RECYCLING TECHNICAL ASSISTANCE
Project #524

FINAL REPORT
CURBSIDE LEAF WASTE MANAGEMENT
& COMPOSTING

February 2013

Sponsored by the Pennsylvania Department of Environmental Protection through the Pennsylvania State Association of Township Supervisors
RECYCLING TECHNICAL ASSISTANCE
Project #524

FINAL REPORT

WILLIAMSTOWN TOWNSHIP
NORTHAMPTON COUNTY, PENNSYLVANIA

CURBSIDE LEAF WASTE MANAGEMENT
& COMPOSTING

Project Completed By:

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1.0 STATEMENT OF PROBLEM

This study was conducted for Williams Township in Northampton County, Pennsylvania under the Recycling Technical Assistance program that is sponsored by the Pennsylvania Department of Environmental Protection (PADEP) through the Pennsylvania State Association of Township Supervisors (PSATS). The Township requested a solid waste expert to assist the Township in implementing a curbside leaf waste collection and composting program to comply with the Municipal Waste Planning, Recycling and Waste Reduction Act of 1988 (Act 101 of 1988). The project evaluated several curbside leaf waste collection alternatives and recommended preferred organics management strategies.

2.0 SUMMARY OF WORK

The following subsections summarize the work conducted by Gannett Fleming under the approved project tasks.

2.1 Leaf Waste Management Background

In a letter dated April 5, 2012 addressed to the Township, the PADEP notified Williams Township of its obligation to comply with residential curbside recycling requirements established by Act 101 of 1988. The new requirements apply to the Township because according to the 2010 US Census, the population exceeds the minimum thresholds that trigger mandated curbside recycling in Pennsylvania communities.

After reviewing its mandated curbside requirements, the Township had a number of concerns about implementing the new curbside recycling program. One concern was implementing curbside leaf waste collection, which is not currently offered within the Township. Some key questions included: who would collect the leaves (Township or another entity); how often should leaf waste be collected?; what equipment is needed?; where will collected leaves and brush be processed?; will Public Works staff be available?; and, what will the cost be to the Township and it’s taxpayers? As an initial step to prepare for leaf waste collection, the Township submitted an Act 101, Section 902 Grant for a tandem axel truck ($124,000), hooklift truck ($57,500) and leaf vacuum ($61,000). The grant funding request was needed to improve the Recycling Center operation and to secure leaf vacuum equipment that was believed to be necessary to meet the mandated requirements.

2.2 Leaf Waste Management Requirements

Under the new mandate by Act 101 of 1988, Williams Township is required to implement curbside recycling, including the management of leaf waste. Leaf waste, as defined by Act 101, includes leaves, garden residues, shrubbery and tree trimmings, and similar material, but does not include grass clippings. Loads comprised primarily of leaf waste should not be disposed in Pennsylvania Landfills in accordance with PA Code, Title 25, Chapter 273.1(j). At a minimum, the Township’s program must:
1. Require by ordinance that leaf waste is targeted for collection from residences and commercial, municipal and institutional establishments; and 

2. Establish a scheduled day, at least once per month, when leaf waste is collected curbside from residences; or 

3. Establish a scheduled day, not less than once in the spring and once in the fall, when leaf waste is collected from residences, and additionally facilitate a drop-off location or other collection alternative approved by PADEP that allows residents in the municipality to deposit leaf waste for the purposes of composting or mulching at least once per month. The leaf waste drop-off location may be located in a neighboring municipality or at a private sector establishment, provided that an agreement is in place to utilize that location and the municipality keeps residents and commercial, municipal and institutional establishments informed of the option at least once every six months. 

4. Ensure that commercial, institutional and municipal establishments generating leaf waste have collection service. 

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

Failure to comply with Act 101 of 1988 can result in PADEP withholding any and all Act 101 of 1988 grant funding. The Township receives approximately $5,000 in Recycling Performance Grant funding annually and has successfully secured Act 101 Section 902 grants in the past for other recycling equipment. 

2.3 Existing Leaf Waste Management Activities 

The Township does not currently collect leaf waste and does not operate a compost facility. Publics Works crews provide tree trimming on Township-owned roadways. Christmas Trees may be placed in a dumpster at the Township Recycling Center at 2300 Morgan Hill Road (see Photo). The Recycling Center is open to all residents (24) hours per day, (365) days per year for recycling plastic bottles (# 1 or 2), tin cans, aluminium cans, glass bottles, cardboard and other paper products. 

2.4 Findings 

The key findings from Gannett Fleming’s evaluation include the following:
• Low housing density, residential property size, grade/slopes, road mileage and overall demographics of Williams Township substantially influence the recommended strategies and potential costs for leaf waste management in the Township (see Appendix A, Zoning Map and Aerial Images). For example, 90 percent of residential properties exceed one (1) acre. Additionally, a substantial portion of residential properties have large grass yards with few trees; but often have trees in the rear of the property and/or along the property border. Larger single-family properties have historically been successful managing organics on site. These properties have adequate space to use backyard composting methods, which eliminates the need for leaf waste collection. Townhouse and condominium communities represent the majority of new residential units. These properties generate very little organic wastes, and are maintained by contract landscaping companies. With an environmentally responsible and cost effective methods of leaf waste management already well established, it is anticipated that only a small portion of residents will use (and be willing to pay for) curbside leaf waste service.

• Introducing curbside leaf waste management will increase the carbon footprint (i.e. total greenhouse gas emissions primarily from burning fossil fuels) associated with leaf waste management in Williams Township because fuel will be required at every stage of collection, transfer, processing, and final distribution of compost products. To the extent feasible, leaf wastes should be composted on residential properties, not taken off site.

• The Township does not currently comply with Act 101 of 1988 regarding leaf waste management for the following reasons:
  o Curbside leaf waste collection is not required via ordinance and is not offered to residents at this time.
    ▪ Ordinances are being updated.
  o Residents are permitted to burn leaf waste.
    ▪ The Township is revising the burning ordinance to prohibit burning of recyclables, including leaf waste.
  o Township recycling educational information is not distributed every six months and does not specify leaf waste requirements.

• The Township has the following compost facilities within 20 miles:
  o Saucon Valley Compost Center
    2011 Springtown Hill Road
    Bethlehem, PA 18015
  o First Regional Compost Authority
    6701 Weaversville Road
    Northampton, PA 18067
It is noted that the Township Recycling Center off Diehl Road could serve as leaf waste consolidation and transfer area provided leaves are deposited into roll-off containers and then transported to an approved compost site.

- It is Gannett Fleming’s opinion that initiating a leaf vacuum program in the Township is not environmentally or financially sustainable, particularly when compared with other alternatives. Municipal leaf vacuum service costs are highly variable, but may range from $100,000 to $150,000 annually, or $5.00 to $25.00 or even much more per year, per household. The Township has limited staff and leaf vacuuming is labor intensive and increases liability. Even if new staff are not added, operational costs can include overtime pay, maintenance, fuel and oil, and organics disposal and processing fees, and insurances and workers compensation. Leaf waste management costs will ultimately be paid by Township residents, including many who do not need or desire the service.

- It is Gannett Fleming’s opinion that it is not economically or operationally feasible for the Township to design, construct or operate a compost facility.
  
  - Capital costs for a permitted compost facility with paved surfaces could range from $250,000 to $750,000 or more.
  - The Township will not generate sufficient incoming feed stocks and outgoing products to cover capital and operation costs. Securing arrangements with other municipalities and feedstock sources would be required. Composting is a complex business with many financial risks.
  - A compost facility would compete with FRCA, a PADEP-funded compost facility located approximately 10 miles from the Township. FCRA has capacity for additional organics.

2.5 Curbside Leaf Waste Collection Alternatives

The curbside leaf waste collection alternatives below target cost-effective methods that meet the minimum requirements of Act 101 of 1988. Collecting leaves separately using vacuum trucks is not reviewed because it is Gannett Fleming’s opinion that leaf waste vacuum service is labor intensive and cost-prohibitive. It would negatively impact public works functions and result in passing avoidable costs to residents. The collection options evaluated are generally structured to include collection of leaf waste (as defined by Act 101 of 1988):

- Leaves are kept separate from other leaf waste materials, including garden residues, shrubbery and tree trimmings. Leaves are placed in paper bags or hard containers, at least once in the spring and once in the fall. Garden residues, shrubbery and tree trimmings are bundled and collected at least once in the spring and once in the fall, on the same day as leaves.
• Grass should be prohibited from collection; however, it could be included if the designated compost facility accepts the material.

• The feedstock requirements of the intended processor/compost facility should be referenced to determine how the material is prepared for curbside collection.

The table below presents several options for curbside leaf waste collection.

<table>
<thead>
<tr>
<th>Leaf Waste Collection Options</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Municipal Collection</td>
<td>Use Township staff to collect bagged (paper) or in hard containers; or contract with another municipality to collect leaf wastes.</td>
</tr>
<tr>
<td>Waste Hauler Contract</td>
<td>Municipal bid to contract with a waste hauler or landscaping company to provide leaf waste collection service in accordance with Act 101 of 1988.</td>
</tr>
<tr>
<td>Hauler Ordinance Requirements</td>
<td>Require private haulers to meet Act 101 minimums and provide all required documentation for PADEP. Provide municipal enforcement. This structure may be difficult to enforce.</td>
</tr>
</tbody>
</table>

2.6 Composting Alternatives

Segregated leaf wastes must be delivered to a PADEP-approved processor where the material is composted or turned into mulch, but not disposed. Leaves are typically composted in windrows and turned into leaf mulch and/or combined with soil to make soil amendments. Tree trimmings and similar wood materials are ground into mulch. Tip fees and/or usage fees plus the travel distance to the facility will impact costs associated with organic material that is collected for the purpose of composting. The Table below presents the basic composting options.

<table>
<thead>
<tr>
<th>Composting Options</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Municipal Composting</td>
<td>Township designs, constructs, permits, and operates a compost facility in accordance with PADEP requirements; or Township utilizes a local municipal compost site in a nearby municipality (e.g. Lower Saucon Compost Site).</td>
</tr>
<tr>
<td>Private Compost Facility</td>
<td>Deliver curbside-collected leaf waste to a private compost facility or utilize the facility for residential drop-off. Chrin Brother’s Landfill does not operate a permitted compost facility.</td>
</tr>
<tr>
<td>Public Compost Facility</td>
<td>First Regional Compost Authority (FCRA) compost facility is located within 10 miles. The annual FRCA Rate for participating municipalities is $3.30 per capita. The Township population (5,884) x $3.30 = $19,417 per year for residents and Public Works Department to drop off yard waste and take finished compost products. FCRA also offers a per load fee.</td>
</tr>
<tr>
<td>Permitted Land Application Farm</td>
<td>Farms may accept loads of leaves only for land application on farm fields. Farms would need to be identified and agree to participate via execution of a 2-page land application form.</td>
</tr>
</tbody>
</table>
2.6.1 **Chrin Brother’s Sanitary Landfill (Chrin Landfill)**

Gannett Fleming, the Township Publics Works Director and Chrin Landfill participated in a conference call on Wednesday, December 19th to discuss leaf waste processing. The key outcomes from this conference included:

- Chrin does not operate a permitted compost facility at this time and is therefore not positioned to accept leaves or bush for composting. In the future, if an approved compost site becomes operational, the Township will be allowed to use the permitted facility.
- Chrin Landfill currently services seven (7) recycling dumpsters at the Recycling Center. In the future, if roll-off containers are staged periodically to collect leaf wastes at the Recycling Center, Chrin *may* be able to service the leaf waste containers provided landfill staff are available (ongoing discussions needed).

2.6.1 **Saucon Valley Compost Center**

The Saucon Valley Compost Center located at 2011 Springtown Hill Road is a compost facility currently available to Lower Saucon Township and Borough of Hellertown residents only. Visitors must present a compost facility ID card. The compost facility is open April through late November on Fridays and Saturdays, 9:00 am to 1:00 pm. Gannett Fleming contacted the municipalities to determine if Williams Township Residents could be permitted to utilize the site, even on a limited basis, to serve as a supplemental drop-off site to meet Act 101 of 1988 requirements. The key outcomes included:

- Due to traffic related safety concerns, the Saucon Valley Compost Center cannot accept vehicle deliveries of yard waste by Williams Township residents.
- Because the Compost Center has the capacity to accept additional yard wastes, the municipalities are willing to further evaluate an arrangement to accept scheduled deliveries of yard wastes (in roll-offs) from the Williams Township Public Works Department.
- A cost sharing agreement would be needed for brush processing that currently costs $3,000 per grind.

3.0 **SOLUTIONS**

The following subsections present Gannett Fleming’s recommended approach for implementing an Act 101-compliant residential curbside leaf waste collection program in Williams Township. The recommendation is based on a review of the existing residential waste management system, demographics, property types and sizes, public works functions and staffing, regulatory requirements and proximity and fees of local organics processors. Leaf vacuum service or other frequent curbside leaf waste collection service will negatively impact the environment, public works staff, and result in avoidable costs being passed on to residents.
3.1 Recommended Solutions/Course of Action

The Township needs to comply with minimum Act 101 of 1988 requirements for leaf waste collection while minimizing collection and processing costs.

ORDINANCE REVISIONS

- Update Ordinance 1992-7 to prohibit the burning of recyclables and leaf waste.
- Update Ordinance 2003-1, to be consistent with the curbside waste and recycling requirements specified in Act 101 of 1988 for mandated recycling communities.

CURBSIDE LEAF WASTE COLLECTION SERVICE

- Do not implement leaf vacuum service. If Act 101, Section 902 grant funding is awarded for a vacuum truck, the Township should work with PADEP to reallocate funds to Recycling Center improvements or recycling equipment.
- Offer curbside leaf waste collection service to all households once in the spring and once in the fall using the following structure:
  - Separate leaves from other materials into kraft paper lawn and leaf bags.
  - Separate and bundle tree trimmings and brush. Brush collected at the curb should be bundled with twine and limited to 4’ length and 3” dia.
- Provide leaf collection using existing equipment (e.g. hooklift and roll-off container). Evaluate outsourcing leaf collection to qualified vendors and request the price-per-household for curbside service – know how much participating households will be billed for the service.
  - A Pay As You Throw” (PAYT) program may be considered for the curbside leaf waste collection provided the Township and residents meet the minimum Act 101 of 1988 leaf waste collection requirements. In a PAYT program for leaf waste, all residents should be offered a known level of service (e.g. one 64 gallon container, or 4 lawn and leaf bags). Residents that have additional quantities of leaf waste may set additional material at the curb, but must pay for the additional service. The PAYT program can be structured in a variety of ways. Residents can buy stickers from the Township, placing these stickers on additional leaf waste bags set at the curb. Haulers may also add the cost for additional bags and containers set at the curb directly to the respective customer bill.
- The Township should implement a sustained public information and education program as required by Act 101 of 1988, recommended as follows:
  - Notify residents 30 days prior to the initiation of the leaf waste (or other) recycling program.
  - Notify residents once every six months of the leaf waste and recycling program, describing the program, collection days, and responsibilities. Gannett Fleming recommends the Township website contain the leaf waste collection schedule for the year by the end of January. The following are accepted forms of educational material distribution:
    - advertisement in a newspaper
- posted public notices
- notice included with other official notifications to taxpayers
- Web-postings may count for one of the two annual notifications

- Evaluate bundling residential curbside leaf waste collection into a contract for a single hauler secured to provide municipal-wide curbside waste, recycling, and leaf waste collection. By bundling curbside leaf waste collection in with trash and recycling service, a very competitive cost can be secured. A professional hauler, not the public works department, would be responsible for providing the equipment and service.

**COMPOST SITE & LEAF WASTE PROCESSING**

- Curbside collected leaf wastes should be delivered to a PADEP-approved compost site. The preferred sites include the Saucon Valley Compost Site in Lower Saucon Township or the FRCA site in Weaverville PA. Due to lower cost, Gannett Fleming recommends the Saucon Valley Compost Site.

- Residents should be provided a supplemental drop-off site for leaf wastes that is open at least once per month. Because it does not appear a convenient or cost-effective compost site is locally available for Township residents to drop-off leaf wastes, roll-off containers for bagged (paper) leaves and bundled brush should be staged at the Township Recycling Center once per month.
  - It is recommended the Township make a request to Chrin Landfill to pay for the cost of tipping fees associated with organics processing and periodically service these roll-offs when staffing is available.

- A tracking form should be used by the Public Works staff to record the number of cubic yards collected and delivered of leaves and brush. Disposal quantities are needed to satisfy annual reporting requirements.

- In order to assure the Township has more than one cost effective option for disposing yard wastes, the Township should work with one or more local farms to complete the two-page Land Application of Yard Waste Form (Appendix B) contained within the Guidelines for Yard Waste Compost Facilities (updated 2009). This would permit the participating farm to accept yard wastes.
APPENDIX

Appendix A - Zoning Map and Aerial Images
Appendix B – Yard Waste Land 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

3. The proposed composting method

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 road 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.

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.

Sponsoring Municipality (where applicable)
5. Please address the following items: (attach additional sheet(s) 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 _____ long.
• 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 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 the 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.
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 Person at Farm
   Property Owner’s Name
   Address of Facility
   (include Access Road Name and Legislative Route Number)
   Zip
   City-Borough-Township
   County

Attach a U.S.G.S. 7.5” map identifying the farm and the yard waste site boundaries.

3. Total acres for 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 that includes site dimensions is acceptable. An engineer’s drawing is not required.

6. Please address the following items:
   - A complete list of 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.