

E. Kneale Dockstader Foundation
2021 Grant Final Report - Submitted November 7, 2021

General Information

Organization Name: White Clay Watershed Association (WCWA)

Project Title: Community Green Infrastructure Project, West Grove Borough, White Clay Creek Watershed

Grant Amount: \$7500

Geographical Area Serviced: West Grove Borough, Southern Chester County, PA

Grant Period: July 1, 2021 – June 30, 2022

Program Implementation & Impact

The White Clay watershed is 107 square miles and includes parts of Chester County, Pennsylvania and New Castle County, Delaware. Unlike most National Wild and Scenic Rivers which are federally owned and managed, the White Clay Creek is a Partnership River where most of the land is privately owned and locally managed. Therefore, the White Clay Watershed Association (WCWA) must work cooperatively with watershed municipalities and private land owners to implement the watershed management plan. In 2016, the Dockstader Foundation supported a new program spearheaded by the Brandywine Conservancy and the White Clay Watershed Association called Catch the Rain. The Catch the Rain program educates, encourages, and provides monetary incentives for voluntary implementation of green stormwater practices such as rain gardens and tree plantings. In 2019, we applied for additional funding to specifically help a local municipality, West Grove borough, develop a green stormwater infrastructure plan for the entire borough, and implement a Catch the Rain demonstration project in a public space. The Avon Grove Rain Garden was constructed in June 2020 and will assist the municipality with attaining water quality standards mandated by the states through their Total Maximum Daily Load (TMDL) permits while also serving as a public demonstration practice for the Catch the Rain program.

In 2021 we completed our second demonstration rain garden in Harmony Park. The GSI practices supported by Dockstader Foundation not only help detain stormwater but also beautify and green the Borough. Additionally, each opportunity we provide to borough staff to work side by side with qualified engineers improves their understanding of how these practices serve the community and builds their confidence in constructing additional rain gardens. All work conducted by the Rutgers team was closely coordinated with the Borough of West Grove and the White Clay Watershed Association. The Harmony Park project was completed on October 5, 2021.

The following activities were undertaken during the grant period:

1. Kick off meeting on site with the Rutgers team, West Grove Borough Public Works Department and Manager, and White Clay Watershed Association. (September 2021)
2. Construction of the Harmony Park Rain Garden (September 27- October 2, 2021)
3. Volunteer Planting (October 5, 2021)

This report summarizes the steps taken to implement the Harmony Park Rain Garden, including lessons learned and predictions of the future impact of the project.

1. Pre-construction site meeting and design changes (As built designs- Attachment A)

During the preconstruction site meeting the team took a closer look at the location and made some changes to the initial design. Due to the large area of impervious surface draining to the garden and the slope of the property, it was determined that three inlets would be needed to direct the flow to the rain garden and lessen the potential for gully formation. The inlets are meant to direct storm water to the garden and slow down the velocity with large river rock and 'speedbumps'. Furthermore, it was decided on site to include an emergency drain should the garden need to be drained during a major storm event. The overflow was installed, but not connected and will not be connected to the storm sewer unless it is determined to be necessary. This was included in the construction so that the garden would not need to be dug up should it be necessary connect.

2. Rain Garden Construction (Photos – Attachment B)

The implemented rain garden is approximately 1030 square feet. The garden is fully vegetated with native plants to enhance wildlife habitat and provide a natural aesthetic. The drainage area from the adjacent parking lot is approximately 8,000 square feet, and three inlets needed to be designed to allow water from the parking lot to reach the garden, while also preventing erosion by slowing down the velocity with large river rock and 'speed-bumps'. During a typical rain year, the annual runoff volume managed is estimated at 173,091 gallons. This project will assist the municipality with reaching its overall stormwater permit requirements which require a reduction in sediment, as well as helping the borough meet its required minimum control measures for public education and outreach through signage and social media postings, public involvement and participation through participation in the Catch the Rain program, and pollution prevention/good housekeeping by managing runoff from municipal-owned land.

3. Public Outreach

This rain garden will serve as a second model to borough residents, public works and municipal staff, and park patrons. Harmony Park is an additional location for future Catch the Rain workshops which will now have two demonstration rain gardens located in popular spots with in the borough.

The rain garden will demonstrate how to capture and infiltrate stormwater runoff at its source. The construction of this garden in partnership with Rutgers engineering staff and the West Grove Public Works Department will provide an additional training opportunity for the borough staff. Finally, the presence of another successful demonstration rain gardens in a heavily used public space will familiarize residents and visitors with these types of

practices which if implemented on a larger scale, including private property, will have a cumulative positive impact on the environment.

Interpretive Signage will be developed for the site to promote green infrastructure and the Catch the Rain Program and installed in late 2022. Temporary signage may be installed until the larger interpretive sign can be developed. The time lag is so we can include photos of the garden from start to establishment as we did at the Avon Grove Library demonstration garden so patrons can see the time it takes to establish a fully functioning rain garden with native plants. Handouts were created for the borough to give to residents interested in the specific plants used on site.

Beneficiaries: White Clay Creek watershed, West Grove Borough, Patrons of Harmony Park.

Financials: (See Budget -Attachment C and Invoices - Attachment D)

The E. K. Dockstader Foundation's \$7500 grant award funded the contractual work provided by the Rutgers Water Resources Team. In addition to the grant funding we received from the Dockstader Foundation, the White Clay Watershed Association covered the cost of plant and volunteer supplies, staff time, and will cover the future costs of an interpretive sign for the garden. West Grove Borough paid for all other construction materials (rock, soil, hauling fees, mulch, piping) and provided an in kind match of \$3500 of public works staff time for construction assistance and usage of machinery.

Attachments:

Attachment A: Harmony Park Rain Garden As-Built Designs

Attachment B: Photos

Attachment C: Budget

Attachment D: Invoices

Attachment A: Harmony Park Rain Garden As-Built Designs

Due to the size of these documents I am attaching live link to all the plans on our website:

<http://whiteclay.org/harmony-park-rain-garden>

Attachment B: West Grove /Harmony Park Rain Garden Photos



Harmony Park Before Construction
(September 2021)



Construction Days 1&2 – inlets to garden
built



Construction Days 3&4 (base dug out and
leveled)



Construction Day 5&6 – Emergency drain,
bioretention mix, rock for inlets, and mulch
added.



1” rain event prior to planting (water had to
be pumped out so the planting could occur)



Rain garden planting day, October 5, 2021



Planting Team, October 5, 2021



Test 1: 2"+ rain event 10/26/2021 – 5 hours after storm event ended



Test 1: 2"+ rain event 10/27/2021 – 24 hours after storm event ended



Test 1: 2"+ rain event 10/28/2021 – 48 hours after storm event ended – fully drained.

Attachment C: Budget

White Clay Watershed Association

Community Green Infrastructure Project, West Grove Borough, White Clay Creek Watershed

Budget Detail	Total Estimated Costs	EKD Grant Request	Inkind Match	Cash Match	Funder	Actual Costs	Notes
Rutgers Cooperative Extension (RCE) Water Resources Program (engineering and construction oversight, planting support)	\$ 12,500	\$ 7,500	\$ 5,000		Rutgers	\$ 7,500	
White Clay Watershed Association- Project Coordination	\$ 1,350	\$ -	\$ 1,350		WCWA	\$ 1,350	
Staff time West Grove Borough	\$ 600	\$ -	\$ 600		BC, WGB	\$ 600	
Design and Fabrication of Interpretive Signage for Rain Garden (18 x 24)	\$ 1,000	\$ -	\$ -	\$ 1,000	WCWS	TBD	* has not been spent yet
Construction labor, equipment and supply costs(soil ammendents, rocks, mulch, piping). 10 days PWD labor @ \$450 per day, plus supplies estimated at \$3000	\$ 7,500	\$ -	\$ 4,500	\$ 3,000	WGB	\$ 7,500	*west grove paid directly for supplies
Plant Material (16 flats at \$100 plus \$400 delivery)	\$ 2,000			\$ 2,000	WCWS	\$ 1,446	*funds reserved for spring 2022 if we need replacement plants
Volunteer Planting Support (10 volunteers, 4 hours each, est \$28/hr) and supplies			\$ 1,120		Volunteers	\$ 834	*only 6 volunteers
Subtotals	\$ 24,950	\$ 7,500	\$ 12,570	\$ 6,000		\$ 19,230	

Attachment D: Invoices



Christopher C. Obropta, Ph.D., P.E.
Extension Specialist, Water Resources

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Rutgers New Jersey Agricultural Experiment
Station Cooperative Extension
Rutgers, The State University of New Jersey
14 College Farm Road
New Brunswick • New Jersey 08901

908-229-0210

INVOICE #0001

September 30, 2021

TO: Shane Morgan
Watershed Coordinator
White Clay Wild & Scenic River Program
mpc@whiteclay.org

Project: Green Infrastructure Installation in West Grove

Invoice Total: \$7500

Description: Provide construction oversight and assistance to install a rain garden at Harmony Park in West Grove, PA.

Please make the check payable to 'Rutgers University.' The check should be mailed to:

Dr. Christopher C. Obropta
Rutgers University
Department of Environmental Sciences
14 College Farm Road
New Brunswick, NJ 08901-8551

Thank you.



CONFIRMATION

Order	WEB-1589
Previous Ord/Quote	
Customer PO	Harmony Park Rain Gar

388 North Creek Road | Landenberg, PA 19350
 610.255.0100 | orders@northcreeknurseries.com
www.northcreeknurseries.com

Great Plants Start Here!

Order pick up: 124 Wedgewood Road | Oxford, PA 19363

Sold To:

The Giving Garden
 Shane Morgan
 182 Sawmill Road
 Landenberg PA 19350
 484-716-6836
thegivinggarden@mac.com

Ship To:

The Giving Garden
 182 Sawmill Road
 Landenberg PA 19350
 484-716-6836
thegivinggarden@mac.com

SHIP WEEK	SHIP VIA	TERMS		SALESPERSON			NOTES		
10/04/2021	CPU	Credit Card		Van Ness, Addison					
Description	Size	Flat Price	Flat Qty Confirm	Plug Qty Confirm	Price (Eaches)	Disc %	Your Price	Royalty Per Plug	Extension Price
Andropogon virginicus	LP50	\$62.50	2	100	\$1.2500	0.00	\$1.2500	0.00	\$125.00
Aster n-a 'Vibrant Dome' PP19538	50	\$48.72	1	50	\$0.9744	0.00	\$0.9744	0.25	\$61.22
Customer Addition - 09/28/2021									
Carex amphibola	LP32	\$56.20	1	32	\$1.7563	0.00	\$1.7563	0.00	\$56.20
Customer Change - 09/28/2021 reduced from 2 to 1									
Coreopsis verticillata	LP50	\$62.50	2	100	\$1.2500	0.00	\$1.2500	0.00	\$125.00
Deschampsia cespitosa	LP50	\$68.75	0	0	\$1.3750	0.00	\$1.3750	0.00	\$0.00
Customer Change - 09/28/2021 reduced from 2 to 0									
Eupatorium coelestinum	LP50	\$62.50	2	100	\$1.2500	0.00	\$1.2500	0.00	\$125.00
Iris versicolor	LP50	\$77.00	1	50	\$1.5400	0.00	\$1.5400	0.00	\$77.00
Customer Change - 09/28/2021 reduced from 2 to 1									
Lobelia cardinalis	LP50	\$71.50	1	50	\$1.4300	0.00	\$1.4300	0.00	\$71.50
Customer Addition - 09/28/2021									
Packera aurea	50	\$55.11	2	100	\$1.1022	0.00	\$1.1022	0.00	\$110.22
Penstemon digitalis	LP50	\$62.50	2	100	\$1.2500	0.00	\$1.2500	0.00	\$125.00
Pycnanthemum muticum	LP50	\$62.50	2	100	\$1.2500	0.00	\$1.2500	0.00	\$125.00
Solidago graminifolia	LP50	\$62.50	2	100	\$1.2500	0.00	\$1.2500	0.00	\$125.00
Sporobolus heterolepis	LP50	\$88.00	2	100	\$1.7600	0.00	\$1.7600	0.00	\$176.00
Vernonia noveboracensis	LP50	\$62.50	1	50	\$1.2500	0.00	\$1.2500	0.00	\$62.50

Flat total: 21 **Royalty Subtotal: \$12.50**

Message:

Taxable Subtotal: \$1,352.14

Tax: \$81.13

PrePayment: \$0.00

Total Amount Due: \$1,445.77

Thank you for your order!



Details for Order #114-4942504-0108268

[Print this page for your records.](#)

Order Placed: September 29, 2021
Amazon.com order number: 114-4942504-0108268
Order Total: \$0.00

Not Yet Shipped

Items Ordered	Price
2 of: <i>Nature Valley Granola Bars Variety Pack, 12 Bars, 8.94 oz</i> <small>Sold by: Amazon.com Services LLC</small>	\$3.99
<small>Condition: New</small>	
1 of: <i>12 Pack - Showa Atlas 370BLK Nitrile Tough Gloves - Medium</i> <small>Sold by: Autobodynow (seller profile)</small>	\$33.50
<small>Condition: New</small>	
5 of: <i>Nisaku NJP650 Hori-Hori Weeding & Digging Knife, Authentic Tomita (Est. 1960) Japanese Stainless Steel, 7.25" Blade, Wood Handle</i> <small>Sold by: Amazon.com Services LLC</small>	\$22.37
<small>Condition: New</small>	

Shipping Address:
Shane A. Morgan
182 SAWMILL RD
LANDENBERG, PA 19350-9302
United States

Shipping Speed:
FREE Prime Delivery

Payment information

Payment Method:
Debit Card | Last digits: 7386
Gift Card

Billing address
Shane A. Morgan
182 SAWMILL RD
LANDENBERG, PA 19350-9302
United States

Item(s) Subtotal:	\$153.33
Shipping & Handling:	\$0.00

Total before tax:	\$153.33
Estimated tax to be collected:	\$8.71
Gift Card Amount:	-\$162.04

Grand Total:	\$0.00

To view the status of your order, return to [Order Summary](#).

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