

**Compost and Community: Developing a Composting Cooperative at the  
Bragg Hill Community Garden**

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Composting is the controlled process in which organic waste decomposes to become an organic soil amendment.<sup>1</sup> Along with benefiting garden growth, composting also helps the environment, climate, and community. Although extremely valuable to the environment, it requires space, specific materials, and knowledge to accomplish. Consequently, numerous Virginia cities are working to make composting more accessible by developing programs to encourage composting on a larger scale. For example, Fairfax developed a food scraps drop-off program at farmer's markets so all residents can conveniently dispose of waste.<sup>2</sup> Arlington residents have a similar option by dropping off food scraps as well as opting in for curbside pickup of their organic waste.<sup>3</sup> Richmond is implementing a program for its residents to do the same.<sup>4</sup> Another excellent system is the D.C. community compost network, which gives D.C. community gardens city support to create and upkeep compost sites.<sup>5</sup> These systems are models for community composting sites and show the potential of composting in Fredericksburg.

Based on research from the Institute of Local Self-Reliance (ILSR), interviews, and site visits with five community gardens in D.C., this report advocates for a community compost program at the Bragg Hill Community Garden. The Bragg Hill Community Garden was established in June 2022 to provide city residents with space to garden and enjoy the outdoors. This important community space could serve as an additional function by helping to reduce food waste, capture carbon, and “close the loop” by helping to create more fertile soil to grow more local food.

## Composting and Its Benefits

Compost is made through a controlled natural breakdown of raw organic waste such as food scraps, lawn clippings, leaves, and other similar items.<sup>6</sup> Once created, compost is a valuable material that helps improve the soil, promotes plant growth while suppressing plant diseases, increases soil's water retention, improves water quality, and filters out pollutants.<sup>7</sup>

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<sup>1</sup> United States Environmental Protections Agency. “Composting at Home.” EPA, November 22, 2022. <https://www.epa.gov/recycle/composting-home#whatcom>.

<sup>2</sup> Public Works and Environmental Services “Food Scraps Composting Drop Off.” Fairfax County Virginia. <https://www.fairfaxcounty.gov/publicworks/recycling-trash/food-scraps-composting-drop>.

<sup>3</sup> “Composting.” – Official Website of Arlington County Virginia Government. <https://www.arlingtonva.us/Government/Programs/Recycling-and-Trash/Residential/Organics-Waste/Composting>.

<sup>4</sup> “City of Richmond Pilots Community Composting Program: Richmond.” City of Richmond Pilots Community Composting Program. <https://www.rva.gov/parks-recreation-press-releases-and-announcements/news/city-richmond-pilots-community-composting>

<sup>5</sup> Department of Parks and Recreation, Community Compost Cooperative Network. <https://dpr.dc.gov/page/community-compost-cooperative-network>.

<sup>6</sup> Bilsens Brolis, Linda and Platt, Brenda, *Community Composting Done Right: A Guide to Best Management Practices*, Institute for Local Self-Reliance, 2019 [www.ilsr.org/composting-bmp-guide](http://www.ilsr.org/composting-bmp-guide).

<sup>7</sup> Bilsens Brolis, Linda, Platt, Brenda, *Community Composting Done Right A Guide to Best Management Practices* & Ayilara, Modupe Stella, Oluwaseyi Samuel Olanrewaju, Olubukola Oluranti Babalola, and Olu Odeyemi. “Waste Management through Composting: Challenges and Potentials.” MDPI, May 30, 2020. <https://www.mdpi.com/2071-1050/12/11/4456>. & Public Works and Environmental Services. “Food Scraps Composting Drop Off.”

Not only does it improve the soil and filter out harmful pollutants, composting is also an excellent method of waste management. In addition to its environmental and community benefits, it extends the life of landfills by decreasing the amount of waste deposited there. It, therefore, helps with future costs by delaying the need to build a new waste disposal facility.<sup>8</sup> The current Fredericksburg landfill has eight cells, four of which have reached full capacity and closed; the other four have used 60% to 91% of the available space.<sup>9</sup> While there may be other solutions to disposing of the waste, promoting cleaner waste disposal methods, such as community composting, would be in line with the city's Environmental Sustainability Program, which is the city's commitment to preventing pollution, educating the public, and otherwise protecting the environment.<sup>10</sup>

Compost can also play a role in mitigating climate change. Compost assists in storing carbon. An acre of soil amended with between 1 to 2 inches of compost can hold around 75% of a car's annual carbon emissions.<sup>11</sup> Compost releases 20 times less carbon dioxide than landfills produce, and, while composting releases some methane, it is significantly less than allowing waste to break down inside landfills.<sup>12</sup> Using compost also reduces reliance on water-polluting synthetic fertilizers, which account for 80% of human-related nitrous oxide emissions.<sup>13</sup>

Finally, compost has a variety of community benefits. In a closed-loop system, such as the one that will be incorporated at the Bragg Hill Garden, resources are reused within the community, city residents are educated on the process and its benefits, and creating the compost promotes community engagement and bonds.<sup>14</sup> A community composting location is especially important, considering that while the city promotes backyard composting, many residents do not have usable backyards.

### **Community Composting: Making Composting More Accessible**

Fredericksburg is taking strides to educate the city on composting, such as with the recent Compost-a-thon and the educational materials provided by the Fredericksburg R-board.<sup>15</sup> These efforts are beneficial to begin the conversation on the necessity and benefits of compost. So far, however, much of this outreach and education has focused on backyard composting, which is not a viable option for many Fredericksburg residents.

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<sup>8</sup> Platt, Brenda. *Growing Local Fertility: A Guide to Community Composting*. Institute for Local Self-Reliance, February 24, 2021. <https://ilsr.org/size-matters-report-shows-small-scale-community-based-composting/>.

<sup>9</sup> "Rappahannock Regional Solid Waste Management Board R-Board Meeting," r-board, May 18, 2023, <https://r-board.org/wp-content/uploads/2023/05/May-18-2023-R-Board-Meeting.pdf>.

<sup>10</sup> "Chronology of Events In Stafford." Stop the Stafford Incinerator. <https://stopthestaffordincinerator.com/chronology-of-events/>. & "Environmental Sustainability Program." City of Fredericksburg. <https://www.fredericksburgva.gov/1820/Environmental-Sustainability-Program>.

<sup>11</sup> Libertelli, Clarissa and Brenda, Platt. "Infographic: How Composting Combats the Climate Crisis." Institute for Local Self-Reliance, May 4, 2022. <https://ilsr.org/compost-climate/>.

<sup>12</sup> Graham, Max. "A Simple Way to Prevent Heaps of Methane Pollution: Composting." Grist, May 15, 2023. <https://grist.org/food/food-waste-prevent-methane-pollution-compost/>.

<sup>13</sup> Ayilara, Modupe Stella, Oluwaseyi Samuel Olanrewaju, Olubukola Oluranti Babalola, and Olu Odeyemi. "Waste Management through Composting: Challenges and Potentials." & Libertelli, Clarissa and Platt, Brenda. "Infographic: How Composting Combats the Climate Crisis."

<sup>14</sup> Platt, Brenda. *Growing Local Fertility: A Guide to Community Composting*. & Libertelli, Clarissa and Platt, Brenda "Infographic: How Composting Combats the Climate Crisis." & Bilsens Brolis, Linda, Platt, Brenda, *Community Composting Done Right: A Guide to Best Management Practices*

<sup>15</sup> R-Board. "Composting." R-Board, 2023. <https://r-board.org/compost/>.

Based on the Fredericksburg City Census, only 39.2% of Fredericksburg residents owned their own home in 2017-2021.<sup>16</sup> Many of these residents live in apartment buildings with no access to yards. This hinders the ability of many people to compost on their own, as composting inside a home is not as successful due to space. Organizations such as the US Environmental Protection Agency and the Institute of Local Self-Reliance recommend finding local composting initiatives if yard space is an issue.<sup>17</sup> In addition to requiring space, composting is a time-consuming process that requires specific techniques and knowledge to be successful. These demands include: adding materials and water in the right proportions, checking its temperature, and turning it. These parts all require time and resources that are not always practical. To address these issues, communities across the country have developed composting cooperatives.

Community-scale composting is a process where participants both contribute to supplying waste and creating and maintaining the compost.<sup>18</sup> Community compost volunteers often include garden members, area residents who want compost, and people interested in promoting sustainability in their neighborhoods. All composters are trained to understand the benefits and how to properly compost. Compost bins are often located inside or close to the community garden, providing finished compost for the gardeners. When done at a community garden, this method creates a closed-loop system (See Appendix One for a graphic depicting the closed-loop system), where area residents bring in waste that will eventually produce compost that will grow nutritious food for the same residents.<sup>19</sup>

Community composting at the Bragg Hill Garden will bring together many families and residents, as the mentioned restraints for backyard composting are prevalent in this community. Creating a system to serve one community takes the weight off people interested in composting but do not have the resources to begin. The remainder of this report will outline a community composting cooperative at the Bragg Hill Community Garden based on demonstrated composting best practices in a small urban city.

### **A Plan for a Composting Cooperative at the Bragg Hill Community Garden**

The Bragg Hill Community Garden currently holds twenty-six plots for the Bragg Hill area. It is conveniently located on Fall Hill Avenue near Snowden Park Playground and serves residents in the nearby area. The garden follows organic practices (no fertilizers) and currently pays a third party to deliver off-site compost despite the garden having the space, infrastructure, and volunteer power to produce its compost. The garden has a five-bin system, with additional space to store both “browns” (dried leaves, dried plant stalks, untreated wood chips, etc.) and garden trimmings (plants freshly removed from the garden).

Once established, the Bragg Hill Compost Cooperative will have twenty-five families bringing in food scraps from their homes and actively contributing to the composting process. Participants must undergo training to learn how to perform best practices to maintain the

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<sup>16</sup> U.S. Census Bureau. “QuickFacts: Fredericksburg City, Virginia.” U.S. Census Bureau.

<https://www.census.gov/quickfacts/fact/table/fredericksburgcityvirginia/HSG445221#HSG445221>

<sup>17</sup> United States Environmental Protections Agency. “Composting at Home.”

Vermicomposting is another alternative that is mentioned by the same organizations. This process consists of using worms in a bin to compost. Although smaller in scale, this method may still pose challenges to maintain due to similar issues of the time required to maintain it and being unsure where to start.

<sup>18</sup> Institute for Local Self Reliance. “What Is Community Composting?” Institute for Local Self-Reliance, March 21, 2023. <https://ilsr.org/composting/what-is-community-composting/>.

<sup>19</sup> Platt, Brenda. *Growing Local Fertility: A Guide to Community Composting*.

compost and understand basic safety precautions. The main practices include: creating a system that works for the garden community, regularly turning the compost, and ensuring no unwanted waste is added (e.g. meat and dairy products). Moreover, continually monitoring the compost is necessary to maintain the compost, which will be done by garden coordinator Dr. Eric Bonds, the UMW Community Garden Club, and Bragg Hill gardeners.

### **Education and Community Engagement**

One of the most important practices is educating and engaging with the community regarding the benefits of composting and the processes involved. To have a successful compost organization, rules must be established as it cannot be assumed that one knows all there is about composting. All compost cooperative members must meet with a compost leader, who is qualified to handle the compost and helps educate others in the garden about the composting process. A shared training document will provide all new participants with an additional overview of the composting process. Signs displayed on the bins list materials accepted for composing and serve to ensure they are placed in the correct location (see Appendix Two for examples of signage that will be posted in the garden). After the community composting cooperative is running, it can be used as a demonstration project to give Fredericksburg residents or even neighboring schools a direct and interactive education in composting.

### **Leadership and Organization**

Developing an organized cooperative includes creating strong leadership within the program. At Mary Washington, a collective of student volunteers has been working since January to create a UMW Community Garden Club to care for and enjoy the community garden. Much like the research and training done to write this report, club members will also be trained and be required to volunteer with the compost during meeting times. Dr. Eric Bonds, lead club members, and gardeners will facilitate the compost training and work with the families using the compost. This allows for a specific point of contact for any questions or concerns regarding the compost operations. Participants will be required to donate an hour of their time each month to work with volunteers to turn and sift the compost.

### **Process and Methods**

Based on the Institute for Local Self-Reliance's Community Composting 101 training course, there are key components needed when beginning composting. These include having resources such as food scraps and yard waste. Once the materials are gathered, teams can be made to sort the greens from the browns and throw away anything that is not compostable in our system. This is where the training will come in handy as well as signage.

With the bin system, the layering method worked the best. The first layer would be a base of wood chips. This allows drainage as the bins are on the ground. The next layer will be four to six inches of browns, then a layer of greens followed by browns and greens and topped off with browns to keep the greens covered. This way the greens are hidden from pests. A ratio of 3:1 should be followed for the browns and greens mix.

An essential step after adding in materials is to water the compost. A good practice to keep in mind while watering is to grab a handful and give it a good squeeze. It should not be dry or dripping wet. There should be a few drops of water coming through your knuckles. At this

point, the pile is ready, a thermometer should be put into place to monitor the temperature of the compost. An ideal reading should be between 131-170 degrees F, this will eliminate pathogens and weed seeds. To keep this optimal temperature, the compost must be turned often. It is also important to keep in mind that airflow is essential, and turning it as needed will ensure that all is well combined.

## **Troubleshooting**

There are undoubtedly challenges that will arise when developing a community composting site. One common issue is contamination, which occurs when non-compostable materials are mixed with organic waste. This can lead to various problems, including decreasing the quality of the finished compost. Contamination with non-compostable materials may also slow down the process. To prevent contamination, educating community members about proper composting practices and providing clear guidelines for what can and cannot be composted is essential. If depositing non-compostable items in the bins becomes a consistent problem, locks can be added to the lids to ensure only those who have completed training will have access.

Another challenge is ensuring that the composting is rodent-free. Although it is doubtful that rodents will be a problem in the garden, especially given the low population density in Fredericksburg compared to that of a large city like Washington DC, the compost will be turned regularly to prevent rodents from taking up residence inside the compost. Additionally, precautions can be taken, such as lining the bins with chicken wire to help prevent rodents from chewing their way through the wood.

In recently conducted interviews, a few composting leaders discussed the poor relationship between those that compost and those that use the space for their gardens. To prevent this from occurring at Bragg Hill's Composting Cooperative, leaders will create a clear line of communication between composters and gardeners to ensure that everyone's needs are met. This communication also means educating gardeners on the benefits of composting and giving them priority to the compost produced there. Already gardeners at Bragg Hill Community Garden have utilized purchased compost, showing that they understand how it can help their gardens, and the compost produced at Bragg Hill will save the community garden money as it will be free for those who wish to use it. Education and constant monitoring play an important role in preventing a lot of problems. Knowing how to identify issues before they become problems in the composting bin allows the composter to address them accordingly. As mentioned before, knowing when to turn the compost, when to water it, or simply knowing what can and cannot go in can make a big difference and save a lot of time.

## **Conclusion**

The Bragg Hill Community Garden is an exceptional place to establish a community compost cooperative in Fredericksburg, especially if following the best practices outlined in this report identified from previously published research, site visits of other community compost operations, and interviews with community composters in Washington D.C. This shared space already provides a location for Fredericksburg residents who lack space to plant a garden.<sup>20</sup> This

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<sup>20</sup> Uphaus, Adele. "New Community Garden Grows in Bragg Hill Neighborhood." Fredericksburg.com, September 21, 2022. [https://fredericksburg.com/news/local/new-community-garden-grows-in-bragg-hill-neighborhood/article\\_83ecf9b7-02c2-5b90-bfdc-25d93b4f70d3.html](https://fredericksburg.com/news/local/new-community-garden-grows-in-bragg-hill-neighborhood/article_83ecf9b7-02c2-5b90-bfdc-25d93b4f70d3.html).

closed-loop system would create a sustainable way for those who do not have a place to compost at home to get rid of waste. The compost could then be reused within the garden, providing a free and organic resource for gardeners to nurture the plants they grow.<sup>21</sup> Already surrounding areas, including Washington D.C, Arlington, and Fairfax, have proven how successful initiatives like these can be, with high public demand once they are in place. Creating a community composting site at Bragg Hill Community Garden would be a step toward making Fredericksburg a more sustainable city, serving to reduce the amount of waste going into a shrinking landfill, mitigating climate change by helping store carbon, and benefiting both gardeners and city residents.

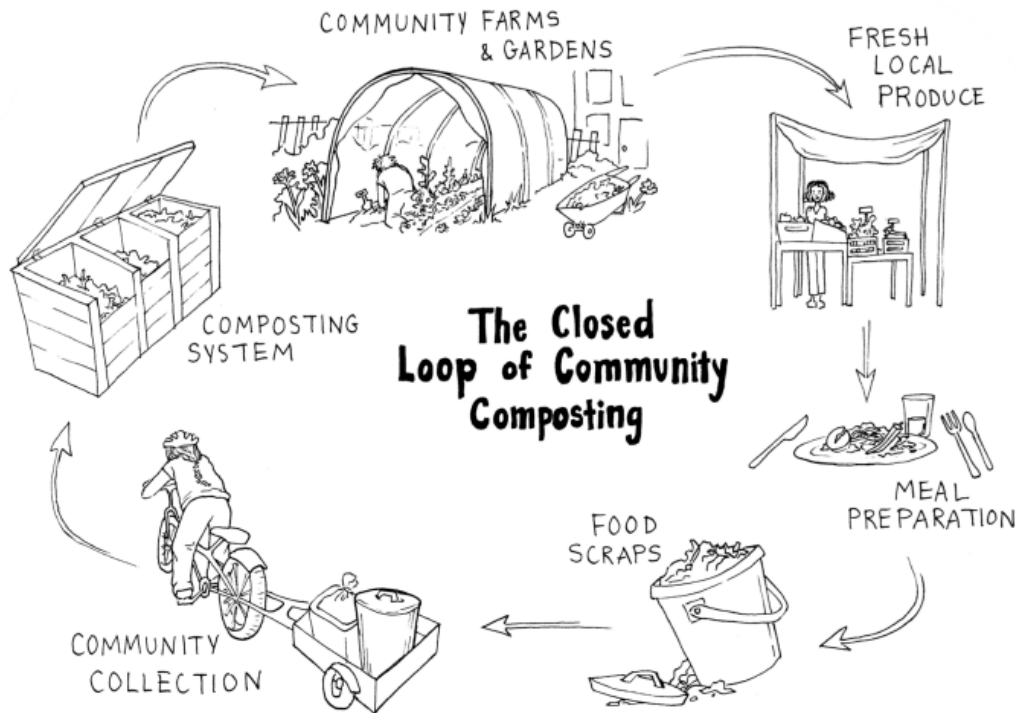
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<sup>21</sup> Bragg Hill Community Garden. "Community Guidelines." Bragg Hill Community Garden. <https://bragghillgarden.org/community-guidelines/>.



## Appendixes

1. Image provided by the Institute of Local Self-Reliance depicting a closed-loop system. This is reflective of how a composting site would function at the Bragg Hill Community Garden.



L. Bilsens Brolis, B. Platt, *Community Composting Done Right: A Guide to Best Management Practices*, Institute for Local Self-Reliance, 2019 ([www.ilsr.org/composting-bmp-guide](http://www.ilsr.org/composting-bmp-guide)). Reprinted with permission.



2. Bragg Hill Community Garden mock signage. These posters will help facilitate the composting process and educate gardeners.

