



COLORADO RIVER DISTRICT

PROTECTING WESTERN COLORADO WATER SINCE 1937

MEMORANDUM

TO: BOARD OF DIRECTORS, CRWCD

FROM: DAVE KANZER, P.E., DEPUTY CHIEF ENGINEER DK

SUBJECT: RE-AUTHORIZATION REQUEST FOR CLOUD SEEDING PROGRAM; 3-YEARS 2021-2023

DATE: MAY 29, 2020

ACTIONS:

Staff requests Board action to authorize the General Manager to renew all pertinent contracts with cost share cooperators and selected contractors to enable the River District to act as the Fiscal Agent and administrator for the Central Colorado Mountain River Basin Weather Modification Program for the next three years: 2020-2023. The total amount of funding from multiple partners to be managed for this project is estimated to be approximately \$280,000 per year. This includes \$25,000 per year direct contribution by the River District.

All contracting documents are subject to review and approval by the General Manager and General Counsel and relevant agreements will be subject to cost recovery rates (or a minimum 3% management fee) and are subject to annual budgeting and appropriations and contingent upon receipt of sufficient cost-share partner funding.

STRATEGIC INITIATIVE(S):

- 3. A. The River District will continue to evaluate and pursue options to increase local water storage supplies and optimize and expand, where appropriate, existing water storage.*
- 3. B. The River District will engage in support efforts aimed at understanding climate change and how it may affect water supplies.*
- 3. C. The River District will engage in and support water supply planning efforts, local and regional, which include adapting to climate change impacts.*

Background

Since late 2016, the River District has actively managed the Central Colorado Mountain River Basin Weather Modification Program (hereafter referred to as the “CCMRB Program”) on behalf of 7 principal cost share partners, including the Front Range Water Council (FRWC), several ski areas, the CWCB and Lower Colorado River Basin contributors. Previously, from 2012-16, Wilson Water Group managed the program on behalf of the funding partners and the River District has participated as a financial contributor at \$25,000 per year since then.

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The Colorado Water Conservation Board is a significant funding partner for the CCMRB Program and a series of other related cloud-seeding, snowpack augmentation programs throughout Colorado; they are also the delegated authority that regulates and administers the CCMRB 5-year cloud seeding permit (valid until 2022). The requested 3-year Board authorization will enable staff to participate in the permit renewal process at that time, as appropriate.

It is important to note that much of the CWCB cloud-seeding funds comes from contributions from Lower Basin states that are interested in augmenting Colorado River snowpack for the purpose of increasing water availability or 'system water' with the intent to increase Lake Powell inflows. Such augmentation is part of the Upper Colorado River basin "Drought Contingency Plan" or DCP. Under Colorado state law, this 'system water' has no specific owner and is available for diversion.

Additionally, outside funding is provided for the CCMRB Program (*i.e.*, Vail Resorts contributions) that is not collected or directly managed by the River District. These funds are expended separately to the same CCMRB Program contractors to support cloud seeding that directly influence their recreational properties, but which contributes additional basin runoff to help meet CCMRB objectives.

Process:

Annual cooperative agreements define the roles and responsibilities of the CCMRB funding partners and directs the River District perform the administration and fiscal management of the program. To do this, the River District collects funds pursuant to a multi-partner cost-share agreement and disburses payments to contractors performing cloud-seeding activities after reviewing and approving operational activities and related invoices / expenditures.

To perform the winter cloud seeding, monitoring, evaluation and reporting, the River District will continue to hire and manage subcontractors (e.g., Western Weather Consultants, North American Weather Consultants, Desert Research Institute, others) with the objective of snowpack augmentation. It is anticipated that Dave Kanzer will continue to act as the contract officer and project manager for the River District with assistance from Mike Eytel and the accounting and administration teams to directly manage contractors, disseminate information to contributing partners and to ensure the objectives of the CCMRB Program are being met.

In addition to seasonal operations, the River District will continue working to improve the cloud seeding technology employed in operations and the science used in estimating the efficacy of cloud seeding activities using program funds and staff time. This includes the purchase and deployment of remotely-controlled cloud seeding generators and the cooperative development and implementation of modeling frameworks along with the National Center for Atmospheric Research (NCAR).

Financial contributions from the cooperators are subject to cost recovery billing for River District staff time based upon published hourly rates or to be assessed a minimum of 3% of contributed funds as cost recovery charge.

Results:

Although quantifying the effectiveness of the CCMRB cloud seeding is subject to significant uncertainty, independent analysis is performed annually to comply with permit requirements and to inform participants. The analytical technique used for cloud seeding effectiveness is based upon statistical ‘target/control’ methods that compare snowpacks in seeded (targeted) basins to unseeded (control) basins.

The analytical results, as calculated and reported by North American Weather Consultants, for the CCMRB indicate that the program has been able to reliably increase snowpack every year of the program.

The following statement is excerpted from the 2018-2019 NAWC annual report:

*“...snowpack evaluations ...are suggestive of a fairly wide range of precipitation/snowpack increases that could be attributed to seeding operations. Overall, **the range was from 4% to 29% increase indications for this single season.**”*

*It is important to keep in mind that single-season results are subject to high variability in natural precipitation patterns, and do not carry the same statistical significance of the long-term results. **The bulk of the long-term resultsare suggestive of 2-4% increases in precipitation and snowpack for this program, for the 10 seeded seasons in the evaluation.**”*

Additional information and copies of these reports are available upon request.



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MEMORANDUM

TO: BOARD OF DIRECTORS, CRWCD

FROM: MIKE EYTEL, SR WATER RESOURCE SPECIALIST

SUBJECT: Fiscal Agency Request for Upper Colorado Wild & Scenic Alternative Management Plan

DATE: JUNE 1, 2020

ACTION: Staff requests that the Board authorize the River District to act as the fiscal agent for the CWCB funding through 2021 and to authorize the General Manager to execute a Purchase Order with the CWCB up to \$99,999.

STRATEGIC INITIATIVES: *1. Outreach and Advocacy*
4. Colorado River Supplies
10. Water Quality.

Background

The Upper Colorado River Wild and Scenic Alternative Management Plan Stakeholder Group has been working since 2008 to develop and implement an alternative management plan that protects the Outstandingly Remarkable Values (ORVs) identified on the mainstem of the Colorado River from Gore Canyon to the lower portion of Glenwood Canyon. The Stakeholder Group's intention is to balance permanent protection of the ORVs, certainty for the stakeholders, water project yield, and flexibility for water users.

In 2009, the Colorado General Assembly created the [Wild and Scenic Rivers Fund](#), CRS 37-60-122.3 to foster cooperative and collaborative processes aimed at the development of protections for river-dependent ORVs. The Wild & Scenic SG requests the River District to be fiscal agent by means of a Purchase Order with the CWCB for up to \$99,999. This round of funding for the Upper Colorado W&S effort is primarily for administrative and monitoring expenses during the first year of operation of the W&S Alternative Management Plan post-provisional period. Due to current conditions related to COVID-19, there are a number of budgetary items which may not occur, and there is some uncertainty whether the CWCB funds will be even available. Regardless, the River District will not be obligated for any costs other than a relatively small annual assessment imposed on all of the Wild and Scenic Interest Groups. These efforts will require minimal time from accounting and technical staff. Staff recommends a 3% administration fee to offset related staff costs. The River District previously has served as fiscal agent for the Wild & Scenic SG but has not done so since 2009.