



July 2, 2004

Mr. William Wolfe
Borough of Shippensburg
60 West Burd Street
Shippensburg, PA 17257

Subject: Technical Assistance Project

Dear Bill:

This letter report summarizes R. W. Beck's evaluation of Shippensburg Borough's Compost Facility. The objectives of the evaluation were to identify facility upgrades that are needed to meet local permitting requirements and/or to increase operational productivity, and to develop a balanced, reasonable methodology and cost basis for setting fees and rates to support the composting operation. This evaluation was performed as part of the Recycling Technical Assistance program sponsored by the Pennsylvania Department of Environmental Protection (DEP) and the Solid Waste Association of North America (SWANA).

The report is divided into the following sections:

- Facility Background and Site Visit Observations;
- Identification of Potential Facility Enhancements;
- Identification of Potential Operational Changes;
- Financial Review; and
- Development of Rates.

Task 1 -- Facility Background and Site Visit Observations

General Information

Shippensburg Borough currently operates a compost facility that is located across the road from the Borough's wastewater treatment plant. The site accepts grass, leaves, and brush from Borough residents, residents of surrounding municipalities, contractors, and Shippensburg University, as well as other private generators. The composting area does not currently have any fencing or a gate house to control site access, but allows compost generators to drop off material freely.

The Borough currently does not charge anyone who drops off materials at the facility. In recent years the facility has experienced increased usage, which increases the Borough's operating costs. Additionally, residential developments are being constructed in close proximity to the facility, which increases the risk of trespassing (inadvertent or otherwise) and generally increases the need for site access control.

Site Description

The composting site is approximately 400 feet by 300 feet, and covers approximately 2.75 acres. There is a tip pad located in the northwest corner of the site, which is 100 feet by 50 feet (500 square feet). Entrance to the facility is from a side road across from the Borough's wastewater treatment facility. An aerial photo of the Borough property is attached as Exhibit 1. A site plan is attached as Exhibit 2.

Operational Description

The compost facility was established in 1990 to serve the residents of Shippensburg Borough. Facility management notes, however, that people drive from as far as 20 miles away to use the site. During the spring of 2003 wastewater treatment plant (WWTP) personnel, who are charged with managing and operating the facility, surveyed incoming drivers to ask them where they lived. The survey revealed that vehicles from the following municipalities were using the facility:

- Shippensburg Borough;
- Lurgan;
- Hopewell;
- Letterkenny;
- Orrstown;
- Chambersburg;
- Scotland;
- Path Valley;
- Southampton (Franklin County); and
- Southampton (Cumberland County).

Many commercial contractors and large generators — including Shippensburg University and Penn Line Services—also utilize this site. These generators create large amounts of material, especially brush, after major storms. Lawn care companies also deliver a significant portion of material to the facility, including the majority of the grass received. Many of these companies service residents from outside the Borough.

None of the large generators have any arrangement with the Borough to purchase finished product from the processing facility.

The composting facility is operated year round, and is accessible 24 hours per day, seven days per week. The facility does not track the number of vehicles entering or exiting the facility, nor the quantity of material being delivered. Management estimates, however, that 60 to 65 percent

of incoming material is from residential sources, 25 to 30 percent is from commercial sources, and 5 to 10 percent is from the University.

Incoming material is placed in designated piles by material type. Brush, leaves, and green waste (lawn clippings and garden waste) are deposited in separate piles. Four times per year the County-owned tub grinder is used to grind the brush. A Borough loader operator loads the tub grinder. The ground brush is placed in long rows using the Borough's front-end loader, and sold as mulch. The leaves and green waste are mixed together into windrows using the Borough-owned loader. The County also has a windrow turner available for use, but the Borough has not used it for the last couple of years because space has been too limited to use it effectively. Instead, the Borough turns the windrows using the front-end loader. A screener that is owned by the County is used twice per year to screen the finished compost to further prepare it for sale. The Borough loader operator loads the material into the screener and places the screened material in a pile available for purchase by residents or contractors. At the time of the site visit (February 25, 2004), the following materials remained on site:

- Two wood chip piles that are approximately 200 feet long, 20 feet wide, and 16 feet high (5,000 total cubic yards);
- Approximately 1,000 cubic yards of leaves from 2003 available on site, which will be composted with the grass received in Spring 2004; and
- Approximately 1,500 cubic yards of finished compost which is available for use/sale.

Figure 1 shows some of the finished material.

Figure 1
Compost and Mulch on Site



Equipment

Cumberland County owns yard waste processing equipment which is available for unlimited use by County municipalities for a flat annual fee. The County hires a transporting company to transport the horizontal grinder and the trommel screen, however they do not pass this cost along to the municipalities. Generally a municipality holds onto the equipment until another jurisdiction needs it, and the jurisdiction needing the equipment typically retrieves it from its current location. Table 1 shows the equipment that the Borough can borrow from the County on an unlimited basis for a flat annual fee.

Table 1
Cumberland County Yard Waste Processing Equipment

Equipment Type	Function	Annual Fee
Tub Grinder HG 525 Horizontal Grinder	Grind brush, tree trimming wood waste into mulch	\$ 1,550
Windrow Turner	Turn leaf windrows for composting	\$ 350
Trommel Screen	Screen mature compost for beneficial use	\$ 400
Top Dresser	Spread screened compost on park/recreation areas	\$ 100

In 2003 the Borough paid for use of the tub grinder, the trommel screen and the windrow turner, for a total cost of \$2,300. It was beyond the scope of this project to evaluate the appropriateness of the flat rates charged by the County to Shippensburg Borough. However, we note that the flat-rate fee structure currently charged by the County may not adequately cover the costs borne by the County to provide these services, which suggests the possibility that the County will need to increase rates at some point in the future. Any such rate increases would need to be passed through to the Borough's compost customers.

The equipment owned by the facility includes a 1985 Michigan L50 front-end loader and a 1986 Case 580K backhoe. The Borough purchased this equipment using Borough funds. The Borough has received 902 grants in the past, for conveyor equipment and recycling bins, and grants helped with the cost of the initial development of the compost site as well as for the backhoe. The expected useful life of a loader and backhoe is 10 to 12 years, so both pieces are due for replacement. The loader is scheduled for replacement in 2005 and the backhoe in 2006. The estimated costs are \$115,000 for the loader and \$75,000 for the backhoe.

Staffing

Staff consists of one equipment operator that works 10 to 20 hours per week, depending on the season, another equipment operator that works 8 to 12 hours per week at the site, and a laborer that spends 5 to 8 percent of his time working at the facility. In addition, a manager spends approximately 2 to 3 percent of his time each year overseeing facility operations. Table 2 summarizes the facility's staffing for 2003.

Table 2
Facility Staffing Summary- 2003

Position	Composting Facility Hours Per Year	Composting Facility Function	Estimated Annual Cost Including Benefits
Facility Manager	52	Supervise operations	\$ 1,472
Equipment Operator 1	780	Equipment operator	\$ 15,129
Equipment Operator 2	260	Equipment operator	\$ 5,043
Laborer	135	Move materials	\$ 1,688
TOTAL	1,227		\$ 23,332

Disposition of Final Product

The Borough sells processed wood chips for \$2 per one-yard bucket and finished compost is sold for \$8 per one-yard bucket. Residents who are willing to load the material into their own vehicles are not charged for compost or mulch. The facility is selling primarily to residents and contractors. The University currently does not purchase any product from the site. It is estimated that the facility sold 440 cubic yards of wood chips and 150 cubic yards of screened compost in 2003, for an estimated \$1,800 in revenues. This is an average of \$3.02 per cubic yard. In addition, 160 cubic yards of wood chips were used for school, park, and Borough projects.

Quantity Estimates

Although the Borough does not track quantities, Borough personnel estimate incoming material quantities based on the size of the piles. They estimate that the quantity of incoming materials will total nearly 34,000 cubic yards in 2004. Note that according to Pennsylvania's Guidelines for Yard Waste Composting Facilities (Document Number 254-5403-100), "No more than 3,000 cubic yards of yard waste shall be placed, stored, or processed on any acre of a facility where composting activity occurs or is planned to occur." At 2.75 acres, the Shippensburg site can only have approximately 8,250 cubic yards of material on site at any given moment. This means that processing material in an efficient fashion, and establishing end markets, is especially important for the Borough. A copy of the DEP's Guidelines for Yard Waste Composting Facilities is provided in Exhibit 3.

Table 3 provides detail regarding these quantities. Quantities for 2004 are estimated based on the average amount of materials received during the last three years. Quantities for 2005 are expected to remain level, although quantities could increase or decrease depending on the

marketing, operational, and rate strategies the Borough decides to implement. We have relied on these Borough-provided estimates in forming our analysis. To the extent these estimates are imprecise, the results to this analysis would be expected to change.

Table 3
Estimated Incoming Materials in Cubic Yards

Year	Bulk Leaves	Leaves	Grass	Brush	Total
1991	1,315	168	105	190	1,778
1992	889	1,314	593	596	3,392
1993	1,145	1,853	619	4,281	7,898
1994	1,250	1,257	1,718	7,110	11,335
1995	585	759	2,533	11,004	14,881
1996	793	1,102	2,613	10,500	15,008
1997	1,300	1,646	2,449	9,912	15,307
1998	923	1,716	2,332	9,324	14,295
1999	1,150	1,250	2,544	7,566	12,510
2000 ¹	0	0	0	0	0
2001	1,000	1,505	2,442	10,500	15,447
2002	700	600	700	16,000	18,000
2003	600	400	1,000	25,000	27,000
2004 ²	767	835	1,381	17,167	20,149
2005 ³	767	835	1,381	17,167	20,149

¹2000 figures are not available because the site was not operational that year due to lack of site manager.

²Based on averaging previous three years' estimated quantities.

³It is assumed that quantities will remain stable, given that tip fees may be implemented.

Financial Review

The Borough's Wastewater Treatment Department supplied information regarding cost and the budget for the compost facility. This information is presented in Table 4.

**Table 4
 Annual Compost Facility Operational Expenses and Revenues Supplied By Borough¹**

Category	2001 Actual	2002 Actual	2003 Budget	2003 Actual	2004 Budget
Expenses					
Labor	\$ 2,418	\$ 3,546	\$ 4,600	\$ 15,991	\$ 10,000
Diesel Fuel			\$ 1,500		\$ 500
Compost Supplies			\$ 500	\$ 76	\$ 500
Contract County Equipment			\$ 2,050	\$ 2,050	\$ 3,000
Subtotal Compost Facility Expenses	\$ 2,418	\$ 3,546	\$ 8,650	\$ 18,117	\$ 14,000
Revenues					
Income from Sale of Compost	\$ -	\$ -	\$ -	\$ 1,800	\$ 2,723
Net Operating Surplus (Deficit)	(\$ 2,418)	(\$ 3,546)	(\$ 8,650)	(\$ 16,317)	(\$ 11,277)

Note that labor costs increased dramatically from 2002 to 2003. This increase is attributable to better record-keeping regarding labor utilized at the site, and an increase in materials being delivered to the site, which required additional labor to manage.

Site Visit Observations

R. W. Beck attended a kick-off meeting and performed a site visit on February 26, 2004. During that meeting several specific challenges facing the facility were expressed, including:

- For the past year the facility has been processing maximum volumes for the size of the site;
- There were odor issues at the site during the summer of 2003;
- The site can be dusty at times;
- The dirt surface can be problematic for the County's grinding and screening equipment;
- Frequent pooling of water or “ponding” on the site often leads to insect problems;
- The site lacks fencing and security, and is not monitored after hours;
- The amount of staff hours devoted to the site are excessive for the quantity of material being processed;
- There is currently no means of accurately measuring quantities of incoming and outgoing material; and

¹ Data from 2003 Budget and 2003 Abbreviated Detail Budget Status Report

- The facility is not fenced, therefore anyone can visit the facility at any hour of the day or night, tipping whatever materials they choose.

Figure 2 shows an example of water pooling on the site.

Figure 2
Water Pooling on Site



Potential facility enhancements and operational enhancements that address these challenges are described below.

Task 2 – Potential Facility Enhancements

Suggested Enhancements

Based on our site visit and operations analysis, we recommend that the Borough consider the following facility enhancements:

- Enclosing the site with a chain link fence and security gate;
- Installing a surveillance camera(s) (to allow remote observation of site from the wastewater treatment offices);

- Grading the site to alleviate pooling of water;
- Paving the site to reduce dirt and dust;
- Building a drainage retention pond to alleviate pooling of water;
- Installing a card-key system for security purposes (which would allow the operator to assist those delivering materials); and
- Building a guard house at the gate.

Although having a scale would be beneficial in tracking quantities of material delivered, purchasing a scale is not recommended, as they cost roughly \$40,000, and would not be cost-effective for an operation of this size.

Costs of Site Enhancements

Table 5 shows the estimated costs associated with the suggested facility and operational enhancements listed above. These costs were estimated based on an engineering cost workup prepared by R. W. Beck and validated by interviews with two local service providers for each cost estimate. The table also shows estimated annual costs, assuming straight line depreciation over the useful life of the item, as described in the table.

The project engineering costs, as well as the costs of installing the concrete island required for the card key system and the costs of pulling the electricity are not included in this analysis. It is assumed that the Borough would use its own engineer, and would build the concrete island required for the card key system, as well as pull the electricity required. The costs of these Borough-provided services could therefore be allocated toward the 10 percent of project costs that the Borough must pay, if DEP is able to fund the other 90 percent through a 902 grant.

Table 5
Estimated Costs of Site Improvements

Recommendation	Estimated Total Cost	Useful Life (Years)	Estimated Annual Cost Without DEP Grants	Estimated Annual Cost With DEP Grants
Grade site, pave and expand ditch as a drainage retention pond	\$ 250,000 ¹	20	\$ 12,500	\$ 1,250
Improvements to drainage ditch (e.g., reeds, re-grading, watering)	\$ 14,400	20	\$ 720	\$ 72
Install a chain link fence and security gate	\$ 40,000	5	\$ 8,000	\$ 800
Install a security camera	\$ 2,000	5	\$ 400	\$ 40
Build guard house at gate	\$ 6,500	5	\$ 1,300	\$ 130

Recommendation	Estimated Total Cost	Useful Life (Years)	Estimated Annual Cost Without DEP Grants	Estimated Annual Cost With DEP Grants
Card key system	\$ 25,000	5	\$ 5,000	\$ 500
Subtotal of Additional Costs	\$ 337,900		\$ 27,920	\$ 2,792
Potential additional upgrade: Construction of stormwater collection and detention system	\$ 90,000	20	\$ 4,500	\$ 450.00
Total of Additional Costs (including the stormwater system)	\$ 427,900		\$ 32,420	\$ 3,242

As Table 5 show, the minimum potential site enhancements are estimated to cost approximately \$338,000. If the costs are amortized over the time periods indicated in Table 5, and DEP grants are obtained to cover 90 percent of the costs, then the Borough's annual costs would be approximately \$2,792. If DEP grants were not obtained for the site enhancements, the annual cost would be \$27,920. This cost estimate assumes that expanding the existing drainage ditch (expanded slightly) would provide adequate runoff stormwater capacity for the site. Therefore, costs for developing a stormwater collection and detention system are not included.

We advise the Borough that this assumption needs to be explored further by the Borough engineer, as making this determination is beyond the scope of this project. If such a system is required it could consume a significant portion of the usable site. If a stormwater collection and detention system had to be constructed on site to manage runoff, it is estimated that this would cost an additional \$90,000. This would be an additional \$4,500 in annual capital costs if DEP grants were not available, and an additional \$450 per year in capital costs if DEP grants did cover the majority of the cost. In addition, this would encroach on usable site space. If this system is required, the Borough might consider expanding the site a bit further, toward the road, to help offset this loss of space.

Task 3 – Operational/Management Enhancements

R.W. Beck's site visit and kickoff meeting revealed several potential operational/management enhancements and considerations that could benefit the Borough's compost operations, as well. Although identification of these enhancements was not part of the original scope, these activities are linked to potential site enhancements described above, and potential rate structures, which are described below, and are therefore listed. Potential composting operations/management enhancements include:

- Requesting that Borough police enforce site access rules and issue fines as appropriate;
- Restricting the amount of grass clippings that can be delivered to the site or mixing some of the grass with ground wood instead of waiting for additional leaves to be delivered;

- Using the windrow turner on a regular basis to ensure a higher quality product that is available sooner (which is important to moving material through the process such that too much material is not on site at any given time);
- Limiting hours of operation to 34 hours per week;
- Hiring part-time employees to track incoming vehicles and quantities delivered;
- Offering large-scale generators a discounted fee if they agree to buy a certain quantity of finished product from the facility;
- Developing a marketing plan for their finished compost and wood chips. Having too much finished product on site hinders the Borough's ability to accept and process additional materials;
- Tracking all labor hours and other costs associated with the operation of the facility more accurately so that all costs, including benefits and overhead, can be accounted for; and
- Developing cost-based user fees to recoup the full cost of operating the facility. This could include the following, discussed in more detail in Task 4, below:
 - Implementing an agreement/fee structure for the registration of contractors and other large-scale generators, such as Shippensburg University and Penn Line Services;
 - Establishing agreements with other municipalities to allow their residents to use the facility; and
 - Accurately tracking fuel used and/or equipment hours used (so that fuel use may be estimated) for composting operations.

Task 4 – Evaluate Costs/Develop Rates

The last recommendation above stems from the fact that, upon review, it became clear that the composting operations' budget did not closely track labor hours. It also appeared that the budgeted labor cost of \$10,000 appeared to significantly underestimate actual labor costs, based on reported hours and salaries. In addition, the composting operations' budget does not include fringe benefits for employees that spend part of their time working at the composting site. Accurate rate development depends upon the establishment of accurate costs, therefore R. W. Beck adjusted the WWTP-provided budget to include the labor costs described in Table 6.

Table 6
 Adjusted Labor Costs

Employee	Hourly Rate	Number of Hours	Annual Raw Labor Cost	Estimated Benefits ¹	Annual Loaded Labor Cost
Manager	\$ 21.78	52	\$ 1,132.56	\$ 339.77	\$ 1,472.33
Operator 1	\$ 14.92	780	\$ 11,637.60	\$ 3,491.28	\$ 15,128.88
Operator 2	\$ 14.92	260	\$ 3,879.20	\$ 1,163.76	\$ 5,042.96
Laborer	\$ 9.62	135	\$ 1,298.70	\$ 389.61	\$ 1,688.31
TOTAL		1,227	\$ 17,948.06	\$ 5,384.42	\$ 23,332.48

¹ Benefits are estimated to be 30 percent of allocated raw labor costs.

R. W. Beck next estimated the full cost of operating the site, including suggested site enhancements. Table 7 below provides a revised 2004 budget including the estimated annual costs associated with the recommended facility and program enhancements – both with and without DEP Grants, which are assumed to cover 90 percent of all eligible enhancements. In addition to the loaded labor costs shown in Table 6, an additional laborer has been added to staff the new gatehouse. It is assumed that this employee would work 34 hours per week, at a base rate of \$9.62 per hour. This equates to an annual cost of \$17,008 per year, excluding benefits (it is assumed that this employee would be part-time, and therefore not eligible for benefits).

Table 7
 Estimated 2004 Expenditures – Including Site Recommendations

Category	Estimated Operating Cost Without DEP Grants	Estimated Operating Costs With DEP Grants
Current Labor	\$ 23,332	\$ 23,332
Gatehouse Laborer	\$ 17,008	\$ 17,008
Total Labor	\$ 40,340	\$ 40,340
Facility Improvements ¹	\$ 27,920	\$ 2,792
Backhoe ²	\$ 6,250	\$ 625
Front End Loader ³	\$ 9,583	\$ 958
Diesel Fuel	\$ 1,800	\$ 1,800
Compost Supplies	\$ 500	\$ 500

Category	Estimated Operating Cost Without DEP Grants	Estimated Operating Costs With DEP Grants
Contract County Equipment	\$ 2,300	\$ 2,300
Total Annual Costs	\$ 88,693	\$ 49,315
Total Annual Cost Estimate 2005	\$ 91,354	\$ 50,794

¹ Assumes construction of storm water collection and retention system is not required. As mentioned above, this would cost an additional \$4,500 per year without DEP grants, or \$450 per year with DEP grants, amortized over 20 years.

² Assumes purchase price of \$75,000, amortized over 12 years.

³ Assumes purchase price of \$115,000, amortized over 12 years.

In addition, the budget in Table 7 includes the annual cost of a backhoe and a rear loader, as these pieces of equipment are both due for replacement.

Diesel fuel costs were estimated based upon past fuel usage and equipment hours. Despite the fact that only \$500 per year is budgeted for fuel for the site, staff indicates that fuel for the on-site equipment is often provided by another department.

The rental of county equipment assumes that the Borough will continue to rent the windrow turner, the grinder, and the screen, but not the top dresser. The Borough might want to consider renting the top dresser, however, as this might make the material more attractive for Borough projects, and would only add \$100 per year in costs.

While we have developed this estimate of full costs based on 2004 data, we note that annual operating cost increases are likely in future years. Accordingly, we believe it is appropriate to plan on annual rate adjustments in the range of three percent to accommodate escalation in facility operating costs. Table 7 shows total costs escalated by 3 percent.

Task 5 – Development of Potential Rates

As mentioned above, the facility currently does not track quantities of incoming materials, nor the number of deliveries to the facility. Instead, they have provided visual estimates of materials in the processing stage. It is suggested that, in order to develop accurate rates, the Borough hire a gatekeeper to track the number of vehicles entering the facility, as well as the quantity and type of material they deliver. This can be done using a visual estimation. It is suggested that, due to the fact that several different types of entities use the facility (e.g., residents, contractors, the University, and other entities), a per-yard processing fee be established. Most small facilities will charge the same rate for all types of materials.

Also, because grass can be problematic (causing odors, particularly when it arrives moist) and because the facility has been collecting more grass than is necessary to make a balanced compost product, the Borough should consider limiting the amount of grass it will accept. Alternatively, the Borough could use ground wood in place of leaves as a carbon source, to

balance the nitrogen-rich grass. Another option would be for the Borough to charge a higher tip fee for grass.

To establish equitable rates, the County's goal should be for the sum of all annual revenue sources to sum to total annual operating costs. If the facility received no DEP grants, the revenue stream would have to be \$91,354 annually to balance the budget (escalated at three percent for 2005). If DEP grants were received, and covered 90 percent of all site improvements listed in Table 5, and equipment listed in Table 7, then the facility would need to earn approximately \$50,794 per year. Although Pennsylvania offers a wide range of recycling and composting grants at the current time, there can be no assurance that these grant monies will be available into the future. For this reason, we recommend that the Borough exclude the impact of grant contributions when establishing its total costs and developing a revenue structure.

Potential sources of revenue for the Borough's facility include:

- **Tip fees** – a per-cubic yard fee for allowing material to be tipped at the facility;
- **Sales revenue** – Revenue from the sale of materials;
- **Annual Per household fees** – Charged to households that choose to deliver their yard waste to the facility.
- **Inter-local agreement per-household charge** – Charged as a flat per-household rate directly to surrounding municipalities based on the number of households in the municipality (would need to be negotiated with each municipality), so that residents could tip at the facility without being charged a tip fee.

When setting rates, it is important that rates be set in a competitive fashion. Tip fees should not be higher than other available facilities' tip fees, for example. R. W. Beck's experience is that tip fees in Pennsylvania for compost processing facilities range from \$3.00 to \$6.00 per cubic yard.

Final prices for materials should also be competitive, and the Borough should strive to make high-quality compost that can be marketed effectively. Most composting market development specialists disagree with giving materials away free of charge, as this instills a mindset to the resident that the compost and/or mulch has no value, which is untrue. It is suggested that the Borough market the material for a fair price – not give it away for free. If space becomes an issue, or the Borough approaches having the maximum allowable quantity of 3,000 cubic yards of material per acre on site, the Borough could hold a special event where they give away mulch and/or compost, and advertise the regular availability and price of the materials to promote future sales. Similarly, the Borough might consider charging other Borough departments for the mulch, perhaps at a discounted rate. While currently it is not common for area municipally owned and operated yard waste facilities to charge for finished product, the prices suggested are nominal relative to what is charged at private facilities. Further, with the move toward self-sustainable recycling programs, it will become more common for municipalities to recoup costs by charging for finished product. Until this becomes common practice, the Borough might consider charging a loading fee only, or keeping the cost of mulch negligible. Other composting

operations, such as the Greater Lebanon Refuse Authority's, are able to charge \$12.00 per cubic yard for their mulch (which is twice ground and screened).

Another potential marketing strategy is to allow those who purchase a certain quantity of material to tip at a reduced rate. After purchasing a certain amount of material in a calendar year, for example, the customer could be given a discount card which entitles them to 10 percent off the regular tip fee, for example.

The Borough should also consider alternatives available to their clients and potential clients for both tipping materials and purchasing end products.

Potential sources of revenue and reasonable upper and lower boundaries are described in Table 8. Typically, if a community agrees to pay a per-household fee for all households in the community, residents living in that community would not be required to pay a tip fee to bring materials to the facility. The table below, then, assumes that some neighboring communities agree to pay per household user fees, while others do not and instead rely upon their residents to pay a tip fee when they tip materials at the composting facility.

It would be beneficial for the Borough to try to assess what level of interest exists among nearby communities, and what type of funding mechanism they would favor. It would also be beneficial to discuss potential funding arrangements with private yard waste generators. This would help the Borough estimate their potential revenues with a greater degree of precision.

**Table 8
 Potential Rates and Revenue Sources**

Revenue Source	Potential Range for Rates		Potential Range for Quantities		Potential Annual Revenues	
	Low	High	Low	High	Low	High
Tip Fees	\$2.00/CY	\$4.00/CY	15,000 cubic yards	40,000 cubic yards	\$ 30,000 -	\$ 160,000
Compost Sales	\$6.00/CY	\$10.00/CY	100 CY	500 CU	\$ 600	\$ 5,000
Mulch Sales	\$1.50 per cubic yard	\$3.00 per cubic yard	300 cubic yards	1,000 cubic yards	\$ 450	\$ 3,000
Annual Per Household Fees	\$10.00	\$20.00	100	500	\$ 1,000	\$ 10,000
Inter-Local Agreement Per-Household Charge	\$5.00	\$8.00	1,700	8,500	\$ 8,500	\$ 68,000
TOTAL POTENTIAL REVENUES					\$ 40,550	\$ 246,000

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Table 8 suggests that the potential exists for the Borough's facility to cover its operating costs, even without DEP grants. This would imply that the Borough's compost facility could be self-sustaining over time, with a revenue structure that covers the full cost of the operations. It should be noted that it is unlikely that the Borough would be able to maximize each revenue source indicated, however, as in some cases one type of charge (such as a per-ton tip fee) might be implemented in lieu of another type (such as a per-household fee). The table is meant to provide an illustrative example, however, of the types of fees that could be implemented, and some reasonable upper and lower bounds for each.

Because of the lack of critical information needed to establish actual rates — such as confirmed material quantities, and no clear understanding of the customer base — it is beyond the scope of this report to calculate actual rates. The facility full costs shown in Table 7 should provide the cost basis of final rates after the Borough completes the necessary facility upgrades and makes the recommended operational changes. As with any public utility, including water, wastewater, or electricity, we support the efforts to develop equitable user fees that adequately cover the full costs of the utility services.

We appreciate the opportunity to work with the Borough on this project. Please contact Walt at (301) 607-6428 or Susan at (401) 782-6710 should you have any questions.

Very truly yours,

R. W. BECK, INC.

Walt Davenport
Special Projects Director

Susan Bush
Project Manager

Exhibit 1
Aerial Photo of Shippensburg Borough Property

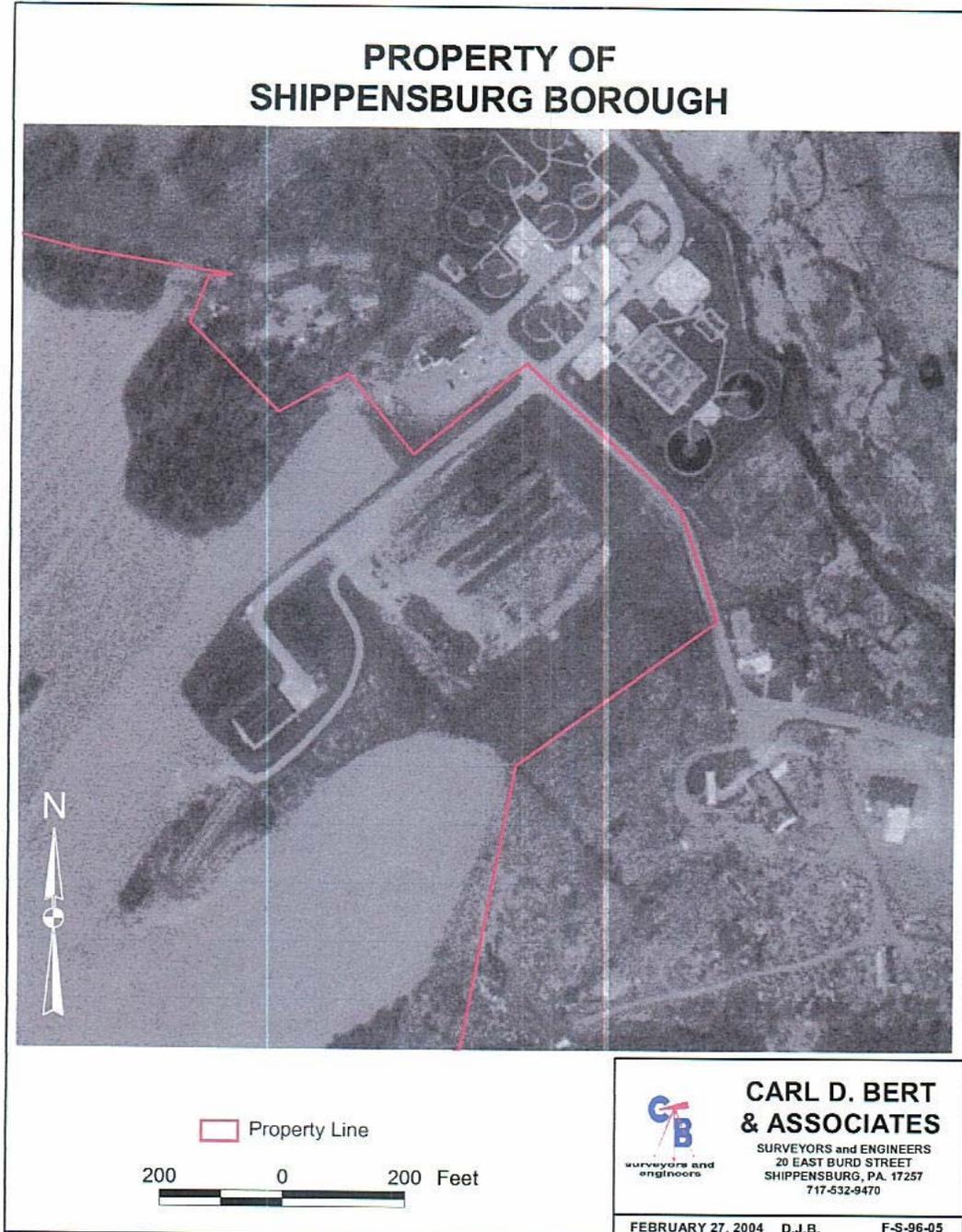


Exhibit 2 – Yard Waste Composting Site Site Plan

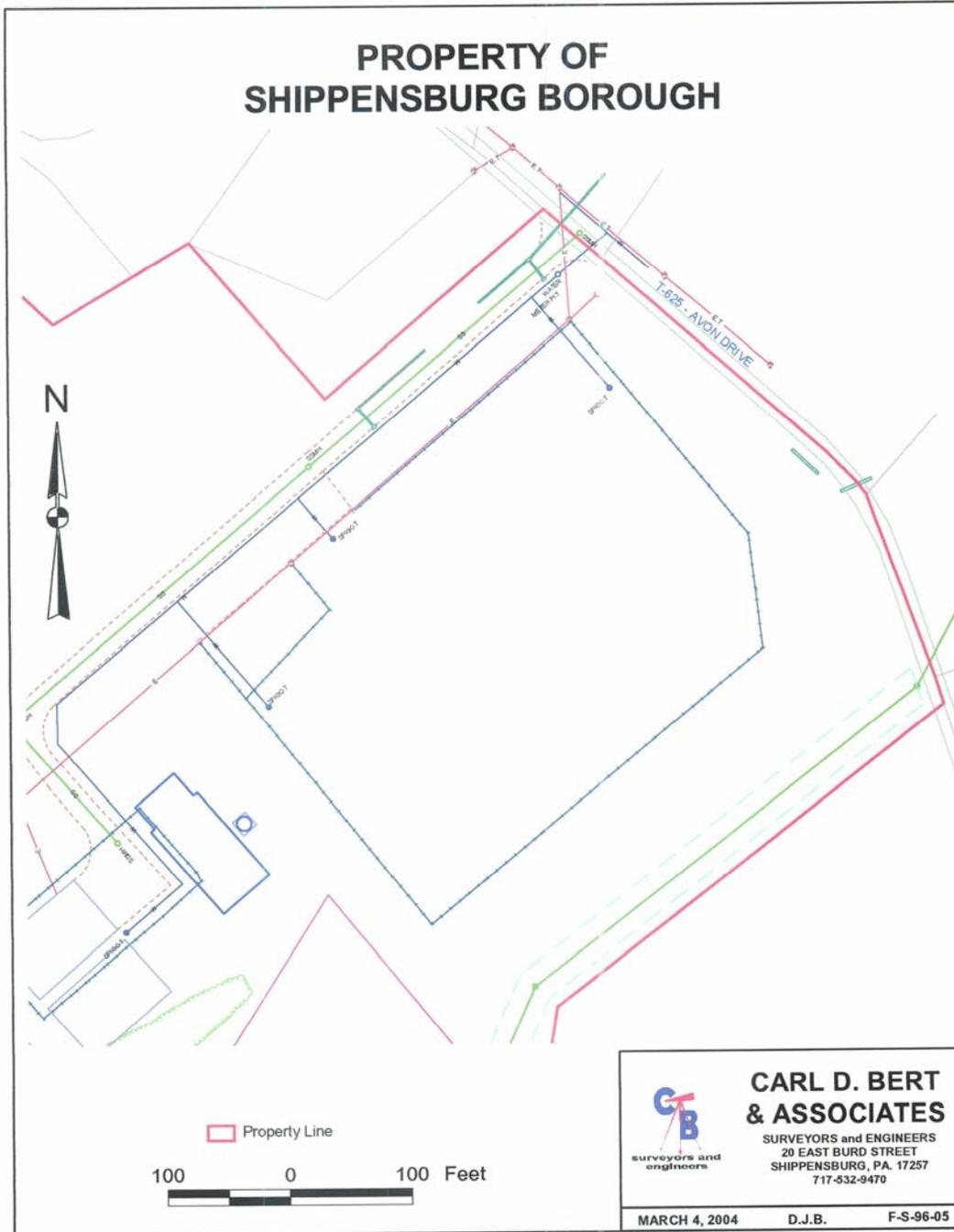


EXHIBIT 3

DEP GUIDELINES FOR YARD WASTE COMPOSTING FACILITIES

DEPARTMENT OF ENVIRONMENTAL PROTECTION
Bureau of Land Recycling and Waste Management
Division of Municipal and Residual Waste

Document Number: 254-5403-100

Title: GUIDELINES FOR YARD WASTE COMPOSTING FACILITIES

Authority: Solid Waste Management Act (35 P.S. §§ 6018.101 et seq.) and regulations at 25 Pa. Code Chapters 271, 281, and 285 (the “municipal waste regulations”).

Effective Date: September 1, 1997

Policy: It is the Department’s policy to provide a person, municipality, or county with the information necessary to operate a yard waste compost facility.

Purpose: The purpose of this document is to provide instructions and operating procedures for the operation of a yard waste composting facility operating under permit-by-rule.

Applicability: This guidance applies to all persons, municipalities, and counties who own or operate a yard waste composting facility operating under 25 Pa. Code Section 271.103(h) Permit-By-Rule.

Disclaimer: The policies and procedures outlined in this guidance are intended to supplement existing requirements. Nothing in the policies or procedures shall affect regulatory requirements.

The policies and procedures herein are not an adjudication or a regulation. There is no intent on the part of DEP to give the rules in these policies that weight or deference. This document establishes the framework within which DEP will exercise its administrative discretion in the future. DEP reserves the discretion to deviate from this policy statement if circumstances warrant.

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Definitions: The definitions listed below are found in 25 Pa. Code Section 271.1.

“Yard Waste”: Leaves, grass clippings, garden residue, tree trimmings, chipped shrubbery, and other vegetative material.

“Yard Waste Composting Facility”: A facility that is used to compost leaf waste, or leaf waste and grass clippings, garden residue, tree trimmings, chipped shrubbery, and other vegetative material. The term includes land affected during the lifetime of the operation, including, but not limited to, areas where composting actually occurs, support facilities, borrow areas, offices, equipment sheds, air and water pollution control and treatment systems, access roads, associated on-site or contiguous collection and transportation activities, and other activities in which the natural surface has been disturbed as a result of or incidental to operation of the facility.

**GUIDELINES FOR YARD WASTE
COMPOSTING FACILITIES**

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INTRODUCTION

Composting has been demonstrated to be an effective waste management technique that can produce a useful end-product while diverting a portion of the wastestream from disposal. It has been estimated that yard wastes--including leaves, trimmings, grass, and related yard debris--can comprise up to 18 percent of the municipal waste stream, with a greater percentage realized in some municipalities on a seasonal basis.

Certain yard waste composting facilities are eligible for permit-by-rule under Section 271.103(h) of the municipal waste regulations if they comply with these guidelines. Section 271.103(h) provides that a person, municipality, or county that operates a yard waste composting facility that is less than 5 acres, other than an individual backyard composting facility, shall be deemed to have a municipal waste processing permit-by-rule if the person, municipality, or county meets the requirements of Subsections 271.103(a)-(c)(relating to storage, PPC plan, daily records, financial assurances, and inappropriate activity), and the facility is operated in accordance with these guidelines on yard waste composting.

These guidelines have been established to promote yard waste composting and reuse in the Commonwealth while providing protection to human health and the environment. Health or environmental problems, resulting from the improper operation of a yard waste composting facility operated under Section 271.103(h), will be treated in the same manner as health or environmental problems at other solid waste management facilities.

More than 250 municipalities and counties in the Commonwealth are conducting yard waste collection and composting programs. In an effort to increase awareness of the benefits of composting and to promote the proper environmental and technical practices involved, the Department has designated several of these facilities as yard waste composting demonstration sites. Many of the other sites also present backyard composting demonstrations for homeowners. The Department has developed a reference manual, brochures, and educational videos to provide further information. To learn more about these and other related resources, contact your DEP regional office or the world wide web site (<http://www.dep.state.pa.us>).

Yard waste composting operations must comply with these guidelines to comply with Section 271.103(h) of the municipal waste regulations. Please contact your DEP regional office for further information.

DEP REGIONAL OFFICES

<p>REGION 1:</p>	<p>DEP SOUTHEAST REGION Lee Park, Suite 6010 555 North Lane Conshohocken, PA 19428 Telephone: (610) 832-6212 Counties Served: Bucks, Chester, Delaware, Montgomery, and Philadelphia</p>	<p>REGION 4</p>	<p>DEP NORTHCENTRAL REGION 208 West 3rd Street, Suite 101 Williamsport, PA 17701 Telephone: (717) 327-3653 Counties Served: Bradford, Cameron, Center, Clearfield, Clinton, Columbia, Lycoming, Montour, North- umberland, Potter, Snyder, Sullivan, Tioga, and Union</p>
<p>REGION 2:</p>	<p>DEP NORTHEAST REGION 2 Public Square Wilkes-Barre, PA 18711 Telephone: (717) 826-2516 Counties Served: Carbon, Lackawanna, Lehigh, Luzerne, Monroe, Northampton, Pike, Schuylkill, Susquehanna, Wayne, and Wyoming</p>	<p>REGION 5:</p>	<p>DEP SOUTHWEST REGION 400 Waterfront Drive Pittsburgh, PA 15222-4745 Telephone: (412) 442-4000 Counties Served: Allegheny, Armstrong, Beaver, Cambria, Fayette, Greene, Indiana, Somerset, Washington and Westmoreland</p>
<p>REGION 3:</p>	<p>DEP SOUTHCENTRAL REGION One Ararat Blvd. Harrisburg, PA 17110 Telephone: (717) 657-4588 Counties Served: Adams, Bedford, Berks, Blair, Cumberland, Dauphin, Franklin, Fulton, Huntingdon, Juniata, Lancaster, Lebanon, Mifflin, Perry, and York</p>	<p>REGION 6:</p>	<p>DEP NORTHWEST REGION 230 Chestnut Street Meadville, PA 16335 Telephone: (814) 332-6848 Counties Served: Butler, Clarion, Crawford, Elk, Erie, Forest, Jefferson, Lawrence, McKean, Mercer, Venango, and Warren</p>

TECHNICAL GUIDANCE FOR THE OPERATION OF A YARD WASTE COMPOSTING FACILITY UNDER PERMIT-BY-RULE

A person, municipality, or county that operates a yard waste composting facility under permit-by-rule shall comply with these guidelines, as required by 25 Pa. Code Section 271.103(h).

General Requirements

The following operational information must be submitted to the Department on the attached Yard Waste Composting Facility Application Form:

- a. The name, address, and telephone number of the operator of the facility.
- b. The sponsoring municipality or county (where applicable).
- c. The location of the facility, including identification of the site by outlying perimeter site boundaries on a United States Geological Survey 7.5 minute topographic map.
- d. Proof that the operator has the legal right to enter the land and perform the approved activities.
- e. A general site plan drawn to scale for the facility indicating the following:
 - i. The location of access roads and gates in relation to public and private roads, wells, and property lines.
 - ii. The location of the tipping area.
 - iii. The location of the processing area, including compost piles and windrows.
 - iv. The location of storage and curing areas.
 - v. Surface water controls.
- f. The operational narrative describing:
 - i. The yard waste collection methods that will be employed by the facility.
 - ii. The methods that will be utilized at the facility to construct compost piles.
 - iii. The proposed dimensions of compost piles and windrows at the facility.

- iv. The source of supplemental water that will be used to maintain an optimal 50 percent moisture content of compost piles or windrows at the facility.
 - v. The proposed method of turning windrows, the turning frequency for composting at the facility and the method for determining that frequency.
 - vi. The proposed duration of the composting process, including curing time, storage time, and the proposed term of compost distribution.
 - vii. A plan for the marketing and distribution of the finished compost.
 - viii. A residue disposal plan, including the location of disposal sites.
 - ix. Provisions for emergency response.
 - x. A public information and education program.
- g. The projected volume of material that will be processed by the facility during the calendar year.

Siting Restrictions

Yard waste composting operations, including storage, composting, and curing, shall not occur in the following areas or the following distances, unless the operator takes special precautions and receives written authorization from the Department:

- a. In a 100-year flood plain.
- b. In or within 300 feet of an exceptional value wetland.
- c. In or within 100 feet of a wetland other than an exceptional value wetland.
- d. Within 100 feet of a sinkhole or area draining into a sinkhole.
- e. Within 300 feet measured horizontally from an occupied dwelling unless the owner has provided a written waiver consenting to the facility being closer than 300 feet.
- f. Within 50 feet of a property line, unless the operator demonstrates that only curing of compost is occurring within that distance.
- g. Within 300 feet of a water source.
- h. Within 3.3 feet of a regional groundwater water table.
- i. Within 100 feet of a perennial stream.

Access Control

1. A gate or other barrier shall be maintained at all potential vehicular access points to block unauthorized access to the site.
2. Access to the site shall be limited to those times when an attendant is on duty.

Operational Requirements

1. No person, municipality, or county shall bring to or receive any material at a yard waste composting facility other than shrubbery and tree trimmings that have been shredded or chipped, unless shredding or chipping is provided at the facility, leaves, grass, and similar related yard debris.
2. The Department may prohibit the use of grass clippings at a yard waste composting facility if the grass clippings cause or contribute to nuisances, or if the site is adversely affecting, or has potential to adversely affect, the citizens or environment of the Commonwealth. Grass clippings shall not be brought to or received at a yard waste composting facility unless:
 - a. Grass clippings delivered to the yard waste composting facility in bulk, bags or other collection containers are emptied of all grass clippings within 24 hours of delivery to the facility.
 - b. Grass clippings are incorporated into the windrows of partially composted leaves or other yard waste within twenty-four (24) hours of delivery to the facility.
 - c. Grass clippings are incorporated into the partially composted windrows of partially composted leaves or other yard waste at a ratio not to exceed one part grass clippings to three parts yard waste, by volume.
3. No more than 3,000 cubic yards of yard waste shall be placed, stored, or processed on any acre of a facility where composting activity occurs or is planned to occur.
4. A person, municipality, or county operating a yard waste composting facility shall, for the duration of yard waste composting activities, identify the operation by posting and maintaining signs that are clearly visible at the junction of each access road and public road. The signs shall be easily seen and read. They should be constructed of a durable, weather-resistant material. The sign wording shall include the name, address, and telephone number of the person(s), municipality(ies), or county(ies) operating the facility, the operating hours, and the materials that can be received by the facility.
5. Each yard waste composting facility shall be operated in a manner which results in the active biological decomposition of the vegetative material received.

6. Yard waste compost piles or windrows shall be constructed and maintained as follows:
 - a. The compost area shall be constructed in a well drained area with a workable surface and slope of 2-4 percent to prevent ponding and control surface water.
 - b. The size of the compost piles or windrows should not exceed eight feet in height or sixteen feet in width unless the composting technology can adequately manage the compost piles, and is approved by the Department.
 - c. Compost piles or windrows shall be constructed within one week following receipt of compostable material at the facility.
 - d. During the active composting process, the optimal moisture content of the windrows or compost piles shall range from 40 to 60 percent to promote decomposition.
 - e. All surface water shall be diverted away from tipping, processing, composting, curing and storage areas. Surface water controls shall be based on a 24-hour precipitation event to be expected once every 25 years. Proper drainage must be maintained to prevent ponding and excessive moisture.
 - f. To promote decomposition, compost piles and windrows shall be turned and reconstructed at least once every three (3) months. A higher turning frequency may be required, depending on the composting technology unless the composting technology requires more intensive management.
7. The operator shall maintain sufficient distance between windrows or piles to allow the proper use of equipment during the deposit, removal, and turning of the compost.
8. The operator shall establish an adequate frequency for inspecting the facility to detect hot spots in any composting, curing or storage areas, dust or litter accumulation, surface water accumulation, erosion or sedimentation, vectors, odors, and other problems. The operator shall take prompt, necessary corrective actions.
9. The operator shall not allow compostable materials or residues to be blown or otherwise deposited offsite.

Residue Disposal

1. The operator shall not allow non-compostable residues or solid waste other than yard waste to accumulate at the facility, and shall provide for proper disposal or processing.

2. Yard waste and other municipal waste received at the facility that are not suitable for composting shall be removed weekly and disposed or processed at a permitted municipal waste facility.

Nuisance Control

1. The operator shall not cause or allow the attraction, harborage, or breeding of vectors.
2. The operator shall not cause or allow conditions that are harmful to the environment or public health, or which create safety hazards, odors, noise, or other public nuisances.

Emergency Response

1. Adequate space shall be maintained to allow the unobstructed movement of emergency personnel and equipment.
2. The operator of each yard waste composting facility shall immediately contact local police or fire departments or other appropriate state or local emergency response agencies in the event of fire, spill, or other hazards that threaten public health, safety, and welfare, or the environment, and whenever necessary in the event of personal injury.

Air Resources Protection

1. The operator shall implement fugitive dust control measures.
2. No person, municipality, or county shall cause or allow open burning at the facility.

Water Quality Protection

1. The operator shall manage surface water and control erosion and sedimentation in accordance with the requirements of 25 Pa. Code Chapter 102, Erosion Control.
2. The operator shall not cause or allow a point or non-point source pollution discharge from or on the facility to any surface waters of the Commonwealth.

**COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF LAND RECYCLING AND WASTE MANAGEMENT**

**YARD WASTE COMPOSTING FACILITY
APPLICATION FORM**

Please familiarize yourself with the Pennsylvania Department of Environmental Protection GUIDELINES FOR YARD WASTE COMPOSTING FACILITIES prior to filling out this form.

1. Operator (Name and Mailing Address) _____ Telephone Number _____

2. Name of Facility _____ Contact Telephone Number _____
Contact Person _____
Property Owner's Name _____ Phone No. _____
Street Address of Facility _____

(Includes Access Road Name and Legislative Number)
State _____ Zip Code _____
City-Borough-Township _____
County _____

Sponsoring Municipality (where applicable) _____

Attach a United States Geological Survey 7.5 minute topographic map identifying the yard waste composting facility site boundaries outlined on it.

Provide proof the operator has the legal right to enter the land and perform the approved activities.

3. The proposed composting method: _____
Total acres of the composting facility: _____
The maximum quantity of yard waste and composted materials to be on the site at any one time: _____
Yard waste in cubic yards: _____
Finished compost in cubic yards: _____

4. Prepare and include in this application a general site plan* for the facility which illustrates the location of the following items:
access roads in relation to the nearest public and private roads, wells, and property lines
tipping area
gate location
surface water controls, erosion and sedimentation controls
processing area including location, orientation, and size of compost piles or windrows
curing or storage areas
north arrow
scale of drawing

* Please note that a hand drawn sketch that includes site dimensions is acceptable. An engineer's drawing is not required.

5 Please address the following items: (attach additional sheets if necessary)

- Provide a complete list of source(s) of yard waste to be received.
- Describe how the yard waste will be collected and received at the facility.
- Describe the method for inspecting incoming yard waste and for removing unacceptable material.
- Describe the windrow construction methods including equipment to be used.
- Describe the windrow size: Initial dimensions will be _____ wide x _____ high x _____ length.
- Describe the source of supplemental water which will be used to maintain an optimal 40 to 60% moisture content of compost piles or windrows.
- Indicate the frequency of windrow turning _____
Indicate the temperature range to be maintained _____
Indicate the method of windrow turning _____
- Describe the method for determining turning frequency.
- Describe the approximate duration of the composting cycle: (in days)
Describe the composting process:
Describe the curing period for compost:
Indicate the time required for storage and distribution:
Indicate the total time required for composting operation:
- Describe the marketing and distribution plan for the finished compost product.

- Describe the residue disposal plan and identify the disposal or processing site(s) to be used.
- Describe the plan for emergency response (fire, police, etc.).
- Outline the public information and education program (attach samples of literature if available).

LAND APPLICATION OF YARD WASTE

A municipality or county that collects yard waste and delivers it to any person to land apply as part of a normal farming operation, shall comply with the following guidelines in order to comply with the permit-by-rule requirements of 25 Pa. Code Section 271.103(h).

General Requirements

1. A municipality or county must notify the Department with the following information:
 - a. Sponsoring municipality or county.
 - b. Responsible official/contact person, including name, address, and telephone number.
 - c. Location, including identification of the site on a U.S.G.S. 7.5' topographic map.
 - d. Operational plan:
 - i. A general site plan must be included which contains the following information for land application sites:
 - A. Access road
 - B. Tipping area
 - C. Surface water controls (tipping area only)
 - D. Farm soil conservation plan and nutrient management plan.
 - ii. The operational narrative must include a description of each of the following:
 - A. Operational hours for receiving yard waste
 - B. Land application and incorporation frequency
 - C. Plan for removal of yard waste from bags
 - D. Spreading and incorporation methods and frequency
 - E. Source of leaves and grass clippings.
 - iii. Volume of yard waste processed during the previous year or expected to be processed during the first year of operation.

Operational Requirements

1. All surface water shall be diverted away from the tipping or storage area. Proper drainage must be maintained to prevent ponding.
2. Yard waste should be delivered to the farm in bulk. Where bags or other containers are used for collection, the bags or containers must be emptied of all yard waste delivered to the farm by the end of each day.
3. The Department may prohibit the use of grass clippings at the farm if the grass clippings cause or contribute to nuisances, or if the site has the potential to adversely affect the citizens or environment of the Commonwealth. Grass clippings shall not be brought to or received at a farm unless:
 - a. The grass clippings are delivered to the farm in bulk. Where bags or other containers are used for collection, the bags and containers must be emptied of the grass clippings delivered to the farm by the end of each day.
 - b. The grass clippings are to be spread in layers not to exceed six (6) inches in depth within one (1) week of delivery to the site.
 - c. Grass clippings mixed with manure and stored in an acceptable manure storage facility may be stored for up to 120 days, provided the storage of the material does not create a nuisance or environmental impact.
4. The operator shall not allow compostable materials or residues to be blown or otherwise deposited offsite.
5. No yard waste may be disposed of in waters of the Commonwealth.

Residue Disposal

1. The operator shall not allow non-compostable residues or solid waste other than yard waste to accumulate at the farm, and shall provide for proper disposal or processing.
2. Yard waste and other municipal waste that is received at the farm, that is not suitable for land application, shall be removed weekly and disposed or processed at a permitted municipal waste facility.

Nuisance Control

1. The operator shall not cause or allow the attraction, harborage, or breeding of vectors.
2. The operator shall not cause or allow conditions that are harmful to the environment or public health, or that create safety hazards, odors, noise, and other public nuisances.

Air Resources Protection

1. The operator shall implement fugitive dust control measures when necessary.
2. No person, municipality, or county shall cause or allow open burning at the facility.

Water Quality Protection

1. The operator shall manage surface water and control erosion and sedimentation in accordance with the requirements of 25 Pa. Code Chapter 102, Erosion Control.
2. The operator shall not cause or allow a point or non-point source pollution discharge from or on the facility to any surface waters of the Commonwealth.

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF LAND RECYCLING AND WASTE MANAGEMENT

LAND APPLICATION OF YARD WASTE FORM

Please familiarize yourself with the Pennsylvania Department of Environmental Protection GUIDELINES FOR LAND APPLICATION OF YARD WASTE prior to filling out this form.

1. Sponsoring Municipality or County (Name and Mailing Address) Telephone Number

2 Name of Farm _____ Contact Telephone Number _____

Contact Person at Farm _____

Property Owner's Name _____

Address of Farm _____

(Include Access Road Name and Legislative Number)

State _____ Zip Code _____

City-Borough-Township _____

County _____

Attach a U.S.G.S. 7.5 map identifying the yard waste site boundaries outlined on it.

3. Total acres of farm land application area. _____

4. Volume of yard waste to be received annually in cubic yards. _____

5. Prepare and include in this application a general site plan* for the facility which illustrates the location of the following items:

access roads in relation to the nearest public road

tipping area

surface water controls (tipping area only)

fields proposed for land application.

* Please note that a hand drawn sketch which includes site dimensions is acceptable. An engineer's drawing is not required.

6. Please address the following items:

- A complete list source(s) of yard waste to be received.
- Describe the method for inspecting incoming yard waste.
- Describe the plan for rejecting or disposing of unacceptable materials and residuals.

- Provide the name and location of the disposal or processing site for unacceptable materials and residuals.

- Attach the farm soil conservation plan and nutrient management plan.

- Describe the volume of yard waste processed during the previous year or expected to be processed during the first year of operation.

- Please provide an operational narrative which includes a description of each of the following:
 - Operational hours for receiving yard waste
 - Land application and incorporation frequency
 - Plan for removal of yard waste from bags
 - Spreading and incorporation methods and frequency
 - Source of leaves and grass clippings.