

SUBMIT OPTION SUBMITTAL FORM BY:

1. EMAIL TO: 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

Option Submittal Form

Contact Information (optional):

Keep my contact information private.

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

Date Option Submitted: 2/1/2012

Option Name:

Integrated Options and Strategies to Maintain and Restore Healthy River Flows

Description of Option:

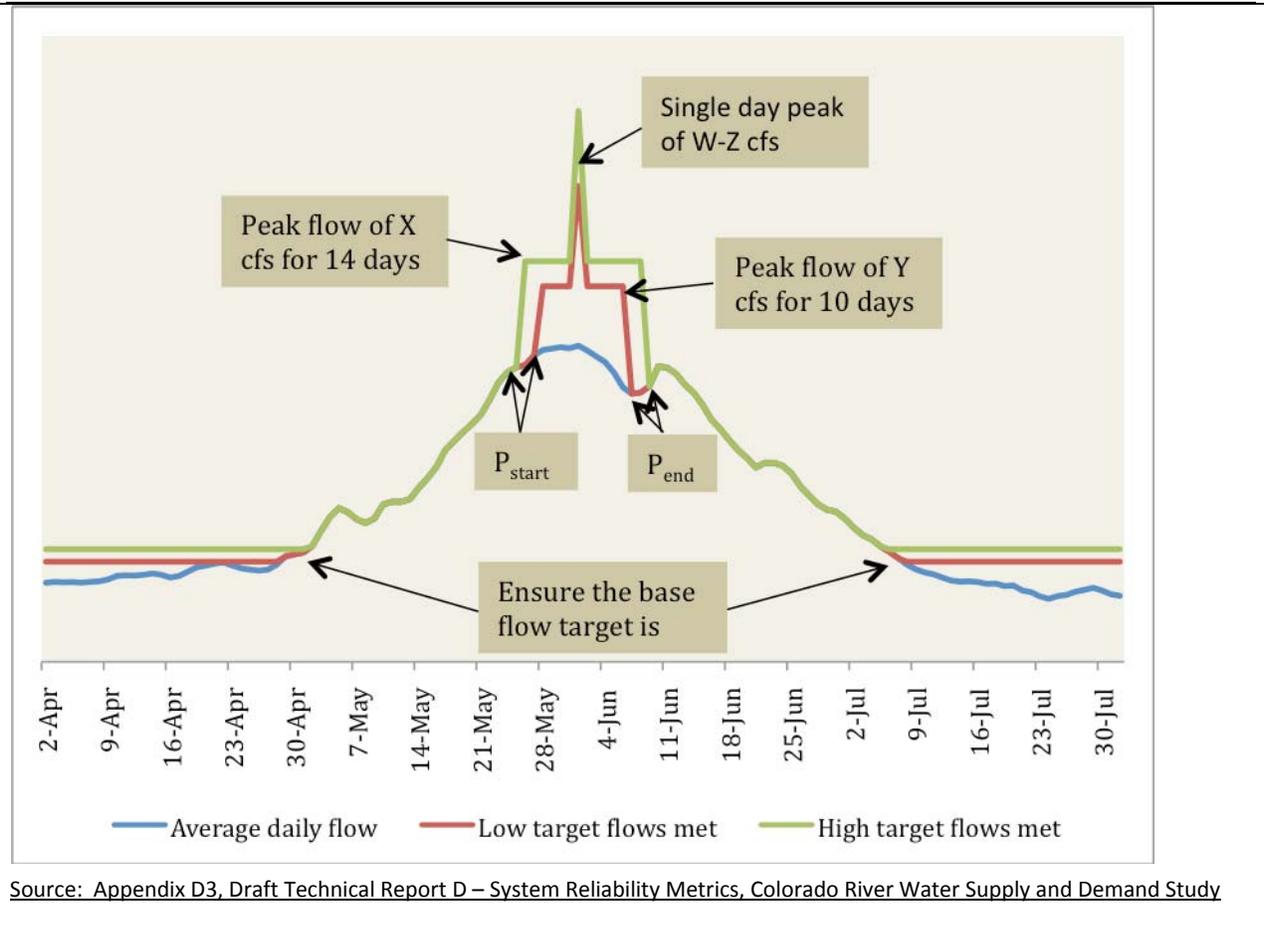
<p>This water management option is to maintain and restore the healthy river flows thought to provide a materially higher degree of river ecosystem and economic benefits. Where such benefits may be provided within current flow regimes, the option is to develop appropriate legal and policy mechanisms that protect enough of the current regimes. Such mechanisms include the continued and adaptive re-operation of major federal reservoirs and other water projects. Where a materially higher degree of river ecosystem and economic benefits depends on the restoration of current flow regimes, this option will again include the continued and adaptive re-operation of water projects, should be integrated with options for water banking and improving irrigation efficiency, and entails protection of restored flows by appropriate mechanisms. The integration of this option with an extensive set of options for demand management should reduce the potential for conflict between meeting such water demands and realizing the river ecosystem and economic benefits from maintaining and protecting more of the targeted flow regimes.</p> <p>Because these benefits are generated by maintaining or restoring river flows instead of consuming them, the quantity and timing of the target flows for upstream reaches need not be added to the flow targets in downstream reaches and are not necessarily added to consumptive demands when assessing water supply and demand imbalances. An important example is meeting flow targets in the Upper Basin by piggybacking on the flows that should not be depleted to keep from violating the flow threshold at Lee Ferry imposed by the 1922 Compact, where the blue line (including when it is under the green line) in the figure below could represent much of the flows that should not be depleted to meet Compact obligations.</p>
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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.

See attached table on healthy flows, columns 1, 2, and 4.

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.

See attached table on healthy flows, column 3.

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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.

This option is currently feasible only at coarse temporal and spatial scales. See table on healthy flows, column 5, issues with the Colorado River Simulation System. Full implementation of this option and its integration with all other water management options requires the basin-wide development and synthesis of finer resolution assessments of ecological and recreational flow needs. Such flow needs then need to be fully incorporated into water budgets at consistent scales. Such basin-wide flow assessments and water budgets have been developed elsewhere at costs ranging from \$5 to \$15 million. The Focus Study on the Colorado River Basin being undertaken by the USGS could offer some building blocks but is not currently scoped or funded to provide basin-wide assessments of ecological and recreational flow needs and consistent water budgets at sufficiently fine scales.

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.

These considerations are highly dependent on the resolution and consistency for the flow assessments and water budgets. The costs, implementation risks, and uncertainty of this water management option are generally higher with coarse, less than comprehensive flow assessments and with imprecise water budgets. Permitting, legal and policy considerations and water supply reliability are generally more problematic at the coarse scale.

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

See above

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.

See above

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

See above

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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.

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

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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

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

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

Location(s)	Anticipate Benefits or Impacts

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

Location(s)	Anticipated Benefits or Impacts

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

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The objective of this option is to maintain or increase the benefits in all of these sectors as supply imbalances in meeting other water demands are addressed.

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