October 29, 2009

R·W·BECK
An SAIC Company

Mr. Clyde Myers
Township Supervisor
Upper Bern Township
P.O. Box 185
25 North 5th Street
Shartlesville, PA 19554

Subject**: SWANA Technical Assistance Project**

Dear Clyde:

This letter report summarizes R. W. Beck's evaluation of a commercial recycling program for Upper Bern Township. Upper Bern Township is a small community (approximately 900 households and a land area spanning 18.2 square miles) located in Berks County (County), which is located in the south central region of Pennsylvania. The Township is not mandated by Pennsylvania's Act 101 to recycle but is interested in developing a recycling program that will encourage its many (approximately 50) small businesses to recycle. The community also has two campgrounds and a third is located outside the Township. The Township would like to encourage the campgrounds to also implement recycling programs. As part of this study R. W. Beck also conducted on-site training to teach the township supervisor and other volunteers how to conduct waste audits at commercial establishments. Surrounding communities were also interviewed in order to gain an understanding of those communities' existing programs and level of interest in participating with the Township in future programs.

This project was performed 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).

The report is divided into the following sections, pursuant to the scope of work developed and agreed upon by R. W. Beck and the Township:

- Executive Summary;
- Background on existing recycling programs/opportunities in and around the Township;
- Summary of Waste Audit Training;
- Estimated Generation Rates and Material Prioritization;
- Campground Recycling;
- General Recycling Program Options and Strategies;
- Surrounding Community Interview Results; and
- Observations and Recommendations.

Executive Summary

Upper Bern Township is a rural community located in Berks County. The Township has about 52 businesses. The Environment/Agricultural Advisory Committee (EAAC) has been surveying businesses to understand whether the businesses recycle, and if so, how and/or what materials they recycle. To date, the EAAC's data indicates that 14 businesses recycle in some fashion. Most of these indicate that they have cardboard recycling programs. Three businesses indicate that they take their recyclables to the Upper Tulpehocken drop-off site (sponsored by the County), and one business indicates that they recycle "on their own." The Township, spurred largely by the EAAC, is interested in developing a recycling program that will encourage more businesses to recycle. The Township would also like to minimize costs associated with any such recycling program. The Township does not have an organized recycling program for residents (though residents may use County drop-off sites or may obtain curbside recycling through their garbage hauler). Therefore, R. W. Beck recommends that a drop-off program be developed for businesses, which would also be accessible to residents. R. W. Beck recommends that a trailer system be purchased and placed adjacent to the Township building, Trailers allow the municipality to minimize costs by hauling the recyclables to a recycling facility using a Township-owned vehicle and existing staff. Furthermore, the Township would receive "credit" for the tonnages recycled through such a program, which would make them eligible for Act 101, Section 904 grants. Currently residents and businesses tonnages recycled are not being reported to the Township nor the County recycling coordinator as being generated in Upper Bern Township. R. W. Beck also recommends that the Township conduct education and outreach about the program, monitor the site. Some municipalities have had success in developing a "milk-run" collection for businesses for a nominal fee, if the drop-off site proves to be too inconvenient for businesses, however in general it is recommended that this option be implemented only where private services are not available, and Act 101, Section 902 grant funding would only be awarded if this service were not available from the private sector.

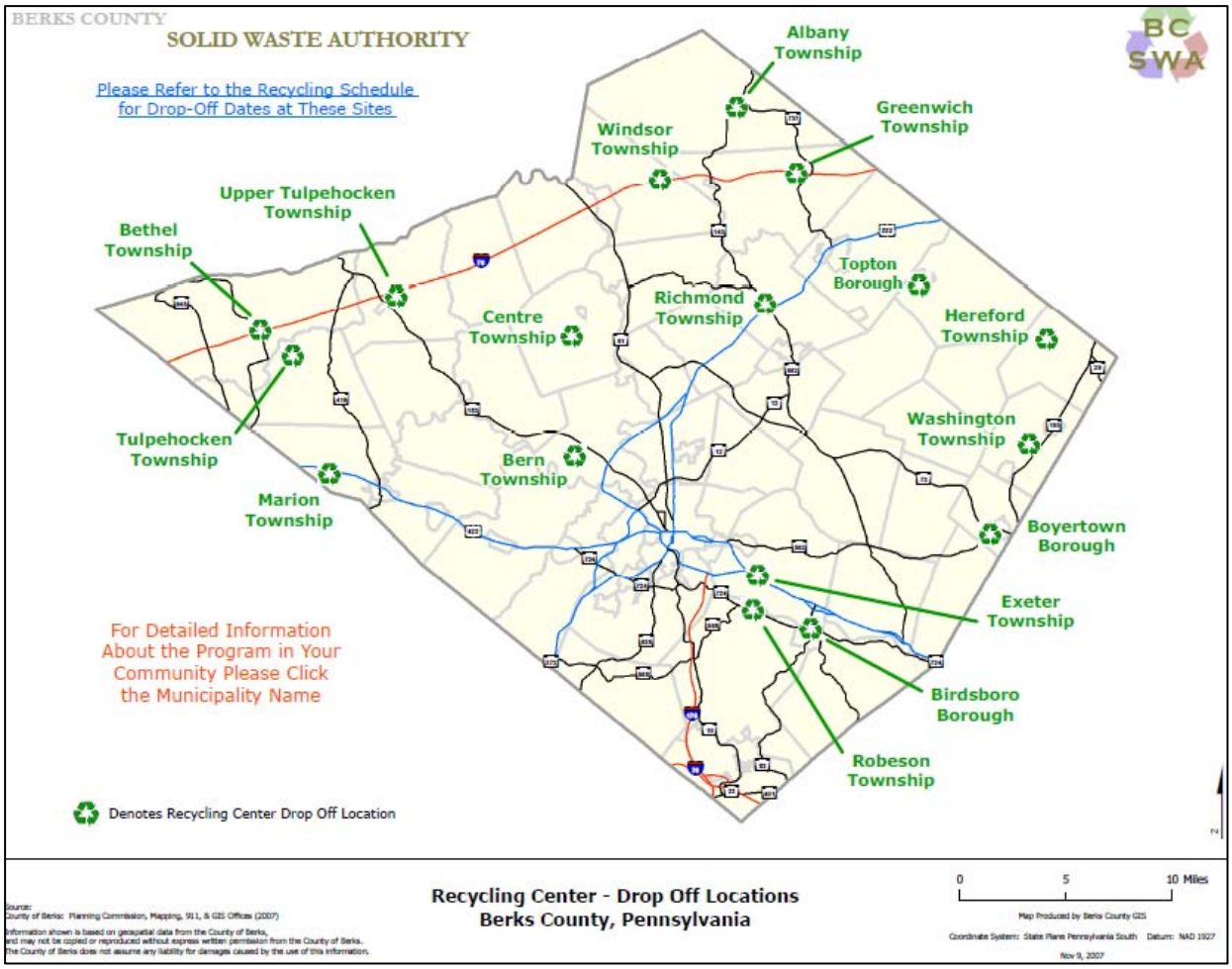
As part of this project R. W. Beck conducted on-site training to the EAAC on how to conduct commercial waste audits. Another option would be to site a second trailer located in the industrial/commercial areas, which would be more convenient for some businesses. Another option is for the Township to consider approaching Tilden Township regarding constructing a joint facility (Tilden Township has already applied for a grant to construct a recycling center near their Township building). Lastly, although the Township does not desire to implement a mandatory program, it might consider adopting a mandatory recycling ordinance if participation is low over time. It is important for the Township to work with haulers to obtain good recycling data, and with commercial establishments, to promote and optimize the program over time.

Background on Existing Recycling Programs in and Around Upper Bern Township

Upper Bern Township is a small community located in Berks County. The Township has over 700 occupied homes, and about 50 small businesses. The County's Solid Waste Authority's

recycling coordinator indicates that there are 74 municipalities in Berks County, only 14 of which are mandated communities as defined by Act 101. There are 31 municipalities in Berks County, however, that have curbside recycling programs for residents – the 14 mandated municipalities plus an additional 17 municipalities. Seventeen communities have drop-off recycling programs (other than County drop-off sites). There are also 12 County-sponsored "rural" drop-off sites throughout the County. These sites are geared toward residential recycling only (as they do not accept cardboard and small openings prevent dumping large quantities of material at one time into the containers). In addition there is a "Hilltop Road" site, referred to as the recycling center, which is an unstaffed site that is available to the public seven days per week, 24 hours per day. This site has roll-off-style containers where residents (only) can deliver commingled containers, mixed paper, and cardboard. There are signs at this site indicating that businesses are not allowed to deliver recyclables to the site. Figure 1 shows the locations of the County-sponsored drop-off sites in Berks County. The rural sites are open to residents on a monthly basis, for a limited period of time – Wednesday through Sunday. Combined, these 12 sites resulted in recycling 800 tons of material in 2008. The recycling center resulted in the collection of 700 tons of material in 2008 – 200 of which was cardboard. Residents hire their own hauler for garbage collection in Upper Bern Township. One hauler that is used by a considerable portion of households is Nesters. Nesters provides monthly curbside recycling. Most other haulers who serve the area, however, do not provide residential curbside recycling. Nesters does not provide recycling data to the Township, as they say they have no way to separate the Township's recyclables from other communities' recyclables that are collected on the same route.

The County recycling coordinator indicates that it can be challenging to obtain recycling data from commercial establishments. There are a few commercial entities, however, that recycle large quantities, such as Cabela's Sporting Goods in Tilden Township, which recycles around 6,000 tons per year, which results in significant Act 101 Section 904 grants for the Township. For the most part, however, residents rely on the network of recycling drop-offs that are provided throughout the County. The County has better compliance receiving information from haulers directly, as there are fewer haulers than businesses operating in the County (18 haulers operate in the County). Most haulers estimate the quantity of recyclables collected on a single route based on the size of containers and frequency of pulls at each site, as haulers do not have on-board scales, but do have customer records. When recycling companies pick up roll-off containers and deliver them directly to the recycling facility, the container is weighed upon delivery, and tonnage is generally allocated to the Township in which the container is located. The County attributes all recyclables delivered to the County-sponsored drop-offs as residential recyclables, as opposed to commercially generated recyclables. Figure 1 shows the location of the County-sponsored drop-off sites.



Source: Berks County

Figure 1. Location of Berks County Drop-Off Sites

There are also numerous opportunities for businesses and individuals to recycle materials through private entities. For example, businesses can deliver cardboard directly to several recycling companies. Table 1 shows a listing of the private entities that will accept old corrugated cardboard, and the distance from Upper Bern Township's office building. This information, as well as information regarding recycling opportunities to recycle other types of materials, is provided on the Berks County web site at http://www.co.berks.pa.us/swa/cwp/view.asp?a=2158&Q=483108. As Table 1 indicates, there are only two locations that accept cardboard from businesses that are likely to be convenient to commercial entities located in Upper Bern Township – Cougle's and Zwicky Processing in Robesonia.

Table 1
Private Drop-Off Locations for Cardboard

Vendor	Address	City	Zip Code	Phone	Miles from Township Building
BDSI Recycling Center	160 Chestnut St.	Honeybrook	19344	610.942.2707	39
Berky's Lot #9 Container Transfer	113 Conrad Rd.	Fleetwood	19522	610.944.5250	27
Birdsboro Napa Auto Parts	702 South Center Rd.	Birdsboro	19508	610.582.2550	29
Cougle's Recycling	100 S. 4th St.	Hamburg	19526	610.562.8336	9
Damore Brothers	1122 Commons Blvd.	Reading	19605	610.926.6551	20
Goldstan Trading, Inc.	822 Buttonwood St.	Reading	19601	610.372.9855	24
Pioneer Crossing Landfill	727 Red Lane Rd.	Birdsboro	19508	610.582.2900	28
Recycling Services, Inc.	365 Elm St.	Pottstown	19465	610.323.8545	39
United Corstack	720 Laurel St.	Reading	19602	610.374.3000	21
Zwicky Processing	220 Buena Vista Rd.	Fleetwood	19522	610.926.0731	19
Zwicky Processing	10 Zwicky Lane	Robesonia	19551	610.693.5606	11

Summary of Waste Audit Training

Mr. Brian Holt of R. W. Beck visited Upper Bern Township and conducted training on conducting waste audits at commercial establishments. Mr. Holt presented a PowerPoint presentation which is provided as Attachment A to this Report. He also distributed handouts, including:

- Generation Audit Questionnaire;
- Worksheet A – Estimating Waste Disposal Costs;
- Worksheet B – Conducting a Waste Audit;
- Worksheet C – Evaluating the Cost of a Recycling program; and
- Worksheet D – Calculating Avoided Costs of Recycling.

These handouts are provided as Attachment B of this report.

Estimated Generation Rates and Material Prioritization

Based on results from the Statewide Waste Composition Study (R. W. Beck, 2003), R.W. Beck developed an estimate of the MSW stream expected to be generated in Upper Bern Township annually. The estimate is based on the southcentral waste characterization results for rural communities. A summary of these results is provided in Table 2.

Table 2
Summary of Waste Characterization Estimates for Upper Bern Township

Material Type	% of Waste Stream	Estimated Tons Disposed
Total Muni Waste Disposed	100%	2,384.06
Paper		
Newspaper	3.6%	85.83
Corrugated Cardboard	7.5%	178.80
Office Paper	1.8%	42.91
Magazine/Glossy	2.3%	54.83
Polycoated/Aseptic	0.5%	11.92
Mixed Paper	5.6%	133.51
Non-Recyclable Paper	6.8%	162.12
TOTAL PAPER	28.1%	669.92
Plastic		
#1 PET Bottles	0.7%	16.69
#2 HDPE Bottles	0.8%	19.07
#3 - #7 Bottles	0.2%	4.77
Expanded Polystyrene	0.5%	11.92
Film Plastic	5.2%	123.97
Other Rigid Plastic	3.9%	92.98
TOTAL PLASTIC	11.3%	269.40
Glass		
Clear Glass	1.4%	33.38

Material Type	% of Waste Stream	Estimated Tons Disposed
Green Glass	0.2%	4.77
Amber Glass	0.5%	11.92
Non-Recyclable Glass	1.2%	28.61
TOTAL GLASS	3.3%	78.67
Metals		
Steel Cans	1.3%	30.99
Aluminum Cans	0.3%	7.15
Other Ferrous	2.0%	47.68
Other Aluminum	0.5%	11.92
Other Non-Ferrous	0.1%	2.38
TOTAL METALS	4.2%	100.13
Organics		
Yard Waste - Grass	1.7%	40.53
Yard Waste - Other	2.1%	50.07
Wood - Unpainted	6.4%	152.58
Wood - Painted	3.2%	76.29
Food Waste	13.7%	326.62
Textiles	2.8%	66.75
Diapers	1.7%	40.53
Fines	0.8%	19.07
Other Organics	2.7%	64.37
TOTAL ORGANICS	35.1%	836.80
Inorganics		
Electronics	0.7%	16.69
Carpet	1.8%	42.91
Drywall	1.6%	38.14
Other C&D	7.9%	188.34
HHW	0.3%	7.15
Other Inorganics	2.2%	52.45
Furniture	3.6%	85.83
TOTAL INORGANICS	18.1%	431.51

The Southcentral waste characterization study results are based on all communities in the southcentral region of Pennsylvania, which includes some communities that have access to recycling programs. The estimates provided in Table 2, therefore, may understate the disposed materials currently generated in Upper Bern Township, as Upper Bern Township lacks convenient access to recycling.

Figure 2 shows the quantities of MSW disposed, by material type, estimated to be generated in Upper Bern Township on an annual basis.

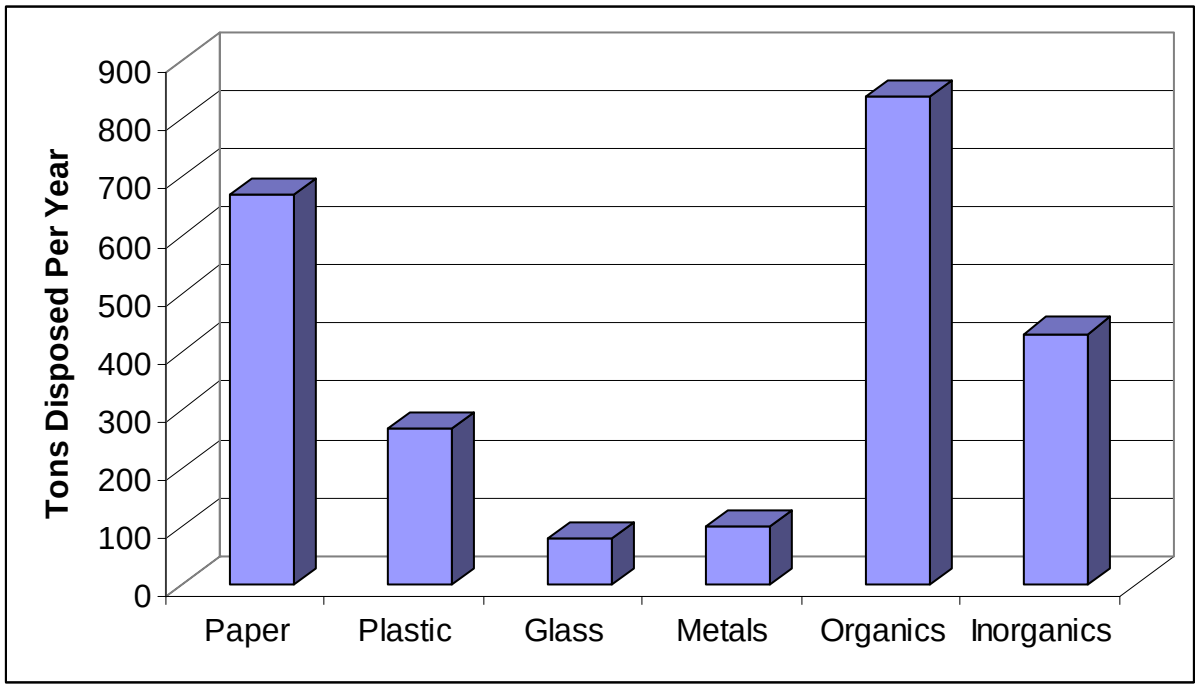


Figure 2. Tons of MSW Disposed Annually, By Material Category

In rural southcentral Pennsylvania, it is estimated that approximately 63 percent of the MSW disposed is generated by residential generators, and 37 percent is generated by commercial establishments. (By comparison, in suburban areas it is estimated that 61.4 percent of disposed MSW is generated by residents, and 38.6 percent is generated by commercial entities. In urban areas, the split is 53.1 percent residential, 46.9 percent commercial.)

R. W. Beck conducted an analysis of "typical" commodities accepted at (and marketed through) most material recovery facilities (MRFs). A summary of the quantities of these commodities expected to be in the disposed waste stream is provided in Table 3.

Table 3
Summary of "Typical" Commodities Estimated to be in Disposed Waste Stream

Material Type	Estimated Quantity[1]	Estimated Value ($/ton)	Estimated Total Value
Newspaper	85.8	$7.50[2]	$643.69
Corrugated Cardboard	178.8	$37.50[3]	$6,705.16
Office Paper	42.9	$95.00[3]	$4,076.74
Magazines	54.8	$7.50[21]	$411.25
Mixed Paper	133.5	$12.50[3]	$1,668.84
PET Bottles (#1)	16.7	$340[4]	$5,674.05
HDPE Bottles (#2)	19.0	$300[4]	$5,721.23
Clear Glass	33.4	$3.75[4]	$187.74
Green Glass	4.8		
Amber Glass	11.9		
Steel Cans	31.0	$117.50[4]	$3,641.64
Aluminum Cans	7.1	$980.00[4]	$7,009.12
TOTAL	619.7		$35,739.46

[1] Based on results of Pennsylvania's Waste Characterization Study, Southcentral region.
[2] Based on Official Board Markets April Prices, New York Mid-Point, ONP #6
[3] Based on Official Board Markets April Prices, New York Mid-Point
[4] Based on RecycleNet.com Full Truckload (FTL) Prices, April 29

Based on the amount of MSW estimated to be disposed in the MSW stream that is generated in Upper Bern Township, a total of 619.7 tons of "typical" recyclables are potentially available to be recovered from the disposed waste stream. As described above, that amount may even be higher in Upper Bern Township where no recycling program is widely available. The estimated value of these materials is over $35,700. It would be highly unusual for a community to recover 100 percent of all recyclable materials generated, however the analysis gives the Township some idea of what is possible. While commodity prices are relatively low at this time (April 2009), it would also be unusual for a community to retain 100 percent of the value of their recovered materials. However, this analysis shows that the materials have a positive economic value in the marketplace, and some form of revenue share may be possible to negotiate with a local recycler. Note that pricing is based on certain assumptions (full truckload, baled materials, for example) and pricing can be lower if these conditions are not met. Also, it is important to remember that tip fees are not paid on materials kept out of the landfills. Assuming a tip fee is about $30 per ton, the community could potentially save (in aggregate) up to $18,591 on tip fees by avoidance of disposal costs associated with the 619.7 tons of commodities described above.

When targeting recyclables, the information contained in the above table (quantity generated and value of the material) is helpful, however they are not the only factors to consider. Other factors to consider when targeting recyclables for recovery programs include:

- Whether alternative material management strategies are available;
- Which materials are generated in a relatively condensed area (for examples, at businesses);
- Whether any materials are problematic or hazardous to manage; and
- Whether there are barriers to managing some types of material (for example, privacy concerns with office paper, materials that are voluminous or become windblown, etc.).

In addition, U.S. Census employment data can be helpful in identifying the types of recyclables available in the waste stream. Table 4 provides 2000 data regarding employment, by industry, for Upper Bern Township.

Table 4
Employment Data for Upper Bern Township[1] and Likely Recyclable Types Generated[2]

Industry	Number Employed	Percent	Likely Recyclable Types Generated
Agriculture, forestry, fishing, hunting, and mining	57	6.6%	Wood, agricultural waste, animal byproduct waste
Construction	63	9.3%	Wood, shingles, aluminum, cardboard, other C&D materials such as asphalt, brick, etc.
Manufacturing	211	24.4%	Cardboard, scraps dependent upon type of manufacturing, pallets, shrink wrap
Wholesale	65	7.5%	Cardboard, pallets, office paper, shrink wrap
Retail trade	76	8.8%	Cardboard, shrink wrap, film plastic bags
Transportation and warehousing and utilities	36	4.2%	Office paper, waste oil, antifreeze, tires
Finance, insurance, real estate and rental/leasing	44	5.1%	Office paper, journals/magazines, newspapers, mixed paper, plastic bottles, aluminum cans, electronics
Professional, scientific, management, administrative, and waste management services	24	2.8%	Office paper, journals/magazines, newspapers, mixed paper, plastic bottles, aluminum cans, electronics
Educational, health and social services	139	16.1%	Office paper, journals/magazines, newspapers, mixed paper, plastic bottles, aluminum cans, steel cans, pallets, cardboard, text books, electronics, food scraps

Industry	Number Employed	Percent	Likely Recyclable Types Generated
Arts, entertainment, recreation, accommodation and food services	74	8.6%	Cardboard, pallets, shrink wrap, aluminum cans, glass bottles, plastic bottles, steel cans, pallets, food scraps
Other services (except public administration)	43	5.0%	Office paper, mixed paper, newspapers, other materials depending upon service
Public administration	31	3.6%	Office paper, mixed paper, newspapers, plastic bottles, aluminum cans

[1] Data Source: U.S. Census, DP-3, Profile of Selected Economic Characteristics: 2000 U.S. Census

[2]Source: R. W. Beck

The largest businesses in the Township (based on number of employees) include Love's Truck Stop (125 employees), McDonald's, and Schwan's Ice Cream delivery.

Based on the value of commodities, along with the quantity in the disposed waste stream, and the other considerations described, R. W. Beck suggests that the Township begin its recycling program by focusing on the following commodities, in general:

- Corrugated cardboard;
- Mixed paper, including office paper, newspapers, magazines, and other mixed paper; and
- Commingled containers, including aluminum cans, PET bottles, HDPE bottles, steel cans, and glass containers.

This minimal separation of recyclable materials, as is done at the County drop-off sites, will provide residents with a sense of continuity and less confusion regarding how to recycle, and will also provide greater flexibility for containers. However, the Township should ensure that the recycler selected is able to accommodate materials delivered in this fashion.

In the future the Township might consider adding a container for yard waste, and find a local processor or farmer that would be willing to accept yard waste for composting.

Township Program Options and Strategies

Collection Program

In general, there are two types of collection programs for MSW recyclables – drop-off and curbside collection. Based on conversations with the Township Supervisor, residential curbside collection is not feasible in Upper Bern Township at this time due to the cost. Also, the Township does not wish to mandate recycling, unless and until they become a mandated community. Because curbside collection programs are relatively costly, particularly in rural areas, drop-off programs are common in rural areas. Drop-off programs can be staffed or unstaffed. More about drop-off collection program options is presented below.

Drop-Off Programs

Drop-off sites are generally established either as 1) the primary means of providing for the collection of recyclables in rural areas where curbside collection may not be cost-effective; 2) to supplement curbside programs and to provide a collection site for recyclables that are not collected at the curb; or 3) to provide opportunities for under-served populations, such as multi-family households or commercial establishments, to recycle. In addition, drop-off sites are typically used for special collection events or drives, for materials such as electronics.

Drop-off sites are most cost-effective when:

- Participation rates for the site(s) are high;
- Residents and businesses recycle large quantities of material at the sites; and
- Residents and businesses prepare recyclables properly.

In order to ensure that these conditions are met, the drop-off sites should be:

- Well-lit, clean and vermin-free;
- Located such that recycling containers are as convenient and visible as MSW disposal containers;
- Serviced frequently enough to avoid overflow of materials;
- Situated such that there is ample space for servicing the containers (usually roll-off containers require 80 to 90 feet, in order to accommodate the roll-off, collection vehicle, and allow for maneuvering space);
- Simple to use – signage should be clear and easy to understand so it is obvious what is to be recycled where; and
- Safe – no high steps, heavy lids, and ensure traffic flow is safe.

Some communities staff their drop-off sites. Site attendants help residents understand the recycling program, ensure that recyclables are placed in the proper containers, and attendants can assist customers unloading their recyclables, and overall serve as an ambassador to the program.

There are two basic options regarding service providers. Drop-off services can be provided by a private entity (typically under contract to a public entity), or by a public entity. If the municipality or county provides the service, benefits include the fact that the local government has control over the program, and can therefore select the types of containers it desires, make changes to the program when desired, and respond to issues immediately. The drawbacks associated with the public entity being the service provider include the fact that the municipality must purchase or lease the appropriate trucks and containers and assume responsibility for maintenance. Often collection vehicles would not be fully utilized, and they are generally not adaptable to other municipal purposes. When drop-off services are contracted out to a private entity, the local government has some control over the program through their contract with the

service provider, but typically the public entity gives up some control. The public entity should monitor service provider performance, however, and in general must accept the type of containers and vehicles that the service provider has (particularly if the community is a small community). The main benefit, however, is that the pubic entity does not have to purchase capital equipment such as containers and collection vehicles, which can be quite costly to buy and maintain. This is particularly true in a small community where collection may not be fully utilized.

There are three basic types of containers typically used for drop-off sites:

- Front-end load containers;
- Trailers; and
- Roll-off containers

These container types, and their pros and cons, are described more below/

Front-End Load Containers

Front-end load containers are typically known as "dumpsters" and come in 1-, 1.5-, 2, 3-, 4-, 6- and 8-cubic yard capacities. This system is beneficial in that the contents are tipped into the collection vehicle on site, and the empty container is replaced immediately. One collection vehicle can usually visit many sites on one route. In Upper Bern Township, several commercial establishments that currently are participating in recycling programs (through Waste Management or other haulers) use front-end load systems. Front-end load containers are more suitable for lightweight, high-volume materials such as cardboard, since the collection vehicles compact the material. They also can be used to collect recyclables from several commercial customers along the same route. Most of these containers cost between $1,500 and $6,700, depending on size. Front-end load trucks have a large capacity. They raise the containers high into the air and dump them into the compacting truck compartment using forks on the front of the truck. In addition to needing a considerable amount of space to accommodate the large front-end load trucks, overhead clearance is required. They have a degree of flexibility not found in roll-off systems, as a truck that does not fill up at the drop-off site may go on to collect recyclables from other customers/sites.

Roll-Off Containers

Modified roll-off containers can be outfitted with specially-designed cutouts to accommodate certain types of recyclables and to discourage users from depositing garbage bags or other contaminants. Built-in partitions, which can be adjusted to accommodate changing volumes of various recyclables, are often used to keep different materials separated. These containers are large-capacity, typically between 20- and 40-cubic yards, but are costly to service since they must be pulled one at a time. Either a replacement container must be left when a full container is hauled from a drop-off site (requiring sufficient spare containers) or there will be no container for continued collection until the pulled container is returned. Compacting roll-off containers can be used for lightweight, high-volume material such as corrugated cardboard and plastics. Roll-off containers can cost between $2,500 and $4,000, or more if a compaction unit is included. The vehicles used to service roll-off containers rely on a hook and cable system to load the container onto the truck bed. When loading, they require enough linear space for the truck, the tilted and extended truck bed, and the container. The containers used at the County's recycling drop-off locations are divided or compartmentalized roll-off containers. WM and Cougle's (and likely other haulers in the area) have the ability to service these containers.

Recycling Trailers

Recycling trailers are often a cost-effective drop-off site option because they can be hauled by a heavy-duty pickup truck with a hitch or another type of truck (i.e., a dump truck) that a local government may already own. Recycling trailers come in a variety of sizes, ranging from 4- to 20-cubic yard capacities. Trailers may be compartmentalized, with the compartments built into the structure of the trailer or with a number of separate bins that fit together onto the trailer frame. Trailers unload using gravity and a hydraulic device that "tips" each compartment individually at the MRF, or by removing individual bins with a forklift. Recycling trailers can range in cost from $10,500 to $20,000 and higher. Other advantages of using trailers include:

- Site preparation is usually easier and less expensive, and easy to relocate, if necessary;
- Trailers are clearly different in appearance from "dumpsters," and thus may be more successful at deterring contamination by garbage;

- The separate compartments on trailers, usually holding one or two cubic yards, provide flexibility in adjusting capacity to more efficiently accommodate the actual volume of recyclables; and
- Trailers provide the flexibility of establishing temporary drop-off locations for specific purposes – for example, a trailer could be towed to a community event such as a festival to provide attendees with a recycling option.

Attachment C provides research regarding three recycling trailer product lines researched by R. W. Beck that could potentially be suitable for Upper Bern Township.

Makeshift Collection Options

In some communities creative collection programs are developed to make use of existing vehicles. Containers must be compatible with the collection vehicles. One example is using a flat-bed truck to collect recycling carts, with the help of a ramp that can be used to roll the carts up into the bed of the truck. Some communities also use flatbed trucks or pickup trucks to collect bagged recyclables. Another example is a community that uses a box-style truck or a pickup truck to collect loose cardboard from businesses. Such a program would be somewhat labor intensive, but could work for relatively small quantities of cardboard.

Service Provider Options

Typically municipalities will contract with a private hauler if they use roll-off-style or front-end load containers for recyclables, unless the municipality happens to have equipment that can be used to haul such containers. Private haulers typically charge a monthly container rental fee and a per-pull fee for recycling containers. In some cases it may be possible to work with the hauler or the recycler to gain some revenue share – a rebate for a portion of the materials collected, based on weight and commodity prices. Recycling trailers are generally used in communities that do not own hauling equipment. In general these trailers are pulled using a vehicle that the municipality already owns. Likewise, makeshift collection options are usually used when municipal workers and/or volunteers are collecting recyclables with a vehicle that the municipality already owns. Again, it is important to be sure that the collection vehicle and containers work appropriately and safely together.

The County's drop-off program, which is provided through a contract with Waste Management, costs the County approximately $100,000 per year for the 12 rural sites, and $40,000 per year for the Hill Top Road site. The County owns the containers, and WM charges $170 per pull in the rural areas and $140 per pull at the Hill Top Road site.

Education and Outreach

In order for a recycling program to be effective, the public must be aware of and informed about the program, and also interested and motivated enough to change their behavior. Successful public education programs combine three approaches:

- **Promotion** – Promotion makes the public aware that recycling services are available in the area, and in general what they are and where they can be found. Promotion includes encouragement to use the program as well. For example: "Recycling is easy with the new recycling drop-off program."
- **Instruction** – The public needs instruction or training in order to take specific actions to participate correctly in the recycling program. For example: "Remove metal caps from glass bottles before recycling" or "Recycle magazines with newspaper." Pictures are often helpful in providing instruction.
- **Education** – The benefits of recycling in a larger sense should also be communicated, to connect recycling to the community and the environment in terms non-professionals can understand. For example: "Recycling creates jobs in Pennsylvania," or "Recycling can help reduce the need for landfills."

The Township should consider developing a substantial initial education and awareness campaign to inform businesses and residents of the new recycling program and build enthusiastic participation.

The Township should contact the DEP Northeast Regional Planning and Recycling Coordinator in Wilkes-Barre to schedule an Act 101 Section 902 Recycling Grant pre-application conference when DEP announces the next application period. The grants cover 90 percent of eligible recycling program costs. Matching recycling education costs with eligible costs for a drop-off recycling site or trailer should be a topic of discussion.

Act 101 Section 904 Recycling Performance Grants are awards based on the total tons recycled and the applicant's recycling rate. The Township should consider applying for Recycling Performance Grants to help fund recycling education and other program costs on an ongoing basis. The deadline for filing a performance grant application is typically September 30 for recycling performed in the previous calendar year.

Tools available to publicize recycling messages can be grouped into five broad categories:

- Print (calendars, brochures, newsletters, paid advertising in print media);
- Broadcast (public-service announcements (PSAs) on television or radio, local cable channel programs, or, less frequently, paid advertising);
- Electronic (web sites, e-mails, discussion boards, blogs);
- Outreach (special events, presentations to schools and community groups, recycling competitions); and
- Icons and incentives (recycling bins with program logo and instruction, refrigerator magnets, bookmarks and other give-aways).

Initial public outreach should be focused on bringing attention to the recycling program. This would include reaching out to local media for short articles about the new program by using a press release or individual phone calls, depending on the community and its relationship with

local media channels. A ribbon-cutting ceremony at each new site may provide an opportunity for a photograph that can be included in the newspaper or short mention on evening television news. Temporary banners and other temporary signage can help bring awareness to the new site as well.

For ongoing promotion, mail inserts in periodic local mailings, such as a local newsletter, property tax bill or utility bill are more cost-effective than other types of mailings because they are included in mail of interest to the household and are less likely to be viewed as an "advertisement" mailing that is discarded without being looked at. If a more substantive brochure is desired, a dedicated mailing at higher cost may be needed. Electronic outreach can be very low-cost, as can public appearances at local events featuring recycling staff interacting personally with residents and businesses, possibly providing reminders and prompts in the form of inexpensive give-aways.

Figure 3 provides a picture of magnets that Mechanicsburg Borough distributed to residents to provide them instruction about their recycling program. Magnets are beneficial because they are more permanent than flyers, and provide instruction where most recycling decisions take place – in the kitchen.

Figure 3. Mechanicsburg Borough's Recycling Information Magnet

When the Township implements a recycling program, education and outreach will be a key factor to ensuring the program's success. Conducting education and outreach activities to residential generators will be somewhat different than such activities for the business community, so these groups are discussed separately.

Residential Education and Outreach

Effective residential education and outreach methods depend upon several factors, including the size of the community, education and outreach budget, and message to be conveyed, as well as available media (local newspapers, radio stations, and television stations, for example). When a new program is being implemented, education and outreach activities are particularly important.

Upper Bern's project team can help residents build enthusiasm for the program by making the program simple and convenient, informing residents of the benefits of recycling, and keeping residents informed about the successes of the program as it unfolds and matures. Of course, it is important to inform residents about the basics of the program as well – what can be recycled, where items can be recycled, and when items can be recycled – whether the program is drop-off or curbside.

Non-Residential Education and Outreach

There is a need for a heavy focus on education in the implementation phase of a program in order to promote participation and train program participants about how to conduct a preliminary waste audit and how to recycle. As more business recycling programs are implemented, however, some level of educational effort must continue, though the effort can probably continue at a more moderate level. Businesses will continue to participate in a recycling program, but usually need regular reminders about the hows and whys of a program.

Upper Bern's project team can help businesses build employee enthusiasm for the waste reduction and recycling programs by encouraging them to distribute or post an announcement from the top management stating their full support of the effort. This statement will impress upon employees that waste reduction and recycling is a high priority for the company. The management announcement should:

- Introduce employees to waste reduction;
- Explain how waste reduction and recycling can benefit the employee, the company and the environment;
- Outline the design and implementation stages of the program; and
- Provide the team leader's name and encourage employee suggestions.

Seeking employee input from as many sources as possible can also build program support. Memos, updates and announcements should be posted regularly and in a centralized location(s). At the same time, employees should have various opportunities for involvement. Monthly or other regular meetings, suggestion boxes, e-mail communication, and informal surveys are some possibilities. If action is taken as a result of employee input, recognize the source and encourage others to participate.

The waste reduction or recycling programs will almost certainly require the efforts of numerous employees. At the least, employees will need to change some daily habits. Employees most affected by the program will need to be trained and kept informed of changes.

In addition, it is helpful to be prepared to provide information more specific to the targeted sectors. For example, many communities develop basic commercial recycling education materials, such as a generic tri-fold brochure about the commercial recycling program in general, as well as more in-depth fact sheets that explain how to recycle materials, or targeted to specific types of businesses.

There is no specific "recipe" for commercial sector education that is guaranteed to work for the Township. The variety of programs and methods used to promote them is just about as numerous as the number of recycling programs in the state. Factors to consider include, but are not limited to business/industry size, number of employees, geographic location, and type of service the company offers or type of product the company manufactures. What works for a given area is a function of matching the type and size of effort to the target audiences in that area.

Suggested Means to Convey Information to Upper Bern Township Businesses and Residents

Brochures. The Township should use a basic recycling brochure or similar publication that explains how the program works, including when and where materials are collected, preparation of materials, and why the program is important. The Township can develop a simple tri-fold brochure which describes the program. The brochure should be distributed to all businesses in the Township – either in person or by mail. It may also be possible to work with the local Chamber of Commerce (The Greater Reading Chamber of Commerce) in order to inform businesses of the recycling programs available, however this Chamber encompasses a much more broad geographic area than just the Township. Mailing the brochures would ensure that they are received, though there is still no guarantee that they will be kept or read. The project team may be able to distribute the brochure in person – which is highly effective, but also time-consuming. It is advisable, however, that the largest businesses be contacted in person, which will make a greater impact and ensure that the manager of the business receives the information, and any questions can be answered. Also, to the extent that businesses are currently recycling, the Township can request that this tonnage be reported to the Township so that they can track progress and include the tonnage in Act 101 Section 904 grant applications.

Similarly, residential mailings can be mailed with other mailings - such as utility bills and tax bills, in order to save on postage.

Reminders. Sometimes businesses and residents forget or do not completely understand which materials are acceptable and which are not, or exactly how to prepare materials. In either case, friendly reminders may help to set these businesses on the right track. It is important that businesses be reminded to recycle. The Township could consider making available promotional items made from recycled materials — preferably something that would be used by business employees so it remains in view as a reminder — to serve as a constant reminder about the Township's commercial recycling program. The Township could provide these items to all businesses that request assistance in conducting a waste audit, or who request bins if they are bringing materials to the recycling drop-off site. Promotional items could include a range of

products, from inexpensive pens, pencils, rulers, and refrigerator magnets to note pads or even tote bags.

Township Newsletter. Upper Bern Township has an excellent newsletter, "UB Informed" which is sent to residents and businesses on a quarterly basis. The newsletter informs residents and businesses of various events and news. The Township should include information about the recycling program in the newsletter. They might recognize businesses that participate in the recycling program – giving the company positive public relations to at least a portion of their customer base.

Township/County Web Site. Information about recycling programs is often provided on County or municipal web sites. Upper Bern Township currently does not have an independent web site, however there is a section of the County's web site dedicated to Upper Bern Township. Information could be located there for now, and if the Township develops its own site in the future, it should be sure to include information about the recycling program on the web site. Meanwhile, the Township might consider working with Berks County to have the County post information about the Township's recycling program on the County's recycling web site. Interested businesses and individuals could go to the site to find information about the program, special collection efforts, and related information. This would provide a relatively inexpensive means of educating and informing the businesses and residents in the Township about the recycling program.

Spotlights on the Program. The Township could also engage in other activities that are fun, inexpensive, and bring attention to the recycling program. Some potential activities for consideration might include:

- Creating a recognizable slogan, logo or mascot associated specifically with the commercial recycling program. Having one or more of these things that identify the program would help to increase program visibility.
- The Township could institute a "Recycling Business of the Month" (or quarter) program, with a selected businesses featured in the Township newsletter and/or local newspaper, as well as on the Township's web site. Specific criteria would need to be developed to determine which businesses might be selected for this recognition, and businesses could be nominated from within the community (self or by other businesses) or selected through a procedure established by the Township. Extra "free" advertising in the Township's newsletter, a plaque recognizing their performance, mention in the local newspaper, or similar "prizes" could be incentives to participate.
- The Township could promote business recycling participation during seasonal events such as Clean Your Files Day (sponsored by the U.S. Conference of Mayors annually in the spring) or America Recycles Day (held annually in November). These national events are an easy way to get businesses involved in recycling, and provide the Township with an additional opportunity to recognize outstanding business participation in the recycling program. For example, the Township could sponsor a contest between businesses on Clean Your Files Day. The top three businesses that recycle the most office paper (either by

weight or by volume) would be recognized in the Township's newsletter, the local newspaper and other publications. It might be possible for the Township to work jointly with the County on such projects, or promote County-sponsored programs.

- Some type of recycling display could be developed that can be used during community events, and rotated among businesses. This display could be used as part of any presentations made by Township officials or members of the project team or the Township's Environmental/Agricultural Advisory Council (EAAC).

Educating Reluctant Commercial Establishments. Many small businesses are reluctant to implement recycling programs because they believe that recycling will result in greater waste management costs. While it is true that recycling does entail some cost, most businesses and institutions should find that their overall waste management costs—that is, cost for collection and disposal of waste and collection and processing of recyclables combined — should not increase when recycling programs are implemented, and in fact, there is significant potential for reduced cost. When some businesses implement recycling programs they do not adjust the number of pulls and/or containers or sizes of containers to offset the reduced disposed volume. This is a mistake, and causes the business to spend more resources than necessary on waste management. Unfortunately, it is difficult to provide any meaningful data to illustrate how recycling will affect a given business in a given community. The resulting overall cost depends on a variety of factors, including, but not limited to, rates in a given area (which varies by region, population density, cost of labor, disposal cost, and what the market will bear, among other things), the materials a business is recycling and the weight and volume of the material, and recycling markets (i.e., what the market price is for any given material, which fluctuates and often varies by region). As noted above, however, managing services efficiently should ensure that overall waste management cost, which includes recycling, should not increase.

Of course, because businesses and institutions in the Township are not mandated to recycle under Act 101, there are no penalties for businesses electing not to participate in whatever voluntary recycling program is developed. This makes it particularly important for the Township to develop incentives to encourage businesses and institutions to recycle.

Program Monitoring and Assessment

It is important to monitor program progress on a regular basis. With drop-off programs, program monitoring typically focuses on tons recovered and contamination rates, as it is difficult to identify a participation rate at a drop-off site. However, the metric of "average pounds (or tons) per household" can still be utilized. The Township might also consider interviewing drop-off participants and other citizens and businesses to see how the program meets or does not meet their needs, and what suggestions for improvement they would recommend.

Program Funding

There are several costs associated with program implementation. If a local hauler is contracted to provide drop-off collection services, and provides the containers to the Township, there are

costs associated with these services. If the Township decided to purchase containers and service them themselves, they would save contract costs, but would use Township employees and vehicles, and purchasing containers is costly. The Township must consider the compatibility between vehicles and containers. Naturally, unstaffed drop-off sites save on labor costs, however the Township would still need to consider container costs, the cost of signs and lighting, as needed, and staff time associated with monitoring the site. If staff collected the materials, that would be an additional cost/use of Township labor. In addition, education and outreach materials would need to be developed and disseminated. The Township could:

1) Apply for Act 101, Section 902 grants. These grants, also known as Recycling Development and Implementation Grants, are open to all municipalities including counties, cities, boroughs, incorporated towns, townships, home rule municipalities, council of governments, consortiums, Solid Waste Authorities, or similar entities established by two or more municipalities under 53 PA. C.S. Chapter 23 Subchapter A (relating to intergovernmental cooperation). These grants will pay up to 90 percent of approved costs. Applicants must submit a fiscal summary form, as well as an itemized expenditure list for each line item.

2) Apply for Act 101, Section 904 grants (Recycling Performance Grants) once the program is in place. All PA municipalities that had a recycling program the previous calendar year are eligible to apply for a 904 grant. Applying for an Act 101, Section 902 grant (Recycling Development and Implementation Grant). These grants will reimburse 90 percent of approved costs. Applicants must have a pre-application conference with the DEP Regional Planning and Recycling Coordinator. Grantees must submit a fiscal summary form, as well as an itemized expenditure list for each line item.

3) Solicit "sponsors" for the Township program. The Township's monthly newsletter has become popular among businesses and residents alike. The Township has already received inquiries from businesses advertising in the newsletter. The advertising could help sponsor the cost of the program.

4) Use volunteers as much as possible. The EAAC is comprised of volunteers. Other volunteers can also be solicited. Similarly, the County's recycling coordinator may be able to provide assistance and resources.

5) Use free media. If at all possible, utilize the media to your advantage. Develop press releases to announce the new program. Distribute these releases to local media outlets. Ask newspapers and radio stations for reduced or free coverage to promote the program.

Details regarding recycling grants for which the Township might qualify are provided as Attachment D of this report.

Results of Interviews of Surrounding Communities

R. W. Beck interviewed the Berks County Recycling Coordinator, Jane Meeks, to discuss the current recycling program. She stated that obtaining recycling information from commercial

establishments in Berks County has been challenging. Haulers did not report any tonnages recycled as being attributable to Upper Bern Township in 2008, although R.W. Beck's site visit revealed several businesses with cardboard recycling dumpsters on site. There are no planned changes to the County's current drop-off recycling program. Currently the County has 12 drop-off locations which are available monthly Wednesday through Sunday. The nearest site to Upper Bern Township would be the Upper Tulpehocken site, which is about five miles from the Upper Bern Township Office.

Cheryl Haus of Tilden Township indicates that Tilden Township has been actively tracking commercial recycling in the Township for four years. Tilden Township estimates that they have between 15 and 20 large businesses and approximately 1,570 households. They have earned approximately $52,000 per year in 904 grants for the past two years, however the applicability of some of the tonnage is being evaluated. The Township indicates that without the tonnage being questioned, they would earn approximately $10,000 per year in Section 904 grants. The Township has also applied for Act 101 Section 902 grants to help build an unstaffed recycling drop-off center. They expect that residents would be most likely to use the drop-off, as opposed to commercial entities (with the exception of some small businesses) because the large commercial establishments all have recycling programs in place. The Township receives annual reports from Cougle's, Allied, and Waste Management, indicating the tonnage of recyclables recovered by individual businesses in the Township.

The recycling Center the Township hopes to establish would likely be unstaffed, but would be available 24 hours per day, seven days per week, perhaps using a card key system. The Center would be located adjacent to the Township building, which is approximately five miles from Upper Bern Township's building. They anticipate that members of the Township's Environmental Advisory Committee (EAC) and road crew staff would be responsible for maintaining the center, and the recyclables would be collected by Cougle's. They hope to have a three-sided building to help protect the materials and users of the center from the elements.

Campground Recycling

One means of increasing recycling that the Township EEAC has identified is to encourage the local campgrounds to have active recycling programs. R. W. Beck conducted site visits of the two campgrounds located in Upper Bern Township. They are approximately ¾ of a mile away from each other. The campsites are Mountain Springs Camping and Appalachian Campsite. They are described below.

Mountain Springs Camping

Mountain Springs Camping is located at 3450 Mountain Road, Shartlesville, PA 19554 (http://www.mountainspringscampground.com/).

The Mountain Springs Campground has approximately 292 camp sites including several cabins. They receive trash collection services from Nesters, using a 14 cubic yard roll-off container. The campground's busy season is from April 15 through October 31. The campground also has

92 permanent mobile homes that have a separate trash collection service from Nesters Sanitation (not recycling). There is an office and general store, arcade, recreation hall, snack bar, swimming pool, shuffleboard court, and horseshoe pits on site. There are three restroom buildings with space around them for recycling containers. Campground staff were initially hesitant about recycling, but by the end of the site visit they were more enthusiastic about implementing a recycling program and decreasing the amount of waste they dispose. They are concerned, however, that such a program might lead to the proliferation of bees and flies. Staff indicated that they are willing to take recyclables from the restroom areas and move them to a larger collection container.

Appalachian Campsite

Appalachian Campsite is located at 60 Motel Drive, Shartlesville, PA 19554
www.appalachianrvresort.com

Appalachian Campsite has about three hundred campsites including cabins, cottages, two deluxe log homes, and RV camp sites. There are about 140 seasonal campers, plus transient sites.

The campground's amenities include a swimming pool, game room, miniature golf course, a basketball court, horseshoes, baseball field, and sand volleyball court. Weekend activities include Bingo and other events, and they will have a restaurant on site in the near future? that will likely be open on weekends only. In addition there is a general store that sells snacks, beverages and gifts.

A staff person indicated that they tried recycling at the campground before, but people would simply place trash in the recycling receptacles, despite the fact that they had "hand holes" at the top of them. She believes that the people who visit their campground are simply not in the habit of recycling at home, and therefore do not recycle away from home either.

R. W. Beck also conducted research to identify other campgrounds with successful recycling programs. Such programs are described below.

Bremer County, Iowa

Bremer County Iowa owns and operates four campgrounds. In 1999 the campgrounds were upgrading their bathrooms from port-o-lets to flushable toilets, and they had shed structures that were no longer going to be used for the port-o-lets. The County, meanwhile, had also been discussing starting a recycling program. Staff decided to repurpose the port-o-let sheds to recycling sheds. A benefit of the sheds is that they are locked, which discourages scavenging of bottle bill material and the design makes it harder for animals to access and create messes. Figures 4 and 5 show photos of a recycling shed.

Figure 4. Bremer County Campground Recycling Shed

Figure 5 Bremer County Campground Recycling Shed

The County's campsites are unstaffed – campers "self check" themselves in at the campsites. There are campsite hosts, however, who receive free camping in exchange for locking the gate at night and cleaning the restroom facilities. The campsite hosts keep an eye on the recycling as well, and make sure that people are recycling properly. The recycling sheds are located in close proximity to the restroom facilities, as is the trash dumpster. County staff collect the recyclable materials and deliver them to a nearby recycling center. At that time, they may pull out any obvious contaminants. The County has a recycling brochure available at the information kiosks near the park entrances. To date, the campgrounds have resulted in recovering over 7,000 pounds of recyclables.

Madison Arm Resort, West Yellowstone, Montana

The Madison Arm Resort in West Yellowstone Montana implemented a recycling program three years ago. The recycling program is just one activity the campground has implemented to become more ecologically sustainable. The Park joined the Yellowstone Business District's "Uncommon Sense" program – a business-training and peer-support program that trains businesses to engage in environmentally sustainable programs. Through the program the campground has also conducted energy-saving measures and switched to biodegradable soaps and shampoos.

The campground, which has 100 campsites (45 of which have full water and electricity hook-up) has recycling bins for cardboard, plastic bottles, aluminum cans, and glass containers. The containers they use had to be bear proof. The containers were purchased with a grant from the Montana Department of Environmental Quality (DEQ). The campsite has placed recycling containers in the campground store, and near the trash containers, which are located along the entrance road to the camp, in order for there to be adequate room for collection vehicle access. Last year the Madison Arm Resort recycled approximately 19 cubic yards of material.

The proprietor of the campground indicates that contamination of the recycled material has not been an issue, although occasionally children in the store will inadvertently place ice cream wrappers in the recycling bins. Campers are provided with a pamphlet about the recycling program upon checking in. Most are compliant because they see the environmental benefits of recycling, and have an interest in environmental issues. Further, the clear signage on the containers helps direct campers regarding material placement. Markets for most materials have been adequate, although currently market pricing is relatively low. There are not adequate markets for glass, however, so the owner of the campground purchased an inexpensive glass crusher, but has not found a market or beneficial use for this material.

Figures 6 through 9 provide pictures of the recycling system at the Madison Arm Resort.

Figure 6. Bear-Proof Recycling Bins at Camp Entrance

Figure 7. Recycling Bins at Office

Figure 8. Recycling Bins Inside Camp Store

Figure 9. Bear-Proof Garbage Containers

Recommendations

General Township Program Recommendations

Based on our experience and site visit to Upper Bern Township, R. W. Beck recommends that the Township:

1) Conduct a visual survey of local businesses to see who is recycling in Upper Bern Township. If possible, make a listing of haulers serving each business. Follow up with haulers with a letter indicating that you are aware that they provide recycling services to specific businesses (to be listed in the letter) and request that they provide the Township with information regarding tonnages recycled on an annual basis. Provide a form and deadline date. The County recycling coordinator can assist with this.

2) Contact large businesses to see if they recycle materials via backhaul and encourage them to report their tons recycled annually at that location. Provide them with an electronic form and email address for convenience. Email reminders when the deadline is approaching. Let the businesses know why this is important to the Township.

3) Ensure that businesses are aware of the available, relatively close options for drop-off recycling (e.g., through private recyclers). If they are unwilling to deliver recyclables to the local recycling companies, ask them if they would be more willing to deliver recyclables to a site located in Upper Bern Township.

4) Meet with private recyclers to ensure that they are tracking the origin of materials delivered by commercial entities, so that the Township can report these tonnages annually.

5) Meet with private haulers to ensure that they are providing logical estimates of the portion of recyclables delivered to recycling facilities that originate from businesses and residents located in Upper Bern Township, as opposed to other communities. This estimate could be based on portion of households on the route in each municipality, for example, or level of service provided by private haulers (e.g., container size, number of containers, and number of pulls for recycling containers).

6) The Township should consider developing a drop-off site recycling program adjacent to the Township offices, as shown in Figure 10. Materials to consider as priority items which are generated by households and/or businesses include:

   - Corrugated cardboard;
   - Mixed paper (including magazines, newspapers, junk mail, etc.); and
   - Commingled containers.

Figure 10. Suggested Site for Township Recycling Site

7) The Township should consider purchasing a trailer container system so it can haul recyclable materials to a local MRF using Township staff or volunteers when the containers are full.

8) The Township should consider implementing additional cardboard-only drop-offs in areas close to local businesses, as the Township's businesses are "clustered" in specific areas. If possible, the drop-off site should be located at a business that is willing to monitor the site.

9) The Township has had discussions with Cougle's Recycling regarding cardboard. Cougle's Recycling indicated that they will pay $10 per ton for loose cardboard and $60 per ton for baled cardboard. If the Township can obtain this pricing, and can retrieve at least 50 percent of the cardboard estimated to be in the disposed waste stream (approximately 90 tons per year of cardboard) then they could recover the initial cost of the baler in approximately two years (assuming they can purchase a reconditioned baler in the $10,000 range). Therefore, purchasing a baler could be beneficial to the Township, as long as the baler does not result in high maintenance costs, and existing staff are capable of baling the material. Also, the Township should ensure that the baler produces bales that meet Cougle's Recycling's specifications. The Township should also be mindful that there are additional operating costs involved with baling corrugated cardboard, such as the cost of electricity and baler wire. The Township could consider accruing Act 101, Section 904 grants to purchase a baler (if the Township earns over $10,000 per year in grants, they must meet certain criteria, as Act 140 describes, which is accessible at:

   http://www.depweb.state.pa.us/landrecwaste/cwp/view.asp?A=1244&Q=483857

   Alternatively, the Township might consider entering into a lease-to-own agreement to purchase a baler

10) The Township should consider implementing a rebate program to local businesses that deliver cardboard to their facility to further incentivize cardboard recovery. For example, businesses' cardboard transactions could be logged, and at the end of the year a percentage of the revenue that the Township earns on cardboard could be rebated to each business on a per-ton delivered basis. This would require weighing each load delivered to the Township, however. If that is not possible, other standards could be applied, e.g., such as a rebate based on estimated volume. The Township should ensure that the revenue shares are based on net revenues (e.g., revenues after processing costs are taken into consideration). It should be made clear that when commodity prices are low, businesses may not receive a rebate for their cardboard. Although providing these rebates on a quarterly or semi-annual basis might be more motivating to businesses, providing them on an annual basis would help the Township ensure that their costs and any market pricing fluctuations are considered before rebates are distributed. Also, less frequent distribution of rebates would require fewer administrative resources. The Township might consider contacting Center County for guidance, as they provide a revenue share to haulers.

11) The Township should discuss revenue sharing with local processors. Ideally a revenue share arrangement will share the risk between the processor and the municipality, and will consider commodity prices. For example, if prices fall below a certain level, the processor would not be required to share revenues.

12) If the site is deemed inconvenient for some residents and businesses, the Township might consider teaming with another local community and/or the County to establish a drop-off site in a location that is convenient to Upper Bern Township residents and businesses, but is located outside of the Township. Similarly, the Township could work with large-scale retailers to develop drop-off recycling sites near their retail locations. Potential examples include:

    a. A school (or schools) in Tilden Township (where Upper Bern Township students attend public schools); or

    b. Cabela's (in Hamburg); or

    c. Wal-Mart (to be sited in Hamburg). Note that Wal-Mart has an extensive recycling program, and in some remote locations has been known to provide drop-off recycling opportunities for nearby residents. Such a program would provide Wal-Mart with increased good will in the community, and would keep the community from having to purchase containers.

13) Although the Township indicates they do not wish to have mandatory recycling, the Township might consider implementing a mandatory recycling ordinance in the future. Implementing such an ordinance and conducting associated education, outreach and enforcement efforts would ensure that commercial establishments are recycling, however the cost of recycling services would be borne by the businesses.

14) It is recommended that the Township and/or volunteers (such as members of the EAAC) develop education and outreach materials to inform residents and businesses of the new drop-off program. Ideas for education and outreach are available at the Curbside Value Partnership's web site, http://www.recyclecurbside.org/.

15) The Township should track the success of the program. If the Township self-hauls, the MRF should be able to weigh the materials upon delivery, which is vital to submitting proper documentation for Section 904 grants. A DEP representative indicates that the Township could estimate the portion of materials delivered by commercial vs. residential sources by monitoring the site for a period of time, then documenting the results. In addition to monitoring tonnages, the Township should monitor the condition of the site(s), the level of contamination, which containers are filled more quickly than others, etc. Also, the Township might consider conducting an informal survey of residents/businesses to ask their opinion of/suggestions for the program.

16) The Township should apply for Act 101, Section 902 and Section 904 grants, as appropriate. Further, the Township might use some newsletter sponsorship funds to help fund the recycling program, if allowable.

17) The Township might consider working with DEP and the County recycling coordinator as well as Tilden Township to discuss the possibility of sharing in the operation and use of the recycling center being considered for Tilden Township. A system would have to be established to estimate the portion of recyclables delivered to the facility from each township, however the labor and cost of operating the program could be shared between the two communities.

Recommendations for Implementing Campground Recycling Programs

It is advised that the campgrounds implement drop-off recycling through their current haulers, if possible. A strategy that is likely to work the best is to have "intermediate" recycling containers (such as lidded wheeled carts or other manageable containers) placed at convenient locations for guests. Near the restrooms is generally a convenient location for either intermediate or final (collection) containers, as residents can "save up" their recyclables in a bag and carry them to the restroom from time to time. However, adequate space needs to be available if the container is the final collection container. Other locations for intermediate recycling containers are at recreation areas where beverages are often consumed (such as near the pool, near the horse shoe pit, and campground store and restaurant/snack bar). Intermediate containers can then be wheeled to collection containers by campground staff. The collection containers (for example, dumpsters) should be located near a ramp or be equipped with a lift so that the contents of the carts can be emptied into them. Another possible location for final collection containers is near the entrance to the campgrounds. Other details regarding recommended practices include:

- Start the program with recycling containers for cardboard and commingled containers, if that is acceptable to the hauler. Campers are likely to generate some cardboard, as well as glass, plastic, and aluminum beverage containers.

- Stores and snack bars are likely to generate a significant amount of cardboard. It might be wise to place a single cardboard dumpster at such locations, and intermediate containers for commingled containers throughout the campground.
- Ensure that containers are placed such that it is as convenient to recycle as it is to dispose of garbage.
- Consider, however, not placing recycling containers right next to trash containers, as overflow trash may end up in the recycling, and vice-versa (but not so far from the trash containers that it discourages participation). Ensuring that container size and collection frequency are adequate can help mitigate this issue, however.
- Ensure containers are clearly labeled and/or signage is clear – use pictures in addition to words.
- Use visual cues, such as signs with pictures, color-coded containers, etc.
- Consider containers with hand holes to discourage disposal of trash in recycling containers.
- Introduce the campers to the program immediately (e.g., upon check-in). Develop a pamphlet that can be used to describe the program, the benefits of recycling, and present this pamphlet to guests as they check in. Staff should also mention the program and thank guests 'in advance' for their participation.
- Try to have a "champion" or "ambassador" of the program. This person keeps an eye on the containers and directs campers to the recycling containers as needed. This champion might be the campground manager, assistant manager, or a staff person or permanent resident with a special interest in environmental issues.
- Encourage the campgrounds to include information about recycling on their web sites.
- Consider having customers sign a commitment to recycle – research shows this is an effective strategy for promoting recycling.
- Consider providing customers with a small reusable tote bag they can use to carry recyclables to the recycling bins. This helps make recycling convenient. These bags can be returnable.
- Provide feedback, as possible, to campsite guests, such as a sign reading "Thanks to considerate campers like you, to date we have kept 200 pounds of materials out of our state's landfills." This information could be available on a sign at check-in, as well as on the campground's web site.
- Use lidded containers to avoid bees, flies, and other animals.
- If bears are a problem (which the local camp site indicated is not the case) use bear-proof containers. These containers are relatively heavy and have doors that are not easily opened by bears.

- Keep track of program successes and challenges so that they can be acknowledged and/or addressed.
- Ensure that the campgrounds or their hauler report recycling tonnages to the Township.

Role for Upper Bern Township

Clearly the campgrounds are private establishments, but the Township and the EAAC in particular have an interest in ensuring that recycling programs are implemented at these sites, because they are locations that are likely to generate a fair amount of recyclables. Because they are located in relatively isolated areas, it is not feasible to site public recycling containers at the entrance to the campgrounds. Therefore, the campsites would be responsible for implementing their own programs. This does not mean, however, that the EAAC and Township, and perhaps the County recycling coordinator, would not have some opportunity to help with the program. Potential roles for the EAAC, Upper Bern Township, and perhaps the County recycling coordinator include:

- Help develop an education and outreach brochure and strategy for the sites;
- Advise the sites regarding proper signage and container placement;
- Conduct audits of the drop-off sites, particularly close to collection day, to obtain information regarding contamination, appropriateness of size of containers, etc.; and
- Help the campgrounds understand the potential cost savings (in pull fees and/or in reduced fees for smaller container rentals as well as disposal costs) that can be realized by implementing a recycling program.

Conclusions

Upper Bern Township is a small community with limited resources that would like to be able to provide convenient access to recycling for their businesses and residents. The existing recycling options are less convenient than a Township-based program would be for many businesses and residents and the Township does not receive credit for recyclables delivered to drop-off sites located in other jurisdictions. Several businesses in the Township recycle, but the businesses and haulers are not conveying this information to the County's recycling coordinator. It is suggested that the Township develop a recycling program that suits the needs of both residents and businesses, to the extent possible, without being exorbitant in cost. A focus for the Township should be communicating effectively with haulers and businesses, as well as the County recycling coordinator to ensure that tonnages are reported accurately. Recommendations are included in this report to develop a drop-off recycling site adjacent to the Township offices, and survey residents and businesses to assess the convenience/consider adjustments to the program. The Township should also work with businesses to educate them about the benefits of recycling and the ways in which implementing a recycling program can be less costly than disposal alone, particularly when commodity prices are high. The Township can work with businesses to identify opportunities for recycling and waste reduction, using the materials and

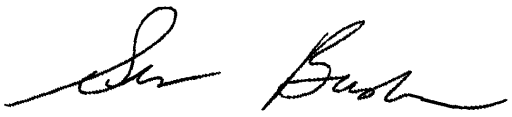
training provided through this technical assistance project, to further promote the programs available. Recommendations are also provided for assisting the campgrounds with implementing a recycling program.

R. W. Beck appreciates the opportunity to work with Upper Bern Township on this project, and we hope the results of this project prove to be helpful to the Township.

Please do not hesitate to contact me if you have any questions about this project. I can be reached at 508.935.1807 or sbush@rwbeck.com.

Sincerely,

R. W. BECK, INC.



Susan Bush
Project Manager

Attachments

Attachment A
WASTE SORT PRESENTATION

R·W·BECK
An SAIC Company

Upper Bern Township

How to Conduct a Business Waste Audit

9-11-09

RW BECK

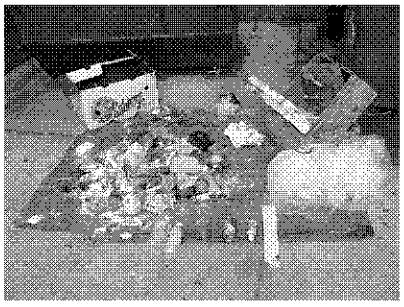
Agenda

- Introduction
- What is a Waste Audit?
- Types of On-Site Waste Characterizations
- Waste Audit Process
- Estimating Avoided Disposal Costs
- Example Audit
- Questions

Introduction

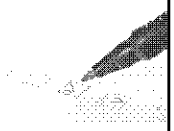
Brian Holt
Field Logistics Specialist/Project Manager
Office: (407) 648-3529
Cell: (301) 788-7641
Email: bholt@rwbeck.com

What is a Waste Audit?



Objectives of a Waste Audit

- Identify composition and quantities of waste being generated
- Analyze effectiveness of current waste management system
- Identify opportunities for improving current waste management system
- Collect baseline data such that improvements to system can be measured



Other Things You Should Know

- Know recyclers in area
- What they will accept and in what forms
- What they typically charge
- Types of containers they usually provide
- Whether they provide additional services
  - Allow change in containers as system matures
  - Revenue share

Site Specific Information

- The generation sites
- Do they have some specific concerns about recycling such as confidentiality or health concerns?
- Do they have densifying equipment on site?
- Do they have the potential to "backhaul" recyclables to a warehouse or distribution center?
- Do they have corporate sustainability goals?
- What are perceived barriers to recycling?

Waste Audit Considerations

- Two Types of Audits
  - Physical
  - Visual
- Audit Team (photographer, scribe, if physical audit - sorter, scale operator)
- Date of Audit
  - Should be "typical"
  - Avoid scheduling near holidays
  - Avoid scheduling after cleanout days

Tips for a Successful Audit

- Ensure management/property manager approval
- Work with janitorial staff to stage sort areas
- Assign specific roles to team members

Possible Equipment Needed

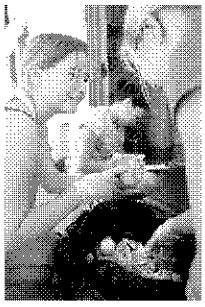
- Gloves
- Heavy-duty shoes
- Camera (digital still and/or video)
- Sort tables
- Safety goggles
- Tarps
- Scale
- Shovels/push brooms
- Garbage cans
- Clipboard, recording forms, pens, labels
- First Aid kit
- Containers
  - Rigid - labeled; and/or
  - Plastic bags - multi-colored by material type or generation site.

Types of On-Site Waste Characterizations: Visual Audit

- **Pre-characterization walk through**
  - Identify generation points
  - Designate specific bag colors per generation point
  - Inform staff in charge of waste management/disposal
  - Observe what is currently in waste containers (inside and out)
- **Follow-up visit for visual characterization**
  - Observe dumpster volume - % full
  - Observe % of colored bags

Material-Specific Information For Visual Audits

- Meet with waste generators in each generation location
- Visually observe contents of the colored bags
- Retrieve several colored bags to view the waste inside

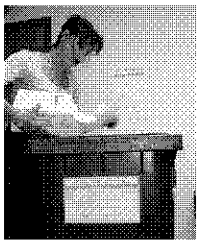


Types of On-Site Waste Characterizations Physical Pre-Disposal Sort

- Pre-characterization walk through
  - Identify generation points
  - Identify possible recoverable materials
  - Inform all of the staff that dispose their waste in dumpster of the study
  - Label and set up containers for pre-disposal sort
- Follow-up visit for characterization
  - Pre-sorted material is quantified (by volume or weight)

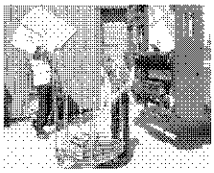
Identifying Generation Points

- Administrative offices
- Cafeteria
- Break room
- Shipping/receiving
- Meeting rooms
- Primary production/work areas
- Others



Typical Commercially Generated Recyclables

- Cardboard
- Newspapers
- Office paper
- Steel cans
- Aluminum cans
- Plastic beverage containers
- Glass containers
- Food waste
- Shrink wrap
- Pallets



Typical Waste Minimization Opportunities

- Paper
- Toner cartridges
- Individual magazine/journal subscriptions
- Junk mail
- File folders
- Packaging
- Pallets
- Reusable office supplies

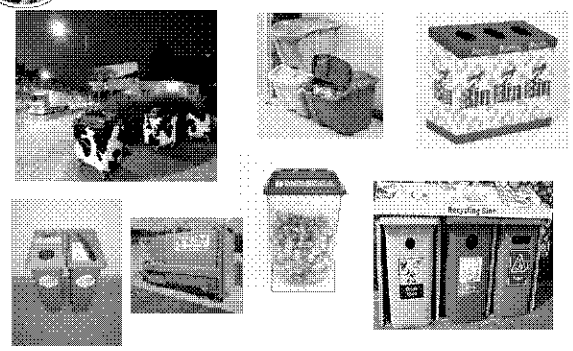
Analyze Data Collected

- Identify waste stream
- Which materials are recyclable?
- Do local markets exist?
- Which materials can be avoided?
- Have a brainstorming session
  - All are heard
  - Work titles are ignored
  - No criticism

Move Forward with Program Planning and Implementation

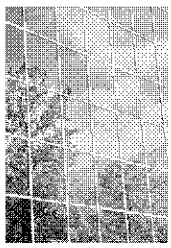
- Communicate with haulers
- Look for revenue share opportunities
- Ensure recycling is convenient
- Educate all employees regularly
- Develop new employee training packet
- Ensure top management supports/promotes program
- TRACK PROGRESS – tons, $ saved, GHG emissions impacts

Some Recycling Container Options



Motivators to Encourage Commercial and Institutional Recycling

- Move toward corporate/institutional sustainability goals
- Help local government/state reach their recycling goals
- Send positive message to customers
- Increase employee morale
- Reduce collection/disposal costs
- Potentially gain revenue share



Estimating Disposal Costs

Depending on how the customer is charged, use the formulas in the following sections on Worksheet A:

- C1 - Flat Fee
- C2 - Pay-as-You-Throw - (by volume or weight)
- C3 - Per-Pull Fee

Evaluating the Costs of a Waste Reduction or Recycling Program

Calculate the costs and savings associated with recycling by using Worksheet C:

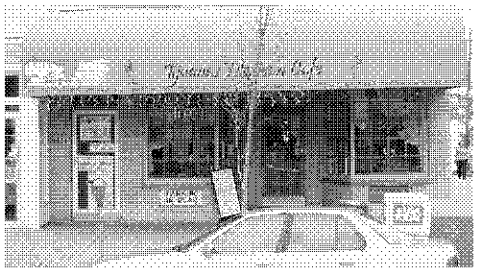
- Monthly Program Costs
- Start-Up Costs
- Monthly Program Savings and Revenues

Calculating Avoided Collection/Disposal Costs

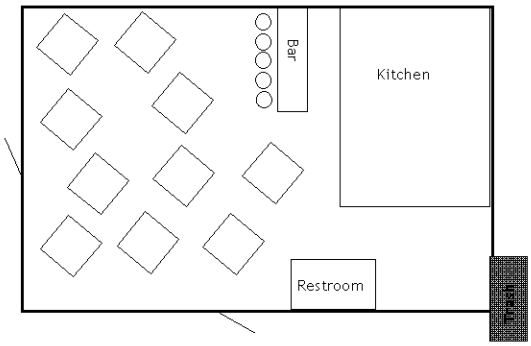
To calculate the avoided collection and disposal costs use Worksheet D:

- Calculating the Savings Using Volumes
- Calculating the Savings Using Material Weight

Example: Mexican Restaurant



Floor Plan - Generation Locations ?



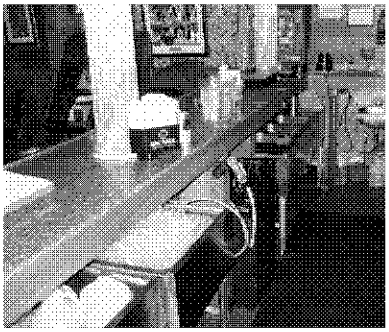
Generation Locations:

Kitchen

Generation Locations:

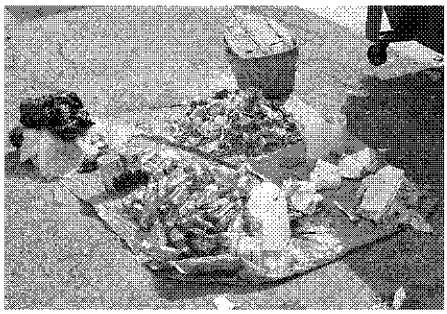
Bathroom

Generation Locations:



Bar

What's in the Waste Stream



Questions ?

Introduction

Brian Holt
Field Logistics Specialist/Project Manager
Office: (407) 648-3529
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Email: bholt@rwbeck.com

Attachment B
WORKSHEETS

R·W·BECK
An SAIC Company

Upper Bern Township, PA
Waste Generation Audit

INTERVIEW QUESTIONS:

1. Business Contact Information (Name, addresses, contact info)

Name_____

Address_____

Contact Name/Number_____

Fax: Email:

2. Indicate store type: _____
3. Number of employees: _____
4. Square footage: Number of Buildings/Function:
5. Acreage (green space):
6. Do you have a floor plan or building layout
7. Do you currently have a recycling program
8. Describe overall waste-generating activities that take place on site:_____

_____

_____

_____

_____

_____

9. How is **refuse** handled from its point of generation to the container from which it is ultimately collected by the collection company?

_____

_____

_____

_____

_____

_____

DATE_____ TIME_____

10. How are **recyclable materials** handled from their point of generation to the container from which they are ultimately collected by the collection company?

    _____

    _____

    _____

11. Who manages the recycling program?_____

12. Is space a limiting factor in siting additional recycling/waste storage containers?
    ☐ Yes ☐ No

If yes, describe: _____

_____

13. Could the work area configuration, containers, and/or aesthetics be improved to enhance the recycling program?

    _____

_____

14. Is waste generated at this facility known to be variable by day of week or season?

☐ Yes ☐ No If yes, describe: _____

_____

15. Please provide general comments/concerns about waste reduction and recycling at your site:_____

_____

Collection Information:

Container #1 - Size _____ CY Material _____

Container #2 - Size _____ CY Material _____

Container #3 - Size _____ CY Material _____

Container #4 - Size _____ CY Material _____

Billing Structure

Collection Cost

$ _____ (Weekly, Monthly, Annually, Per Pull, Per Cubic Yard, Per Ton)

Container Rental Fee

$_____ (Weekly, Monthly, Annually)

16. Questions asked at each generation location (example: behind counter, office, break room)

Generation Location	Number of Employees	Who Empties/ How Often Are Waste Receptacles Emptied	How is Waste Handled From Generation to Disposal	Manger Assumptions:		% of Waste Generated		
				Waste Composition	Possible Diversions	Operation	Employee	Customers

Generation Location	Number of Employees	Who Empties/ How Often Are Waste Receptacles Emptied	How is Waste Handled From Generation to Disposal	Manger Assumptions:		% of Waste Generated		
				Waste Composition	Possible Diversions	Operation	Employee	Customers

Generation Location	Number of Employees	Who Empties/ How Often Are Waste Receptacles Emptied	How is Waste Handled From Generation to Disposal	Manger Assumptions:		% of Waste Generated		
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Generation Location	Number of Employees	Who Empties/ How Often Are Waste Receptacles Emptied	How is Waste Handled From Generation to Disposal	Manger Assumptions:		% of Waste Generated		
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Generation Location	Number of Employees	Who Empties/ How Often Are Waste Receptacles Emptied	How is Waste Handled From Generation to Disposal	Manger Assumptions:		% of Waste Generated		
				Waste Composition	Possible Diversions	Operation	Employee	Customers

Name_____ Date:_____

Worksheet A: Estimating Disposal Costs

Off-Site Waste Removal

A. Name of waste removal company _____

Telephone number _____ Date contract expires_____

B. Removal Schedule

Number of times _____ Per (day/week/month/other) _____
Days of week _____ Time(s) of day _____

Choose one of the following equations (C1, C2 or C3):

C1. Waste removal charge (If charged as flat fee or part of rent)

_____	X	_____	=	_____
Waste removal fee		Number of times per year		Annual waste collection/disposal cost

---

C2. Waste removal charge (If charged by weight or volume)

_____	X	_____	=	_____
Waste removal charge per unit of weight or volume		Number of units of waste removed of waste (from receipts or call haulers)		Annual waste removal cost

If applicable, add:

_____	X	_____	=	_____
Hauling container(s) rental fee per time periods		Number of time periods per year		Annual container cost

_____	+	_____	=	_____
Annual waste removal cost		Annual container cost		**Total Waste Disposal Cost**

C3. Waste removal charge (If charged per pull)

_____	X	_____	=	_____
Charge per pull		Pulls per year		Annual waste pulling charge

If applicable, add:

_____	X	_____	=	_____
Hauling containers(s) rental fee per time period		Number of time periods per year		Annual waste container rental cost

_____	X	_____	=	_____
Annual waste pulling charge		Annual waste container rental cost		**Total waste collection/disposal cost**

WORKSHEET B: CONDUCTING A WASTE ANALYSIS

The following are two options for estimating the types and quantities of materials in a company's waste stream. This knowledge will aid you in targeting materials for recycling and reduction and in contacting recyclers.

Method I

This Method involves visually monitoring the dumpster each day and keeping track of the following:

- What materials are visible in the dumpster?
- What materials take up the largest volume in the dumpster?
- How full is the dumpster?

If the majority of a company's waste is placed in garbage bags before disposal, have cleaning staff use different colored bags for each area. For example, put the waste from the offices in clear bags, the cafeteria waste in white bags, the restrooms' in blue bags, the production waste in black bags, etc. This will help to identify the areas which are generating the most material. Then, walk through those areas to see what is being thrown away. In the above example, we could assume that the clear bags contained primarily office paper.

Waste Analysis Estimation – Method 1

Day observed _____

How full _____

Materials Visible	Estimated Percentage of Waste Stream
_____	_____
_____	_____
_____	_____
_____	_____

Color of bag	**# in dumpster**	**Type of waste generated in the designated area**
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

Method 2

This method provides a more accurate estimation of the quantity of material in the waste stream. Place a container near the dumpster or in a central location and designate it for your targeted material. Notify all employees that, for a specified period of time, all of the targeted material will be placed in this container rather than the dumpster. With certain materials, such as OCC, it may be possible to have one employee or the cleaning staff segregate the material. For other materials, such as office paper, all employees will need to be involved. Note that the container must be under shelter.

Continue the sort for at least two weeks. At the end of the specified time period, record the quantity of material accumulated. Contact the local recyclers listed in the back of this guide to find one that will pick up or allow you to drop-off the sorted material for recycling.

Waste Analysis Estimation – Method 2

Material sorted _____ Time period sorted _____

_____ cubic yards	X	_____	=	_____ cubic yards
Size of containers		Number of containers		Amount sorted

(_____ pounds	_	_____ pounds)	X	_____	=	_____ pounds
Weight of full Container		Weight of empty container		Number of containers		Amount sorted

Extrapolate this amount to a month or year. This information will be extremely useful when contacting recyclers and determining the cost-effectiveness of your recycling program.

(_____ pounds	÷	_____)	X	52 weeks/year	=	_____ pounds
Amount sorted		Number of weeks Of sort				Targeted material discarded per year

WORKSHEET C: EVALUATING THE COSTS OF A WASTE REDUCTION OR RECYCLING PROGRAM

Monthly Program Costs

Additional labor (cleaning/maintenance staff)	$_____
Additional energy requirements	$_____
Transportation	$_____
Additional space requirements	$_____
Education/promotion	$_____
Record keeping	$_____

START-UP COSTS (AMORTIZED MONTHLY)

Containers	$_____
Equipment (if any)	$_____
Other:	$_____
Total Program Costs	**$_____**

Monthly Program Savings and Revenues

Avoided collection/disposal costs (See Worksheet D)	$_____
Decrease in new material costs	$_____
Revenues from sale of recyclables	$_____
Avoided purchases	$_____
Avoided labor (cleaning/maintenance staff)	$_____
Total Program Savings/Revenues	**$_____**

Total Program Savings/Revenues – Total Program Costs	**$_____**

WORKSHEET D: CALCULATING AVOIDED COLLECTION/DISPOSAL COSTS

Material targeted for recycling or waste reduction_____

Approximate percentage of waste stream_____

By Volume

Use this formula if you used a visual estimate of the waste stream of if you calculated volumes in the waste sort.

_____	X	_____	=	_____
% of material (by visual estimation or sort)		Total cubic yards disposed (ex.: 4 cubic yard dumpster emptied 3 times per week = 12 cubic yards or 48 cubic yards per month.)		Targeted for diversion

_____ cubic yards	X	70%**	=	_____ cubic yards
Targeted for diversion				Expected diversion

_____ cubic yards	÷	_____	=	_____ cubic yards
Expected diversion		Total volume of all waste disposed		Percent of Waste Stream Diverted

By Weight

Use this formula if you calculated weight in the waste sort and if your hauler will provide weight slips for your dumpster.

_____ pounds	X	70%**	=	_____ pounds
Pounds of material Discarded per year (Worksheet B)				Expected diversion

_____ pounds	÷	_____	=	_____
Expected diversion		Total weight of waste disposed (provided by hauler)		**Percent of Waste Stream to be Diverted**

**To be conservative, assume that you will divert 70% of the target material.

Depending upon the amount of material diverted from the waste stream, a business may be able to save money by reducing the number of times per week the dumpster is hauled or by reducing the size of the dumpster. The Township should encourage the business to ask their waste hauler how much disposal costs can be reduced if the waste stream is reduced by the percent estimated above.

Attachment C
RECYCLING TRAILER INFORMATION

R·W·BECK
An SAIC Company

Attachment C
RECYCLING TRAILER INFORMATION

Several companies manufacture recycling trailers in various sizes. Three of these manufacturers, and descriptions of their trailers, are provided below.

1. Dempster Industries, Beatrice, Nebraska (800/777-0212)

Dempster Industries makes four models of recycling trailers under the AlleyCat brand name. The general features of their trailers include:

- Frames are made of galvanized steel;
- Bins are made of heavy-duty, post-industrial LDPE regrind plastic in either one or two cubic yard capacity depending on trailer size;
- The bins are removed and dumped using a forklift.
- The specifications for the two largest AlleyCat trailers are presented in Table C-1.

Table C-1
Dempster AlleyCat Recycling Trailer Specifications

Model	RSWT-3000	RSWT-5000
Axles	2 - 3500 lb. capacity each	3 - 3500 lb. capacity each
Brakes	Hydraulic surge w/ emergency breakaway	Hydraulic surge w/ emergency breakaway
Lights	Rear stop/turn, side/rear clearance DOT approved	Rear stop/turn, side/rear clearance DOT approved
Bins	10 individual units Heavy duty roto-molded 4-way forklift entry Nestable Stackable w/ optional lid	14 individual units Heavy duty roto-molded 4-way forklift entry Nestable Stackable w/ optional lid
Capacity	10-12 cubic yards	14-16 cubic yards
Curb Wt.	2960 lbs.	4200 lbs.
Tongue Wt.	360 lbs. empty	520 lbs. empty
Gross Wt.	6000 lbs.	9200 lbs.
Price (excl. freight)	$13,342	$17,475

Pennsylvania counties using AlleyCat trailers include Armstrong County and Greene County. A representative of Greene County's recycling processor, GreenArc, reports that the Townships that use and haul the trailers are satisfied with them. They use the

largest model trailer to minimize the number of collections required. The trailers are pulled by dump trucks owned by the individual townships where the trailers are located. The GreenArc representative had one caution about the trailers: to unload the bins, they must be slid along the frame rails to either end of the trailer, then lifted. To manage the process, the bins are arranged so that the heavier compartments – glass and newspaper – are positioned on the ends of the trailers and the lighter materials such as aluminum and plastic are in the middle. The lighter bins can then be pushed by hand to the ends for forklift access. The reason is that the wheel wells extend over the edge of the middle bins, as shown in Figure C-1.

Figure C-1. AlleyCat Recycling Trailer

This user also reported that a forklift with a rotating head was very helpful for removing and tipping bins easily, and also allowed the material in the bins to be tipped into a hopper or onto a sorting table, not only onto the floor, if that were desired. Figure C-2 shows the unloading process.

Figure C-2. AlleyCat Recycling Trailer - Unloading

2. Pro-Tainer, Alexandria, Minnesota (800/248-7761)

http://www.protainer.com/products/progravity.cfm

Pro-Tainer manufactures five types of recycling trailers: Pro-gravity, Pro-side dump, Pro-bin, Pro-tilt and Pro-roll off. For Upper Bern Township's purposes, the Pro-gravity, Pro-side dump and Pro-bin designs could all potentially be suitable.

Pro-Gravity – These trailers are fabricated of steel and painted. The compartments for the recyclables are integrated into the structure of the trailer – they are not removable. Each compartment features a sloping floor and a locking door in the front. When brought to the processing center, the door is opened and the material slides out onto the floor – no forklift is necessary. While this is easier and potentially time-saving over the need to use a forklift, it also prevents dumping the load onto any other surface except the floor, such as into a hopper. Pro-gravity trailers are available in a range of capacities, from 9- to 20- cubic yards.

The specifications for the Pro-gravity trailer are provided in Table C-2. The company estimates that shipping costs would be approximately $1,500 per unit.

Table C-2
Pro-Tainer Pro-Gravity Recycling Trailer Specifications

Model	PGT-18T-3	PGT-20T-3
Axles	2 – 6,000-lb Torflex	2 – 6,000-lb Torflex
Brakes	Electric with Breakaway Kit (Optional Hydraulic)	Electric with Breakaway Kit (Optional Hydraulic)
Lights	N/A	N/A
Bins	Built-in to structure. Can be customized to a degree at factory.	Built-in to structure. Can be customized to a degree at factory. Is 5 inches taller than 18 cubic yard model
Capacity	18 cubic yards	20 cubic yards
Curb Wt.	4650 lbs.	4800 lbs.
Tongue Wt.	N/A	N/A
Gross Wt.	9,350	9,200
Price (excl. freight)	$10,500	$11,000

Figure C-3 below shows a photograph of a Pro-gravity trailer.

Figure C-3. Pro-Gravity Recycling Trailer

Pro-Side Dump – These trailers feature four five-cubic yard hoppers, which can be configured to provide either four or up to eight recycling compartments (using dividers in one or more of the hoppers) with a total capacity of 20 cubic yards. The trailers use built-in hydraulic motors to tilt and dump the containers to the side. While these self-dumping trailers don't require forklifts to empty, the weight and complexity are increased with the hydraulic motors. Increased headroom and attention to safety procedures would be needed with such trailers.

The specifications for the Pro-side dump trailer are provided in Table C-3.

Table C-3
Pro-Tainer Pro-Side Dump Recycling Trailer Specifications

Model	PRH-20
Axles	2 – 7,000-lb Torflex
Brakes	Electric with Breakaway Kit (Optional Hydraulic)
Lights	N/A
Bins	2 – 8 compartments, depending on customer's needs
Capacity	20 cubic yards
Curb Wt.	6,650 lbs.
Tongue Wt.	N/A
Gross Wt.	7,350
Price (not incl. freight)	$ 20,000

Figure C-4 below shows a photograph of a Pro-Side dump trailer, and Figure C-5 shows the emptying process for this model.

Figure C-4. Pro-Tainer Pro-Side Dump Recycling Trailer

Figure C-5. Pro-Side Dump Trailer Unloading Process

Pro-Bin – The design of these trailers is similar to the AlleyCat trailers. Removable bins, fabricated of steel, are strapped on to the trailer. The bins, which feature sloping floors, are removable using a forklift and empty through rear doors that are accessible only when the bins are off the trailer. Inserts for the forks are built into the bins, so a rotating head forklift is not needed. The bin contents could be dumped on the floor, or into a hopper or other location, provided care was taken in lifting a heavy steel bin to any height. Figure C-6 shows a photograph of a Pro-bin trailer. On the 12, 16, and 20 cubic yard trailers, bin capacity is 2 cubic yards each.

Specifications for the Pro-bin trailer are presented in Table C-4.

Table C-4
Specifications for Pro-Tainer Pro-Bin Trailer

Model	PRTB-16	PRTB-20
Axles	2- 7,000-lb Torflex	2 – 7,000-lb Torflex
Brakes	Electric with Breakaway Kit (Optional Hydraulic)	Electric with Breakaway Kit (Optional Hydraulic)
Lights	N/A	N/A
Bins	8 – 2-cubic yard	10 – 2-cubic yard
Capacity	16 cubic yards	20 cubic yards
Curb Wt.	5500 lbs.	6800 lbs.
Tongue Wt.	N/A	N/A
Gross Wt.	7,500	8,200
Price (not incl. freight)	$14,700	$16,700

Figure C-6. Pro-Tainer Pro-bin Recycling Trailer

3. Haul-All, Ontario, Canada (888/428-5255)

http://www.haulall.com/english/default.asp

Haul-All manufactures a line of full-service drop-off centers and recyclables transfer stations. Several counties in Pennsylvania use their equipment, including Schuylkill, Blair, Cambria, Carbon, Dauphin, Pike, Wyoming and Monroe Counties. The Haul-All recycling truck that services their drop-off equipment has a "wet line" that enables the drop-off center bins to be plugged into the truck and dumped hydraulically on-site.

Haul-All also manufactures a recycling trailer that can be plugged into the specialized truck in the same way, enabling its bins to be tilted and dumped hydraulically. For communities that don't use Haul-All's specialized drop-off equipment and service truck, the company offers an innovative solution that enables them to still use the recycling trailer – a portable hydraulic pump. Such a system avoids the need for each trailer to carry a hydraulic pump, saving weight, complexity and cost. When the

trailer arrives at the MRF, the portable electric motor is plugged into a power outlet and the hydraulic line is plugged into a fitting on the trailer and the bins are then tipped. A photograph of the Haul-All trailer is provided in Figure C-7, and Figure C-8 shows the tipping procedure for the Haul-All trailer..

Figure C-7. Haul-All Recycling Trailer

Figure C-8. Tipping the Haul-All Trailer

The Haul-All trailer has a 16-cubic yard capacity. The bins can be fabricated at the factory into specific configurations, but they are then non-adjustable. The entire trailer is made of steel.

Wyoming County uses the Haul-All recycling trailers in a stand-alone program without the permanent drop-off system. The County recycling coordinator reports that the townships hosting the drop-off sites deliver the trailers to the MRF using one-ton dual-wheel trucks. Once at the MRF, the portable electric/hydraulic pump unit is used to dump the bins. This trailer comes with side jacks that are put in place to stabilize the trailer as the bins are extended for dumping, to compensate for the weight of the bins and the material. Overall Wyoming County reports that they and their townships are satisfied with the system.

Attachment D
GRANT INFORMATION

R·W·BECK
An SAIC Company

Act 101 Section 904 Recycling Performance Grant Formula and Grant Limitations

Recycling Performance Grant Award Formula

Total Award* = *Base Award + Bonus Award + Commercial Incentive.

Base Award = Approved Residential Tonnage + Approved Commercial Tonnage x $5.00

Bonus Award = Approved Residential Tonnage + Approved Commercial Tonnage x Municipality's Grant-calculated Recycling Rate x $1.00

* Approved Tonnages are less any residues. Approved commercial tonnage for the bonus award cannot exceed the approved residential tonnage.

* A municipality's recycling rate is determined in this manner:

Approved Residential + Approved Commercial Tonnage/(municipality's population x 0.8) x 100, where 0.8 tons/person/year is an average state-wide waste generation rate. Approved commercial tonnage for the Recycling Rate calculation cannot exceed the approved residential tonnage.

Commercial Incentive = Documented Commercial Tonnage in excess of that approved for the Base and Bonus awards x $10.00

Recycling Performance Grant Limitations

Mandated recycling communities that apply for the grant, as well as any other municipality (other than a county) awarded more than $10,000 in performance grant funds, must have certain recycling program components as specified by Act 140 of 2006 including:

- Requires, through ordinance, that all residents have waste and recycling service.
- Has an implemented residential recycling program and facilitates a commercial recycling program or participates in a similar county or multi-municipal program.
- Has a residential and business recycling education program.
- Has a program of enforcement that periodically monitors participation, receives complaints and issues warnings for required participants and provides fines, penalties, or both, in its recycling ordinance.

- Has provisions, participates in a county or multi-municipal program or facilitates a private sector program for the recycling of special materials.
- Sponsors a program, facilitates a program or supports an organization to address illegal dumping and/or littering problems.
- Has a person or entity designated as recycling coordinator who is responsible for recycling data collection and reporting recycling program performance in the municipality or municipalities.

If the municipality has not met the above performance requirements, the grant funds awarded shall be expended by the municipality only to meet the performance requirements. If the municipality has met the performance requirements, the grant funds awarded may be expended by the municipality on any expense as determined in the discretion of the municipality. Pa. DEP may require budget documents or other expenditure records and may deny funding through this Section if an applicant cannot demonstrate that funds have been expended on eligible activities.

Applicants must provide documentation with weight slips showing the quantities of eligible Act 101 materials recycled. In order to maximize these funds, it is important that the municipality receive documentation from commercial entities that have recycling programs in place. In general it is easier to work with local haulers to obtain this information. Some large businesses backhaul their recyclables to a warehouse or distribution center for processing. In this case the information must be obtained from the businesses.