

Appendix 1A

Plan of Study



Appendix 1A – Plan of Study

Colorado River Basin Ten Tribes Partnership Tribal Water Study Plan of Study (Finalized March 2014)

1.0 Introduction

The Bureau of Reclamation's (Reclamation) Upper and Lower Colorado Regions (UC and LC Regions), in collaboration with representatives of the Ten Tribes Partnership¹ (Partnership) are undertaking the Colorado River Basin Ten Tribes Partnership Tribal Water Study (Study) to build on the technical foundation of the Colorado River Basin Water Supply and Demand Study (Basin Study) and advance critical information beyond the limited assessment of tribal water in that study. The estimated cost for the Study is \$500,000 which consists of a \$100,000 grant to the Partnership from Reclamation and \$400,000 for Reclamation's participation. In addition, the Partnership is expected to contribute to the Study beyond the anticipated \$500,000 cost through staff time contributions in excess of what may be covered by the \$100,000 grant. The Study will be conducted over a period of approximately two years with an anticipated completion by December 2015.

The tribes of the Ten Tribes Partnership hold a significant amount of quantified and unquantified Federal reserved water rights to the Colorado River and its tributaries. In addition, there are unresolved reserved rights claims and many tribes hold water rights that are not Federal reserved water rights. Reclamation did not intend that the Basin Study be used to assess the future impacts to tribal water use in the Basin, and it did not fully account for tribal water demand, reflect the potential use of used tribal water by others, or show the potential impact on the Basin water supply if a substantial amount of the presently unused or unquantified tribal water is used by the tribal water rights holders prior to 2060. In recognition of the importance in bringing the tribal perspective to bear in furthering the understanding of these important matters, Reclamation and the Ten Tribes Partnership are committed to the thorough development and timely completion of the Study as documented in the *Agreement Regarding the Importance of the Colorado River Basin Tribal Water Study* provided in Appendix 1.

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 and estimated timeline in each phase.

2.0 Study Purpose and Objectives

The purpose of the Study is to conduct a comprehensive study that will assess, for the tribes of the Ten Tribes Partnership, tribal² water supplies, document current tribal water use on

¹ Chemehuevi Indian Tribe, Cocopah Indian Tribe, Colorado River Indian Tribes, Fort Mojave Indian Tribe, Jicarilla Apache Nation, Navajo Nation, Quechan Indian Tribe, Southern Ute Indian Tribe, Ute Indian Tribe of the Uintah and Ouray Reservation, Ute Mountain Ute Tribe

² For purposes of this plan of study "tribal" refers collectively to the tribes and only those tribes of the Ten Tribes Partnership

Partnership reservations, project future water demand on Partnership reservations, document use of unused tribal water by others, and identify tribal opportunities and challenges associated with the development of tribal water considering the future projected water supply and demand imbalances documented in the Basin Study. Specific objectives of the Study include:

- Improve the understanding of the role of tribal water throughout the Colorado River system using existing data
- Enhance the Colorado River Simulation System (CRSS) to improve its simulation of tribal water use
- Characterize current tribal water use by each of the tribes in the Partnership
- Characterize a range of future tribal water demand for each of the tribes in the Partnership
- Identify potential future impacts to specific users, or groups of users, presently relying on unused tribal water
- Identify tribal water development challenges both specific to the tribes in the Partnership and in general Basin-wide
- Identify opportunities for tribes to participate in potential opportunities that can help reduce future uncertainty and future water imbalances

The Study will be conducted collaboratively with involvement by the seven Colorado River Basin States and other interested stakeholders. Although the Study may identify potential legal and policy issues related to tribal water development and potential solutions to water imbalances, the Study is intended to view tribal water in the context of the current Law of the River³.

3.0 Study Management

Management of the Study will be accomplished as described in the following sections.

3.1 Study Team

The Study Team will ensure that the tasks that related to the Study are completed in an effective, efficient manner, are technically sound, and are within the Study's financial and time constraints. Members of the Study Team provide the expertise, experience, and knowledge that relate to the Study's scope and objectives. Study Team members include the members of the Partnership's Legal/Technical Committee and designated Reclamation staff from the Upper Colorado (UC) and Lower Colorado (LC) Regions. Study Team members will be responsible for communicating Study progress and issues to their respective management such as the Partnership and Reclamation management. Representatives of individual tribes are expected to participate in the study as part of sub-teams in areas where information specific to the individual tribes is critical.

³ 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 collectively 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.

3.2 Sub-Teams

Various sub-teams may be formed as needed to perform certain tasks. Sub-team members would provide the specific expertise required to perform those tasks. The Study Team will determine when a specific sub-team should be formed, that sub-team's tasks, and the expertise required of that sub-team. Members may include Study Team members, additional staff from the UC and LC Regions, tribal representatives, and representatives from other groups with a particular expertise sought by the Study Team.

4.0 Study Schedule, Phases, & Products

The Study will build from the analysis done in the Basin Study to advance the knowledge of tribal water resources in the Basin.

4.1 Schedule

The Study will be conducted over a period of two years with an anticipated completion of December 2015. The Study will consist of five major phases: Current Tribal Water Use Assessment, Future Tribal Water Demand Assessment, Assessment of System Impacts resulting from the development of tribal water, Evaluation of Opportunities and Challenges related to the development of tribal water. A draft report will be developed for each phase and will be combined into a final report in a fifth phase. The projected timeline for these phases and the major Study milestones are displayed in the following tables.

Table 1
Projected Study Timeline

Phase Name	2013	2014												2015											
	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	
1. Current Tribal Water Use Assessment																									
2. Future Tribal Water Demand Assessment																									
3. Assessment of System Impacts resulting from the development of tribal water																									
4. Identification and Evaluation of Opportunities and Challenges related to the development of tribal water																									
5. Final Report Production																									

Table 2
Projected Study Milestones & Products

Phase Name	Milestones		Products
1. Current Tribal Water Use Assessment	2014	Feb	Completion of data and information collection meetings with each of the Ten Tribes
		Apr	Draft report describing findings from the assessment of current tribal water use and workplan for CRSS enhancements
2. Future Tribal Water Demand Assessment	2014	Dec	Draft report describing findings from the assessment of future tribal demand
		Dec	Completion of CRSS enhancements
3. Assessment of System Impacts resulting from the development of tribal water	2015	May	Draft report describing findings from system dependence assessment
4. Identification and Evaluation of Opportunities and Challenges related to the development of tribal water		Jul	Draft report describing findings from opportunities/challenges evaluation
5. Final Report Production	2015	Oct	Draft final report that combines reports from previous phases
		Dec	Final report

4.2 Phases

The following sections describe the work to be completed in each of the five major Study phases.

Phase 1. Current Tribal Water Use Assessment

For each of the tribes in the Partnership, an assessment of current water use will be conducted. The assessment will include a description of the amount of water currently used by the tribe, the locations and types of use, additional water supplies beyond Colorado River water (e.g. groundwater), and any major diversions or infrastructure. For the purpose of the Study, current use may include analysis of multiple years of use data and is intended to provide a baseline of use rather than to quantify an absolute amount of current use. This information will be used to develop recommendations for CRSS enhancements as well as serve as the base information for which the future demand assessment will be conducted in Phase 2. Tribal background information that includes a description of each of the tribes in the Partnership will also be collected. Major tasks and sub-tasks for this phase are as follows.

Tasks:

- Task 1: Develop template for data collection including, but not limited to:
 - a. Nature and priority of water rights
 - b. Current water use
 - c. Shortages if known
 - d. Type of use
 - e. Additional water supplies other than Colorado River surface water
 - f. Major diversion or infrastructure
 - i. Location
 - ii. Operating constraints
- Task 2: Review and select methods to estimate current use
- Task 3: Meet with representatives from each of tribe in the Partnership to populate template developed in Task 1
- Task 4: Catalog/analyze data
 - a. Develop maps for locations of diversions/uses
- Task 5: Develop prioritized list of enhancements for CRSS guided by Task 4
- Task 6: Develop draft report
 - a. Present findings from the assessment of current tribal water use including tribal background information
 - b. Include workplan for CRSS enhancements
- Task 7: Develop draft final report
 - a. Incorporate and address comments on draft report

Phase 2. Future Tribal Water Demand Assessment

Two major activities will be conducted in this phase simultaneously. In the first activity, enhancements to CRSS will be performed such that tribal water use can be more accurately simulated, which will be performed in Phase 3. In the second activity, for each of the tribes in the Partnership, future tribal water demand scenarios will be developed that better reflect likely tribal development scenarios than those developed and used in the Basin Study.

Tasks:

- Task 1: Complete CRSS enhancements identified in Phase 1
- Task 2: Review and select methods to project future demands
- Task 3: Conduct assessment of future demands
 - a. Identify and address discrepancies with demands of non-tribal entities from the Basin Study resulting from any changes in tribal demand
- Task 4: Develop draft report
 - a. Present findings from the assessment of future tribal demand
- Task 5: Develop draft final report
 - a. Incorporate and address comments on draft report

Phase 3. Assessment of System Impacts resulting from the development of tribal water

In this phase, using the modified version of CRSS developed in Phase 2, a series of modeling simulations will be performed in order to quantify system impacts resulting from a range of future tribal water demand scenarios. A set of system metrics (e.g. key reservoir elevations, water deliveries to non-tribal entities) will be identified that will be used to indicate the Basin effects resulting from the future development of water by the tribes.

Tasks:

- Task 1: Identify system metrics
 - a. Incorporate system metrics in CRSS or as post-processing tool
- Task 2: Determine modeling assumptions to support assessment
 - a. Input modeling assumptions into CRSS
 - b. Input future demand scenarios developed in Phase 2 into CRSS
- Task 3: Perform model simulations
- Task 4: Synthesize and analyze simulation results
- Task 5: Develop draft report
 - a. Present findings and results of assessment
- Task 6: Develop draft final report
 - a. Incorporate and address comments on draft report

Phase 4. Identification and Evaluation of Opportunities and Challenges related to the development of tribal water

This phase will consist of a discussion of issues related to future use and/or development of tribal water and may include additional CRSS assessments that build on the findings in Phase 3.

Current arrangements such as transfers, leases, exchanges, forbearance, etc. that tribes or others currently have in place and the opportunities and challenges associated with those arrangements will be discussed.

Potential future opportunities, and the associated challenges, for tribes will also be discussed. The opportunities may include, but are not limited to:

- Transfers, leases, water banking, exchanges, forbearance, or other arrangements that offer potential opportunities for tribes
- Funding for infrastructure development
- Funding for infrastructure rehabilitation
- Storage projects
- Improved efficiencies and re-use
- Additional stream gaging on Colorado River tributaries

Tasks:

- Task 1: Review Phase 3 findings and modify Phase 4 tasks as appropriate
- Task 2: Develop draft final report
 - a. Describe findings from opportunities/challenges evaluation

Phase 5. Final Report Production

This phase will consist of the development of the final Study report. Draft reports from each of the previous phases will be finalized and combined to result in a final Study report.

Tasks:

- Task 1: Review and incorporate comments on draft final reports from Phases 1-4
- Task 2: Combine reports from Phases 1-4 into final Study report
 - a. Develop any supporting documents, e.g. executive summary
- Task 3: Publish final Study report

4.3 Products

The primary products of the Study will be draft reports of each phase's activities that will be synthesized into a final report including the following elements:

- Assessment of current tribal water use
- Assessment of future tribal demand
- Findings from the system impacts assessment
- Findings from opportunities/challenges evaluation

A work plan for enhancements to CRSS and a modified version of CRSS will be additional Study products.

5.0 References

Bureau of Reclamation, 2012. *Colorado River Basin Water Supply and Demand Study – Study Report*

6.0 Appendices

Appendix 1 - *Agreement Regarding the Importance of the Colorado River Basin Ten Tribes Partnership Tribal Water Study*



Agreement Regarding Importance of the Colorado River Basin Tribal Water Study As Identified in the Colorado River Basin Water Supply and Demand Study

Whereas, As part of its implementation of the SECURE Water Act of 2009, Subtitle F, The Omnibus Public Land Management Act of 2009 (Public Law 111-11, March 30, 2009), the Bureau of Reclamation (Reclamation) has established a program of Basin Studies within the western United States to address the growing need for information and tools to aid water resource managers; and,

Whereas, the purpose of this effort is to undertake comprehensive water studies that define options for meeting future water demands in river basins in the western United States where imbalances in water supply and demand exist or are projected; and,

Whereas, the studies performed under the SECURE Water Act (P.L. 111-11) should include consideration of actions to address the projected impacts of drought and climate change; and,

Whereas, one of the first basins examined under the Basin Study Program was the Colorado River Basin; and,

Whereas, during the development and preparation of the Colorado River Basin Water Supply and Demand Study (Study), Reclamation and participating tribal representatives recognized that:

The Indian Reserved Water Rights of the tribes of the Colorado River Basin are unique and have attributes that must be recognized under federal law and distinguished from state law water rights; and,

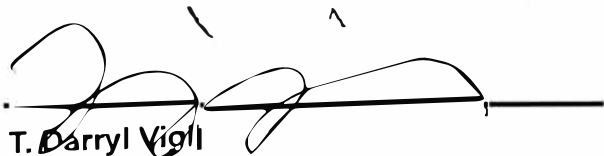
The Indian Reserved Water Rights of the tribes of the Colorado River Basin account for approximately 2.9 million acre-feet of annual diversion rights of the total apportionment of the Colorado River in the United States; and,

The Study does not fully account for tribal water demand nor reflect the potential use of tribal water by others nor show the potential impact on Colorado River Basin water supply if a substantial amount of the presently unused or unquantified tribal water is used by the tribal water rights holders prior to 2060; and,

Whereas, In the final Study Report, Reclamation and the Colorado River Basin Tribes Partnership (Ten Tribes Partnership) identified their commitment to joint future planning efforts that build on the scientific foundation of the Study and advance critical information beyond the limited assessment of tribal water in the Study.

Therefore, the undersigned representatives of the Department of the Interior and Ten Tribes Partnership state and agree,

In recognition of the aforementioned, the Department of the Interior (acting through Reclamation) and the Ten Tribes Partnership agree to undertake the Colorado River Basin Tribal Water Study. Both parties acknowledge the importance of prompt initiation, thorough development, and timely completion of this study. Work on the study will begin in 2013 with anticipated completion by December 2015. Reclamation and the Ten Tribes Partnership commit to work together in this endeavor in the spirit of collaboration and partnership. By doing so, Reclamation and the Ten Tribes Partnership hope to bring the tribal perspective to bear in identifying, analyzing, and documenting these important matters.


T. Darryl Vigil
Chairman

Colorado River Basin Tribes Partnership


Anne J. Castle
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