RECYCLING TECHNICAL ASSISTANCE

PROJECT #559

MIDDLE SMITHFIELD TOWNSHIP
MONROE COUNTY, PENNSYLVANIA

OAK GROVE MULTI-MUNICIPAL COMPOST FACILITY DEVELOPMENT

JULY 2015

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

Project Completed By:

Environmental Resources Associates

120 CREEK CABIN LANE
East Stroudsburg, PA 18302
570-223-8856
pjcerapa@aol.com

ERA ***CONSULTANTS IN ENVIRONMENTAL RESOURCE MANAGEMENT***

1.0 Statement of Problem

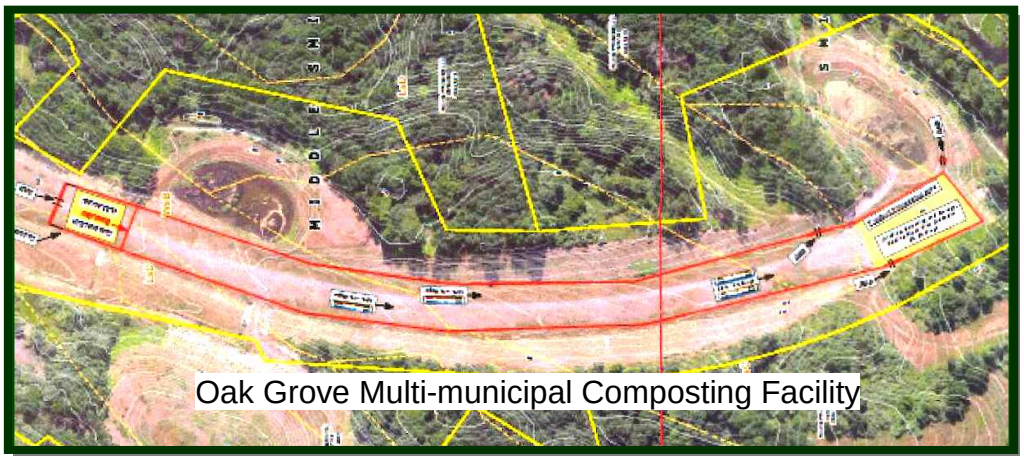
The Townships of Middle Smithfield and Smithfield located in Monroe County and Lehman located in Pike County, (Municipalities) joined together to develop and implement a multi-municipal approach to achieve their collective goal to effectively and economically address common needs for the establishment of a comprehensive and Act 101 compliant recycling and waste management system. Only one vital program element to achieving their collective goal remains, the development of a multi-municipal compost facility.

Middle Smithfield Township (designated "Lead Agency") requested, and was granted Recycling Technical Assistance, to aid in development/construction of the Oak Grove Multi-municipal Composting Facility (Facility).

Environmental Resources Associates (ERA) was selected to provide consulting services to assist in establishing a leaf and yard waste drop-off and processing/composting facility, consistent with the Pennsylvania Department of Environmental Protection (PADEP) “Guidelines for Yard Waste Composting Facilities” (Guidelines).

2.0 Background

The planned Facility will be located on an approximate 46-acre parcel and include a drop-off site that will occupy an area of approximately 3 acres (northern section of parcel) and the compost processing facility, which will occupy an area of 4.33 acres (southern section of parcel).



Oak Grove Multi-municipal Composting Facility

Materials to be accepted at the drop-off site will be leaves and yard waste as per PADEP Guidelines. Tree and brush trimmings will also be accepted and ground/processed into wood chips/mulch. The facility will be limited to accepting and processing an estimated maximum volume of 10,000 cubic yards of leaf and yard waste.

The facility site is centrally located between Smithfield and Middle Smithfield Townships and flanked by Lehman Township. The Pennsylvania Department of Transportation (PennDot) owns the facility site.

The parcel was originally purchased by PennDot as a segment of a bypass project for the Village of Marshalls Creek. However, because of design modifications to the Marshalls Creek Bypass, this section was eliminated. The Municipalities have established a long-term lease with PennDOT.

Particular benefits attributable to the site include:

- The site is approximately 46 acres of which an extensive area is wooded. This enhances security and provides a visual and sound buffer for the few nearby residences.
- Approximately one mile of roadway (paved and unpaved) developed to PennDOT specifications transects the property, connecting the drop-off and compost/processing areas.
- The northern portion of the roadway is paved and provides excellent access via Oak Grove Road. The paved roadway contains a concrete median strip allowing for safe and efficient traffic flow control for a drop-off and product distribution area.
- A gravel roadway terminating at the compost and processing area services the southern portion of the site. The area is secluded from residences, surrounded by woodland and has acceptable slopes (approximately 2.5% to 3.5%) for windrow formation, turning and curing areas, and with minor modifications for the establishment of a wood waste (tree and brush trimmings) processing area.
- The site is partially enclosed by existing chain link security fencing.
- The site has an extensive storm water collection and management system in place and well-established vegetation.

Considering the site's size and specific improvements, the facility site is uniquely suited for the economic development of the multi-municipal compost facility. Additionally, public funds expended for the lease and development of the site will be put to a beneficial use.

The Municipalities have made a great deal of progress toward achieving their collective goal for the establishment of a leaf and yard waste drop-off and compost facility.

Accomplishments include:

- Established and implemented equivalent mandatory recycling programs, including curbside collection of leaf and yard waste.

- Developed and entered into a Multi-municipal Agreement (as authorized under Act 180) for the formation of the Oak Grove Multi-municipal Composting Facility Board (Board). The Multi-municipal Agreement includes succinct terms and conditions for municipal participation in the program (current and future) including both functional and financial aspects and operation of the compost facility. The Agreement also designated a "Lead Agency" (Middle Smithfield Township), to operate and administer the Oak Grove Multi-municipal Composting Facility.

- Applied for and received an Act 101 Section 902 Recycling Grant ($127,045.00) to assist with essential equipment acquisition and site development costs.

- Developed and adopted an interim fee schedule for facility services and products, pending collection and assessment of actual cost data. The schedule addresses municipal, commercial and residential patron's use of the drop-off site and purchase of bulk products (compost and wood mulch).

3.0 Project Scope of Work and Execution

Middle Smithfield Township as Lead Agency for the Oak Grove Multi-municipal Composting Facility Board requested consulting assistance for development/construction and operation of the approved multi-municipal leaf and yard waste compost and drop-off facility. Specifically, ERA provided oversight and recommendations during project site development, equipment acquisition, and operations training.

Task 1: Refine Work Scope

ERA met with Middle Smithfield, Smithfield (Lead Agency) and the Oak Grove Multi-municipal Composting Facility Board (Board) to discuss the PADEP approval, conditions and requirements for the development and operation of a leaf and yard waste drop-off and compost facility, under the Department's Guidelines. ERA also collected pertinent information for use in subsequent tasks.

Based on the initial meeting with the Lead Agency and input provided by the Board, the technical assistance work scope was refined to meet specific project needs.

Task 2: ERA assisted the Board and Lead Agency with project management and oversight during site development and implementation efforts. **ERA worked closely with the Lead Agency, both on and off site, to assist in assuring the timely development of the facility (see Attachment A for photos of facility development). These efforts included:**

- Securing site access to prevent vandalism, theft of materials and/or equipment, and unauthorized use during site development/construction.

  - Installation of security fencing and gates at the entrance of the drop-off site and access to the processing areas.
  - Determining locations for installation of security cameras.

- Completing site modifications and improvements for establishment of materials drop-off and composting and processing areas.

  - Modifications to erosion and sedimentation control plan and installation of control measures.
  - Strategy for reuse of onsite mixed soil, gravel and rock stockpile. An approximately 800-ton stockpile of clean mixed materials, resulting from the original PennDot site construction activities, was located in the proximity of the planned processing area. The stockpile was processed onsite using the Lead Agency's portable screening plant. The segregated soil, gravel and rock provided beneficial and economical materials for site construction activities including but not limited to:

preparation of processing area, construction of stone filters berms, preparation of pads for materials collection and product distribution.

- Improvement to existing gravel compost site access road: approximately 900-tons of asphalt millings were used to provide an improved wear course on the access road. The Lead Agency applied 6-inches of millings using its road paver and compactor.
- Placement of 12'x38' modular office.
- Site preparation and installation for pre-cast concrete T-walls for construction of feedstock collection and product distribution bins.
- Configuration and grading of windrow pads and materials processing areas.
- Conceptual design for construction of stone erosion filters, surrounding materials processing area.

Procuring of equipment for materials processing.

- Assisted the Board with the purchase of a used (2004) Brown Bear (SC3610), compost turner from North Londonderry Township, Lebanon County. This effort included inspection and observation of operation of the unit review of historical operations routine and preventative maintenance and repair records and subsequent recommendation for purchase.

Brown Bear - SC3610

Conducting training sessions for compost site operators, including such topics as:

- Operating requirements under Guidelines for Yard Waste Composting Facilities
- Methods for inspecting incoming yard waste and for removal of unacceptable material
- Overview of the composting process
- Windrow construction methods including equipment use
- Windrow monitoring requirements
- Optimum windrow temperature range maintenance
- Methods for determining frequency for windrow turning
- Methods for windrow turning
- Review of nuisance control plan
- Review of preparedness prevention and contingency plan

- ERA also prepared and reviewed a Trouble Shooting Guide (included in Attachment B) for operations, Windrow Monitoring Logs and Incoming Feedstock and Product Logs (to identify types and sources of feedstocks and track outgoing product's volumes).

ERA attended monthly meetings of the Board to identify project needs, provide progress updates, address any questions or concerns and gain input. Meetings were also held on a regular basis with Lead Agency personnel to assist with facility development efforts and operator training.

Task: 4 Final Report

ERA prepared a Final Report detailing completed work efforts accomplished during the construction/development of the Oak Grove Multi-Municipal Compost Facility with applicable comments and recommendations and provided an electronic and hard copy to the Lead Agency.

4.0 Conclusion

Due to the location and extensive development and improvements made by PennDot, the selected site provided a unique and exceptional opportunity for the economical establishment of the Oak Grove Multi-Municipal Compost Facility. Although the site affords many beneficial improvements from an economic and development perspective, the project would not have come to a successful and expeditious conclusion without the cooperation and support of all aforementioned parties, enabling the project to progress swiftly from concept to reality.

Oak Grove Multi-municipal Compost Facility
Grand Opening May 11, 2015

The Oak Grove Multi-Municipal Compost Facility Board's intent is the economic operation of the compost facility, with the ultimate objective of it being financially self-sustaining. To achieve this objective an economic benchmark or yardstick must be established.

In order to establish a supportable foundation for assessing fair and equitable fees for services and products, "full costs" associated with the development and annual operation of the compost facility must be identified and tracked. This is especially important during the initial years of operation. The typical costs associated with a compost facility/program include capital (facilities

development/construction and equipment), labor operations and maintenance (associated with handling and processing acceptable materials), utilities, insurance, program administration, product distribution/marketing and public education/outreach.

5.0 Recommendations

Based on the completion of the above noted Tasks and its experience with similar projects, ERA offers the following observations and recommendations for consideration of the Oak Grove Multi-Municipal Compost Facility Board and its Lead Agency:

- Establish fair and equitable service/user fees based on **full cost** accounting, to adequately cover the cost of services and products and help to insure economic sustainability for the compost operation, independent of grants. ERA also recommends that the Lead Agency consider applying full cost depreciation for significant capital equipment expenditures when calculating service fees, to enable it to set aside funds for equipment repairs and replacement. This approach is a conservative method used to assist in assuring program financial sustainability. This approach is particularly worthy considering the competitive nature of Act 101 Section 902 grants and uncertainty of future grant funding.

- Evaluate the project based on the amount of materials collected and diverted from the waste stream, the efficiency and cost effectiveness of materials handling and production/throughput (cost per ton to produce product) and quality and value of product (ability of product values to cover costs of processing). Value of product to include: avoided cost of disposal, avoided cost of purchasing products, service fees and revenues from product sales.

- 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 produced at the compost facility. Additionally, the Lead Agency should survey potential end markets identified to determine their specific needs regarding product specifications and quantities.

- Develop and implement a plan/strategy for marketing of the compost facility's products.

- Apply for Act 101 Section 902 Recycling Grants to gain needed financial assistance for eligible capital cost for remaining site improvement and processing equipment.

- Develop demonstration areas at the facility showcasing the many beneficial uses for compost and mulch.

- Continue to expand public education/outreach programs.

ATTACHMENT - A
PHOTOGRAPHS OF FACILITY IMPROVEMENTS

MAIN ENTRANCE

MAIN ENTRANCE

DROP-OFF AREA COLLECTION
AND PRODUCT DISTRIBUTION BINS

LEAF COLLECTION BINS

BRUSH COLLECTION BINS

COMPOST DISTRIBUTION BINS

INTERIOR GATE
ACCESS TO COMPOST SITE

ACCESS ROAD TO COMPOST SITE

LEAF WASTE WINDROWS

WOOD MULCH/CHIP WINDROW

PROCESSING AREA

PRODUCT STORAGE BINS

ATTACHMENT - B
TROUBLE SHOOTING GUIDE

TROUBLE SHOOTING GUIDE

Situation	*Probable Cause*	*Solution*
Low temperature in windrow	Moisture content low	Turn windrow add water while turning
	Insufficient air flow	Turn windrow to Improve aeration
	Size of windrow too small	Combine with another windrow and/or add material
Mosquitoes	Mosquitoes breeding in ponding water	Re-grade and fill depressions
High temperature	Low oxygen content	Turn windrow to improve aeration
	Compacted material **(1)**	Turn windrow to loosen material and Improve aeration
Odor	Anaerobic condition, excess moisture	Turn windrow to improve aeration
	Compacted material **(1)**	Turn windrow to loosen material and improve aeration
	Ponding of water	Re-grade and fill depressions

(1) Material received (leaves or grass) which is compacted should be shred or mixed to loosen/separate prior to windrow formation.