

STATE OF COLORADO

Colorado Water Conservation Board

Department of Natural Resources

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Denver, Colorado 80203
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TO: Colorado Water Conservation Board Members

Bill Ritter, Jr.
Governor

FROM: Ted Kowalski

James B. Martin
DNR Executive Director

DATE: January 14, 2010

Jennifer L. Gimbel
CWCB Director

SUBJECT: **Agenda Item 23, January 26-27, 2010 Board Meeting
Water Supply Protection Section – The Colorado River
Basin Water Supply and Demand Study**

Dan McAuliffe
CWCB Deputy Director

Background

As mentioned in previous CWCB Director Reports, the U.S. Bureau of Reclamation selected three western river basins for funding under its “Basin Study Program.” The Colorado River Basin Water Supply and Demand Study was one of the three basins selected (at a total cost of \$2 million). The other two basins selected were the St. Mary and Milk River basins in Montana (at a total cost of \$700,000) and the Yakima River basin in Washington (at a total cost of \$2.6 million). Each basin study requires a 50/50 cost-share, and in the case of the Colorado River Basin study, \$1 million will be provided by the Bureau of Reclamation, and \$1 million will be provided by the seven Colorado River Basin states.

Recently, representatives of Reclamation’s Upper and Lower Colorado Regions and the Colorado River Basin states finalized a proposed a Contributed Funds Act Agreement, a Plan of Study, and a Public Involvement Plan for the Colorado River Basin Water Supply and Demand Study. Each state (or water provider substitution) is required to contribute one-seventh of the total non-federal share of \$1 million, or \$142,860. The Contributed Funds Agreement requires that \$75,000 be received by Reclamation by July 31, 2010, and that the balance, or \$67,860, be received as a cash contribution or authorized in-kind service by the expiration date of the agreement on January 31, 2012. Attached to this memo are: 1) a one page fact sheet, 2) the Contributed Funds Act Agreement; 3) the proposed Plan of Study; and, 4) the proposed Public Involvement Plan.

Staff Recommendation

The Staff will provide a presentation on the scope of the Colorado River Basin Supply and Demand Study, and seek Board input on this study.

AGREEMENT

AMONG

Arizona Department of Water Resources
AND
(California) Six Agency Committee
AND
Colorado Water Conservation Board
AND
New Mexico Interstate Stream Commission
AND
Southern Nevada Water Authority
AND
Utah Division of Water Resources
AND
Wyoming State Engineer's Office
AND
Bureau of Reclamation, Department of the Interior

for the
COLORADO RIVER BASIN WATER SUPPLY AND DEMAND STUDY

Preamble

THIS AGREEMENT for the Colorado River Basin Water Supply and Demand Study is entered into by the STATE OF ARIZONA, acting through the ARIZONA DEPARTMENT OF WATER RESOURCES, the (CALIFORNIA) SIX AGENCY COMMITTEE, the COLORADO WATER CONSERVATION BOARD, the SOUTHERN NEVADA WATER AUTHORITY, the NEW MEXICO INTERSTATE STREAM COMMISSION, the UTAH DIVISION OF WATER RESOURCES, the WYOMING STATE ENGINEER'S OFFICE, and the UNITED STATES OF AMERICA, DEPARTMENT OF THE INTERIOR, BUREAU OF RECLAMATION.

Explanatory Recitals

WHEREAS, the Secretary of the Interior, through the Bureau of Reclamation, is authorized to make examinations and surveys for the development of waters under 43 U.S.C. §§ 411 and 1511, and Reclamation has received appropriations to perform such a study for the Colorado River Basin (Basin), called the Colorado River Basin Water Supply and Demand Study (Study); and

WHEREAS, the Secretary, through the Bureau of Reclamation, has the ability to receive money contributions through the Sundry Civil Expenses Appropriations Act, March 4, 1921, 43 U.S.C. §395 (Contributed Funds Act); and

WHEREAS, the States of Arizona, California, Colorado, Nevada, New Mexico, Utah, and Wyoming (Basin States) desire to contribute funds to the Bureau of Reclamation for the performance of the Study, and also wish to perform concurrent studies, which can be used in the furtherance of the Study.

NOW, THEREFORE, in consideration of the mutual covenants herein contained, the Parties agree as follows:

ARTICLES

I. Purpose of the Agreement

The Parties agree to work collaboratively to perform the Study. This Agreement establishes the terms for funding the Study and the terms that will guide the performance of the Study.

II. Definitions

- A. Reclamation means the United States Department of the Interior, Bureau of Reclamation.
- B. UC Region means the Upper Colorado Region of the Bureau of Reclamation.
- C. LC Region means the Lower Colorado Region of the Bureau of Reclamation.
- D. Non-Federal Cost Share Partners mean the Arizona Department of Water Resources, the (California) Six Agency Committee, Colorado Water Conservation Board, the New Mexico Interstate Stream Commission, the Southern Nevada Water Authority, the Utah Division of Water Resources, and the Wyoming State Engineer's Office.
- E. Parties means Reclamation and each Non-Federal Cost Share Partner referred to collectively.
- F. Party means either Reclamation or an individual Non-Federal Cost Share Partner.
- G. Stakeholder means any entity that is not Reclamation or a Non-Federal Cost Share Partner that may provide input, data, comments, or participate in the public involvement process related to the Study. Reclamation and Non-Federal Cost Share Partners may invite Stakeholders to Study-related meetings where their input and expertise is desired.
- H. Confidential Information means trade secrets or commercial or financial information that is privileged or confidential under the meaning of 5 U.S.C.

§552(b)(4). However, this Agreement and the documents that are shared pursuant to this Agreement must comply with relevant Freedom of Information Act (FOIA) and State open records act laws.

- I. Term of Agreement means that period set forth under Section X, Article A.
- J. Subject Invention means any invention or discovery, which is or may be patentable under Title 35 of the United States Code, conceived or first actually reduced to practice in the performance of work under this Agreement.

III. Purpose of the Study

The purpose of the Study is to conduct a comprehensive study to define current and future imbalances in water supply and demand in the Basin and the adjacent areas of the Basin States that receive Colorado River water for approximately the next 50 years, and to develop and analyze adaptation and mitigation strategies to resolve those imbalances.

The Non-Federal Cost Share Partners acknowledge that Reclamation may utilize this Study to meet portions of the Secure Water Act (42 U.S.C. § 10363).

IV. Study Approach, Expected Outcomes and Deliverables

- A. The Study will be technically oriented, incorporating information from the latest science, engineering technology, climate models, and innovations. The level of analysis of the strategies and options will be similar to an appraisal-level study. The Study will take a collaborative approach and foster Stakeholder participation and input throughout the Study.
- B. Management of the Study will be accomplished through the designation of Co-Study Managers, a Steering Team, a Project Team, and various Sub-Teams.
 - 1. One Co-Study Manager will be designated from Reclamation and one Co-Study Manager will be designated from the Non-Federal Cost Share Partners. The Co-Study Managers will sit on and lead the Steering Team.
 - 2. The Steering Team will steer and guide the efforts of the Project Team such that the objectives of the Study are met in an effective, efficient manner, and within the Study's financial and time constraints. The Steering Team will be comprised of one member from the UC Region, one member from the LC Region, one member from each Basin State, and one member from the Upper Colorado River Commission, for a total of 10 members.
 - 3. The Project Team will ensure that the tasks that relate to the Study are completed in a cost-effective, timely manner and are technically sound. Members of the Project Team provide the expertise, experience, and knowledge that relate to the Study's scope and objectives. Members include staff from the UC and LC Regions, staff from the non-Federal Cost-Share

Partners, and staff from other entities who may be contracted to provide specific information, knowledge, and support. The Co-Study Managers will lead the Project Team.

4. Various Sub-Teams will be formed as needed to perform specific tasks. Sub-Team members provide specific expertise required to perform those tasks. Members are comprised of Project Team members, additional staff from the UC and LC Regions and the non-Federal Cost-Share Partners, and staff from contracted entities. Membership may also include representatives from other groups with a particular expertise sought by the Sub-Team.
- C. The primary products of the Study will be interim written reports to be integrated into a final report that will include the following elements:
1. Assessment of quantity and location of existing and future water supplies and demands throughout the Basin, including the potential effects of climate variability and climate change;
 2. Analysis of supply and demand relationships and quantification of imbalances in specific locations throughout the Basin;
 3. Development and evaluation of options for balancing supply and demand;
 4. Findings and recommendations;
 5. Description of methods and research processes, including assumptions, models, and data used in the Study; and
 6. Description of Stakeholder involvement.

Other expected outcomes of the Study include the identification of collaborative strategies through the Study's Public Involvement Plan, included as a part of the Plan of Study. In addition, the Study is expected to enhance communication and improve the understanding of water management issues among the Parties and the Stakeholders.

V. Plan of Study

The Plan of Study is attached hereto and incorporated herein as Exhibit B. All Parties acknowledge that as the Study progresses, additional detailed tasks and sub-tasks will be determined by the Project Team and approved by the Steering Team. If the Steering Team determines that substantial changes or modifications to the Plan of Study are necessary, the Parties may amend Exhibit B by mutual written agreement.

VI. Study Cost and Funding

- A. The total cost of this Study is estimated to be \$2,000,000, to be cost-shared equally between Reclamation and the Non-Federal Cost Share Partners (\$1,000,000 from Reclamation, \$1,000,000 from the Non-Federal Cost Share Partners). The Non-Federal Cost Share Partners agree to split their cost-share obligation of \$1,000,000 equally. Each Non-Federal Cost Share Partner will contribute 1/7th of \$1,000,000, a contribution of \$142,860, to be provided as cash or a combination of cash and in-kind services.
- B. No later than July 31, 2010, each Non-Federal Cost Share Partner shall contribute \$75,000 in cash. In addition, by the expiration date of this Agreement, each Non-Federal Cost Share Partner will contribute the balance of their financial obligation (\$67,860) as cash and/or in-kind services by performing concurrent studies which shall provide information and data integral to the Study. All cash funds contributed will be electronically transferred to Reclamation and deposited within an account to be provided by Reclamation.
- C. In the event a Non-Federal Cost Share Partner is unable to participate due to lack of funding, that Non-Federal Cost Share Partner shall immediately withdraw from this Agreement in accordance with Section X, Article C. In the event of a notice of withdrawal, the remaining Non-Federal Cost Share Partners may meet and agree to alter the cash and/or in-kind services portions of their contributions to cover any lack of funding created by the withdrawal of a Non-Federal Cost Share Partner. If such an agreement is made, the remaining Non-Federal Cost Share Partners shall provide a written copy of their agreement to Reclamation within sixty (60) days. If an agreement is not reached within sixty (60) days, Reclamation and the remaining Non-Federal Cost Share Partners shall meet and discuss other options that allow the Study to move forward including adjusting the Study to allow for concurrent studies to obtain the information that was to be provided by the withdrawing Non-Federal Cost Share Partner.
- D. In the event that any funds advanced to Reclamation by the Non-Federal Cost Share Partners are not required to complete the work under the Study, such excess funds shall be returned by Reclamation to the Partners without interest, upon completion of the work defined by the Study; provided, however, that in the event the Parties agree on additional work consistent with the direction of this Agreement, such excess funds may be retained by Reclamation.

VII. Authorities

- A. Nothing in this Agreement alters the statutory authorities or any other authorities of the Non-Federal Cost Share Partners or Reclamation. This Agreement is intended to facilitate cooperative efforts for mutual provision of services and support and technical assistance by both Parties in the conduct of meeting the objectives and scope of the Study. This Agreement does not supersede or void

B. Reclamation's authority to enter into this Agreement:

1. Reclamation Act of June 17, 1902 (ch. 1093, 32 Stat. 388; 43 U.S.C. §372, et seq.) and acts amendatory thereof and supplementary thereto.
2. The Sundry Civil Expenses Appropriations Act, March 4, 1921, 43 U.S.C. §395 (Contributed Funds Act).
3. The Colorado River Basin Project Act, section 201 (82 Stat. 885; 43 U.S.C. § 1511).

C. Non-Federal Cost Share Partners' authority to enter into this Agreement:

1. The Arizona Department of Water Resources, through its Director, is authorized and directed, subject to the limitations in A.R.S. § 45-106, for and on behalf of the State of Arizona, to consult, advise and cooperate with the Secretary of the Interior of the United States ("Secretary") with respect to the exercise by the Secretary of congressionally authorized authority relative to the waters of the Colorado River (including, but not limited to, the Boulder Canyon Project Act of 1928, 43 U.S.C. § 617, and the Colorado River Basin Project Act of 1968, 43 U.S.C. § 1501). Additionally, under A.R.S. § 45-105(A)(8), the Director is authorized to "[e]nter into an interagency contract or agreement with any public agency pursuant to title 11, chapter 7, article 3 and contract, act jointly or cooperate with any person to carry out the provisions and purposes of" A.R.S. Title 45. Pursuant to A.R.S. § 45-105(A)(3) and (A)(10), the Director may "[c]ollect and investigate information upon and prepare and devise means and plans for the development, conservation and utilization of all waterways, watersheds, surface water, groundwater and groundwater basins in this state and of all related matters and subjects," and "cooperate with agencies of the United States or of any state or government."
2. (California) Six Agency Committee: The Colorado River Board ("CRB") of California was created in 1937 by the California Legislature in recognition of the vital nature of the Colorado River water and power resources to the general well being of the state, its agencies, and its citizens. As California Water Code Section 12550 permits monies to be contributed in support of the state's funding of the Colorado River Board, the Six Agency Committee was created in 1950 to provide such support. The Six Agency Committee is a Joint Powers Authority composed of six Southern California public agencies with Colorado River water and power interests: Coachella Valley Water District. Imperial Irrigation District, Los Angeles Department of Water and Power, Palo Verde Irrigation District, San Diego County Water Authority and the Metropolitan Water District of Southern California. The Six Agency

Committee administers funds contributed by the represented agencies, which currently accounts for 100 percent of the CRB's budget. The purpose of the Committee is to administer funds contributed by the represented agencies for purposes that will protect and advance their rights and interests in the Colorado River System.

3. The Colorado Water Conservation Board is a division of the State of Colorado, Department of Natural Resources, created for the purpose of aiding in the protection and development of the waters of the State of Colorado. The Colorado Water Conservation Board is authorized to enter this Agreement pursuant to Section 37-60-106 C.R.S. (2009).
4. The New Mexico Interstate Stream Commission is a statutory agency of the State of New Mexico with broad powers to investigate, protect, conserve and develop the state's waters, including both interstate and intrastate stream systems. The New Mexico Interstate Stream Commission is authorized to enter into this Agreement pursuant to Section 72-14-3 NMSA 1978.
5. The Southern Nevada Water Authority is a Nevada joint powers agency and political subdivision of the State of Nevada, created by agreement dated July 25, 1991, as amended November 17, 1994, and January 1, 1996. The Southern Nevada Water Authority is authorized to contract with public entities for the provision of services pursuant to ¶ 6(h) of the Cooperative Agreement that formed SNWA, and the Intergovernmental Cooperation Act of 1968 (31 U.S.C. §6505) authorizes federal agencies to provide specialized services to state or local governments and to receive reimbursement.
6. The Division of Water Resources (DWR) is the water resource authority for the State of Utah. Utah Code Ann. § 73-10-18. The Utah Department of Natural Resources Executive Director (Department), with the concurrence of the Utah Board of Water Resources (Board), appoints the DWR Director (Director). § 63-34-6 (1). The Board makes DWR policy. § 73-10-1.5. The Board develops, conserves, protects, and controls Utah waters, § 73-10-4(4), (5), and in cooperation with the Department and Governor, supervises administration of interstate compacts, § 73-10-4, such as the Colorado River Compact, §§ 73-12a-1 through 3, and the Upper Colorado River Basin Compact, § 73-13-10. The Board, with Department and Gubernatorial approval, appoints a Utah Interstate Stream Commissioner, § 73-10-3, currently the DWR Director, to represent Utah in interstate conferences to administer interstate compacts. §§ 73-10-3 and 73-10-4. These delegations of authority authorize the Utah Interstate Stream Commissioner/DWR Director to sign this document.
7. Water in Wyoming belongs to the state. Wyoming Constitution Article 8 Section 1. The Wyoming State Engineer is a constitutionally created office and is Wyoming's chief water official with general supervisory authority over the waters of the State. Wyoming Constitution, Article 8, Section 5. The

Wyoming legislature conferred upon Wyoming officers the authority to cooperate with and assist like authorities and entities of other states in the performance of any lawful power, duty or authority. Wyo. Stat. Ann. Section 16-1-101 (2005). Wyoming and its State Engineer represent the rights and interests of all Wyoming appropriators with respect to other states. Wyoming v. Colorado, 286 U.S. 494 (1922). See Hinderlider v. La Plata River & Cherry Creek Ditch Co., 304 U.S. 92 (1938). In signing this Agreement, the State Engineer intends that this Agreement be mutually and equally binding between the Parties.

VIII. Anti-Deficiency Act

The expenditure or contribution of any funds for the performance of any obligation of any Party under this Agreement shall be contingent upon appropriation or allotment of funds for the payment of such obligation. No liability shall accrue to any Party in case funds are not appropriated or allotted. No provision herein shall be interpreted to require obligation or payment of funds in violation of the Anti-Deficiency Act, 31 U.S.C. §1341.

IX. Reports and Confidentiality

- A. Freedom of Information Act (FOIA) Disclosures: The Parties understand and agree that all communications, including this Agreement, may be disclosed to the public in accordance with the FOIA, unless protected under any FOIA exemptions. Similarly, there are State open records act requirements that the Parties understand may require disclosure to the public in accordance with those State laws, unless protected under those State laws.
- B. Final Reports: The results of this Agreement and the science, engineering, and technology data that are collected, compiled, and evaluated under this Agreement shall be shared and mutually interchanged by Non-Federal Cost Share Partners and Reclamation. A final report summarizing all data and findings shall be prepared by Reclamation and the Non-Federal Cost Share Partners. Reclamation and the Non-Federal Cost Share Partners shall have 60 days to review the manuscript prior to submission for publication. The report shall acknowledge this Agreement and the contribution of each Party's personnel and any Stakeholders contributions that are requested by Reclamation and/or the Non-Federal Cost Share Partners. The final content of the Report will be determined by Reclamation and the Non-Federal Cost Share Partners.
- C. Confidentiality:
 - 1. Any Confidential Information used in this Agreement shall be clearly marked confidential or proprietary by the submitter and shall not be disclosed by the recipient without permission of the submitter. To the extent any Party orally submits its Confidential Information to another Party, the submitting Party will prepare a document marked "CONFIDENTIAL" embodying or identifying in reasonable detail such orally submitted Confidential

Information and provide the document to the other Party within thirty (30) days of disclosure.

2. No Party shall be bound by confidentiality if the Confidential Information received from another Party:
 - a. Already is available to the public or known to the recipient;
 - b. Becomes available to the public through no fault of the recipient; or
 - c. Is non-confidentially received from another Party legally entitled to it.
3. It shall not be a breach of this Agreement if the recipient is required to disclose the Confidential Information by a valid order of a court or other government body, or as otherwise required by law, or as necessary to establish the rights of any Party under this Agreement; PROVIDED THAT the recipient shall provide prompt prior notice thereof to the submitting Party to enable the submitting Party to seek a protective order or otherwise prevent such disclosure, and PROVIDED FURTHER THAT the Confidential Information otherwise shall continue to be confidential.

X. Term and Termination

- A. Term: This Agreement shall take effect upon the approval of the Parties and, unless earlier terminated by the Parties, will expire on January 31, 2012, unless amended.
- B. Amendment: If any Party desires to modify this Agreement, all Parties shall confer in good faith to determine the desirability of such modification. Such modification shall not be effective until a written amendment is signed by all Parties.
- C. Withdrawal: Individual Non-Federal Cost Share Partners may withdraw from this Agreement at any time, with or without cause, and without incurring liability or obligation to the other Parties by providing notice to Reclamation and the remaining Non-Federal Cost Share Partner(s) at least ninety (90) calendar days prior to withdrawing from this Agreement. The withdrawing Non-Federal Cost Share Partner shall forfeit any funds obligated by it prior to the date on which the notice of withdrawal occurs.

XI. Key Personnel

- A. Each Party shall designate key personnel for receipt of notices and other purposes under this Agreement ("Key Personnel"). The Key Personnel for each Party are listed in Exhibit A, which is attached hereto and incorporated herein.
- B. Should a Party designate new Key Personnel during the term of this Agreement, the Party shall provide the other Parties with notice of the name of its new designated Key Personnel in accordance with Section XII.

- C. The Key Personnel are not authorized to change or interpret with authority the terms and conditions of this Agreement.

XII. Notices

Notices, requests, demands, or other communications between the Parties under this Agreement, including copies of any correspondence among the scientific and/or technical representatives of each Party that interpret or may have a bearing on the legal effect of this Agreement's terms and conditions, shall be sent to the Key Personnel listed in Exhibit A. Notice will be sufficiently given for all purposes as follows:

- A. Personal Delivery: When delivered to the recipient, notice is effective upon delivery.
- B. United States Mail: When mailed, postage prepaid, by first class mail, notice is effective three business days after the date the notice is mailed by the sender. When mailed, postage prepaid, by certified mail, return receipt requested, notice is effective on receipt, if a return receipt confirms delivery.
- C. Overnight Delivery: When delivered by an overnight delivery service such as Federal Express, charges prepaid or charged to the sender's account, notice is effective on delivery, if delivery is confirmed by the delivery service.

XIII. General Provisions

- A. Limitations: This Agreement sets out the Parties' intentions and objectives and does not direct or apply to any person besides the Non-Federal Cost Share Partners and Reclamation. This Agreement is not intended to, and does not create, any right, benefit, or trust responsibility, substantive or procedural, enforceable at law or equity, by anyone against the United States, its agencies, its officers, or any person.
- B. Subcontracting Approval: A Party hereto desiring to obtain and use the services of a third party via contract or otherwise shall give prior notice to the other Parties, including details of the contract or other arrangement. This requirement is to assure that confidentiality is not breached and rights in Subject Inventions are not compromised.
- C. Assignment: No Party has the right to assign this Agreement or any of its responsibilities hereunder.
- D. Endorsement: This Agreement and/or the results of the Study funded under this Agreement are not to be construed as an endorsement of the results of the Study by the Federal government or any non-Federal Cost Share partner, except as may be explicitly stated by an authorized representative of the Federal government or by an authorized representative of a specific Non-Federal Cost Share Partner.

- E. Disputes: Any dispute arising under this Agreement, which cannot be readily resolved, shall be submitted jointly to the Key Personnel, identified in Exhibit A, Key Personnel. Each Party agrees to seek in good faith to resolve the issue through negotiation or other forms of nonbinding dispute resolution processes mutually acceptable to the Parties. Pending the resolution of any dispute or claim, each Party agrees that performance of all obligations shall be pursued diligently.
- F. Force Majeure: No Party shall be liable for any unforeseeable event beyond its reasonable control not caused by the fault or negligence of such Party:
1. Which causes the Party to be unable to perform its obligations under this Agreement; and
 2. Which it has been unable to overcome by the exercise of due diligence.
 3. This includes, but is not limited to, flood, drought, earthquake, storm, fire, pestilence, lightning and other natural catastrophes, epidemic, war, riot, civil disturbance or disobedience, strikes, labor dispute, failure or sabotage of any Party's facilities or any order or injunction made by a court or public agency.
- G. Governing Law: The construction, validity, performance, and effect of this entire Agreement shall be governed by the laws applicable to the Government of the United States of America in accordance with applicable Federal Law as interpreted by Federal Courts.
- H. Waiver: The failure of any Party to enforce any term hereof shall not be deemed a waiver of any rights contained herein.
- I. Severability: In the event any provision of this Agreement is determined to be invalid or unenforceable under any controlling law, the invalidity or unenforceability of that provision shall not in any way affect the validity or enforceability of the remaining provisions of this Agreement.
- J. Entire Agreement: The terms and conditions contained in this Agreement constitute the entire Agreement and understanding by and among the Parties and shall supersede all other communications, negotiations, arrangements and agreements either oral or written, with respect to the subject matter herein.
- K. Notwithstanding Subsection XIII.J., individual Non-Federal Cost Share Partners may enter into separate agreements with Reclamation as may be necessary under applicable State law to implement the terms and conditions of this Agreement requiring contribution of funds.¹ Such agreements between Non-Federal Cost Share Partners and Reclamation shall not be inconsistent with the terms and conditions of this Agreement.
- L. Counterparts: This Agreement may be executed in duplicate and each original shall be equally effective.

¹ The State of Colorado will enter into an agreement with Reclamation that will be consistent with Colorado fiscal rules and applicable statutes.

- M. Sovereign Immunity: The Parties do not waive their sovereign immunity by entering into this Agreement, and each fully retains all immunities and defenses provided by law with respect to any action based on or occurring as a result of this Agreement.
- N. Prior Approval: This Agreement shall not be binding upon the Wyoming State Engineer's Office unless it has been reduced to writing before performance begins and unless it is approved as to form by the Wyoming Attorney General or his representative.
- O. Third Party Beneficiary Rights: The Parties do not intend to create in any other individual or entity the status of third party beneficiary. The rights, duties, and obligations contained in this Agreement shall operate only among the Parties and shall inure solely to the benefit of the Parties to this Agreement.
- P. All contractors shall strictly comply with all applicable federal and State laws, rules, and regulations in effect or hereafter established, including, without limitation, laws applicable to discrimination and unfair employment practices.
- Q. The State of Arizona may terminate this Agreement upon finding that a State employee that was significantly involved in the creation of this Agreement is, at the time the Agreement is in effect but no later than three years after its termination, an employee or consultant to any other Party in the Agreement.
- R. Drafting Considerations: Each Party has participated fully in the drafting, review and revision of this Agreement, each of whom is sophisticated in the matters to which this Agreement pertains, and no Party shall be considered to be the sole drafter of this Agreement.
- S. Officials Not To Benefit: No Member of or Delegate to the Congress, or Resident Commissioner, shall benefit from this Agreement other than as a water user or landowner in the same manner as other water users or landowners.

IN WITNESS WHEREOF, the Parties hereto have caused this Agreement to be executed.

Approved as to form:

THE STATE OF ARIZONA acting
through the ARIZONA
DEPARTMENT OF WATER
RESOURCES

By: _____
Nicole Klobas
Deputy Counsel

By: _____
Herbert R. Guenther
Director

Date

Approved as to form:

(CALIFORNIA) SIX AGENCY
COMMITTEE

By: _____
Gerald R. Zimmerman
Executive Director
Colorado River Board of California

By: _____
Dana B. Fisher, Jr.
Chairman

Date

Approved as to form:

COLORADO WATER
CONSERVATION BOARD

By: _____
Maggie Van Cleef
Acting Purchasing Director
Colorado Department of Natural Resources

By: _____
Jennifer L. Gimbel
Director

Date

Approved as to form:

SOUTHERN NEVADA
WATER AUTHORITY

By: _____
John J. Entsminger
Deputy General Counsel

By: _____
Patricia Mulroy
General Manager

Date

Approved as to form:

NEW MEXICO
INTERSTATE STREAM
COMMISSION

By: _____
Amy Haas
General Counsel

By: _____
Estevan R. Lopez
Director

Date

Approved as to form:

UTAH DIVISION OF
WATER RESOURCES

By: _____
Robert V. King
Chief, Interstate Streams

By: _____
Dennis J. Strong
Director

Date

Approved as to form:

WYOMING STATE
ENGINEER'S OFFICE

By: _____
S. Jane Caton
Senior Assistant Attorney General
Wyoming Attorney General's Office

By: _____
Patrick T. Tyrell
Wyoming State Engineer

Date

Approved as to form:

BUREAU OF RECLAMATION

By: _____
John Doney
Attorney Advisor
Office of the Solicitor

By: _____
Lorri Gray-Lee
Regional Director
Lower Colorado Region

Date

Exhibit A.

Colorado River Basin Water Supply and Demand Study
Key Personnel

**Colorado River Basin Water Supply and Demand Study
Key Personnel**

Non-Federal Cost Share Partners' Key Personnel

Organization	Primary Contact	Contact Information
Arizona Department of Water Resources	Perri Benemelis	Colorado River Management 3550 North Central Avenue Phoenix, AZ 85012 (602) 771-8408 pfbenemelis@azwater.gov
(California) Six Agency Committee	Jerry Zimmerman	Secretary c/o 770 Fairmont Avenue, Suite 100 Glendale, CA 91203 (818) 500-1625 x308 grzimmerman@crb.ca.gov
Colorado Water Conservation Board	Ted Kowalski	Program Manager 1313 Sherman Street, Room 721 Denver, CO 80203 (303) 866-3441 ext. 3220 ted.kowalski@state.co.us
Southern Nevada Water Authority	William Rinne	Director of Surface Water Resources 100 City Parkway, Suite 700 Las Vegas, NV 89193-9956 (702) 691-5255 Bill.rinne@snwa.com
New Mexico Interstate Stream Commission	John Whipple	Colorado River Program Manager PO Box 25102 Santa Fe, NM 87504-5102 (505) 827-6172 john.whipple@state.nm.us
Utah Division of Water Resources	Robert King	Chief, Interstate Streams 1594 West, North Temple Street Salt Lake City, UT 84114-6201 (801) 538-7259 robertking@utah.gov
Wyoming State Engineer's Office	John Shields	Interstate Streams Engineer Herschler Building, 4 th East Cheyenne, WY 82002-0370 (307) 777-6151 jshiel@seo.wyo.gov

Reclamation's Key Personnel

Region	Primary Contact	Contact Information
Lower Colorado Region	Terry Fulp	Deputy Regional Director P.O. Box 61470 Boulder City, NV 89006 (702) 293-8411 tfulp@usbr.gov
Lower Colorado Region	Amber Z. Cunningham	Project Manager P.O. Box 61470 Boulder City, NV 89006 (702) 293-8472 azcunningham@usbr.gov
Upper Colorado Region	David Trueman	Manager, Resources Management Division 125 S. State Street, Room 6107 Salt Lake City, UT 84138 (801) 524-3759 dtrueman@usbr.gov
Upper Colorado Region	Deborah L. Lawler	Chief, Program Management Group 125 South State Street, UC410 Salt Lake City, UT 84138 (801) 524-3685 dlawler@usbr.gov

Exhibit B.

Colorado River Basin Water Supply and Demand Study
Plan of Study

Colorado River Basin Water Supply and Demand Study Plan of Study

1 Introduction

The Bureau of Reclamation's Upper Colorado and Lower Colorado Regions (UC and LC Regions), in collaboration with representatives of the seven Colorado River Basin States (Basin States), submitted a proposal in June 2009 to fund the "Colorado River Basin Water Supply and Demand Study" (Study) under the Basin Study Program (Program). In September 2009, the Study was selected for funding under the Program. The estimated total cost of the Study is \$2 million, with an equal cost-share of 50 percent by Reclamation and 50 percent by agencies in the Basin States (the non-Federal Cost-Share Partners). The Study will be conducted over a period of two years, beginning in January 2010.

This Plan of Study contains: the Study's purpose and objectives; a description of the Study management structure; a description of the major phases of the Study and a breakdown of the major tasks in each phase; a plan for public involvement throughout the Study (Attachment 1); and the June 2009 proposal (Attachment 2).

2 Study Purpose & Objectives

The purpose of the Study is to conduct a comprehensive study to define current and future imbalances in water supply and demand in the Colorado River Basin (Basin) and the adjacent areas of the Basin States that receive Colorado River water for approximately the next 50 years, and to develop and analyze adaptation and mitigation strategies to resolve those imbalances.

The Study will characterize current and future water supply and demand imbalances in the Basin and assess the risks to Basin resources. Resources include water allocations and deliveries consistent with the apportionments under the Law of the River²; hydroelectric power generation; recreation; fish, wildlife, and their habitats (including candidate, threatened, and endangered species); water quality including salinity; flow and water dependent ecological systems; and flood control. Specific objectives of the Study include:

- Characterization of the current water supply and demand imbalances in the Basin including the assessment of the risks to Basin resources from historical climate variability.
- Characterization of future water supply and demand imbalances under varying water supply and demand conditions in the Basin including the assessment of the risks to Basin resources from possible future impacts of climate change.

² The treaties, compacts, decrees, statutes, regulations, contracts and other legal documents and agreements applicable to the allocation, appropriation, development, exportation and management of the waters of the Colorado River Basin are often referred to as the Law of the River. There is no single, universally agreed upon definition of the Law of the River, but it is useful as a shorthand reference to describe this longstanding and complex body of legal agreements governing the Colorado River.

- Identification of potential strategies and options to resolve Basin-wide water supply and demand imbalances including:
 - Modifications to the operating guidelines or procedures of water supply systems;
 - Modifications to existing facilities and development of new facilities;
 - Modifications to existing water conservation and management programs and development of new programs;
 - Modifications to existing water supply enhancement programs and development of new programs; and
 - Other structural and non-structural solutions.
- Identification of potential legal and regulatory constraints and analysis of potential impacts to water users and Basin resources for the strategies and options considered.
- Prioritization of identified strategies and options and the recommendation for potential future actions, including feasibility studies, Congressional authorization, environmental compliance activities, demonstration programs, and/or implementation as appropriate.

3 Study Management

Management of the Study by the UC and LC Regions and the non-Federal Cost-Share Partners will be accomplished as described in the following sections.

3.1 Co-Study Managers

One Co-Study Manager will be designated from Reclamation and one Co-Study Manager will be designated from the Non-Federal Cost Share Partners. The Co-Study Managers will sit on and lead the Steering Team.

3.2 Steering Team

The Steering Team will steer and guide the efforts of the Project Team such that the objectives of the Study are met in an effective, efficient manner, and within the Study's financial and time constraints. The Steering Team will be comprised of one member from the UC Region, one member from the LC Region, one member from each Basin State, and one member from the Upper Colorado River Commission, for a total of 10 members.

3.3 Project Team

The Project Team will ensure that the tasks that relate to the Study are completed in a cost-effective, timely manner and are technically sound. Members of the Project Team provide the expertise, experience, and knowledge that relate to the Study's scope and objectives. Members include staff from the UC and LC Regions, staff from the non-Federal Cost-Share Partners, and staff from other entities who may be contracted to provide specific information, knowledge, and support. The Co-Study Managers will lead the Project Team.

3.4 Sub-Teams

Various Sub-Teams will be formed as needed to perform specific tasks. Sub-Team members provide specific expertise required to perform those tasks. Members are comprised of

Project Team members, additional staff from the UC and LC Regions and the non-Federal Cost-Share Partners, and staff from contracted entities. Membership may also include representatives from other groups with a particular expertise sought by the Sub-Team.

3.5 Reclamation Management Structure

To facilitate Reclamation's oversight responsibilities and internal coordination, the proposed Study management structure includes a Reclamation Oversight Team (Oversight Team) and a Reclamation Study Team (Study Team). The Oversight Team provides oversight for the Study and will guide the efforts of the Study Team to ensure that the objectives of the Study are met within the financial and time constraints. Members of the Oversight Team are the Regional Directors of the UC and LC Regions and a senior member of the Office of Policy and Administration in Denver. Members of the Study Team include key staff from the UC and LC Regions.

4 Study Schedule, Phases, & Products

The Study will be technically oriented, incorporating information from the latest science, engineering technology, climate models, and innovations. The level of analysis of the strategies and options will be similar to an appraisal-level study to assist in justifying and preparing feasibility studies, Congressional authorization, environmental compliance activities, demonstration programs, and/or implementation as appropriate.

4.1 Schedule

The Study will be conducted over a period of two years, beginning in January 2010. The Study will consist of four major phases: Water Supply Assessment, Water Demand Assessment, System Reliability Analysis, and Development and Evaluation of Opportunities for Balancing Supply and Demand. The projected timeline for these phases is provided in Figure 1. The projected Study milestones are listed in Table 1.

Figure 1. Projected Study Timeline

Phase Name	1st Half 2010						2nd Half 2010						1st Half 2011						2nd Half 2011					
	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D
1. Water Supply Assessment																								
2. Water Demand Assessment																								
3. System Reliability Analysis																								
4. Development & Evaluation of Opportunities for Balancing Supply & Demand																								

Table 1. Projected Study Milestones

Milestone	Deliverable Description
September 2010	Report describing findings from current and future water supply assessment
September 2010	Report describing findings from current and future water demand assessment
April 2011	Report describing findings from system reliability analysis
August 2011	Report describing findings of opportunities analysis
October 2011	Draft Study report and appendices available for review
December 2011	Final Study report and appendices complete

Development and review of the draft and final Study report will follow the completion of the fourth milestone as shown above.

4.2 Phases

Table 2 provides the tasks and sub-tasks associated with the major Study phases.

Table 2. Overview of Study Phases

<p>Phase 1. Water Supply Assessment. Assess the quantity and location of current and future water supplies throughout the Basin, including the potential effects of climate variability and climate change. Major tasks and sub-tasks include:</p> <ul style="list-style-type: none">1.1 Review & Select Methods to Estimate Current Supply<ul style="list-style-type: none">1.1.1 Historic Observed Record1.1.2 Paleo Record1.2 Review & Select Methods to Project Future Supply1.3 Conduct Assessment of Current Supply1.4 Conduct Assessment of Future Supply1.5 Enhance Modeling Capability as Needed to Incorporate Methods to Project Future Supply1.6 Conduct Sensitivity Analysis of Selected Methods to Project Future Supply1.7 Prepare Draft Interim Report1.8 Peer Review Report1.9 Prepare & Publish Interim Report
<p>Phase 2. Water Demand Assessment. Assess the quantity and location of current and future water demands, including the potential effects of climate variability and climate change. Major tasks and sub-tasks include:</p> <ul style="list-style-type: none">2.1 Review & Select Methods to Estimate Current Demands2.2 Review & Select Methods to Project Future Demands2.3 Conduct Assessment of Current Demands2.4 Conduct Assessment of Future Demands<ul style="list-style-type: none">2.4.1 Update State Demand Projections2.4.2 Analyze Temperature Effects on Projected Use2.5 Enhance Modeling Capability to Better Represent Future Demands<ul style="list-style-type: none">2.5.1 Reservoir Evaporation2.6 Prepare Draft Interim Report2.7 Peer Review Report2.8 Prepare & Publish Interim Report

Phase 3. System Reliability Analysis. Assess the capability of existing and proposed infrastructure and operations to meet future demands and water supply challenges. This analysis will include an assessment of the operational risk and reliability of the system currently and in the future. System reliability will be determined by describing the quantity and locations of supply/demand imbalances currently and in the future. Scenarios for baseline and future water supply and demand will be determined in Phases 1 and 2. Evaluate effectiveness of opportunities identified in Phase 4 in resolving imbalances. Major tasks and sub-tasks include:

- 3.1 Identify Model & System Reliability Metrics
- 3.2 Determine Baseline System Reliability
 - 3.2.1 Determine Baseline Scenario Modeling Assumptions
 - 3.2.2 Prepare Model to Simulate Baseline Scenario
 - 3.2.3 Perform Model Simulations
 - 3.2.4 Synthesize & Analyze Model Results
 - 3.2.5 Summarize Model Results
- 3.3 Project Future System Reliability
 - 3.3.1 Determine Future Scenario Modeling Assumptions
 - 3.3.2 Prepare Model to Simulate Future Scenarios
 - 3.3.3 Perform Model Simulations
 - 3.3.4 Synthesize & Analyze Model Results
 - 3.3.5 Determine Modeling Assumptions for Supply/Demand Opportunities
 - 3.3.6 Prepare Model to Simulate Future Conditions Under Supply/Demand Opportunities
 - 3.3.7 Perform Model Simulations with Supply/Demand Opportunities
 - 3.3.8 Synthesize & Analyze Model Results
- 3.4 Prepare Draft Interim Report
- 3.5 Peer Review Report
- 3.6 Prepare & Publish Interim Report

Phase 4. Development & Evaluation of Opportunities for Balancing Supply & Demand.

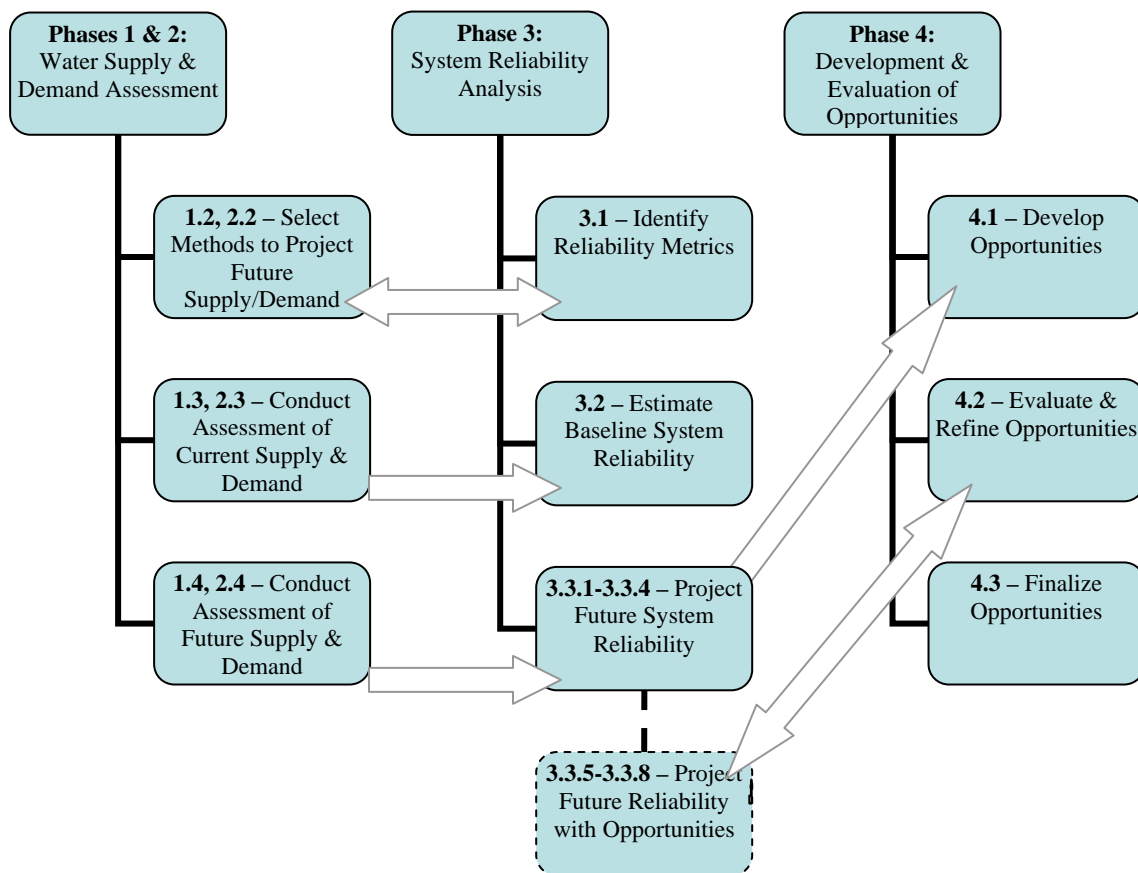
Identify and quantify potential opportunities to address imbalances in supply and demand in order to best meet future challenges. This analysis will include the identification and development of both structural and non-structural opportunities. As opportunities are refined, an iterative modeling process will be used to determine future system reliability under conditions where selected opportunities are assumed to be developed and/or implemented. Opportunities include but are not limited to: operational changes, legal and institutional changes, water conservation and efficiency, land fallowing and retirement, conjunctive use, upgrades, rehabilitation or replacement of existing facilities, water recycling and reuse, desalination, development of new conveyance and storage facilities, weather modification, vegetation management, dust abatement efforts, groundwater remediation, urban runoff management, and importation projects. Major tasks and sub-tasks include:

- 4.1 Develop Opportunities
 - 4.1.1 Identify Opportunities
 - 4.1.2 Determine Preliminary Opportunities for Evaluation
 - 4.1.3 Analyze Opportunities (Preliminary)
- 4.2 Evaluate & Refine Opportunities
 - 4.2.1 Technical Feasibility
 - 4.2.2 Uniform Cost Comparison
 - 4.2.3 Environmental Impacts/Permitting Requirements
 - 4.2.4 Economic and Socioeconomic Impacts
 - 4.2.5 Legal and Public Policy Considerations
 - 4.2.6 Risk and Uncertainty
 - 4.2.7 Others

4.2.8 Assessment of Effectiveness
4.2.9 Potential Yield
4.2.10 Timeframe for Implementation
4.2.11 Agreements or Partnerships Needed
4.2.12 Cost Allocation
4.2.13 Siting
4.3 Finalize Opportunities
4.3.1 Determine Ability of Opportunities to Resolve Imbalances
4.4 Prepare Draft Interim Report
4.5 Peer Review Report
4.6 Prepare & Publish Interim Report

Figure 2 illustrates the information transfer and coordination of tasks in the four major phases of the Study.

Figure 2. Flowchart of Major Study Phases



The first coordination occurs between Phases 1 and 2 and Phase 3 where the identification of the system reliability metrics in Task 3.1, in terms of spatial and temporal scale, depend upon the methods selected to project future supply and demand in Task 1.2 and Task 2.2. Baseline and future system reliability in Task 3.2 and Task 3.3, respectively, is determined based on

the results of the assessment of current and future water supply and demand conditions in Task 1.3 (and Task 2.3) and Task 1.4 (and Task 2.4).

In Task 4.1, opportunities to resolve supply/demand imbalance will be identified considering the results of the projections of future system reliability in Tasks 3.3.1-3.3.4. The evaluation and refinement of those opportunities in Task 4.2 will be accomplished through re-projecting future system reliability under the identified opportunities in Tasks 3.3.5-3.3.8. After several iterations consisting of refining opportunities and projecting system reliability to determine the opportunities' performance, opportunities will be finalized in Task 4.3.

4.3 Products

The primary products of the Study will be interim written reports to be integrated into a final report that will include the following elements:

- Assessment of quantity and location of existing and future water supplies and demands throughout the Basin, including the potential effects of climate variability and climate change,
- Assessment of efforts currently being undertaken to reduce supply and demand imbalances throughout the Basin,
- Analysis of supply and demand relationships and quantification of imbalances in specific locations throughout the Basin,
- Development and evaluation of options for balancing supply and demand,
- Findings and recommendations,
- Description of methods and research processes, including assumptions, models and data used in the Study, and
- Description of stakeholder involvement.

Other expected outcomes include the identification of collaborative strategies through the Study's stakeholder involvement process.

4.4 Public Involvement Plan

A Public Involvement Plan has been developed to ensure that all stakeholders in the Basin as well as the general public are informed and their input is sought and considered throughout the Study. The Public Involvement Plan is provided in Attachment 1.

5 Attachments

Attachment 1 – Colorado River Basin Water Supply and Demand Study Public Involvement Plan

Attachment 2 – Colorado River Basin Water Supply and Demand Study Proposal

Attachment 1.

**Colorado River Basin Water Supply and Demand Study
Public Involvement Plan**

Colorado River Basin Water Supply and Demand Study Public Involvement Plan

Introduction

The Colorado River Basin Water Supply and Demand Study (Study) has been selected to be one of three, two-year studies funded through the Bureau of Reclamation's Basin Study Program. The Study will provide a comprehensive analysis of current and future imbalances in water supply and demand projected through 2060 in the Colorado River Basin (Basin) and the adjacent areas of the Basin States (Arizona, California, Colorado, Nevada, New Mexico, Utah and Wyoming) that receive Colorado River water; potential impacts of climate variability and climate change on water supply and demand; and potential adaptation and mitigation strategies and options to resolve those imbalances. A primary objective of the Study is prioritization of identified strategies and options and the recommendation for potential future feasibility studies, Congressional authorization, environmental compliance activities, demonstration programs, and/or implementation.

The Study is cost-shared on a 50/50 basis between the Study partners: Reclamation (the Federal Cost-Share Partner) and agencies in the Basin States (the non-Federal Cost-Share Partners). Because the Colorado River Basin spans two Reclamation regions, Reclamation is represented by both the Upper Colorado Regional Office and the Lower Colorado Regional Office.

The Study partners will facilitate public involvement to solicit and incorporate stakeholder input throughout the study. This Public Involvement Plan (PIP) provides the framework for that effort.

Approach

Several communication methods will be employed to effectively maintain communication with all interested stakeholders and to provide, seek, and receive information. A response will be provided for all comments received. All information received regarding technical aspects of the Study will be considered and feedback regarding that consideration will be provided.

All outreach materials, information received, and feedback provided will be archived in a centralized electronic filing system. As the Study progresses, the effectiveness of the public involvement will be assessed periodically and adjustments will be made as necessary to ensure that appropriate communication and feedback is occurring.

Communication Methods

Effective communication is essential for the ongoing success of the Study. The methods of communication that will be used to disseminate information and accept input during the course of this Study include the following:

- a Study website will be maintained to provide up-to-date, on-line information;
- an e-mail address will be established to facilitate communication electronically;
- a facsimile (fax) telephone number will be established to allow communication by fax;
- points-of-contact will be established in the Upper Colorado and the Lower Colorado Regions to facilitate additional information exchange;
- news releases and informational mailings will be provided as appropriate;
- a mailing list will be established and maintained to ensure that all interested stakeholders receive information;
- public meetings will be held at strategic points throughout the Study; and
- additional meetings with interested stakeholders groups will be held as appropriate.

Additional information on each of these methods is provided below.

Web Site

Reclamation's Study web site will be used to post up-to-date information. Web site content will be updated periodically, particularly at major milestones and prior to public meetings. In addition, the web site will be used as a tool for soliciting input from stakeholders. The following web page will be available no later than January 8, 2010:

<http://www.usbr.gov/lc/region/programs/crbstudy.html>.

E-mail

Reclamation has established a Study e-mail address to disseminate information regarding the Study and to receive input. The Study e-mail address is:

ColoradoRiverBasinStudy@usbr.gov.

Facsimile

Input may also be submitted by facsimile at: 702-293-8156.

Points-of-Contact

For additional information, questions, or comments on the Study, Reclamation has designated two Study Points of Contact:

- Lower Colorado Region: Amber Cunningham at 702-293-8472 or ColoradoRiverBasinStudy@usbr.gov
- Upper Colorado Region: Deborah Lawler at 801-524-3685 or ColoradoRiverBasinStudy@usbr.gov.

News Releases and Informational Mailings

News releases and other informational mailings will occur near major milestones throughout the Study to inform stakeholders and the public of the Study status, provide opportunities for input, and provide meeting information including dates and locations of the public meetings.

Mailing List

Informational mailings will be sent to interested stakeholders on the Study mailing list (either physically, electronically, or both). During each informational mailing, the recipient will be asked if he or she would like to remain on the list. Individuals will be added to the mailing list when requested through the Study e-mail address or through attendance at a public meeting captured on the sign-in sheet. An initial mailing will be made in January 2010 to a list of Colorado River stakeholders who were involved in similar prior studies.

Public Meetings

Public meetings will be held at strategic points throughout the Study, beginning with an initial meeting in the spring of 2010. Additionally, prior to completion of each Study phase, public meetings will be held to provide a summary of the results of the previous phase and to seek comments on the upcoming phase of the Study, thereby allowing consideration of information and suggestions by the public for incorporation in the Study.

Four public meetings are currently envisioned as follows:

1. Targeted for March 2010 - Meeting to discuss the Study objectives, structure, schedule, PIP, the proposed approach for Phase 1 (assessment of current and future water supply), and Phase 2 (assessment of current and future water demand);
2. Targeted for September 2010 – Meeting to discuss the results of Phases 1 and 2 and the proposed approach for Phase 3 (analysis of the current and future system reliability);
3. Targeted for April 2011 – Meeting to discuss the results of Phase 3 and the proposed approach for Phase 4 (analysis of strategies and options for resolving supply/demand imbalances); and
4. Targeted for August 2011 – Meeting to discuss the results of Phase 4.

Additional Meetings with Interested Stakeholder Groups

During the course of the Study, additional meetings may be held with interested stakeholder groups to solicit additional input, expertise, data, and information. As appropriate, representatives of interested stakeholder groups may participate in specific Study tasks to facilitate incorporation of such input into the Study.

Interested stakeholder groups may include, but are not limited to Federal agencies, Native American tribes and communities, water districts, scientific research groups, hydropower agencies and other representatives of the energy industry, environmental groups, and representatives of the recreational industry. An initial mailing will be made in January 2010 to a list of interest groups who were involved in similar prior studies to gauge their interest and capability for participating in the Study. Other interest groups are encouraged to provide their contact information via one of the communication methods listed above.

Attachment 2:
**Colorado River Basin Water Supply and Demand Study
Proposal**

Colorado River Basin Water Supply and Demand Study Basin Study Program

Contact: Deborah Lawler, 801-524-3685
Amber Cunningham, 702-293-8472
Email, ColoradoRiverBasinStudy@usbr.gov

Spanning parts of the seven states of Arizona, California, Colorado, New Mexico, Nevada, Utah, and Wyoming (Basin States), the Colorado River Basin (Basin) is one of the most critical sources of water in the West. The Colorado River and its tributaries provide water for the municipal supply to 30 million people, irrigation of nearly 4 million acres of land, and hydropower facilities that generate more than 4,200 MW, helping to meet the power needs of the West and offset the use of fossil fuels. The Colorado River is also the lifeblood for at least 15 Native American tribes, seven National Wildlife Refuges, four National Recreation Areas, and five National Parks.

Water supply and demand imbalances already exist in some geographic areas in the Basin and are projected to increase in both magnitude and spatial extent in the future. Storage capacity of approximately four times the average inflow has provided the ability to meet most demands even over periods of sustained drought, such as is currently being experienced. However, studies indicate that droughts of greater severity have occurred in the far past and climate experts and scientists suggest that such droughts are likely to occur in the future. Furthermore, studies have postulated that the average yield of the Colorado River could be reduced by as much as 30 percent due to climate change. Meanwhile, the Basin States include some of the fastest growing urban and industrial areas in the United States.



Increasing demands coupled with decreasing supplies may exacerbate imbalances throughout the Basin. The study will:

- analyze water supply and demand imbalances throughout the study area through 2060;
- assess options for resolving such imbalances; and
- develop recommendations to address current and projected imbalances.

Non-Federal cost-share partners include each of the seven Basin States, water management authorities, and irrigation and water districts. Broad support for the study exists among stakeholders throughout the Basin and their input and participation will be sought throughout the study.

The total cost of the study is \$2 million (50/50 cost share).



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