

Water Supply Reserve Fund – Grant and Loan Program
Water Activity Summary Sheet
March 22-23, 2017
Agenda Item 24(I)

Applicant & Grantee: Colorado River Water Conservation District

Water Activity Name: Basin Roundtable Technical Study on Colorado River Risk Response Options

Water Activity Purpose: Nonconsumptive/Agricultural/M&I/Needs Assessment/Education

County: All

Drainage Basin: Colorado

Water Source: Colorado River

Amount Requested/Source of Funds:

\$10,000	Colorado Basin Account
\$10,000	Gunnison Basin Account
\$10,000	Southwest Basin Account
<u>\$10,000</u>	<u>Yampa/White/Green Basin Account</u>
\$40,000	Total Grant Request

Matching Funds: Applicant Match (cash) = \$58,040

- 145% of the Basin Account request (meets 25% min)
- 59% of the total project cost of \$98,040

Staff Recommendation:
Staff recommends approval of up to \$10,000 from each of the Basin's Accounts to help fund the project titled: Basin Roundtable Technical Study on Colorado River Risk Response Options.

Water Activity Summary:

The intent of Phase II of the Colorado River Risk Response Options Study is to explore potential voluntary preemptive actions— and associated risks— that Colorado water users could take as short term measures (1-5 years in duration) to protect critical reservoir elevations. The study will evaluate a number of scenarios with a variety of assumptions regarding voluntary demand management and reservoir operation scenarios that were developed based on feedback from the BRTs and other stakeholders.

Two different technical approaches will be used in Phase II. The first set of analyses will build upon the Colorado River Simulation System (CRSS) modeling from Phase I, and will include additional modeling runs with CRSS to evaluate alternative model assumptions (hydrology, demand, etc.). The second piece of Phase II will investigate opportunities to use CRSS in conjunction with StateMod in order to model demand management allocation schemes. This work will allow for an exploratory analysis of the strengths and weaknesses of both tools in answering demand management questions both together and separately.

Discussion:

The questions raised in the Risk Study -- both Phase I and the initial draft scope of work for Phase II - were of statewide interest. Director Eklund and CWCB staff worked with the Basin Roundtables in creating a revised Phase II SOW is a project that will be a useful follow-up from Phase I of the Risk Study, while avoiding concepts that implicate interstate issues such as Colorado River compact compliance.

CWCB plans to be actively engaged in the implementation of this study. The Technical Advisory Committee for the study will include CWCB staff. The Committee will work closely with the contractor on refinement of model details and other technical work. Moreover, interpretations of the scope of work which could affect sensitive water policy matters must be approved by the CWCB Director.

CWCB staff has reviewed the Application and Statement of Work of Phase 2 and have determined that this effort assists the Roundtables satisfy their respective Basin Implementation Plans (BIP) Goals and Measurable Outcomes as follows:

- Colorado BIP: Theme 1: Protect and Restore Healthy Streams, Rivers, Lakes and Riparian Areas; Theme 2: Sustain Agriculture; Theme 3: Secure Safe Drinking; Theme 6: Assure Dependable Basin Administration;
- Gunnison BIP: Goals and Measurable Outcomes 1: Protect existing water uses in the Gunnison Basin;
- Southwest BIP: Goals and Measurable Outcomes, Themes A-G
(<https://www.colorado.gov/pacific/sites/default/files/SW%20BIP%2004017015.pdf>);
- Yampa/White/Green BIP: Goals and Measurable Outcomes - Protect the YWG Basin from compact curtailment of existing decreed water uses and some increment of future uses.

This effort also assists in meeting the Goals and Measurable Outcomes of Colorado's Water Plan, such as "Protect Colorado's ability to fully develop compact entitlements, and continue to support agreements that strengthen Colorado's position in interstate negotiations, while ensuring the long-term viability of Colorado's interstate compacts and relationships Colorado will focus planning efforts on maintaining healthy systems and avoiding a Colorado River Compact deficit, rather than focusing on its response to compact curtailment", as presented in Chapter 8: Interstate Projects and Agreements.

Issues/Additional Needs: No issues or additional needs have been identified.

Eligibility Requirements: The application meets requirements of the three subsections of the Eligibility Requirements: General Eligibility, Entity Eligibility, and Water Activity Eligibility.

Eligibility Based on Funding Match Requirements: This application meets the Basin Account Matching requirements.

Evaluation Criteria: This activity has undergone review and evaluation and staff has determined that it satisfies the Evaluation Criteria. Please refer to Basin Roundtable Chair's Recommendation Letter and the WSRF Grant Application for applicant's detailed response.

Funding Summary / Matching Funds:

<u>Funding Source</u>	<u>Cash</u>	<u>In-kind</u>	<u>Total</u>	
Colorado River Water Conservation District	\$29,020	\$0	\$29,020	Secured
Southwestern Water Conservation District	\$29,020	\$0	\$29,020	Secured
Sub-total	\$58,040	\$0	\$58,040	
WSRF Colorado Basin Account	\$10,000	\$0	\$10,000	
WSRF Gunnison Basin Account	\$10,000	\$0	\$10,000	
WSRF Southwest Basin Account	\$10,000	\$0	\$10,000	
WSRF Yampa/White/Green Basin Account	\$10,000	\$0	\$10,000	
Total Project Costs	\$98,040	\$0	\$98,040	

CWCB Project Manager: Carlee Brown & Megan Holcomb

All products, data, and information developed as a result of this grant must be provided to the CWCB in hard copy and electronic format as part of the project documentation. This information will in-turn be made widely available to Basin Roundtables and the general public and will help promote the development of a common technical platform. In accordance with the revised WSRA Criteria and Guidelines, staff would like to highlight additional reporting and final deliverable requirements. The specific requirements are provided below.

Reporting: The applicant shall provide the CWCB a progress report every 2 months, beginning from the date of the executed contract. The progress report shall describe the completion or partial completion of the tasks identified in the scope of work including a description of any major issues that have occurred and any corrective action taken to address these issues.

Final Deliverable: At completion of the project, the applicant shall provide the CWCB a final report that summarizes the project and documents how the project was completed. This report may contain photographs, meeting summaries, and engineering reports/designs.

Engineering: All engineering work (as defined in the Engineers Practice Act (§12-25-102(10) C.R.S.)) performed under this grant shall be performed by or under the responsible charge of a professional engineer licensed by the State of Colorado to practice engineering.

THE COLORADO BASIN ROUNDTABLE
C/O P.O. BOX 1120
GLENWOOD SPRINGS, COLORADO
81602

Sept. 28, 2016

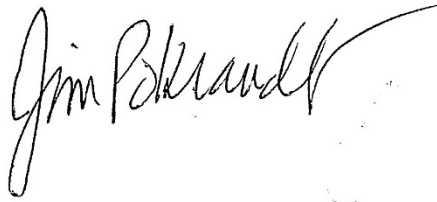
Craig Godbout
Colorado Water Conservation Board
Water Supply Planning Section
1313 Sherman Street
 [\(303\) 866-3441, ext 3210](tel:(303)866-3441) (office)
 [\(970\) 218-9407](tel:(970)218-9407) (cell)
craig.godbout@state.co.us

Dear Craig:

The Colorado Basin Roundtable voted unanimously on Sept. 26, 2016 to support the WSRA Basin grant for \$10,000 that will go toward the Colorado River District's application to conduct a Colorado River Development and Curtailment Risk Study – Phase II. The other three West Slope Roundtable are slated to add \$10,000 each. That makes a pool of \$40,000 to match \$24,750 contributions each by the Colorado River District and the Southwestern Water Conservation District (\$89,500 total budget).

This grant request finds its genesis in the December 2014 Four West Slope Basin Roundtable meeting at Ute Water in Grand Junction. There was a clear call to develop technical information to assist the four West Slope Basin Roundtables in their talks and negotiations regarding the ability to develop future water supplies. In Phase I, technical committee formed to help manage the study and it incorporated the West Slope, the Metro, South Platte and Arkansas Roundtables. We expect that level of participation on the committee to continue in Phase II.

This project advances priorities in our BIP as an understanding of river flows are central to ag sustainability, m&I development and environmental concerns.



Jim Pokrandt
Chair, Colorado Basin Roundtable

The Gunnison Basin Roundtable
501 Palmer Street
Delta, CO 81416

December 5, 2016

Mr. Craig Godbout
Water Supply Management Section
COLORADO WATER CONSERVATION BOARD
1313 Sherman St., Room 718
Denver, CO 80203

Re: WSRF Grant Request: CRWCD Colorado River Development and Curtailment Study – Phase II

Dear Mr. Godbout:

This letter is presented to advise you that the grant application submitted by the CRWCD for \$10,000 from Basin Account funds from the Water Supply Reserve Fund for Phase II - Colorado River Development and Curtailment Study was reviewed by the Gunnison Basin Roundtable and its Project Screening Committee and was approved by a unanimous vote of the Gunnison Basin Roundtable during our meeting on December 5, 2016.

This water activity meets the provisions of Section 37-75-104(2), Colorado Revised Statutes. The requirements/language from the statute is provided in Part 3 of the Criteria and Guidelines.

This study will further address the need for technical data so that the Four West Slope Roundtables – and all of Colorado - can better discuss issues surrounding future Colorado River development and the risk to current water users. The technical data gathered as a result of this study will be important to educating stakeholders on development and curtailment negotiations.

Sincerely,

A handwritten signature in blue ink, appearing to read "Frank J. Kugel".

Frank J. Kugel
Vice Chair

cc: Hugh Sanburg (e-mail)
Tom Alvey (e-mail)

February 15, 2017

Colorado Water Conservation Board
1313 Sherman Street
Denver, CO

Re: Revised Scope of Work for Phase 2 of the Risk Assessment Study

Dear Members of the Board and Staff,

Thank you for the opportunity to weigh in on the revised scope of work for the Colorado River Risk Assessment Phase II. We appreciate the efforts of the board and staff to solicit comments from the West Slope basin round tables. On February 6th, the Gunnison Basin Round Table had a good discussion regarding the proposed changes to the Scope of Work. This letter is intended to provide you with an overview of the concerns that were raised.

The consensus of the round table is to support the revised scope of work. However, the members were disappointed that some of the analysis needed to really understand the potential risks and impacts to our water users was removed from the scope. We believe that the study as proposed is necessary, and are hopeful that the additional analysis will be a priority upon completion of this second phase.

One of the key issues raised had to do with ensuring that demand management not be a synonym for agricultural conversion. As the study progresses we do not want to lose sight of this perspective. In addition, we would like the work products to be available for use by the West Slope roundtables to complete a Phase III or IIb if necessary.

Our round table members did offer a number of specific comments that will be summarized as part of our February 6th meeting minutes. We look forward to working with you in the future on this very important study! Sincerely,

Hugh Sanburg, Chair
Kathleen Curry, Vice-Chair
Gunnison Basin Round Table

Mary Brown

marytaylorbrown@gmail.com

February 13, 2017

Carlee Brown
Section Chief
Interstate, Federal & Water Information Section
1313 Sherman Street
303-866-3441 ext 3220
carlee.brown@state.co.us

Dear Carlee,

The YWG Roundtable Executive Committee has convened and discussed the changes in the Scope of Work for the Phase II Risk Study. It was not possible to discuss the changes to the scope with the entire Roundtable prior the response deadline of February 16th. The Executive Committee agreed to support the revisions. These changes will be further discussed at the next YWG Roundtable meeting on March 8th.

While supportive of the Scope as revised the Executive Committee is hopeful that the results of this Phase II study will be made available to the Roundtable so that the portions of the original Phase II that have been eliminated from the revised scope may be pursued at some future time.

We look forward to working with the CWCB and all of the Roundtables as this project moves forward.

Sincerely,

Mary Brown
YWG Basin Roundtable Chair

SOUTHWEST BASINS ROUNDTABLE

Michael Preston, Chair

c/o Dolores Water Conservancy District

P.O. Box 1150

Cortez, Colorado 81321

970-565-7562

October 20, 2016

Mr. Craig Godbout

Water Supply Management Section

Colorado Water Conservation Board

1580 Logan Street, Suite 600

Denver, Colorado 80203

SUBJECT: Joint West Slope Roundtable Technical Study – Phase II

Dear Mr. Godbout:

The Southwest Basin Roundtable approved funding of \$10,000 from the Basin Account for the Joint West Slope Roundtable Technical Study – Phase II. The SWBRT joins with the other three West Slope Roundtables, SWCD and CRD in contributing to this project which has a total budget of \$89,500. The application was considered in detail and the \$10,000 commitment from the SWBRT Basin Fund was approved at the October 12, 2016 meeting of the Southwest Basin Roundtable. There was a quorum of Roundtable members present.

The Southwest Basin Roundtable has been actively engaged in this effort since the Four West Slope Roundtables met in December of 2014. The SWBRT participated financially and on the technical group during Phase 1 of the Study, has received regular updates on Phase I progress, and unanimously supports going forward and contributing \$10,000 to Phase II.

The completed Grant Application will be forwarded directly to you by the Colorado River District, the lead applicant. Please contact the lead applicant directly or me at 970-565-7562, mpreston@frontier.net, if you have questions or wish to discuss this application in more detail.

Sincerely,



Michael Preston

Southwest Basin Roundtable Chair

Risk Assessment: West Slope Roundtable Caucus Agreement on Adjusting Statement of Work

Michael Preston (mpreston@frontier.net)

Thu, Feb 16, 2017 at 9:37 AM

Dear Southwest Basin Roundtable Participants,

At our January 11 Southwest Basin Roundtable meeting, our Roundtable joined the other three West Slope Roundtables in providing \$10,000 each matched by contributions from Colorado River District and Southwestern Water Conservation District to conduct Phase II(a) concerning Risk Study.

The Front Range Roundtables and Water Council expressed concerns about the outcomes that we hope to achieve related to applying the Risk Assessment the TMD Framework in the Colorado Water Plan. To avoid polarizing and delaying the Risk Assessment, CWCB has agreed to participate in shaping the Statement of Work for the Risk Assessment to promote a common data platform from the proposed modeling and keep East and West Slope Roundtables constructively engaged.

After several webinars and phone conferences, the West Slope Roundtable Chairs and Conservation District Directors have agreed that being able to advance the proposed risk related modeling will set the stage for the questions that we intend to pursue once the modeling is in place. These questions had appeared in section 2.b. of the attached redline of the original statement of work.

As a result of these discussions we agreed that our intent remains the same for the use of the modeling, but these points are not an essential element in the Phase II(a) Statement of Work. We can move forward with the modeling in this phase of work to apply the modeling to our key questions in a subsequent phase.

Since this adjustment in the statement of work needs to occur before our April Roundtable meeting to keep the effort moving, I will comment in support of the West Slope consensus that the modeling should proceed and the involvement of CWCB in support of a statewide approach is a plus when the model is complete and we are ready to apply it to the TMD Framework in the Colorado Water Plan.

This email will notify Carlee Brown, who is managing this negotiation on behalf of CWCB that SWBRT is in support in the attached adjustments to the Statement of Work. When our Roundtable meets on April 12, Eric Kuhn, Bruce Whitehead and I, who have been involved in these negotiations and conversations, will provide the Roundtable with a thorough briefing followed by open discussion with the Roundtable.

Michael Preston, General Manager
Dolores Water Conservancy District
Chair, Southwest Basin Roundtable
60 South Cactus, Cortez, CO 81321
(970) 565-7562



COLORADO WATER CONSERVATION BOARD



WATER SUPPLY RESERVE ACCOUNT APPLICATION FORM

Today's Date:

Colorado River Development and Curtailment Risk Study

Name of Water Activity/Project

Colorado River Water Conservation District

Name of Applicant

Colorado - \$10,000
Gunnison - \$10,000
Southwest - \$10,000
Yampa/White - \$10,000

Amount from Statewide Account:

n/a

Amount from Basin Account(s):

\$40,000

Total WSRA Funds Requested:

\$40,000

Approving Basin Roundtable(s)

(If multiple basins specify amounts in parentheses.)

FEIN: 84-6000156

Application Content

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Required Exhibits

- A. Statement of Work, Budget, and Schedule
- B. Project Map
- C. As Needed (i.e. letters of support, photos, maps, etc.)

Appendices – Reference Material

- 1. Program Information
- 2. Insurance Requirements
- 3. WSRA Standard Contract Information (Required for Projects Over \$100,000)
- 4. W-9 Form (Required for All Projects Prior to Contracting)

Water Supply Reserve Account – Application Form

Revised October 2013

Instructions

To receive funding from the Water Supply Reserve Account (WSRA), a proposed water activity must be approved by the local Basin Roundtable **AND** the Colorado Water Conservation Board (CWCB). The process for Basin Roundtable consideration and approval is outlined in materials in Appendix 1.

Once approved by the local Basin Roundtable, the applicant should submit this application **with a detailed statement of work including budget and schedule as Exhibit A** to CWCB staff by the application deadline.

WSRA applications are due with the roundtable letter of support 60 calendar days prior to the bi-monthly Board meeting at which it will be considered. Board meetings are held in January, March, May, July, September, and November. Meeting details, including scheduled dates, agendas, etc. are posted on the CWCB website at: <http://cwcb.state.co.us> Applications to the WSRA Basin Account are considered at every board meeting, while applications to the WSRA Statewide Account are only considered at the March and September board meetings.

When completing this application, the applicant should refer to the WSRA Criteria and Guidelines available at: <http://cwcb.state.co.us/LoansGrants/water-supply-reserve-account-grants/Documents/WSRACriteriaGuidelines.pdf>. In addition, the applicant should also refer to the [Supplemental Scoring Matrix](#) applied to Evaluation Criteria Tiers 1-3 for Statewide Account requests .

The application, statement of work, budget, and schedule **must be submitted in electronic format** (Microsoft Word or text-enabled PDF are preferred) and can be emailed or mailed on a disk to:

Craig Godbout - WSRA Application
Colorado Water Conservation Board
1313 Sherman St., Room 721
Denver, CO 80203
Craig.godbout@state.co.us

If you have questions or need additional assistance, please contact Craig Godbout at: 303-866-3441 x3210 or craig.godbout@state.co.us.

Water Supply Reserve Account – Application Form

Revised October 2013

Part I. - Description of the Applicant (Project Sponsor or Owner);

1.	Applicant Name(s):	Colorado River Water Conservation District		
	Mailing address:	POB 1120 Glenwood Springs, CO 81602		
	FEIN #:	84-6000156 (contacting agent)		
	Primary Contact:	Eric Kuhn	Position/Title:	General Manager
	Email:	ekuhn@crwcd.org		
	Phone Numbers:	Cell: 970-379-7314	Office:	970-945-8522
	Alternate Contact:	Alesha Frederick	Position/Title:	Business Support Specialist
	Email:	afrederick@crwcd.org		
	Phone Numbers:	Cell: 662-574-6024	Office:	970-945-8522

2. Eligible entities for WSRA funds include the following. What type of entity is the Applicant?

- ☐ Public (Government) – municipalities, enterprises, counties, and State of Colorado agencies. Federal agencies are encouraged to work with local entities and the local entity should be the grant recipient. Federal agencies are eligible, but only if they can make a compelling case for why a local partner cannot be the grant recipient.
- ☒ Public (Districts) – authorities, Title 32/special districts, (conservancy, conservation, and irrigation districts), and water activity enterprises.
- ☐ Private Incorporated – mutual ditch companies, homeowners associations, corporations.
- ☐ Private individuals, partnerships, and sole proprietors are eligible for funding from the Basin Accounts but not for funding from the Statewide Account.
- ☐ Non-governmental organizations – broadly defined as any organization that is not part of the government.

Water Supply Reserve Account – Application Form

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3. Provide a brief description of your organization

The Colorado River Water Conservation District (also known as the Colorado River District or the River District) was created by the Colorado General Assembly in 1937 to lead in the protection, conservation, use and development of the water resources of the Colorado River Basin for the welfare of the District, and to safeguard for Colorado all waters of the Colorado River to which the state is entitled. Fifteen counties in western Colorado comprise the District and each appoints a member to the Board of Directors. The District covers all the lands and waters of Grand, Summit, Eagle, Pitkin, Routt, Garfield, Moffat, Rio Blanco, Mesa, Delta, Gunnison and Ouray counties and parts of Montrose, Saguache and Hinsdale counties.

4. If the Contracting Entity is different then the Applicant (Project Sponsor or Owner) please describe the Contracting Entity here.

The applicant is the same as the contracting entity.

5. Successful applicants will have to execute a contract with the CWCB prior to beginning work on the portion of the project funded by the WSRA grant. In order to expedite the contracting process the CWCB has established a standard contract with provisions the applicant must adhere to. A link to this standard contract is included in Appendix 3. Please review this contract and check the appropriate box.

☒ The Applicant will be able to contract with the CWCB using the Standard Contract

☐ The Applicant has reviewed the standard contract and has some questions/issues/concerns. Please be aware that any deviation from the standard contract could result in a significant delay between grant approval and the funds being available.

6. The Tax Payer Bill of Rights (TABOR) may limit the amount of grant money an entity can receive. Please describe any relevant TABOR issues that may affect the applicant.

The Colorado River Water Conservation District does not anticipate any TABOR issues.

Water Supply Reserve Account – Application Form

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Part II. - Description of the Water Activity/Project

1. What is the primary purpose of this grant application? (Please check only one)

☒ Nonconsumptive (Environmental or Recreational)

☒ Agricultural

☒ Municipal/Industrial

☒ Needs Assessment

☒ Education

☐ Other

Explain:

2. If you feel this project addresses multiple purposes please explain.

The Colorado River Development and Curtailment Risk Study addresses the need for technical data so that the Roundtables concerned with use of the Colorado River can better discuss issues surrounding future Colorado River development and the risk to current water users. These issues affect agriculture, municipal and industrial, and environmental/recreational uses. This technical data will be important to educating stakeholders on development and curtailment negotiations.

3. Is this project primarily a study or implementation of a water activity/project? (Please check only one)

☒ Study

☐ Implementation

4. To catalog measurable results achieved with WSRA funds can you provide any of the following numbers?

New Storage Created (acre-feet)

New Annual Water Supplies Developed, Consumptive or Nonconsumptive (acre-feet)

Existing Storage Preserved or Enhanced (acre-feet)

Length of Stream Restored or Protected (linear feet)

Length of Pipe/Canal Built or Improved (linear feet)

Efficiency Savings (acre-feet/year OR dollars/year – **circle one**)

Area of Restored or Preserved Habitat (acres)

☒

Other -- Explain:

Technical data to support Roundtable negotiations.

Water Supply Reserve Account – Application Form

Revised October 2013

4. To help us map WSRA projects please include a map (Exhibit B) and provide the general coordinates below:

Latitude:

Longitude:

5. Please provide an overview/summary of the proposed water activity (no more than one page). Include a description of the overall water activity and specifically what the WSRA funding will be used for. A full **Statement of Work** with a detailed budget and schedule is required as **Exhibit A** of this application.

This application addresses Phase II of the Colorado River Development and Curtailment Risk Study. Phase I is almost concluded and it is agreed by the entities to address additional questions. **Background:** At the Dec. 18, 2014, meeting of the Four West Slope Basin Roundtables held at Ute Water in Grand Junction, various attendees cited the need for technical data so that the Four Roundtables could better discuss issues surrounding future Colorado River development and the risk to current water users.

The issues framing the need for technical data include the Yampa-White's call for a "development carve out" and the Gunnison's position that development of any sort, any place poses a risk to all current users. The Colorado and Southwest Basin Implementation plans have since identified development needs and risks. The risk factor is also critical to Principal No. 4 in the Conceptual Agreement about how to discuss a future transmountain diversion. It reads: "A collaborative program that protects against involuntary curtailment is needed for existing uses and some reasonable increment of future development in the Colorado River System, but it will not cover a new TMD." (*Chapt. 8, page 14, Colorado's Water Plan*).

Against this backdrop, the Colorado River District and the Southwest Water Conservation District proposed that the Four Roundtables each join in a cross-basin Water Supply Reserve Account approval process to support a WSRA application for technical data development by the two Districts. The purpose is to give the engaged Roundtables in the state a common technical platform by which fruitful discussions and negotiations can be had.

Key findings of the risk study's Phase I

- Droughts similar to those in the recent past could cause Lake Powell to, within a few years, drop to levels that jeopardize Glen Canyon Dam's ability to generate electricity, and create a risk that the Upper Colorado River Basin would be unable to meet its delivery obligations under the 2007 Interim Guidelines and potentially the Colorado River Compact.
- The higher the consumptive use in the Upper Basin going forward, the greater the risk to all water users.
- Water supply augmentation and "drought operations" – moving water from large upstream reservoirs to prop up the levels in Lake Powell – reduce risk.

Water Supply Reserve Account – Application Form

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- “Demand management” – the voluntary reduction of consumptive use in the Upper Basin – can further reduce risk.
- In the most extreme drought scenarios, even after drought operations and additional demand management in the Lower Basin, the shortfall may be too large to meet with demand management programs, suggesting the need for discussions now about the necessary tradeoffs and alternative strategies to meet worst case scenarios.

Conclusions

- Hydrology, Demands and Future Development levels matter, the higher the consumptive use in the Upper Basin the higher the risk to all users
- Contingency Planning is essential, CRSP (Aspinall, Flaming Gorge, Navajo) reservoir drought operations reduces the risk, but in more severe droughts (e.g., 1988-1993 & 2001-2005), demand management is also required
- Some of the demand management volumes we are seeing in the model are very large and may not be feasible, so we need to consider the “trade-offs” and alternative strategies
- Example: Demand Management Combined with a Water Bank:
 - Could limit the annual impact to consumptive use by spreading conservation over many years
 - Would provide greater control over conserved water

The intent of Phase II is to further quantify the risks to water users in Colorado, by evaluating a number of scenarios with a variety of assumptions regarding the timing, location, volume and administrative requirements that could be imposed in order to make up a Powell deficit. Scenarios to be evaluated in Phase II are developed based on feedback from the West Slope BRTs as well as input from Front Range Roundtables.

Two different technical approaches will be used in Phase II. The first set of analyses will build upon the CRSS modeling from Phase I, and will include additional modeling runs with CRSS to evaluate alternative model assumptions (hydrology, demand, etc), as well as to quantify the sensitivity of risk to various drivers (demand, hydrology, CRSP operations, etc). The second piece of Phase II will investigate the utility of StateMod in addressing more detailed sets of questions that have been raised by the participants. These include demand management allocation schemes among the basins, modeling of compact calls, and a more realistic look at the effects of transbasin diversions and the use of storage facilities, particularly in the upper mainstem. While the ultimate objective is to use StateMod in parallel with CRSS, this initial work will test the ability of StateMod to address these questions, and will allow budget to perform some exploratory model analysis to better understand the limitations of the tool in this application.

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The next phases of the study should focus on four basic areas:

1. Additional hydrologic analysis using CRSS. There are suggestions that we conduct additional modeling using flows from the paleo-hydrologic record and there are questions concerning the 3,525' management trigger – why not 3,510' for example.
2. The study results suggest some rare, but very large shortages that might have to be made up through demand management. We need to model alternative approaches where we bank a smaller amount of water in a reservoir in more years and hold that water for delivery in the large demand management years.
3. Using both CRSS and CDSS (state mod) explore how different management options impact water uses, reservoir storage, and the major sub-basins. We would look at a variety of options, many (or most) of which someone will object to. The objective is to look at where the water for demand management might be found:
 - a) A reduction of water uses based on priority.
 - b) A pro-rata reduction of all major post-compact rights.
 - c) A pro-rata reduction of consumptive use within each basin based on either the consumptive use within each basin or that basin's average contribution to the Colorado River System's natural (undepleted) flow.
 - d) A combination of a, b and c with a pre-compact water bank.
 - e) Other options suggested by stakeholders.
4. Conduct additional modeling based on the updated climate model results if the data needed to conduct such modeling becomes available.

Financing and Scope of Work

To conduct this study, the River District and Southwest District will contribute \$24,750 each (\$49,500 each). The Roundtables are requesting \$10,000 each, (\$40,000), for a grand total of \$89,500 to fund Phase II.

The Colorado River District is the contracting entity. For a full scope of work, please see Exhibit A.

Study Management

- The study will be managed jointly by the River District and the Southwestern District with assistance of technical representatives from the four West Slope roundtables and the Arkansas, Metro and South Platte Roundtables. The effort needs to be open and transparent.

Water Supply Reserve Account – Application Form

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Part III. – Threshold and Evaluation Criteria

1. Describe how the water activity meets these **Threshold Criteria**. (Detailed in Part 3 of the Water Supply Reserve Account Criteria and Guidelines.)

- a) The water activity is consistent with Section 37-75-102 Colorado Revised Statutes.¹

This activity is consistent with the CRS.

- b) The water activity underwent an evaluation and approval process and was approved by the Basin Roundtable (BRT) and the application includes a description of the results of the BRT's evaluation and approval of the activity. At a minimum, the description must include the level of agreement reached by the roundtable, including any minority opinion(s) if there was not general agreement for the activity. The description must also include reasons why general agreement was not reached (if it was not), including who opposed the activity and why they opposed it. Note- If this information is included in the letter from the roundtable chair simply reference that letter.

This information is pending Roundtable consideration, approval and the writing of approval letters.

¹ 37-75-102. Water rights - protections. (1) It is the policy of the General Assembly that the current system of allocating water within Colorado shall not be superseded, abrogated, or otherwise impaired by this article. Nothing in this article shall be interpreted to repeal or in any manner amend the existing water rights adjudication system. The General Assembly affirms the state constitution's recognition of water rights as a private usufructuary property right, and this article is not intended to restrict the ability of the holder of a water right to use or to dispose of that water right in any manner permitted under Colorado law. (2) The General Assembly affirms the protections for contractual and property rights recognized by the contract and takings protections under the state constitution and related statutes. This article shall not be implemented in any way that would diminish, impair, or cause injury to any property or contractual right created by intergovernmental agreements, contracts, stipulations among parties to water cases, terms and conditions in water decrees, or any other similar document related to the allocation or use of water. This article shall not be construed to supersede, abrogate, or cause injury to vested water rights or decreed conditional water rights. The General Assembly affirms that this article does not impair, limit, or otherwise affect the rights of persons or entities to enter into agreements, contracts, or memoranda of understanding with other persons or entities relating to the appropriation, movement, or use of water under other provisions of law.

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- c) The water activity meets the provisions of Section 37-75-104(2), Colorado Revised Statutes.² The Basin Roundtable Chairs shall include in their approval letters for particular WSRA grant applications a description of how the water activity will assist in meeting the water supply needs identified in the basin roundtable's consumptive and/or non-consumptive needs assessments.

This information is pending Roundtable consideration, approval and the writing of approval letters.

- d) Matching Requirement: For requests from the Statewide Fund, the applicants will be required to demonstrate a **25 percent** (or greater) match of the total grant request from the other sources, including by not limited to Basin Funds. A minimum match of 5% of the total grant amount shall be from Basin funds. A minimum match of 5% of the total grant amount must come from the applicant or 3rd party sources. Sources of matching funds include but are not limited to Basin Funds, in-kind services, funding from other sources, and/or direct cash match. Past expenditures directly related to the project may be considered as matching funds if the expenditures occurred within 9 months of the date the contract or purchase order between the applicant and the State of Colorado is executed. Please describe the source(s) of matching funds. (NOTE: These matching funds should also be reflected in your Detailed Budget in **Exhibit A** of this application)

The total budget is \$60,000. The Colorado River District is contributing \$10,000. The Southwest Colorado Conservation District is contributing \$10,000. It is anticipated that each of the four West Slope Basin Roundtables (Colorado, Gunnison, Southwest and Yampa/White) will contribute \$10,000 each from their respective WSRA Basin Funds.

² 37-75-104 (2)(c). Using data and information from the Statewide Water Supply Initiative and other appropriate sources and in cooperation with the on-going Statewide Water Supply Initiative, develop a basin-wide consumptive and nonconsumptive water supply needs assessment, conduct an analysis of available unappropriated waters within the basin, and propose projects or methods, both structural and nonstructural, for meeting those needs and utilizing those unappropriated waters where appropriate. Basin Roundtables shall actively seek the input and advice of affected local governments, water providers, and other interested stakeholders and persons in establishing its needs assessment, and shall propose projects or methods for meeting those needs. Recommendations from this assessment shall be forwarded to the Interbasin Compact Committee and other basin roundtables for analysis and consideration after the General Assembly has approved the Interbasin Compact Charter.

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2. For Applications that include a request for funds from the **Statewide Account**, describe how the water activity/project meets all applicable **Evaluation Criteria**. (Detailed in Part 3 of the Water Supply Reserve Account Criteria and Guidelines and repeated below.) Projects will be assessed on how well they meet the Evaluation Criteria. **Please attach additional pages as necessary.**

Evaluation Criteria – the following criteria will be utilized to further evaluate the merits of the water activity proposed for funding from the Statewide Account. In evaluation of proposed water activities, preference will be given to projects that meet one or more criteria from each of the three “tiers” or categories. Each “tier” is grouped in level of importance. For instance, projects that meet Tier 1 criteria will outweigh projects that only meet Tier 3 criteria. The applicant should also refer to the Supplemental Scoring Matrix applied to Evaluation Criteria Tiers 1-3 for Statewide Account requests. WSRA grant requests for projects that may qualify for loans through the CWCB loan program will receive preference in the Statewide Evaluation Criteria if the grant request is part of a CWCB loan/WSRA grant package. For these CWCB loan/WSRA grant packages, the applicant must have a CWCB loan/WSRA grant ratio of 1:1 or higher. Preference will be given to those with a higher loan/grant ratio.

Tier 1: Promoting Collaboration/Cooperation and Meeting Water Management Goals and Identified Water Needs

- a. The water activity addresses multiple needs or issues, including consumptive and/or non-consumptive needs, or the needs and issues of multiple interests or multiple basins. This can be demonstrated by obtaining letters of support from other basin roundtables (in addition to an approval letter from the sponsoring basin).
- b. The number and types of entities represented in the application and the degree to which the activity will promote cooperation and collaboration among traditional consumptive water interests and/or non-consumptive interests, and if applicable, the degree to which the water activity is effective in addressing intrabasin or interbasin needs or issues.
- c. The water activity helps implement projects and processes identified as helping meet Colorado’s future water needs, and/or addresses the gap areas between available water supply and future need as identified in SWSI or a roundtable’s basin-wide water needs assessment.

Tier 2: Facilitating Water Activity Implementation

- d. Funding from this Account will reduce the uncertainty that the water activity will be implemented. For this criterion the applicant should discuss how receiving funding from the Account will make a significant difference in the implementation of the water activity (i.e., how will receiving funding enable the water activity to move forward or the inability obtaining funding elsewhere).
- e. The amount of matching funds provided by the applicant via direct contributions, demonstrable in-kind contributions, and/or other sources demonstrates a significant & appropriate commitment to the project.

Tier 3: The Water Activity Addresses Other Issues of Statewide Value and Maximizes Benefits

- f. The water activity helps sustain agriculture & open space, or meets environmental or recreational needs.
- g. The water activity assists in the administration of compact-entitled waters or addresses problems related to compact entitled waters and compact compliance and the degree to which the activity promotes maximum utilization of state waters.
- h. The water activity assists in the recovery of threatened and endangered wildlife species or Colorado State species of concern.
- i. The water activity provides a high level of benefit to Colorado in relationship to the amount of funds requested.

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j. The water activity is complimentary to or assists in the implementation of other CWCB programs.
Continued: Explanation of how the water activity/project meets all applicable **Evaluation Criteria**.

Please attach additional pages as necessary.

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Part IV. – Required Supporting Material

1. **Water Rights, Availability, and Sustainability** – This information is needed to assess the viability of the water project or activity. Please provide a description of the water supply source to be utilized, or the water body to be affected by, the water activity. This should include a description of applicable water rights, and water rights issues, and the name/location of water bodies affected by the water activity.

The water body to be affected by this water activity is the Colorado River system which includes the mainstem and its tributaries in western Colorado.

2. Please provide a brief narrative of any related studies or permitting issues.

3. Statement of Work, Detailed Budget, and Project Schedule

The statement of work will form the basis for the contract between the Applicant and the State of Colorado. In short, the Applicant is agreeing to undertake the work for the compensation outlined in the statement of work and budget, and in return, the State of Colorado is receiving the deliverables/products specified. **Please note that costs incurred prior to execution of a contract or purchase order are not subject to reimbursement.** All WSRA funds are disbursed on a reimbursement basis after review invoices and appropriate backup material.

Provided in Exhibit A.

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Please provide a detailed statement of work using the template in Exhibit A. Additional sections or modifications may be included as necessary. Please define all acronyms and include page numbers.

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The above statements are true to the best of my knowledge:

Signature of Applicant:

Jim Pokrandt

Digitally signed by Jim Pokrandt
DN: cn=Jim Pokrandt, o=Colorado
River District, ou,
email=jpokrandt@crvcd.org, c=US
Date: 2017.03.13 10:43:52 -0800

for Eric Kuhn

Print Applicant's Name: Eric Kuhn, General Manager, Colorado River District

Project Title: Colorado River Development and Curtailment Risk Study

Date: March 1, 2016

Return an electronic version (hardcopy may also be submitted) of this application to:

Craig Godbout – WSRA Application
Colorado Water Conservation Board
1313 Sherman St., Room 721
Denver, CO 80203
303-866-3441, ext. 3210 (office)
303-547-8061 (cell)
craig.godbout@state.co.us

Exhibit A
Phase II(a) Basin Roundtable Technical Study on Colorado River Risk Response Options

Statement of Work
Date: March 7, 2017

WATER ACTIVITY NAME: Basin Roundtable Technical Study on Colorado River Risk Response Options - Phase II

GRANT RECIPIENT: Colorado River Water Conservation District

FUNDING SOURCE: Gunnison BRT Basin Funds (\$10,000.00), Southwest BRT Basin Funds (\$10,000.00), Colorado BRT Basin Funds (\$10,000.00), Yampa-White-Green BRT Basin Funds (\$10,000.00).

INTRODUCTION AND BACKGROUND

At the December 18, 2014 meeting of the four West Slope Basin Roundtables (BRTs), attendees cited the need for more technical data and modeling so that the four roundtables could better understand and discuss issues surrounding future Colorado River development, the risk to existing water users and implementation of the framework principles included in Colorado's Water Plan. Results from Phase I validated previous work (Contingency Planning, Basin Study, etc.) that illustrate real risks to Lake Powell and quantify a range of possible deficit volumes that Colorado could be asked to supplement to maintain Powell elevations above critical thresholds.

Given that citizens and water users across the state have a stake in the challenges on the Colorado River, the Colorado Water Conservation Board (CWCB) envisions the next step of this study as a statewide effort. With input from all BRTs, CWCB has defined a Phase II that will help inform how Colorado can help protect critical elevations in Lake Powell through voluntary demand management and other water management activities. As such, the CWCB will continue to exercise its leadership and oversight responsibilities with regard to this study and all future efforts to address interstate water issues.

The intent of Phase II is to explore potential voluntary preemptive actions— and associated risks— that Colorado water users could take as short term measures (1-5 years in duration) to protect critical reservoir elevations. The study will evaluate a number of scenarios with a variety of assumptions regarding voluntary demand management and reservoir operation scenarios that were developed based on feedback from the BRTs and other stakeholders.

Two different technical approaches will be used in Phase II. The first set of analyses will build upon the Colorado River Simulation System (CRSS) modeling from Phase I, and will include additional modeling runs with CRSS to evaluate alternative model assumptions (hydrology, demand, etc.). The second piece of Phase II will investigate opportunities to use CRSS in conjunction with StateMod in order to model demand management allocation schemes. This work will allow for an exploratory analysis of the strengths and weaknesses of both tools in answering demand management questions both together and separately.

All phases of the Study will help planning for eventual implementation of Principle 4 of Colorado's Conceptual Framework contained in Chapter 8 of Colorado's Water Plan.

Principle 4: A collaborative program that protects against involuntary curtailment is needed for existing uses and some reasonable increment of future development in the Colorado River System, but it will not cover a new TMD.

A collaborative program that protects existing uses and an increment of future development is a necessary element of Colorado's water planning, regardless of whether a new TMD is developed. The Framework includes this principle to make clear that a collaborative program would not protect a new TMD.

The collaborative program should provide a programmatic approach to managing Upper Division consumptive uses, thus avoiding a Compact deficit and ensuring that system reservoir storage remains above critical levels, such as the minimum storage level necessary to produce hydroelectric power reliably at Glen Canyon Dam (minimum power pool). A goal of the collaborative program is that it would be voluntary and compensated, like a water bank, to protect Colorado River system water users, projects and flows. Such protection would NOT cover uses associated with a new TMD.

A second goal of the collaborative program should be that it protects the yield of the water supply systems in place in the Colorado River Basin from involuntary curtailment. To achieve this goal, the program would need to expand to accommodate future West Slope growth and growth of existing water supply systems, the pace of which is not now known. Protecting additional consumptive uses will increase the program's scope and challenges. Some basins, such as the less-developed Southwest and Yampa/White/Green, anticipate the need for future development and will seek terms to accommodate it in the collaborative program. Regardless of when a use develops, the program would strive to protect uses at the time of shortage, except a new TMD. (Emphasis added.) By adapting to accommodate increased uses at any given time, the program should not lead to a rush to develop water rights. Section 9.1 of Colorado's Water Plan provides additional discussion of the collaborative program.

The collaborative program will develop in concert with intra- and interstate water policies. The IBCC and roundtables can provide an important forum for sharing the work of on-going interstate negotiations, scoping technical analyses, and identifying issues of concern at the stakeholder level, as well as providing input to the CWCB as it manages and conducts the technical, legal, economic, and other studies necessary for implementation.

The Study will be supported by two committees:

An Outreach Committee. This committee will be made up of the contractor (Hydros), representatives from each sponsoring roundtable, representatives of the funding sponsors, CWCB staff, and other interested parties. Participation in this committee is not limited. This

committee will operate in the same manner as a similar committee during Phase I of the Study. Hydros will conduct webinars with this committee to report progress under the Scope of Work and seek input regarding work accomplished and future tasks within the Scope of Work. This committee will inform the sponsoring roundtables regarding progress of the study and seek their input.

A Technical Advisory Committee. This committee will be a smaller group consisting of Hydros, a representative of each sponsoring roundtable that wishes to participate, the funding sponsors, CWC staff, and others with special expertise as appropriate. There will not be an absolute limit on the number of participants, but keeping the group small enough to function effectively is important. This committee will work closely with Hydros regarding refinement of model details, coupling of CRSS and StateMod, and possible improvements to StateMod within the Scope of Work.

OBJECTIVES

Phase II will address the following questions:

1. Refinement and further analysis of scenarios using CRSS:
 - a. Water Banking scenarios that include various levels of preemptive demand management and storage in a hypothetical reservoir not subject to equalization under the 2007 Colorado River Interim Guidelines, together with different assumptions about future demand growth.
 - b. Additional model runs utilizing paleo-hydrology sequences to understand sensitivity to paleo-events and where those events fit within the spectrum of historical gaged data and climate change (predicted) hydrology.
 - c. Evaluation of historic and possible future hydrologic variability and the impacts of that variability on critical reservoir elevations. Comparison of the magnitude of the hydrologic variability to other factors such as demands (as represented by both the Scenario A and 90% of Scenario D1 (“90% D1”) demand schedules, as defined in the 2012 Colorado River Basin Supply and Demand Study).
2. Evaluate the utility of StateMod in addressing questions related to voluntary demand management. The goal will be to understand the capabilities and limitations in StateMod under various assumptions. Questions that we hope to eventually be able to ask of StateMod include (but are not limited to):
 - a. How would different approaches to demand management impact water users, reservoir storage, and sub-basins?
 - i. If a water banking mechanism were in place to preemptively conserve water to help protect critical reservoir elevations in Lake Powell.
 - ii. Volumes that may need to be conserved in order to address risks identified in Phase I of the study, and duration of that storage.
 1. Evaluation of conditions within Colorado during drought periods that could prompt preemptive actions.
 2. Comparison of possible volumes to current consumptive use (average, dry-year, wet-year)

- iii. Which reservoirs are best situated to provide cumulative water banking storage over several years.
 - 1. Strategies for maximum utilization of existing storage.
 - 2. Evaluation of exchange potential throughout basins that might improve utilization of existing storage.
 - iv. Scenarios in each basin for providing temporary (1-5 year duration) voluntary demand management to protect critical reservoir elevations in Lake Powell.
 - 3. Review results with the sponsoring BRTs; discuss implications and lessons for implementation of a preemptive water banking storage account.
 - 4. As approved by CWCB and permitted by budgetary constraints, expand or refine scenarios to address follow-on questions.

TASKS

TASK 1 - Ongoing CRSS Evaluation

Description of Task

Based on feedback from the BRTs and other stakeholders, a set of follow-on questions have been developed that leverage the initial set of runs from Phase I. These include investigation of system risks with different hydrologic sequences, with different preemptive voluntary demand management and water banking mechanisms, and with different demand and growth assumptions. A preliminary set of questions is provided in the introduction above, and we anticipate additional feedback and scenario requests from the participants that will be included in this task.

Method/Procedure

Continued use of CRSS for additional model runs, and extraction of additional data from scenarios that were already run as part of Phase I.

Deliverable

Model reports, memos, and presentations to stakeholders as needed.

TASK 2 - StateMod Evaluation and CRSS Integration Testing

Description of Task

Phase I of this work utilized CRSS to evaluate basin-wide risks. It is too coarse for use in evaluating local water use and non-CRSP reservoir operations. Ideally we could use StateMod to address more detailed questions on water banking. However, StateMod itself may have limitations in its ability to accurately reflect these components. The first task, therefore, will be an evaluation of the capabilities and limitations of StateMod in addressing these questions. We will use this budget to perform initial model simulations for the Phase II Study, to better understand any limitations, to identify and possibly implement model enhancements necessary for the study, and to test the StateMod/CRSS "coupling" that would be necessary to allow for feedback and data flow between the two models.

We will also evaluate different options for hydrologic traces. StateMod traditionally uses a single-trace historical period of record, whereas CRSS utilizes a hydrologic ensemble approach for simulating multiple possible events. It may be necessary to develop one or more hydrologic sequences that can be utilized by both models. As part of this task, we will also evaluate the usefulness of Paleo-hydrologic data and whether or not it adds information to the evaluation of risk.

The long-term objective (Phase IIb) in enhancing and coupling these tools is to be able to simulate water use and demand management across the sub-basins including:

1. Single-year versus multi-year actions to protect critical elevations in Lake Powell.
2. Water banking scenarios wherein the State and individual sub-basins may proactively create a water bank to mitigate against a call or other "mandatory" actions.
3. Strategies for maximum utilization of existing storage for water banking purposes.

Method/Procedure

Network modifications and testing of CRSS and StateMod; development of simple data conversion tool for moving data between the models. Written report on the strengths, limitations, and additional needs for partnering CRSS and StateMod.

Deliverable

Model files and ancillary tools and memo describing integrated use of the two models.

TASK 3- Final Report(s) and Meetings (Phase IIa)

Description of Task

One objective of this work is to provide a foundation of knowledge to BRT participants in order to foster informed discussions on management of risk. Phase I included over a dozen webinar events, as well as numerous in-person meetings. We anticipate a similar level of effort in this next Phase as well, and include budget in this task for conducting these meetings.

Additionally, we anticipate numerous interim reports, presentations, and as a final deliverable two separate reports, one for each of the above tasks:

1. Write a report documenting model work, scenario results, and recommendations moving forward, based on items from Task 1.
2. Write a report or memorandum of findings related to the use of StateMod, presenting initial modeling results and making recommendations for incorporation of StateMod results into Phase IIb analyses (Task 2).

Method/Procedure

Draft reports to be reviewed by participant committees. Meetings and workshops will be held to present findings and solicit input for additional studies.

Deliverable

Final Reports and associated model files, results, and other analyses.

REPORTING AND FINAL DELIVERABLE

Reporting: The applicant shall provide a progress report to the CWCB Director every 2 months, beginning from the date of the executed contract. The progress report shall describe the completion or partial completion of the tasks identified in the statement of work including a description of any major issues that have occurred and any corrective action taken to address these issues.

Any changes or additions to the scope of work must be approved by the CWCB Director. Interpretations of the Scope of Work that affect sensitive water policy matters must be approved by the CWCB Director. CWCB staff will be invited to participate in all meetings regarding the project and will be included in the review of drafts of the final deliverables.

Final Deliverable: At completion of the project, the applicant shall provide the CWCB a final report that summarizes the project and documents how the project was completed. This report may contain photographs, summaries of meetings and engineering reports/designs.

BUDGET

Task	WSRF Funds	Matching Funds (cash & in-kind)	Total Costs	Hydros Budget Estimate
1: Ongoing CRSS Evaluation		\$26,560	\$26,5600	\$ 26,560
2: StateMod Evaluation and CRSS Integration Testing	\$20,000	\$10,560	\$30,5600	\$ 30,560
3: Final Reporting and Meetings	\$15,000	\$20,920	\$35,9200	\$ 35,920
Travel Expenses (mileage, meals, hotel, etc.)	\$5,000	\$0	\$5,000	\$ 5,000
TOTAL	\$40,0000	\$58,040	\$98,040	\$ 98,040

Schedule

Task	Start Date	End Date
1: Ongoing CRSS Evaluation	4/1/2017	12/31/2017
2: StateMod Evaluation and CRSS Integration Testing	4/1/2017	12/31/2017
3: Final Reporting and Meetings	4/1/2017	12/31/2017