



## COLORADO

### Colorado Water Conservation Board

Department of Natural Resources

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**TO:** Colorado Water Conservation Board Members

**FROM:** Ben Wade, Water Supply Planning Section

**DATE:** March 22, 2018 Board Meeting

**AGENDA ITEM:** 32 a-e. Water Plan Grants - Engagement and Innovation - Initial Consideration

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**This item is for consideration only. No action is required at this time**

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#### Introduction

The Engagement & Innovation category began with \$1 million in available funds. Over the first two rounds, 14 applications were approved totaling \$830,519 with \$169,481 remaining. In the third and final round of FY2017-2018 (February 1 deadline), CWCB staff received six new applications and carried over one grant from Round 2 to total \$255,408. Staff is supporting five of the new applications as noted in the table below. The application held over from Round 2 is in the process of securing matching funds and will be included for final approval at the May 2018 CWCB Board Meeting at reduced funding. If approved at staff supported funding levels, the total requested amount for Round 3 would total \$169,350 leaving \$131 remaining in the grant fund.

Applicant	Project Name	Request	% of Project	Staff Support
a. The Greenway Foundation	Clean River Design Challenge	\$24,500	50%	\$24,500
b. Water Education Colorado	Build Statewide, Data-Based Education Action Plan & Associated Tools	\$47,000	56%	\$47,000
c. Left Hand Watershed Oversight Group	Stewardship Through Community Science	\$36,000	27 %	\$36,000
d. Denver South Transportation Management Association	Infra-Red Plant Stress Monitoring Pilot	\$19,350	50%	\$19,350
e. Sangre de Cristo Acequia Association	Preserving the Hispano Water Culture Curriculum Design &	\$7,500	20%	\$7,500

#### Staff Review and Comments

##### a. The Greenway Foundation - Clean River Design Challenge

The Greenway Foundation is a non-profit organization created in 1974 and has been working towards finding solutions to pollution issues along the South Platte River in the Denver Metro Area and focusing on creating thriving ecological and recreational resources.

The Greenway Foundation is seeking Water Plan Grant to fund the Clean River Design Challenge. The goal of the project is to develop a design that can be put into waterways in an



urban setting and clean trash that is in the river. Teams from Metropolitan State University of Denver, Colorado School of Mines and the University of Colorado-Denver will compete with one another and purposely involve students from other professional disciplines than water resources to design a device that will be implemented, constructed and made available in the marketplace.

The project helps achieve the goal in the Water Plan, Objective F: Watershed Health by protecting healthy environments, promoting to protect and restore water quality and to protect critical watersheds.

Staff supports recommending a \$24,500 grant to The Greenway Foundation for approval at the May 2018 meeting.

**b. Colorado Foundation for Water Education dba Water Education Colorado - Design and Build Statewide, Data-Based Strategic Water Education Action Plan and Associated Tools**

Water Education Colorado is seeking additional Water Plan Grant funding to design and build a statewide strategic Water Education Action Plan which would help to fulfill Goal 2 of the Colorado Water Plan, Chapter 9.5 “Create a Data Based Water Education Plan”. This Plan would serve as a playbook for statewide and basin-wide educational efforts over the next 3-5 years.

Water Education Colorado will also use a portion of funding to revise its organizational strategic plan to align more closely with the education goals in the Colorado Water Plan.

This project supports the goal to “significantly improve public awareness and engagement regarding water issues statewide” by the year 2020.

Staff supports recommending a \$47,000 grant to the Water Education Colorado for approval at the May 2018 meeting.

**c. Left Hand Watershed Oversight Group - Stewardship through Community Science**

Lefthand Watershed Oversight Group (LWOG) was formed in 2005 and is a nonprofit organization based in Boulder County. LWOG mission has been to restore and protect Left Hand Creek Watershed for future generations. Since 2016, LWOG has significant funding (over ten million dollars) to implement twenty flood recovery projects. These projects are designed to reduce flood risks, stabilize streambeds and banks, restore the ecological health of the watershed, and improve human health and safety. LWOG carries out its mission through four programs: Watershed Science, Stewardship, Restoration, and Outreach and Education.

The proposed project would be to develop a Community Science Program to engage the Left Hand Creek Watershed community in watershed stewardship through citizen science using tools and other platforms for effective collection, management, and sharing of data. While the focus of this plan is on the Left Hand Creek Watershed, LWOG intends to develop these tools with a goal of scalability and repeatability, so that it would be provided as a “toolbox” that can be applied and modified by other Colorado watersheds.

This project supports the Objective F: Watershed Health and supports the goal to “protect critical watersheds”. This also advances education goals by advancing education and informing Colorado citizens of critical water issues.

Staff supports recommending a \$36,000 grant to the Left Hand Watershed Oversight Group for approval at the May 2018 meeting.

**d. Denver South Transportation Management Association - Infra Red Plant Stress Monitoring Pilot**

The Denver South Transportation Management Association (Denver South TMA) is a 30 year old non-profit public-private serving Arapahoe and Douglas counties. The organization provides guidance on public policy and regional planning. Denver South TMA is responsible for landscaping and landscape maintenance for the major interchange areas along the south I-25 Corridor.

The proposed project is to use infra-red thermal imaging system in a suburban roadway landscape to analyze and measure plant stress. These types of systems have typically been used in agricultural settings. Denver South TMA will test this model at the southeast landscaping quadrant of I-25 and Arapahoe Road. The site is currently under reconstruction and is scheduled to be completed in July 2018. The types of plants at the site includes native seed, sod, shrubs, and deciduous and evergreen trees.

This project is consistent with the Colorado’s Water Plan goal to Increase Municipal Conservation and Efficiency. This Project advances the Education, Outreach, and Innovation objectives by deploying Innovative technology to better manage and potentially reduce water usage. The Grant will also provide education and outreach in sharing of the results and findings with water providers, CDOT, the Colorado landscape industry, and others.

Staff supports recommending a \$19,350 grant to the Denver South Transportation Management Association for approval at the May 2018 meeting.

**e. Sangre de Cristo Acequia Association - Preserving the Hispano Water Culture Curriculum**

The Sangre de Cristo Acequia Association (SCAA) is a 501(c)3 organization representing over 73 acequias, supporting approximately 300 families. The mission of the Sangre de Cristo Acequia Association is to preserve acequias as the core social, political, and economic institution in Costilla, Conejos, Huerfano and Las Animas counties. We are an education and outreach organization supporting the viability of the acequia system, and the rich water, ecology, heritage, and food production they support.

The proposed project aims to view water through the historic landscape of Southern Costilla County by creating an educational curriculum regarding the implementation of the acequia water distribution system and its intersection with current Colorado Water Law. The curriculum will explore this water distribution system through history to the present, through a variety of hands on lessons and field trip experiences.

The curriculum will include the following themes: Theme I: Spanish & Mexican Land Grants; Theme II: The Acequia and Colorado Water Law; Theme III: Centennial Farms; Theme IV: La Vega Commons;

Theme V: Connecting the Landscape to the Hispano Farmer/Rancher. The curriculum will be made available statewide to teachers in a downloadable format and will be housed at Sangre de Cristo Heritage Center in San Luis, CO and the History Colorado Center in Denver.

Staff supports recommending a \$7,500 grant to the Sangre de Cristo Acequia Association for approval at the May 2018 meeting.

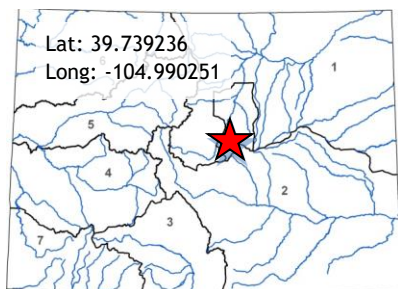
*See attached Data Sheets for the project summaries.*



## Clean River Design Challenge The Greenway Foundation

March 2018 Board Meeting  
Initial Consideration

### Water Plan Grant Application



L O C A T I O N	
County/Countries:	Denver County
Drainage Basin:	Metro Basin

D E T A I L S	
Total Project Cost:	\$49,000
Water Plan Grant Request:	\$24,500
Other CWCB Funding:	\$0
Other Funding Amount:	\$21,000
Applicant Match:	\$3,500
Project Type(s): Other	
Project Category(Categories): Engagement & Innovation	
Measurable Results: 6-10 designs and scale models for in-stream trash removal devices developed; feasibility study and cost estimates for a working prototype of a device designed; Information on trash in Denver area waterways distributed to 8,000+ Denver area residents	

The Clean River Design Challenge (CRDC) aims to develop innovative solutions to help solve the problem of trash in Denver's urban waterways. This year, the CRDC proposes to engage approximately forty students from three area universities: Metro State University, Colorado School of Mines, and University of Colorado- Denver.

The CRDC has two rounds, each culminating with presentations to a panel of expert judges. Round one produces designs, and in the second round, scale models of the devices would be built and tested on a custom made flume. The applicant will also pursue the implementation of a winning trash removal device if it shows significant potential for real-world success. Through connections with local engineers and governmental departments, prototypes will be constructed and tested in the waterway, with the goal of permanent installation.

The CRDC has two key goals: Raising awareness of the importance of protecting our valuable water resources and awareness of the urban waterway trash problem in particular through education and outreach, and 2) facilitating innovation that can lead to solutions to a complex, pervasive water quality problem.

By engaging students from a variety of backgrounds and disciplines in three universities, The Greenway Foundation is reaching budding professionals who may not have been exposed to water resources as a discipline, and who may not be planning to work in the water field. In addition to reaching students, the CRDC reaches thousands of people through TGF's social media and email newsletter distribution, as well as media coverage of the competition's final demonstration and judging day.

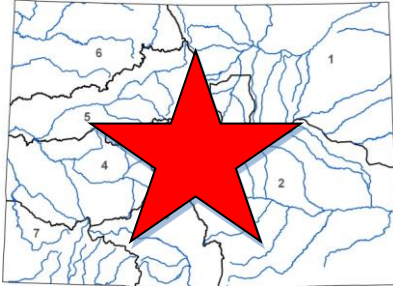
The project helps achieve the goal in the Water Plan, Objective F: Watershed Health by protecting healthy environments, promoting to protect and restore water quality and to protect critical watersheds.



**Statewide Strategic Water Education Action Plan &  
Associated Tools  
Colorado Foundation for Water Education dba Water  
Education Colorado**

March 2018 Board Meeting  
Initial Consideration

**Water Plan Grant Application**



L O C A T I O N	
County/Countries:	Statewide
Drainage Basin:	All Basins

D E T A I L S	
Total Project Cost:	\$84,087
Water Plan Grant Request:	\$47,000
Other CWCB Funding:	\$0
Other Funding Amount:	\$32,500
Applicant Match:	\$4,587
Project Type(s): Other - Education	
Project Category(Categories): Engagement & Innovation	
Measurable Result: 250,000-500,000 Coloradans Impacted by Engagement Activity	

Water Education Colorado (WECO) proposes to design and build a statewide strategic Water Education Action Plan to fulfill Goal 2 of Colorado Water Plan Ch. 9.5: “Create a Data-Based Water Education Plan.” This plan will be developed in consultation with local partners from around the state, and would serve as a playbook for coordinated statewide and basin-wide water education activities over the next 3-5 years. The data WECO will use is coming together through other ongoing education projects; the Water Education Asset Mapping project led by the One World One Water Center at Metropolitan State University of Denver and; the OMNI baseline survey conducted in Spring 2018.

WECO has 15 years of experience educating Colorado citizens and public officials. WECO is currently leading a statewide network of water education and outreach professionals that the CWCB Engagement and Innovation Grant Fund has also invested in called the Water Educator Network (WEN). WEN constitutes an “army of educators” with overlapping aims who are poised to inform and implement aspects of the plan with WECO’s facilitation and leadership.

In addition to building the statewide strategic plan, a small portion of this grant will be used to help WECO to revise its own organizational strategic plan to align with the goals of the statewide plan.

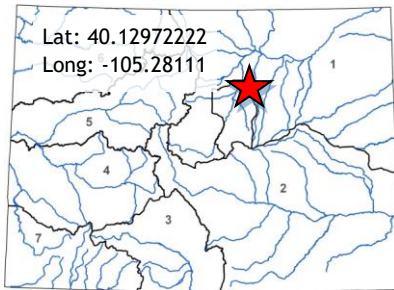
WECO staff believes a revised strategic plan will help the organization to be most effective in stewarding the state plan’s implementation between now and 2020. The number of Coloradans impacted by this engagement activity is estimated to be between 250,000 and half a million citizens, which will help “improve public awareness and engagement regarding water issues statewide.”



## Stewardship through Community Science Left Hand Watershed Oversight Group

March 2018 Board Meeting  
Initial Consideration

### Water Plan Grant Application



L O C A T I O N	
County/Countries:	Boulder
Drainage Basin:	South Platte

D E T A I L S	
Total Project Cost:	\$131,657.84
Water Plan Grant Request:	\$36,000
Other CWCB Funding:	\$0
Other Funding Amount:	\$87,657.84
Applicant Match:	\$8,000
Project Type: Other - Education	
Project Category(Categories): Engagement & Innovation	
Measurable Result: Provide tools to 20,000 water users in the Left Hand Creek Watershed and extend the developed Community Science program "toolbox" statewide.	

The proposed project aims to develop a Community Science Program to engage the Left Hand Creek Watershed community in watershed stewardship through citizen science using tools and other platforms for effective collection, management, and sharing of data. While the focus of this plan is on Left Hand Creek Watershed, the applicant intends to develop these tools with a goal of scalability and repeatability, so that it would be provided as a "toolbox" that can be applied and modified by other Colorado watersheds.

Water Plan Grant funding will be used to hire a consultant team that will collaborate with Left Hand Watershed Oversight Group (LHWOG) staff to:

- Design a strategic community science plan that includes approaches for outreach, recruitment, data collection, evaluation, and materials for education, training, and workshops.
- Develop tools that can be used to collect, store, manage, access, and share data, including mobile applications, data sheets, databases, and online data sharing platforms which will enable knowledge sharing through open access to information. This effort may leverage existing platforms and tools that facilitate custom citizen science project design and data sharing (e.g. citisci.org). Also, develop interactive webpage to extend the impact of existing resources.
- Provide continued oversight, management, training, workshops, and support for community science efforts in order to ensure long-lasting benefits to community.

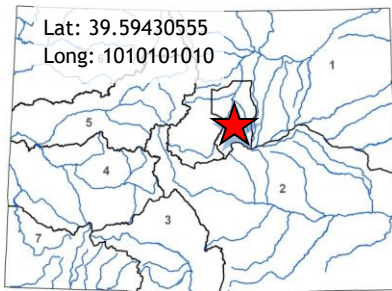
The applicant believes this project will help achieve the watershed health goals set in the Water Plan and the South Platte Basin Implementation Plan by empowering the public with scientific understanding of water issues through learning by doing.

Through participation in community science projects, community members without scientific training or credentials will gain an improved understanding of how science can (or cannot be) used to address relevant Colorado water challenges. In addition, decision-makers and elected officials can receive feedback from informed community scientists to better understand their needs, priorities, and unique circumstances.





## Water Plan Grant Application



L O C A T I O N	
County/Countries:	Arapahoe
Drainage Basin:	Metro

D E T A I L S	
Total Project Cost:	\$38,700
Water Plan Grant Request:	\$19,350
Other CWCB Funding:	\$0
Other Funding Amount:	\$0
Applicant Match:	\$19,350
Project Type(s):	Other
Project Category(Categories):	Engagement & Innovation
Measurable Result:	Full evaluation of broader impacts to be conducted throughout the course of the pilot.

The proposed project aims to pilot an infrared thermal imaging system in a suburban roadway landscape environment. These types of systems typically have been used in agricultural settings. The applicant seeks to test this model at the southeast landscaping quadrant of the Arapahoe Rd & I-25 Interchange, which is currently being reconstructed and scheduled to be completed in July 2018.

The applicant will remotely collect, warehouse and analyze visual and thermal imaging data. The infra-red equipment used will allow the applicant to interface with controllers over Wi-Fi and cellular networks, enabling real-time data capturing through the cloud and allowing access from various locations. Data points will include real-time temperature readings, heat stress indicators, evapotranspiration rates, general weather indicators and agricultural stresses.

The applicant is a regional organization and is responsible for landscaping and landscape maintenance along Colorado Department of Transportation's (CDOT) controlled right-of-ways (ROW). If successful, this pilot could impact water use efficiency in similar settings, such as other public ROW throughout Colorado's roadway system, suburban office parks and other environments that require irrigation to support mixed vegetation.

Denver Water is the water provider at this location and all irrigation originates from one commercial tap. The area includes approximately one acre for irrigation and types of crops include native seed, sod, shrubs and assorted deciduous and evergreen trees.

The target audience for this proposal includes CDOT, statewide city and county public works and maintenance staff, metropolitan districts, contract landscape maintenance firms and other organizations responsible for similar types of landscaped areas and landscape maintenance contracts. The applicant proposes to reach these organizations through their direct contacts at the state and local government levels, through participation in organizations such as the Colorado Municipal League and the Denver Metro Chamber of Commerce and through their social media and monthly newsletter channels.

This project is consistent with the goals in Colorado's Water Plan, Objective B: Increase Municipal Conservation and Efficiency and advances the Education, Outreach, and Innovation objectives by deploying Innovative technology to better manage and potentially reduce water usage.

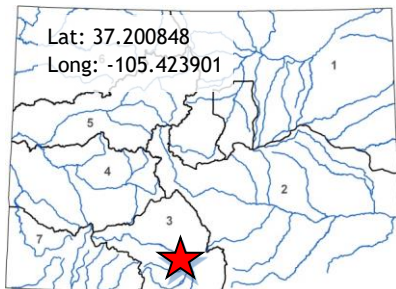




## Preserving the Hispano Water Culture Curriculum Sangre de Cristo Acequia Association

March 2018 Board Meeting  
Initial Consideration

### Water Plan Grant Application



L O C A T I O N	
County/Countries:	Statewide-Costilla, Huerfano, Conejos & Las Animas Counties
Drainage Basin:	Rio Grande

D E T A I L S	
Total Project Cost:	\$45,500
Water Plan Grant Request:	\$7,500
Other CWCB Funding:	\$0
Other Funding Amount:	\$36,000
Applicant Match:	\$2,000
Project Type(s):	Other - Education
Project Category(Categories):	Engagement & Innovation
Measurable Result:	Development of an interactive student curriculum

The proposed project aims to view water through the historic landscape of Southern Costilla County. The unique cultural aspects of the area include the original settlement of the area via the Sangre de Cristo Land Grant, the implementation of the acequia water distribution system and its intersection with current Colorado Water Law.

This project proposes to create an educational curriculum that explores water through history through the present, through a variety of hands on lessons and field trip experiences.

These lessons will follow these themes: Theme I: Spanish & Mexican Land Grants; Theme II: The Acequia and Colorado Water Law; Theme III: Centennial Farms; Theme IV: La Vega Commons; Theme V: Connecting the Landscape to the Hispano Farmer/Rancher.

The curriculum will be available for teachers Statewide in an easily downloadable format that will provide both in class lessons and a field trip component for students in grades K-12. The project is designed to provide educational and outreach opportunities through the development of Statewide Curriculum that will be housed at both at Sangre de Cristo Heritage Center in San Luis, CO and History Colorado Center in Denver. The lessons will be made available by each organization and will support a variety of Colorado Content Standards.

The target audience for this project are educators and students in grades Kindergarten through the 12<sup>th</sup> grade across the state. The applicant states this project further promotes objects outline in section 9.5 of Colorado's Water Plan because it provides technical and financial assistance for high-quality, balanced, and grassroots water education and outreach efforts that inform Coloradans. The Rio Grande Basin Round Table has supported this project as it addresses the Rio Grande Basin Goal to establish a long-term education and outreach effort for water use and needs in the San Luis Valley/Rio Grande Basin.