

I. Project Title: Colorado River Decision Support System (CRDSS)

II. Bureau of Reclamation Agreement Number(s): N/A

III. Principal Investigators:

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IV. Abstract:

The CRDSS supports better decision making with respect to the utilization of Colorado River water resources. It provides computer databases and tools to make informed and timely decisions regarding the use and operation of Colorado's water resources in the Upper Colorado River Basin. The CRDSS operates in accordance with existing compacts and state laws governing the administration of water and water rights, and will allow planning for the optimal use and development of Colorado's water resources to occur.

In relation to the Recovery Program, CRDSS is being used to evaluate the physical and legal water availability at different locations along a stream and to determine the amount of water available for instream flow appropriations. It can also provide information to help determine the impacts of endangered fish flows on Colorado's ability to develop its full compact apportionment.

In 2018, CRDSS was used for depletion accounting for the 15-Mile Reach and Yampa PBO for the periods 2006-2010 and 2011-2015. The modeling and accounting are based on depletions determined from StateMod and StateCU datasets and models. Both the Yampa and Colorado mainstem StateMod models were updated during the Colorado River Water Availability Study (CRWAS) Phase II, which is still ongoing. StateCU model datasets have also been updated to include high-altitude crop coefficients for use in the Modified Blaney-Criddle method.

The development of CDSS was initiated in 1993. A funded maintenance program has been established to provide ongoing maintenance and data updates. In addition to the regular maintenance of the CRDSS, CRWAS resulted in updated models in 2016 as well as climate change datasets that are being studied during the 2018-2019 Statewide Water Supply

Initiative (SWSI). Some of the funding and tasks for the study directly benefited the Recovery Program, as mentioned below.

V. Study Schedule: 1993 – 2023

VI. Relationship to RIPRAP:

Assess legal and physical availability of water and compact considerations associated with the protection of instream flow water rights for endangered fish and their critical habitat in the Little Snake River, the Yampa River above and below the Little Snake River, the White River, the Colorado River (mainstem), and the Gunnison River. Provide hydrology support to develop and evaluate flow augmentation alternatives for the Yampa and Little Snake Rivers. Estimate current and projected future depletions in the Colorado River mainstem above the 15-Mile Reach and Yampa Rivers in Colorado for their respective PBOs.

RIPRAP Activity Numbers:

Yampa and Little Snake Rivers: I.B.3, I.B.4., I.C.3., I.D.2.

White River: I.A.1., I.B.3, I.C., I.D., I.E.1.

Colorado mainstem: I.A.3., I.A.4., I.B.3

Gunnison River: I.B., I.C.

VII. Accomplishment of FY 2018 Tasks and Deliverables, Discussion of Initial Findings and Shortcomings:

- Accounting for the 15-Mile Reach PBO was performed 2018 using the CRDSS datasets and StateCU. This accounting was peer-reviewed and is anticipated to be submitted to the Program in 2019.
- Accounting for the Yampa PBO performed in 2018 using the CRDSS datasets and StateCU. This accounting was peer-reviewed and is anticipated to be submitted to the Program in 2019.
- The Colorado River Water Availability Study (CRWAS) Phase II modeling was completed and documentation is being written during 2018-2019.
- 2015 satellite imagery and GIS layers of irrigated acreage coverage has been compiled and published for Colorado Water Divisions 4, 5, 6, and 7 (Gunnison, Colorado mainstem, Yampa/White, San Juan/Dolores). These are available online within the CDSS database.
- StateCU high-elevation crop coefficients were developed for use in the Modified Blaney-Criddle equation to determine crop evapotranspiration.
- A dataset of climate data was developed for the American Society of Civil Engineers Standard evapotranspiration/Penman-Monteith methodology to determine crop evapotranspiration. This is being peer-reviewed in 2019.
- The database to run the CRDSS tools and planning models is online and has been fully populated with data including structure diversion records, climate data, water rights information and streamflow data through water year 2017. This can be viewed on the Internet at cdss.state.co.us.

VIII. Recommendations:

- CWCB will continue providing funding and staff for use and maintenance of the CRDSS.

IX. Project Status: On track and ongoing.

X. FY 2018 Budget Status

- A. Funds Provided: \$115,000 State of Colorado funding + in-kind services
- B. Funds Expended: \$115,000
- C. Difference: \$0
- D. Percent of the FY 2018 work completed, and projected costs to complete: 100% and \$0
- E. Recovery Program funds spent for publication charges: \$0

XI. Status of Data Submission (Where applicable):

CRDSS models and data can be viewed online at cdss.state.co.us.

XII. Signed: Brian Macpherson 1/29/19
Principal Investigator Date