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: May 23-24, 2018 Board Meeting

AGENDA ITEM: 32 a-f. Water Plan Grants – Engagement & Innovation Final Consideration

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Introduction

The items listed below were presented by staff for Initial Consideration at the March 2018 Board Meeting in Broomfield, Colorado. The Board provided feedback and support for final consideration at this Board Meeting.

The Engagement & Innovation category began Fiscal Year 2017-2018 with $1 million in available funds. With the final approval of the applications listed below, this Water Plan Grant category will have $131.00 available for future applications.

Staff Recommendation

Staff recommends Board Approval of the projects/activities listed in the following table for Water Plan Grant funding.

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
f. One World One Water Center at Metro State University of Denver	Activating Colorado's Water Plan with Student Driven Innovation	$35,000	77%	$35,000

* Indicates items which will include a presentation by the applicant

See attached Data Sheets for locations and summaries.

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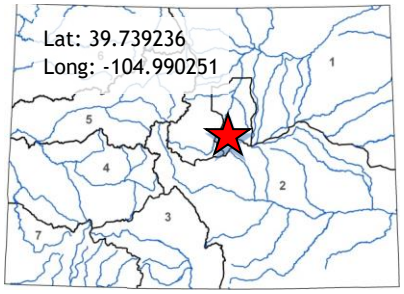
Clean River Design Challenge
The Greenway Foundation

May 2018 Board Meeting
Final Consideration

Water Plan Grant Application



LOCATION	
County/Counties:	Denver County
Drainage Basin:	*Metro Basin*

DETAILS	
Total Project Cost:	$49,000
Water Plan Grant Request:	$24,500
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 Foundatoin is reaching budding professionals who may not be 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 heathy environments, promoting to protect and restore water quality and to protect critical watersheds.

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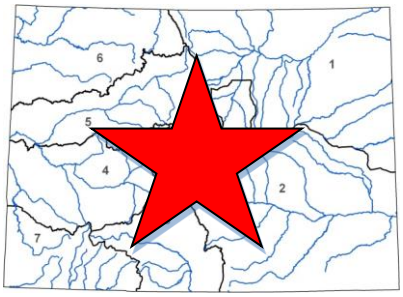
Statewide Strategic Water Education Action Plan & Associated Tools

Colorado Foundation for Water Education dba Water Education Colorado

May 2018 Board Meeting
Final Consideration

Water Plan Grant Application



LOCATION	
County/Counties:	Statewide
Drainage Basin:	All Basins

DETAILS	
Total Project Cost:	$84,087
Water Plan Grant Request:	$47,000
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."

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Stewardship through Community Science
Left Hand Watershed Oversight Group

May 2018 Board Meeting
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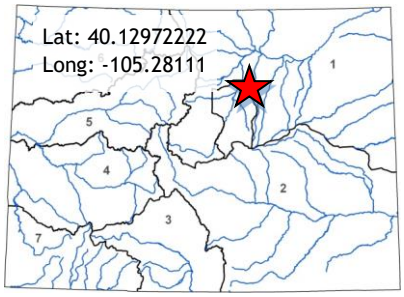
Water Plan Grant Application



LOCATION	
County/Counties:	Boulder
Drainage Basin:	South Platte

DETAILS	
Total Project Cost:	$131,657.84
Water Plan Grant Request:	$36,000
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. citsci.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.

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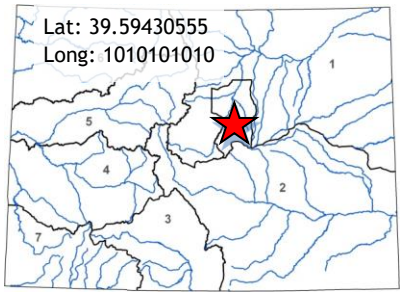
InfraRed Plant Stress Monitoring Pilot
Denver South Transportation Management Association

May 2018 Board Meeting
Final Consideration

Water Plan Grant Application



LOCATION	
County/Counties:	Arapahoe
Drainage Basin:	Metro

DETAILS	
Total Project Cost:	$38,700
Water Plan Grant Request:	$19,350
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 infrared 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 affect 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.

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Preserving the Hispano Water Culture Curriculum

Sangre de Cristo Acequia Association

May 2018 Board Meeting
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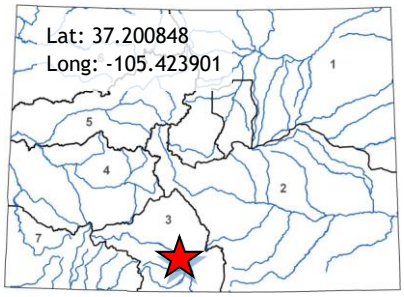
Water Plan Grant Application



LOCATION	
County/Counties:	Statewide-Costilla, Huerfano, Conejos & Las Animas Counties
Drainage Basin:	Rio Grande

DETAILS	
Total Project Cost:	$45,500
Water Plan Grant Request:	$7,500
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 12th 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.

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Activating Colorado's Water Plan with Student Innovation
One World One Water Center at MSU Denver

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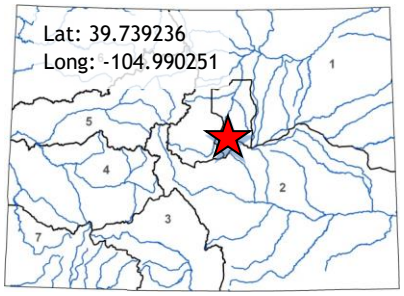

LOCATION	
County/Counties:	*Statewide*
Drainage Basin:	*All*

DETAILS	
Total Project Cost:	$45,000
Water Plan Grant Request:	$35,000
Applicant Match:	$10,000
Project Type(s): Other	
Project Category(Categories): Engagement & Innovation	
Measurable Results: The measurable results will include number of students/faculty/staff impacted as well as the direct impacts of the campus projects selected through the competition.	

Students and faculty at university campuses are often focused on their specific area of study that their natural connection to water, the vast field of water related studies, and the details of Colorado's Water Plan are largely unknown to them. The OWOW Center will attempt to change that dynamic through their Activating Colorado's Water Plan with Student Driven Innovation proposal.

The One World One Water Center at MSU Denver (MSU), CU-Boulder, Denver Botanic Gardens and Brendle Group, working together as the Colorado Water Collaboratory, would like to partner to develop a cross-campus contest that helps university departments and students see themselves (and their area of study) in Colorado's Water Plan. In 2015 and 2016, MSU helped pilot efforts with a Theatre class and an Industrial Design class to create a water play and design a better rain barrel, respectively. In each case, there was a focus on understanding water challenges in Colorado and the need for wise water planning. Building on the group's vision for "Collaboratory" efforts that use campuses as living labs for water innovation and MSUs past success getting students to see themselves in the Colorado Water Plan, the team would like to create a multi-campus contest with replicable outputs and measurable impact that focuses on challenges in Colorado's Water Plan.

Colorado's Water Plan identifies the OWOW Center at MSU Denver as group that is leading campus communities on water supply planning, research, dialogue, and education. Bringing together the MSU Denver and CU-Boulder campuses with Denver Botanic Gardens and Brendle Group - through the Colorado Water Collaboratory - allows unique opportunities to spearhead programs that will incorporate Colorado's Water Plan priorities and campus sustainability.

The Basin Implementation Plans described a list of goals including to "identify the necessary institutional changes, and the related cultural and economic adaptations in Colorado lifestyle, to address increasing water demands." University campuses are prime locations to test and analyze changes to water use on campus through institutional practices, infrastructure, and behavior as well as assessing cultural and economic trends amongst Colorado's growing higher education communities.

The South Platte Basin Roundtable and Metro Roundtable Education Action Plan includes an objective to work with universities to gauge public support and knowledge of the BIP and CWP through survey. This effort will include a pre- and post-survey component to measure students' knowledge before and after the contest rollout.

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Activating Colorado's Water Plan with Student Innovation
One World One Water Center at MSU Denver

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