



Harborcreek Township Composting Site Operational Improvements Project #620

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SCS Engineers is a waste management, environmental engineering, consulting, and construction firm. Nothing herein shall be considered or interpreted to be the provision of legal services or advice.

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1 EXISTING CONDITIONS

Harborcreek Township (Township) is a Pennsylvania Act 101 mandated recycling community. The Township contracts with a private hauler for the curbside collection of trash, recycling, and yard waste. New residents may obtain a 25-gallon recycling bin at no charge from the Township Administration Building or they may purchase a 65-gallon cart for \$35. Trash and recyclable materials are collected weekly from residents on the same day.

The Township has established and currently operates a composting facility to process leaves and other yard waste collected from residents. Landscaping companies are also allowed to use the site for disposal of yard waste. The facility received about 75 tons of leaf waste in 2017, which is up from about 60 tons received and processed in 2016. Most of this material is collected curbside by the Township's contracted hauler and delivered to the site. Three Township Parks Department employees operate the compost site. It is estimated they spend 100 to 150 hours each year managing materials, turning compost, and opening bags of leaf waste.

Technical assistance was requested to evaluate the current operations of the composting site. This report provides recommendations for how the site can be improved and operated more efficiently. The assistance included meeting with representatives from the Township and neighboring municipalities to discuss opportunities for establishing a partnership among local governments for the composting facility.

2 SUMMARY OF WORK PERFORMED

This section summarizes the tasks completed for this project.

Task 1 – Data Collection

SCS requested technical and operational information on the composting facility from the Township. This information was reviewed and clarified by SCS’s composting expert prior to and during the site visit (Task 2).

Task 2 – Site Visit

SCS’s composting expert who is a certified compost operations manager traveled to Harborcreek Township to visit the composting facility. The site visit occurred in August 2018 and included observations of operational practices at the facility. Throughout the site visit, SCS’s composting expert obtained additional information on the facility, its operations, and feedstock. The site visit included a discussion of suggestions and recommendations for how the site could be operated more efficiently. SCS also facilitated a meeting with the Township and representatives of neighboring Lawrence Park Township and Wesleyville Borough to discuss a regional composting partnership.

Task 3 – Final Report

This final report provides the observations, suggestions, and recommendations made to the Township during the site visit. Additionally, this report includes a list of compost operator training programs that Township staff may consider attending to expand their technical knowledge on composting and facility operation.

3 RESULTS

COMPOSTING BENEFITS AND CHALLENGES

The Township is a Pennsylvania Act 101 mandated recycling community. The diversion and composting of leaf waste is an integral part of recycling in the Township. It is important for the Township to consider how composting can be made more efficient to provide the greatest benefit to the community. Two benefits of composting are that it:

- Enables efficient handling of an inherent nuisance material, and
- Creates a useful, valuable product.

Quantities of yard waste brought to drop-off sites and collected curbside are on the rise. A successful composting program requires organizational and operational resources to create a useable, valuable product. A summary of the benefits and challenges of a composting program is shown in **Table 1**.

Table 1. Benefits and Challenges of Composting

Benefits	Challenges
Creates use product from waste material	Processing is time consuming
Improves material handling	More costly than landfilling
Potential tip fee revenue	Land required
Saleable product	Marketing of product
Excellent soil conditioner	Odor and vector control

CURRENT PROGRAM

Harborcreek Township, located in Erie County, PA, currently operates a small-scale compost facility (Facility) on Township property. The operation can best be described as an “experiment” to manage organic materials generated in the Township. The composting site is located on a 4.2 acre secluded area behind the Township Building at 5601 Buffalo Road, Harborcreek, PA 16421. The site accepts a limited quantity of bagged leaves that are brought to the site by the Township’s contracted hauler, Waste Management, primarily during the spring and fall. The Township sells the compost to residents, landscapers, and others for a fee as follows:

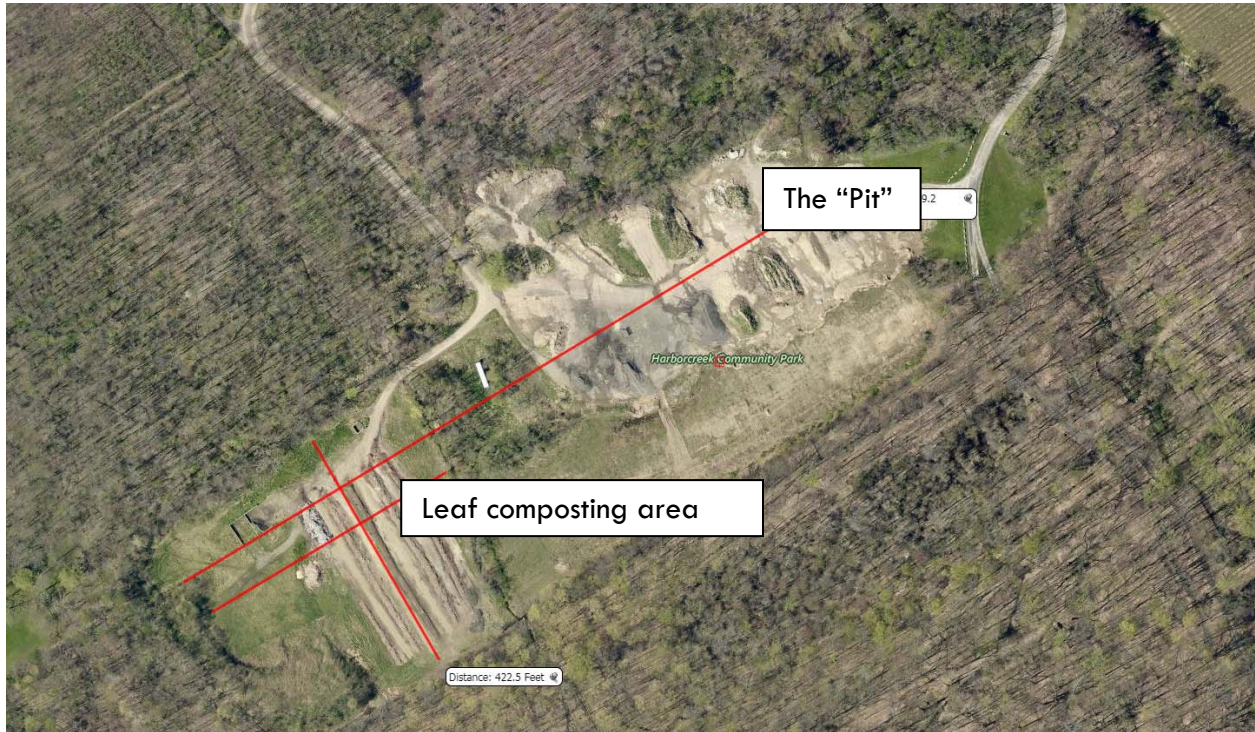
- \$25.00 per three cubic yards of unscreened compost delivered, or
- \$10.00 for three cubic yards of unscreened compost picked up at the composting site.

The Township reports that it generates about \$750 of revenue each year from the sale of the unscreened compost to residents. Residents requesting smaller amounts of compost for household landscaping projects are provided the compost at no charge. The Facility meets the requirements of Pennsylvania’s Permit-By-Rule provisions 271.103(h) for a yard waste composting facility.

In addition to the bagged leaves accepted at the Facility, the Township allows landscaping companies and other commercial generators to dispose of yard waste in a separate area known as the “Pit.” The Township does not charge a tipping fee to dispose of brush at the site and for the most part users have

access to the site 24-hours per day, seven days a week. Brush is currently burned at this site. During the site visit in August 2018, there was discussion that the “Pit” could be a better site for composting operations than the existing Facility because it has direct access to main transportation routes. This site is also used as a gravel borrow and storage for excess road building materials.

Exhibit 1. Aerial Photo of Harborcreek Township Composting Site



Historic Feedstock

Leaves brought to the Facility by Waste Management are typically enclosed in plastic bags. Township Parks Department staff, and in some cases prison labor, tear open bags to prepare the materials for composting. While onsite in August 2018, SCS observed bags of leaves from the fall of 2017 that have yet to be emptied. This indicates that there is insufficient time to debag leaves brought to the Facility. To improve the efficiency of operation and prepare for program expansion, SCS recommends that the Township prohibit the use of plastic bags for leaf collection. Leaves should be contained in compostable paper bags.

Incoming Material

The Facility received about 48 tons of leaves in 2017 and about 46 tons of leaves in 2016. Most of this material is collected curbside and delivered to the Facility by the Township’s contracted hauler, Waste Management. Leaf waste quantities are known because Waste Management weighs their trucks containing collected leaves at their facilities prior to disposal of the material at the Facility. Leaf

collection is carried out about four weeks in the spring and four weeks in the fall. Waste Management pays the Township a flat fee per truckload of materials as specified in their contract.

Table 2 summarizes the amount of leaf and yard waste collected in Harborcreek Township and select Erie County municipalities for which data is available. If the Township decides to upgrade and expand their composting site, the potential exists to direct some of this material to the Facility, particularly material that is not being disposed of at the Millfair Compost Site. The quantity of material collected in Harborcreek Township, which could be processed at the Facility, is under-reported in this table due to the following reasons:

- The Township estimates that only about 75 percent of the leaves collected in the Township by Waste Management are brought to the composting site. The remaining leaves are disposed of at the Lakeview Landfill.
- The Township is rural and many residents manage their leaves via alternative methods, such as by burning or by stockpiling them on their property. Education of residents to manage leaves and yard waste has the potential to generate additional material for the compost site.
- Quantities of yard waste do not include brush delivered to the site by landscapers and other commercial entities.

Table 2. Leaf and Yard Waste Collection in Erie County

Year	Harborcreek Township	Millcreek Township	Fairview Township	North East Borough	North East Township	Wesleyville Borough
Number of Households	6,155	22,750	3,814	1,719	2,443	1,358
Disposal Site	Harborcreek Compost Site	Millfair Compost	Millfair Compost	North East Borough Compost Site	North East Township Compost Site	Dirt Works
Annual Quantities						
2014	--	3,368	3,012	810	193	--
2015	111	599	517	915	252	--
2016	46	1,133	484	1,305	215	112
2017	48	4,232	473	840	210	--

If the Township expands and upgrades their existing composting site, the Township should consider collaborating with the following Erie County municipalities: North East Borough, North East Township, Wesleyville Borough, and Lawrence Park Township. If the Township were to establish agreements with these municipalities to receive their leaves and yard waste, the Facility would need to be able to accommodate at least 1,200 tons of materials. Note that no data is available from Lawrence Park Township.

Existing Equipment

The Township has minimal equipment available for use in managing and processing leaves and yard waste brought to the Facility. An inventory of existing equipment available to the Township is

summarized in **Table 3**. Both the Cat loader and Wildcat windrow turner are owned by Harborcreek Township. The Brown Bear windrow turner is owned by the Millfair Compost Site. It is listed here because the Township has been extended an invitation to use or acquire the equipment since it is no longer needed or in use at the Millfair Compost Site. The following section includes a description of each equipment item.

Table 3. Composting Equipment Inventory

Make	Model	Description
Cat	938F	Wheel Loader
Wildcat	8' Tractor Pull	Windrow Turner
Case International	5140 Maxxum	Tractor
Brown Bear	Loader Mount	Windrow Turner

CAT 938F Wheel Loader

The CAT 938F is a multi-use loader used for moving moderate amounts of material. The loader is used to stockpile materials, feed the grinder and trommel screen, and load trucks. Production and performance characteristics are as follows:

- Production factors: three cubic yard bucket; 13.75-foot dump clearance.
- Fuel usage: three gallons/hour.
- Bucket edge-plate wear is infrequent.
- Engine Service (oil and filters): every 500 hours.

Wildcat Windrow Turner

The Wildcat windrow turner is a tractor pulled, power takeoff, straddle type turner that shapes and turns a windrow approximately eight feet by four feet. Estimated production and performance factors are as follows:

- Turns approximately 600 cubic yards of compost per hour.
- Fuel usage: Dependent on size of tractor used.
- Maintenance: Minimal - grease bearing and occasionally change wear plates.

Brown Bear Windrow Turner

The Brown Bear windrow turner is a front loader mounted turner and aerator with separate diesel power mounted on the unit. Estimated production and performance factors are as follows:

- Production factors: Requires a five cubic yard bucket loader.
- Fuel usage: three gallons/hour.
- Maintenance: minimal - edge-plate wear is infrequent.
- Engine Service (oil and filters): every 500 hours.

Provisional Equipment

If the decision were made to expand the composting operation, existing equipment would need to be upgraded to manage the material received at the site. This could be done in phases to reduce the initial capital outlay for the equipment. This equipment can be rented from contractors or dealers until the Facility attains a size to justify purchasing this equipment. **Table 4** summarizes the equipment that will be needed to expand composting operations and produce a final product, including mulch from the brush, which could be sold to the public.

Table 4. Potential Equipment Needs

Make	Model	Description
Varies – Diamond Z, Vermeer, Morbark,	Varies	Horizontal Grinder
Varies – Komptech, McCloskey, Doppstadt Revolver, Vermeer, Terex	Varies	Trommel Screen
Self-Propelled Straddle – Varies – Wildcat, Scarab, Komptech, Backhus	Varies	Windrow Turner

Labor

Currently three Township Parks Department employees operate the Facility on a part-time basis. Harborcreek Township estimates that approximately 150 hours per year are spent opening leaf bags, creating windrows, and processing curing materials. The Township occasionally receives support from prison labor to assist with opening plastic bags of leaves accepted at the site.

Site Opportunities and Conditions

Figure 1 is an aerial picture of the composting site, including the active processing area and the “Pit” that is used for the disposal of branches and brush. SCS staff visited the Facility on August 9, 2018 (see pictures in **Appendix A**) and made the following general observations:

- The site appears to be in good condition and has potential for more intensive use.
- Very little material was actually being composted.
- The facility needs a site plan for organizing functional areas and planning for future growth.

OPPORTUNITIES AND RESOURCES

Example Program

The Millfair Compost Site serves as a good example for Harborcreek Township to look to and receive guidance from in further developing their composting program and site. Millfair is located near the Township and receives and processes the same types of materials that the Harborcreek facility would

accept. Millfair Compost has operated for the last 14 years under a partnership between Fairview Township and Millcreek Township. They produce compost, mulch, and soil products from leaf and yard waste brought to the site. Staffing consists of one full time supervisor and six to seven part time employees.

Millfair composting staff have extensive experience managing composting operations. Their staff have knowledge and experience with how to start and operate a compost facility. This includes securing grant funding, establishing operational procedures, managing budgets, sourcing feedstock, implementing an efficient and effective POS (point-of-sale) system, maintaining a positive public image, being a good neighbor, and understanding competition, among other things. They have expressed a willingness to assist Harborcreek Township in their efforts to develop their composting program.

Markets

There are two markets to be considered and evaluated as the Township makes decisions on the future of composting:

- **Leaf and Yard Waste Feedstock** – In order to facilitate successful operation of an expanded composting site, the Township needs to understand the markets available to obtain feedstock for processing and producing compost. Discussions with Millfair Compost Site personnel indicate there is more leaf and yard waste generated than can be processed in the County. The Millfair Compost Site is currently filled to capacity and would welcome another facility to relieve the pressure by taking in more material. As discussed above, the opportunity exists to divert more leaf and yard waste from Harborcreek Township residents as well as partner with other jurisdictions (Wesleyville Borough and Lawrence Park Township) to accept yard waste generated in those jurisdictions.
- **Finished Products** – It is important that the Township be diligent in their processing of leaves and yard waste to produce a high quality compost and mulch that could be sold to residents, landscapers, and others needing material for beautification projects.

Finished Products

Compost

Township staff have observed an increasing demand for compost from residents and landscapers. Using compost in landscaping projects can result in better plant growth and survival rates and thus high quality compost is a sought-after valuable product that could generate revenue for the Township to offset composting site operational costs.

SCS has conducted extensive surveys of compost producers and landscaping professionals throughout the United States. Compost producers typically specialize in the processing and management of compostable by-products and residuals from municipalities, industries, and agri-businesses. The producers offer a full range of services including transportation and marketing of compost, mulch, and other organic products. Most of the producers SCS surveyed stated that they do not regularly buy finished products from other compost facilities, although they may purchase some material when they are low on inventory.

These companies were generally open to exploring possibilities for collaborating with other composting facilities to close the recycling loop and expand the sales of finished compost. Preliminary pricing SCS obtained indicates that a range of \$5.00 to \$20.00 per cubic yard of finished compost could be paid (wholesale price). Reduced quality compost, which is generally used in agricultural applications, represents the low end of the price range. The high-end prices are for higher-quality compost used by homeowners in landscaping projects. The primary criteria compost producers use to inform their decision on bringing in other compost to sell was the quality of the finished compost. Though ranges of compost grades have markets, the largest market is for high quality grade that would ultimately be used by homeowners and landscapers.

Mulch

SCS has conducted surveys similar to that of compost, but instead focusing on mulch. The findings were somewhat different from the compost surveys because the markets for mulch are larger and the demand for various grades of mulch is broader.

Mulch is produced and supplied in the Northeast market by a number of regional and national landscape material companies. Competition is strong and product quality varies from low-end ground pallets to high-end homogeneous feedstocks. Differences in quality are reflected in the price of each product. However, there is demand in the marketplace for all grades of mulch, whether it is ground wood, high-end nutshells, or hemlock bark.

Landscaping companies generally expressed an interest in sourcing higher-quality mulch to use in their products and services. These companies use mulch purchased from various mulch suppliers, with a preference for a higher-quality product. An acceptable mulch can be produced from yard feedstock with proper handling of the material and attention to creating a material to the end use. Prompt grinding of feedstock and proper aging to darken the mulch, or use of red or black dye applied to the proper material, can make saleable mulch. A materials management plan, which is well conceived and executed, can overcome many obstacles in developing an outlet for the final product. Trying to compete with larger, specialized companies to make a product that is not economical or feasible based on the Township's operations and available feedstock will result in a failed operation. Producing the best product available with the feedstock and resources the Township has at its disposal is a more prudent way to go.

Compost Training Programs

SCS recommends that the staff designated to develop the program participate in a training program specific to operating a composting facility and producing compost and mulch products. This section summarizes some existing compost training programs the Township could consider attending. This list is not exhaustive of the training programs that are available.

Maine Compost School -- The Maine Compost School is the nation's longest continually running compost education program. The Maine Compost School offers both classroom and laboratory hands-on activities. It is designed for people interested and/or involved with medium and large-scale composting operations. This course is a certificate program and trains personnel to be qualified compost site operators. For more information go to www.composting.org.

US Composting Council -- Compost Operations Training Course: 40-hr, 5-day course focuses on giving you the knowledge you need to run a successful composting facility. In addition to in-depth lectures, the

course provides hands-on practice through indoor and outdoor activities as well as tours to local facilities. More information can be found at www.compostfoundation.org.

Solid Waste Association of North America (SWANA) – Manager of Composting Operations:

SWANA’s suite of training and certification programs includes a three-day course on managing composting operations. This course will enable students to appreciate and understand the science and practice of this industry. This course addresses concepts critical to successfully managing composting programs including the rationale for composting, planning and site development, economics, and operations. Managing Composting Programs discusses best practices, emerging technologies, and management issues characteristic of municipal composting programs. The course consists of class lecture, discussion, activities and an optional facility tour. Following the completion of the course, students can take the composting exam to become a SWANA Certified Manager of Composting Operations. Information on this program can be found at www.SWANA.org.

The following websites have been identified as having information on producing compost and operating a composting program that the Township may find useful.

- **Penn State:** <https://extension.psu.edu/making-and-using-compost>.
- **Cornell:** <http://compost.css.cornell.edu/index.html>.

4 RECOMMENDATIONS

ESTABLISH PROGRAM GOALS

The Township needs to establish solid waste program goals and priorities that will develop their system further. These goals and priorities will inform how the Township will manage yard waste now and in the future. The Township's options include:

- **Maintain the Status Quo** - Continuing the yard waste management program and operating the composting site in its current state.
- **Expand and Develop Composting Facility** – Expanding the composting program and upgrading the composting site to accommodate the receipt of additional materials.
- **Close the Composting Facility** – Closing the composting site and identifying another facility to receive the yard waste generated in the Township.

SCS encourages the Township to focus on providing services to help manage yard waste generated in the Township, divert the materials from disposal, and produce a product that can be used to beautify the community. There are many processes the Township can go through to set the goals and objectives of their program. One of these processes is described in a book titled, *The Universal Traveler: A Soft-Systems Guide to: Creativity, Problem-Solving, and the Process of Reaching Goals*¹. The process outlines an orderly way to set goals, make decisions, and implement ideas to achieve stated goals. This process can be applied to how the Township may proceed with their composting facility. A general outline of this process is described below. A more detailed description of the process and steps can be found under the Operational Improvements section following in this report.

1. **Accept Current Situation:** Understand the current situation and how the Township got to this point. What issue needs to be solved? What do you want to accomplish? What do you want your program to look like?
2. **Analyze:** Obtain facts. What are the components of the issue and how is each component contributing to the current situation/state?
3. **Define:** Decide what the main issues are and use to establish the goals. Conceptualize and clarify the major goals.
4. **Ideate:** Identify opportunities and strategies for achieving project goals and objectives. Identify the ways/methods of getting to the major goals.
5. **Select:** Compare project goals with possible ways of getting there (identified in #4. Ideate above). Prioritize methods based on their capability of achieving goals/solving problems – some uncertainty will exist. Select the best strategy(s) for achieving goals.
6. **Implement:** Implement the best strategy selected under #5 above.

¹ Koberg, D., and Bagnall, J., *The Universal Traveler: A Soft-Systems Guide to: Creativity, Problem-Solving, and the Process of Reaching Goals*, Crisp Publications, Inc. 1991

7. **Evaluate:** Evaluate the strategy as it is being implemented and once it is functioning and make adjustments as needed.

The results of this process, or another comparable process, may help the Township decide whether to maintain, expand/develop, or close the composting site. The following section describes SCS's recommendations to expand and develop the composting program and site based on our understanding of the current program.

OPERATIONAL IMPROVEMENTS

The operational improvements outlined below were identified based on the site visit and observations completed, meetings with Township and County staff, and data provided.

Expand Composting Program

Establishing program goals (discussed above) and understanding residents' needs are necessary steps for the Township to take in order to evaluate the feasibility and desirability of developing and expanding the existing yard waste management program. SCS acknowledges there are other considerations the Township must evaluate (i.e. financial) in order to decide whether the existing composting site and program can be expanded. However, based on SCS's site visit and meetings/dialogues with Township and Erie County staff, it is recommended that the Township move to develop and expand the program and site. SCS has identified multiple reasons for making this recommendation, including:

- **Additional Capacity Needed** - There is a need for additional composting capacity in the Township and Erie County. Existing composting facilities operating in the area are at or near capacity, making them unavailable for use and constraining new program development and existing program expansion.
- **Additional Collection Services Desired** - There is interest in providing additional yard waste management services in Harborcreek Township as well as in neighboring municipalities. Increased and expanded collection programs will further divert materials from disposal and prevent residents from managing yard waste in unsustainable ways. The Harborcreek Township Composting Facility could provide for reliable processing and disposal capacity of increased quantities of yard waste.
- **Greater Service to Residents** - An expanded Composting Facility has the potential to expand service to residents by providing a convenient and reliable facility for the management of yard waste. If the Township produces high-quality compost and mulch products, the materials can be offered to residents (free or a fee) to use in landscaping projects to further beautify the community.
- **Centrally Located** – The Township's existing composting site is centrally located in the Township and Erie County. This provides an accessible location for other municipalities to use as the preferred site for yard waste management and disposal.
- **Existing Site** – Although the existing Composting Facility would need improvements and upgrades, such as environmental controls, to manage additional material, the Township already has a composting site established that is available for use. Many municipalities do not have an

already established site readily available, centrally located, and able to accept yard waste materials like Harborcreek Township.

- **Act 101 Compliance** – Harborcreek Township is required by the Municipal Waste Planning, Recycling and Waste Reduction Act of 1988 (Act 101) to recycle. This includes providing for the collection and management of yard waste. These requirements prohibit the burning of “leaf waste,” which includes leaves, garden residues, shrubbery, tree trimmings, and other similar materials (excludes grass clippings). Expanding and upgrading the composting site provides the Township the opportunity to cease burning of brush that is brought to the site. **Appendix C** summarizes the municipal recycling requirements of Act 101.

Develop Site Plan

If the Township decides to expand and upgrade the composting site, it will be necessary to develop a site plan and facility management plan to document and direct operations at the Facility. A site plan is typically a visual layout of a composting site or facility that shows the relationship between different operations and processes occurring at the site. The site plan identifies how materials flow through a facility. This includes from when yard waste materials are delivered by haulers to when the final compost or mulch is transported off the site to markets. The plan details the slope of the site, distance between project operations, and environmental controls such as stormwater/run-off management and wetlands, and buffers zones. **Appendix B** includes a sample composting facility site plan sourced from the *On-Farm Composting Handbook* by Robert Rink². With the proper training, the Township could develop the site plan using their own staff or hire a consulting/engineering firm specializing in composting site design and operations to develop the plan.

Draft Facility Management Plan

The Township will also need a facility management plan for their composting site. This plan includes many different parts that provide significant detail on how the composting facility will be managed and operations completed. The site plan (described above) is typically included in a facility management plan. This plan provides an overview of the composting process and details how the Township will operate their composting program and site. To control the impacts the site may have on neighbors and the surrounding environment, a facility management plan will provide proactive strategies to reduce the risk that the facility will negatively affect the Township.

A facility management plan typically includes the following sections:

- **Site Description** – This section describes the location and size of the site, including the area designated for operations, environmental controls, and future expansion (if available). It also includes descriptions of adjacent properties. A portion of the site description includes information on drainage, stormwater management, and the site’s fire suppression system. It includes basic information such as the site’s operating hours, access control measures, and staffing levels. A general overview of site operations are also included in the site description. This includes information on materials accepted, material screening, placement and processing of materials, the compost “recipe,” material monitoring, recordkeeping, and product testing.

² Rink, R., *On-Farm Composting Handbook*, Natural Resource, Agriculture, and Engineering Service (NRAES), 1992

- **Facility Protocols** – This section provides detail on the material processing protocols employed at the site. This includes the desired carbon to nitrogen ratio, oxygen supply/availability, moisture levels, temperature, surface area, pH, atmospheric conditions, feedstock management, stability and curing, compost analysis and quality, and recordkeeping. This section includes a description of each step in the composting process, and describes the desired conditions to successfully complete each step.
- **Site Management** – Another component of a facility management plan includes a section that discusses site management control measures and protocols. This includes how the site will manage run-off, erosion and sediment accumulation, and other housekeeping-type concerns such as dust and litter control.
- **Operations Plan** – This section of the facility management plan contains specific protocols and activities to manage odors and vectors. It also includes a description of contingency measures to be completed if some issue or problem arises. Contingency plans for equipment failure, unacceptable material, contamination, facility shutdown, and odor/vector control plan failure are typically included. Other unique conditions of the site may require additional contingency measures and plans be described. A toxics control plan is also included in this part of a facility management plan. Finally, emergency phone numbers and contacts are listed in this section.

SCS recommends the Township work with an experienced and knowledgeable consulting/engineering firm specializing in composting site operations to develop a facility management plan.

Source Feedstocks

As the Township considers the development and expansion of the composting site, SCS recommends identifying sources of feedstocks that can be processed and managed at the site. The site will operate with increased efficiency and produce a reliable quantity of saleable product (compost and mulch) if the Township receives a consistent stream of organic material to process.

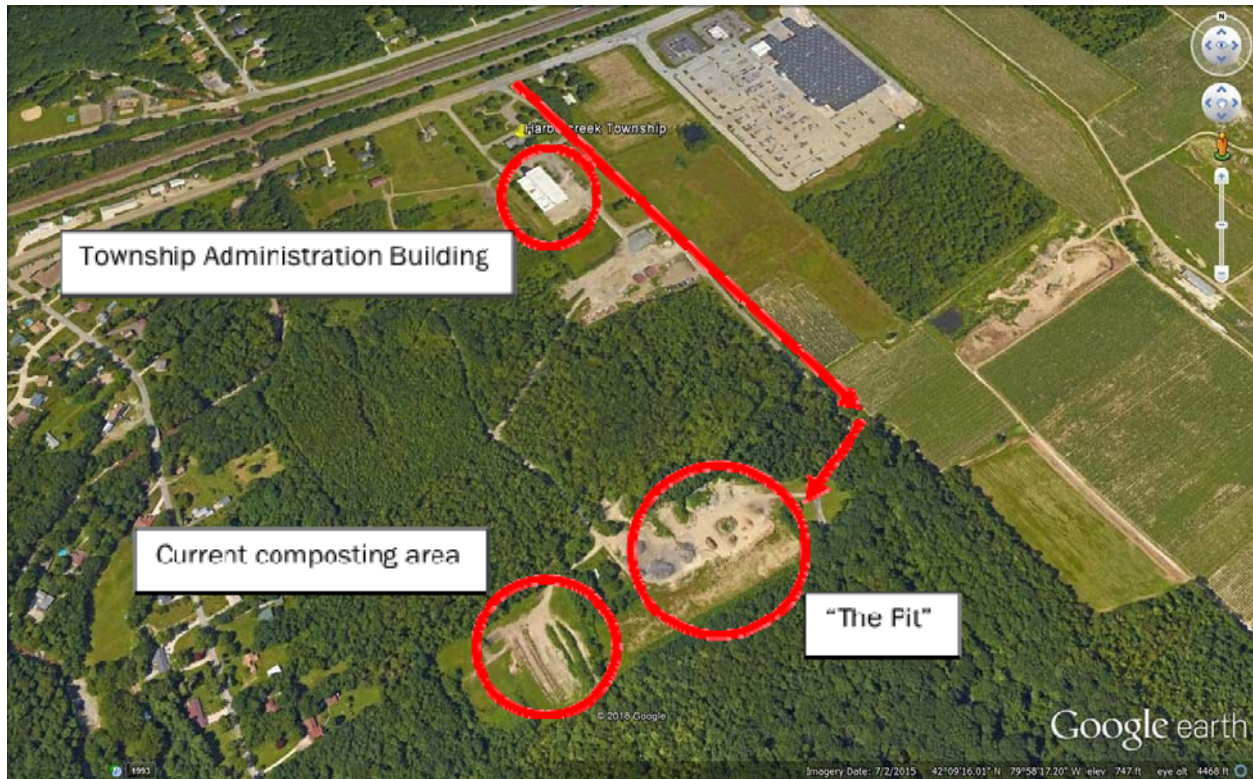
Identifying nearby local governments that have a desire to collect and divert yard waste materials from disposal (such as Lawrence Park Township and Wesleyville Borough) may provide a steady stream of materials for processing. The Township could also open up the facility to allow landscapers, other commercial vendors, and possibly even residents to drop-off yard waste for a fee. Additionally, when the Township renews or re-bids their solid waste services collection contract, all yard waste materials collected in the Township could be directed to the Township's Composting Facility for processing and disposal.

Consideration should be given to the seasonal generation of yard waste. How the composition of yard waste changes over different seasons will have an impact on the Facility's operations. Grass clippings are more prevalent in the spring and summer months, while leaves comprise the larger portion of yard waste in the fall. SCS recommends that the Township also consider food scraps as a feedstock. While setting up a food scraps composting program would not be a high priority for the Township at this time, there is potential for it to be considered in the future. Identifying potential sources of food scraps now can facilitate the incorporation of the material into the Facility's operation later. The Facility site plan design should be based on the anticipated quantity of materials that the site would receive for processing.

Transition Composting Area to “The Pit”

Consideration of site accessibility should be a priority for the Township. To increase accessibility, SCS recommends transitioning the active composting area from its current location (further from the access road) to “The Pit.” “The Pit” area of the composting site provides direct access for haulers, landscapers, and others who may be using the Composting Facility to drop-off yard waste. Highway 20 serves as the primary access road to the Facility. Vehicles turn off Highway 20 unto Municipal Drive at the Harborcreek Township Municipal Building. From there trucks proceed about half a mile to the Composting Facility. The first area vehicles arrive at is “The Pit,” which is currently where brush is deposited and burned. After proceeding through “The Pit,” vehicles arrive at the active composting area. “The Pit” area is larger than the current composting area and can accommodate an increased number of trucks bringing yard waste to the site. Since “The Pit” is near Municipal Drive it provides easier and more direct access for customers using the site. **Figure 1** is a Google Earth image of Harborcreek Township’s Composting Facility with areas and access locations identified.

Figure 1. Aerial View of Composting Site



Hire Dedicated Staff

Developing and expanding the Township’s composting program and site will require dedicated staff. SCS recommends that the Township hire a full-time Composting Facility Supervisor and a part-time (at least initially) Composting Facility Operator. These individuals will work together to build and expand the composting program and site. The Supervisor would be responsible for overseeing all aspects of the Facility. Specifically, the individual will complete the necessary facility management and site plans, select and procure composting equipment, develop partnerships with other municipalities to secure

feedstock, obtain appropriate state and local permits and ensure compliance, set and manage the Facility's budget, and report to the Township management on Facility activities. The Operator would be responsible for completing composting operations, including preparing/processing materials, using equipment, and testing or screening the final products. Initially, the Township could hire a part-time operator. As the composting program expands the operator position could become full-time. Employing dedicated staff to the Composting Facility will give the site and program the attention needed in order to develop it into a facility that can serve the Township's and region's yard waste management needs.

Consult Millfair Compost and Recycling Center Staff

Expanding the Township's composting program and facility to accommodate additional material is a significant undertaking that will require planning and preparation. Obstacles and challenges will arise as the program and site grow and expand. The Township has the ability to draw on the experience of the staff at the nearby Millfair Compost and Recycling Center. The Millfair Compost and Recycling Center is a joint program and facility operated by Millcreek Township and Fairview Township. The Millfair Compost and Recycling Center is open seven days a week and accepts leaves, shrubbery, brush, non-food garden residue, and tree trimmings for processing into compost and mulch.

Township staff should rely on Millfair employees to provide ideas and guidance for the Harborcreek Township Composting Facility as it develops and decisions need to be made. Although Harborcreek Township's Composting Facility will not mirror the Millfair facility, many issues that Harborcreek will need to work through, including permitting, environmental controls, sourcing feedstocks, and operations may be similar. In 2014, Millcreek Township utilized the Pennsylvania Department of Environmental Protection's (DEP) Recycling Technical Assistance Program to develop an employee handbook and composting guide for their facility. The report that was developed for this project is available on the DEP's website at www.dep.pa.gov. It is possible Millfair's employee handbook and composting operations manual could be used as a guide to develop similar materials for Harborcreek's operations.

Coordinate with Existing Composters

Competing with private composters already established is a concern for Harborcreek Township as they consider expanding their existing composting program. However, SCS's experience is that the interests of private and municipal composters rarely overlap. Most private composters do not have the resources, nor the inclination, to operate a large scale composting operation. The location of a municipal facility within their operating area often benefits their business because they now have a readily available drop-off site for leaf and yard waste, while at the same time a convenient location to purchase needed compost, mulch, or soil products.

Harborcreek Township staff identified two private composters in the Township that accept materials for processing. These include Nelsons Trucking and Dirtworks. Nelsons Trucking composts leaves while Dirtworks accepts leaves, grass clippings, and food waste for composting. As the planning process proceeds, these companies and others identified as operating in the Harborcreek Township geographical area should be included in discussions and meetings, and invited to offer their input into the planning process. Addressing their comments and concerns can go a long way to reducing the potential for opposition by designing a facility that works within the existing marketplace.

Implement Safety and Security Measures

To facilitate safety and security at the Facility, it is necessary to implement access control measures. These measures are designed to protect the Township from unauthorized access, vandalism, property damage, and personal injuries. This is also required to prevent illegal dumping and the disposal of unacceptable materials at the Facility. Access control measures that the Township may consider and implement include:

- **Perimeter Fence and Gate** – A fence around the perimeter of the property would curb unauthorized access by people and wildlife. Access roads must be gated and locked at the end of each working day.
- **Designated Operating Hours** – Regular operating hours should be established for the Facility. The hours may be posted at the entrance to the Facility, on the Township’s website, and advertised whenever the composting program is promoted. This is especially useful if the Township decides to open the Facility to residents and landscaping companies for the disposal of yard waste.
- **Onsite Staffing** – Full-time and part-time staff must be onsite at the Composting Facility at all times during operating hours. Onsite staff would be responsible for tracking haulers, screening materials, and facilitating compliance with all Composting Facility rules and regulations.
- **Signage** – Clear signage is required for managing the Composting Facility properly. The facility management plan (discussed above) should include information on signage and the flow of vehicles and materials through the system. Signs will help maintain safety by directing customers and identifying rules (i.e. speed limit). They are also important for facilitating efficient operation and the production of quality products by directing customers where to place yard waste.
- **Cameras** – As an added layer of protection and security, SCS recommends the Township invest in a security system that includes cameras placed in strategic locations. This would likely include at the entrance, tipping area, and equipment storage areas.

Ban Use of Plastic Bags

One of the most effective ways to improve efficiency of the Township’s existing composting program and operations is to ban the use of plastic bags to contain yard waste. Plastic bags are not compatible with the Township’s composting program. Currently, City staff and occasionally labor from the local penitentiary manually tear open bags of yard waste delivered to the Facility. Even plastic bags labeled “compostable” or “biodegradable” can pose problems for composting operations. The Township will need to coordinate their effort to eliminate the use of plastic bags with Waste Management, the Township’s contract hauler that collects yard waste curbside from residents.

The yard waste section of the Township’s solid waste ordinance should be amended to establish a provision that yard waste materials must not be contained in plastic bags. This will provide the Township with the enforcement mechanism needed to require compliance. To facilitate the transition from plastic bags to paper bags, the Township may provide an initial supply of paper bags to residents free of charge. This will get residents accustomed to containing yard waste in paper bags and will build

dialogue with the community as to why this change is necessary. The Township can coordinate with local retailers to sell paper bags compatible for composting at the Township’s Facility. Millfair Compost and Recycling Center requires residents using their site to manually empty leaves and yard waste from containers or bags.

Evaluate Need to Quantify Incoming Materials

SCS believes that should the Township expand the composting site, it may be necessary to quantify the amount of materials managed at the site. This may be especially important since much if not all of the material at the Facility will be managed outdoors. Rainfall events can have a significant impact on the density of materials. Additionally, as compost ages, the density also increases. Variations in the densities and the uncertainties about their measurement can affect the financial performance of the Facility. How a loader operator scoops up material and loads a truck impacts the volume of material that is distributed/sold to markets.

To mitigate some of this uncertainty the Township may consider investing in a laser scanner that measures the volume of materials. SCS believes that such a laser scanner is not immediately necessary as the composting site is increasing production; however, it may be required if the composting site transitions to a regional site that receives material and distributes final products widely.

5 CONCLUSION

The Township must decide the future of their composting site. The Township could decide to maintain current operations, expand the facility, or close it and direct yard waste to another location. SCS recommends that the Township expand the Composting Facility. SCS understands there is a need for additional composting capacity in the Township and Erie County, and the existing Harborcreek Township Composting Facility has the potential to become a regional facility that can serve the yard waste disposal and management needs of the Township and surrounding municipalities.

SCS makes the following recommendations to develop a facility that serves the community, reduces environmental and public health impacts, and diverts materials from disposal. These recommendations include:

- Establish Program Goals;
- Expand the Composting Program;
- Develop Site Plan;
- Draft Facility Management Plan;
- Source Feedstocks;
- Transition Composting Area to “The Pit;”
- Hire Dedicated Staff;
- Consult Millfair Compost and Recycling Center Staff;
- Coordinate with Existing Composters;
- Implement Safety and Security Measures;
- Ban Use of Plastic Bags.

Implementing these measures and developing these plans will help the Township establish and operate a composting facility that can have a positive impact on the environment and community of Harborcreek.

Appendix A
Harborcreek Township Composting Site Photos



Windrows



Fall 2017 bags of leaves



Unscreened compost ready for purchase



Brush Drop-Off Area at "The Pit"



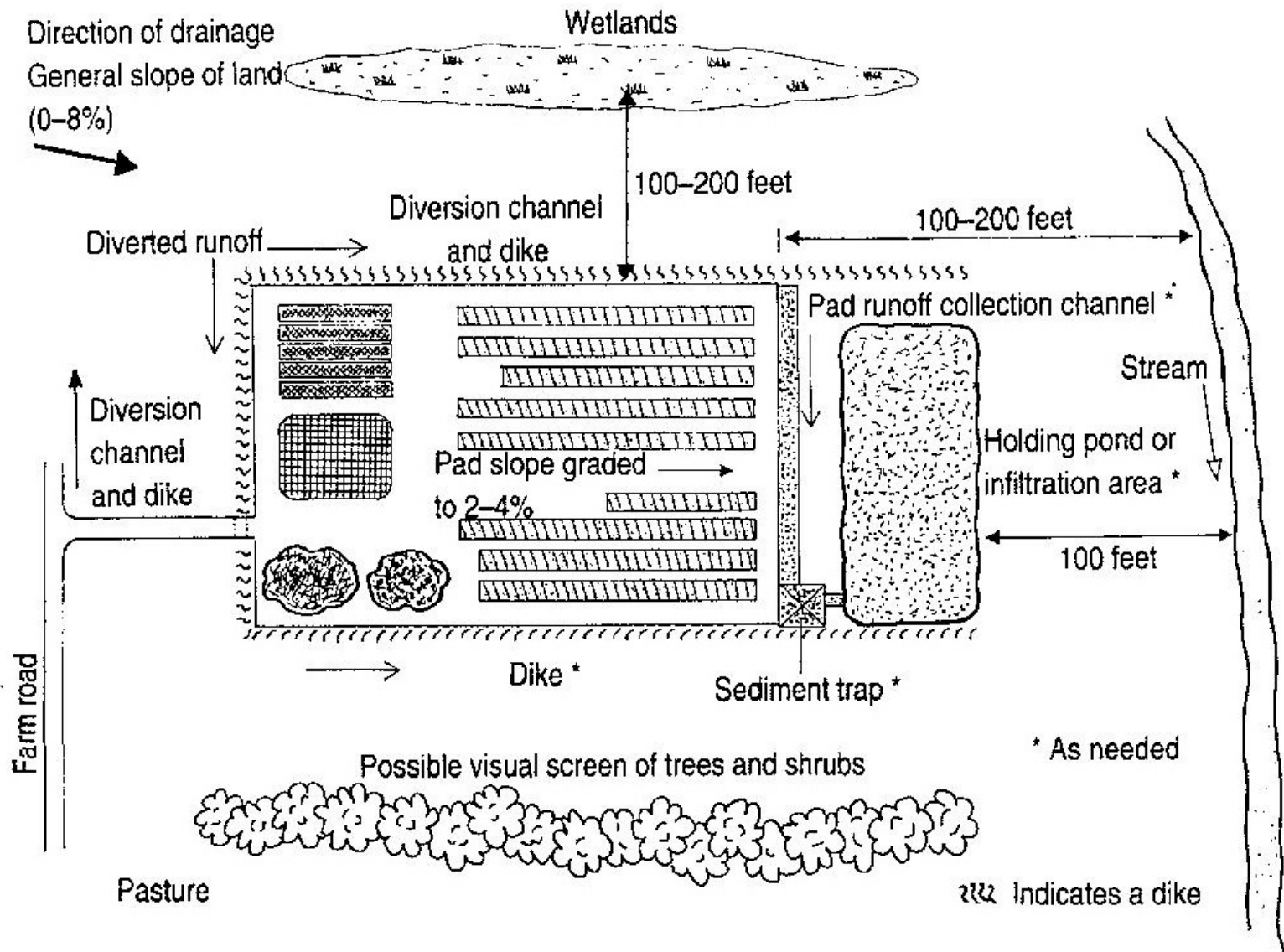
Wildcat Compost Turner



Brown Bear Compost Turner at the Millfair Compost Site

Appendix B Sample Site Plan³

³ Rink, R., On-Farm Composting Handbook, Natural Resource, Agriculture, and Engineering Service (NRAES), 1992



Appendix C
Summary of Act 101 Requirements for Mandated Recycling Communities

Summary of Act 101 Municipal Recycling Requirements

Overview

Chapter 15, Section 1501 of the Pennsylvania Municipal Waste Planning Recycling and Waste Reduction Act (Act 101), outlines the requirements for large municipalities to recycle. Municipalities, other than counties, with a population of 10,000 or more people or with a population of more than 5,000 but less than 10,000 people, and a population density of more than 300 people per square mile, are mandated to recycle.

Recycling Ordinance

An Act 101 mandated local government must adopt an ordinance that requires recycling. The ordinance shall require the following:

- 1) Recycling at single-family homes and apartments; commercial, municipal, and institutional establishments; and at community activities.
- 2) A scheduled day, at least once per month, when separated recyclable materials are to be placed at the curb or similar location for collection.
- 3) A collection system, including trucks and related equipment, to pick-up separated recyclable materials from the curb or similar location at least once per month from homes and businesses in the municipality. The municipality shall explain how the system will operate, the dates of collection, the responsibilities of persons within the municipality and incentives and penalties.
- 4) Provisions to ensure compliance with the ordinance, including incentives and penalties.
- 5) Provisions for the recycling of collected materials.

Residential Recycling

Residents must separate for recycling at least three materials deemed appropriate by the municipality from municipal waste generated at their homes, apartments, or other residential establishments. Separated materials must be stored at the property until collection. The three materials must be selected from the following:

- Clear glass;
 - Colored glass;
 - Aluminum;
 - Steel and bimetallic cans;
 - High-grade office paper;
 - Newsprint;
 - Corrugated paper;
 - Plastics.
-

Leaf waste must also be separated from municipal waste generated at residential properties and stored for collection, unless residents have already provided for the composting of the materials (i.e. backyard composting).

Owners or landlords of multi-family rental properties with four or more units must establish a recycling collection system at each property. The collection system must include suitable containers for collecting and sorting materials, easily accessible locations for the containers and written instructions to the occupants concerning the use and availability of the collection system. Owners or landlords that comply with these requirements shall not be liable for noncompliance by occupants of their buildings.

Commercial, Municipal, and Institutional Recycling

Occupants of commercial, municipal, and institutional establishments are required separate and store for recycling of the following materials at a minimum:

- High-grade office paper
- Aluminum;
- Corrugated paper;
- Leaf waste. Occupants of commercial, municipal, and institutional establishments may be exempt from the requirements of this law if those persons have otherwise provided for the recycling of materials they are required to recycle. To be eligible for an exemption, the commercial, municipal, or institutional generator must provide written documentation to the municipality annually.

Community Activity Recycling

Organizers of community events must provide for the separation, storage, and collection of high-grade office paper, aluminum, corrugated paper, and leaf waste at the events. Community activities required to recycle include events sponsored in whole or in part by a municipality or held within a municipality and sponsored privately. Events include fairs, bazaars, picnics, or sporting events that will be attended by more than 200 or more people each day of the event.

Leaf Waste Diversion

Municipalities mandated to recycle under Act 101 must require residential and commercial establishments to separate and store leaf waste for collection. Leaf waste includes leaves, shrubbery, tree trimmings, and similar materials, excluding grass clippings. These materials must be collected at least monthly. In order to comply with Act 101, mandated municipalities must at a minimum:

- 1) Implement an ordinance that requires leaf waste to be separated from municipal waste for recycling at residential and commercial, municipal, and institutional establishments, AND
- 2) Establish a scheduled day, at least once per month, when leaf waste is collected curbside or similar location, OR
- 3) Establish a scheduled day, no less than two times per year and preferably in the spring and fall, when leaf waste is collected curbside or similar location from residential and commercial establishments, AND facilitate a drop-off location or other collection alternative approved by the

Pennsylvania Department of Environmental Protection that allows persons to drop-off leave waste for composting at least once per month. A leaf waste drop off site can be in a neighboring municipality or at a private establishment provided there is an agreement in place to utilize the site, and residents and occupants of commercial establishments are informed of the drop-off location at least every six months.

Municipalities are encouraged to manage source separated Christmas trees as leaf waste for processing at DEP approved composting facilities.

Public Education and Outreach

Municipalities subject to the requirements of Act 101 must implement a comprehensive and sustained public education program. This program is to provide residents and owners/tenants/occupants of commercial, municipal, and institutional establishments with information on recycling program features and requirements. The educational program includes two features:

- **Initial Education** – At least 30-days prior to the start of a recycling program notify all persons occupying residential, commercial, municipal, and institutional establishments of the recycling requirements as contained in the ordinance.
- **Sustained Education** – Every six months the municipality must inform and remind all persons occupying residential, commercial, municipal, and institutional establishments of the recycling requirements.

Numerous forms of educating the public are acceptable and include:

- Newspaper advertisement circulating in the municipality;
- Public notice posted where such notices are customarily posted;
- Notices in other official notifications (i.e. utility bills);
- Website;
- Newsletter;

A combination of forms are acceptable and at least one form must be in print annually.

Implementation

Municipalities may implement their responsibilities for the collection, transportation, processing, and marketing of recyclable materials in one or a combination of the following ways:

- 1) Collect, transport, process, and market recyclable materials themselves;
 - 2) Enter into a contract(s) with other entities for the collection, transportation, processing, or marketing of recyclable materials. If contracting for recycling services, the entity being contracted is responsible to the municipality for implementing of recycling activities.
 - 3) Contract with a landfill or material recovery facility, in lieu of a curbside recycling program, that guarantees by contract that at least 25 percent of the waste received is recycled. The technology utilized in this program must have prior approval from DEP.
-

- 4) Utilize a recycling facility that demonstrates that the materials separated, collected, recovered, or created by the facility can be marketed as readily as materials collected through a curbside recycling program. In addition, the mechanical separation technology used by the facility has been demonstrated to be effective for the life of the facility.

Exceptions

The municipality is not required to collect, transport, process, or market recyclable materials or contract for these services if all of the following conditions are met:

- 1) The municipality is not collecting and transporting municipal waste from such establishment or activity.
- 2) The municipality has not contracted for the collection and transportation of municipal waste from such establishment or activity.
- 3) The municipality has adopted an ordinance as required, and the establishment or activity complies with the provisions of the ordinance.

Act 140
Requirements for Section 904 Recycling Performance Grants

Overview

Act 101 was amended in 2006 by Act 140 to establishment requirements for the use of Section 904 Recycling Performance Grants.

Requirements:

Municipalities mandated to recycle under Act 101 and receive more than \$10,000 in funding from recycling performance grants must meet the following requirements:

- 1) Requires, through ordinance, that all residents have waste and recycling service.
- 2) Has an implemented residential recycling program and facilitates a commercial recycling program or participates in a similar county or multi-municipal program.
- 3) Has a residential and business recycling education program.
- 4) Has a program of enforcement that periodically monitors participation, receives complaints and issues warnings for required participants and provides fines, penalties, or both, in its recycling ordinance.
- 5) Has provisions, participates in a county or multi-municipal program or facilitates a private sector program for the recycling of special materials.
- 6) Sponsors a program, facilitates a program or supports an organization to address illegal dumping and/or littering problems.
- 7) Has a person or entity designated as recycling coordinator who is responsible for recycling data collection and reporting recycling program performance in the municipal or municipalities.

If these requirements are not satisfied by the municipality, then the grant funds awarded under this section must be expended by the municipality only to satisfy these requirements. If all these

requirements are satisfied, then the grant funds awarded may be used for any expense as selected by the municipality.
