

**SUBMIT OPTION SUBMITTAL FORM BY:**

1. EMAIL TO: [COLORADORIVERBASINSTUDY@USBR.GOV](mailto:COLORADORIVERBASINSTUDY@USBR.GOV)

2. U.S. MAIL TO: BUREAU OF RECLAMATION, ATTENTION MS. PAM ADAMS, LC-2721, P.O. BOX 61470, BOULDER CITY, NV 89006-1470

3. FACSIMILE TO: 702-293-8418

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## Option Submittal Form

**Contact Information (optional):**

**Keep my contact information private.**

Contact Name: _____	Title: _____
Affiliation: _____	
Address: _____	
Telephone: _____	E-mail Address: _____

Date Option Submitted: February 1, 2012

**Option Name:**

Lower Basin Water Bank
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**Description of Option:**

Increasing flexibility using existing infrastructure and institutional arrangements (e.g., storage of water in Lake Mead under domestic and/or international rules) to allow for voluntary and compensated conservation and storage of Colorado River entitlements for the benefit of critical junior uses of Colorado River water, in the event of shortage and/or as a means to augment supply. As part of a larger, cooperative effort, Lower Basin water users in the U.S. and Mexico would voluntarily work together to conserve water under a U.S. federal Intentionally Created Surplus (ICS) program and anticipated future Intentionally Created Mexican Allocation (ICMA) program and/or other arrangements to develop a substantial, ongoing Lower Basin storage account in Lake Mead that could be used to offset shortage risks to critical junior uses, provide augmented supplies during normal and above-normal conditions, and meet other river management objectives in the United States and Mexico. This bank could be operated on an interstate and even international basis and/or as multiple banks within distinct jurisdictions.
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**Location:** Describe location(s) where option could be implemented and other areas that the option would affect, if applicable. Attach a map, if applicable.

Areas of Arizona, California, Nevada and Mexico in which Colorado River water is used.
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**Quantity and Timing:** Roughly quantify the range of the potential amount of water that the option could provide over the next 50 years and in what timeframe that amount could be available. If option could be implemented in phases, include quantity estimates associated with each phase. If known, specify any important seasonal (e.g., more water could be available in winter) and/or frequency (e.g., more water could likely be available during above-average hydrologic years) considerations. If known, describe any key assumptions made in order to quantify the potential amount.

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Amount varies with need, which is defined by shortage volumes, yet-to-be-defined 'critical junior uses,' and other water management goals; and with the volume of Colorado River water that rights-holders would agree to make available through voluntary, compensated transfers or other agreements that result in changing location and/or purpose of use. A Lower Basin Water Bank (or banks) should be scalable, operating flexibly to meet needs as hydrologic conditions vary interannually and over the long term.

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## Additional Information

**Technical Feasibility:** Describe the maturity and feasibility of the concept/technology being proposed, and what research and/or technological development might first be needed.

Implementation could require new or expanded infrastructure.

**Costs:** Provide cost and funding information, if available, including capital, operations, maintenance, repair, replacement, and any other costs and sources of funds (e.g., public, private, or both public and private). Identify what is and is not included in the provided cost numbers and provide references used for cost justification. Methodologies for calculating unit costs (e.g., \$/acre-foot or \$/million gallons) vary widely; therefore, do not provide unit costs without also providing the assumed capital and annual costs for the option, and the methodology used to calculate unit costs.

Costs for water will be negotiated with willing sellers, and participation in the bank will be voluntary and compensated. Cost of banked water may include compensation to junior water rights holders who agree to forbear or reduce use under their rights, and to affected communities. Costs may include direct compensation to farmers or other water users; payment to water distribution organizations to cover costs of infrastructure maintenance and administration; payment to counties in lieu of taxes; weed control; and payment into a fund reserved for compensation to directly affected third parties (such as crop sprayers and farm suppliers when banked water comes from agriculture). Fallowing and deficit irrigation require no infrastructure or operating costs beyond typical infrastructure operating costs and administration.

Depending on how a lower basin water bank(s) is implemented, costs may also include new infrastructure to allow for new or expanded deliveries. Infrastructure expansion costs have been roughly defined for the CAP, for example - approximately \$250 million for an additional 300,000 acre-feet of canal capacity. Infrastructure needs and costs have not been identified for other locations.

**Permitting:** List the permits and/or approvals required and status of any permits and/or approvals received.

NEPA review for expansion or addition of any infrastructure in the United States, as well as any transfer volumes that exceed those contemplated in the LCR MSCP and the Final EIS for the Interim Shortage Guidelines. Any addition of infrastructure in Mexico may also require permitting.

**Legal / Public Policy Considerations:** Describe legal/public policy considerations associated with the option. Describe any agreements necessary for implementation and any potential water rights issues, if known.

A Lower Basin Water Bank could operate under the rules for Intentionally Created Surplus utilizing Lake Mead storage, possibly in combination with yet-to-be-defined rules for "Intentionally Created Mexican Allocation." This would potentially require a mechanism for exchanges or transfers between ICS and ICMA storage accounts.

Within the United States, transfer of Colorado River water entitlements is authorized under

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federal regulations, but must comply with both federal and state policies.

**Implementation Risk / Uncertainty:** Describe any aspects of the option that involves risk or uncertainty related to implementing the option.

LOW. Water banking is a low-risk activity, insofar as ICS and ICMA programs are designed to avoid increasing shortage risks to Lower Basin users in the United States and Mexico.

**Reliability:** Describe the anticipated reliability of the option and any known risks to supply or demand, such as: drought risk, water contamination risk, risk of infrastructure failure, etc.

No known risks.

**Water Quality:** Identify key water quality implications (salinity and other constituents) associated with the option in all of the locations the option may affect.

Water quality impacts could result from bank operations

**Energy Needs:** Describe, and quantify if known, the energy needs associated with the option. Include any energy required to obtain, treat, and deliver the water to the defined location at the defined quality.

Energy Required	Source(s) of Energy
Unknown.	

**Hydroelectric Energy Generation:** Describe, and quantify if known, any anticipated increases or decreases in hydroelectric energy generation as a result of the option.

Location of Generation	Impact to Generation
	Bank operations may increase or decrease hydroelectric energy generation, depending on the location of fallowing and deficit irrigation projects.

**Recreation:** Describe any anticipated positive or negative effects on recreation.

Location(s)	Anticipate Benefits or Impacts
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	Bank operations may impact flows for recreation depending on the location of fallowing and deficit irrigation projects.

**Environment:** Describe any anticipated positive or negative effects on ecosystems within or outside of the Colorado River Basin.

Location(s)	Anticipated Benefits or Impacts
	Bank operations may have a positive or negative impact on the health of Colorado River flows, depending on the location of fallowing and deficit irrigation projects. Groundwater recharge may be diminished in irrigated areas. Salton Sea inflows may be diminished. Flows between Imperial and Parker Dams may be diminished.

**Socioeconomics:** Describe anticipated positive or negative socioeconomic (social and economic factors) effects.

Where banked water is derived from agricultural operations, economic impacts to rural/source communities should be mitigated through direct payments to irrigators as well as payments to local institutions (e.g. county governments) and dependent businesses (e.g. crop sprayers) to compensate for revenue losses. Mitigation would be defined in terms of banking agreements. Innovative alternatives to “buy and dry” transfers that allow for continued viability of the grower operations that are transferring water have been documented by the Western Governors’ Association.<sup>1</sup>

**Other Information:** Provide other information as appropriate, including potential secondary benefits or considerations. Attach supporting documentation or references, if applicable.

We would appreciate the opportunity to work with Reclamation’s technical team on the implementation of this option in the Colorado River Simulation System model.

<sup>1</sup> For more information, see <http://www.westgov.org/initiatives/water/373-water-papers>.