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Environmental Update



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Recycling versus landfilling:

Scott Mouw and Jim Hickman (NC Division of Pollution Prevention and Environmental Assistance, 919-715-6500) recently wrote an article entitled “**Recycling vs. Landfilling**”. A somewhat condensed version of their article is presented here:

Recently, a question was asked on a number of list serves regarding **"the cost of putting recyclable material into a landfill vs. having a recycling program (even if there is no profit)."** The question was also asked: **"what is the cost for recycling?"** Although these questions can be very complex to answer, below are some perspectives to consider.

It is always important to compare "apples to apples." When recycling is compared with disposal, the cost of solid waste collection is frequently excluded. Simply put, it is a mistake to compare only "tipping fees" to the full cost of recycling. To make a true comparison, it is necessary to include the cost of picking up garbage as part of the total cost of landfilling it.

Local reports to the state show that the cost of collecting and disposing garbage for most municipalities is around \$90 to \$130 per ton. Tipping fees are typically in the \$30 - \$35 range, sometimes less, sometimes more – therefore disposal fees are only about a quarter to a third of what it costs to dispose of garbage.

Data from local reports also document that well-run curbside programs cost about the same as garbage collection/disposal. For example, the table presents the costs recently reported by a few of the programs around the state for fiscal year 2004:

City	Garbage	Recycling
Apex	\$91/ton	\$106/ton
Newton	\$101/ton	\$98/ton
Asheville	\$92/ton	\$101/ton
Wilmington	\$145/ton	\$137/ton
Morehead	\$136/ton	\$41/ton

Unfortunately, there are a number of recycling programs in North Carolina that under-achieve because of any one or a combination of three factors:

- 1) low participation rates,
- 2) collection of a limited range of recyclable materials, and
- 3) use of outmoded, inefficient collection techniques and technologies.

Local governments have direct control over all three of these elements. They can take advantage of both new developments in recycling and "tried and true" methods in all three areas to make their program more efficient:

Participation - A good education and promotion program is essential to attain high participation. Incentive programs such as pay-as-you-throw and recycling "lotteries" can also be used to encourage the public to recycle. Morehead City, for example, uses a lottery to achieve an 80% participation rate.

Materials - Markets for recyclable materials have expanded and now allow the collection of a wider array of materials - for example, residential mixed paper and all plastic bottles. Asheville's program includes the collection of 81 pounds per household of mixed paper per year, helping to make its diversion rate one of the highest in the state.

Collection - The early standard for curbside programs was the use of 18 gallon bins, with curbside separation of materials into compartmentalized trucks. Now, the need to separate at the curb is going the way of the dinosaur. The number of material recovery facilities (MRFs) available around the state to process commingled recyclables has expanded dramatically. Commingling improves the efficiency of collection operations, and makes it easier to add materials to programs. In addition, commingling allows the use of carts in place of bins, giving households more capacity for storing recyclables. Greensboro's use of carts and a local MRF has helped the city achieve one of the state's highest local per household recovery rates.

The City of Raleigh offers an example of how recycling costs could be reduced using all three approaches. Raleigh reports spending \$124 per ton for garbage collection/disposal and \$184 per ton for recycling. The City reports a participation rate of 49%. If Raleigh was able to achieve a participation rate similar to Morehead City (80%) using a combination of education and incentives, the City would recycle an estimated 7,772 additional tons, lowering its per ton recycling costs by as much as \$60.

Alternatively, if Raleigh added mixed paper and achieved Asheville's recovery rate of 81 pounds per household, it would collect an additional 1,822 tons per year, which would drop its cost per ton as much as \$20. That's without increasing participation.

As Raleigh's recycling cost-per-ton goes down by collecting more materials, it also avoids paying tipping fees on the tonnage that "flips" from garbage over to recycling. For every ton Raleigh recycles, it saves an additional \$23 per ton in avoided disposal cost (i.e., tipping fees not paid by Raleigh to the Wake County landfill). If Raleigh increases its participation to 80 percent, the avoided disposal costs are over \$178,000 per year.

Tipping fees do not always cover some of the more indirect and intangible costs of disposal. A tipping fee usually covers the current costs of operating a landfill, sometimes the debt service on the landfill, and sometimes the funding of reserves for post-closure care. The true costs of post-closure care are difficult to predict - most landfills will protect groundwater for a very long

time, but some may have "leaks" that require expensive, long-term remediation.

In addition, tipping fees don't always reflect the cost of replacing a landfill that has been filled. A new public landfill covering 500 acres removes that acreage from the local tax base and stops it from being used for other purposes, such as farming, homes or industry. Perhaps most intangible and controversial is the "cost" of a local battle over the siting of a landfill.

Recycling costs per ton can be comparable or better than the cost to collect and dispose of solid waste, depending on how well the local program is operated. A cost-per-ton analysis is, however, only one way (and probably the simplest way) to look at this question. The more complex issues have to do with the economic and environmental "externalities" of disposal and recycling. These externalities almost never factor into a local government's cost calculations of disposal vs. recycling, although the global effects of recycling clearly benefit all citizens and communities.

The positive environmental and economic impacts of recycling are well documented. They can be seen in direct cost benefits for many industries. For example, increasing the utilization of cullet (crushed glass) allows glass manufacturers to lower their furnace temperatures and save related energy costs. This is important for North Carolina, as host to two large glass plants that depend on cullet.

Recycling is a growing business and job creator in North Carolina. The number of recycling businesses represented in the state's recycling markets directory has more than doubled in the past decade, and new types of recyclers are appearing on the scene - almost no electronics recyclers were listed in the directory 15 years ago; now there are close to forty.

An estimated 12,000 people are employed by over 500 recycling companies in North Carolina, earning a living, paying taxes, making investments, and contributing to the economy of the state. The standard "cost-per-ton" analysis of recycling versus disposal rarely takes into account these positive impacts, because the benefits are not directly seen on a local government's bottom line. But they are real. And with the majority of NC recycling companies needing more supply, there is great potential for much

more job creation in this sector.

The other huge factor that is rarely included in a strict cost-per-ton analysis is the environmental benefit of recycling. This issue is much too broad to address here, but just one perspective may be helpful:

If a local recycling program raises its participation rate by 100 households, it prevents the equivalent greenhouse gas emissions of 8 cars. If a town the size of Fayetteville was to start a curbside program and achieve a modest participation rate of 60 percent, it would achieve the greenhouse gas equivalent of removing 2,000 cars from the road.

As a final, more analytical note, the common methodology for comparing program costs relies on incremental accounting. Incremental accounting is a tool that is often used to determine the overall budgetary effect of adding a new program (e.g., recycling). Although this tool is very useful for rate setting, it should be used with caution when used for making policy decisions.

In almost every case, incremental accounting will favor the incumbent program. In fact, we have run analyses of communities with extremely efficient recycling programs, programs in which the recovery rate is higher than the budgetary demand of the program (e.g., 10% of solid waste management budget pays for recycling in a community with a 15% recovery rate). Even in these communities, an incremental cost analysis will favor the incumbent program (garbage) despite the fact that the new program is more efficiently run than the incumbent program.

The main reason the existing program is favored is because solid waste management programs have high fixed costs associated with collection. The collection costs associated with garbage collection programs generally account for about 70 percent of the overall program costs. The addition of a new program will only result in a nominal decrease in these fixed costs. Therefore, the new program is mainly compared to the variable disposal cost that can be avoided - a difficult comparison to make with tipping fees in the \$30 per ton range.

As a result, we encourage communities to use a full cost accounting assessment of the costs-per-ton of their garbage and recycling programs. Among other benefits, this approach allows local

governments to more effectively target efficiency improvements in each program, which should reduce total costs. With recycling, those improvements will most likely boil down to three things: 1) get more people to recycle, 2) recycle more materials, and 3) commingle.

Recycling: are you doing your part?

- New Hanover County Recycling collects, processes and markets over 8,000 tons of material per year. Seven recycling centers are located throughout the county. For locations and other information, call 910-341-4345.
- The City of Wilmington recycling program, Separate Materials and Recycle Together (SMART) is a voluntary program for collecting recyclable materials at your curbside. To sign up for this service call 910-790-2376 and a SMART box will be delivered to your home. Recycling is provided at no additional charge.
- Onslow County has 12 convenience centers. Call 910-989-2107 for further information.
- To learn about the City of Jacksonville's recycling program, call 910-938-5337.
- If your area wasn't mentioned above, the following website will direct you to programs available in your area:

<http://www.p2pays.org/localgov/PAYT/ncwaste.asp>

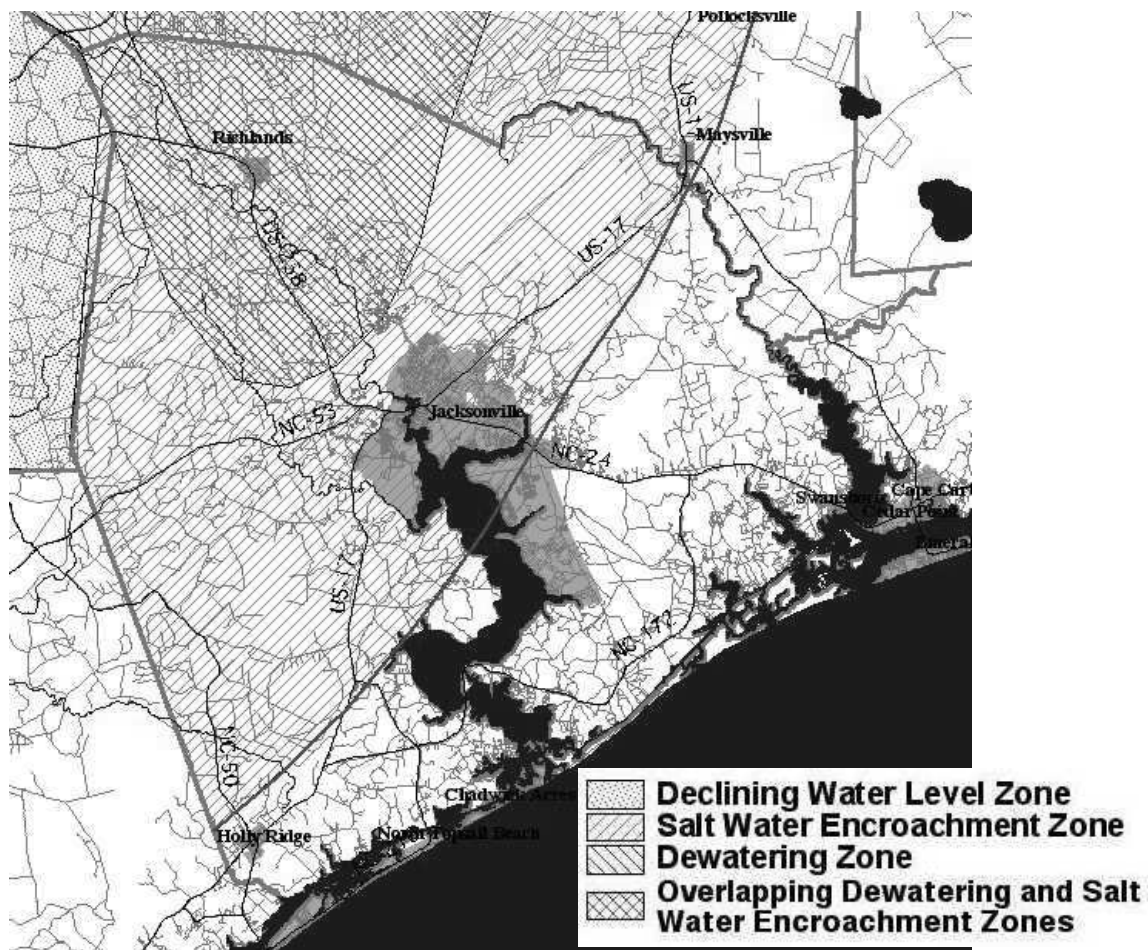
If you don't have internet access, call your city or county information number or your county Cooperative Extension center.

A recent estimate indicated that 30% of New Hanovers' landfill waste was organic material. Homeowner and neighborhood composting programs could remove this much more material from entering the landfill...and prolong its life.

The City of Jacksonville estimated that three groups make up 90% of the waste stream: food and yard waste (23%), paper/paperboard (42%), and glass/metals/plastic (25%). Much of this is recyclable or compostable. If you haven't been recycling, beginning would be a great New Year's resolution!

Groundwater map:

A smaller version of the Onslow ground water zone category map was in last month's newsletter. Some people indicated that they had had



trouble reading it; hopefully, this larger version will reproduce more clearly. This image, as well as the entire CCPCUA map is available on the internet at:

http://www.ncwater.org/Permits_and_Registration/Capacity_Use/Central_Coastal_Plain/

Sincerely,

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