

RAIN GARDEN DESIGN

FILTERS, DIRECTS RUNOFF

FROM GILLETTE THREE-ACRE PARKING LOT

Stormwater runoff becomes a problem as communities grow and develop.

Impervious surfaces like parking lots, streets, sidewalks, and buildings can accumulate pollutants, and the runoff collects these pollutants that can remain unfiltered as it flows to streams and reservoirs. That then becomes our drinking water and makes up our recreation areas.

The runoff can also increase flooding potential.

Rain gardens are one way to combat these problems. Rain gardens in critical locations will collect and filter stormwater runoff through natural processes.

In late 2017, the idea to create a rain garden near the Gillette College Technical Education Center's parking lot began. One inch of rainfall on the 3.1-acre parking lot is equal to 82,152

gallons of water. The water runoff collected contaminants and flowed into the Donkey Creek watershed. Those contaminants included not only chemicals from the parking lot, but also E. coli strains likely from animals that walk along or feed in that area such as dogs, geese, and others.

"The water quality of this watershed has been impaired for several years," said Jennifer Hart, district manager for the Campbell



County Conservation District. "Unfortunately, it's not a point source pollution where we can just plug up a pipe."

The Donkey Creek watershed is a source for the Gillette Fishing Lake in Dalbey Memorial Park, which is heavily used by the community. The water continues downstream to Keyhole Reservoir, which is also a popular recreational site.

"The Campbell County Master Gardeners approached the college to talk about what a rain garden is and how it can benefit the community, the watershed, and the college," said Mark Andersen, facilities director at the college. "We had a good location along 4-J road that would be public for people to see so they can learn and understand what a rain garden is as well."

The Master Gardeners and Gillette College then partnered with the conservation district to create a plan and identify funding for the project.

◀ The rain garden adjacent to the Gillette College Technical Education Center parking lot and 4-J Road in Gillette was constructed in coordination with Gillette College, Campbell County Master Gardeners, Campbell County Conservation District, Natural Resources Conservation Service, and others. (Photo by Fred Harrell, NRCS-Wyoming public affairs specialist)

What is a rain garden?

Rain gardens can add aesthetic appeal and wildlife protection to a variety of landscapes, including yards around homes or green spaces around parking lots. They help filter water contaminants like motor oil and fertilizer from water run-off before it reaches ground water or runs through the storm drain. Rain gardens are designed to slow water down, so they are also great at reducing erosion and capitalizing on the amount of water that soaking the soil.

A rain garden temporarily holds water after a storm or for run-off from hard surfaces like roofs, driveways, and parking lots. Water runs off (inflow) a surface into a depression in the ground. The depression allows for "ponding" where water can collect and quickly soak into the soil and be available to plants. The area is not meant to be a permanent pond, so it should be relatively shallow and have a place for water to overflow if needed. The shape can vary as well as the type of plants, but it's important for the soil to be easily permeated so water can soak in quickly.

Consider that some plants are going to receive more water than others when selecting plants for a rain garden. The plants closer to where water is ponding, or at the bottom of a rain garden, should prefer more water, and plants farther away should prefer drier conditions. Leave existing plants that appear to be thriving; they are already doing a good job absorbing excess water. If adding plants to an existing landscape, consider matching plants to those present or plants in the surrounding landscapes so the rain garden doesn't look out of place. There's a nice plant list and other suggestions to consider here: bit.ly/wyo-rain-gardens.

The \$42,200 project was funded with assistance from Clean Water Act Section 319 Funds from the Wyoming Department of Environmental Quality and water quality funding from the Wyoming Department of Agriculture. The college, as well as other volunteers, contributed a nearly 40 percent match in funding.

Hart said an agreement for the project was created in July 2018 with the help of engineering support through the Natural Resources Conservation Service's Conservation Technical Assistance (CTA).

CTA is available to any group or individual interested in conserving natural resources

and sustaining agricultural production.

"The challenge with this project was bringing our agriculture expertise into an urban environment," said Chris Campton, a civil engineering technician with NRCS. "Since this would be a very public and visible project, we wanted to make sure it was aesthetically pleasing while still meeting the water quality requirements set forth in the grant. Based on these conditions, we decided a filtration system, such as a rain garden, was the best option."

Construction began in July 2018.

Materials and vegetation were chosen that would filter and

detoxify the contaminated water as it ran through the rain garden, said Campton.

"We had a lot of support from the college, the conservation district, and others," Campton said. "There is a maintenance aspect of this project as well. As the years go on, the rain garden will evolve as plants and materials are switched out to maintain the necessary filtration and detoxifying qualities."

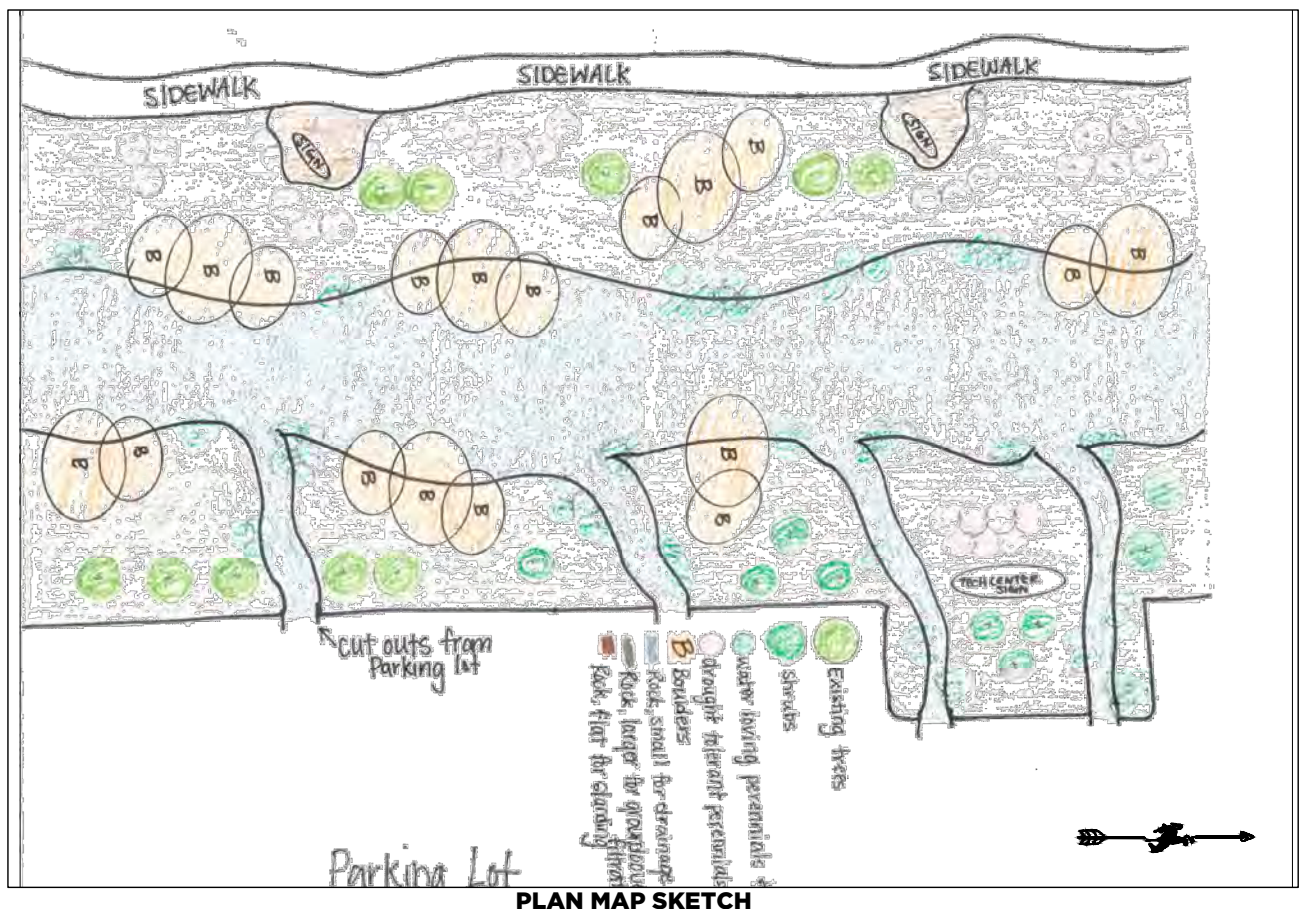
Local support for the project was critical to its construction.

"We had a lot of community members volunteer to help install the rocks, plants, and trees to create this rain garden," said Andersen. "As we went through the process, we learned quite a bit of how much contaminated water actually comes off of our campus and flows into Donkey Creek."

Educating the community about the benefits of a rain garden was another goal.



The rain garden adjacent to the Gillette College Technical Education Center collects runoff from the parking lot and filters contaminants before entering the Donkey Creek watershed. This view is looking downstream of the rain garden toward Donkey Creek. (Photo by Fred Harrell, NRCS-Wyoming public affairs specialist)



Natural Resources Conservation Service in Wyoming provided design and engineering expertise through its Conservation Technical Assistance program. This is the plan map sketch prepared by NRCS for the project. (Courtesy of NRCS-Wyoming)

"Any opportunity we have to provide education on how the community can do its part is always beneficial," said Hart.

The project was completed in the summer of 2019 with the help of numerous volunteers.

"Not only did we end up with a rain garden, but we ended up with a lot of education on what we can do to better prevent the contaminants from getting into Donkey Creek," said Andersen.

The project also included interpretive signs that explain the

purpose of the rain garden and how it is made.

"Rain gardens such as these are beneficial to communities in many ways," said Hart. "As more of these rain gardens are created, the greater impact they will have on improving the quality of water supplied to our communities. It's going to take a lot of these smaller projects to really make an impact on the watershed."

Visit the rain garden at the Gillette College Technical Education Center at 3251 S. 4-J Rd., Gillette, WY.

For more information on NRCS conservation technical assistance, visit our website at www.nrcs.usda.gov or contact your local NRCS service center.

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