Expanding Residential Rain Garden Installations in Front Range Communities: A Bilingual Project

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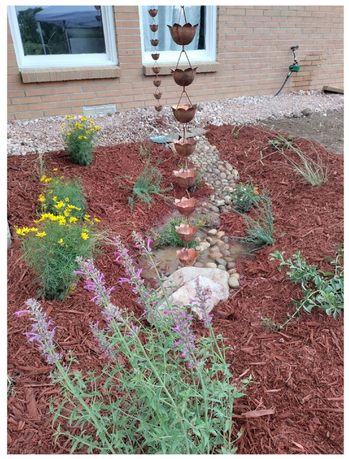
Introduction: Threatened Water, Threatened Life



Humans and non-humans in Colorado face unprecedented pressure as our water supply dwindles due to climate change, water pollution, growing population, and inefficient usage. In recent years, water shortages have halted development and construction, as was the case for the town of Severence in 2020. Even when water is available, towns and Tribal Nations struggle to access their legally allocated water due to the exorbitantly high cost of water treatment and delivery systems.

As water supply declines, the price of water increases, causing financial strain and emotional stress for communities reliant on Colorado water. Despite these economic shifts, residents are still often required to water non-native and resource-intensive grass lawns, as is the case for residents in Wellington. These contradicting pressures place a disproportionate burden on low-income and minority Coloradans, making water supply and quality matters of environmental justice.

In Colorado, 50% of residential water is used to irrigate outdoor landscapes, especially turf grass. Residential neighborhoods have become a monoculture of turf grass, laden with a toxic cocktail of pesticides, herbicides, and fertilizers that are harmful to humans, non-humans, and pollute our waterways. Turf promotes noxious weeds and invasive species, like the Japanese beetle, while pushing out native pollinators and birds.

Residential rain gardens capture water from gutter systems to irrigate native plants, recharge groundwater tables, reduce stormwater runoff, improve water quality, and reduce the demand for treated residential water. Rain gardens diversify (sub)urban plant and animal ecology and add green space to our landscapes. In this pilot project, our team planted 19 rain gardens along the Front Range, taught free and bilingual rain garden classes, monitored rain garden establishment, and forged communal relationships to increase our collective climate resiliency.

Where Watersheds and Anthropology Intersect

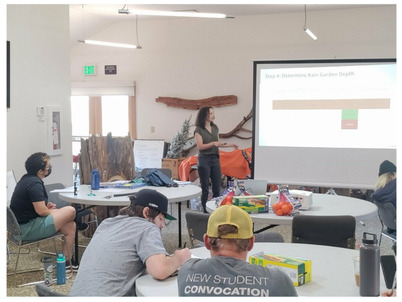
A watershed is a “scientific” boundary defined by elevation and water flows, but these boundaries quickly become disrupted by inter-basin diversions, geopolitical histories, economic demands, and our social realities. Political ecology teaches us that ”nature”, including watersheds and water supply, did not simply appear as it is. Rather, our country’s history of the removal of Indigenous people, slavery, unfettered capitalism, and disrespect for the planet has physically shaped the landscape and can be felt unevenly in our day-to-day lives.

Addressing our social and environmental issues must be done concurrently as they are intertwined politically, economically, physically, and for many, spiritually. The human-nature dichotomy begins to blur when we recognize our deep interdependence with the earth. Stewardship does not exist solely within the bounds of “defending wilderness,” but some of the most salient impacts can begin hyper-locally in your front yard. By centering social and language justice, we seek to heal our communities and the land we live and rely on.

Rain Gardens, Language Justice, Education, & Research

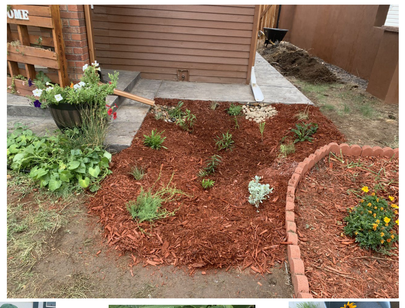
In four months, our team planted 19 rain gardens in Fort Collins, Loveland, Longmont, Wellington, Denver, Commerce City, Centennial, and Greeley. These rain gardens ranged from 50-100 ft^2 and accommodated full sun, part shade, and full shade yards. These rain gardens were installed at no cost to the homeowners to reduce the economic burden of landscape design and gardening. We also created a homeowner packet to aid in maintenance with a watering schedule, plant care and establishment guide, winter care, rain barrel guide, and more.

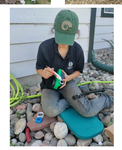
Partnerships are crucial to environmental and social work as different groups bring different perspectives and resources, thus strengthening our work’s longevity and the breadth of our impact. We partnered with youth and community-based organizations like the South Platte River Advisory Youth Council, Mile High Flood District, and Groundwork Denver to install gardens across the region.



We designed a Certified Rain Garden Installer Course which includes a three-hour class, homework, an exam, and the completion of a rain garden installation. The course materials are in English and Spanish, thus filling a gap in stormwater education material which is often not accessible to the Spanish-speaking community. This certification program promotes economic development by creating a group of qualified people who can install green infrastructure, expand their landscaping businesses, or simply save money on their water bill by reducing their irrigation water use. I taught several components of the Certified Rain Garden Installer class, as well as a Green Infrastructure class, and hosted a review session for our SCM I&M class. I also led my own garden installation and taught youth about tool safety and caring for native plants.

Finally, our program includes a monitoring component to explore the efficacy of rain gardens at the residential scale. In addition to monthly plant height and width measurements, we installed Level Loggers at two sites to measure the infiltration rate of the gardens over time.

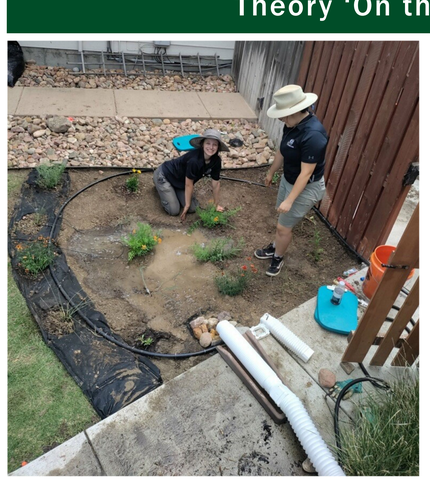




Internship Outcomes

- *Professional Development*
  - Rain Garden Installer Certification; Stormwater Control Measures Inspection & Maintenance Certification
  - Attended and taught the Colorado Stormwater Center’s classes: Rain Garden Certification Course; Rain Barrels; Green Infrastructure; Stormwater Control Measures Inspection & Maintenance
  - Attended Confluence 2022 Conference in Loveland, CO
- *Community Outreach, Education, & Language Justice*
  - Professionally communicated with homeowners and connected them with resources
  - Increased awareness of the benefits of using stormwater as a resource
  - Demonstrated the need for Diversity, Equity, and Inclusion in the water field and the importance of incorporating language justice when developing educational content and programs
- *Field Experience*
  - Conduct rain garden site assessments and infiltration tests, determine the best location for the rain garden, choose a rain garden layout, and install the rain garden
  - Gained practical knowledge and experience installing gardens, drip irrigation, and creative problem-solving

Theory ‘On the Ground’



This internship and my amazing team have given me the space to apply and expand my knowledge in meaningful ways. Rather than memorizing equations about soil properties, I spent hours with my hands in the mud, watching and observing for myself how water and soil interact. I had little previous experience using tools, but now I feel confident installing irrigation line and re-constructing downspouts. At the beginning of the season, I nearly killed a hyssop but after a few weeks of nurturing and observing it, the hyssop rebounded and we were able to plant it in a rain garden. I’ve gained a new relationship with water, soil, plants, and myself. I have grown stronger, more confident, and am excited to continue this work after graduation. Lastly, I am so grateful for Jessica and Mia who are exemplary leaders, activists, and friends, and made this project so special.

COLORADO STATE UNIVERSITY EXTENSION