent river regulation authority under the Boulder Canyon Project Act. 95

Obviously, any Mexican participation in an ICS program would require appropriate amendments to the current international framework to allow for temporary reductions or increases in Treaty deliveries. These could clearly be accomplished via the adoption of a new Minute to the Treaty of 1944 by the International Boundary and Water Commission. 96

Since these amendments to the Treaty framework are not currently in place, Reclamation cannot assume that such programs will in fact be established in the future. However, insofar as some elements of the Basin States proposal have expressly contemplated Mexican participation in shortages, we suggest that some consideration of the potential benefits of Mexican participation in the NEPA process is warranted, since the implementation of the Seven States Agreement on which the Basin States Alternative is premised – most notably the proposed shortage policy and proposed policies for unilateral water exchanges – will already require consultation with Mexico and/or the adoption of a new Minute. Other opportunities for Mexican participation could be considered in the same diplomatic process. 97

As discussed in the white paper attached to the CBS submittal, *Taking ICS to Mexico*, significant benefits for U.S. water users, Mexican water users, and the environment could potentially be derived from extending proposed policies related to ICS, system efficiency improvements, and water exchanges to include water users in Mexico. Such a program could provide significant assistance in resolving difficult issues related to urban, agricultural, and environmental water supplies in Mexico, while opening enormous opportunities for both U.S. and Mexican water users to obtain water supplies via funding of irrigation efficiency improvements, the construction of urban water infrastructure, water supply replacement or enhancement, desalination, and other projects. 98

These credits could be used to firm up urban water supplies in both countries, engage in long-studied environmental restoration projects in the Delta, and increase flexibility in Mexico’s agricultural sector – creating economic, environmental, and social benefits in both countries while offering the United States and Mexico a venue for cooperation in the otherwise contentious area of water management at the border. These opportunities would clearly help to offset the negative impacts to Mexico that might otherwise be associated with a shortage strategy.

Given the potential benefits, we urge Reclamation to leave the door open to such a program in the preferred alternative and the ROD, and include both an unassigned banking allotment and a broader ICS mechanism. 99

***Individual Technical Corrections to the DEIS***

p. 3-17 delete “to construct” from quoted material 100

p. 4-76 lines 13-19 appear out of place. Are they a repeat of p.4-41 lines 16-22? 101

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- p. 4-164 section 4.8.2.2 discussing NIB to SIB should refer to pulse flows below Morelos Dam rather than “excess” flows as ICS for delta would by definition be a dedicated flow for a beneficial use, and therefore not “excess.” 102
- p. 4-170 lines 15-17 statement re: volume of water passing Morelos being rare [*sic*] and unimportant for vegetation and wildlife is false. See our comments on the Drop 2 draft EA for documentation of the importance of these flows. 103
- p. 4-170 line 39 why would CBS increase flows by 0.4 mafy? Is this due to incorrect assumption about M&I water? 104
- p. 4-171 line 4 pulse flows every other year – incorrect for same reasons 105
- p. 4-200 lines 15-16 pulse flows every other year- incorrect for same reasons 106
- p. 4-203 lines 3-5 “These benefits were deemed moderate because flows in this reach are currently rare and any additional flow in this reach is assumed to be beneficial.” By what criteria are these benefits deemed moderate rather than major? 107
- p. P-86. Once corrected as noted above, figure P-61 should be labeled as “Flows Below Morelos Diversion Dam.” 108

#### IV. Conclusion

Once again, we thank Reclamation for its extensive assistance in developing, modeling, and considering CBS for the DEIS, and ask that Reclamation incorporate our comments as it refines CBS and its environmental and socio-economic analyses for the Final EIS. We welcome the opportunity to meet with Reclamation to discuss these matters further if this would be of assistance in Reclamation’s analysis.

We believe that the current NEPA process represents a significant potential turning point in the history of the Law of the River, one which offers significant opportunities for both water users and environmental values on the River – but which also carries with it significant economic, environmental, and diplomatic risks. The Basin States Alternative, and the Seven States Agreement upon which it is built, represents a significant potential step forward for water management in the Lower Basin; however, in isolation it does not step far enough to ensure the protection of environmental values in the Lower Basin and Mexico and assist the development of an international agreement between the U.S. and Mexico that will be necessary to implement the States’ proposed shortage policy. 109  
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Two components of CBS, the expansion of the ICS program to other users in the U.S. and Mexico, and the provision of a voluntary, compensated mechanism for shortage mitigation, are particularly critical in this regard, and we believe the analysis conducted to date strongly bears out the importance of these mechanisms. We strongly urge Reclamation to adopt these elements as a part of the preferred alternative in the Final EIS. 111

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Thank you for your consideration of these comments. We look forward to continuing to work with Reclamation over the coming months as Reclamation moves to prepare its Final EIS and Record of Decision.

Sincerely,

Kara Gillon  
Senior Staff Attorney  
Defenders of Wildlife  
824 Gold SW  
Albuquerque, NM 87102  
[kgillon@defenders.org](mailto:kgillon@defenders.org)

James A. Wechsler  
Director  
Southwest Waters Committee  
Sierra Club  
2475 Emerson Avenue  
Salt Lake City, UT 84108  
[jawex@gmail.com](mailto:jawex@gmail.com)

Jennifer Pitt  
Scientist  
Environmental Defense  
2334 N. Broadway  
Boulder, CO 80304  
[jpitt@environmentaldefense.org](mailto:jpitt@environmentaldefense.org)

Peter W. Culp  
Francisco Zamora  
Sonoran Institute  
7650 E. Broadway, Suite 203  
Tucson, AZ 85710  
[peter@ssd.com](mailto:peter@ssd.com)  
[francisco@sonoran.org](mailto:francisco@sonoran.org)

Garrit Voggesser  
Senior Manager  
Tribal Lands Conservation Program  
National Wildlife Federation  
2260 Baseline Road, Suite 100  
Boulder, CO 80302  
[voggesser@nwf.org](mailto:voggesser@nwf.org)

Bart Miller  
Water Program Director  
Western Resource Advocates  
2260 Baseline Road, Suite 200  
Boulder, CO 80302  
[bmiller@westernresources.org](mailto:bmiller@westernresources.org)

Michael Cohen  
Senior Associate  
Pacific Institute  
2260 Baseline Road, Suite 205  
Boulder, CO 80304  
[mcohen@pacinst.org](mailto:mcohen@pacinst.org)

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## Responses to Comment Letter G-5

### G-5-1

Your comment is noted.

### G-5-2

Your comment is noted.

### G-5-3

Information presented in the Draft EIS has been modified in the Final EIS pursuant to this specific comment, as well as other public comments. Section H.6. of the Final EIS includes an additional assessment that considers the impacts of a compensated voluntary conservation program. This assessment indicates that the positive benefits of such a program will vary extensively and will depend on the type of program developed, the size and length of the program, the local and regional economics, and the participants.

### G-5-4 and G-5-5

See response to Comment No. F-4-9.

### G-5-6 through G-5-9

Your comment is noted. No change to the Final EIS was necessary.

### G-5-10

Your comment is noted. No change to the Final EIS was necessary.

### G-5-11 and G-5-12

Your comment is noted. No change to the Final EIS was necessary.

### G-5-13

See response to Comment Nos. F-5-2 and F-5-5.

### G-5-14

See response to Comment Nos. F-5-2 and F-5-5.



### **G-5-15**

Reclamation concurs with this comment. However, as noted in Section 4.4 and Section 4.14, the total water delivery reductions that occur under the Conservation Before Shortage Alternative include both voluntary and involuntary reductions and the frequency and magnitude of these total reductions under the Conservation Before Shortage Alternative are comparable to those observed under the Basin States Alternative and the Preferred Alternative.

### **G-5-16**

Your comment is noted. As noted in the response to Comment No. G-5-3, the assessment conducted by Reclamation in Section H.6 of the Final EIS indicates that the positive benefits of such a program will vary extensively and will depend on the type of program developed, the size and length of the program, the local and regional economics, and the participants.

### **G-5-17**

Your comment is noted. Additionally, it is noted that under a compensated voluntary conservation program, the lands that would first likely be affected would be those that have the lowest productivity and/ or are less profitable. These lands would most likely be affected under both compensated, voluntary conservation or involuntary shortage since agencies that would be affected by involuntary shortages would also consider these same lands during a shortage as a source for dry year water transfers.

### **G-5-18**

Information presented in the Draft EIS has been modified in the Final EIS pursuant to this specific comment, as well as other public comments. In the assessment conducted by Reclamation (Section H.6 of the Final EIS), Reclamation determined that the per acre-foot payments to growers varied widely under a compensated voluntary conservation program. Other cost factors that would need to be considered in addition to the per acre-foot cost include: program administration, dust/weed control and other environmental mitigation, and other payments that may be needed to mitigate other third-party impacts.

### **G-5-19**

As shown on Figure 4.4-2 and 4.4-3 in the Final EIS, the probability of water delivery reductions and the average shortage volumes is similar between the Conservation Before Shortage and the Basin States Alternative. The Preferred Alternative has somewhat lower probabilities of voluntary and involuntary shortage over the entire interim period when compared to the Basins States and Conservation Before Shortage alternatives.

### **G-5-20**

See response to Comment No. F-4-9.

**G-5-21 and G-5-22**

This comment fails to accurately reflect the information published by Reclamation in the Draft EIS in Section 4.4.4.1 (page 4-82) and other places throughout the document. However, in light of the apparent confusion caused by this discussion in the Draft EIS, Reclamation has made editorial revisions to the Final EIS in Section 4.4.4.1 to avoid any confusion on this matter; specifically, language has been added in Section 4.4.4.1 that better explains the mechanism for voluntary versus involuntary water delivery reductions. To further distinguish these differences, involuntary and voluntary shortages are analyzed separately in several instances in the Final EIS to express the differences and respective effects, as appropriate.

**G-5-23**

Your comment is noted. As described in Appendix M of the Final EIS, it is unknown which entities might participate in the storage and delivery mechanism contemplated under several of the action alternatives. Further it is unknown at what levels they might participate, the specific water conservation projects that may be developed to create the water supply, and also where the conserved water will be used and when. Modeling assumptions with respect to the entities that might participate and their respective level of participation were used to determine potential effects of the storage and delivery mechanism on environmental resource, particularly to reservoir storage and river flows downstream of Lake Mead. See also responses to Comment Nos. F-5-2 and F-5-5

**G-5-24**

Your comment is noted. No change to the Final EIS was necessary.

**G-5-25 and G-5-26**

Your comment is noted. No change to the Final EIS was necessary.

**G-5-27**

Information presented in the Draft EIS has been modified in the Final EIS (see Section M.3.2, Appendix M) pursuant to this specific comment, as well as other public comments. Accordingly, the second heading in Table M-5 of the Final EIS has been modified to reflect this comment. Specifically, the description of the second set of flows has been changed and the word “environmental” has been deleted from the term – “Other Environmental Flows Below the NIB.” Also, language has also been added in this section that notes that “these second set of flows could be used by Mexico or the sponsor of the conserved water for varying purposes.”

**G-5-28**

The flows shown in Figure P-61 of the Draft EIS represents the probability of occurrence of any flows in excess of Mexico’s scheduled water deliveries. These include excess flows that occur when Lake Mead is in flood control release conditions, as well as flows associated with the

storage and delivery mechanism. The CRSS model ends at NIB and a separate node was added next to the NIB to account for all flows that arrive in excess of Mexico's schedule deliveries. The model does not model how or where these flows would be used. The general assumption in the analysis is that these flows would pass the Morelos Diversion Dam. However, it is recognized that Mexico could divert any or all of these flows that arrive at the Morelos Diversion Dam and this would be done solely at their discretion at the quantities that they determine are appropriate.

**G-5-29**

Your comment is noted. No change to the Final EIS was necessary

**G-5-30**

Your comment is noted. No change to the Final EIS was necessary. The Basin States Alternative and the Preferred Alternative both include provisions for consultation when the Lake Mead water level falls below elevation 1,025 feet msl. For modeling purposes, it was assumed the 600 kafy shortages would continue down to the top of the Lake Mead dead pool elevation.

**G-5-31 through G-5-33**

Your comment is noted. No change to the Final EIS was necessary. See also responses to Comment Nos. F-5-2 and F-5-5.

**G-5-34**

Information presented in the Draft EIS has been modified in Section M.3.2. of the Final EIS pursuant to this specific comment, as well as other public comments. The description in Section M.3.2. was clarified to account for the flows as an additional delivery to Mexico.

**G-5-35**

Your comment is noted. No change to the Final EIS was necessary.

**G-5-36**

The Department of Interior or Reclamation currently does not have the authority to implement all facets of the funding proposal of the Conservation Before Shortage proposal and additional legislation would be necessary to gain such authority. As such, the viability of this funding proposal is not known at this time. Additionally, Reclamation it is beyond the scope of this EIS to analyze alternative funding strategies for any alternative or component of an alternative.

**G-5-37**

This comment fails to accurately reflect the information published by Reclamation in the Draft EIS in Section 4.11.2.6 and in other locations within Section 4.11. However, in light of the apparent confusion caused by this discussion in the Draft EIS, Reclamation has made editorial

revisions to Section 4.11.2.6 of the Final EIS to affirm that a surcharge was not included in the economic analysis.

**G-5-38**

Your comment is noted. No change to the Final EIS was necessary.

**G-5-39**

Your comment is noted. No change to the Final EIS was necessary.

**G-5-40 through G-5-43**

Information presented in the Draft EIS has been modified in the Final EIS pursuant to this specific comment, as well as other public comments. Accordingly, the content of the Final EIS has been modified to reflect this public input. For the Final EIS, a Preferred Alternative has been identified and evaluated and draft operational guidelines have been included in Appendix S.

**G-5-44**

The geographic scope identified for this EIS (Section 3.2) corresponds to the specific issues and potential effects associated with changes in the operations of Lake Powell and Lake Mead, as discussed and analyzed under the alternatives considered in this Final EIS (see Chapter 2).

**G-5-45**

Reclamation does not concur with this comment. The Draft EIS addressed this issue in Section 4.4 and Section 4.14.

**G-5-46**

Reclamation does not concur with this comment. The Draft EIS identified and addressed a wide of range of potential impacts to environmental resources within the affected area. The potential impacts were fully disclosed in the Draft EIS and clarifying information has been included in the Final EIS in response to public comment.

**G-5-47 and G-5-48**

Your comment is addressed in the general response pertaining to climate changes and hydrologic variability in the introduction to Volume IV of the Final EIS. Section 4.2 of the Final EIS has been enhanced and two new appendices (Appendix T and Appendix U) have been added to provide additional information regarding the potential impacts of climate change and hydrologic variability.

**G-5-49**

Your comment is noted. No change to the Final EIS was necessary.

**G-5-50**

Your comment is noted. The interim nature of the guidelines is intended to provide an opportunity to evaluate how the guidelines work. In addition, opportunities for review of the effectiveness of the guidelines are anticipated to be available both throughout the proposed interim period and at intervals during the interim period. Such reviews would provide a basis for possible further federal actions and decisions at the end of the interim period. Reclamation anticipates that a review of the guidelines will be conducted at a time prior to the end of the interim that would allow the Department, and the public, to assess the effectiveness of the guidelines and to determine the most appropriate course of action for the post-interim period.

**G-5-51**

Your comment is noted. No change to the Final EIS was necessary. Please note that the CRSS salinity module is primarily used to model the effects of salinity control projects on the salinity numeric criteria locations (Below Hoover, Below Parker, and at Imperial Dam). While compliance with the differential required by Minute 242 is not modeled in CRSS, the compliance objectives are achieved by the daily and monthly operational decision that are made by the Yuma Area Office in the management of the Mexico deliveries and management of the drainage flows from the Yuma area.

**G-5-52 and G-5-53**

Your comment is noted. The United States will continue to undertake activities to comply with the provisions of Minute 242 and these activities will not be affected by the proposed federal action.

**G-5-54 and G-5-55**

See responses to Comment Nos. G-5-51 and G-5-52.

**G-5-56 and G-5-57**

Your comment is noted. The information requested is provided in Section 5.1.19 and Section 6.8 of the Final EIS.

**G-5-58**

Your comment is noted. No change to the Final EIS was necessary.

**G-5-59**

Your comment is noted. No change to the Final EIS was necessary.

**G-5-60**

Your comment is noted. No change to the Final EIS was necessary.

**G-5-61**

Your comment is noted. No change to the Final EIS was necessary.

**G-5-62 through G-5-64**

See responses to Comment Nos. F-5-2 and F-5-4.

**G-5-65**

See response to Comment No. F-5-18.

**G-5-66**

Reclamation does not concur with this comment. As noted in Section 4.3.9, none of the alternatives are expected to adversely affect the frequency or magnitude of excess flows to Mexico. See also response to Comment No. F-5-8.

**G-5-67 through G-5-69**

Your comment is noted. No change to the Final EIS was necessary. The guidelines and programs considered as part of the proposed federal action will enable the entities within the United States to manage the waters allotted to them pursuant to the Law of the River in a more effective manner. See also response to Comment No. F-5-22.

**G-5-70 through G-5-74**

Your comment is noted. No change to the Final EIS was necessary.

**G-5-75 through G-5-85**

See responses to Comment Nos. G-5-21 and G-5-23.

**G-5-86**

Your comment is noted.

**G-5-87 through G-5-90**

See response to Comment No. F-4-9.

**G-5-91**

Reclamation concurs with this comment. The Conservation Before Shortage Alternative was not eliminated from consideration even though Reclamation currently lacks the authority to implement all aspects of the alternative. See also response to Comment No. G-5-36.

### **G-5-92**

The information requested is provided in the Draft EIS and the Final EIS. The text in Section 4.15.2 of the Final EIS states this was just one example of how the shortages would be distributed. The socioeconomic analysis in Section 4.14 of the Final EIS describes how additional shortages would affect communities throughout the affected environment.

### **G-5-93 through G-5-95**

Information presented in the Draft EIS has been modified in the Final EIS pursuant to this specific comment, as well as other public comments. For the Final EIS, a Preferred Alternative has been analyzed that provides for the maximum annual creation volume of 4.2 maf. The larger ICS provides the opportunity for future expansion of the program, with the potential for additional participants. See also response to Comment No. F-5-2.

### **G-5-96**

Your comment is noted. No change to the Final EIS was required.

### **G-5-97 through G-5-98**

See responses to Comment Nos. F-5-2 and F-5-5.

### **G-5-99**

See response to Comment No. G-5-93.

### **G-5-100**

Reclamation does not concur with this comment. The quoted material from the Colorado River Project Storage Act includes the words "to construct" as quoted in the Draft EIS in Section 3.3.2. However, after reviewing this comment, and considering public input, Reclamation has stricken the referenced words to avoid any confusion. This revision does not significantly or materially change the statement or the impact analysis or results presented in the DEIS.

### **G-5-101**

Information presented in the Draft EIS has been modified in the Final EIS pursuant to this specific comment, as well as other public comments. The content of the Final EIS has been modified to reflect this public input and the referenced paragraph in Section 4.3.9 has been deleted and is no longer included in the Final EIS. This revision does not materially change the context of the paragraph or significantly change the impact analysis or results presented in the Draft EIS.

### **G-5-102**

Your comment is noted. No change to the Final EIS was necessary.

**G-5-103**

Information presented in the Draft EIS has been modified in the Final EIS pursuant to this specific comment, as well as other public comments. The referenced language in Section 4.8.3.7 has been deleted in the Final EIS.

**G-5-104**

Information presented in the Draft EIS has been modified in the Final EIS pursuant to this specific comment. Section 4.8.3.7 of the Final EIS has been modified to reflect this public input. The volume with respect to the difference between the Conservation Before Shortage Alternative and the No Action Alternative is 0.35 maf and this difference occurs in year 2019. This revision does not significantly change the impact analysis or results presented in the Draft EIS.

**G-5-105 and G-5-106**

Information presented in the Draft EIS has been modified in Section 4.8.3.7 and Appendix M of the Final EIS pursuant to this specific comment, as well as other public comments. Section 4.8.3.7 and M.3.2 of the Final EIS has been revised to differentiate between the different flows that are provided in the Conservation Before Shortage Alternative. This revision does not significantly change the impact analysis or results presented in the DEIS since this revision only affects the description of these flows and not how the flows were modeled.

**G-5-107**

Your comment is noted. No change to the Final EIS was necessary. The benefits of the pulse flows below Morelos Dam associated with the Conservation Before Shortage Alternative were identified in the Draft EIS and Final EIS. These benefits were deemed moderate. These benefits were not deemed minor because the probability of significant flows would be greater under Conservation Before Shortage Alternative as compared to those under the No Action Alternative, and the river corridor in this reach allows overbank flooding at lower flows than upstream sections of the river. The benefits were not deemed major since a major benefit would be caused by a flow regime that was closer to pre-dam conditions where regular flows and overbank flooding likely occurred annually during spring runoff. These periodic pulse flows still remain distinct from the flows that existed under pre-dam conditions and therefore a major designation was not warranted.

**G-5-108**

Information presented in the Draft EIS has been modified in the Appendix P of the Final EIS pursuant to this specific comment, as well as other public comments. The title on the referenced figure has been changed to “Flows Below Morelos Diversion Dam.”

**G-5-109 through G-5-111**

Your comment is noted. No change to the Final EIS was necessary.



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## Comments on Bureau of Reclamation Draft EIS Colorado River Interim Guidelines for Lower Basin Shortages and Coordinated Operations for Lake Powell and Lake Mead

Prepared by: David L. Wegner  
Prepared for: Glen Canyon Institute – 2609 Columbine Avenue, Durango, CO 81301  
April 27, 2007

### I. General Comments

The Draft EIS is the latest addition of water management related documents produced by the Bureau of Reclamation to address issues related the distribution of water from the Colorado River. This document and resulting management direction will add to the existing tomes on managing surplus water, the Long-Term Operating Criteria and the coordinated management of water between the upper and lower Colorado River Basin States. No one expects exciting reading or innovative thought, but the lack of addressing current state of climate and hydrology is troubling.

The Bureau is grossly missing the opportunity and responsibility to address potential future conditions for water management based on scientific advice from experts in water management and climate. Recent reports that point towards a much different hydrologic condition in the Colorado River Basin include:

National Research Council – February 2007 – reporting that future droughts will likely be more extreme and for longer periods of time.

Intergovernmental Panel on Climate Change – Climate Change 2007 – stating that droughts in the Southwest will be more extreme and calls on governments to begin planning now for reduced water.

Recent Science article reporting the result of running 19 climate computer models and their indication of a worsening drying trend for the Southwest.

Tree-ring analysis clearly shows that climate and hydrology in the Colorado River basin are linked and that historically there have been long and extreme drought events.

To not admit that the system is changing quickly nor addressing appropriate water management contingencies is akin to the Corp of Engineers telling the people of New Orleans to not worry, the dikes are in great shape. Reclamation is better than that but unfortunately this document does not provide much hope, direction or acknowledgement of the fact that SW hydrology is changing.

Recent climate documentation is consistent in concluding that the future for the Colorado River Basin is for far less water. The analytical approach used in the DRAFT EIS has a fatal flaw in that it assumes, based on a very short historic data set, that change will balance out and therefore it is business as usual for the Bureau of Reclamation.

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Climate change impacts will occur far sooner than the 2026 timeline outlined in the Draft EIS. The Colorado River Basin is entering a drought, one that continues the trend since water year 2000 (except for 2005) of below average water conditions. In the April 2007 announcement from the Upper Colorado River Basin Bureau of Reclamation lead hydrologist, *Water year 2007 is shaping up to be yet another year with below average inflow. The current projection for spring runoff into Lake Powell is only 50 percent of average. ... Reservoir storage in Lake Powell and Lake Mead is currently 48 and 54 percent of capacity.* This sobering monthly report from the Bureau of Reclamation clearly identifies that conditions in the Colorado River Basin are changing quickly. It would stand to reason then that the Bureau of Reclamation should look at a much different hydrologic future than the one that they are using as the baseline for projecting future conditions.

Weather conditions for the Colorado River Basin and the Southwest are changing at a rate far faster than the historic record that the Bureau of Reclamation is using indicates. The Southwest has had significantly below-average rainfall since 1999. The prospect of a drier Southwest is clear and should not be ignored and to do so violates a basic trust that the citizens of this country have regarding government management of a precious resource.

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## II. Comments Related to Assumptions Utilized

The assumptions utilized in the DRAFT EIS are constrained by their lack of addressing some basic information. The entire premise of the DEIS is driven by the set of inflow conditions. The Bureau uses a very limited (1906-2004) historical data set of actual flows to define the input supply parameters for the model and analysis. Peer reviewed literature and a stable of climate scientists have pointed out that the historical parameters and data are not a scientifically credible way to address the future.

**Historic Hydrology Utilized** – Based on measured flows from 1906 – 2004. This range of flows does not cover the potential future lower flow conditions that will be found in the Colorado River Basin.

**CRSS Model** – limited application to addressing extreme conditions. Was developed and applied under a narrow set of operating constraints and inputs.

**Glen Canyon Dam Elevation Ranges** – does not address the concerns over water movement once the elevation of Lake Powell drops below minimum power pool. At that point control of releases will occur only through the river outlet tubes.

**Upper Basin Depletions** – uses a figure of 5.4 MAF when in fact the Upper Basin is proclaiming to want to deplete 6.0 MAF. This difference amounts to 3 MAF by the year 2030.

**Input Volumes** – the Bureau of Reclamation uses historic hydrology data (1906 to 2004) and assumes that 15 MAF will be available. Scientifically peer reviewed analysis performed and reported by the National Academy of Sciences indicate that at BEST CASE, no more 14.5 MAF should be used, and more likely the actual volume should be closer to 13.5 MAF. If everything else remains the same,

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the Bureau of Reclamation’s assumption that the flow will be 500,000 acre feet higher than the long-term mean amounts to 5 MAF in ten years and 12.5 MAF in 25 years.

**Impact due to climate change.** On a best case approach we may see as little as 5% reduction in flow volumes, this would amount to an error in the Bureau’s input volume of 7.5 MAF in ten years and 18 MAF in 25 years. If the worse case of 40% reduction in flow occurs this would lead to even larger error in the amount of input volume to the system.

**Ongoing Research** – no mention is made of the impact of the proposed operational impacts as related to the ongoing Grand Canyon Monitoring Program and its proposed use of periodic flow releases to protect the resources of the Grand Canyon. A slight mention is made of the Lower Colorado River Multispecies Conservation Program but only in reference to its ongoing presence. No discussion occurs as to how changing the operational patterns will be factored into these important and ESA driven efforts.

**Glen Canyon dam and Hoover dam operational constraints.** Limited discussion occurs as to the general management philosophy regarding the day to day operational management of the two dams. Specific discussion as to critical reservoir elevation limits (power pool, cavitation of generators from air entrainment, use and limits of river outlet tubes, and operational constraints) is not provided in a single section in the document.

**Impacts to Basin Fund from reduced Lake Powell levels** – a thorough discussion needs to exist to what will happen to the revenue flow to the Basin Fund as the elevation of Lake Powell drops and power generation is diminished. What will this do to Westerns existing power contract rates (expect increases?), capacity and energy amounts, and the Basin Fund which supports a multitude of other water user and Bureau of Reclamation projects (i.e. subsidizes).

**Impacts to Hydroelectric production.** Discussion is limited on the impacts that will likely occur to the financial balance of Western Area Power Administration if hydropower is seriously constrained due to low reservoir elevation levels at Lake Powell. While the report writers may not want to address the issues, it is important that the potential worse case scenario of limited water available for hydropower generation. What happens to the existing balance of payments for the CRSP? What impacts occur to basin rate payers?

**Identification of Priorities.** It would seem logical that a clear process flow chart should be identified in a SHORTAGE document that identifies what the process would be in regards to meeting the priorities of water delivery. It would seem pertinent that this process should be articulated and laid out so that there is a clear identification of process and procedure.

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**III. Comments on Five Alternatives**

The Bureau of Reclamation identifies five alternatives that they have assessed in the DEIS. These five evolved through a series of scoping and coordination meetings that the Bureau had with individuals, groups, and the seven Colorado River Basin States. The five alternatives include:

No action – business as usual

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Basin States  
Conservation Before Shortage  
Water Supply  
Reservoir Storage

All five alternatives are addressed assuming the same management philosophy that has existed since the Long-Range Operating Criteria were agreed to. This philosophy assumes that Lake Powell and Lake Mead are operated as one unit, balancing releases based on the Law of the River constraints and a limited input supply data set.

Of the five alternatives, based on the historic set of assumptions, the most logical alternative is *Conservation Before Storage* as it utilizes set elevation targets in Lake Mead to direct specific water management actions.

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However, based on the assumptions identified in Section I and the change that will occur in available water supply in the Colorado River Basin, we believe that an additional alternative should be evaluated that includes the following:

Shifting Storage from Lake Powell to Lake Mead. Under a lower flow volume scenario both Powell and Mead cannot and will not ever fill again under the historic hydrological rules articulated by Reclamation.

Storing water in Lake Mead will provide benefits to users of the Colorado River Basin by:

- Reducing evaporation. Maintaining one large reservoir instead of two will reduce the amount of water that evaporates off of the reservoir surface. Estimated water savings of 500,000 acre feet per year.
- Reduced loss of water migrating into the sandstone of Lake Powell basin. The granitic rock of Lake Mead basin does not draw as much water into the substrata. Result = increase in water.
- Maintain reservoir elevations of Lake Mead to continue electrical generation.
- Provide more normal flow regime in the Grand Canyon

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Credit Upper Basin states with the amount of water flowing past the gaging station at Lees Ferry. We support the development of intentionally created surplus (*Conservation Before Shortage Alternative*) as a viable way to aggressively address water conservation with incentives.

Implement aggressive water conservation campaign throughout the Colorado River Basin.

#### IV. Comments on Methodology Used to Estimate a Range of Daily Glen Canyon Dam Releases

Only six annual Lake Powell release volumes were considered (7.00, 7.48, 8.23, 9.00, 9.50 mafy). If climate scientists are correct, release volumes may approach 5 million acre feet per year. It would seem prudent to at least run scenarios that reflect the worse case conditions

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Approach does not take into consideration the historical drought regimes that have historically occurred within the Colorado River Basin.

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The CRSS methodology assumptions and input factors are limited resulting in a narrow set of comparison options. 22

**V. Comments on Coordinated Operations on Lake Powell and Lake Mead**

Lake Powell is the input for the majority of water to be distributed in the Lower Colorado River Basin.

Glen Canyon Dam operations are driven by a hierarchy of priorities, beginning with meeting the Colorado River Compact and ending with supporting recreation on the reservoir. Critical to upper basin water management is keeping the generators at Glen Canyon Dam spinning so that they generate electricity and revenue for the Upper Basin Fund and the support of other Bureau of Reclamation projects. The analysis provided by the Bureau of Reclamation indicated that they do not assume that Powell has a very high likelihood of ever dropping below the minimum power pool elevation in Lake Powell. This is a gross underestimation of the likely impacts to be felt as result of lower inflow volumes to Powell due to climate change. 23

Colorado River Basin – System Management. Glen Canyon and Hoover dams are the largest facilities in the river basin, however management of a reduced supply of water and increasing environmental concerns demand that a system wide EIS be developed to address and integrate the large range of issues and constraints that exist in the developed Colorado River system. 24

**VI. Water Quality and Environmental Impacts**

Affected Environment – Water Quality

- o Temperature of Releases from Glen Canyon Dam do not take into account the full spectrum of thermal conditions that may exist as the reservoir level drops and seasonal limnology conditions change. It is highly likely that seasonal spikes in temperature will occur as warmer water in the reservoir is intercepted by the intakes (elevation 3470). No mention is made of the potential Temperature Control Device for Glen Canyon Dam that the Upper Colorado Region is currently reviewing. 25
- o Dissolved Oxygen – In September 2006 and March of 2007 hypoxia events (release of low dissolved oxygen water) occurred at Glen Canyon Dam. These types of events will continue to occur at Glen Canyon Dam as the reservoir levels diminish and limnological conditions change. The DEIS indicates that this is an abnormal event and not likely to continue to occur. This is wrong – the probability will continue with potentially large impacts on the downstream environment. 26

Affected Environment – Sediment

- o Lower reservoir levels in both Powell and Mead will expose significant sediment deposits in the delta areas. Remobilization of these sediments and the chemical residues trapped within them may pose a considerable risk to the aquatic environment in the reservoirs. Additional modeling under more 28

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- realistic reservoir conditions is required to predict future impacts and movement of sediment. 30
- o Loss of storage capacity – no discussion occurs as to the reduction in reservoir storage capacity resulting from the input of sediment into the basins. No reference is made to the ongoing reservoir sedimentation studies at neither Powell nor the historic work completed by the Denver Technical Service Center on sedimentation rates. The Denver Technical Service Center also recently completed an assessment of bypassing sediment around Glen Canyon Dam. How will this work be integrated into the operational mix? 31-33
- Affected Environment – Special Status Species
  - o Humpback Chub – no discussion on the impacts of variable flow and water quality conditions and their affects on the listed *gila cypha* (Humpback chub) in the Grand Canyon. The Upper Colorado River Basin is currently engaged in a lawsuit over the impacts of flow releases on the Grand Canyon environment and the listed species. 34-35
- Affected Environment – Non-Native Species
  - o Zebra and quagga mussle population expansion – no mention is made of the potential population impacts of zebra and quagga mussels in the Colorado River. The lack of any discussion of these species and their potential impact on the water delivery system of the Colorado River is curious. At least referencing work completed by the USGS would seem worthy. 36-38
  - o Striped Bass from Lake Mead - will there be an expansion of striped bass further into the Grand Canyon if the water temperatures warm due to modified Glen Canyon Dam operations and Lake Powell limnological conditions? 39
- Affected Environment – Colorado River Delta and Mexico. While it is an interesting line of logic of why it is not within the context of the Bureau to acknowledge that a Colorado River delta exists, it would seem prudent that at least a short discussion on what the five alternatives might mean to the water flows would be appropriate. Also no discussion is included about the potential for the Yuma Desalinization Plant coming on-line. This will affect the water quality and delivery of water to Mexico. It should be mentioned. 40-42
- Affected Environment – Recreation. Lower reservoir levels are exposing historic rapids and creating new rapids in the inflow areas of Powell and Mead. How will these river hazards be managed under the new lower elevation reservoir regime? 43

**VII. Recommendations**

- Redo the hydrologic projects based on realistic future hydrologic conditions
- Include an alternative that looks at managing the Colorado River reservoirs to focus on filling Lake Mead first and reducing evaporation and loss due to infiltration.
- Recognize the range of actual hydrologic supply that is likely in the Colorado River Basin.
- Include impacts to the Colorado River Delta and the Grand Canyon
- Use the DEIS and NEPA process to look at a range of basin wide conservation measures 44

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Recommend the development of a basin wide Colorado River EIS to address the integrated management of the entire plumbing system of the Colorado River. | 45  
Implement a clear and graphical identification of the process that will be followed should shortage occur and water deliveries are constrained. What process will be followed? How will priorities be defined? What will get shorted first – environment, junior holders, and tribes?  
Include a complete list of water holders and their priorities. Put in a table and chart so that we can understand who will get water when shortages begin to occur. | 46

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## Reponses to Comment Letter G-6

### G-6-1 through G-6-4

Your comment is addressed in the general response pertaining to climate changes and hydrologic variability in the introduction to Volume IV of the Final EIS. Section 4.2 of the Final EIS has been enhanced and two new appendices (Appendix T and Appendix U) have been added to provide additional information regarding the potential impacts of climate change and hydrologic variability.

### G-6-5

The information requested is provided in the EIS. The outlet works and the capacity limitations of the outlet tubes are discussed in Section B.2.11 of Appendix B of the EIS and these constraints are included in the CRSS model.

### G-6-6

This comment fails to accurately reflect the information published by Reclamation in the Draft EIS and the Final EIS in Section 3.4.1. As noted in that section, the Upper Basin depletions are assumed to ramp up to 5.4 maf in 2060, excluding evaporation losses of approximately 574 kaf, resulting in a total depletion of approximately 6.0 maf.

### G-6-7

Your comment is addressed in the general response pertaining to climate changes and hydrologic variability in the introduction to Volume IV of the Final EIS. Section 4.2 of the Final EIS has been enhanced and two new appendices (Appendix T and Appendix U) have been added to provide additional information regarding the potential impacts of climate change and hydrologic variability.

### G-6-8 and G-6-9

See response to Comment No. F-2-43.

### G-6-10

The information requested is provided in the EIS. Appendix B, Colorado River System Facilities and Current River Systems Operations, From Lake Powell to SIB, which provides extensive descriptions on the yearly, monthly, daily, and hourly operations of the mainstream reservoirs, from Lake Powell to SIB.

### G-6-11 and G-6-12

The information requested is provided in the Draft EIS. Section 4.11, Electrical Power Resources, describes the potential effects on energy resources, Western, and the basin funds.

### **G-6-13**

Your comment is noted. Section 4.11 of the Final EIS describes the results the analyses that compare the differences between the alternatives on energy production. An evaluation of the financial condition of Western is outside the scope of this study.

### **G-6-14**

Your comment is noted. No change to the Final EIS was necessary. Section 4.11.2.9 of the EIS notes that the proposed federal action could reduce the amount of money available to meet the intended use of the Basin Power Fund. The potential impacts to the fund are described in Section 4.11.2.5.

### **G-6-15**

Reclamation does not concur with this comment. The different project power contractors and the retail power agencies all have different rate structures that include other cost factors such as transmission and distribution costs, peak power charges, administrative costs, taxes and franchise fees. Additionally, many retail agencies have access to other forms of power and this factors heavily into the melded rates that apply within their respective service areas. Because of all these cost factors, the retail rates that apply throughout the Colorado River Basin vary extensively. Given this and the fact that the change in average annual generation (from No Action) was generally less than 1 percent for the action alternatives, an evaluation of the potential impacts to rate payers within the numerous communities within the Colorado River Basin was determined to be unnecessary.

### **G-6-16**

The information requested is provided in the EIS. Appendix E provides detailed tables that show the different water entitlement holders within each of the Lower Division states and their respective priorities. Section 3.4.6 of the EIS explains the modeling assumptions with regard to how the shortages are distributed between and within the Lower Division states. Additional detailed discussions on how the shortages are distributed using the Shortage Allocation Model as well as tables showing the output from this model, are presented in Appendix G. The tables in Appendix G also show the distribution of shortages to water users based on different total Lower Basin water delivery reduction volumes. In addition, draft guidelines for implementing the Preferred Alternative are included in the Final EIS as Appendix S.

### **G-6-17**

Your comment is noted. No change to the Final EIS was necessary. All the alternatives have water management actions that are linked to specific reservoir water surface elevations. Table 2.8-2 and Table 2.8-3 of the EIS provide an overview and comparison of the operational elements and trigger elevations provided in the different alternatives.

**G-6-18**

Your comment is noted. No change to the Final EIS was necessary. The decommissioning of Glen Canyon Dam is outside the scope of this study,

**G-6-19 through G-6-23**

Your comment is addressed in the general response pertaining to climate changes and hydrologic variability in the introduction to Volume IV of the Final EIS. Section 4.2 of the Final EIS has been enhanced and two new appendices (Appendix T and Appendix U) have been added to provide additional information regarding the potential impacts of climate change and hydrologic variability.

**G-6-24**

Your comment is noted. No change to the Final EIS was necessary. As described in Section 3.2 of the EIS, reservoirs located upstream of Lake Powell are operated independently of Lake Powell would not be affected by the proposed federal action.

**G-6-25**

This comment fails to accurately reflect the information published by Reclamation in the Draft and Final EIS in Section 4.5 and Appendix F. The CE-QUAL-W2 and GEMMS water quality models considered the changing water quality conditions (including temperature) at Lake Powell throughout the full range of operational elevations.

**G-6-26**

The information requested is provided in the EIS. Section 1.8.13 and Section 5.1.29.2 of the EIS which makes reference to the temperature control device proposed to be installed at Glen Canyon Dam and also the NEPA process that is being undertaken as part of the LTEP.

**G-6-27**

The information requested is provided in the EIS. Recurrences of low dissolved oxygen such as occurred in 2005 below Glen Canyon Dam may result from reservoir drawdown cycles under any of the alternatives, but as described in Section 4.5.5 the river reaerates after passing through rapids downstream of Lees Ferry.

**G-6-28**

Your comment is noted.

**G-6-29**

Your comment is noted. As noted in Section 4.5.5. of the EIS, quantified water quality impacts from reservoir sediment delta headcutting are not currently available.

### **G-6-30**

Your comment is noted. No change to the Final EIS was necessary.

### **G-6-31 and G-6-32**

Your comment is noted. No change to the EIS was necessary. The rate of sedimentation accumulation at Lake Powell has been decreasing over the past two decades. The sediment accumulation rate at Lake Powell was estimated to be approximately 85,000 afy in 1962, decreasing to 27,000 afy in 1986, a change of approximately 56 percent. This decrease is likely attributed to land-use controls, climatic conditions, and the construction of additional reservoirs upstream. Reclamation is investigating the use of newer technology and recently conducted a bathymetry survey to analyze the submerged topography at Lake Mead. Coupled with a GIS analysis of the exposed topography and comparison to past surveys, the sediment accumulation will be estimated. Analysis of that data is on-going.

### **G-6-33**

Your comment is noted. The Denver Technical Service Center studies are outside the scope of this study.

### **G-6-34**

The information requested is provided in the EIS in Section 4.8. Section 4.8 includes a description of how water quantity and quality impacts could impact the listed Humpback Chub (*Gila cypha*). This discussion included analysis of how potential temperature changes within the Grand Canyon could impact (1) the humpback chub and their non-native fish competitors, (2) several parasites that infect humpback chub, and (3) the main aquatic food sources in the Grand Canyon. In addition to this, Reclamation has added a discussion to the Final EIS regarding the effects of flow variations on native fish habitat for each alternative. Please refer to Chapter 4.8 of the Final EIS for further details of these analyses.

### **G-6-35**

Your comment is noted. No change to the Final EIS was necessary.

### **G-6-36 through G-6-38**

Information presented in the Draft EIS has been modified in the Final EIS (see Section 3.8) pursuant to this specific comment, as well as other public comments. Presently, zebra mussels are not definitely known to exist within the study area. Section 3.8 has been amended to note the presence of quagga mussels in Lake Mead, Lake Mojave, and Lake Havasu and the potential presence of zebra and/or quagga mussel populations in Lake Powell. However, the proposed federal action is not expected to have an effect on the presence or spread of quagga mussels within the study area greater than may occur under the No Action Alternative. This revision does not significantly change the impact analysis or results presented in the Draft EIS.

**G-6-39**

The information requested is provided in the EIS in Section 4.8. Although the Affected Environment section of the EIS does not provide a discussion on impacts, Reclamation did describe how temperature impacts could increase the likelihood of upstream migration of non-native fish into the Grand Canyon. Though not specifically mentioned, these non-native fish could include striped bass from Lake Mead.

**G-6-40**

Your comment is noted. No change to the Final EIS was necessary. As noted in Section 3.3.10 of the Draft EIS and the Final EIS, flows below Morelos Diversion Dam primarily result from flood control operations at Hoover Dam. The potential effects of the alternatives on those flows are presented in Section 4.3.9 of the Draft EIS and the Final EIS.

**G-6-41 and G-6-42**

The information requested is provided in the EIS. Section 4.2.7, notes that the modeling of the alternatives for the EIS assumes that the Yuma Desalting Plant is not operational over the modeling period. The water quality analyses described in Section 4.5 considered this and the findings of the analyses were that there will be no significant impact to the quality of the water delivered to Mexico at the NIB.

**G-6-43**

The information requested is provided in the EIS. As noted in Section 4.12.3.1, there would be no change in exposure to unsafe bloating conditions caused by changes in river elevations.

**G-6-44**

Your comment is noted. No change to the Final EIS was necessary. Basin wide conservation measures are outside the scope of this EIS.

**G-6-45**

See response to Comment No. G-6-24.

**G-6-46**

The information requested is provided in the EIS. Section 3.4 of the EIS provides a description of the apportionment of the waters of the Colorado River; Section 4.4 provides the results of comparative analyses of water deliveries under the different alternatives during Surplus, Normal, and Shortage conditions; Appendix E provides tables that show the Colorado River water users within each Lower Division state and that shows respective priorities within each state; and Appendix G provides a description of Shortage Allocation Model and provides tables that show the distribution of the shortages between the states and amongst the water users within each Lower Division state.

**IRRIGATION & ELECTRICAL DISTRICTS  
ASSOCIATION OF ARIZONA**

W.A. DUNN  
CHAIRMAN OF THE BOARD

R. GALE PEARCE  
PRESIDENT

R.D. JUSTICE  
VICE-PRESIDENT

SUITE 140  
340 E. PALM LANE  
PHOENIX, ARIZONA 85004-4603  
(602) 254-5908  
Fax (602) 257-9542  
E-mail: [rslynch@rslynchaty.com](mailto:rslynch@rslynchaty.com)

CHARLES W. SLOCUM  
SECRETARY-TREASURER

ROBERT S. LYNCH  
ASSISTANT SECRETARY-TREASURER

E-MAILED ONLY

April 30, 2007

Regional Director, Lower Colorado River Region  
Bureau of Reclamation  
Attn: BCOO-1000  
P.O. Box 61470  
Boulder City, Nevada 89006-1470

Re: Comments on the Draft Environmental Impact Statement for the Colorado River Interim  
Guidelines for Lower Basin Shortages and Coordinated Operations for Lake Powell and Lake  
Mead, 72 Fed.Reg. 9026, et seq. (February 28, 2007)

The following comments are submitted on behalf of the Irrigation & Electrical Districts Association of Arizona, a statewide association of 24 Members and Associate Members that contract for and receive power from Glen Canyon Dam, Hoover Dam, the Parker-Davis Project and the Navajo Generating Station. As such, our Members and Associate Members are directly impacted by the proposed Interim Guidelines.

The Irrigation & Electrical Districts Association of Arizona (IEDA) was founded in 1962 and represents the interests of its membership concerning federal hydropower resources generated on the Colorado River. Since 1962, IEDA has been intimately involved in the development of legislation, regulations, environmental analyses and other activities concerning power generation on the Colorado River.

IEDA wishes to compliment the Bureau of Reclamation on its thorough analysis of the resources subject of this DEIS and, specifically, with its analysis of hydropower resources and proposed impacts on those resources from implementation of any of the alternatives analyzed in the DEIS.

Having said that, however, we are mindful of the comments already submitted by the Colorado River Energy Distributors Association (CREDA), of which IEDA is a member, and the careful and specific analysis of necessary changes in the DEIS that those comments identify. We totally support those comments. 1

We wish to draw Reclamation's attention specifically to the economic analysis and forecast comments on page 2 of the CREDA comments. We do so because we feel one shortcoming of the DEIS is its failure to adequately appreciate the future value of peaking power from hydropower facilities managed by the Bureau of Reclamation on the Colorado River. As demand for electricity 2 3

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SERVING ARIZONA SINCE 1962



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continues to increase, demand for peaking power will increase also, perhaps even more rapidly than demand for base load. There are numerous studies available that supply such forecasts in peer reviewed analyses. Limitations on the use of Glen Canyon Dam especially as a peaking power resource, and to a lesser extent Hoover Dam, will cause the utilities that contract for those resources to seek other sources of peaking power. It is reasonable to assume that other hydropower resources will also be fully committed and overcommitted, especially in a region-wide drought. Thus, the alternative peaking power resources will come from fossil fuel sources. The DEIS does not recognize this fact nor attempt to analyze the increase in fossil fuel electric power demand that will be created when these Shortage Sharing Guidelines need to be implemented. Since Congress has recognized the value of hydropower over a long history, in such provisions as Section 5 of the Colorado River Storage Project Act of 1956, the final EIS needs to recognize this value also and to recognize the increased demand on the fossil fuel portion of the regional generation supply that utilization of the Shortage Sharing Guidelines will produce.

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The final EIS also needs to recognize that there will be a concomitant increase in greenhouse gas emissions from lesser availability of federal hydropower on the Colorado River. Since these alternative generation resources are less nimble than hydropower, more of them will be required to cover the same real time demand than a hydropower facility would otherwise supply. This factor needs to be recognized in the final EIS as well.

8

The final EIS also needs to recognize the current status of contracting for the Parker-Davis resource. Compare the statement at page 3-95, line 27, with the statement at page 4-235, lines 34 and 35. Those conflicting statements will both need to be updated as Reclamation finalizes the EIS.

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Finally, we note that CREDA believes that the collaborative process being undertaken by the Basin States may continue to refine parameters of the Basin States alternative as described in the DEIS. CREDA asks for further ability to comment on any such refinement. We are under the impression that the refinement process that NEPA can recognize will be reflected in the comments submitted during the comment period on the draft EIS and not thereafter. As Reclamation well knows, should any significant change to the proposed alternatives be considered by Reclamation after the close of the comment period, any such changes would be required to be resubmitted for public comment. Given the timeline that Reclamation has announced for completion of this process, we anticipate that that will not happen. However, should a significant change to any of the alternatives be proposed for consideration, we will assume that Reclamation will reopen the comment period before completing the Environmental Impact Statement process. Such action would be required to maintain the integrity of the process.

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Thank you for the opportunity to comment on this most important exercise.

Sincerely,

/s/

Robert S. Lynch  
Counsel and Assistant Secretary-Treasurer  
G-7

RSL:psr  
cc: IEDA Members

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## Reponses to Comment Letter G-7

### G-7-1 and G-7-2

Your comments are noted.

### G-7-3

Reclamation does not concur with this comment. As noted in Section 4.11 of the EIS the electrical energy prices used in the analysis were developed from both an hourly price forecast keyed to the Palo Verde Interchange and mean monthly reported price indices for the Palo Verde Interchange obtained from Dow Jones, Inc. These energy prices represent the best available data for evaluating impacts. We are not aware of an industry standard that provides for appreciating the future value of peaking power.

### G-7-4 through G-7-8

Your comments are noted. No change to the Final EIS was necessary. While there may be a need for entities that contract for power from the Colorado River hydro powerplants to seek alternative peaking power sources in future years, the source of this power is uncertain. See also response to Comment No. G-3-15.

### G-7-9

The information requested is provided in the Draft EIS. Please refer to Section 3.11.1.2 for a discussion on the status of power contracts associated with the Glen Canyon, Hoover, Parker and Davis powerplants.

### G-7-10

Reclamation does not concur with this comment. The two referenced statements are correct. The Parker-Davis contracts are due to expire in 2008. As noted in Section 4.11 of the EIS, Western is currently negotiating the extension of these contracts.

### G-7-11 through G-7-13

Your comments are noted.

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PO Box 466  
Moab, UT 84532  
435.259.1063  
[info@livingrivers.org](mailto:info@livingrivers.org)

April 30, 2007

Regional Director, Lower Colorado Region  
Bureau of Reclamation, Attn: BCOO-1000  
P.O. Box 61470  
Boulder City, NV 89006-1470

Sent via email: [strategies@lc.usbr.gov](mailto:strategies@lc.usbr.gov)

Re: Comments on Draft Environmental Impact Statement for Colorado River Interim  
Guidelines for Lower Basin Shortages and Coordinated Operations for Lake Powell  
and Lake Mead

Dear Regional Director,

Living Rivers/ Colorado Riverkeeper and the Center for Biological Diversity submit the  
following as comments on the Draft Environmental Impact Statement for Colorado  
River Interim Guidelines for Lower Basin Shortages and Coordinated Operations for  
Lake Powell and Lake Mead (DEIS).

With this DEIS, it was hoped that the seven basin states and the Bureau of Reclamation  
(Reclamation) would take an important step in articulating the need for, and response  
to, the increasing likelihood that Colorado River water users will experience shortages.  
It was assumed that in this era of uncertainty surrounding Colorado River hydrology  
that Reclamation would hold true to its mission to manage, develop, and protect water  
and related resources in an environmentally and economically sound manner in the  
interest of the American public. Unfortunately, the DEIS fell well short in meeting these  
expectations.

1

When the public hears the word "shortages," the term most commonly associated with  
this initiative, it wants to know how much, and the appropriate actions necessary to  
respond. While the DEIS has provided answers, the response leaves the public with  
little confidence that the principle agency responsible for managing the Colorado River  
water supplies has a full grasp of the problems now before it, nor a commitment to  
charting a path to overcome them.

2

- Baseline Conditions Not Properly Defined

The potential for shortages on the Colorado River have been mounting long before  
the emergence of the current drought. The over-allocation of water due to im proper  
assumptions as to the Colorado River's mean inflow has reached the point where  
shortages, which never occurred in the past, will shortly be inevitable. Reclamation is

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repeating the same mistake by using a 15.0 million acre-feet (maf) mean inflow projection well above the paleo-climate reconstruction estimates of 13.0-14.7 maf. If the observed flows of 14.2 maf of the past 50 years were to be used as a guide, the Basin States proposal would be of little value, and Upper Basin water users would be destined to restrict their consumption to meet their delivery requirements to the Lower Basin.

3

- Climate Change Does Not Exist?

Reclamation's modeling excluded any analysis of the potential for the region's rising temperatures to further impact future streamflow. Study after study from the nation's leading research centers now point to reduced flows on the Colorado River in the years ahead: ranging from 10 percent over the next century to upwards of 50 percent by 2050. As the National Research Council reported in February, while there may be uncertainty as to the magnitude of change, flows on the Colorado River are expected to reduce. Even the most modest reduction in flows, five percent over the 53-year forecast period, would create shortages far in excess of what the DEIS has contemplated.

4

- Conservation Measures Undefined

While a program for banking conserved water in Lake Mead is contained in the Basin States proposal, this program appears speculative as to the level of participation, or how it assures a decreasing reliance on Colorado River water commensurate with the level of shortages Nature may impose.

5

We fully recognize the dilemma faced by Reclamation in developing this DEIS. Had it undertaken a thorough evaluation, addressing the range of uncertainty regarding mean streamflow and climate, the Basin States initiative would have looked far too meager a response to warrant much consideration. However, Reclamation's principle mission, especially during these uncertain hydrologic times, should be to present as unbiased and as clear picture of what the future might be, not what a select group of politicians and/or special interests want it to look like.

6

### 1. Baseline Conditions Not Properly Defined

Reclamation must present a clear picture to the public of the real challenge facing Colorado River water users. The system's over-allocation is now creating an imbalance that requires shortages to become the norm, not rare events that may result from extended dry periods. These are not problems necessitating detailed study to understand nor sophisticated computer models to simulate, yet Reclamation neglects to offer such critical background information to the public.

7

As illustrated in Table 1, employing Reclamation's own assumptions, in 2008 it is projected that the Colorado River will provide an operating surplus of just 2.7% (400,000 af), shifting to an annual net shortage of 3.3% (-490,000 af) by 2060. This latter figure is little different from the extensive results offered by Reclamation's own model discussed in Chapter 4, Section 4 of the DEIS.

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**Table 1**  
**Colorado River Water Balance**

	<u>2008</u>	<u>2060</u>
<u>Inflows</u>		
Mean Inflows at Lees Ferry	15.03	15.03
Gains between Glen Canyon Dam and Hoover Dam	0.77	0.77
Gains below Hoover Dam	<u>0.50</u>	<u>0.50</u>
Total System Inflows	16.30	16.30
<u>Outflows</u>		
Upper Basin depletions	(4.54)	(5.43)
Lake Powell evaporation	(0.56)	(0.56)
Lake Mead evaporation	(0.80)	(0.80)
Lower Basin & Mexico consumption	(9.00)	(9.00)
Evaporation and operational losses below Hoover Dam	<u>(1.0)</u>	<u>(1.0)</u>
Net System Balance	0.40	(0.49)

Although this imbalance is what is now driving the Basin States to develop a plan for shortages, nowhere in the DEIS are such basic issues and mathematics surrounding the system's over-allocation addressed. It is not the drought that is forcing this EIS. Nor is it the potential intervention by the Secretary of Interior should Lake Mead fall below 1,025 msl as stated in the Purpose and Need. These are all secondary to the main issue: the Colorado River has reached its limit, yet plans are underway to take more water.

It's vital that Reclamation ensures the public is fully aware of this dynamic, since it illustrates how sensitive the system has now become to changes in inflow, and thus how critically important inflow assumption are for Colorado River planning purposes.

Reclamation, however, has avoided any frank discussion on the likelihood of, or impacts resulting from, a reduction in the forecasted mean inflow of 15.0 maf used in its modeling. Reclamation offers the public only this, "However, 99-year record period is a relatively short time frame, and it is possible that future flows may include periods of wet or dry conditions that are outside of all the possible sequences seen in the historical record."

This is an amazingly cavalier attitude since Reclamation knows better than most how foolhardy reliance on merely observed streamflow records can be. History has already proven that mistakes in forecasting future mean streamflow on the Colorado can lead to major problems down the road. It is precisely such a misadventure that is behind the imbalance the system now experiences. This DEIS is underway now because those who signed-off on the Colorado River Compact of 1922 mistakenly believed in their mean Lees Ferry streamflow calculations of 16.4 maf. In allocating just 15 maf, they assumed a nearly ten percent buffer. A buffer we've longtime known is not there. Scientists concur that the period used by Compact drafters was the wettest in the past 1,200 years, and have also concluded the 20<sup>th</sup> century to be one of the wettest overall. Knowing this, it

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seems imprudent to assume future flows will necessarily be so benevolent.

As the National Research Council (NRC) stated in its recent report, “Colorado River Basin Water Management: Evaluating and Adjusting to Hydroclimatic Variability,” relying on gage data alone is a somewhat antiquated practice.

*“For many years, scientific understanding of Colorado River flows was based primarily on gaged streamflow records that covered several decades. Recent studies based on tree-ring data, covering hundreds of years, have transformed the paradigm governing understanding of the river’s long-term behavior and mean flows. These studies affirm year-to-year variations in the gaged records. They also demonstrate that the river’s mean annual flow—over multi-decadal and centennial time scales, as shown in multiple and independent reconstructions of Colorado River flows—is itself subject to fluctuations.”*

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The studies the NRC authors refer to all estimate a long-term mean streamflow at Lees Ferry below the 15.0 maf mean uses by Reclamation in the DEIS.

**Table 2**  
**Reconstructions of Colorado River**  
**Mean Flows at Lees Ferry**

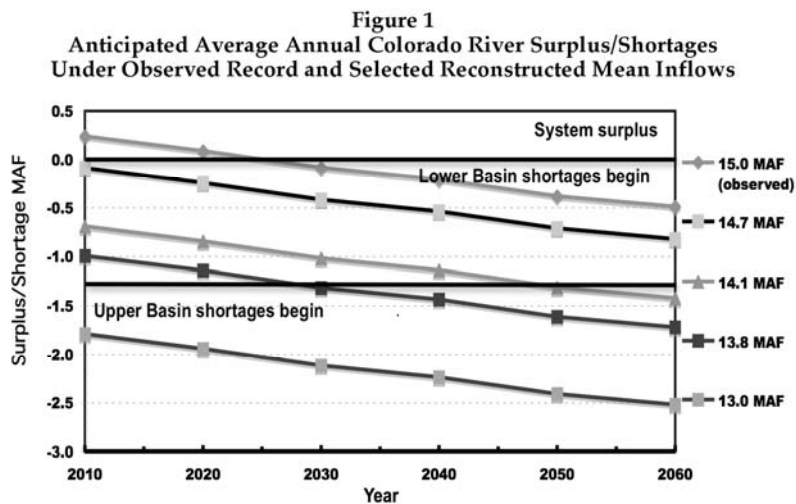
<u>Author (year)</u>	<u>Reconstruction Period</u>	<u>MAF</u>
Stockton and Jacoby (1976)	1511/12/20-1961	13.0 – 14.15
Michaelsen et al. (1990)	1568-1962	13.8
Hidalgo et al. (2000)	1493-1962	13.0
Woodhouse et al. (2006)	1490-1997/98	14.1 – 14.7

These paleoclimatic reconstructions illustrate that it is not only possible, but growing evidence suggests that the observed mean streamflow being used by Reclamation is too high. Surprisingly, nowhere in the DEIS is this fundamental assumption addressed, merely the disclaimer that the model may misrepresent the future because of its reliance on the observed record.

Here again, a sophisticated model is not necessary to illustrate the significant impacts changes in mean streamflow would have on the imbalance growing in the system. Figure 1 uses the information from Tables 1 and 2 to estimate the net annual shortages Colorado River water users will experience should the mean inflow be less than 15.0 maf Reclamation projects. Figure 1 also illustrates how, should future flows drop to 14.1 maf annually, shortages will likely occur in both the Upper and Lower Basins—not just the Lower Basin as forecasted in the DEIS. Furthermore, this 6.2 percent reduction in the mean streamflow is sufficient to generate average annual shortages right now in excess of the 400,000 – 600,000 af shortage policy at the heart of the Basin States alternative. Evaluating a reduction of this magnitude is hardly inappropriate as it is very close to the observed mean of 14.2 maf from 1950 to the present.

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To its credit, Reclamation does provided some alternative flow sequences summarized in Appendix N. However, no analysis was performed on the potential impacts should the observed mean streamflow prove inaccurate in projecting future Colorado River flows. Two of the three scenarios used relied on the observed record to simulate flows with greater variability, but not significant reductions in mean flow volumes. The third alternative sequence, Direct Paleo, used Woodhouse data with a mean of 14.6 maf. This offered a glimpse into the type of sensitivity analysis that should be undertaken on the full range of reconstructed streamflow estimates. The likelihood of shortages rose from 70 to 80 percent in 2060, with shortages in excess of 2 maf five percent of the time—shortages not forecasted using the observed mean of 15.0 maf. To these changes Reclamation offers just the following commentary on the Direct Paleo results.

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*“The Direct Paleo scenario underestimates the observed mean, as expected, because this paleo reconstruction has a lower mean (14.6 million acre-feet [maf]) than the observed period (15.0 maf). ...The Direct Paleo is able to generate much lower flows than observed, approximately 3.7 maf lower five percent of the time. It was expected the Direct Paleo would generate lower flows than observed as these are characteristic of Lees Ferry streamflow reconstructions.” Pages N-4/5)*

To limit such an important discussion to known statistical differences without any background as to why these differences exist, and that surrounding them is a whole body of work that suggests that Reclamation is over-estimating the mean annual flow, is not only misleading, but wholly inappropriate given the issues at stake should Reclamation’s assumptions be wrong.

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As Table 2 illustrates, Reclamation’s choice of reconstruction data with an annual mean of 14.6 maf is at the top end of the mean flow estimates by paleo-reconstruction

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researchers. While the data used for its Direct Paleo scenario is among the most recent, the National Research Council further notes there is not yet consensus on which reconstruction may be most appropriate for planning purposes. Therefore, Reclamation must not limit its discussion of alternative hydrologic sequencing to merely a brief analysis of one reconstruction data set. It must fully analyze the full range of variability advanced by researchers so that both Reclamation and the public can be sufficiently informed to evaluate the alternatives for the proposed action.

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## 2. Climate Change Does Not Exist?

Even more alarming than Reclamation's unwillingness to objectively address what constitutes an appropriate historical mean streamflow, is the agency's policy to wholly ignore the recommendations of climate scientists who are warning with increasing regularity of the inevitability of reduced Colorado River flows in the decades ahead.

15

The most recent alert arrived this month in the April edition of *Science Magazine*. The Lamont Doherty Earth Observatory of Columbia University forecasts that drier climatic conditions are already taking hold in the Southwest. Droughts similar to what the region is now experiencing will become more common, and the respites in between will generate less precipitation than in the past.

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*"Here we show that there is a broad consensus amongst climate models that this region will dry significantly in the 21st Century and that the transition to a more arid climate should already be underway. If these models are correct, the levels of aridity of the recent multiyear drought, or the Dust Bowl and 1950s droughts, will, within the coming years to decades, become the new climatology of the American Southwest."*

In the National Research Council's report released six weeks earlier it was emphasized that the trend toward rising temperatures in the Colorado River basin will continue, thus further stressing water supplies.

*"Any future decreases in Colorado River streamflow, driven primarily by increasing temperatures, would be especially troubling because the quantity of water allocations under the Law of the River already exceeds the amount of mean annual Colorado River flows. This situation will become even more serious if there are sustained decreases in mean Colorado River flows. Results from these numerous hydroclimatic studies are not unanimous, and all projections of future conditions contain some degree of uncertainty. Nevertheless, the body of climate and hydrologic modeling exercises for the Colorado River basin points to a warmer future with reductions in streamflow and runoff."*

To illustrate this range of forecasts one need look no further than the two most recent papers released that address the Colorado River specifically. Both used models contained in the Intergovernmental Panel on Climate Change (IPCC), 4<sup>th</sup> Assessment released in February.

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In Christensen, et al. 2007, University of Washington, it was found that mean results from eleven models generated reductions of annual streamflow at Lees Ferry from eight to eleven percent toward the end of the century: "Although our results show somewhat

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smaller (ensemble mean) reductions in runoff over the next century than in previous studies (Christensen et al, 2004 in particular), the reservoir system simulations show nonetheless that supply may be reduced below current demand which in turn will cause considerable degradation of system performance.”

In Hoerling, et al., 2006, NOAA Earth System Research Laboratory, where 12 models were employed, a much more dramatic changes to the mean flow at Lees Ferry was forecasted: “Relative to the 1990-2005 mean flow of 13 maf, the 42-run average projects a 25 percent decline in streamflow during 2006-2030, and a 45 percent decline during 2035-2060.”

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In 2005, Milly, et al., NOAA Geophysical Fluid Dynamics Laboratory, 12 models contained in the IPCC 4<sup>th</sup> Assessment were also used to assess future Colorado River flows. The results projected reductions in the Colorado River flows from 10 to 30 percent by 2050.

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In the face of such mounting evidence, Reclamation remains steadfast in using its 15.0 maf observed mean streamflow to evaluate proposed alternatives designed to address shortage conditions. However, if the projections contained in the findings of any of the above researchers prove accurate, such conditions would dramatically, if not entirely eliminate, the viability of the proposed alternatives to cope with the scale of shortages Nature may deliver during Reclamation’s forecast period.

As illustrated in Table 3 and Figure 2 below, assuming the most modest projections of just a 5 percent increase over the next 50 years, the Colorado River system will begin to force shortages in both the Upper and Lower Basins by 2060. Albeit crude, the results of such calculations are not inconsistent with past research. As Nash et.al, reported in 1993, a 5 percent reduction on Colorado River flows would indeed begin to stress the Upper Basin’s ability to meet its Colorado River Compact obligations.

21

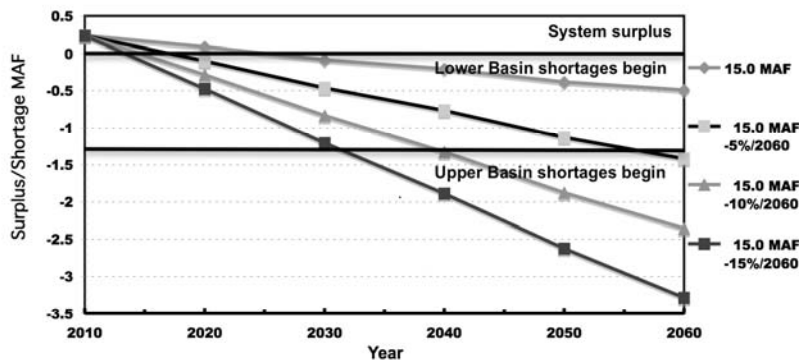
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**Table 3**  
**Estimated Impact of Inflow Reductions**  
**On Colorado River Water Balances in 2060**  
**Using 15.03 maf Observed Mean Streamflow**

	<u>Reduction</u>			
	0%	-5%	-10%	-15%
<u>Inflows</u>				
Mean Inflows at Lees Ferry	15.03	14.28	13.53	12.78
Gains between Glen Canyon Dam and Hoover Dam.	0.77	0.73	0.69	0.65
Gains below Hoover Dam	<u>0.50</u>	<u>0.48</u>	<u>0.45</u>	<u>0.43</u>
Total System Inflows	16.30	15.49	14.67	13.86
<u>Outflows</u>				
Upper Basin depletions	(4.54)	(5.43)	(5.43)	(5.43)
Lake Powell evaporation	(0.56)	(0.59)	(0.62)	(0.64)
Lake Mead evaporation	(0.80)	(0.84)	(0.88)	(0.92)
Lower Basin & Mexico consumption	(9.00)	(9.00)	(9.00)	(9.00)
Evaporation and operational losses below Hoover Dam	<u>(1.00)</u>	<u>(1.05)</u>	<u>(1.10)</u>	<u>(1.15)</u>
Total System Losses	(15.90)	(16.91)	(17.03)	(17.14)
Net System Balance	(0.40)	(1.42)	(2.36)	(3.29)

**Figure 2**  
**Estimated Impact of Inflow Reductions on Colorado River Shortages 2010- 2060**  
**Using 15.03 maf Observed Mean Streamflow**



These estimated shortages are all calculated assuming Reclamation's 15.0 maf streamflow. As noted above, there is significant evidence that suggest that reliance on the observed record my significantly over-estimate the system's ability to avoid shortages. Moreover, as the Hoering analysis illustrated, models themselves rely on

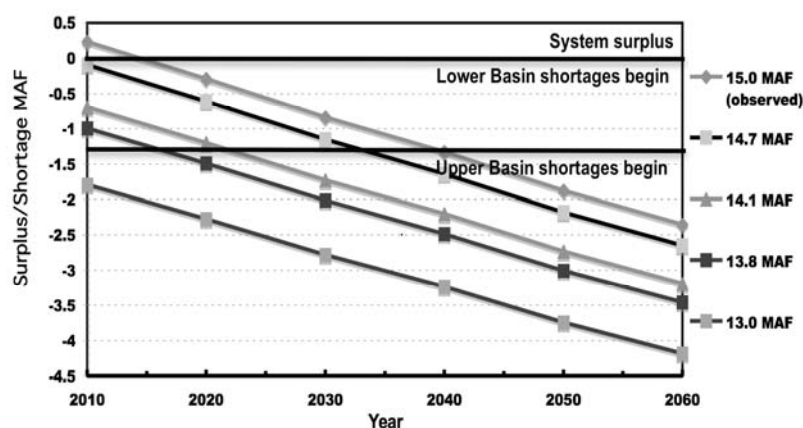
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different mean streamflows when making their forecasts. As such, it's instructive to also examine how shortage conditions may change depending on the mean streamflow the climate change reduction factor are applied to. Figure 3 illustrates how a 10% reduction in flows attributed to climate change would impact the same reconstructed streamflow estimates from Figure 1.

**Figure 3**  
**Estimated Impact on Colorado River Shortages 2010- 2060**  
Assuming a 10% Inflow Reduction to Observed, and Selected Reconstructed Mean Inflows



While nobody yet knows if any of the scenarios outlined in Figures 2 and 3 above will pass by Lees Ferry in the coming decades, all estimates are well within the range of projections that have been made by climate researchers to date. Needless to say, all forecast shortages well beyond the range contemplated by the DEIS.

For Reclamation to project future Colorado River shortages while ignoring such overwhelming evidence is of an error of magnitude far greater than mistakes made by those who framed the Compact 85 years ago. Then, just a few people were asking that caution be exercised given the limited data at hand. Now society is faced with the reverse. Most people recognize the need for caution given the volumes of data available encouraging it, yet Reclamation alone chooses to embark on a path of risk, blind to the flashing lights along the way.

### 3. The Conservation Unknown

The majority of the DEIS evaluates plans for when and how to reduce flows from Lake Mead should certain shortage conditions exist. What is virtually ignored are the steps the Lower Basin should be taking to reduce its reliance on this water as these shortages gradually become a permanent condition due to increased Upper Basin consumption and the potential continuation of the downward trend in overall system inflows.

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Admittedly, given the limited level of initial shortages forecasted by Reclamation for the interim period, the DEIS likely assumes that such shortages are of a magnitude well within the abilities of the Lower Basin states to absorb without creating additional noise in the system. However, even under Reclamation's rather optimistic predictions of inflows, shortages of more than .5 MAF will become commonplace. Arizona in particular will be facing reductions nearly every year.

23

More importantly, should Colorado River inflows continue to reflect the kind of downturn many researchers are predicting, a nearly persistent state for Lower Basin reductions would quickly materialize. Furthermore, should those forecasts suggesting more severe reductions in streamflow prove accurate, the Upper Basin too may be forced to permanently adjust its consumption.

24

The DEIS's only attention to the water conservation issues pertaining to the Basin States Alternative, is through a mechanism allowing the Basin States to bank water in Lake Mead for release at a later date. However, as the DEIS notes, the actual use of this program is vague to say the least.

*"At this time, it is unknown which entities might participate in a Lake Mead mechanism that allows the storage and delivery of conserved system and non-system water. Furthermore, the timing and magnitude of the storage and delivery of conserved water is unknown." (Page M-1.)*

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Furthermore, as is illustrated in the specimen worksheet reproduced in Table M-3, it is unclear if the kinks of the program have been ironed out. The worksheet shows California accumulating over 3 maf of water in Lake Mead, whereas the assumptions state California's maximum allowable accumulation is 1.5 maf.

26

While a potentially valuable concept, the lack of any discussion as to how this, or any other program, will cause those Lower Basin water users most exposed to shortage situation to reduce their reliance on Colorado River water, illustrates an ongoing lack of foresight by the Lower Basin states. As summarized in Section 1 above, these shortages have been a known problem resulting from the river's over-allocation. The Lower Basin's reluctance to address this problem is evidence by the political background spawning the Basin States proposal, and ultimately this DEIS. Moreover, the Lower Basin's unwillingness to advance a more far-reaching alternative, which recognizes the scale of potential shortages discussed above, further reveals its resistance to planning for what it has known for decades would be coming.

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Therefore, the Department of Interior must require from the Basin States, as a pre-condition to any changes in dam operations, a detailed action plan outlining how they will reduce their consumption of Colorado River should shortages of the range discussed above materialize. It's not enough to assume that junior water rights holders will happily accept such cuts on a regular basis. Colorado River water users must resolve disputes in advance of shortages occurring, so that federal resources, including the courts, are not forced to do it for them.

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In developing their plans, the Basin States and Reclamation should examine the

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tremendous water losses evaporating off the surfaces of Lakes Powell and Mead, averaging 1.36 maf annually. Much of the water in both these reservoirs could be stored underground in aquifers already plumbed into the Colorado River system. 32  
33

It's ironic that as the climate heats up, and evaporation rates increase, the states of Arizona and California, which have extensive capacity in their Colorado River groundwater recharge facilities, would advocate storing "conserved" water in Lake Mead where more losses will undoubtedly occur. The DEIS should therefore examine how the proposed "Lake Mead storage and delivery of conserved system and non-system water" program can be shifted to more efficient storage reservoirs underground. Such storage would also avoid the potential loss associated with Mead banking should Reclamation be forced to spill excess water for flood control purposes through Hoover Dam 34  
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**Conclusion**

Thirty million people now rely on Colorado River water to be delivered to their homes, a number which is increasing despite the fact river flows are decreasing. Much of the Southwest economy relies on this water, therefore will experience serious repercussions should shortages materialize that are beyond the magnitude forecasted in this DEIS. 37

The men who met at Bishops Lodge in 1922 created this problem by allocating more water than the Colorado River had historically provided. Reclamation now appears destined to perpetuate this error by again assuming there is more water in the river than paleo-reconstruction experts now advise. Moreover, Nature is in the process of imposing major changes on the Colorado River that no amount of computer modeling can hide.

We therefore urge Reclamation and the Basin States to take a step back and revisit the assumptions that went into this process so they better reflect the changing world around them. Only then can some *real* alternatives for dealing with the *real* shortages problems be developed, analyzed and presented to the public. The longer Reclamation and the Basin States delay attending to all this, the fewer the options, the more contentions the atmosphere, and the more costly the solutions become. 38  
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Lastly, recognizing the importance of this issue, Living Rivers/Colorado Riverkeeper would appreciate the opportunity to offer additional comments to Reclamation and this DEIS process. We understand that other interveners intend to submit comments beyond today's published deadline and that Reclamation has agreed to incorporate them in the Final EIS. Please notify us as to the final deadline after which no additional comments will be accepted on this DEIS. 40  
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Sincerely,

John Weisheit, Living Rivers, Conservation Director  
Michelle Harrington, Center for Biological Diversity, Rivers Program Director

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## Reponses to Comment Letter G-8

### G-8-1 and G-8-2

Your comment is noted.

### G-8-3 and G-8-4

Your comment is addressed in the general response pertaining to climate changes and hydrologic variability in the introduction to Volume IV of the Final EIS. Section 4.2 of the Final EIS has been enhanced and two new appendices (Appendix T and Appendix U) have been added to provide additional information regarding the potential impacts of climate change and hydrologic variability.

### G-8-5

Your comment is addressed in the general response pertaining to climate changes and hydrologic variability in the introduction to Volume IV of the Final EIS. Section 4.2 of the Final EIS has been enhanced and two new appendices (Appendix T and Appendix U) have been added to provide additional information regarding the potential impacts of climate change and hydrologic variability.

### G-8-6

Your comment is noted. No change to the Final EIS was necessary

### G-8-7 through G-8-14

Your comment is addressed in the general response pertaining to climate changes and hydrologic variability in the introduction to Volume IV of the Final EIS. Section 4.2 of the Final EIS has been enhanced and two new appendices (Appendix T and Appendix U) have been added to provide additional information regarding the potential impacts of climate change and hydrologic variability.

### G-8-15 through GS-8-21

Your comment is addressed in the general response pertaining to climate changes and hydrologic variability in the introduction to Volume IV of the Final EIS. Section 4.2 of the Final EIS has been enhanced and two new appendices (Appendix T and Appendix U) have been added to provide additional information regarding the potential impacts of climate change and hydrologic variability.

### G-8-22

The information requested is provided in Section 3.4 and Section 4.4. of the EIS. Most states, regional agencies, local agencies, and communities have already or are in the process of

preparing water resources management plans and or drought management plans that address varying water demand and water supply management issues.

### **G-8-23**

Information presented in the Draft EIS has been modified in the Final EIS pursuant to this specific comment, as well as other public comments. Section 4.4 of the Final EIS has been expanded to include a discussion on the probability and magnitude of future multi-year shortages.

### **G-8-24**

Your comment is noted.

### **G-8-25**

Your comment is noted. No change to the Final EIS was necessary. The proposed storage and delivery mechanism is one of the four operational elements that comprise the proposed federal action. The proposed mechanism will increase the flexibility the Lower Division states have to meet future water use needs from Lake Mead, particularly during low reservoir and shortage conditions. Section 2.3.3 and Appendix S describe the operational details of the Basin State's Alternative ICS mechanism

### **G-8-26**

This comment fails to accurately reflect the information published by Reclamation in the Draft EIS in Appendix M and other locations in the Final EIS. Table M-3 in Appendix M of the EIS provides the assumed accumulation and delivery schedules for conservation activities under the Basin States' Alternative. These schedules are used in modeling the ICS mechanism under the Basin States' Alternative. The model assumes a running account of the water being accumulated and delivered and limits the amount of water that can be accumulated to the maximum volumes that are noted in Table M-2 (Basin States Alternative Volume Limitations of ICS)..

### **G-8-27 and G-8-28**

See response to Comment No. G-8-22.

### **G-8-29**

Your comment is noted. The action alternatives consider a range of shortage strategies for the Lower Basin and he analyses also considered how these water delivery reductions would be distributed to the Lower Division states as well as to users within these states. Additionally, Reclamation has evaluated the potential impacts of these potential future water delivery reductions. The implementation of the proposed federal action is intended to provide a higher degree of certainty of the volumes of potential water deliveries that may available under different reservoir conditions. This higher degree of certainty will enable the Basin States and other Colorado River water users to better plan and prepare for future reductions in water deliveries.

**G-8-30 and G-8-31**

Your comment is noted. No change to the Final EIS was necessary. The Basin State's Alternative is based on their consensus proposal of February 2006 as revised by their comments submitted in response to the Draft EIS in April 2007. The April 30, 2007 letter transmitting the Basin State's proposal to the Secretary notes that the Basin States have set aside contentious issues and agreed to a comprehensive set of detailed operating guidelines for the Colorado River during the proposed interim period.

**G-8-32**

Information presented in the Draft EIS has been modified in the Final EIS (see Appendix P) pursuant to this specific comment, as well as other public comments. Evaporation at Lake Powell and Lake Mead is simulated in CRSS by multiplying the monthly average reservoir surface area by monthly evaporation coefficients. A description of the methodology and the monthly evaporation coefficients is provided in Appendix A. A comparison of the mean and median evaporation volumes for Lake Powell and Lake Mead for the No Action Alternative and the action alternatives is provided in Appendix P. This revision does not significantly change the impact analysis or results presented in the Draft EIS.

**G-8-33 through G-8-36**

Your comment is noted. Local water user agencies, such as the Metropolitan Water District of Southern California, and the Arizona Water Bank are already utilizing storage in groundwater aquifers to optimize their available surface water supplies. The proposed federal action would not limit these activities, but rather would enhance the tools available to lower basin waters users to meet their water use needs from Lake Mead in the future.

**G-8-37 through G-8-39**

Reclamation has considered a wide range of potential hydrological conditions and a wide range of potential water delivery reductions in the analyses in this EIS. The proposed guidelines will be interim in nature and are intended to provide the river operators and managers experience in the operation the Colorado River system under low reservoir conditions. This valuable experience is intended to provide information that can be used to plan for future conditions beyond the interim period.

**G-8-40 through G-8-42**

Your comment is noted. Reclamation did not extend the comment period on the Draft EIS

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**CREDA**

Colorado River Energy Distributors Association

April 25, 2007

**ARIZONA**

Arizona Municipal Power Users Association

Arizona Power Authority

Arizona Power Pooling Association

Irrigation and Electrical Districts Association

Navajo Tribal Utility Authority  
(also New Mexico, Utah)

Salt River Project

**COLORADO**

Colorado Springs Utilities

Intermountain Rural Electric Association

Platte River Power Authority

Tri-State Generation & Transmission  
Association, Inc.  
(also Nebraska, Wyoming, New Mexico)Yampa Valley Electric  
Association, Inc.**NEVADA**Colorado River Commission  
of Nevada

Silver State Power Association

**NEW MEXICO**

Farmington Electric Utility System

Los Alamos County

City of Truth or Consequences

**UTAH**

City of Provo

South Utah Valley Electric Service District

Utah Associated Municipal Power Systems

Utah Municipal Power Agency

**WYOMING**

Wyoming Municipal Power Agency

**Leslie James**Executive Director  
CREDA  
4625 S. Wendler Drive, Suite 111  
Tempe, Arizona 85282Phone: 602-748-1344  
Fax: 602-748-1345  
Cellular: 602-469-4046  
Email: [creda@qwest.net](mailto:creda@qwest.net)  
Website: [www.creda.org](http://www.creda.org)

Bureau of Reclamation

Attention: BCOO-1000

PO Box 61470

Boulder City, Nevada 89006-1470

VIA EMAIL: [strategies@lc.usbr.gov](mailto:strategies@lc.usbr.gov)

The Colorado River Energy Distributors Association (CREDA) appreciates the opportunity to provide comments on the Bureau of Reclamation's (Reclamation) draft environmental impact statement on Colorado River Interim Guidelines for Lower Basin Shortages and Coordinated Operations for Lake Powell and Lake Mead (DEIS) (72 Fed.Reg. 9026-9028, February 28, 2007). In the event there is an extension of the comment period, CREDA may supplement these comments at an appropriate later date. CREDA offers some general background and perspectives, followed by specific comments on the DEIS.

**CREDA Background**

CREDA's mission is "To preserve and enhance the availability, affordability, and value of Colorado River Storage Project facilities while promoting responsible stewardship of the Colorado River System." CREDA is a non-profit, Colorado corporation, also authorized to do business in Arizona, which was formed in 1978 as an association of non-profit entities who are long-term contractors for resources of the Colorado River Storage Project (CRSP). CREDA represents its members by working with Reclamation and the Western Area Power Administration (WAPA) regarding issues related to the CRSP. CREDA members serve over four million consumers in both Upper and Lower Colorado River basin states: Arizona, New Mexico, Nevada, Colorado, Utah and Wyoming. CREDA members include joint action agencies, state agencies, political subdivisions, tribal utility authorities, municipalities, rural electric cooperatives and irrigation and electrical districts. CRSP contractors pay all the power costs of the CRSP, which includes construction (with interest), operation, maintenance and replacements, transmission, environmental and approximately 95% of the irrigation costs. CREDA has also been a representative of contractors who purchase federal power on the Glen Canyon Dam Adaptive Management Work Group (AMWG) since its inception. CREDA and its members have a direct and specific interest in this process.

**CRSP Background**

In 1956, the CRSP was initiated to provide storage facilities for the Upper Basin states so that they could meet their obligations under the Colorado River Compact. The CRSP was authorized in the Colorado River Storage Project Act of 1956 (P.L. 485, 84<sup>th</sup> Cong., 70 Stat. 50), as a multi-purpose federal project. The Act defined project purposes as flood control, water storage for irrigation, municipal and industrial purposes and generation of electricity. The CRSP includes hydropower generation facilities at the Aspinall Unit (three dams with hydropower facilities), Flaming Gorge Dam and Glen Canyon Dam. Glen Canyon Dam is the largest hydropower generating feature of the CRSP, comprising approximately 70%

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of the generation resource of the Salt Lake City Area Integrated Projects (SLCA/IP).

#### Glen Canyon Dam and Hydropower Considerations

Glen Canyon Dam, located near Page, Arizona, includes eight generators, with the nameplate generating capacity of 1,296,000 kW<sup>1</sup> and reservoir storage capacity of 27,000,000 acre feet (to elevation 3,700)<sup>2</sup>. Lake Powell and Glen Canyon Dam are critical to the workings of the Law of the River, the Colorado River Compact and the Upper Colorado River Basin Compact, particularly in times of drought.

Reclamation currently operates Glen Canyon Dam to allow for hydrologic conditions, water rights, minimum stream flows, powerplant capacities, and reservoir elevation goals. "In addition to the water delivery purpose, another authorized purpose of Glen Canyon Dam is to generate hydroelectric power"<sup>3</sup> However, that purpose has been significantly constrained since the early 1990's, with the initiation of interim operating criteria, and continuing with the October 1996 Record of Decision (ROD)<sup>4</sup> which called for a Modified Low Fluctuating Flow (MLFF) operating regime, which ultimately resulted in the constraint of hydropower generation levels (maximum and minimum generation/flow and limits on up and down ramps) in favor of downstream resource concerns.

"Energy is the lifeblood of the U.S. economy. As our economy continues to grow, so too will the demand for abundant, affordable and reliable sources of energy."<sup>5</sup> Commenting on positive economic indicators, Federal Reserve Board Chairman Alan Greenspan cited the "chronic concern" that rising energy prices could threaten the nation's economic recovery. Greenspan called the positive indicators "scant comfort" and pointed out that all projections point to an "uncertain future."<sup>6</sup> Over the past 25 years, electrical demand in the West rose at nearly twice the rate of the population growth (140% vs. 71%), with the population expected to increase another 54% by the year 2030.<sup>7</sup> Now is not the time to further reduce or continue to unnecessarily restrict generating capacity at Glen Canyon Dam. Hydropower has been labeled the "most successful form of renewable energy."<sup>8</sup> It provides the only way to "store" electricity (in the form of water) for later use. Hydropower has many advantages over other power sources, including the ability to start quickly and adjust to rapid changes, including black start capability, during times of high energy demand and regional system disturbances. Since the power system in the West operates in an integrated manner, any time the load increases or decreases, a regulating generator must sense that change and immediately respond. Glen Canyon generation provides that capability. If Glen Canyon generation is further constrained by maximum and minimum flow and ramp rate releases, this flexibility and resource diversity is reduced. Reduced generation capability also requires the use of other less environmentally desirable resources, which can also raise the cost to consumers due to the need to replace the hydropower resource that is no longer available.

In 2005, CREDA wrote to then-Interior Secretary Gale Norton expressing a multitude of concerns regarding CRSP generation, drought and Basin Fund issues. A copy of that letter is attached hereto and CREDA requests Reclamation give consideration to the points contained in that communication in this DEIS process. *Hydropower generation impacts, although addressed in detail in the DEIS, should be added as one of the "three important considerations" in this DEIS.*<sup>9</sup>

<sup>1</sup> <http://www.usbr.gov/power/data/sites/glencany/glencany.html>

<sup>2</sup> <http://www.usbr.gov/dataweb/dams/az10307.htm>

<sup>3</sup> 71 Fed.Reg. 74558, December 12, 2006

<sup>4</sup> [http://www.usbr.gov/uc/rm/amp/pdfs/sp\\_appndxG\\_ROD.pdf](http://www.usbr.gov/uc/rm/amp/pdfs/sp_appndxG_ROD.pdf)

<sup>5</sup> House Resources Committee Press Release, January 20, 2004.

<sup>6</sup> Testimony of Chairman Alan Greenspan, *Federal Reserve Board's semiannual Monetary Policy Report to the Congress*, Before the Committee on Financial Services, U.S. House of Representatives, February 11, 2004.

<sup>7</sup> Energy Information Administration, Annual Energy Outlook 2006 with Projections to 2030, <http://www.eia.doe.gov/oiaf/aeo/electricity.html> (Feb. 2006)

<sup>8</sup> Report of the Energy Policy Development Council, May, 2001 at 5-19.

<sup>9</sup> DEIS, p.2-1.

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CREDA offers the following specific comments on the DEIS, organized by Section title, then by page number and line numbers where appropriate).

**Purpose and Need**

1) P.1-24, 1.4-8: This paragraph references Beach Habitat Building Flow (BHBF) releases, but in terms of the Purpose and Need of the DEIS, the relevancy is not clear. Based on clarifying discussion at the April 3 comment forum, we understand the reference to “triggering criteria” refers to the spill avoidance criteria, (Appendix A.5.6), NOT the sediment criteria used in the 2004 BHBF. By way of background, at the December 6, 2006 AMWG meeting, there was significant discussion and concern expressed about the lack of a science plan for a BHBF, and the need to consider more than just “hydrologic triggering criteria.” In addition, at the April 2, 2007 Technical Work Group (TWG) meeting, it became clear that there is not yet a BHBF science plan that has been vetted/approved by the TWG and the AMWG. CREDA recommends this paragraph be deleted, or in the alternative clarified that the only reference to BHBF specifically refers to the modeling assumption explained in Appendix A regarding spill avoidance.

5

**Affected Environment**

1) P.3-19, 1.15: Where reference is made to Glen Canyon Dam operations, it should be clear that operations are pursuant to the Law of the River (and not just reference to the Grand Canyon Protection Act of 1992).

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2) P.3-19, 1.21-23: Reference later in the DEIS is made to Reclamation’s Long-Term Experimental Plan<sup>10</sup>; CREDA recommends these lines be revised to reflect “pending the outcome of the LTEP...”, as opposed to stating that “future daily and hourly releases are expected to continue to be made according to ... 1996 ... ROD...”.

7

3) P.3-48, 1.2-6: See also comment on Purpose and Need above regarding BHBF. CREDA recommends these lines be deleted.

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4) P.3-95, 1.26: CREDA recommends this line be rewritten as follows: “Firm power contracts for resources of the Salt Lake City Area Integrated Projects (SLCA/IP), of which Glen Canyon is one of the resources, terminate in 2024,”...

9

5) P.3-99, 1.1-2: Clarification should be added to indicate that the Secretary is *authorized* (not mandated) to use CRSP power revenues to fund the Glen Canyon Adaptive Management Program,<sup>11</sup> hence, funding for this program does not fall within the same obligation level as the other listed programs.

10

6) P.3-99, 1.3-4: Clarification should be added to the reference to funding of the Endangered Fish Recovery Implementation Program. Annual base funding is provided solely by power revenues, it is not “cost shared.” In addition, no later than 2008, the Secretary is obligated to provide a report to Congress on the status of the use of power revenues for base funding, containing a recommendation regarding the need for continued base funding after fiscal year 2011. The utilization of power revenues for annual base funding shall cease after the fiscal year 2011, unless reauthorized by Congress; except that power revenues may be continued to be utilized to fund the operation and maintenance of capital projects and monitoring.”<sup>12</sup>

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7) P.3-99, 1.14-16: The DEIS should be very clear in that “A change in the amount of available capacity or energy *WILL* affect “the revenue... to the Basin Fund, the rates charged to power *and water* customers, *and could impact repayment to the Treasury and the support of environmental programs funded by Basin Fund revenues.*”

14

**Environmental Consequences**

1) P.4-79, 1.27-29: Seasonal, daily and hourly flows will continue to be managed in accordance with the Law of the River, not the AMP.

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2) P.4-241, 1.24-29: Certainly “total loss of electrical power generation” would have a substantial impact on the Basin Fund, power rates, repayment, and environmental program funding.

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<sup>10</sup> DEIS, section 5.1.28

<sup>11</sup> Grand Canyon Protection Act of 1992, section 1807

<sup>12</sup> P.L. 106-392, Section 3(d)(2)

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However, it should be noted that these impacts don't occur ONLY with the complete loss of power generation. Although "the action alternatives generally have a minor impact on the *economic value* of electrical power generation", impacts associated with declining Basin Fund levels can be significant (see comment 7) above).

16

**Alternatives/Recommendations**

1) CREDA supports the consensus process being undertaken by the Basin States in the development of the Basin States (BS) alternative. We also understand the States are continuing to refine parameters of that alternative, and there is the potential that underlying assumptions may be adjusted, so we request the ability to comment further should that alternative change.

17

2) Consistent with the position CREDA has taken in the past regarding the use of Basin Fund power revenues for "non-power" programs (see attached), and consistent with the stepped levels of shortage contained in the BS alternative, CREDA recommends that Reclamation fund the "non-power" programs from appropriated dollars (*not* CRSP Basin Fund power revenues) in stepped increments tied to the BS shortage levels. For instance, if a shortage of 400kaf is declared, one-third of the "non-power" program annual costs would be funded through appropriations. If a shortage of 500kaf is declared, two-thirds of those annual costs would be funded through appropriations. If a shortage of 600kaf is declared, 100% of those annual costs would be funded through appropriations. This approach would not require legislation to implement.

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3) From a public policy perspective, CREDA believes it inappropriate to assess power customers with a surcharge to "subsidize" water conservation projects as recommended in the Conservation Before Storage (CBS) alternative.

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Thank you for the opportunity to comment on this DEIS.

Sincerely,

*/s/ Leslie James*

Leslie James  
Executive Director

Cc: CREDA Board

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Bureau of Reclamation  
April 25, 2007



## CREDA

Colorado River Energy Distributors Association

April 25, 2005

### ARIZONA

Arizona Municipal Power Users Association

Arizona Power Authority

Arizona Power Pooling Association

Irrigation and Electrical Districts Association

Navajo Tribal Utility Authority  
(also New Mexico, Utah)

Salt River Project

### COLORADO

Colorado Springs Utilities

Intermountain Rural Electric Association

Platte River Power Authority

Tri-State Generation & Transmission  
Association, Inc.  
(also Nebraska, Wyoming, New Mexico)

Yampa Valley Electric  
Association, Inc.

### NEVADA

Colorado River Commission  
of Nevada

Silver State Power Association

### NEW MEXICO

Farmington Electric Utility System

Los Alamos County

City of Truth or Consequences

### UTAH

City of Provo

Strawberry Electric Service District

Utah Associated Municipal Power Systems

Utah Municipal Power Agency

### WYOMING

Wyoming Municipal Power Agency

### Leslie James

Executive Director  
CREDA  
4625 S. Wendler Drive, Suite 111  
Tempe, Arizona 85282

Phone: 602-748-1344  
Fax: 602-748-1345  
Cellular: 602-469-4046  
Email: [creda@qwest.net](mailto:creda@qwest.net)  
Website: [www.creda.org](http://www.creda.org)

Honorable Gale Norton, Secretary  
Department of the Interior  
VIA FAX

Dear Secretary Norton:

It is our understanding that on or about April 26, 2005, the seven Colorado River Basin States may submit to you comments regarding whether the runoff forecast warrants an adjustment to the release amount from Lake Powell for water year 2005. We are writing to alert you to another drought related issue that the Colorado River Energy Distributors Association (CREDA) believes requires your immediate attention.

CREDA is a non-profit Colorado corporation comprised of Colorado River Storage Project (CRSP) firm electric service customers in the states of Arizona, Colorado, Nevada, New Mexico, Utah and Wyoming. CREDA members are all non-profit entities, including joint action agencies, state agencies, political subdivisions, tribal utility authorities, municipalities, rural electric cooperatives and irrigation and electrical districts. CREDA members represent the majority of the CRSP customers and serve over four million consumers. CREDA initiated a dialogue over a year ago with the Bureau of Reclamation (Bureau), Western Area Power Administration (Western) and state water interests to consider drought impacts to power production and the Upper Colorado River Basin Fund (Basin Fund). CREDA participates in the Annual Operating Plan stakeholder process, the Glen Canyon Adaptive Management Work Group and the Upper Basin Endangered Fish Recovery Program, as well as the annual work program review process with Western and the Bureau.

Section 7 of the CRSP Act of 1956 requires that the "hydroelectric powerplants and transmission lines...be operated...so as to produce the greatest practicable amount of power and energy that can be sold at firm power and energy rates...". Section 5 of that Act established the Basin Fund and requires that all revenues collected in connection with the operation of the CRSP and participating projects be credited to that Fund.

Due to the on-going drought, the Basin Fund -- which finances repayment of the federal investment in power facilities and operation, maintenance and replacement (OM&R) activities at Glen Canyon Dam and the other power facilities of the CRSP -- is close to insolvency. Unless immediate action is taken, the Basin Fund will not be able to cover annual OM&R expenses, repay the capital costs of the power features of the CRSP or fund three important non-power programs now funded by power revenues: the Colorado River Salinity Control Program, the Glen Canyon Adaptive Management Program and the Endangered Fish Recovery Programs of the Upper Colorado River and San Juan Basins. The costs associated with these non-power programs are nearly \$20 million per year.

CREDA is deeply concerned the Basin Fund may not have sufficient revenues to cover the annual OM&R costs of the CRSP and to repay the capital costs of the project. We are also concerned that, if the Fund is depleted, the non-power programs currently funded with CRSP power revenues will go unfunded, to the detriment of many interests in the Upper Basin states.

CRSP customers have already borne the financial brunt of the ongoing drought. Just two years ago, a 17% rate increase was imposed. In addition, beginning October 1, 2004, energy reductions of 26% were imposed. And the comment and consultation process for yet another rate increase (24%) just closed last week, with the increase to take effect October 1, 2005. And yet, funding for these non-power programs has continued with no reduction, which has in part created a severe cash flow situation in the Basin Fund. Ongoing

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rate increases could render the CRSP resources uneconomic, with customers having no choice but to pass those increased costs on to their consumers. For most of the CRSP customers, particularly the 55 Native American customers who became CRSP customers on October 1, 2004, this cost would be prohibitive and would defeat any potential benefit the federal resource is intended to provide.

CREDA urges the Department of the Interior to immediately seek appropriations for the non-power programs now financed with Basin Fund revenues. Further, CREDA believes that future use of revenues from the Basin Fund for non-power purposes should be limited to those situations where the use of power revenues is mandated by law, not when such use is merely permitted. For example, the Glen Canyon Adaptive Management Program authorizes, but does not mandate, the use of CRSP power revenues for program funding. Similarly, the Endangered Fish Recovery Program legislation requires the Bureau and the Western to seek appropriations in times of financial need. To the best of our knowledge, neither the Bureau nor Western has requested such appropriations, despite the congressional directive. Furthermore, these programs are for the benefit of an entire population, and should be funded as such, not by a restricted pool of recipients of federal hydropower.

CREDA also urges the Department to seek appropriations to fund OM &R at CRSP facilities when the Basin Fund is not adequate to cover these costs. Consideration could be given to the establishment of a "trigger", such as when the Bureau's 24-month hydrology indicates minimum power pool conditions at Lake Powell.

Our review of the legislative history of the CRSP indicates no one contemplated, or could have been reasonably expected to contemplate, this drought situation and the ensuing economic and financial impacts to CRSP power customers. This situation deserves immediate attention and assistance.

I am enclosing a copy of a Drought White Paper that CREDA prepared in March of this year, which provides additional information about these critical issues. Also enclosed is a resolution passed by the Colorado River Water Users Association in December 2004, supporting our request.

We would also like the opportunity to discuss these issues with you or your staff at your earliest convenience.

Sincerely,

*/s/ Leslie James*

Leslie James  
Executive Director

Cc: CREDA Board  
John Keys III  
Michael HacsKaylo  
AZ, CO, NV, NM, UT, WY Congressional Delegations

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#### DROUGHT IN THE COLORADO RIVER BASIN

##### THE COLORADO RIVER STORAGE PROJECT (CRSP)

The CRSP was authorized in the Colorado River Storage Project Act of 1956 (P.L. 485, 84<sup>th</sup> Cong., 70 Stat. 50), as a multi-purpose federal project. The Act defined project purposes as flood control, water storage for irrigation, municipal and industrial purposes and the generation of electricity. Recreation and environmental mitigation and protection were added as project purposes later, but were not added to all of the features that make up the CRSP.

The CRSP power features include five dams and associated generators, substations, and transmission lines. Glen Canyon Dam is located near Page, Arizona and is by far the largest of the CRSP projects. Glen Canyon consists of eight generators for a total of about 1300 MW, which is more than 76% of the total CRSP generation. Flaming Gorge Dam is on the Green River, a major tributary of the Colorado River, and is located near Vernal, Utah. Flaming Gorge has three units producing about 132 MW of generation. The Aspinall Unit includes three dams and generating plants along the Gunnison River near Gunnison, Colorado. Blue Mesa is the first dam on the river and has two units producing about 97 MW. Morrow Point is the second dam in the series and consists of two generators producing a total of 146 MW. Crystal is the final dam and has one 32 MW generator.

##### COLORADO RIVER ENERGY DISTRIBUTORS ASSOCIATION (CREDA)

CREDA's mission is "To preserve and enhance the availability, affordability, and value of Colorado River Storage Project facilities while promoting responsible stewardship of the Colorado River System." CREDA is a non-profit corporation, which was formed in 1978 as an association of entities who are long-term contractors for resources of the CRSP. CREDA works on behalf of its members with the Bureau of Reclamation (Bureau) and the Western Area Power Administration (WAPA) regarding issues related to the CRSP. CREDA members serve over 4 million consumers in six states: Arizona, New Mexico, Nevada, Colorado, Utah and Wyoming. CREDA members include joint action agencies, state agencies, political subdivisions, tribal utility authorities, municipalities, rural electric cooperatives and irrigation and electrical districts.

CRSP contractors pay all the power costs and approximately 95% of the irrigation costs of the CRSP, which includes construction (with interest), operation, maintenance and replacements, transmission, environmental and irrigation assistance. Beginning October 1, 2004, 55 tribes and pueblos became CRSP contractors under 20 year contracts.

#### DROUGHT IN THE COLORADO RIVER BASIN

The Colorado River Basin is in its sixth consecutive year of drought. In the 100 years of record keeping by the Bureau, there have never been six consecutive years of drought. Lake Powell is at its lowest level since 1969 at 3556 feet, which is 144 feet from full pool. It is approaching minimum power generation level. If this year's hydrology mirrors the past two years, this level could be reached as soon as February 2006. If minimum power generation level is reached, there will be little CRSP generation available to the CRSP contractors. This will have significant economic consequences for the CRSP contractors and the customers they serve, as well as for a number of other non-power programs that are funded with CRSP power revenues.

##### THE UPPER COLORADO BASIN FUND AND DROUGHT IMPACTS

The Basin Fund is a revolving fund maintained by CRSP power revenues. The Basin Fund is the source of CRSP project repayment, including: repayment of the capital investment with interest, operation, maintenance and replacement expense, 95% of the irrigation investment, Bureau and WAPA employee salaries (about \$80 million annually). In addition, the Fund has been the source of funding for other "non-power" programs:

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\*Approximately \$18 million for the Colorado River Salinity Control Program;  
\*\$179,577,774 for the Glen Canyon Adaptive Management Program;  
\*\$40,399,329 for the Upper Colorado River Basin and San Juan Basin Endangered Fish Recovery Programs.

The programs listed above total about \$20 million per year.

In addition, due to reduced generation levels from the CRSP resource, WAPA has had to purchase power on the open market to meet its contractual requirements. This year alone, they have spent \$50.5 million from the Upper Colorado Basin Fund for replacement power. In order to maintain a sufficient Basin Fund level, in October 2003, WAPA reduced energy deliveries to its customers by 26%. Each customer has had to "make up" the shortfall on its own. WAPA has also begun an approximate 24% rate increase process.

CREDA has worked with WAPA to develop a program as part of the rate process that would allow some customers to procure their own supplemental power instead of through WAPA. This would shift some of the Basin Fund risk from WAPA to the customers by allowing each customer to decide how the shortfall in CRSP generation should be made up.

Since 1998, the Basin Fund has been at risk of deficiency due to reduced generation levels, market price conditions and expenditures for environmental testing. CRSP customers have experienced increased rates and reduced energy deliveries. In the event generation ceases at Glen Canyon Dam, the CRSP rate would have to increase fourfold, which would also be approximately double the cost of energy that could be procured on the open market.

CREDA members, all non-profit entities, have no option other than to pass those costs on to their consumers. For most of the CRSP customers, particularly the 55 new Native American customers, this cost would be prohibitive, and would defeat any potential benefit the CRSP resource may provide to those customers.

NON-POWER RELATED PROGRAMS SHOULD BE FUNDED BY APPROPRIATIONS, NOT CRSP CUSTOMERS

CREDA is concerned that, when generation is ceased or close to being ceased at Glen Canyon Dam, an effort will be made to require CRSP power users to fund the non-power programs described above. This would, in effect, be a subsidy from the electric consumers in six Western states to all the parties that benefit from the Salinity Control, Adaptive Management and Endangered Species Recovery programs on the river.

Instead, the non-power programs should seek appropriations from Congress to fund activities when the Basin Fund is depleted. Further, the Basin Fund should be limited to "the basics", namely, those costs that are mandated by law to be repaid by the Fund. The Glen Canyon Adaptive Management Program authorizes, but does not mandate, the use of CRSP power revenues for program funding. The Endangered Fish Recovery Programs legislation requires the Bureau and WAPA to seek appropriations in times of financial need.

From a public policy standpoint, these programs are intended to benefit the environment, which is in the public interest, and therefore should be funded by appropriations. Providing appropriations for these programs would assist in maintaining the Basin Fund's solvency.

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APPROPRIATIONS RECOMMENDATIONS

CREDA suggests that Congress immediately:

Provide funding for Glen Canyon Adaptive Management Program costs by appropriations to Section 8, CRSP Act. (approx. \$9 M annually) – see GCPA Sec. 1807; CRSPA Sec. 5;

Provide funding for the Upper Colorado River and San Juan Endangered Fish Recovery Programs by appropriations to Section 8, CRSP Act (approx. \$6M annually) – see (3)(d)(1) of S. 2339; and

Provide funding for the Colorado Basin Salinity Control Program costs assigned to CRSP power revenues (approx. \$2 M annually)

Further, CREDA suggests that when the Bureau's 24-month hydrologic study indicates there will be no power generation at Glen Canyon Dam OR if the Secretary of the Interior implements an annual release amount of less than 8.23MAF, Congress provide appropriations, to be repaid by CRSP at the end of the repayment period, without interest, to fund the operation, maintenance, and replacement expenses of the Bureau and WAPA assigned to the Colorado River Storage Project (approximately \$80 million annually). Congress should also require a report to Congress if the hydrologic trigger is met. Funding would be discontinued when Lake Powell's level reaches the level agreed to by the states for 602(A) storage.

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Adopted by CRWUA December 17, 2004

Resolution No. 2005-19

DROUGHT IMPACTS ON THE COLORADO RIVER STORAGE PROJECT

The United States Bureau of Reclamation (USBR) and the Western Area Power Administration (Western) should implement cost-cutting measures and strategies to improve the status of the Upper Colorado River Basin Fund and stabilize the Colorado River Storage Project (CRSP) power rate, and to work in partnership with the CRSP customers to develop an operational, financial, and rate-setting strategy that addresses the drought situation, creates a sustainable cash flow and maintains a viable power rate.

The Colorado River Water Users Association encourages the passage of federal legislation that would make available non-reimbursable appropriations to the USBR and Western; to ensure ongoing funding of CRSP operations and other required annual funding obligations.

**Position Statement**

***Drought Impacts on the Colorado River Storage Project***

(Resolution No. 2005-19)

The federal CRSP hydropower and delivery systems were authorized by Congress to provide a wide range of significant benefits to millions of citizens in the West, including:

- Flood Control
- Irrigation
- Municipal water supply
- Interstate and international compact water deliveries
- Lake and stream recreation
- Blue ribbon trout fisheries
- River regulation
- Economic development
- Fish and wildlife propagation and mitigation
- Power generation and transmission

The Colorado River Basin is entering its sixth year of drought conditions. Lake Powell water storage is at the lowest since it filled in 1980, and is approaching the level where power generation will cease.

Funding for repayment of federal investment in the CRSP storage features and participating irrigation projects, and the operation and maintenance of the CRSP facilities and staff of the U.S. Bureau of Reclamation (USBR) and the Western Area Power Administration (Western) is provided through power revenues maintained in the Upper Colorado River Basin Fund.

A portion of the costs associated with the Colorado River Salinity Control program, the Glen Canyon Adaptive Management Program and the Upper Basin Endangered Fish Recovery Programs are funded through the Upper Colorado River Basin Fund.

A combination of reduced generation from the CRSP, costs associated with environmental programs and experiments, and wholesale power market conditions have resulted in unstable, non-sustainable cash flow conditions in the Upper Colorado River Basin Fund. The effective CRSP power rate is increasing while resource deliveries are declining.

As hydrologic conditions improve after the current severe ongoing drought that has plagued the Colorado River Basin and most of the western United States for the past five years, the Bureau of Reclamation should do its utmost to build reservoir conservation storage back to pre-drought conditions in each of the reservoirs which it manages.

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## Reponses to Comment Letter G-9

### G-9-1 and G-9-2

Your comment is noted. No change to the Final EIS was necessary.

### G-9-3

Your comments are noted. Seeking federal appropriations to replace Basin Fund revenues for non-power programs and Operation, Maintenance and Replacement of CRSP facilities is outside the scope of this study.

### G-9-4

The information requested is provided in the EIS. Please refer to the opening paragraph of Section 4.11 of the EIS identifies the issues addressed in the analyses of potential impacts to the electrical power resources.

### G-9-5

Your comment is noted. No change to the Final EIS was necessary. Section 1.8.1 of the EIS is a summary description of the Operation of Glen Canyon Dam Final EIS and Record of Decision. This and other references cited in Section 1.8 cover other previous federal actions that are of relevance to this EIS.

### G-9-6

The information requested is provided in Section 3.3.2 of the EIS.

### G-9-7

Information presented in the Draft EIS has been modified in the Final EIS (See Section 3.2.2.) pursuant to this specific comment, as well as other public comments. This revision does not change the impact analysis or results presented in the DEIS.

### G-9-8

See response to comment G-9-5.

### G-9-9

Your comment is noted. No change to the Final EIS was necessary.

### G-9-10 through G-9-14

Your comments are noted. No change to the Final EIS was necessary.

**G-9-15**

The information requested is provided in Section 3.3.2 of the EIS.

**G-9-16**

Your comment is noted. No change to the Final EIS was necessary. Section 4.11.2.9 of the EIS notes that the proposed federal action could reduce the amount of money available to meet the intended use of the Basin Power Fund. The potential impacts to the fund are described in Section 4.11.2.5.

**G-9-17 and G-9-18**

Your comment is noted.

**G-9-19**

See response to Comment No. G-9-3.

**G-9-20**

Your comment is noted. No change to the Final EIS was necessary.