

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: February 1, 2012

Option Name:

Water Reuse/Recycling

Description of Option:

Water recycling reuses water that normally would be discharged as treated wastewater to meet potable and nonpotable demands. Recycled water is a drought-proof, locally controlled, and highly reliable source of water supply.

Location: Describe location(s) where option could be implemented and other areas that the option would affect, if applicable. Attach a map, if applicable.

The metropolitan areas of southern California, Phoenix, Tucson, and Las Vegas are specifically analyzed in a white paper prepared during the 2007 augmentation study. ¹ Additional reuse potential is evaluated for the Front Range of Colorado in two published reports by the NGO conservation community. ²

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.

¹ Colorado River Consultants. 2008. Technical Evaluation of Options for Long-Term Augmentation of the Colorado River System: White Paper on Water Reuse. March.

² Western Resource Advocates, Trout Unlimited, Colorado Environmental Coalition. 2011. Filling the Gap: Commonsense Solutions for Meeting Front Range Water Needs. Boulder, CO.

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1.5 million AF of treated wastewater is discharged to the ocean in southern California without being reused. Over the next several decades, municipal reuse is expected to grow, leaving 900,000 AF for potential agricultural reuse. We estimate 200,000 AF of additional reuse in the Denver metropolitan area and 70,000 AF of additional reuse in the Arkansas basin are possible as well.

Reuse plants could be brought online gradually and incrementally increased as demand dictates.

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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.

Water reuse for meeting municipal and agricultural demand already exists throughout the Colorado River Basin. Key technical issues include water availability, seasonal storage, and salinity mitigation.

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.

\$900 to \$1,700 per AF.

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

Federal and state permitting likely required (NEPA, PPA, NPDES). Local permitting also probable.

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.

Public perceptions can dramatically impact acceptance for water supply from reuse. Where extensive education has preceded reuse projects, public acceptance is high. In Singapore, direct potable reuse water is bottled and sold in convenience stores (it's called "NEWater").

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

Little to no risk or uncertainty.

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.

Drought-proof, locally controlled, highly reliable.

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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.

Impacts are heavily location specific and depend on source water quality, treatment method, and the quality requirements of end users.

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
Additional energy will be required to further treat wastewater effluent to meet higher water quality standards and to pump treated water to customers. In some cases (e.g. Los Angeles/Las Vegas), the energy required to treat and distribute reuse water is smaller than the energy required to import raw water supplies.	

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
	No impacts.

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

Location(s)	Anticipate Benefits or Impacts
	See next.

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

Location(s)	Anticipated Benefits or Impacts
	Reuse dependent ecosystems do exist where effluent provides perennial flow – impacts to these ecosystems may be significant if water is reused instead of discharged. Construction site impacts are also possible.

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

Unknown.

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

See:

Colorado River Consultants. 2008. Technical Evaluation of Options for Long-Term Augmentation of the Colorado River System: White Paper on Water Reuse. March.
Western Resource Advocates, Trout Unlimited, Colorado Environmental Coalition. 2011. Filling the Gap: Commonsense Solutions for Meeting Front Range Water Needs. Boulder, CO.
Available at: www.westernresourceadvocates.org/gap.