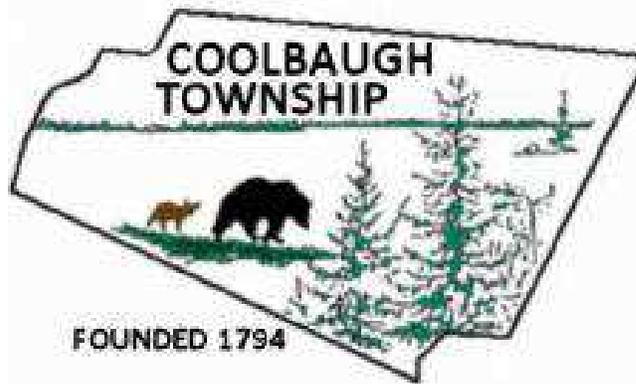


**RECYCLING TECHNICAL ASSISTANCE  
PROJECT #560  
COOLBAUGH TOWNSHIP  
MONROE COUNTY, PENNSYLVANIA**



**COMPOST FACILITY ASSESSMENT**

**January 2016**

**Sponsored by the Pennsylvania Department of Environmental  
Protection through the Pennsylvania State Association of Township  
Supervisors**

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## 1.0 Statement of Problem

Coolbaugh Township (Township), located in Monroe County, Pennsylvania, requested and was granted consulting services under the Recycling Technical Assistance Program sponsored by the Pennsylvania Department of Environmental Protection (PADEP) via the Pennsylvania State Association of Township Supervisors (PSATS). The Township requested technical assistance to identify program strengths and weaknesses and provide recommendations for program enhancement and improvement and the development of financial sustainability strategies. Environmental Resources Associates (ERA) was assigned to provide the requisite consulting services.

## 2.0 Background

Coolbaugh Township is a mandated municipality under Act 101. The Township has a total area of 13.79 square miles; its population is approximately 20,564 persons (2010 Census), with a population density of 239 persons per square mile.

The Township has operated a PADEP approved multi-municipal drop-off and compost facility for more than a decade. The facility is located adjacent to the Township's road department maintenance center at 549 Laurel Drive, Tobyhanna, Pennsylvania. The facility site is approximately 3 to 3.5-acres of a 10.5-acre parcel owned by the Township. A drop-off site, product storage and distribution areas, equipment storage and maintenance buildings are located adjacent to the compost site.

The compost facility is open to Township residents and commercial entities (landscapers and contractors). The facility also provides processing services to its neighboring municipalities of Tobyhanna Township and Tunkhannock Township for acceptable organic materials delivered to the compost site (primarily grinding of brush and tree trimmings). Processing services are provided to municipalities via intermunicipal agreements.

The facility has experienced transitions in management and operations personnel over the past few years.

## 3.0 Project Scope of Work and Execution

Summarized below are descriptions of project tasks and a brief summary of efforts accomplished by ERA over the term of the study. Detailed descriptions of work efforts and outcomes are included in subsequent sections.

### **Gather and Review Pertinent Information and Refine Work Scope**

Prior to initiating the project, ERA met with Township representatives to discuss project objectives, and to gather operational, financial and education/outreach information relative to

the operation of the multi-municipal compost program. The objective of this effort was to gain insight and baseline data for use in subsequent efforts.

The Township determined that the basic objectives of the study would be to audit and evaluate the compost facility from both an operations and economics basis, with emphasis placed on improving efficiency and program economic sustainability.

Specific goals include:

- Lower production cost for the operation of the compost facility, improve efficiency and generate high quality products.
- Identify options for improving marketing strategies for products, compost and wood chips/mulch.
- Establish a supportable foundation for assessing fair and equitable fees for services and products.

### **Program Review and Assessment**

ERA made several visits to the Township's drop-off and compost facility to observe and photograph feedstock delivery, storage, handling and processing, equipment operation and product storage and distribution. Interviews were conducted with facility personnel to collect additional information for use in identifying options for program improvements/modifications.

ERA identified project strengths, weaknesses, and recommended options for enhancement and improvements addressing both operational and economic aspects of the project relative to materials handling, processing and throughput and product quality. ERA developed recommendations for systems improvements and strategies for achieving economic sustainability.

### **Final Report**

Based on the data and information provided by the Township, ERA's observations and assessment of its compost facility collection and processing systems, a Final Report was prepared detailing ERA's findings and recommendations.

## **4.0 FACILITY OPERATIONS AND OBSERVATIONS**

ERA conducted numerous site visits to the compost facility. During the site visits, ERA met with Township representatives and operations personnel to gather data and background information, review current operations and challenges, inspect equipment, observe, and photograph operations.

### **4.1 DESCRIPTION OF COMPOST FACILITY AND OPERATIONS**

#### **Organic feedstock accepted at the compost facility includes:**

- Leaves and grass (bulk, no bagged material),

↻ Trimmings from brush and shrubbery, tree trimmings (various diameter tree limbs and trunk sections), Christmas trees and wood chips.

**The facility includes the following designated areas:**

- ↻ Materials drop-off,
- ↻ Leaf waste staging and processing/windrow composting,
- ↻ Wood waste grinding,
- ↻ Product distribution, and
- ↻ Equipment storage and maintenance buildings.

**Accessibility**

Hours of operation are 7:30am to 3:00pm Monday through Friday and on designated Saturdays.

**Volume of Materials**

During 2014 the Township estimated that 285-tons of leaf waste and wood waste were processed at the facility. A detailed breakdown regarding the specific types and volumes of materials was not available.

**Leaf Waste Composting**

Leaf and yard waste is composted aerobically using low technology open-air windrow technology. The Township delivers collected leaf and yard waste directly to the Township compost facility. Residents and participating municipalities also deliver limited volumes of leaf waste to the compost facility.

Collection trucks delivering materials to the compost site offload in the approximate location where windrows (approximately 6 to 8 feet high and 12 to 14 feet wide) are formed. Compost facility personnel prior to, and during offloading, visually inspect leaves and yard waste to ensure quality control. Any material not meeting specifications is culled and properly disposed of by the compost facility personnel.

Leaves are processed using a horizontal wood grinder (Bandit Model #3680 Beast Recycler) that effectively shreds the leaves reducing volume and increasing the available surface area of leaves available to microbes and thus aides in accelerated decomposition.

The processed leaves are formed into new windrows or incorporated into existing windrows. Initial formation of windrows is accomplished using a wheel loader (John Deere Model #544J). The loader bucket lifts the organic material and allows it to cascade back into the windrow several times. This type of windrow formation provides for optimum mixing and loose deposition of material, enhancing porosity and increasing airflow. The wheel loader is used for subsequent turning of windrows during the composting process. It is notable that this method of windrow turning is the preference of the Township. The Township owns a Wildcat (PTO) windrow turner. Windrows are regularly monitored to ensure the physical requirements of the compost process are met. Windrows are turned as required, based on monitoring. Once a windrow reaches a stabilized state (temperature does not increase when the windrow is

turned), it is placed in a curing pile or allowed to cure in place.

**☑ Wood Waste Grinding**

Wood wastes delivered to the facility (brush, tree trimmings and Christmas trees) are stored at the wood waste drop-off area until sufficient volumes are accumulated for economic processing/grinding.

**☑ Product Screening**

A rotary trommel screen is used to process finished compost and wood chips to generate marketable finished products.

**☑ Product Distribution/Marketing**

The Township and participating municipalities use the compost and wood chips for landscaping around municipal buildings and development/maintenance of trails at parks and picnic areas.

The compost facility's products (compost and mulch) are available to residents. Residents may self-load products (compost and mulch) free of charge. Additionally, the Township offers a punch card pass that entitles residents to receive four free loads of products (12-yards of wood chips or 6-yards of compost) per year. The pass and loading of products are free of charge.

The Township charges a fee for bulk product loading. Products are available to the public and commercial entities at the same loading costs.

**PRODUCTS/MATERIALS LOADING FEE SCHEDULE**

<b>PRODUCTS/MATERIALS</b>	<b>PRICE</b>
<b>MULCH</b>	
MINIMUM LOADING FEE ( per half yard )	\$ 5.00
EACH ADDITIONAL 3 YARDS	\$30.00
<b>COMPOST</b>	
MINIMUM LOADING FEE ( per half yard )	\$10.00
EACH ADDITIONAL 3 YARDS	\$60.00

The Township has not developed a definitive plan or strategies for the marketing of products.

**4.1 FACILITY OBSERVATIONS**

The observations described below are based on ERA's site visits/inspections and review of on-site records and logs.

**🏠 Overall**

The facility, buildings and equipment appeared well maintained and orderly. The size and configuration of the facility are conducive to efficient operations.

↗ **Odor**

A very slight earthy odor was noted.

↗ **Signage**

The facility has signs posted to inform facility patrons of the types of materials that are accepted, facility operating schedule and fee schedule for materials drop-off and loading. Notably absent was signage describing materials preparation, prohibited items, rules, and regulations for use of site and penalties for misuse.



↗ **Site Access and Security**



Access allows for safe and adequate traffic flow. The compost facility is not accessible to the public. The compost facility site is gated and surrounding topography renders the site less than accessible.

↗ **Leaf Composting Area**

The leaf compost pad is not paved. The pad consists of compacted road millings and gravel graded to an approximate 2% slope. Areas of rutting, standing water (ponding) were evident. The pad contains rows of active windrows and finished compost. It is noteworthy that some of the leaf compost was not fully decomposed (some presence of partially composted leaves, leaf stems and veins were observed). This condition indicates that additional turning and/or screening of the compost and/or additional time to cure may be required to further improve quality product. The stone filter berm extending along the east and south sides of the active windrow and curing areas is in need of repair or replacement. The active compost area is encroaching on the curing area.



**Materials Delivery**

Residential and commercial patrons dropped a variety of acceptable feedstocks including brush, tree trimmings and leaves. The materials delivered were generally properly prepared and free of contaminants. The drop-off areas for leaf and yard waste and wood waste are located within or adjacent to their respective processing areas.

### ➤ **Product Distribution Area**

Compost and wood chips/mulch for self-loading were stockpiled for distribution at a product pick-up area located at a convenient location at the facility entrance. Patrons were observed self-loading products during site visitations. The products were considered of good quality.



### ➤ **Equipment**

The materials handling and processing equipment is well maintained and serviceable with the exception of the grinder. The grinder is approximately ten years old and records indicate that it has required ever increasing and costly maintenance and repair.

### ➤ **Records and Logs**

No system exists for volume tracking for incoming feedstocks or product distribution, or recording windrow monitoring efforts.

## **5.0 PROGRAM SUSTAINABILITY**

The Township's basic goals are to achieve efficient and economical operation of the compost facility, with emphasis placed on economic sustainability. In order to operate a compost facility cost-effectively, a justifiable foundation for assessing fair and equitable fees for services and products must be established.

To achieve these goals an economic benchmark or yardstick needs to be established. It is imperative that the Township identify all costs (full costs) associated with the overall development and operation of the compost facility as well as for specific efforts. This approach will greatly assist the Township to accurately establish fair and equitable per unit volume based fees for services and products.

Full cost accounting considers all of the costs associated with a waste management facility/operation, unlike more traditional accounting practices used by numerous municipalities that track only current cash expenditures.

The typical costs associated with a compost facility/operation include, but are not limited to capital costs (facilities development and equipment), operations and maintenance costs (associated with the handling and processing of feedstocks), utilities, insurance, program administration, product distribution and public education/outreach.

From an economic perspective, operation of a compost facility is a unique endeavor in that it provides two potential revenue streams. One revenue stream can be derived from assessing fees on delivery of feedstocks for processing, and the other on sale/marketing of consistent high quality organic products.

Profiting from the compost facility is not the Township's purpose in operating the facility. However, to achieve economic sustainability, offsetting capital and operational costs is imperative. Establishing equitable volume based per yard fees (predicated upon a verifiable



foundation of full costs) will assist in offsetting costs and achieving economic sustainability for the compost facility operation for those benefiting directly from the services and products the compost facility provides (participating municipalities, residential and commercial patrons).

The Township should also consider applying full cost equipment depreciation when calculating service fees to enable it to set aside funds for equipment replacement. This approach is a conservative method to assist in assuring program financial sustainability, particularly considering the competitive nature of grant awards and the uncertainty of future grant funding. Notably this approach will result in increased annual budget costs and corresponding service fees.

Establishment of a verifiable cost per unit/per yard fees for services and products should greatly assist the Township when negotiating new inter-municipal agreements.

## 6.0 SOLUTIONS

ERA has worked closely with Township personnel over the course of the study to provide suggestions and recommendations for program improvements. The Township has proactively pursued the implementation of many of these improvements. Specific items accomplished during the course of this study included:

- Reconstruction of the site's stone filter berm,
- Stockpiled gravel and road millings on site and initiated efforts to fill depressions and ruts on site,
- Instituted a permit program and fee schedule for use of site by commercial entities,
- Implemented a volume tracking system for incoming feedstocks and product distribution, and
- A recording system for windrow monitoring using log sheets provided by ERA.

Additional recommendations for program improvements are described in Section 7.0.

## 7.0 RECOMENDATIONS

Based on its observations and analysis conducted during the study, ERA provides the following recommendations for the Township's consideration.

- Establish fair and equitable service/user fees based on full costs, to adequately cover the cost of services and products and help to insure economic sustainability for the compost operation.
- Develop an inter-municipal agreement based on actual per yard materials handling and processing costs. The agreement must succinctly define functional and financial aspects of the project and the roles, responsibilities, services provided and service/user fees for each participating municipality (both current and future).

- Explore the potential for expanding participation in the multi-municipal program to include additional municipalities.
- Identify market segments (groups of potential consumers with similar characteristics and needs/requirements) that may be interested in bulk purchase of products currently produced at the compost facility. Additionally, the Township should survey potential end markets identified to determine the Township's ability to meet their specific needs regarding product specifications and quantities.
- Develop and implement a plan/strategy for marketing of the compost facility's products.
- Conduct an annual evaluation of the program to measure facility efficiency, materials handling, processing, and marketing of products.
- Support/encourage programs (Grasscycling and backyard composting) that divert acceptable organic feedstocks from the waste stream and the compost facility.
- Continue to grade and fill depressions and ruts on site, as an interim measure to improve working surface of site. Pave site as a long term solution, to provide for an all weather durable working surface and efficient maneuvering for processing and materials handling equipment, and to avoid rutting and ponding and related potential odor and vector problems.
- Purchase a new horizontal grinder to insure efficient and economic operation of the site.
- Relocate materials drop-off areas adjacent to the product distribution area or other area external of the composting and processing areas. This effort will allow for ease of tracking incoming feedstocks, and avoid potential safety hazards associated with patrons entering the active processing site where heavy equipment is operated.
- Improve signage describing materials preparation, prohibited items, rules, and regulations for use of site and penalties for misuse. This effort will assist in reducing rejects, materials/contaminants and additional required sorting and removal of unacceptable materials by facility personnel. Detailed instructional signage translates into labor and reject disposal cost savings and production of high quality marketable materials.
- Insure that all new windrows are constructed within the designated active composting area.
- Reinstate the use of the windrow turner to improve biodegradation and improve product quality.
- Modify and update education/outreach efforts to extol the value and benefits of the compost program and in particular the products derived from the organic feedstocks collected and processed by the Township. These efforts should target both the public and private sectors.
- Apply for an Act 101 Section 902 Grant to assist in funding eligible facility improvements and equipment costs.