Water Supply Reserve Fund – Grant and Loan Program
Water Activity Summary Sheet
September 18-19, 2019
Agenda Item 9(e)

Applicant & Grantee:	Colorado Master Irrigator
Water Activity Name:	Colorado Master Irrigator Program - Northern High Plains
Water Activity Purpose:	Multipurpose/Study (Ag/M&I/Needs Assessment)
County:	Cheyenne, Kit Carson, Yuma, Washington, Sedgwick, Logan, Philips, Lincoln
Drainage Basin:	South Platte
Water Source:	Northern High Plains Aquifer
Amount Requested:	$59,655 South Platte Basin Account
Matching Funds:	Applicant & 3rd Party Match (cash & in-kind) = $18,180 • Exceeds 25% match requirement for the Basin Account request

Staff Recommendation:
Staff recommends approval of up to $59,655 from the South Platte Basin Account to help fund the project titled: Colorado Master Irrigator Program – Northern High Plains.

Water Activity Summary: WSRF grant funds, if approved, will support the development and outreach-related activities related to a new, four-day intensive educational course on science-backed management methods and tools necessary to sustain profitable agriculture, improve water- and energy-use efficiency, and increase water conservation. This program's goal is to encourage Northern High Plains farmers, farm managers, and crop consultants to make shifts in practice and mindset necessary to address significant Ogallala aquifer water quantity and quality declines, sustain irrigated agriculture in the region, and satisfy compact-related obligations. A project advisory committee that includes members of the Northern High Plains Designated Basin's eight Ground Water Management Districts, area producers, CSU Extension, and others will support the program's coordinator with curriculum development, program outreach, work to establish private and publicly supported incentives to encourage management shifts, and help secure funding for the program and sponsorship opportunities for its participants. Each class cohort will have 25 participants, which may also influence management more widely across the Basin's 584,522 irrigated acres through program-related outreach and because of peer-to-peer exchange among producers that participate in or serve as educators for the program.

Discussion: This project supports the goal of recognizing the importance of Colorado's future well-being, and support continued success and develop new voluntary measures to sustain irrigated agriculture as indicated in section 1.9.1 Agriculture in the South Platte Basin Implementation Plan, while also assisting the state maintain agricultural viability, and support agricultural conservation and efficiency as stated in Chapter 10 of Colorado's Water Plan.

Issues/Additional Needs: The applicant must submit two additional letters verifying matching commitments prior to entering into a contract with the state, otherwise no issues or additional needs have been identified

Eligibility Requirements: The application meets requirements of all eligibility components: General Eligibility, Entity Eligibility, Water Activity Eligibility, and Eligibility Based on Match 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:

Funding Sources	**Cash**	**In-kind**	**Total**	**Status**
Plains Ground Water Management District	$0	$9,500	$9,500	Pending
Republican River Water Conservation District	$5,000	$0	$5,000	Pending
Water Preservation Partnership	$2,000	$0	$2,000	Secured
Colorado Water Center Education and Outreach Grant	$4,120	$0	$4,120	Secured
Sub-total	$11,120	$9,500	$20,620	
WSRF South Platte Basin Account	$59,655	$0	$59,655	Secured
Total Study Costs	**$70,775**	**$9,500**	**$80,275**	

CWCB Project Manager: Alex Funk

South Platte Basin Roundtable
Garrett Varra,
Chair
July 23, 2019

Craig Godbout
Water Supply Planning Section
Colorado Water Conservation Board
1313 Sherman Street, Room 718
Denver, CO 80203

Via email to craig.godbout@state.co.us

RE: Letter of Support for the "Colorado Master Irrigator" grant application.

Craig,

It is with great pleasure that we submit recommendation for full approval for the Water Supply Reserve Fund grant application submitted by Colorado Master Irrigator in the amount of $59,655. We believe the program fits well within the Colorado Water Plan and South Platte Basin Implementation Plan in numerous ways. This application was recommended for approval at the July meeting of the SPBRT. A quorum was present and all members voted in support of the application. It is our hope that this program will become a model for further efforts across the state.

Helping farmers determine how to sustain profits while integrating tools and strategies that can help them improve water and energy-use efficiency and increase water conservation on their operations is the main goal of Colorado Master Irrigator, a 4-day, 32-hour educational course to be offered annually to farmers and crop consultants starting in early 2020. The curriculum will provide in-depth exposure to a wide range of science- and practice-backed topics representative of proven management tools and practices that have been successfully implemented in the region, along with information on regional hydrology and relevant local, state, and Federal programs. The focus on topics such as increasing the use of irrigation scheduling and deficit irrigation, upgrading irrigation systems, planting less water-demanding crops, and improving soil health directly aligns with our goals (CWP 6.5.2; SPBRT BIP 5.3.2). The use of these teachings will then help address the gap between "future water needs and available water provisions" in the Basin, helping to maintain Colorado's agricultural economy, limit permanent dry-up of irrigated acres, benefit municipal and industrial users that rely on the Ogallala aquifer and help support Colorado's interstate water compact compliance efforts (CWP 6.2, 6.4, 6.5.1, 6.5.2; SPRT BIP 1.9.1 measurable outcomes 1-4, 4.6.2, 5.5.3, 5.4.1 5.4.4, S5.9).

The South Platte Basin Roundtable is in full support of Colorado Master Irrigator and see the potential this program has to offer both our basin and, eventually, the entire state of Colorado. We recommend approval of their application.

Sincerely,

Garrett Varra

Last Update: July 31, 2018

Colorado Water Conservation Board
Water Supply Reserve Fund **Grant Application**

Instructions
All WSRF grant applications shall conform to the current 2016 WSRF Criteria and Guidelines. To receive funding from the WSRF, a proposed water activity must be approved by a Roundtable(s) **AND** the Colorado Water Conservation Board (CWCB). The process for Roundtable consideration and recommendation is outlined in the 2016 WSRF Criteria and Guidelines. The CWCB meets bimonthly according to the schedule on page 2 of this application. If you have questions, please contact the current CWCB staff Roundtable liaison:

Arkansas	**Gunnison | North Platte | South Platte | Yampa/White**	**Colorado | Metro | Rio Grande | Southwest**
Ben Wade ben.wade@state.co.us 303-866-3441 x3238	Craig Godbout craig.godbout@state.co.us 303-866-3441 x3210	Megan Holcomb megan.holcomb@state.co.us 303-866-3441 x3222

WSRF Submittal Checklist (Required)	
X	I acknowledge this request was recommended for CWCB approval by the sponsoring roundtable.
X	I acknowledge I have read and understand the 2016 WSRF Criteria and Guidelines.
X	I acknowledge the Grantee will be able to contract with CWCB using the Standard Contract.(1)
Application Documents	
X	Exhibit A: Statement of Work(2) *(Word – see Template)*
X	Exhibit B: Budget & Schedule(2) *(Excel Spreadsheet – see Template)*
X	Letters of Matching and/or Pending 3rd Party Commitments(2)
X	Map(2)
	Photos/Drawings/Reports
X	Letters of Support
Contracting Documents(3)	
	Detailed/Itemized Budget(3) *(Excel Spreadsheet – see Template)*
	Certificate of Insurance(4) *(General, Auto, & Workers' Comp.)*
	Certificate of Good Standing(4)
	W-9 Form(4)
	Independent Contractor Form(4) *(If applicant is individual, not company/organization)*

Last Update: July 31, 2018

	Electronic Funds Transfer (ETF) Form[4]

(1) Click "Grant Agreements". For reference only/do not fill out or submit/required for contracting
(2) Required with application if applicable.
(3) Additional documentation providing a Detailed/Itemized Budget maybe required for contracting. Applicants are encouraged to coordinate with the CWCB Project Manager to determine specifics.
(4) Required for contracting. While optional at the time of this application, submission can expedite contracting upon CWCB Board approval.

Schedule		
CWCB Meeting	**Application Submittal Dates**	**Type of Request**
January	December 1	Basin Account; BIP
March	February 1	Basin/Statewide Account; BIP
May	April 1	Basin Account; BIP
July	June 1	Basin Account; BIP
September	August 1	Basin/Statewide Account; BIP
November	October 1	Basin Account/BIP

Desired Timeline	
Desired CWCB Hearing Month:	July
Desired Notice to Proceed Date:	September

Water Activity Summary	
Name of Applicant	Colorado Master Irrigator
Name of Water Activity	**Colorado Master Irrigator Program- Northern High Plains**

Approving Roundtable(s)	Basin Account Request(s)[1]
South Platte Basin Roundtable	$59,655

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Basin Account Request Subtotal	$59,655
Statewide Account Request(1)	$0
Total WSRF Funds Requested (Basin & Statewide)	$59,655
Total Project Costs	$80,275

(1) Please indicate the amount recommended for approval by the Roundtable(s)

Grantee and Applicant Information	
Name of Grantee(s)	Colorado Master Irrigator
Mailing Address	PO Box 188, Burlington, CO 80807
FEIN	
Grantee's Organization Contact(1)	Brandi Baquera
Position/Title	Program Coordinator
Email	pgwmd@centurytel.net
Phone	(719)346-8487
Grant Management Contact(2)	Brandi Baquera
Position/Title	Program Coordinator
Email	pgwmd@centurytel.net
Phone	(719)346-8487
Name of Applicant (if different than grantee)	
Mailing Address	
Position/Title	
Email	
Phone	

(1) Person with signatory authority
(2) Person responsible for creating reimbursement invoices (Invoice for Services) and corresponding with CWCB staff.

Description of Grantee
Provide a brief description of the grantee's organization (100 words or less).

Last Update: July 31, 2018

Colorado Master Irrigator is a non-profit organization whose goal is to help equip producers in the Northern High Plains Designated Basin with information they can use to save water, conserve energy, build soil health, and enhance farm profitability through their participation in a 4-day intensive educational program.

The Colorado Master Irrigator Board of Directors was recruited from the larger program advisory committee (PAC) to lend their expertise (accounting, fundraising, farming, agricultural industries, etc.) to the program. The Colorado Master Irrigator program coordinator will provide fiscal and progress updates and support the work of Board sub-committees as needed.

Type of Eligible Entity (check one)	
	Public (Government): municipalities, enterprises, counties, and State of Colorado agencies. Federal agencies are encouraged to work with local entities. 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.
X	**Non-governmental organizations:** broadly, any organization that is not part of the government
	Covered Entity: as defined in Section 37-60-126 Colorado Revised Statutes

Type of Water Activity (check one)	
	Study
X	Implementation

Category of Water Activity (check all that apply)		
	Nonconsumptive (Environmental)	
	Nonconsumptive (Recreational)	
X	Agricultural	
	Needs Assessment	
X	Education & Outreach	
x	Other	Municipal/Industrial & Environmental. Explain: Programs that support reductions in agricultural consumptive use of groundwater/keep more of the Ogallala/High Plains aquifer resource stored in the ground will provide

		critical support for drought resilience for the region's human communities (and their municipal/industrial activities) and ecological communities, including populations of several native and uncommon species reptiles, fish, and amphibians dependent on groundwater fed streamflow.

Location of Water Activity	
Please provide the general county and coordinates of the proposed activity below in **decimal degrees**. The Applicant shall also provide, in Exhibit C, a site map if applicable.	
County/Counties	Cheyenne, Kit Carson, Yuma, Washington, Sedgwick, Logan, Philips, and Lincoln
Latitude	
Longitude	

Water Activity Overview
Please provide a summary of the proposed water activity (200 words or less). Include a description of the activity and what the WSRF funding will be used for specifically (e.g. studies, permitting, construction). Provide a description of the water supply source to be utilized or the water body affected by the activity. Include details such as acres under irrigation, types of crops irrigated, number of residential and commercial taps, length of ditch improvements, length of pipe installed, area of habitat improvements. If this project addresses multiple purposes or spans multiple basins, please explain. The Applicant shall also provide, in Exhibit A, a detailed Statement of Work, Budget, and Schedule.

WSRF funding will support development and outreach activities related to a new, four-day intensive educational course on science-backed management methods and tools necessary to sustain profitable agriculture, improve water- and energy-use efficiency, and increase water conservation. This program's goal is to encourage Northern High Plains (NHP) farmers, farm managers, and crop consultants to make shifts in practice and mindset necessary to address significant Ogallala aquifer water quantity and quality declines, sustain irrigated agriculture in the region, and satisfy compact-related obligations.

A project advisory committee (PAC) that includes members of the NHP Designated Basin's eight Ground Water Management Districts, area producers, CSU Extension, and others will support the program's coordinator with curriculum development, program outreach, work to establish private- and publicly supported incentives to encourage management shifts, and help secure funding for the program and sponsorship opportunities for its participants.

Each class cohort will have 25 participants, impacting ~25,000 irrigated acres per class (125 acres x 8 circles/participant x 25 participants). This program may also influence management more widely across the Basin's 584,522 irrigated acres through program-related outreach (in person and digital) and as a result of peer-to-peer exchange among producers that participate in or serve as educators for the program.

Measurable Results		
To catalog measurable results achieved with WSRF funds please provide any of the following values.		
	New Storage Created (acre-feet)	
Need to estimate	New Annual Water Supplies Developed or Conserved (acre-feet), Consumptive or Nonconsumptive	
(See below)	Existing Storage Preserved or Enhanced (acre-feet)	
	Length of Stream Restored or Protected (linear feet)	
Need to estimate	Efficiency Savings (indicate acre-feet/year OR dollars/year)	
	Area of Restored or Preserved Habitat (acres)	
	Length of Pipe/Canal Built or Improved	
Various metrics to be tracked	Other	Explain: Each class cohort will have 25 participants, representing an estimated 25,000 irrigated acres (about 1/20th of the Basin's total irrigated acres). Through peer-to-peer exchange, network building, and outreach efforts, the program is expected to reach hundreds of people each year within and beyond the NHP Basin, potentially influencing many more irrigated acres. In addition, each class of Master Irrigator participants will be asked to share some key water-use data for their operations, including on their crop production reported in bushels produced/acre-in of water applied. At the end of the

		course, each class member will be asked to define a target goal (or goals, e.g. increasing water use efficiency, learning to use irrigation scheduling or interpret soil moisture probe data, etc.) that will demonstrate their use of knowledge gained or refined as a result of participating in this program. Master Irrigator program staff will track the progress these individuals make related to these goals on an annual basis for the next three growing seasons. This activity will generate a wide variety of quantitative and qualitative data on producers' management and mindset shifts, the adoption of strategies and tools, water use efficiency, reductions in overall water consumption, and/or profitability per acre-inch of applied water.

Water Activity Justification
Provide a description of how this water activity supports the goals of Colorado's Water Plan, the most recent Statewide Water Supply Initiative, and the respective Roundtable Basin Implementation Plan and Education Action Plan [(1)]. The Applicant is required to reference specific needs, goals, themes, or Identified Projects and Processes (IPPs), including citations (e.g. document, chapters, sections, or page numbers). For applications that include a request for funds from the Statewide Account, the proposed water activity shall be evaluated based upon how well the proposal conforms to Colorado's Water Plan criteria for state support (CWP, Section 9.4, pp. 9-43 to 9-44;) (Also listed pp. 4-5 in 2016 WSRF Criteria and Guidelines).

Last Update: July 31, 2018

The Northern High Plains (NHP) Designated Basin has limited surface water and therefore depends on the Ogallala (High Plains) aquifer. Agriculture, and irrigated agriculture in particular, is the Basin's primary economic driver, supporting extensive crop and livestock production (mainly corn, sorghum, wheat, potatoes, sunflowers, soybeans, alfalfa, and cattle) and many agriculture-related businesses. Crop and livestock commodity sales for the counties spanned by this Basin--whose production value is considerably increased as a result of irrigation--totaled more than $6.2 billion in 2017 (NASS 2017 Ag Census Data). Farmers in this part of the state are under pressure to find ways to reduce pumping and slow water table decline in order to extend viable use of the Ogallala resource longer into the future and help meet interstate obligations of the Republican River Compact.

The Colorado Master Irrigator program is an in-person, 4-day (32-hour) conservation-oriented course that will taught annually beginning in early 2020 by highly knowledgeable and effective teachers and farmers. This program will provide in-depth training on a wide range of advanced conservation and irrigation management tools and practices. The program will also provide up-to-date information on regional hydrology and available well retirement opportunities. This program is closely modeled on the example of a highly successful Master Irrigator program offered since 2016 in the Texas Panhandle by the North Plains Groundwater Conservation District: (http://northplainsgcd.org/conservationprograms/communityedu/master-irrigator/). The course developers, teachers and class members involved in Colorado Master Irrigator represent "principal targeted audiences" including agricultural, academic, and Roundtable stakeholders identified in the South Platte Basin Roundtable (SPBR)/Metro 2019 Education Action Plan (EAP).

The Colorado Master Irrigator Program format is designed expressly to encourage profitable agricultural water management, such as increasing use of irrigation scheduling and deficit irrigation, upgrading irrigation systems, planting less water-demanding crops, and improving soil health (CWP 6.5.2; SPBR BIP 5.3.2). Such shifts can translate into significant savings of acre-feet of aquifer water left in the ground for future use, thus helping to maintain Colorado's agricultural economy, limit permanent dry-up of irrigated acres, and address the gap between "future water needs and available water provisions" identified for this Basin while complying with interstate water compact requirements (CWP 6.2, 6.4, 6.5.1, 6.5.2; SPBR BIP 1.9.1 measurable outcomes 1-4, 4.6.2, 5.5.3, 5.4.4, SPBR 5.4). As such, this activity will have potential multi-benefit impacts for the NHP Designated Basin's municipal and industrial users who also rely on the Ogallala aquifer, and on on wildlife populations dependent groundwater-fed streams.

A program advisory committee (PAC) representing Basin stakeholders (producers, crop consultants, ag-related industries, groundwater management districts, state and Federal agency staff, and others) will guide the development of this program. Their input and collaboration with the Master Irrigator Program coordinator to develop a high-quality learning experience and to encourage "buy-in" to this innovative program will ultimately serve to build local expertise and increase community support for conservation that is necessary to sustain irrigated farmland (CO WP 6.2, SPBR BIP S5.9). Overall, this program's outreach efforts (in-person, print, and digital/website and social media) and messaging will also help encourage greater public awareness and social acceptance of conservation required to address the NHP

Designated Basin's water-related challenges, potentially reaching diverse audiences across the state and beyond (CWP 6.3, 9.5; SPBR 5.5.9; SPBR/Metro 2019 EAP).

Regional expertise will be leveraged to form each cohort of course instructors, who will include producers, university academic and Extension staff, representatives from different ag industries, crop consultants, and others. Curriculum topics taught as part of this program will expressly include practical and economic aspects related to maintaining or increasing market advantage and profitability even if/as applied water use is reduced. This course will also include an overview of regional hydrology (past, present, and future) and state- and Federal programs active in the NHP related to water- and energy-use efficiency and conservation. Each day of the course will foster peer-to-peer exchange among producers involved in the program as participants or as panelists who will share insights gained from implementing different strategies aimed at increasing water-use efficiency and conservation on their farms (CWP 6.4).

Some management shifts that aim to increase water use efficiency and/or conservation can significantly benefit producers' bottom lines. As an illustrative example, an operation with eight crop circles that typically applies 15 acre-inches of water per year per pivot spends several hundred dollars just in energy costs for each acre-inch applied, to turn the pivot and run the irrigation pump engine. If overall productivity goals can be met while water use is decreased by 15% (2.25 fewer acre-inches; achievable through a variety of means, e.g. using irrigation scheduling to better target/time water applications, shifting crops planted, lowering seed populations, etc.) this water use reduction could result in several thousand dollars in energy-related cost savings while also significantly reducing irrigation equipment wear and tear.

For the first three years of the program, the Colorado Master Irrigator program will be offered once per year. The class size will be limited to 25 participants to maximize effective in-depth engagement and exchange. Once established, this program might be offered more than once within the NHP per year if/as demanded; the program might also serve as an example that could be adapted and delivered in other Basins.

Master Irrigator Program participants are expected to complete all 32 hours of the course. They will be asked to come prepared to share information that relates water use to target yield goals for the operations for which they work. At the conclusion of the program, participants will identify a conservation-oriented commitment for the coming growing season that can be tracked for the following three years by the Master Irrigator Program staff. This information will yield insights that can be used to improve the program curriculum year-over-year, and to help inform and improve technical support required to encourage greater water use efficiency and water conservation across the Basin (CWP 6.3, SPBR/Metro 2019 EAP).

This flexible approach to setting and meeting ag water management goals "meets producers where they are at" in a way allows for differences among operations, spatial variation in the aquifer's saturated thickness, soil types, etc. This program will help arm producers with the information they need and a knowledgeable social network they can rely on as they identify which ag water management improvements are doable, affordable, and specifically relevant to their production goals. With several years of the program under its belt, the data collected on

producers' commitments may also help inform decision-making processes in a way that "reduces uncertainty for water managers and supports the development of basin-specific models" applicable to compact-related obligations (CWP 6.4, 5.2; SPBR BIP 5.3.2).

Some of the program's participants may be already leading, conservation-oriented producers who already strictly limit how much water they apply each year relative to typical crop evapotranspiration needs (i.e., ~9-10 acres-inches or less of applied water/year). Their production-related goals upon completion of the program may involve trying out new crop rotations, testing new drought-tolerant varieties or different seeding rates, upgrading and testing out new irrigation hardware or software, etc. Other producers may elect to try to effectively integrate other strategies and/or tools relevant to their water use decision-making--using the free WISE irrigation scheduling tool available through CSU Extension, for example, or learning to interpret and trust data from soil moisture probes-- such that they find, similar to many other producers in the Ogallala region, that they can considerably reduce consumptive use of water without impacting yields. Crop consultant participants might define a goal of helping their clients better understand the financial and water savings potential of certain tools and strategies covered by this program.

The Colorado Master Irrigator Program PAC will work to establish a variety of incentives that can reward participants' engagement and support their water-use efficiency/conservation-oriented commitments. These incentives may include:

- additional professional development/training opportunities available through regional partners
- local discounts on inputs, tools, and irrigation system upgrades
- more favorable terms with ag lenders
- a rebate on Republican River Water Conservation District irrigated acreage fees
- improved eligibility for state and Federal grants, loans, and cost-share programs
- the ability to enter into conservation-oriented easements or perpetual agricultural agreements with the state that eliminate (perceived or real) "use it or lose it" risks tied to water use permits.

Should Master Irrigator Program tracked commitments to increasing water-use efficiency and conservation lead to greater, demonstrable water savings achieved by the Basin over time, it is the hope of this program's advisory committee that the number of well retirements anticipated --affecting at least 25,000 acres by 2029 at current depletion rates-- might be able to be reduced (SWSI 2010).

(1) Access Basin Implementation Plans or Education Action Plans from Basin drop down menu.

Matching Requirements: Basin Account Requests	
Basin (only) Account grant requests require a 25% match (cash and/or in-kind) from the Applicant or 3rd party and shall be accompanied by a **letter of commitment** as described in the 2016 WSRF Criteria and Guidelines (submitted on the contributing entity's letterhead). Attach additional sheet if necessary.	
Contributing Entity	Amount and Form of Match (note cash or in-kind)
Plains Ground Water Management District	$9500 in-kind

Republican River Water Conservation District	$5000 cash
Water Preservation Partnership	$2000 cash
Colorado Water Center Education and Outreach Grant	$4120 cash
Total Match	$20,620
If you requested a Waiver to the Basin Account matching requirements, indicate the percentage you wish waived.	

Matching Requirements: Statewide Account Requests	
Statewide Account grant requests require a 50% match as described in the 2016 WSRF Criteria and Guidelines. A minimum of 10% match shall be from Basin Account funds (cash only). A minimum of 10% match shall be provided by the applicant or 3rd party (cash, in-kind, or combination). The remaining 30% of the required match may be provided from any other source (Basin, applicant, or 3rd party) and shall be accompanied by a **letter of commitment.** Attach additional sheet if necessary.	
Contributing Entity	Amount and Form of Match (note cash or in-kind):
NA	
Total Match	$0
If you requested a Waiver to the Statewide Account matching, indicate % you wish waived. (Max 50% reduction of requirement).	

Related Studies
Please provide a list of any related studies, including if the water activity is complimentary to or assists in the implementation of other CWCB programs.

1. 2014-2017; "Economic Analysis and Design of Policies to Reduce Groundwater Use in the Northern High Plains Ground Water Basin." **Colorado Water Conservation Board** grant, $159,882. Related research article: RA Hrozencik, DT Manning, JF Suter, C Goemans, and RT Bailey (2017). The Heterogeneous Impacts of Groundwater Management Policies in the Republican River Basin of Colorado. Water Resources Research (53) 12: pp 10757-10778.
2. 2015-2016; Water Irrigation Scheduler for Efficient Application (WISE) online tool promotion and improvement in Colorado. **Coca-Cola Company**, $25,000.
3. 2013-2016; Decision Support Tools, Drought Tolerance, and Innovative Soil and Water Management Strategies to Adapt Semi-arid Irrigated Cropping Systems to Drought; PI Dr. Neil Hansen and 6 other co-PIs; **USDA-NRCS Conservation Innovation Grant**, $882,924, including $58,000 for an interdisciplinary engagement/demonstration project to monitor the field water balance under different irrigation strategies, and demonstrate irrigation scheduling techniques and precision irrigation)
4. 2013-2015; Implementation of Deficit Irrigation Regimes: Demonstration and Outreach; PI Dr. José L. Chávez; **Colorado Water Conservation Board**, Alternative Agricultural Water Transfer Methods Competitive Grant Program.
5. 2011-2015; Mobile Irrigation Water Management System Using eRAMS Cloud Computing Infrastructure; co-PI Dr. Mazdak Arabi; **USDA-National Institute of Food and Agriculture**, $365,000. (Interdisciplinary research and engagement project; Project director coordinating web-based and mobile app irrigation management software development and extension activities for irrigating producers)
6. 2012-2014; Agricultural weather data delivery improvements to Uncompahgre Valley irrigators; PI Denis A. Reich; co-PIs Troy A. Bauder and Nolan J. Doesken; Colorado Water Conservation Board, $112,000. (Interdisciplinary engagement project that included work on providing irrigation scheduling and water balance algorithms for an online irrigation scheduling tool.
7. 2013; Demonstration and Validation of an Online Irrigation Scheduling Tool for use in Sugarbeet Production in Northern Colorado. PI Erik Wardle; co-PI's Troy Bauder and Joel Schneekloth; **Western Sugar Cooperative**, $9,752. (Field validation of an online irrigation scheduler on 4 sugar beet fields in north east Colorado)
8. 2009-2012; Using the ASCE Standardized Reference Evapotranspiration Equation and Appropriate Crop Coefficients for Irrigation Management in Colorado; co-PIs Dr. José L. Chávez and Troy Bauder; **USDA-NRCS Conservation Innovation Grant**, $74,617. (Interdisciplinary engagement/demonstration project; Project director supervising field and lab activities to estimate crop ET and irrigation requirements)
9. NL Klocke, JP Schneekloth, SR Melvin, RT Clark, JP Payero (2004). Field scale limited irrigation scenarios for water policy strategies. Applied Engineering in Agriculture 20 (5): 623-631. Study partially funded by the **U.S. Department of the Interior, Bureau of Reclamation**.
10. 2016-2020; "Sustaining agriculture through adaptive management to preserve the Ogallala aquifer under a changing climate." **USDA-National Institute of Food and Agriculture** Award # 2016-68007-25066. $10,000,000. Co-PIs Meagan Schipanski and

Reagan Waskom, hosted at Colorado State University; involves 40 collaborating faculty members based at 9 institutions in 6 Ogallala states.

Previous CWCB Grants
List all previous or current CWCB grants (including WSRF) awarded to both the Applicant and Grantee. Include: 1) Applicant name; 2) Water activity name; 3) Approving RT(s); 4) CWCB board meeting date; 5) Contract number or purchase order
None

Tax Payer Bill of Rights
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.
None

NEBRASKA

COLORADO

KANSAS

REPUBLICAN RIVER BASIN

Prepared by
HELTON & WILLIAMSEN, P.C.

Data Sources:
State of Colorado Division of Water Resources
United States Geological Survey
2009, RLH

N
W E
S

0 10 20 40 60 80 100

Scale in Miles

Legend

- Streams and Rivers
- Lakes and Reservoirs
- States
- Counties
- Republican River Basin

NORTH PLAINS
GROUNDWATER
Conservation District

April 29, 2019

Jason Roudebush
South Platte Basin Roundtable Needs Committee Chair
Colorado Water Conservation Board
1313 Sherman St, Room 718
Denver, CO 80203

Dear Mr. Roudebush,

On behalf of the North Plains Groundwater Conservation District, it is my pleasure to write this letter of support regarding efforts underway to establish a program in northeastern Colorado modeled on our award-winning Master Irrigator program, through which we have offered intensive irrigation management training to growers since 2016. With 91 graduates and over 246,000 irrigated acres influenced, Master Irrigator is a successful model for irrigation conservation education in the northern Texas Panhandle.

The Master Irrigator program is an intensive irrigation management curriculum delivered over four one-day sessions to show producers irrigation techniques and conservation practices that work together to save water, conserve energy, build soil health and enhance farm profitability.

North Plains Groundwater Conservation District welcomes similar, rigorous education program development to share the Master Irrigator name, structure, and success. We are actively engaging with groups in several Ogallala region states interested in replicating our program's format. This past year, we traveled to Colorado on more than one occasion and hosted members of the Colorado Master Irrigator program team at our office in Dumas, Texas to provide in-depth guidance and share key insights that we gained through coordinating Master Irrigator for the past four years.

We understand that the Colorado Master Irrigator program will include the following elements that we think are important for sustaining high expectations now associated with the Master Irrigator brand:

- Focus on agricultural irrigation
- Advisory committee of stakeholders and local experts guiding the program
- At least 24 hours of robust instruction over at least 4 days
- Instruction on the following topics, consistent with best management practices for local growing conditions: agronomics, irrigation scheduling, systems.

Based on our experience, we are confident that the Colorado Master Irrigator program has tremendous potential to benefit farmers and rural communities across northeastern Colorado.

Sincerely,

Steven D. Walthour, P.G.
General Manager

PO Box 795 603 East 1st Street Dumas, TX 79029 (806) 935-6401 Phone (806) 935-6633 Fax www.northplainsgcd.org

From:
Dennis Coryell
Agriculturalist
54263 County Rd X
Burlington, CO 80807

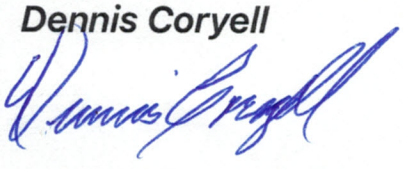
To Whom It May Concern:

It is my pleasure to write a letter in support of the Colorado Master Irrigator Program currently under development in our Republican River Basin. I strongly believe this program offers new and unique opportunities for our water users to find ways to conserve water and help sustain our depleting aquifer. Through coordination with local producers, industry representatives, CSU Extension Agents, and many others and by using examples from the original award winning program in Texas, the Colorado Master Irrigator Program promises to bring in-depth, practical irrigation management training to our area to show producers and community members how to effectively reduce water usage without economical sacrifices. This program can be shared across the state of Colorado, as well as over multiple state lines.

As a local farmer who has been involved with water issues in the Northern High Plains Basin for close to 30 years I see the need to develop a program to educate and encourage irrigators to wisely use and conserve this precious resource. I want my Son and Grandson's family to be able to use this water during their lifetime.

I am in full support of this program and am excited for the opportunities it will bring to our region.

Sincerely,
Dennis Coryell



WATER PRESERVATION PARTNERSHIP
NORTHERN HIGH PLAINS OF COLORADO

April 24, 2019

Jason Roudebush
South Platte Basin Roundtable Need Committee Chair
Colorado Water Conservation Board
1313 Sherman St, Room 718
Denver, CO 80203

To Whom It May Concern,

During the August 1, 2018, board meeting, the Water Preservation Partnership (WPP) discussed the Master Irrigator program which was created by a partnership agreement between the North Plains Groundwater Conservation District (NPGCD) and USDA's Natural Resources Conservation Services (NRCS). Participants who complete the Master Irrigator course and receive their certification are given priority access to the NPGCD EQIP funding. The program includes classroom training as well as in-field demonstrations on: moisture monitoring, drones, producer panels, agronomics, VRI, crop profitability analyzer, etc.

The WPP voted to pursue starting a similar program in the Northern High Plains Basin and to commit $2,000.00 to assist with the initial start-up of the Colorado Master Irrigator Program.

The Water Preservation Partnership appreciates the efforts of everyone involved with the design and implementation of this new, innovative program in Colorado, and we look forward to its many successes.

Sincerely,

Steve Kramer

Steve Kramer, WPP Chairman of the Board

Golden Plains Area

Kit Carson County

April 25, 2019
To: Whom it may concern
From: RF Meyer, Golden Plains Area Agronomist

Ron F. Meyer

Re: Letter of support for the Colorado Master Irrigation program

I am writing a support letter for the Colorado Master Irrigation program. This program offers great potential to assist not only Colorado irrigators but will have a High Plains footprint, as well. As a result of our aquifer depletions, new production strategies and education will be essential.

Colorado State University Extension will stand ready to assist this project.

Washington County
181 Birch Ave
Courthouse Annex
Akron, CO 80720
(970) 345-2287

Kit Carson County
817 15th St.
Burlington, CO 80807
(719) 346-5571

Phillips County
127 E. Denver
P.O. Box 328
Holyoke, CO 80734
(970) 854-3616

Yuma County
310 Ash, Suite B
County Courthouse
Wray, CO 80758
(970) 332-4151

Sedgwick County
315 Cedar
County Courthouse
Julesburg, CO 80737
(970) 474-3479

http://goldenplains.colostate.edu

April 30, 2019

Jason Roudebush
South Platte Basin Roundtable Needs Committee Chair
Colorado Water Conservation Board
1313 Sherman St, Room 718
Denver, CO 80203

Dear Mr. Roudebush,
With this letter I would like to express my support for the proposal being submitted to the South Platte Basin Roundtable for funding for the development of the "*Colorado Master Irrigator*" program in the Northern High Plains Basin. This program will provide training and access to research-based information that farmers can put to good use for water conservation practices and ultimately to save water, conserve energy, build soil health and enhance farm profitability. The course content and peer-to-peer exchange offered through this program will provide an excellent opportunity for farmers to get their questions answered about how different agricultural water management strategies and tools might benefit their operations now and into the future.

Along with other CSU Extension colleagues based in eastern Colorado, I am willing to help support this program as an advisor and if needed, as a teacher. I would like to see this program succeed and perhaps serve as a model for other parts of the state where groundwater depletion threatens rural communities and their economies.

Sincerely,

Wilma Trujillo, PhD
CSU Extension Agronomist
Cropping Systems Specialist for Logan and Morgan counties

COLORADO STATE UNIVERSITY
EXTENSION

County Extension Offices

Logan County
508 South 10th Avenue
Sterling, CO 80751
970-522-3200

Morgan County
914 East Railroad Avenue
Fort Morgan, CO 80701
970-542-3540

OgallalaWater.org
OPTIMIZING WATER USE TO SUSTAIN FOOD SYSTEMS

Jason Roudebush
South Platte Basin Roundtable Needs Committee Chair
Colorado Water Conservation Board
1313 Sherman St, Room 718
Denver, CO 80203

April 26, 2019

Dear Mr. Roudebush,

As co-Project Directors of the USDA-National Institute for Food and Agriculture funded Ogallala Water Coordinated Agriculture Project, we strongly support the proposal requesting Water Supply Reserve Funding through the South Platte Basin Roundtable that will help establish an innovative, 4-day educational program called Colorado Master Irrigator in northeastern Colorado to provide training to deepen irrigators' knowledge on water saving practices and approaches.

A year ago in Garden City, Kansas, an interactive event that we helped to organize called the Ogallala Summit brought together more than 200 water management leaders from all eight Ogallala states. The original Master Irrigator program, created and run by Texas's North Plains Groundwater Conservation District, was featured at this event. The intensive, high quality, and practical educational experience and peer-to-peer exchange offered through this conservation-oriented program impressed Summit participants, who subsequently identified the replication of this program in other states as an actionable activity with great potential to help sustain irrigated agriculture in the Ogallala region.

The Colorado Master Irrigator program is backed by strong local commitment. To start the ball rolling, the Plains Ground Water Management District board contributed the time of their Manager, Brandi Baquera, who has worked to champion the Colorado Master Irrigator Program concept to make it a reality since participating at the Ogallala Summit. The Water Preservation Partnership, a group of individuals from eight Northern High Plains Ground Water Management Districts who have been working together to find ways to encourage conservation in this part of the state, has also provided early crucial support in the form of input and seed funding.

As an outcome of the Summit, we currently facilitate a multi-state working group with individuals in Colorado, Kansas, Nebraska, New Mexico, Oklahoma, Minnesota, Mississippi, and Texas as they work to sustain, develop, and launch Master Irrigator programs in their states. It has been truly exciting to see how Colorado's progress in moving forward to set up a project advisory committee, commit to work on building a locally adapted curriculum, and engage in outreach efforts is helping to inspire similar efforts in other states.

The Colorado Master Irrigator program will serve as a conduit for research findings to be shared directly with end users: farmers and crop consultants. We are pleased to be able to commit the support of some of our team members and our project network as advisors and teachers for this program. Overall, we believe that this community-led effort will help build the support and knowledge that farmers need in order to remain productive and profitable while reducing aquifer withdrawals, thus positively impacting northeast Colorado's groundwater and agriculture-dependent communities.

Sincerely,

Meagan Schipanski, Co-PD, Ogallala Water CAP
Assistant Professor, CSU

Reagan Waskom, Co-PD, Ogallala Water CAP
Director, Colorado Water Center, CSU

Republican River Water Conservation District
Water Activity Enterprise
410 Main Street, Ste 8, Wray, Colorado 80758
Phone 970-332-3552

April 26, 2019

To Whom It May Concern:

The Water Preservation Partnership in the Northern High Plains Basin of Colorado is currently involved in the development of a conservation program which offers water users opportunities to explore new concepts to conserve water and reduce the rate of depletions to the Ogallala Aquifer. The Republican River Water Conservation District recognizes the importance of this program to this area.

Through coordinated efforts with local producers, industry representatives, CSU Extension Agents, and many others, the Colorado Master Irrigator Program promises to bring in-depth, practical irrigation management training to participants. This program will demonstrate how to effectively reduce water usage without causing economical sacrifices. This program is building on a similar award-winning program in the North Plains Groundwater Conservation District, located in the Texas panhandle.

The Colorado Master Irrigator Program is being designed so that it could be shared across additional areas of Colorado, as well as with several states. The RRWCD strongly recommends approval of the requested funding for the Colorado Master Irrigator Program.

Sincerely,

Deb Daniel
General Manager

Gregory W. Larson

14977 County Road 97

Haxtun, CO 80731

glarsfarm@gmail.com

To Whom It May Concern:

I am writing this letter in support of the Colorado Master Irrigator Program currently being developed in Colorado's Republican River Basin. Water conservation is increasingly becoming a vital issue in our Basin and I feel this program would be an excellent option that users could use to help sustain our depleting aquifer. Through coordination with local producers, industry representatives, CSU Extension Agents, and many others, using examples from the original award winning program in Texas could make this a very successful program. The Colorado Master Irrigator Program would bring in-depth, practical irrigation management training to our area to educate producers and community members how to effectively reduce water usage without economical sacrifices. This program will benefit the entire Republican River Basin as well as many other areas and water industries across the state of Colorado. My involvement with water as a local producer, being a Commissioner on the Colorado Groundwater Commission, Vice-President of Republican River Water Conservation District Board, and a Colorado Corn Administrative Committee board member keep me close to water issues across Colorado, therefore I feel this is a very important program to fully develop and implement as soon as possible.

Sincerely,

Gregory W. Larson

Colorado Water Center
E102 Engineering | 1033 Campus Delivery
Fort Collins, CO 80523-1033
Phone: (970) 491-6308

April 16, 2019

Amy Kremen
Soil and Crop Sciences
Colorado State University
Fort Collins, CO 80523-1170

Dear Amy,

We are pleased to inform you that your project "Development and Launch of a "Master Irrigator" Education and Training Program in Northeastern Colorado" was selected for funding by the Colorado Water Center in the amount of $7,500.

Thank you for your application; we look forward to hearing about the results of this project in the future.

AWARD TERMS AND REQUIREMENTS
Projects will begin on July 1, 2019 and end on May 15, 2020

PROJECT BUDGET

- All expenses must be finalized by the project end date. No extensions will be granted.
- Timely drawdown is expected or funds will be withdrawn from the grantee.
- The PI is expected to work with his or her departmental accountant to ensure the award is spent according to the approved budget. The PI's departmental accountant is responsible for all project accounting and reports. The PI's department is responsible for any spending deficit.

PROJECT DELIVERABLES

- Awardees will be required to submit the following:
  - Mid-year status report in January 2020
  - Final report with evidence of deliverables by July 15, 2020
  - An article for the *Colorado Water* newsletter by July 15, 2020
- Funded applicants will be required to acknowledge support from the Center in all publications, presentations, and external grant proposals related to the project.
- Funded applicants will be required to inform the Center of any deliverables as a result of funding for three years after the project end date.
- Funded applicants will be asked to present their results and accomplishments at events and in written publications.

OTHER

- Funded applicants must comply with applicable university research integrity and compliance regulations and guidelines.

To accept this award, e-mail your confirmation to me at reagan.waskom@colostate.edu no later than **Wednesday, May 1, 2019.**

Sincerely,

Reagan Waskom,
Director, Colorado Water Center