

April 1, 2005



Mr. Bruce Brady
Union County Recycling Coordinator
1610 Industrial Blvd. Suite 600
Lewisburg, PA 17837

Subject: **Technical Assistance Project**

Dear Bruce:

This final letter report summarizes the findings of R. W. Beck's work undertaken to identify potential means of composting food waste generated at Bucknell University, The Federal Penitentiary at Lewisburg, and yard waste generated at the University and in the County. This effort was undertaken as part of the Recycling Technical Assistance program sponsored by the Pennsylvania Department of Environmental Protection (DEP) and the Solid Waste Association of North America (SWANA).

This letter report summarizes the findings of R. W. Beck's evaluation and provides recommendations for the County, prison, farm, and Bucknell University to consider. The report is divided into the following sections, which correspond with the Tasks identified in the scope.

- Introduction;
- Description of Current System;
- Potential Alternative Scenarios; and
- Analysis and Recommendations.

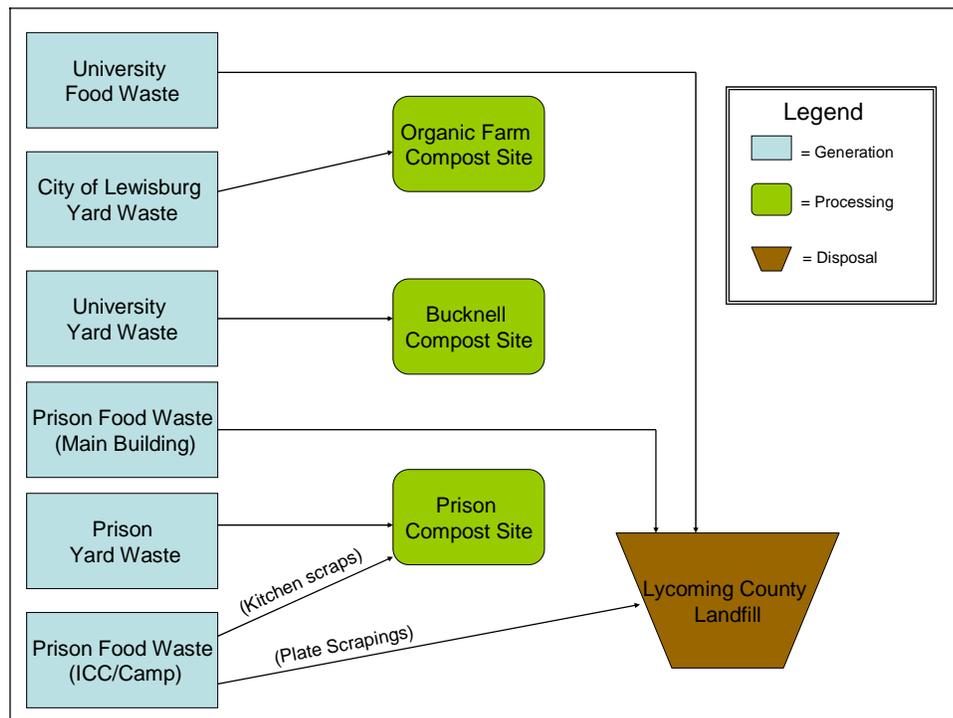
Introduction

Currently, there are three known composting operations in Union County, each working independently of the other. The Prison composts on-site generated kitchen scraps from two of its lower security buildings, the University composts vegetative waste generated on-campus, and Briar Patch Farms composts the City of Lewisburg's yard waste, as well as vegetative materials, manure, and animal mortalities generated on-farm, yard waste from local residents, and vegetative waste and manure from surrounding farms.. This project examined the possibility of implementing a food waste program which could entail a level of cooperation between these three entities. The current system is described below, including descriptions of the three existing composting operations.

Description of Current Organics Waste System

The Current flow of yard and food waste pertinent to these entities is illustrated in Figure 1, and described below, in more detail.

Figure 1
Current Organics Flow



Prison Composting Operations

As Figure 1 illustrates, all of the food waste generated in the Main Building at the prison is currently disposed at the Lycoming County landfill, as is post-consumer food waste generated in the ICC/Camp (lower security facilities than the main prison). Currently vegetative kitchen scraps generated on-site at the ICC and “The Camp” (lower security facilities than the main building) is composted at the prison’s composting site. This composting site is operated by the ICC inmates, in order to learn about composting, as well as develop work habits and pride. The compost is used to help grow crops and flowers at the prison farm and greenhouse. Due to cost-savings measures, the manager of the ICC farm program anticipates that in the future more emphasis will be placed on growing vegetables, leaving less time for inmates to focus on managing the compost piles. Currently, the inmates transport the food waste from the kitchen (which is located at the camp) in 55-gallon barrels, via a hand truck, to the compost site.

Compost is turned manually using pitch forks. The food waste that could potentially be composted jointly with Bucknell University-generated organics, and perhaps organics generated in Lewisburg and the farm, is the food preparation waste from the main building in the prison. The quantity of this waste varies considerably, but is expected to be from 400 to 800 pounds-per day. This food would be comprised of kitchen scraps and overproduction only. Plate scrapings would not be separated for composting, due to the high disease rate among the prison population.

The prison composting site is located behind the “camp” facility of the prison. It is a relatively small area, however could potentially be expanded, as there is vast land not currently being used in the area. The site is on unimproved surface. Low security prison laborers turn the piles manually, using pitch forks and shovels. The compost is used on site to grow flowers and vegetables. Figure 2 shows the prison’s current composting area.

Figure 2
Prison Composting Site



Bucknell Composting Operations

Bucknell University, located in Lewisburg, composts campus-generated leaf and yard waste in windrows on campus. Lycoming County crews grind wood waste on site, and University staff compost leaf and yard debris in windrows, using a front end loader for turning. This compost is used on campus and on the adjoining golf course, which is on campus property but privately owned and operated. The University owns tractors, a loader, shredder, and screen, which can all be used in the composting operation.

Currently Bucknell University composts campus-generated vegetative waste, as well as vegetative waste generated at the adjacent golf course. The University’s site is approximately

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200' x 200', and is on an unimproved surface. It is surrounded on one side by a day care center (about 100 feet away), on another side by a golf course, on a third side, by athletic fields, with an approximately 200' buffer area of nursery plantings in between the site and the athletic fields. On the fourth side, there is a cluster of buildings, including an "Art Barn," (about 150 feet from the site) where students can use studio space, a University-owned rental home, and a garage. There is a heavily vegetated drainage swale at the University site, which is approximately 40' x 90' in size. Currently the windrows are 200 feet from the day care center and 300 feet from the Art Barn.

Figure 3 shows the University yard waste processing site, Figure 4 shows the current drainage swale at the University's yard waste processing site, and Figure 5 shows an aerial view of the site.

Figure 3
Bucknell University Yard Waste Processing Site



Figure 4
University Composting Site Retention Pond



Figure 5
Aerial View of University's Yard Waste Processing Site



Briar Patch Farm Composting Operations

Union County received a DEP 902 grant in 1994 to purchase the following yard waste processing equipment:

- Tractor-drawn windrow turner;
- Tractor; and
- Bobcat.

An agreement was made between Mr. Preston Boop, owner of Briar Patch Organic Farm (“Farm”), and Union County for Mr. Boop to process the County’s “extra” yard waste at his site with this equipment, which remains on site. The yard waste from the City of Lewisburg is delivered for processing approximately twice per year by Bucknell University staff, as a favor to the municipality. This yard waste consists mostly of leaves as well as brushy waste and weeds. In 2003 the City of Lewisburg had 14 loads of approximately 24 cubic yards each (a total of 336 cubic yards) delivered to the Farm for processing (although generally there are more loads per year – usually 20). In addition, the general public is allowed to “tip” yard waste, free of charge, on the property. This yard waste is placed in windrows, and composted along with manure received from local dairy farmers, hay, animal mortalities, and vegetative waste from the farm. Mr. Boop indicates that he can sell the compost for \$40 per cubic yard, or use it on his own site.

Figure 6 shows current processing at the farm. Figure 7 shows the retention pond at the farm.

Figure 6
Windrow-Turning at Briar Patch Farm



Figure 7
Retention Pond at Briar Patch Farm



Conceptual Composting Facility

In order to estimate the space required for a composting facility, R. W. Beck estimated the quantity of material to be composted, based on data provided by the study participants.

Bucknell Organic Waste Generation

The University's primary food preparation area generates approximately three tons of pre-consumer food waste per month during the school year and four to five tons of post-consumer food waste per year. Additional food preparation areas on campus would be expected to produce an additional 2.5 tons per month. Some of the food waste is de-watered, or partially de-watered.

Municipal Yard Waste

In addition, the 460 cubic yards of leaves currently delivered to Briar Patch Farm for composting per the arrangement with Union County mentioned above, could potentially be available for composting with the food waste.

Table 1 summarizes the total amount of compostable food waste and yard trimmings generated at Bucknell University on an annual basis.

Table 1
 Compostable Waste

Generation Site	Type of Waste	Basis of Estimation	De-Watered?	Estimated Tons per Year ¹	Estimated CY per Year
Bostwick Cafeteria, BU	Food Waste – Kitchen Prep Trimmings	1.8 tons/month	No	20.5	26.9
Bostwick Cafeteria, BU	Food Waste -- Plate Scrapings	4-5 tons/month	Yes	46.5	60.9
Terrace Room, BU	Food Waste -Plate scrapings	1.5 tons/month	No	29.3	38.4
Bison, BU	Food Waste -Trim, Over production	1 ton/month	No	10.5	10.5
Bostwick Kitchen, BU	Food Waste - Leftovers, Over Production, rice, etc	3 tons/month	Partially	31.5	31.5
Main Building, Prison	Food Waste - Kitchen scraps and over production	9.125 tons/month	No	109.5	143.5
Subtotal Food Waste Bucknell				138.3	168.2
Subtotal All Food Waste				247.8	311.7
Lewisburg Leaf Waste, Lewisburg	Loose Leaves	460 cy per year	No	80.5 ²	460.0
Bucknell University Grounds	Leaf Waste	800 cy per year	No	100.0	800.0
Bucknell University Grounds	Wood Waste	2,000 cy per year	No	325.0	2,000.0
Subtotal Yard Waste				505.5	3,260.0
Total All Organic Waste Excluding Prison Food				643.8	3,428.2
Total All Organic Waste				753.3	3,571.7

¹ University food waste assumed to be reduced by half for three months of the year.

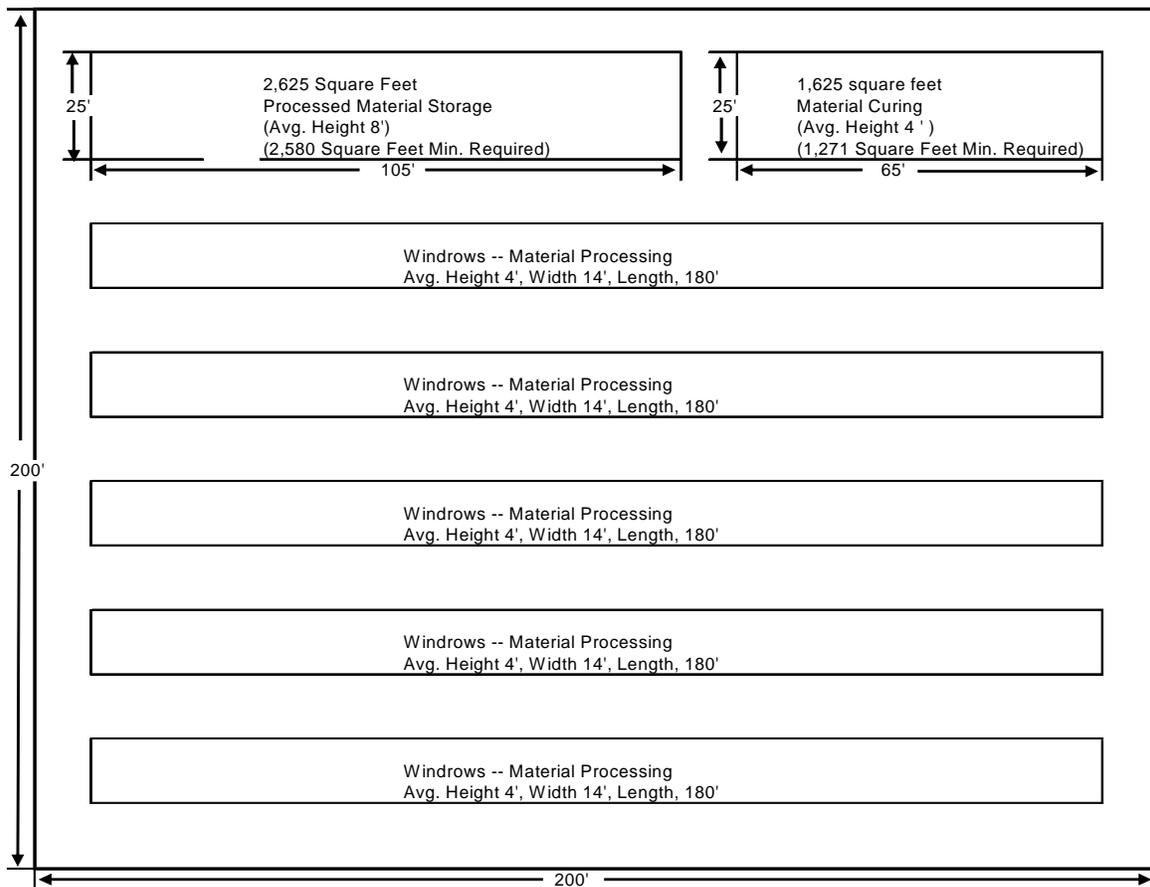
² Based on 350 lbs per cubic yard, as leaves are partially compacted due to vacuuming.

³ Based on 250 lbs. per cubic yard, loose leaves.

⁴ Assumes half of the 2,000 cy is loose brushy waste, at 250 lbs. per cy, and half is wood waste, at 400 lbs. per cy.

R. W. Beck estimated the space needed to compost the materials summarized in Table 1. A potential layout, using a 200' x 200' pad, is provided in Figure 8 below.

Figure 8
Potential Compost Site Layout



According to the calculations, which were based on guidance provided in the Natural Resource, Agriculture, and Engineering Services (NRAES) Cooperative Extension's *On-Farm Composting Handbook*, a 200x200 square foot pad is enough space to compost the quantity of material estimated above, assuming:

- Incoming material is not part of the 200'x200' pad;
- Grinding and screening operations are not part of the 200' x 200' pad;
- Combining raw materials leads to a reduction of 20 percent by volume;
- Shrinkage is assumed to be 25 percent by volume, during processing;

- Final shrinkage is assumed to be 50 percent by volume;
- Windrows are expected to be 180 feet in length, 14 feet in width, and an average of four feet high.
- Curing is expected to be 90 days maximum;
- Storage is expected to be 365 days maximum; and
- Fifteen feet is available between windrows.

The current mix appears to be fairly high in carbon content, as leaves and wood have a high carbon to nitrogen ratio, and vegetative food waste has a C:N ratio of 1.9 – 2.9. The compost, therefore, would benefit by adding manure to the mix. This would, of course, increase space requirements. It should be noted, however, that most industry professionals recommend developing a site larger than initially required to accommodate future growth in a more cost-efficient manner.

The final end product, given the quantities of materials provided above, is expected to be approximately 20,620 cubic feet per year, or about 764 cubic yards per year.

Potential Alternative Scenarios

Bucknell has been considering expanding their recycling program by implementing a food waste composting project. They would like to take food waste from the main food preparation site, Bostwick Kitchen, and combine it with the yard waste to make more nutrient-rich compost, while providing the students with the opportunity to learn about composting, and the benefits of recovering food waste. University officials also thought it could be advantageous to include food waste generated at the Lewisburg Federal Penitentiary, located just four miles down the road. Further, the opportunity to combine this effort with the composting located at Briar Patch Farms is worth exploring

At the outset of the research, it appeared that there were three potential locations at which all organic materials could be aggregated and composted:

- 1) The prison's composting site;
- 2) Briar Patch Farm; or
- 3) Bucknell University's yard waste processing site.

The following sub sections consider the pros and cons of each of the potential sites.

Composting at the Prison

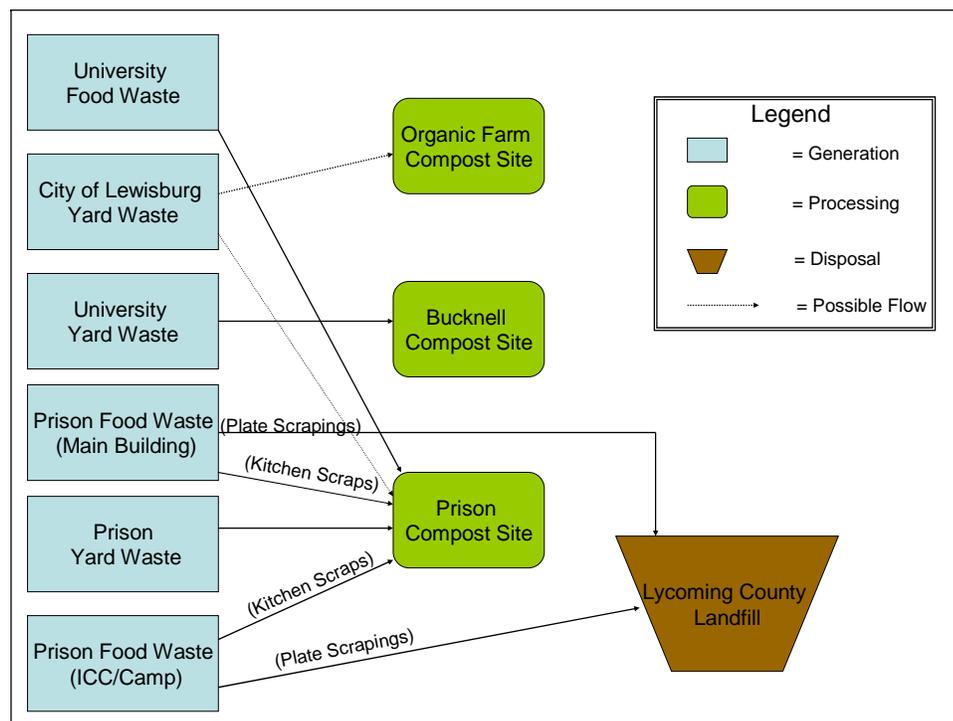
At first glance, composting at the prison seemed to be likely in that the prison site could potentially offer the following benefits:

- Free labor to manage the compost;

- Large land area;
- Hay for bulking agent and nitrogen source.

The flow of organics, under this scenario, would be as pictured in Figure 9.

Figure 9
Organics Flow -- Scenario 1



In this scenario, all food waste described above would be delivered to the prison's composting site, however it is uncertain as to whether the City of Lewisburg's yard waste would continue to be processed at Briar Patch Farm, or if it would be delivered to the prison. The University would continue to process its yard waste on its current site. While this option has potential benefits, the prison's environmental manager indicates the following:

- Having labor available to manage the site is an uncertainty, as the Camp laborers are expected to make food harvesting more of a priority in the future;
- Delivering loads of waste to the prison could pose a security threat; and
- Hay is not available for use as a bulking agent, as it is farmed by a private contractor who has no dealings with the prison itself.

In addition, the site is not engineered, and would likely require improvements to the surface of the pad. Additional measures would likely need to be taken to improve drainage.

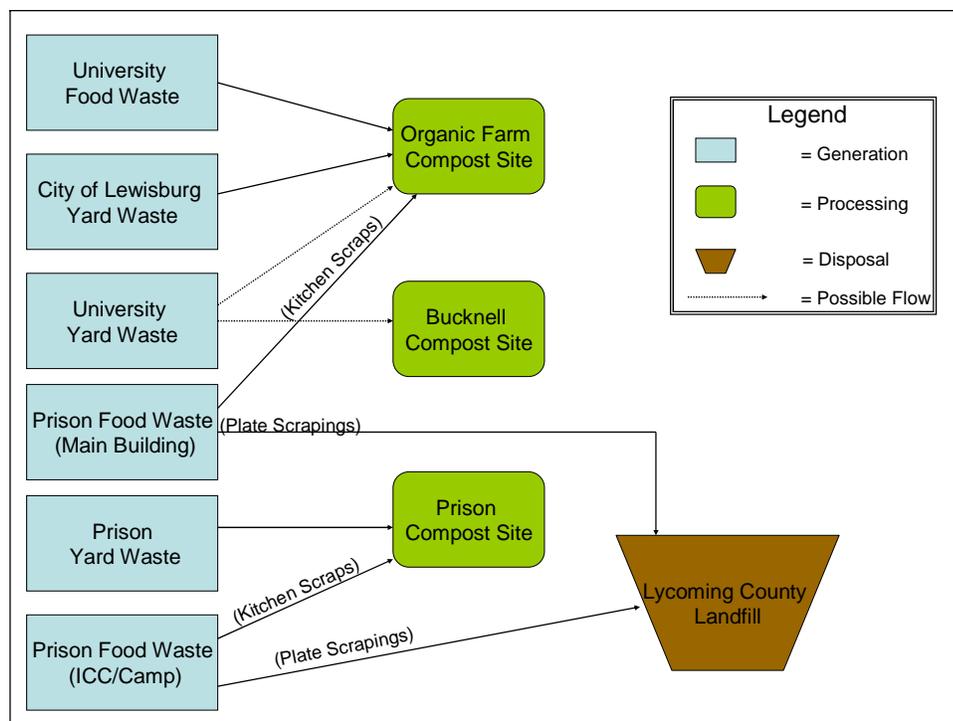
Composting at Briar Patch Farm

Another scenario, composting at Briar Patch Farm, was also considered. The benefits of Briar Patch Farm are:

- An engineered site already exists;
- The farm has a tractor and windrow turner;
- The farmer has a large knowledge base of composting practices.

The flow of organics if Briar Patch Farms composted food waste would be as depicted in Figure 10.

Figure 10
Organics Flow – Scenario 2



In this scenario, all food waste described above would be delivered to the Briar Patch Farm. The City of Lewisburg's yard waste would continue to be delivered to the farm, as well. Bucknell University's yard waste would continue to be processed at Bucknell's current yard waste processing site, and the prison's ICC and Camp food waste and yard waste would continue to be processed at the prison's compost site.

The site offers many benefits, as there is an engineered hard-surface 200' x 150' pad on site, sloped at 1 ½ degrees for runoff, and an engineered retention pond. In addition, the Farm has a tractor and tractor-drawn windrow turner on site, as well as monitoring equipment. Also, the farm is located in a remote area, where odors and potential vermin and debris would not be likely to pose problems. The Farm also already has relationships with local farmers who deliver manure, which would be beneficial to the food-yard waste mix. Potential drawbacks of this scenario are:

- Limited labor currently exists at the farm;
- Food waste would have to be transported to the farm daily;
- Site would likely have to be enlarged; and
- The Farm is less convenient to students for educational opportunities than if the site were on campus.

Composting at the University

The third scenario is composting at the University. This option has the following benefits:

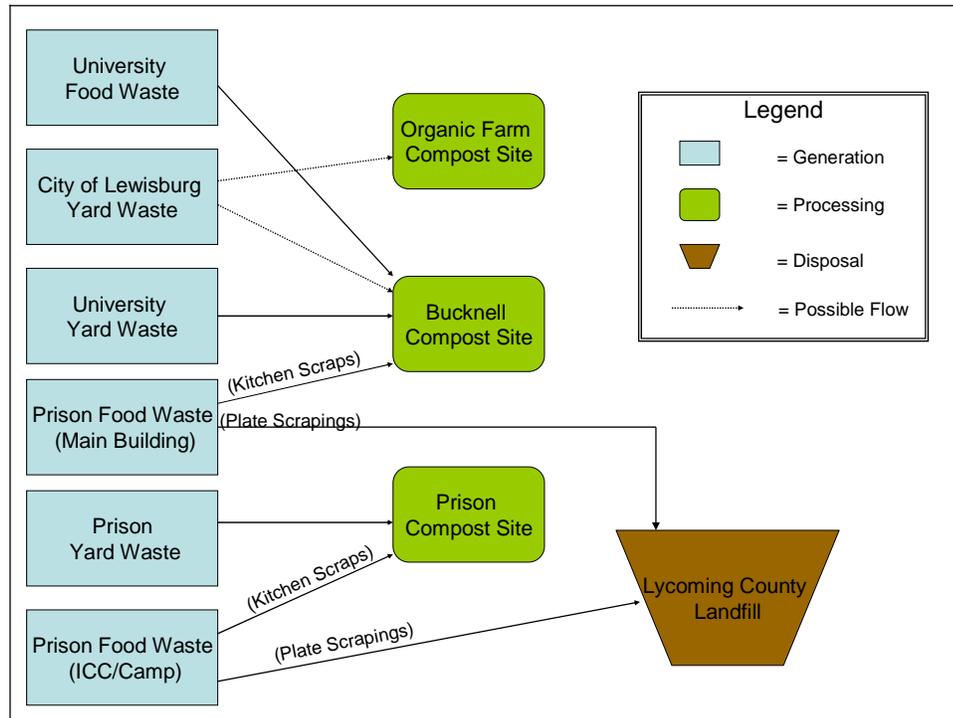
- Located close to the University food waste generation sites, cutting down on transportation costs and time;
- Knowledgeable staff available to manage the compost operation;
- On-campus educational benefits to the students; and
- Resulting compost would be beneficial to both the University and the golf course.

The potential drawbacks to the site are:

- Close proximity to the day care, Art Barn, and rental home; and
- Limited space for growth; and
- Lack of engineered pad and runoff drainage system.

Figure 11 illustrates the flow of organics under this scenario.

Figure 11
Organics Flow – Scenario 3



As Figure 11 shows, if Bucknell University operates a composting site, the University and Prison’s yard waste would be delivered to the University site for composting. The City of Lewisburg’s yard waste could potentially also be processed at the University site.

With the addition of food waste, the windrows would have to be much lower in height to ensure optimal processing and to minimize odors, and would be longer and narrower, to the specifications of the windrow turner purchased, which would make the windrows closer to these buildings.

The prison would like to add its food waste after the composting program is “up and running.” If this scenario is pursued, the University should consider gradual implementation of food waste processing, particularly to head off any issues with odor.

Analysis and Recommendations

A summary of the advantages and disadvantages of each potential food waste composting scenario is provided in Table 2.

Table 2
Advantages and Disadvantages of Each Composting Scenario

Scenario	Advantages	Disadvantages
Scenario 1 – Compost at Prison	<ul style="list-style-type: none"> ▪ Labor is free ▪ Land is isolated from population ▪ Land is plentiful ▪ Food waste currently being composted on site ▪ Site is relatively close to University – 4 miles 	<ul style="list-style-type: none"> ▪ Labor availability is not predictable ▪ Uncertain whether additional land could be utilized for composting ▪ Security issues exist with both delivering materials and sending materials elsewhere ▪ Prison has no financial incentive to make program work, as they do not pay tip fees at the landfill ▪ Site is not engineered – no “pad” per se, and no engineered drainage system ▪ On-site student education opportunities are limited
Scenario 2 – Compost at Briar Patch Farm	<ul style="list-style-type: none"> ▪ Engineered site exists ▪ Site is isolated – odors, vectors and debris less problematic ▪ Site is expandable ▪ Farm has tractor and windrow turner ▪ Owner has extensive knowledge of composting practices 	<ul style="list-style-type: none"> ▪ Farm is relatively far from University – about 7 miles ▪ Minimal labor currently available at farm ▪ On-site student education opportunities more limited

Scenario	Advantages	Disadvantages
Scenario 3 – Compost at University	<ul style="list-style-type: none"> ▪ Site is in close proximity to University food generation sites ▪ Site is only four miles from prison ▪ Site can provide educational opportunities for students ▪ University has tractor, loaders, shredder and screen ▪ University has ample labor to manage composting ▪ University has labor and equipment for grading site ▪ University has financial incentive (i.e., landfill tip fee reductions) to encourage success of program ▪ Two staff members at Bucknell have earned PROP certificates for compost operation. 	<ul style="list-style-type: none"> ▪ Site is relatively small with very limited expansion capability ▪ Site is relatively close to day care, rental home, and athletic fields – odors, litter and vectors could be an issue ▪ Site may need adaptations, such as grading and expansion of drainage swale

Permitting Considerations

R. W. Beck contacted DEP to gain an understanding of the permitting considerations under the three different scenarios. If food waste composting occurred on the Farm, then it would be covered under the On Farm General Permit. This permit applies to facilities that are considered to be “normal farming operations” and that meet all three of the following criteria:

- Do not exceed five (5) acres;
- Do not exceed 500 tons or 1,000 cubic yards per year of source separated food waste; and
- Do not exceed 3,000 cubic yards per acre of total materials.

The composting facility shall include all raw materials and waste storage areas, the composting and curing areas, and the finished compost storage areas. It is expected that the amount of waste to be composted would fit well within these guidelines.

Other key conditions of this permit include:

- Incoming food waste must be mixed or incorporated within 24 hours of receipt of the waste at the compost facility. Incorporation of other materials must occur within one week of receipt.

- The composting area shall be constructed in a well-drained area with a workable surface and slope of 2-4 percent to prevent ponding and control surface water. All storm water should be diverted away from the composting area. The working surface should be firm, uniformly graded and dry.
- The permit requires the use of windrows, aerated static piles, or in-vessel methods for composting. The temperature of the compost, during the composting phase, shall be maintained at a minimum of 55 degrees Celsius or greater for at least 25 days for the windrow method, or for at least 72 consecutive hours for the static aerated pile or in-vessel method. For the windrow method, turning shall be consistent with currently accepted science-based composting technology. In addition, the compost shall be cured for a minimum of 30 days.
- Rejected wastes and non-compostable materials shall be segregated from the incoming wastes, intended for composting, and shall be managed properly at a permitted disposal facility or recycled on a weekly basis.
- An operational plan must be developed and implemented, which includes:
 - A general site plan indicating an access road, tipping area, surface water and storm water controls for all compost-related areas, farm soil conservation plan; and nutrient management plan if available;
 - Operational hours for receiving waste;
 - Volume of waste processed during the previous year or expected to be processed during the first year of operation; and
 - Detailed description of the compost system.

A complete listing of these requirements is available on DEP's web site.

If the composting site was located at the University site, and involved composting of University-generated materials only, and was under five acres in size, it would be considered a captive facility, and would be required to meet the same stipulations as the on-farm general permit. If, however, compostables were delivered to the University site for composting, or if University-generated compostables were delivered to the prison site, a general permit would be required. General permits can cost from \$1,000 to \$2,000, according to a DEP representative, depending on the type of permit, and take three to six months to obtain.

Potential Expenditures and Cost Savings

If the University composted their food waste described above, rather than disposing it, it is estimated that they would save approximately \$6,265 per year in disposal costs, based on their current disposal fee of \$45.40 per ton at the Lycoming County Landfill. Additional savings could be accrued due to not having to purchase compost. Assuming a current price of \$4 per cubic yard, and assuming that the University would receive an amount of compost equal to half of the waste they provide to the facility (assuming all wood waste listed above is composted),

this would be 1,490 cubic feet, or roughly 55 cubic yards. This would save \$220 in compost costs, with the potential to save in hauling costs, as well.

Potential costs would depend upon the site selected. Site upgrades, for example, can cost up to \$100,000 and more, depending on the extent of the work and materials required. If the site were located at the University, staff may be able to upgrade the site in-house. If the site required a new windrow turner, this could be an expense of as little as \$20,000, or as much as \$175,000, depending on the type and model of windrow turner desired. A tractor-pulled windrow turner in the \$50,000 – range would likely be suitable for a site of the size described above. Table 3 summarizes the different costs that would be required under the different scenarios. Note that the scope of this project involves only planning-level costs, which in some cases is provided in the form of ranges, as exact costs depend on specifics selected by the compost site operator.

Table 3
Cost Differentials for Each Scenario

Cost Item	Scenario 1 Compost at Prison	Scenario 2 Compost at Farm	Scenario 3 Compost at University
Items That Would Be Needed Under All Scenarios			
Collection Vehicle	\$35,000	\$35,000	\$35,000
Lidded Carts	\$300	\$300	\$300
Items With Variable Costs, Depending on Scenario			
Tractor	\$25,000	Not required	Not required
Windrow Turner	\$25,000 - \$50,000	Not required	\$25,000 - \$50,000
Site Improvements	Up to \$100,000	May not be required	Up to \$100,000
Transportation Costs ¹	\$5,200 per year	\$9,100 per year	\$650 per year

¹Based on estimated operating costs of \$50 per hour, which includes labor, vehicle maintenance, and fuel. Assumes five trips per week to compost site, with

Recommendations and Conclusions

R. W. Beck recommends that the University, prison, and County, seek to implement a food waste composting program at the Farm, in the absence of a more remotely located on-campus site. Despite the fact that an on-site program would save the University in hauling time/costs and provide a convenient educational forum, the close proximity of the Art Barn, the golf course, athletic fields, and especially the rented home and the day care center, are cause for concern. DEP regulations stipulate that a food waste composting site must be located at least 300 feet from an occupied dwelling. Although the day care center is not an occupied dwelling, and therefore regulations would not preclude the site from being developed as a food waste composting site, a day care center is considered to be a “sensitive neighbor.” The golf course, which is also located adjacent to the potential site, is also potentially a sensitive neighbor. The close proximity of the University-owned rental home is also potentially problematic.

Briar Patch Farm is the preferred site because it already has an engineered site, does not pose any security risk issues, and can seek an on-farm permit-by-rule permit. It is therefore suggested that the University try to reach an agreement with the farm owner to implement a composting program. The following should be discussed and agreed upon, in writing:

- Delivery of food waste – acceptable times, tip location, etc.;
- Labor – who manages piles, at what cost, etc. The potential exists for University staff to manage piles, if the Farm does not wish to; however waivers should be drafted, such that liability is not an issue.
- Disposition of end product – The Farm and University should pre-arrange how the end materials are to be divided. They should also discuss the potential for selling the compost, vs. using it on-site at the Farm, and on-site at the University.
- Acceptance of other materials – the Farm and the University should discuss the potential for accepting other types of organic waste from other generators, including Lewisburg’s leaf waste, manure from local farmers, and other food waste.
- Availability of the site for educational tours – the Farm and University should discuss the potential for having classes or University groups visit the Farm for educational purposes. Protocol should be established, such as how far in advance the Farm is to be contacted, if the Farm owner has to be present during such a visit, etc.
- Equipment costs – The University, farm owner, and County should jointly discuss how any needed equipment is to be funded. Before program implementation, the farm owner and University should discuss current and future equipment needs, and how to meet them. The current windrow-turner is acceptable for composting the material being considered, however the potential of the University keeping a tractor on-site might be discussed, as well as how to share equipment maintenance, fuel, and replacement costs.

If the County, Farm, or University plan to proceed with implementing a food waste composting program, the following are suggested:

- Test on a small scale, to ensure process does not result in odor issues;
- Keep containers to less than 135 pounds if they are to be lifted manually – using 65-gallon wheeled carts is acceptable, however they should not be filled to capacity. Generally filling them no more than 2/3 full is recommended. Four-wheeled carts are easier to maneuver than two-wheeled carts, but can “get away” on hills.
- If using a “lift” system, or able to tip from loading dock, a 95-gallon cart can be used, but not filled all the way (expect the cart to reach 300 lbs. when full – check manufacturers’ weight ratings when purchasing carts).
- Obtaining a windrow turner would save man-hours, and result in more optimal aeration. The University might consider a tow-behind unit, as they have tractors available (but check

specifications to be sure the tractor has ample horsepower); Also, sizes of windrows should be considered, to ensure space is adequate.

- Be prepared to manage vectors, although usually birds and vectors are not a problem if food waste is added to an awaiting carbon pile, and mixed immediately upon arrival.
- It is recommended that the site avoid, at least initially, the composting of used paper napkins, as these materials are often windblown and attract birds. It is suggested that if the University wishes to compost these materials in the future, they add them gradually, after first conducting a successful test pilot program.
- If a food waste compost program is developed, facility management should be proactive in letting the nearby neighbors know about the new materials being accepted, and let them know who to contact if there are issues with the new feedstock (even though most of the neighbors are farmers and already provide the farm with manure for composting).
- If additional wood chips are required, it is suggested that the facility work out an arrangement with Lycoming County, as they may be able to provide wood chips free of charge.
- Many farmers in the area provide manure to the farm already for composting. With the addition of food waste to the composting mix, it may be beneficial to seek additional manure and spent hay to provide additional bulking and more immediately available nitrogen to the process.
- Plan in advance how to manage odors. For example, expect odors when the piles are turned, for twenty minutes or so. Time the turning of the piles such that fewest people would be offended, and always considering the direction of the wind.
- Plan in advance how to make the most of the composting site as an educational benefit. Examples include:
 - Signage around plantings where Bucknell-manufactured compost is used, especially near the cafeteria;
 - Tours of the compost facility to student groups;
 - Earth day events;
 - Promotion of the University's cost savings, in both disposal fees and soil amendment products, due to the use of manufactured soil amendment, and potentially to reduced water usage.
- Apply for the 2005 Compost Infrastructure Development Grant Program (Program) through the Department of Environmental Protection. Under this grant program, qualified existing and operating for-profit business entities and non-profit organizations in the Commonwealth will be awarded grants to increase the quantity of yard waste and/or food wastes collected in this Commonwealth. These grants are valid for equipment, but not for site improvements. The goal of this program is to increase the quantity of organic materials collected and

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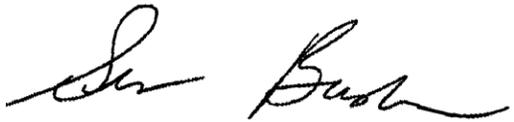
composted to further increase this Commonwealth's recycling rate. Applications for the grant program will be accepted by the Department until 4:00 p.m. on March 4, 2005. The application is available at the following address:

http://www.dep.state.pa.us/dep/deputate/airwaste/wm/recycle/compost_sum/grant05.doc.

Thank you for the opportunity to assist the County with this project. I can be reached at (401) 782-6710 should you have any questions.

Sincerely,

R. W. BECK, INC.

A handwritten signature in black ink, appearing to read "Susan Bush", is written over a thin red horizontal line.

Susan Bush
Project Manager