



Colorado Water Conservation Board

Water Plan

Water Project Summary

Name of Applicant	University of Colorado Boulder
Name of Water Project	Effects of Landscape Transformations on Urban Heat and Water Quality
Grant Request Amount	\$295,967.00
Primary Category	\$295,967.00
<i>Conservation & Land Use Planning</i>	
Total Applicant Match	\$124,985.00
Applicant Cash Match	\$62,493.00
Applicant In-Kind Match	\$62,492.00
Total Other Sources of Funding	\$0.00
Total Project Cost	\$420,952.00

Applicant & Grantee Information

Name of Grantee: University of Colorado Boulder
 Mailing Address: 572 UCB Boulder CO 80309-0001
 FEIN: 846,000,555

Organization Contact: Aditi Bhaskar
 Position/Title: Associate Professor Email: aditi.bhaskar@colorado.edu
 Phone: 303-492-7577

Grant Management Contact: Aditi Bhaskar
 Position/Title: Associate Professor Email: aditi.bhaskar@colorado.edu
 Phone: 303-492-7577

Description of Grantee/Applicant

State/Public-controlled Institute of Higher Education

Type of Eligible Entity

- Public (Government)
- Public (District)
- Public (Municipality)
- Ditch Company
- Private Incorporated
- Private Individual, Partnership, or Sole Proprietor
- Non-governmental Organization
- Covered Entity
- Other

Category of Water Project

- Agricultural Projects
Developing communications materials that specifically work with and educate the agricultural community on headwater restoration, identifying the state of the science of this type of work to assist agricultural users among others.
- Conservation & Land Use Planning
Activities and projects that implement long-term strategies for conservation, land use, and drought planning.
- Engagement & Innovation Activities
Activities and projects that support water education, outreach, and innovation efforts. Please fill out the Supplemental Application on the website.
- Watershed Restoration & Recreation
Projects that promote watershed health, environmental health, and recreation.
- Water Storage & Supply
Projects that facilitate the development of additional storage, artificial aquifer recharge, and dredging existing reservoirs to restore the reservoirs' full decreed capacity and Multi-beneficial projects and those projects identified in basin implementation plans to address the water supply and demand gap.

Location of Water Project

Latitude 40.000000
Longitude 105.000000
Lat Long Flag
Water Source
Basins Metro
Counties Denver
Districts

Water Project Overview

Major Water Use Type Municipal
Type of Water Project Planning
Scheduled Start Date - Design 8/15/2024
Scheduled Start Date - Construction

Description

Recognizing the large amount of municipal water that is being used for residential irrigation of turfgrass, the recent Colorado Water Plan calls for transformative landscape change to build the Colorado landscapes of tomorrow. Because of environmental linkages, landscape transformations will affect not just water use but also urban heat and water quality, which both of are already under pressure. Urban heat in the metro area is under pressure from climate change. Water quality in the metro area is under pressure with the increasing requirements for nutrient reductions for MS4 and TMDLs, as well as basin control regulations. To address these effects, this application proposes to quantify the effects of landscape transformations on urban heat and water quality in the Denver metropolitan area. Achieving these objectives will inform the development of best practices for landscape transformations in Colorado.

Measurable Results

New Storage Created (acre-feet)
New Annual Water Supplies Developed or Conserved (acre-feet), Consumptive or Nonconsumptive
Existing Storage Preserved or Enhanced (acre-feet)

New Storage Created (acre-feet)
Length of Stream Restored or Protected (linear feet)
Length of Pipe, Canal Built or Improved (linear feet)
Efficiency Savings (dollars/year)
Efficiency Savings (acre-feet/year)
Area of Restored or Preserved Habitat (acres)
Quantity of Water Shared through Alternative Transfer Mechanisms or water sharing agreement (acre-feet)
Number of Coloradans Impacted by Incorporating Water-Saving Actions into Land Use Planning
Number of Coloradans Impacted by Engagement Activity

Other

Outcomes will lead to more effective water savings from turfgrass replacement.

Water Project Justification

This project directly helps support Action 1.7 in the Colorado Water Plan (Water Plan): Identify turf replacement options that support transformative landscape change. Action 1.7 states, “Often turf removal in other states uses rock, gravel, or other materials that inevitably make landscapes hotter and may not support irrigation that sustains trees — exacerbating warming through the heat island effect.” This project will identify the warming from different turfgrass alternatives, and suggest what types of landscape transformations will also support equity and effective climate adaptation.

Action 1.7 also states, “Understanding the best strategies for transformative landscape change to reduce water use while maintaining livable and aesthetically pleasing outdoor environments will require the creation of a Colorado standard for landscapes...Beyond the requirements in statute, CWCB will actively conduct and support research on turf replacement best practices, alternative tools for driving turf replacement, addressing underlying irrigation concerns, and identifying the optimal low water replacement materials that could be sustained on as little as one day of efficient irrigation per week. CWCB will use information and data it collects through its turf replacement program to create a handbook that explores study findings and compares the potential for municipal tools like water rate structures, water budgets, incentives and land use codes to aid this transformation...CWCB will also engage experts to evaluate alternative landscape plant material options that include medium to low water-using native species and/or well-adapted plant species and analyze ways that a range of other landscape challenges such as stormwater management, heat impacts, ... might be addressed through a Colorado-specific landscape standard.” This project will directly support these efforts by conducting research on turf replacement best practices for livable outdoor environments for heat impacts and stormwater management (specifically water quality in stormwater).

Lastly, this project also supports Colorado Water Plan Action 1.6: “Promote outdoor One Water strategies for integrated land use planning”. This project takes a One Water approach by linking water conservation, land use, climate adaptation, equity, and water quality. This is also evidenced by the letters of support from the One Water Leaders.

Related Studies

This proposed project is related to multiple CWCB-funded programs. Specifically, the programs that are most related:

1. CWCB’s Turf Replacement Program originally funded by the Legislature as HB-22-1151. In 2022, the Colorado legislature passed this bill providing \$2 million for turfgrass replacement programs, which was distributed to 30+ water utilities in a single year.
2. CWCB’s Urban Landscape Conservation Task Force that Governor Polis called for to help inform how

Colorado can achieve transformative landscape change at scale.

3. In 2023, CWCB's Water Plan Grant to Resource Central (Resource Central - Building Statewide Capacity for Turf Removal) for \$1.5 million to accelerate transformative landscape change across the state through turf removal and replacement. The proposed project will help inform best practices for expanding turf removal programs.

4. The 2022 CWCB Water Plan Grant to Resource Central (Resource Central - Resource Central Landscape Change Program Impact Analysis). The proposed project is synergistic with this project, as evidenced by the letter of support from Resource Central from Katie Butler, the research fellow who is carrying out the landscape change program impact analysis focusing on the water use reductions from Garden in a Box implementations. This proposed project is synergistic as we will also be identifying impacts from Garden in a Box implementations on urban heat and water quality, and combining these findings with the water use changes identified by this previous CWCB grant into an overall assessment of effects.

Taxpayer Bill of Rights

Not applicable.