

Millcreek Township Mulch Material Evaluation

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SCS ENGINEERS

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1 BACKGROUND

Millcreek Township (Township) is a mandated recycling community under the Pennsylvania Municipal Waste Planning, Recycling and Waste Reduction Act (Act 101). The Township manages the curbside collection of recyclable materials and trash for 17,000 households. The recyclable materials are collected by a private hauler and transported to a private material processing facility in Pittsburgh.

Key to the Township's material diversion programs is the Millfair Compost and Recycling Center, an inter-municipal effort between Millcreek Township and Fairview Township. The five-acre facility is located on the border between the two townships and has been in operation for 20 years. Residents of both Townships are allowed to drop off materials at the facility for free and contractors are eligible to purchase permits to drop off materials. Each year approximately 13,000 to 25,000 visitors enter the facility to drop off materials or pick up finished products. The compost center operates seven days a week from March through mid-December and is only open Tuesdays and Thursdays for the remainder of the year. Items currently accepted at the facility:

- Brush
- Leaf Waste
- Shrubbery
- Tree Trimmings (less than 24" in diameter and less than 8' in length)
- Non-food garden residue

The Millfair Compost and Recycling Center processes delivered materials into compost, fine-screened mulch, and coarse mulch. Finished products are available to all of Erie County and are sold by the cubic yard from the facility. While compost sells out quickly when available, excess mulch accumulates each year, creating congestion and reducing capacity for new materials.

The Township, to move the mulch, does not charge for the coarse mulch product and uses the product at their parks and properties. Even with these measures in place, there remains a large surplus of mulch onsite. Landscaping companies have mentioned that their clients prefer to use colored mulch products.

The Township is requesting recycling technical assistance to assess additional alternative methods or markets to move the mulch material out of the facility and expand compost production. Moving the mulch will free up capacity for the acceptance of materials to create more compost.

2 SUMMARY OF WORK

- **Task 1 – Kick-Off Meeting and Compost Facility Observations:** The kick-off meeting and community observations occurred over a one-day period and included a meeting with Township staff to review the project scope, desired outcomes, and work products. The site visit included a tour of the compost facility to understand site layout, operational challenges, and equipment needs.
- **Task 2 – Review Operational Procedures:** The observations and discussions held as a part of Task 1 were used to understand the procedures for processing the fine screened mulch, coarse screened mulch, and unscreened mulch. SCS assessed the screening, storage, and distribution processes, and reviewed the quality of the mulch and made recommendations to move mulch products more efficiently.
- **Task 3 – Exploring Opportunities to Increase Demand:** The observations and discussions held as a part of Task 1 were used to identify regular and consistent end-users of the mulch, including contractors, businesses, and community groups, and recommend strategies to enhance engagement with these users. This report includes recommendations for streamlining operations, reducing surplus, and creating more consistent demand for the mulch, ultimately improving efficiency and reducing the current backlog and preventing the occurrence of a stockpile in future years.
- **Task 4 – Final Report:** This report represents the final task of this project and includes our findings and recommendations.

3 RESULTS

COMPOST FACILITY OBSERVATIONS

The following section outlines the observations of the compost facility mulch operations that occurred as part of the kick-off meeting and site visit for this project. The Millfair Compost and Recycling Center operates under a permit by rule first issued by Pennsylvania Department of Environmental Protection (DEP) in 2004. The facility is a joint operation between Millcreek Township and Fairview Township but operates as more of a regional facility allowing residents of neighboring communities access to deliver materials. Contractors are eligible to drop-off materials following the purchase of a permit, giving them access to use the facility. The compost and mulch products produced on site are either given away or made available for purchase by the public.

Site Layout

The five-acre facility layout and operations are divided into two parts, with one side handling compost production and the other side processing wood waste materials into mulch. The compost center is surrounded by a fence with a gated entrance for customers to access during hours of operation. Residents and contractors delivering or purchasing materials at the facility must stop at the attendant building located near the entrance. The attendant directs the customer to the proper location to pick up or deliver material.

Traffic flows on one of two main routes through the facility, an inner loop that is near the attendant building and an outer loop that surrounds the wood waste processing side of the facility. There is a large building located in the far northeast corner of the site that is used as a shop and storage location for large equipment. The facility is at capacity and does not have additional space to expand. **Figure 1** details the facility layout and traffic flows.

Figure 1. Layout and Traffic Flows of Millfair Compost and Recycling Center



Equipment

The compost center has two Bandit Beast 3680 horizontal grinders that are used to grind woody materials into mulch and to grind leaf waste into compost. The horizontal grinders are stored in the machine shop during the winter. **Figure 2** shows one of the grinders stored and undergoing annual maintenance.



Figure 2. Horizontal grinder in machine shop during winter months.

The facility uses a Vermeer Cougar 516 two-fraction trommel screen to process the woody materials following the first grind. Two products, a fine mulch and a coarse mulch, are produced by the screener. The screener seemed to be in good working condition; however, the staff noted that the machine is slow and tends to clog when it rains. **Figure 3** shows the current Vermeer Cougar 516 trommel screen stored for the winter.

The facility uses wheel loaders to move materials on site and load the grinders and trommel screens. During the winter season the grinders and trommel screen are stored in the shop building to protect them from the elements and allow for annual maintenance to occur.

Procedures

Woody materials delivered to the facility must pass the scale house where an attendant will visually estimate the volume of material being delivered and direct them where to unload. The delivered woody materials are placed into a large brush pile near the attendant hut. Brush materials remain in this pile until there is space available to grind them using a horizontal grinder. Following the first grind materials are placed into unscreened windrows, approximately 10-15' tall and 20' wide, to cure for approximately one year. **Figure 4** shows the ground woody materials that have not yet been screened. During the curing time the materials are turned occasionally using a loader to push materials to the top of the pile.



Figure 4. Brush Materials Delivered to the Facility

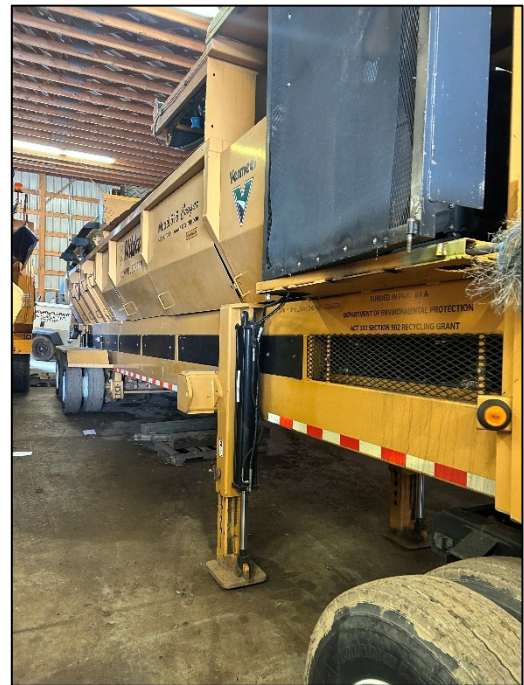


Figure 3. Vermeer Cougar 516 Trommel Screen Stored for Winter

Following the curing time, materials are screened into two fractions, a #1 fine mulch and a #2 coarse mulch, using a trommel screen. The screener is adjusted as necessary to produce a 50/50 mixture of fines to overs. The screener is placed between the two final product piles so that each fraction will be deposited near the final products pile to avoid handling the materials more than necessary. **Figure 5** shows the composition of the #1 fine mulch produced by the process. **Figure 6** illustrates the #2 coarse mulch.

The finished products remain in these piles until being purchased and hauled off-site by a customer. Residents from Erie County are allowed to come to the site to pick up bulk compost and mulch materials for a fee per cubic yard. Some mulch materials are available to Erie County residents at no charge. The Millfair Compost and Recycling Center has three dump trucks and offers the option to have the products delivered to customers for an additional fee.

Figure 5. Fine Mulch Quality and Stockpile



Figure 6. Coarse Mulch Quality and Stockpile



REVIEW OF OPERATIONAL PROCEDURES

The Millfair Compost and Recycling Center operates an efficient and organized wood waste/brush debris processing center. During the site visit, SCS did not notice contamination within the final mulch products, and the site was kept very clean and organized. The mulch is handled minimally during the production process, increasing the overall efficiency.

There are a few procedural steps that could improve efficiency and quality of the final product described below.

Grinder Screen: The #1 fine mulch material is more appealing to customers than the coarse mulch. The unscreened mulch piles contained many large pieces that would take a long time to break down. Exploring smaller grinder screen options to reduce the average size of material following the second grind may help produce a higher quality #1 fine mulch.

Curing Time: During the site visit, it was stated that materials remain in unscreened windrow piles to cure for approximately one year before being screened and sold. SCS recommends reducing the initial curing time before screening to 2-3 months to reduce the amount of time materials remain on site. The reduction of the curing time will reduce the amount of material that is stockpiled on site. Following the screening, larger less desirable mulch can be ground a second time and allowed to cure for another 2-3 months before being screened again.

Turning of Mulch Materials: During the site visit, the procedures used to produce the mulch materials were discussed with facility staff. Staff mentioned that mulch materials are occasionally turned by scooping materials at the bottom and depositing them at the top using a wheel loader. This process is repeated several times throughout the pile but is unlikely to result in completely turning the pile. SCS recommends creating a defined schedule and procedure for turning the mulch windrows to prevent the occurrence of fires and avoid anaerobic conditions leading to sour mulch products.



Figure 7. Pile of Unscreened Mulch Material

EXCESS SUPPLY OF WOODY MULCH MATERIALS

In recent years, the facility has accumulated a large stockpile of unscreened mulch materials that are causing congestion at the site. Staff mentioned that the stockpile did not appear all at once but rather slowly accumulated over many years with a greater supply than demand. **Table 1** shows the volume of materials from residents and contractors entering the facility. **Table 2** details the volume of mulch and compost products exiting the facility during CY2024.

In the past when the stockpile became too large, the facility restricted contractor access to help reduce the stockpile. This strategy reduced the amount of incoming material but also reduced the amount of outgoing material because contractors are a large end user of mulch products. Once the stockpile returns to a manageable size contractors' access to the facility was restored.

The site has tried increasing the demand for the mulch products by purchasing dump trucks to offer delivery services, contacted potential large end users, and have conducted a survey to understand factors that may be limiting demand for mulch products. These strategies, however, have not meaningfully increased the demand for mulch materials at the site year over year.



Figure 8. Detailed View of the Unscreened Mulch Products

Table 1. Amount of Incoming Brush Material Delivered in 2024

Incoming Material by Generating Sector	Amount of Material (cubic yards)
Residential Drop-off	13,415
Contractor Drop-off	1,910
Total	21,486

Table 2. Amount of Outgoing Mulch Products in 2024

Product Type	Amount of Material (cubic yards)
Fine Mulch	2,874
Coarse Mulch	580
Total	4,265

4 INCREASING DEMAND FOR MULCH MATERIALS

This section details strategies the Millfair Compost and Recycling Center staff might implement to increase the demand for mulch materials. The significant amount of mulch materials on-site accumulated over several years, it will take time and work to reduce the stockpile by developing markets and relationships with companies that might utilize the materials. Listed below are recommendations to begin reducing the stockpile of mulch products, in order of priority.

INCREASE FINE MULCH PRODUCTION

The outgoing product volumes provided in **Table 2** indicate the demand for fine mulch outweighs the demand for coarse mulch by a ratio of five to one, suggesting that less coarse mulch should be produced and Millfair Compost Center should produce more fine mulch. This can be done by reducing/changing the screen size on the horizontal grinder, adjusting the ratio of fines to overs of the trommel screen, and regrinding coarse mulch. The coarse mulch (overs) can then be composted to produce a higher quality product.

MARKET PRODUCTS

Often compost facilities spend a great deal of effort sourcing raw material, but less time thinking about the markets for the finished products. The Millfair Compost and Recycling Center should allocate staff time, either through new hiring or reassigning job duties of existing staff, each week to marketing mulch/compost products and developing/maintaining relationships with end users of mulch products. One of the first tasks marketing staff should do is lead the development of a marketing plan for the facility and each product offered (see below).

Develop Marketing Plan

The Millfair Compost and Recycling Center marketing plan should include information on the existing and potential new markets for each product, targeted customers for each product, specific measurable goals and strategies to reach those goals, and methods to measure progress toward those goals. Developing a marketing strategy allows for reflection on the types of customers the facility would like to attract and offers the opportunity to create a plan to obtain their business. This plan will serve as a guide to help Millfair Compost and Recycling Center staff provide products desirable in their community to operate sustainability for many years to come.

The United States Composting Council (USCC) has resources to assist municipal composting operations develop marketing plans specific to their operations. **Appendix A** includes select compost marketing information developed by the USCC that Millfair Compost and Recycling Center staff might consider using as a starting point for developing their own marketing plan for compost and mulch materials.¹ For more information please see the link in the footnote.

Engage Customers

The staff member tasked with marketing compost and mulch products should have regular communication with existing customers to confirm the compost/mulch products provided to them meet their expectations and provide value. This may include casual conversations with customers as

¹ <https://hub.compostingcouncil.org/>

they pick up material at the Millfair Compost and Recycling Center or more formal meetings to discuss how compost and mulch products can better meet their needs.

In addition to engaging existing customers, it is important to remain in contact with past customers who may no longer be using compost/mulch products from Millfair and to identify potential new customers. Remaining in contact with past customers keeps open the possibility of regaining their business. As Millfair staff evaluate their operations and establish a marketing plan, feedback from past customers might provide insight into new or modified products that could be produced to meet their needs. Similarly, identifying and engaging potential new customers might provide an opportunity to gain their business.

Create partnerships/relationships with local contractors to understand the types of mulch products they and their customers desire and create a procedure to meet those specifications. The resulting product can then be sold wholesale to contractors, allowing large amounts of material to be moved. These relationships will also help the businesses to see the Compost Center as a supplier instead of competition.

Education

The staff member tasked with marketing mulch materials should consider producing educational materials on effective ways to use mulch products. Educational materials that may be valuable to the community include handouts, articles/graphics/videos for the website, and in-person demonstrations or presentations. These efforts should be targeted toward informing members of the public on effective ways to use products available at the compost center.

TEMPORARILY LIMIT RESIDENTIAL ACCESS

Currently, the Millfair Compost and Recycling Center operates as a regional facility, allowing residents of neighboring communities to deliver materials to the site. It is recommended customer usage be temporarily limited to the residents of Millcreek and Fairview townships to reduce the stockpile of mulch materials. Staff may consider expanding the customer base as demand for mulch and compost products increases and additional material is needed to meet customer expectations.

MAXIMIZE USE OF MULCH PRODUCTS

Mulch products should be used at Township owned properties in both Millcreek and Fairview townships when those products meet landscaping and property management needs. The use of the mulch at these properties will help reduce the supply and give community the opportunity to see the values and quality of the products. The staff member tasked with marketing materials should also reach out to neighboring communities to offer the mulch materials to them free of charge for use at their facilities.

CREATE NEW PRODUCTS

SCS recommends the Millfair Compost and Recycling Center evaluate additional products the unscreened mulch materials could be converted to through additional processing. After careful consideration of the processing and space requirements needed for each product, facility staff should decide whether to pursue each new material type. Initially the Millfair Compost and Recycling Center should only prepare small amounts of the new material to verify interest before scaling production. Listed below are a few suggestions for additional products to investigate further.

Different Sized Mulch

Discuss with customers the preferred sizes and styles of mulch products to tailor and create a product(s) that matches the specifications required by customers. Millcreek should continually seek to create a product that better meets their customers' requirements.

Colored Mulch

Discussions with contractors indicated that end users/residents would be interested in purchasing colored mulch products. Millcreek should explore opportunities to develop partnerships with larger facilities that specialize in coloring mulch or renting a mulch coloring machine to make batches of colored mulch to offer residents and contractors.

EXPLORE ALTERNATIVE USES

The Millfair Compost and Recycling Center should explore alternative uses for the mulch products beyond traditional garden beds, such as erosion control, land reclamation, landfill cover, animal bedding, fuel, etc. When exploring alternatives, it is important to engage potential end users to fully understand regulations impacting the new application and potential additional processing requirements to create a useful product.

BAGGING MULCH

Results from a survey carried out by Millcreek Township and discussion during the site visit indicated that some customers would be interested in purchasing bagged mulch. This can be an effective strategy to increase demand by allowing the product to be sold to a wider variety of end users and increase distribution capacity; however, there are several challenges to overcome. These challenges include consistent product, branding/labeling, storage and supply, facilities and equipment, and marketing.

Converting a composting operation from bulk to bagged products is possible but must be well thought out before attempting. Otherwise, the challenges of bagging products may create a significant strain on operations. Municipal composting facilities have been able to successfully implement bagging operations, such as Montgomery County, Maryland; their product, Leafgro, a soil amendment is placed into bags and then sold to retailers in state and out of state. Staff at Millfair Compost and Recycling Center might consider and evaluate establishing a mulch bagging operation once the current stockpile of materials has been put to use. Marketing efforts discussed earlier in this report may provide insight into the demand and opportunities to bagging mulch.

5 CONCLUSIONS


The Millfair Compost and Recycling Center produces a variety of compost and mulch materials from materials delivered by residents and contractors. The facility efficiently produces high quality mulch products from the incoming brush. There are a few improvements to the process to improve the process and quality of the end-product, reducing the curing time and implementing a more robust turning process. These improvements will reduce the amount of time materials must sit idle on site, improve the products, and prevent fires.

During the last several years the supply of brush materials entering the facility has significantly outweighed the demand for the mulch products produced. This has led to the accumulation of

material on site causing congestion and reducing overall efficiency. The site has tried several strategies to increase the demand for the final products but has not successfully increased demand so far. SCS recommends the facility implement some of the following suggestions to assist in increasing the demand for mulch materials.

- Increase Fine Mulch Production
- Market Products
 - Creating a Marketing Plan
 - Engage End Users
 - Education
- Temporarily Limit Customer Access to Townships
- Maximize Use of Mulch Products
- Creating New Products
 - Different Sized Mulch
 - Colored Mulch
- Explore Alternative Uses
- Bagging Mulch

These suggestions, if implemented, will slowly increase the demand for the mulch products and over time decrease the large stockpile of mulch at the facility. Begin by implementing strategies slowly to avoid overcommitting the supply of mulch or stretching facility staff too thin.



Appendix A

Select USCC Compost Marketing Materials



Identify Potential Markets



The first step to preparing a marketing plan is to evaluate the market. Because actual markets for compost vary widely from one community to the next, an assessment of the organics industry in your region is essential to understand the potential for compost use in your locality.

Potential market sectors may include:

- Landscaping installation and maintenance
- Sports turf management
- Nursery/greenhouse potting soil
- Stormwater mitigation and erosion control
- Agriculture (fiber, food, sod, forestry)
- Home gardening

New uses

A market survey can help identify:

- Potential target markets and users of compost products
- Current compost demand
- Price paid for similar products
- Desired qualities in the product
- Customer biases about compost feedstocks

- Customer feedstock biases with compost use
- Purchasing cycles
- Peak demand months
- Purchase terms
- Delivery conditions

Identify your competition's

- Price
- Location
- Qualities

Market Viability and Government-Produced Compost: Get Your Value!

Determine your compost's value to the user based on its advantages and limitations. Does your product meet, or can it be changed to meet your customer's needs? If you are a government entity, identify the internal value of the finished product.

Remember that properly made compost has a market value and should be "given away" only for special promotions or severe inventory issues. You should educate all of your staff that recycling organics into compost is not simply disposing of waste but creating a valuable product.

An expectation that may need to be addressed is that all city services are provided at no cost to the residents. Organic disposal, like water purification, can be a city service that is offered to residents. These services have value and finished compost should be priced accordingly to establish a market value for the compost.

Determine a plan for showing others within the organization the value of the finished compost product so that it may be sold at market prices.

Links and Resources:

[The Practical Guide to Compost Marketing and Sales](#) (book sold in USCC store)

[Protect Your Compost Brand with Trademarks](#) (BioCycle)

[Marketing Municipal Compost](#), Compost University

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Identifying Distribution Channels



Consider how you will distribute your product.

- Evaluate options for delivery.

Do you have in-house hauling capability, with vehicles not contaminated by feedstocks?

Can you contract with an outside hauler?

- Packaging. Bagging your product bring additional cost, time, and a different market segment.
- Distribution

Retail sales have a higher markup, but require more personnel time to orchestrate.

- In-house sales directly to the retail customers
- Selling to outside distributors such as garden centers.

Wholesale sales directly to large customers can move product quickly, but to keep those customers you need to maintain a reliably large supply of material on-hand.



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Continuous Evaluation of Marketing and Compost Quality



No product will continuously sell itself! Plan to periodically re-evaluate how well-aligned the product you create is to the expectations of customers.

- Ask your customers how you could improve.
- Look at what your competition is doing.
<https://www.compostingcouncil.org/page/participants>
- Familiarize yourself with the differences between compost, soil amendments and fertilizers and be sure your messaging is specific to your purpose.
- Review the updates to the specifications on the US Composting Council website.
<https://www.compostingcouncil.org/page/HowUseCompost>

Keep up with your professional certification. USCC offers certifications in operations (Certified Compost Operations Manager-producing the product) and allied roles (Certified Compost Professional-sales, marketing etc.) Doing what it takes to become certified and maintaining what is new in your expertise area will ensure you are providing your customers with the latest information.

- <https://certificationsuscc.org/>

Send your employees to mentoring and educational courses.

- <https://www.compostingcouncil.org/page/MentorYoungProfessionals>
- <https://www.compostfoundation.org/Education/COTC>

Consider how you are reaching out to discover and capture new markets.

- Attend the US Composting Council conference and listen to previous years' recordings.
 - <https://compostconference.com/>
 - <https://www.compostingcouncil.org/page/ConferenceProceedingsAndRecordings>
- Attend allied industry conferences: public works, plant associations, etc.
 - [American Society of Landscape Architects](#) chapters in your area
 - [Landscape Contractor Associations](#) in your region
 - [Nursery associations](#) in your area
 - [Sports Turf](#) associations (golf course, sports fields etc.)

Also look into how you can educate your customers to set realistic expectations. A well-educated customer is an enthusiastically returning customer.

Compost is earthy gold!

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