8-2-2019

**Stormwater Capture via Green Infrastructure in the Plaster Creek Watershed**

Kyle Dankert  
*Calvin University*

Ana Singh  
*Calvin University*

Deanna Geelhoed  
*Calvin University*

David P. Warners  
*Calvin University*

Follow this and additional works at: [https://digitalcommons.calvin.edu/pcs_student-papers](https://digitalcommons.calvin.edu/pcs_student-papers)

**Recommended Citation**  
Dankert, Kyle; Singh, Ana; Geelhoed, Deanna; and Warners, David P., "Stormwater Capture via Green Infrastructure in the Plaster Creek Watershed" (2019). *Student Papers and Reports*. 7.  
[https://digitalcommons.calvin.edu/pcs_student-papers/7](https://digitalcommons.calvin.edu/pcs_student-papers/7)

This Poster is brought to you for free and open access by the Plaster Creek Stewards at Calvin Digital Commons. It has been accepted for inclusion in Student Papers and Reports by an authorized administrator of Calvin Digital Commons. For more information, please contact dbm9@calvin.edu.
Stormwater Capture via Green Infrastructure in the Plaster Creek Watershed
Kyle Dankert, Ana Singh, Deanna Geelhoed, Dr. David Warners- Calvin University, Grand Rapids, Michigan

Introduction

Calvin University’s campus is located within the Plaster Creek watershed, an area of land from Caledonia to the Grand River near downtown Grand Rapids. All of the water within this region drains into Plaster Creek, which, after many years of neglect and mistreatment, has become one of the most polluted waterways in West Michigan.

Plaster Creek Stewards (PCS) aims to restore the local watershed by focusing on education, research and “on the ground” restoration. The focus of the restoration work is to reduce stormwater runoff containing high amounts of sediment, chemicals, and other pollutants. A variety of green infrastructure practices are used to accomplish this goal.

Objectives

Fifth Year Efforts
Our objectives were to continue, expand, refine, and promote the work done in years before.

- Design and install curb-cut rain gardens in the Roosevelt Park, Alger Heights and Oakdale neighborhoods.
- Add and sediment traps to reduce sediment buildup in newly installed curb-cut rain gardens.
- Improve overall health of the watershed with native plantings to improve the ecological health and pollinator diversity.
- Attend community events to engage with its members and educate them about the watershed and stream health.
- Represent Calvin University in a respectful and responsible way.

Methods

Rain Gardens
Plaster Creek Stewards use rain gardens to capture stormwater runoff and encourage a slow percolation of water into the ground. PCS focuses on the curb-cut rain garden, that directs stormwater from the streets into the plant-filled basin of the garden. Here, the rain water seeps into the garden and the plants and evaporate/transpose the stormwater.

Native Plants
Native plants are used in all of our plantings and rain gardens. These plants are the best adapted to the Michigan climate and soils, while providing habitat for native wildlife. Plaster Creek Stewards collect seeds, propagate, and grow as many native plants as possible into our gardens and restoration projects.

Sediment Traps
A vital feature of curb-cut rain gardens are sediment traps. Sediment traps are placed in the inlet of each rain garden and collect sediment from street runoff. As water flows into the basin of the sediment trap, it slows down, and sediment that is suspended in the water is deposited into the traps. These sediment traps help with the maintenance of the rain gardens and make disposal of polluted sediment easier.

Results

The Plaster Creek Watershed has been neglected for over 100 years. It will take many years of hard work to keep it from getting worse. In time and with continued efforts Plaster Creek may stabilize and begin to recover.

There are still many small improvements that can be seen. The sediment traps have been observed with trapped sediment. Many community members have expressed interest in having their own rain gardens installed. Some native plantings have reached full maturity and provide habitat for local fauna. The work on the Plaster Creek watershed is ongoing but its future is promising.

References

- All pictures provided by Plaster Creek Stewards
- Thanks to Deanna Geelhoed, Dr. Dave Warners, and the Plaster Creek Stewards Staff for research guidance
- Thanks to the Calvin University Science Division and EGLE for support and funding of this project