# SWANA RECYCLING TECHNICAL ASSISTANCE

# FINAL REPORT

## SPRING TOWNSHIP, BERKS COUNTY
## YARD WASTE MANAGEMENT EVALUATION

Reedy Road Yard Waste Site Facility

**Prepared by**

Gannett Fleming

## HARRISBURG, PENNSYLVANIA

## APRIL 2009

# SWANA TECHNICAL ASSISTANCE STUDY
# FINAL REPORT
# SPRING TOWNSHIP, BERKS COUNTY
# YARD WASTE MANAGEMENT EVALUATION

## Table of Contents



## FIGURES

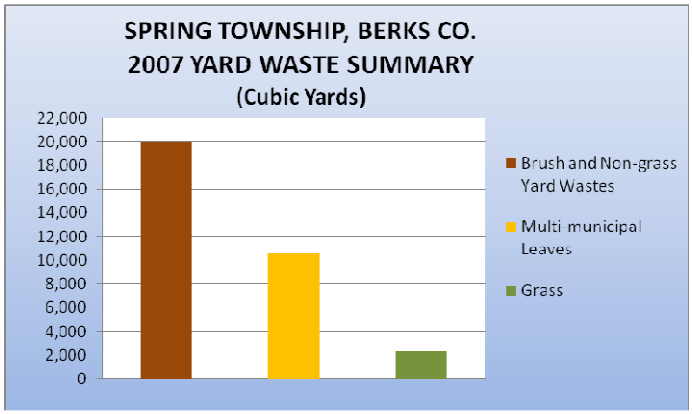
# SPRING TOWNSHIP, BERKS COUNTY
# YARD WASTE MANAGEMENT EVALUATION

## - EXECUTIVE SUMMARY -

Spring Township operates a comprehensive waste management program, including a multi-municipal yard waste management system. The Township operates two yard waste drop-off sites that handle over 30,000 cubic yards of incoming material annually. Residents from **Sinking Spring Borough**, **Lower Heidelberg Township** and **Wyomissing Borough** also receive leaf waste collection service and/or have access to Spring Township's yard waste drop-off and composting services as part of this integrated system. GF evaluated the existing leaf waste collection program the Reedy Road and Goose Lane yard waste sites and provided operational and site configuration recommendations to improve the overall yard waste management system performance. Some key conclusions include:

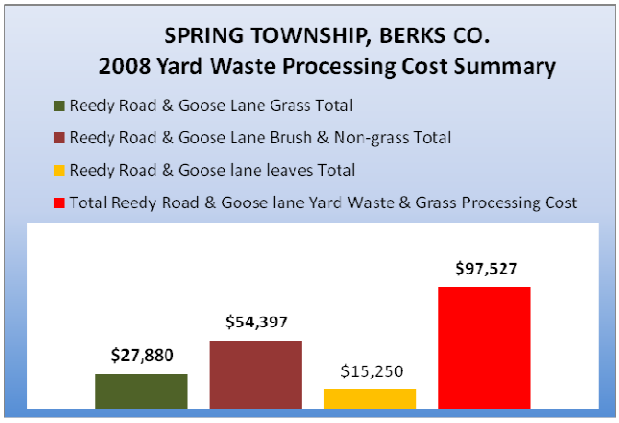
- The 1.5 acre Reedy Road yard waste facility is too small to efficiently manage current and projected incoming yard waste quantities.

- The Reedy Road and Goose Lane sites operate as yard waste materials transfer locations, not as yard waste compost facilities. Leaves and grass are consolidated at these locations and transported to a processor (Zwicky) prior to material size reduction through active composting and decomposition.




- Operationally, there is excessive and inefficient handling of leaves and grass due to the frequent piling and loading required for consolidation. Some of these activities and processing costs can be reduced through active composting.

- Yard waste processing and operational costs exceed $100,000 annually, with brush management being the largest cost component at over $50,000 per year.

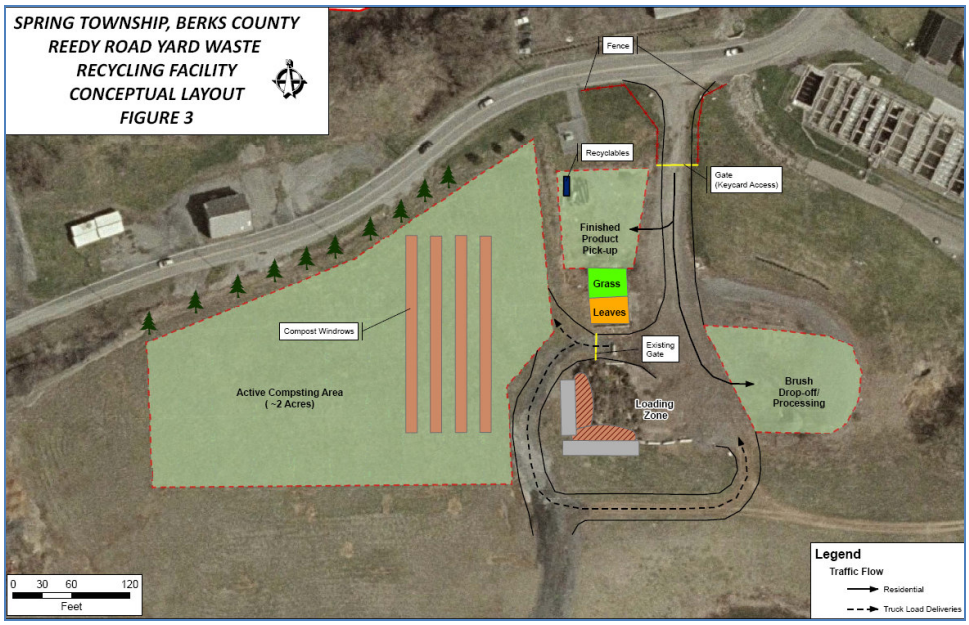


- The economic sustainability of the yard waste management operations benefit from the diverse revenue streams used to offset system costs.
- Open access (no gate) to the sites contributes to contamination and lack of accountability for those who utilize the site(s).
- There is adequate Township property area to expand the primary Reedy Road site; provided the expansion does not conflict with other potential land uses.

GF recommends Spring Township move forward with expanding and reconfiguring the Reedy Road yard waste site so that the Township can continue to serve over 38,000 residents located in the four municipalities. The Township should improve the Reedy Road and Goose Lane operations using an integrated planning approach that considers other existing and potential/future land uses. As summarized, GF recommends Spring Township:

- Review the preliminary conceptual layout attached at this end of this Report as a starting point for making decisions pertaining to the facility expansion and re-configuration.
- Target a total expanded site area of four acres, unless surrounding land uses restrict the available area.
- Designate 2.0 acres in the existing grass areas for active windrow composting of leaves and grass.
- Utilize low-technology composting methods using a front-end loader to periodically turn windrows, targeting the first month after material is dropped to turn several times.
- Initially, a paved surface is not recommended and grass will help manage runoff.


- A gated key-card entrance is recommended for the facility. Both residential and commercial users could be assessed a small fee for the purchase of a key card.




- Increase the brush processing area to allow for greater storage capacity to reduce the number of grindings that must be performed in any given year.
- Construct a new elevated loading platform for material loading.
- Remain flexible when implementing an operational strategy that incorporates active composting. For example, the Township can continue to flow unprocessed leaves and grass to Zwicky as needed to ensure volumes do not exceed processing capacity or negatively impact site safety and operations.
- Prohibit the use of plastic bags for leaves and grass and require no bags or kraft biodegradable bags.
- Secure a competitive pricing for brush processing services by issuing a concise municipal bid for brush processing services.
- Evaluate the feasibility of procurement of a new or used yard waste grinder and share these equipment operation and maintenance costs with the participating municipalities.
- Evaluate how the Reedy Road and Goose Lane operations may be integrated with other land use activities:
    - The municipal campus and development of offices or other commercial uses in the area zoned Planned Office Business (POB) adjacent to Reedy Road.
    - Shiloh Hills Park project could be safer, more effective yard waste collection area that could replace the Goose Lane yard waste site.

# SWANA TECHNICAL ASSISTANCE STUDY
# FINAL REPORT
# SPRING TOWNSHIP, BERKS COUNTY
# YARD WASTE MANAGEMENT EVALUATION

## 1.0 INTRODUCTION

Spring Township (Township) is located in Berks County. The Township hosts two leaf and yard waste collection sites, one on Reedy Road and the other on Goose Lane. In 2008 the Township submitted an Act 101, Section 902 Grant Application to the Pennsylvania Department of Environmental Protection (PADEP) to improve the Township's leaf waste management and recycling program. The Grant application requested funding to upgrade the yard waste site located on Reedy Road adjacent to the Waste Water Treatment Plant. The grant application included the following prioritized items pertaining to yard waste management:

**Deere 544J loader –** to be dedicated to the Reedy Road yard waste operations.
**Yard waste site improvements –** barriers, paving materials and labor.
**Recycling roll-offs –** to be staged at the yard waste site for residential drop off of recyclables.

Other items including recycling bins and educational brochures were also listed for financial reimbursement.

The Township has established a goal of increasing the yard waste drop-off tonnage by 15 percent by 2010. The Township requested Gannett Fleming, Inc. (GF), an independent consultant, to evaluate the existing leaf waste collection program and the Reedy Road yard waste site to ensure that the growing program can accommodate the anticipated material volumes and efficiently manage incoming and outgoing yard wastes. The Township would like recommendations for optimizing material handling and compost operations, with consideration of the nearby Waste Water Treatment Plant renovation and expansion that will impact the current Reedy Road site configuration.

### 1.1 Scope of Work

GF worked with the Township to develop the following tasks for this project.

**Task #1** GF will gather and review background information provided by the Township and will incorporate relevant information into the project report. This background information will focus on information related to the current leaf waste collection and processing/compost operations.

**Task #2** GF will make one (1) site visit to the Township's compost site. GF will evaluate the site and make observations with consideration of the site layout, operations, and methods used for documenting material quantities. GF will use the observations from the site visit to develop recommendations for the collection system and compost operation layout.

**Task #3** GF will prepare and provide the Township with a project report including findings and recommendations. This task includes a review of the report by PADEP and response to PADEP comments. An electronic file of the final report will be submitted to PADEP and to the Township. Two bound and one unbound hardcopies of the Final Report will also be provided to the Township.

## 2.0 STUDY BACKGROUND

Spring Township is growing, and current population projections exceed 25,000. The Township is mandated to recycle under the Municipal Waste Planning, Recycling and Waste Reduction Act of 1988 (Act 101), including curbside collections of leaf waste. To facilitate a public leaf waste management program, the Township supplements curbside efforts with two compost facilities. The yard waste sites are a necessity for managing drop-off and curbside-collected yard waste materials from Spring Township residents as well as from surrounding municipalities that participate in cooperative yard waste management arrangements with Spring Township. The Township is evaluating the operation of the Reedy Road Compost Facility (primary site) under this technical assistance study to improve overall operations and to make recommendations to the site configuration since the site area will be reduced by the current wastewater treatment plant retrofits and construction activities.

### 2.1 Compost Definitions

Definitions for various compost-related terms are provided below.

**Leaf Waste.** Defined by Act 101 and its regulations as "Leaves, garden residues, shrubbery and tree trimmings, and similar material, but not including grass clippings."

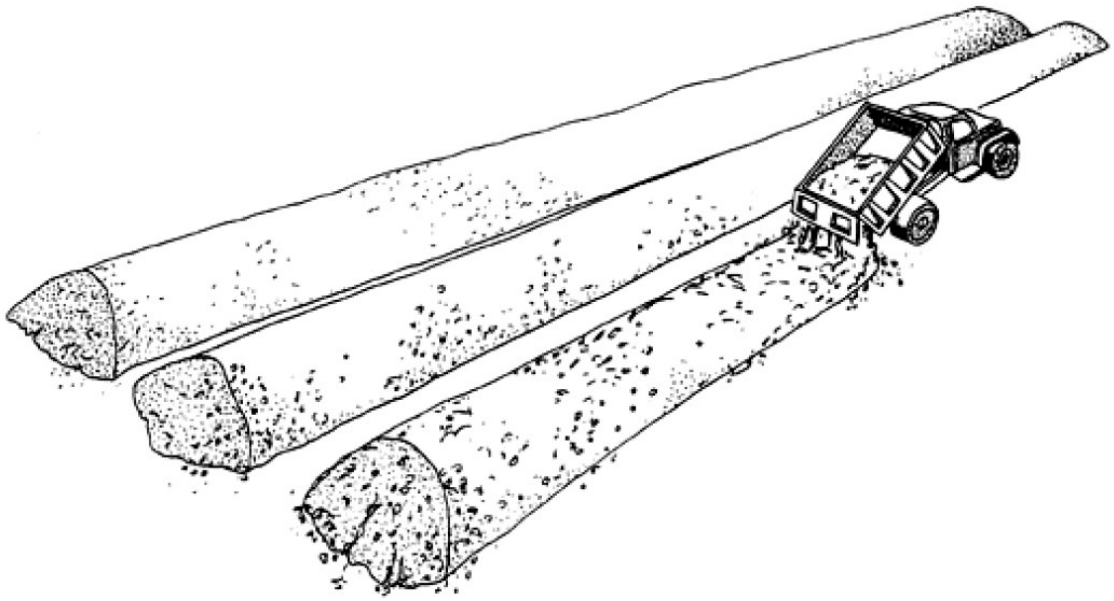
**Yard Waste.** As defined by Pennsylvania Code, Title 25, Chapter 271.1 includes leaves, grass clippings, garden residue, tree trimmings, chipped shrubbery and other vegetative material.

**Mulch.** Commonly defined as a soil covering used to control weeds or erosion; retain moisture in soil; and insulate soil from cold weather. Mulch is also used for aesthetic purposes. Organic materials commonly used for mulch include wood chips, ground up

landscape trimmings, shredded bark, coarse compost material, straw, and shredded paper. Non-organic materials include crushed concrete and brick, stones and gravel, lava rock, and even plastic film.

**Compost.** Pennsylvania Code, Title 25, Chapter 271.1 defines composting as the process by which organic solid waste is biologically decomposed under anaerobic or aerobic conditions to yield a humus like product (i.e. compost). Compost feedstock materials include yard and landscape trimmings, agricultural crop residues, paper pulp, food scraps, wood chips, manure, and biosolids. Compost is often used for enhancing soil structure and building organic matter content; adding nutrients to soil; controlling weeds and dust; and retaining moisture in soil.

***Low-Level Windrow Technology***. This is a common method of leaf waste composting utilizing a front-end loader to construct long parallel windrows of material 6-8 feet and 12-16 feet wide. Turning is conducted at least twice per year, and additional turnings (particularly with the first month of material arrival) increase the rate of decomposition. The leaf to grass ratio should not be lower than 3 to 1. For 6 foot high windrows with an average of 14 foot wide aisles, approximately 3,500 cubic yards per acre can be composted. Low-level windrow turning with a loader and infrequent turnings produces finished compost in approximately 12-18 months.



## 3.0 YARD WASTE MANAGEMENT OPERATIONS

Spring Township promotes a multi-municipal leaf collection program that supports yard waste composting for **Spring Township**, **Sinking Spring Borough**, **Lower Heidelberg Township** and **Wyomissing Borough**. Over 38,000 residents have leaf waste service or access to yard waste composting through this multi-municipal yard waste program. In addition to leaves accepted from each municipality, grass clippings collected in Spring Township and Sinking Spring Borough are also managed at the Reedy Road Compost Site. Yard waste in Spring Township is collected twice per year at the curbside.

### 3.1 Yard Waste Facility Operations

GF focused our review on the Reedy Road yard waste operation, which handles the majority of incoming yard waste. The smaller Goose Lane yard waste operation was considered and incorporated into recommendations where applicable. The Goose Lane site is located to the south, and serves as a drop-off area in the more rural portion of the Township (see attached **Figure 1**). Both the Reedy Road and Goose Lane Yard Waste drop off sites are open dusk to dawn, 7 days per week for drop-off. The yard waste sites accept materials from residents and commercial vendors.

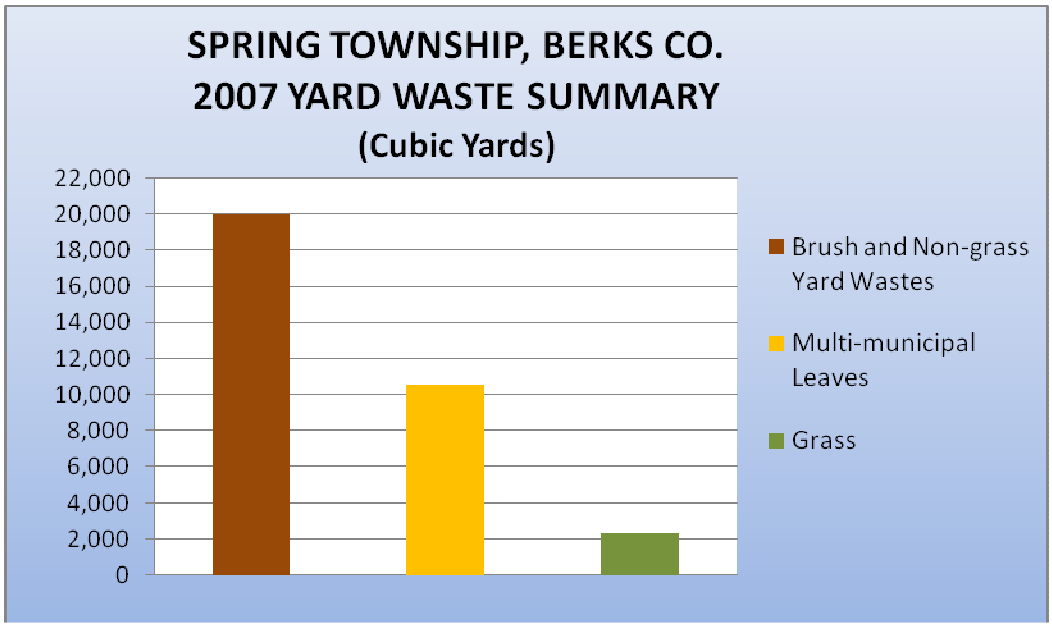
The operating area of the Reedy Road compost facility is approximately 1.5 acres and the facility is permitted and operated under the PADEP Permit-by Rule Guidelines. This yard waste site is located adjacent to the Township waste water treatment facility (**Figure 2**). The Township's Waste Water Treatment Plant is undergoing a retrofit and expansion. Construction activities will affect the operation of the Reedy Road site, primarily by reducing the paved area where leaves are consolidated and loaded into trucks or roll-off containers.


Yard waste materials delivered from curbside collections and drop-off are consolidated at the yard waste site and then hauled away by W.D. Zwicky and Sons (Zwicky) in Robesonia, Pennsylvania for final processing and composting. Leaves are placed into large piles and stored temporarily until they can be mechanically loaded into roll-off container or trailers for delivery to Zwicky. Brush is accumulated into piles in a separate area from leaves and is periodically processed into wood grinds and chips using a grinder service paid for by the Township. After processing, ground brush is taken to Zwicky in

Robesonia, Pennsylvania. A small amount of wood chips is retained on site for use by visitors who can take the material away at no cost. Grass delivered to the site is placed into an area with Jersey barriers at the site and then Zwicky delivers a 20-cubic-yard roll-off that is loaded and then hauled away for processing.

### 3.2 Incoming Yard Waste Quantities (2007)

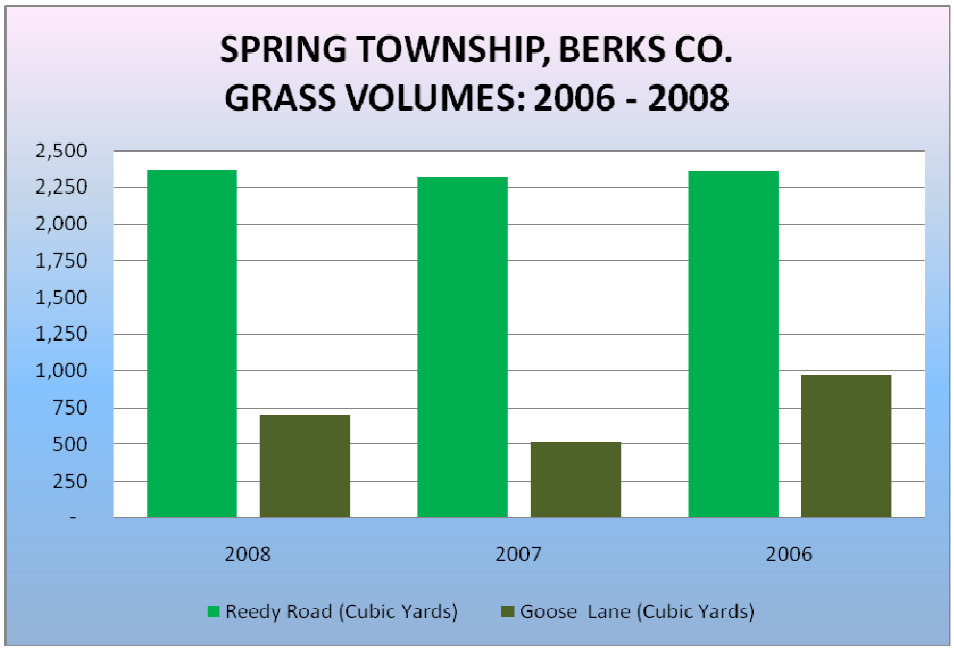
GF was provided complete yard waste data for 2007. In 2007, the municipal yard waste program recycled over 2,300 cubic yards of grass clippings, approximately 20,000 cubic yards of brush and non-grass yard wastes, plus 10,533 cubic yards of leaves. This material was delivered to Zwicky for recycling.




Leaf and yard waste materials are received at the Spring Township yard waste facilities in the following ways:

- Drop-off by residents
- Truckload deliveries of leaf waste from:
  - Spring Township
  - Sinking Spring Borough
  - Lower Heidelberg Township
  - Wyomissing Borough.
- Commercial vendors

The following Grass Volumes chart reveals the quantity of incoming grass is very constant for both yard waste sites, averaging over 2,000 cubic yards per year for Reedy Road and almost 750 cubic yards per year for the Goose Lane Site.

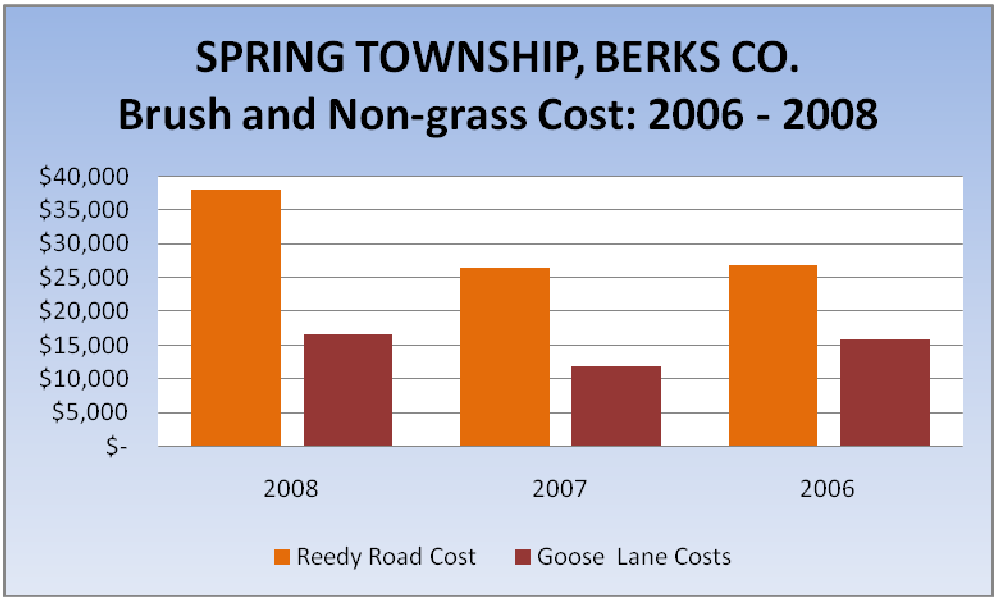



## 3.3 Yard Waste Program Costs

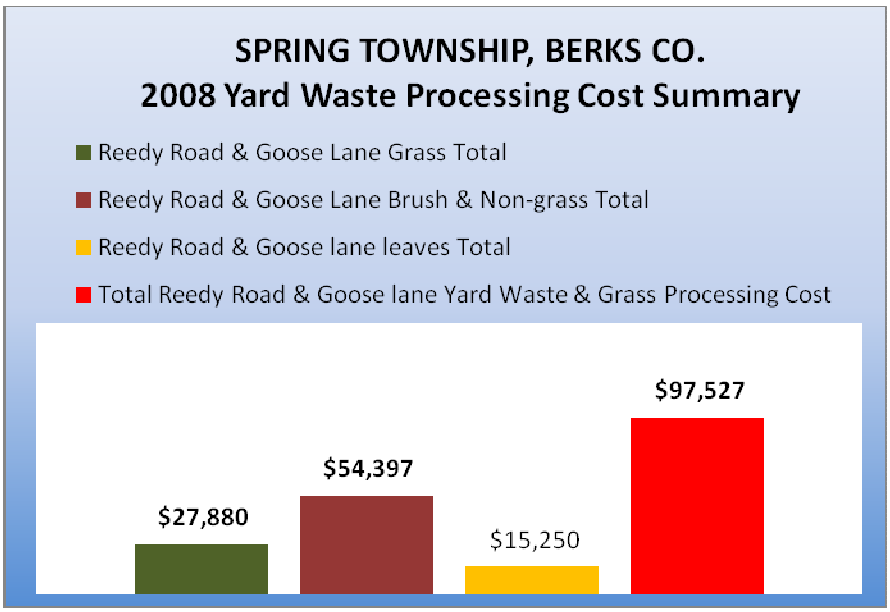
The largest component of the yard waste program costs include processing and transportation costs (e.g. pull charges) assessed by Zwicky plus Township labor and equipment. The Township tracks the costs for processing via invoices, which are broken down into 3 categories:

- Yard waste (includes brush and similar non-grass yard wastes): Processing/grinding by Zwicky that is conducted three to four times per year.
- Leaves: Cost for loading/transport/processing of leaves by Zwicky.
- Grass: Cost for grass loaded into 20-cubic-yard roll-offs and transported to Zwicky at a cost of $5.00 per cubic yard.

As shown in the following graph, brush and non-grass processing costs for grinding service ranges from over $25,000 to over $35,000 in a given year. This cost does not include Township labor and equipment expenses associated with managing brush on site (loader operation, removing debris, etc.).




The 2008 Yard Waste Processing Cost Summary below shows the distribution of processing costs across the three yard waste streams/material types processed by Zwicky. As shown, the processing/grinding of brush and other similar non-grass materials (e.g. shrubs, Christmas trees, etc.) accounts for largest component of the total annual cost. Notably, the total cost for grass processing is comparatively high when considering grass volumes are much lower that the two other organic streams.



### 3.4 Yard Waste Program Revenues

Yard waste processing costs the Township over $100,000 annually when outsourced processing fees are combined with Township labor and equipment costs. To offset yard waste collection and composting costs, Spring Township finances its yard waste operation through securing a variety of revenue streams:

- Residential Recycling Fee - $40 per household assessed annually to all residential units.
- Act 101, Section 904 Performance Grants – The Township is awarded Recycling Grants based on the eligible quantity (tons) of commercial and residential recycling reported to the PADEP. The Township has received over $100,000 for 904 Performance Grants for some grant years. Recycling Grants are not a guaranteed revenue source for the Township and the Act 101 Grant Program has a shortage of revenues at this time.
- Multi-municipal tip fees for leaves: Spring Township executes intermunicipal agreements with Sinking Spring Borough, Lower Heidelberg Township and Wyomissing Borough, allowing the Townships to deliver loads of leaf waste to the Reedy Road compost site for a fee based on cubic yards delivered.
- Sinking Spring is permitted to use the yard waste drop-off and is assessed a fee.

## 4.0 REEDY ROAD YARD WASTE SITE VISIT

GF conducted a site visit and yard waste facility evaluation on December 4, 2008.


GF's observations of the Reedy Road facility are summarized as follows:

Favorable Observations

- The yard waste site and material was clean (i.e. free of debris) with the exception of a few plastic bags containing grass clippings.

- The paved surface allowed for efficient managing, loading and dumping of materials without rutting, water ponding, etc.
- Cameras were installed to deter illegal dumping and other nuisance activities.
- The site proximity to the wastewater treatment facility offers access to loading equipment and staff and also facilitates site monitoring.
- Designated areas for leaves, grass and brush and drop-off areas were clearly identified by signage and separated by Jersey barriers.
- The site had a steady inflow of customers dropping off yard wastes during the visit.
- Adjacent land area is owned by the Township and is suitable for leaf waste composting.

Unfavorable Observations:

- The existing site is approximately 1.5 acres, which is smaller than needed to efficiently and cost effectively manage/compost current volumes of leaves, grass and other yard wastes. The limited site size reduces the operational functionality and flexibility of the yard waste operation and contributes to excess processing/transportation fees.
- The Reedy Road yard waste site operates as a yard waste materials transfer location, not as a "compost" facility. Typically, a compost facility is used to process organic materials over a period of time, managing the natural decomposition of material in the production of one or more finished compost products. Consequently, the handling and transport of over 12,000 cubic yards of leaves and grass annually prior to material breakdown costs a premium.

  Composting leaves reduces the original leaf mass by about 50 percent and increases the bulk density from 350 lbs - 400 lbs. per cubic yard of leaves to approximately 1,400 lbs. per cubic yard of finished compost. One cubic yard of leaves (27 cubic feet) is reduced to about 3.75 cubic feet of compost, an 87.5 percent volume reduction.
- The site is not gated or fenced. Visitors have 24-hour open access which is a risk for drop-off of unwanted materials or possibly other liabilities (e.g. theft, access to nearby waste water treatment facility, etc.). No contamination of unwanted materials was observed, but the Township reported it does receive unwanted debris fairly regularly at the site. There is no system to verify customers, so material is coming in from various municipalities unchecked.
- Available land area is not being used for composting.

- The amount of labor used to consolidate leaves into large piles and load onto trucks or roll-off boxes appears excessive, particularly when compared with low-technology windrow composting that achieves material volume reduction prior to delivery offsite.
- Woodchips is the only finished compost product available to visitors.
- The designated grass area is undersized.

## 5.0 CONCEPTUAL SITE LAYOUTS OF THE COMPOST FACILTY

Based on the existing site features, and based on our experience with compost facility operations GF prepared a conceptual layout in **Figure 3**. This conceptual layout incorporates existing site features, adds features, and modifies the site configuration to account for the wastewater treatment plan retrofit and to increase material processing capacity. GF approached this conceptual layout with the following key factors/conclusions in mind:

- Waste water treatment facility construction will reduce the yard waste site area.
- A new elevated loading area is needed since the existing area will be lost due to the waste water treatment plant construction activities.
- Tracking of persons entering the yard waste site is necessary for safety, accountability, to minimize contamination, and to be positioned to assess a fee to commercial and/or residential users.
- Active composting is needed to minimize the volume of material that is shipped from the facility unprocessed, thus reducing processing costs.
- Additional brush receiving and processing area is needed to reduce the required frequency of brush processing/grinding.
- The grass drop-off area requires expansion.
- An area is needed for residential recyclables drop-off.
- A designated area is needed for residential pick up of finished compost/mulch.
- Safe cuing distance is needed between the gate and roadway for vehicles entering the facility.
- Trees along the road will act as a visual buffer.
- Windrows should be constructed parallel to the slope and can be placed directly on the existing grass surface.

This conceptual layout is intended for use in the planning stages of developing and finalizing a new yard waste facility site design that will meet the near and long term yard waste operations goals. The Township can use a phased approach for constructing the new/enhanced yard waste facility on Reedy Road. Final yard waste site layouts and design are beyond the scope of this Recycling Technical Assistance Study.

## 6.0 INTEGRATED AND SUSTAINABLE YARD WASTE MANAGEMENT PLANNING

While conducting the yard waste site visits and background investigations, GF identified opportunities to apply an integrated planning approach to the Township's yard waste operations that can improve upon the overall economic, social and environmental sustainability of its yard waste management activities. The Reedy Road yard waste site is located within Township-owned property that will be developed in the future to include other land uses. The Goose Lane site is located within several miles of the proposed Shiloh Hills Park that will be constructed by the end of fall 2009. An integrated planning and site development approach for yard waste management should consider the following:

- The Reedy Road yard waste facility expansion will be adjacent to Township-owned property that is zoned Planned Office Business (POB). The Township has designated the area on the other side of the lake across from the yard waste site to be developed into a municipal campus. The Township is investigating ways to have public/private enterprise to develop the site (offices or commercial).
    - The Reedy Road yard waste expansion, design and operations should be integrated with these other proposed land uses to ensure the yard waste site expansion, which could include a new access road and traffic patterns, do not interfere with future land development.
    - The municipal campus, offices and/or other commercial properties could benefit from the use of finished compost and mulch products.
- The Goose Lane yard waste site can be integrated into the new Shiloh Hills Park. The Shiloh Hills Park project will include an environmental trail, dog park, and open theatre, among other features. Integrating a designated yard waste drop-off area within Shiloh Hills Park to take brush, leaves and grass can have the following benefits:
    - The yard waste drop-off location increases convenience for residents because it is at a location where residents may also go to enjoy the park.

- Park aesthetics and plant growth can be cost-effectively improved using mulch and compost. Mulch and compost available on-site at the park can reduce the cost of inorganic fertilizer and reduce travel and costs including purchase of mulch and compost from other sources.
- The yard waste compost site can be integrated into the environmental trail or environmental education through one or more signs explaining yard waste management and composting.
- The Goose Lane yard waste site is located directly along a roadway. Relocating the site to Shiloh Hills Park would improve safety.
- The Goose Lane yard waste site is isolated and is prone to contamination of unwanted materials because it is out of public view. Relocating the site within the park will improve monitoring and reduce contamination.
- Locating the Goose Lane site at the park will provide opportunities to reduce processing cost for this site by:
    - Distributing at least some of the yard waste material on park grounds, thus reducing transportation and outsourced processing fees.
    - More efficient use of equipment and labor, through possible shared use of equipment stored and used for park maintenance; rather than the inefficient loading and hauling of equipment to the Goose Lane site as is done currently.

Development of a detailed integrated planning strategy was beyond the scope of this study.

## 7.0 CONCLUSIONS AND RECOMMENDATIONS

### 7.1 Conclusions

Spring Township operates a comprehensive waste management program. Yard waste collection and management for the purpose of recycling is an important and growing piece of this integrated waste system. The Township offers curbside yard waste collections to its residents and operates two supplemental yard waste drop-off sites. Each year, Spring Township manages over 30,000 cubic yards of material. The Township is targeting a 15 percent increase in the quantity of yard waste that is recovered through its yard waste drop-off program by 2010. The program is a multi-municipal effort. Sinking Spring Borough, Lower Heidelberg Township and Wyomissing Borough make up 38,000 local residents that have leaf waste service or access to yard waste drop-off and composting services through Spring Township's programs.

GF's primary focus in this study was to evaluate the existing leaf waste collection program and the Reedy Road yard waste site and make recommendation for a redesigned/expanded compost site and yard waste program that can accommodate and efficiently manage incoming and outgoing material volumes. Based on our review of the existing yard waste program, some key conclusions include:

- The 1.5 acre Reedy Road yard waste facility is too small to efficiently manage current and projected incoming yard waste quantities.
- It appears there is adequate Township property area to expand the Reedy Road site, provided the expansion does not conflict with other potential land uses.
- Operationally, there appears to be excessive and inefficient handling of leaves and grass due to the frequent piling and loading required to consolidate these materials for delivery off site.
- The Reedy Road and Goose Lane sites operate as yard waste materials transfer locations, not as yard waste compost facilities. Leaves and grass are handled and transported to a processor prior to material size reduction through active composting and decomposition. This operational method creates frequent on-site material handling and associated processing costs that can be reduced.
- Leaves piled in windrows will become compost in 12 months, but this process can be accelerated by turning piles and by mixing in nitrogen (i.e. grass). Natural decomposition through composting can reduce the total volume of grass and leaves by over 80 percent.
- Yard waste processing and operational costs exceed $100,000 annually, with brush being the largest cost component at over $50,000 per year.
- The economic sustainability of the yard waste management operations benefit from the diverse revenue streams used to offset system costs.
- Open access to the site without a gated entrance contributes to:
    - Drop-off of unwanted materials that require management, disposal and associated time and expense.
    - Increased liabilities and lack of accountability for people who access the facility.
- Spring Township receives up to $100,000 per year for Act 101, Section 904 Performance Grants. Act 101, Section 904 Performance Grants will be available through 2009, but will be subject to reauthorization of the $2.00 Act 101 recycling fee that should be voted on in the 2009 legislative session. Future Act 101, Section 902 Grants for capital equipment and recycling containers are contingent upon future reauthorization and may be subject to competition from other municipalities seeking funding.

- There are benefits to integrating future yard waste management facility modifications and operations with other nearby land use activities.

## 7.2 Recommendations

GF recommends Spring Township move forward with expanding and reconfiguring the Reedy Road yard waste site so that the Township can continue to serve over 38,000 residents located in four area municipalities. The Township should improve the Reedy Road and Goose Lane operations using an integrated planning approach that considers other existing and potential/future land uses. GF recommends the Township transition the Reedy Road yard waste operation from a consolidation and transfer-type yard waste operation to a yard waste facility that actively composts, at least a portion of the incoming leaves and grass, as a measure to cost-effectively optimize performance. Specific recommendations are included below. GF encourages the Township to use a phased approach as it begins to utilize the site to conduct composting activities.

**REEDY ROAD YARD WASTE SITE EXPANSION**

GF recommends the Township review the preliminary conceptual layout in **Figure 3** attached at this end of this Report as a starting point for making decisions pertaining to the facility expansion. GF recommends the Reedy Road yard waste site modifications include the following features:

- A minimum total area of four acres, unless surrounding land uses restrict the available area.
- At least 2.0 acres for active windrow composting of leaves and grass. Approximately 1,000 – 1,500 cubic yards of leaves can be composted per acre, depending on row spacing and pile construction. A 2-acre active compost area would allow up to 3,000 cubic yards of leaf composting at a time. With very little handling, leaves will become compost in 12 months, but this time frame can be reduced by adding grass (nitrogen) and percent of the current annual leaf totals (10,00 cubic yards).
- Initially, a paved surface is not recommended for the active composting area for leaves and grass. The proposed active compost area (**Figure 3**) is a grass covered area that will help with runoff and can be an effective working surface. The photo to the right is from a compost site in Columbia Borough, Lancaster County that successfully manages leaves directly on a grass surface.

- A gated key-card entrance to the facility. Both residential and commercial users can be assessed a small fee for the purchase of a key card. Commercial cards should be priced higher. GF has observed $20 for residential yard waste access cards and $250 for commercial yard waste access cards.
- An increased brush processing area to allow for greater storage capacity to reduce the number of grinding periods that must performed in any given year.
- An elevated loading platform for material loading. The existing elevated platform will no longer be available for use due to the wastewater treatment expansion.

**YARD WASTE OPERATIONS**

After the Reedy Road site is expanded, Township yard waste operators should use the active composting process to reduce the volume of leaves and grass prior to use as compost or delivery to Zwicky or other private or public entity. The Township should implement low-level windrow composting methods using a front-end loader to periodically turn leaf windrows. Incoming truckloads of leaves should be dumped into parallel windrows as they arrive on site. Windrows should be constructed 6-8' high by 14' wide. As grass is received and consolidated at the facility, it should be spread across the top of leaf windrows and then mixed into the leaves. Grass will accelerate the rate of composting by adding nitrogen and optimizing the carbon to nitrogen ratio (a 3:1 leaf to grass volume ratio is optimal). The Township can begin composting immediately using a "pilot project" approach to test the quantity and mix ratios of material to continually optimize site space utilization, composting rates, labor utilization, and material quality.

The Township should remain flexible when implementing an operational strategy that incorporates active composting. For example, the Township can continue to flow unprocessed leaves and grass to Zwicky as needed to ensure volumes do not exceed processing capacity or negatively impact site safety and operations. Active composting could be integrated into the Reedy Road Compost site operation in several ways:

- Compost a portion of the annual incoming leaves and grass into a final product for use by the Township and local residents, while continuing to load and transport remaining leaves and grass to Zwicky or another processor.
- Partially compost leaves and grass for a period (say one to three months) to achieve a substantial size reduction prior to handling and delivery to a processor. The reduction in the total cubic yards shipped will lower annual processing fees. Notably, leaves will experience a rapid volume reduction within the first month

of windrow composting, which can be accelerated by turning windrows twice with a loader during that period.

- Fully decompose leaves and grass into a finished compost prior to distribution off site.

The Township should prohibit the use of plastic bags for leaves and grass and investigate ways to minimize brush processing costs, including the following.

- Secure a competitive pricing for brush processing services by issuing a concise municipal bid for brush processing services. The bid should indicate the volume of material that will require processing and other service specifications (e.g. if some, all or none of the processed yard waste material will remain the Township's).
- Evaluate the feasibility of procurement of a new or used yard waste grinder. If a grinder is purchased, an intermunicipal agreement should be executed between Spring Township and participating municipalities to equitably distribute the shared equipment costs.
- Kraft biodegradeable paper bags should be required in place of plastic bags.

**INTEGRATED YARD WASTE MANAGEMENT**

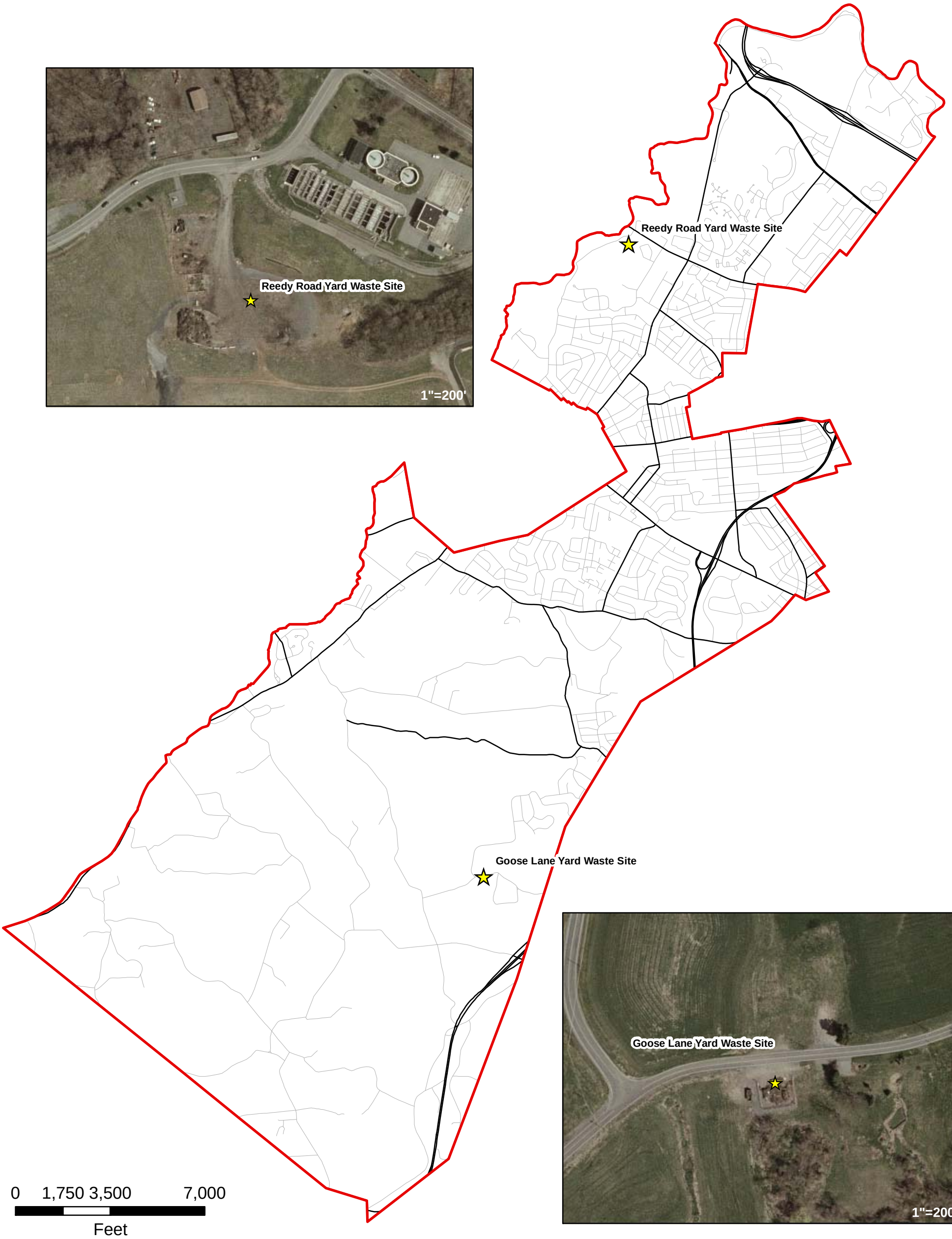
GF recommends the Township consider a long-term planning strategy for its pending yard waste site modifications. The Township should evaluate how the Reedy Road and Goose Lane operations may be integrated with other land use activities:

- Develop the Reed Road yard waste facility expansion so it compliments potential future uses of adjacent property land uses that could include a municipal campus and development of offices or other commercial uses in the area zoned Planned Office Business (POB).
- Relocate the Goose Lane yard waste site by integrating this yard waste drop-off area as part of the Shiloh Hills Park project, which could benefit both park maintenance and improve the Goose Lane site operation (refer to benefits in Section 6.0).

**FIGURES 1,2,3**

# *SPRING TOWNSHIP, BERKS COUNTY*
# *YARD WASTE RECYCLING FACILITIES*
# *FIGURE 1*



# SPRING TOWNSHIP, BERKS COUNTY
# REEDY ROAD YARD WASTE RECYCLING FACILITY
# FIGURE 2

# SPRING TOWNSHIP, BERKS COUNTY
# REEDY ROAD YARD WASTE RECYCLING FACILITY
# CONCEPTUAL LAYOUT
# FIGURE 3

Fence

Recyclables

Gate
(Keycard Access)

Finished
Product
Pick-up

Grass

Leaves

Compost Windrows

Existing
Gate

Active Compsting Area
( ~2 Acres)

Loading
Zone

Brush
Drop-off/
Processing

0 30 60 120
Feet

**Legend**

**Traffic Flow**

Residential

Truck Load Deliveries