



MEMORANDUM
APRIL 3, 2019

TO: BOARD OF DIRECTORS

FROM: DAVE “DK” KANZER DK

SUBJECT: CLOUD SEEDING UPDATE & PRESENTATION

ACTION: No action requested, status update only

STRATEGIC INITIATIVE(S):

- 3. C. The River District will engage in and support water supply planning efforts, local and regional, which include adapting to climate change impacts.*
- 4. C. The River District will continue to study mechanisms, such as a ...water supply augmentation to address the risk of overdevelopment.*
- 7. C. The River District will look for opportunities where its efforts are needed as a catalyst to help in-District interests plan for and meet their water needs in a manner that is consistent with the District’s compact contingency planning goals and objectives.*

Background

Beginning in 2016, the River District board directed staff to take over the active management of the Central Colorado Mountain River Basin Weather Modification Program (hereafter referred to as the “CCMRB”) from the Wilson Water Group on behalf of 7 principal cost share partners, including the Front Range Water Council (FRWC), several ski areas, the CWCB (with funding from Lower Colorado River Basin contributors). Prior to that and since 2012, the River District had only participated as a financial contributor at \$25,000 per year.

In 2017, the Board further directed staff to manage the CCMRB through the 2019-20 cloud seeding season via formal motion. Now after three seasons of management, and in response to a Board request for a presentation, this memo provides a brief summary update of CCMRB activities and an overview of the information to be discussed and presented in greater detail at the upcoming quarterly board meetings in Glenwood Springs on April 16-17.

Cloud Seeding Program Activities

On an annual basis, the River District hires and manages a subcontractor (Western Weather Consultants of Durango, aka “WWC”) to site, operate and maintain approximately 29 propane-fired cloud seeding generators within four counties (Pitkin, Eagle, Summit and Grand) that create silver iodide “smoke” or dust-sized nuclei to enhance natural snow production. Twenty-seven of these are small, manually-operated generators that are owned by WWC; they are located on private lands and operated by land owners by subcontract to WWC. In the fall of 2018, two state-of-the-

art, remote controlled cloud-seeding generators were purchased from Idaho Power Company, the manufacturer, by the River District and deployed, replacing two manual generators. These are also operated and maintained by WWC pursuant to contract terms.

All cloud seeding activities are regulated and permitted by the Colorado Department of Natural Resources with delegated authority to the Water Conservation Board. There are currently nine, active, separately administered, cloud seeding operational permits in Colorado. Cloud seeding permits are typically held by the cloud seeding operators and not the program sponsor. Thus, WWC holds the permit for the CCMRB target area, on behalf of the River District and beneficiaries.

In addition to regulating cloud seeding across the state, the CWCB provides significant funding to cloud seeding program sponsors. For the cloud seeding programs that benefit the Colorado River Basin, about half of the CWCB cloud-seeding funding support comes via contributions from Lower Basin states that are interested in augmenting Colorado River snowpack for the purpose of increasing Lake Powell inflows. Such augmentation is part of the Upper Colorado River basin “Drought Contingency Plan” or DCP. However, under state law, and by consensus, augmented ‘system water’ has no specific owner and is available for diversion and/or appropriation under state water law. Similar cloud seeding activities are also occurring in Utah and Wyoming.

Program Budget and Funding

The average annual budget for the CCMRB is approximately \$230,000. This includes all operational costs for WWC, analysis and reporting requirements and staff time needed for management. This total includes approximately \$50,000 of non-River District managed direct funding provided to operators in the CCMRB target area by the ski areas (Keystone, Breckenridge and Winter Park). Of the total annual budget, approximately \$155,000 is directly managed by the River District Enterprise; this is roughly made up of \$80,000 from CWCB, \$75,000 from the FRWC; the River District provides \$25,000 from its General Fund.

Separately, outside funding is directly provided to WWC by Vail Resorts (not collected or managed by the River District) that benefits the CCBRB, as the Vail/Beaver Creek ski areas are entirely within the CCMRB area. In other words, although these funds are expended directly to enhance their recreational opportunities on their properties, such augmented snowpacks contribute additional runoff for CCMRB beneficiaries.

2018-19 Activities

As the cloud seeding and snowpack accumulation season comes to a close, by all accounts, it has been a good year, especially in comparison to the dry 2017-18 season. To date, there were approximately 28 events that met the desired conditions for seeding (temperature, prevailing winds and moisture thresholds) since November 2018 in the CCMRB. In comparison, 2017-18 had only 21 seedable events. In dry years, unexpended operational seeding funds are carried forward. For example, \$50,000 of remaining, unused funds from 2018 were utilized in the 2019 season, enabling the CCMRB to take advantage of additional seedable events.