



DATE: August 23, 2023
TO: Chris Mattingly, Director of Utilities
THROUGH: Michele Loudenback, Environmental and Sustainability Programs Manager *ML 8/23/23*
FROM: Michelle Chao, Stormwater Program Specialist *MC 8/23/23*
SUBJECT: Approval of Blue Neighborhoods Pilot Project within the Lake Thunderbird Watershed

office memorandum

BACKGROUND:

The City of Norman's (City's) Stormwater Management Program (SWMP) outlines the activities that the City will implement to reduce pollution in stormwater runoff. Two of the ways that the City does this is through public education and promoting Low Impact Development (LID) practices such as rain water harvesting and rain gardens. Public education and outreach is a key component to compliance with the Lake Thunderbird TMDL.

On April 10, 2023, during a meeting with Freese and Nichols, Inc., recipient of Contract K-2021-39 which services included recommending location and type of potential structural water quality control measures, a draft memo was presented which outlined various BMPs and green infrastructure practices which could be utilized to address the Lake Thunderbird TMDL. Cisterns/rain barrels and rain gardens were included as practices which could be used to store and infiltrate or divert stormwater. While not included in the draft report, staff discussed the potential of encouraging residents to use compost as a soil amendment in lieu of chemical fertilizers. These practices are all implementable at the residential level.

The draft memo also identified 3 stations as receiving the highest level of pollutants. The southern-most station, Upper Dave Blue Creek (UDB-1), had high results for total suspended solids (TSS) and consists of new development in the upper watershed transitioning to mostly agricultural and undeveloped land closer to the monitoring station. The northwestern-most station, the Little River (TG-1), had high results for phosphorus and flow but has a very limited drainage area within city limits and consists mostly of stormwater flow received from Moore. The northeastern-most station, Woodcrest Creek (WC-1), which had high results for nitrogen and phosphorus, includes much of Griffin Park and Sutton Wilderness Park in the upper watershed and primarily established neighborhoods, with the exception of Montoro Ridge which is still under construction, in the 1 square mile immediately upstream of the monitoring station. Since fertilizers are typically not applied in Griffin Park or Sutton Wilderness Park, which comprises approximately 19% of the watershed, it was determined that the primary source of nutrients to this station is the residential neighborhoods. The 1 square mile between E. Tecumseh and E. Rock Creek Roads, and between N. Porter and 12th Ave NE, comprises approximately 31% of the total sub-watershed for Woodcrest. This area contains 1,356 parcels that are zoned residential or contain a residential structure with an average parcel size of 0.28 acres. This section of the watershed was selected for this pilot project due to the proximity of established neighborhoods to the monitoring station and the variety of BMPs which could be implemented at the residential level.

DISCUSSION:

The proposed pilot project, Blue Neighborhoods, incentivizes Norman residents to utilize the following practices:

1. Encouraging water conservation and improving water quality through the use of cisterns or rain barrels.
2. Improving water retention and stormwater infiltration by replacing chemical fertilizers with compost. Reducing over-application of fertilizers by conducting soil tests.
3. Improving water quality and providing pollinator habitat by planting rain gardens and pollinator pockets.

Water Conservation

Rain water harvesting can improve stormwater quality, reduce downstream flooding, and reduce negative impacts to existing water infrastructure. Rain water that is harvested, or collected in a cistern, is temporarily diverted and stored for later use. It no longer collects pollutants as it flows downstream which negatively impacts Lake Thunderbird and our water treatment plant. In addition, it is not contributing to inflow and infiltration which can contribute to sanitary sewer overflows and bypasses. Since this water is being collected on site it also reduces the total amount of water being discharged from an area during a rain event which reduces downstream flooding.

Based on survey results, 67% of respondents were interested in a rain barrel, 45% were willing to invest up to \$50 and 23% were willing to invest up to \$100. Rain barrels and pedestals can be purchased from Upcycle Products for \$70 and \$35, respectively, and installation can be completed for approximately \$250 per downspout. This results in a total cost of \$355 per rain barrel; citizens will be required to invest \$100 while the remaining \$255 will be funded by the City. An initial investment of \$10,000 will fund the installation of 39 rain barrels.

Improving Soil Health

Compost has a high water retention rate, improves soil structure and health, which can result in greater infiltration rates, and provides a nutrient source which is more readily absorbed by plants than chemical fertilizers. These benefits are primarily due to the high organic matter content of compost. According to the United States Department of Agriculture, every 1% increase in organic matter results in as much as 25,000 gallons of available soil water per acre. Residents that prefer to use traditional fertilizers will also be encouraged to conduct soil tests to determine the appropriate application rate of fertilizer.

Based on survey results, 67% of respondents were interested in compost top-dressing while 38% currently use synthetic fertilizers. The majority of respondents, 40%, had lawns that were less than 2,500 square feet and 38% had lawns that were 2,501-5,000 square feet. Most respondents were willing to pay up to \$50, 33%, and up to \$100, 25%. The cost of compost and installation is approximately \$0.10/square foot. Assuming an average lawn size of 4,000 square feet, the total cost is \$400 per home. The City will fund 50% of the total cost up to \$300. For a 4,000 square foot lawn, the citizen will be required to invest \$200 while the remaining \$200 will be funded by the City. An initial investment of \$10,000 will fund compost top-dressing for approximately 50 homes with 4,000 square foot lawns.

Providing Habitat

Rain gardens are a shallow depression that allows stormwater to pool and infiltrate into the soil instead of flowing downstream. Similar to cisterns/rain barrels, rain gardens can help reduce the total amount of water discharged from an area during a rain even, reduce downstream flooding, and reduce the amount of pollutants flowing into Lake Thunderbird.

Infiltration rates can be improved by utilizing native vegetation which tends to have a deeper root system which increases infiltration rates. Due to this benefit of native vegetation, residents will also be eligible for incentives to install pollinator gardens.

Based on survey results, 53% of respondents were interested in a rain garden while 77% were interested in a pollinator garden. The majority of respondents, 56% for rain gardens and 54% for pollinator gardens, were interested in a garden space 0-50 square feet. The majority of respondents were willing to invest \$50-100, 41% for rain gardens and 50% for pollinator gardens. The cost of installation for a rain garden and pollinator garden are approximately \$10/square foot and \$7/square foot, respectively. The City will fund 50% of the installation cost of a rain garden and 60% of the cost of a pollinator garden up to \$300. For a 25 square foot rain garden, the total cost will be \$250; the citizen will be required to invest \$100 with the remaining \$150 funded by the City. An initial investment of \$10,000 will fund the installation of approximately 66 rain gardens that are 25 square feet.

RECOMMENDATION NO. 1:

Staff recommends approval of an initial \$30,000 investment in the pilot project Blue Neighborhoods. The initial investment will fund approximately 39 rain barrel installations, compost top-dressing at 50 homes, and 66 rain garden installations. Funds are available in the Stormwater Quality budget 10110225-44199 Other Business Services.

Approved by:  Not Approved: _____



neighborhoods

Program

2023

PILOT PROJECT

What is a **blue** neighborhood?

A 'blue' neighborhood embraces practices that conserve water, protect water quality, improve soil health, and provide vital habitat for pollinators and other wildlife. The city of Norman's Blue Neighborhoods Program is a new neighborhood initiative to improve water quality in the Lake Thunderbird watershed by providing incentives to encourage water conservation, improve soil health, and provide wildlife habitat.

Who is eligible?

The 2023 Blue Neighborhoods Pilot Project is only available to city residents that live in a 1 square mile area between E. Tecumseh Road and E. Rock creek Road and between N. Porter Ave. and 12th Ave NE. This 1 square mile makes up 31% of the watershed for Woodcrest creek. You must be the homeowner and the qualifying address must be your place of residence.



Find out more at bit.ly/BlueNeighborhoods

Why woodcrest creek?

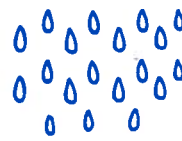
Woodcrest creek is a sub-watershed of Lake Thunderbird. That means all the water that drains into Woodcrest creek eventually flows into Lake Thunderbird which provides drinking water for city of Norman residents. In 2013, the Department of Environmental Quality published a total maximum load (TMDL) report for Lake Thunderbird. The TMDL report stated that Lake Thunderbird was receiving too much sediment and nutrients, like nitrogen and phosphorus.

As a result of the TMDL report, the city of Norman contracted with the Oklahoma Water Resources Board in 2016 to conduct monitoring at various waterbodies throughout the Lake Thunderbird watershed. One of these stations is Woodcrest creek. This monitoring station yielded the highest results for nitrogen and phosphorus throughout the entire watershed.

Which activities are eligible?

The 2023 pilot project focuses on 3 main categories as described below:

1. Conserve water
2. Improve soil health
3. Provide wildlife habitat



1 conserve
water

Rain barrels can be used to collect rainwater that can later be used for irrigation purposes throughout the summer. This reduces water usage, saves you money on water bills, and helps reduce wear and tear at the water treatment plant.



2 improve soil
health

Top-dressing your lawn with compost, in lieu of traditional fertilizers, is a great way to incorporate "blue" practices into your lawn care regime. According to the Environmental Protection Agency, compost improves the health of your soil, retains moisture and nutrients, and reduces the need for pesticides and fertilizers.



3 provide wildlife
habitat

Rain gardens and pollinator pockets provide important habitat for pollinators and other wildlife. Rain gardens have the added benefit of helping to improve water quality by providing a shallow depression where stormwater can infiltrate into the soil instead of flowing downstream. This reduces the amount of pollutants going into Lake Thunderbird and reduces downstream flooding.



conserve
water

Use rain barrels and cisterns to harvest rainwater

A 55-gallon rain barrel or 275-gallon IBC tote can be used to harvest rainwater which can be used later to irrigate your garden or lawn. This reduces water usage, saves you money on water bills, and helps reduce wear and tear at the water treatment plant.

All applicants must have gutters and downspouts already installed on their home. In addition, they must be able to complete routine maintenance activities such as:

- emptying the device after each rain,
- ensuring it is empty before freezing temperatures, and
- cleaning/rinsing the interior to prevent build-up.

Applicants must also:

- pay a \$100 fee per barrel or \$175 fee per IBC tote,
- already have gutters and a downspout installed, and
- have at least 80-400 square feet draining to the downspout.

Installation will include:

- 55-gallon rain barrel (including pedestal) or 275-gallon IBC tote from Upcycle Products,
- stabilized base for the barrel and pedestal, and
- connection to downspout.

Limit one device per household

rain barrel vs iBC tote

55-gallon rain barrel

- Made from Pre-used barrels of BPA-free HDPE plastic which can be left outdoors.
- Heavy duty screening keeps even the smallest mosquitoes out.
- uniquely designed with plastic fittings that match the rate of expansion and contraction of barrel plastic to avoid leakage
- May be slight scratching or scuffs due to previous overseas transportation.
- Because these barrels were originally used to transport food, there may be residual food product odor that will dissipate with use.
- \$100 installation fee



275-gallon IBC Tote

- IBC stands for Intermediate Bulk container.
- These totes can be hooked up to a downspout by removing top lid, but does not come with a filter.
- Since these totes are translucent, more maintenance will be needed to prevent algae buildup.
- \$175 installation fee



Rain barrels and totes by:
Upcycle Products, Inc.
(815) 735-9583
upcycle-products.com/

Installation completed by:
Mr. Gutter
(405) 266-5261
mrgutterok.com/

Questions?

(405) 366-5435

bit.ly/BlueNeighborhoods



improve

soil health

Replace chemical fertilizers with compost

Top-dressing your lawn with compost, in lieu of traditional fertilizers, is a great way to incorporate "blue" practices into your lawn care regime. According to the Environmental Protection Agency, compost improves the health of your soil, retains moisture and nutrients, and reduces the need for pesticides and fertilizers.

compost top-dressing costs approximately \$.10/square foot of turf grass and the city of Norman will cover 50% of the cost up to \$300. compost will be spread on your lawn to a depth of 1/4 inch.

Applicants must:

- pay a portion of the installation and materials fee (see back for more information), and
- refrain from using additional fertilizers (synthetic or otherwise) for the duration of the growing season.

Installation will include:

- compost (provided by Fertile Ground), and
- application to a depth 1/4 inch.

Let's do the math*

For **3,000** square feet of turf:

$$\$0.10 \times 3,000 = \$300 \text{ (total cost)}$$

$$\$300 \times 50\% = \$150 \text{ (city of Norman)}$$

Remaining **\$150** is your total cost

For **10,000** square feet of turf:

$$\$0.10 \times 10,000 = \$1,000 \text{ (total cost)}$$

$$\$1,000 \times 50\% = \$500$$

$$- \underline{\$300} \text{ (city of Norman)}$$

$$\$200 \text{ (in excess of subsidy)}$$

$$\$500 + \$200 = \mathbf{\$700} \text{ is your total cost}$$

Work and compost will be provided by:

Fertile Ground

(405) 633-0264

fertilegroundok.coop/

If you already have a lawn care regime that you like, **free** soil tests will also be provided. Soil tests can help you determine exactly how much fertilizer you need for your lawn so you don't spend extra time and money applying fertilizer you don't need!

*these numbers are only estimates and may change depending on your specific home

Questions?



(405) 366-5435



bit.ly/BlueNeighborhoods



provide
habitat

Plant a pollinator pocket

Pollinator pockets provide important habitat for pollinators and other wildlife. Rain gardens have the added benefit of helping to improve water quality by providing a shallow depression where stormwater can infiltrate into the soil instead of flowing downstream. This reduces the amount of pollutants going into Lake Thunderbird and reduces downstream flooding. The city of Norman will pay a portion of the installation costs up to \$300.

Applicants must:

- pay a portion of the installation and materials fee (see back for more information), and
- refrain from cutting back vegetation until late winter or early spring (March-April).

Installation will include:

- edging and mulch,
- a variety of native plants including, but not limited to: switch grass, little bluestem, aster, goldenrods, black-eyed susan, bluestar, winecups, coneflowers, and milkweed, and
- for rain gardens, excavating and berming of soil with stabilized overflow

Let's do the math*

For a **25** square foot rain garden:

$$\$10 \times 25 = \$250 \text{ (total cost)}$$

$$\$250 \times 60\% = \$150 \text{ (city of Norman)}$$

Remaining **\$100** is your total cost

For a **25** square foot pollinator pocket:

$$\$7 \times 25 = \$175 \text{ (total cost)}$$

$$\$175 \times 50\% = \$87.50 \text{ (city of Norman)}$$

Remaining **\$87.50** is your total cost

Installation completed by:

Eco Landscaping

(405) 802-5922

ecogardenok.com/ecolandscaping/

Gardens will also receive a variety of native plants including: switch grass, little bluestem, aster, goldenrods, black-eyed susan, bluestar, winecups, coneflowers, and milkweed.

*these numbers are only estimates and may change depending on your specific home

Questions?

(405) 366-5435

bit.ly/BlueNeighborhoods

participation application

name: _____

Home address: _____

Phone : _____ Email : _____

1. Is this home your primary residence? Yes No

2. Which activities are you interested in?

If you are interested in more than one activity, please rank them in order of preference (1 most preferred and 3 least preferred).

conserve water Yes, rank _____ No

If yes, pick one:

55-gallon rain barrel 275-gallon IBC tote

Improve soil health Yes, rank _____ No

If yes, pick one:

free soil test compost top-dressing

Provide habitat Yes, rank _____ No

If yes, pick one:

rain garden pollinator pocket

what's next?

city staff will contact you for a site visit to discuss which practices you are interested in and determine eligibility.

applications are due by October 15

