North Carolina

SOLID WASTE MANAGEMENT

Annual Report

JULY 1, 1996 - JUNE 30, 1997

State of North Carolina
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Department of Environment
and Natural Resources
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Reduce, Reuse, Recycle

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This document is submitted in satisfaction of state requirements to prepare an annual report on the status of solid waste management in North Carolina. Information for this document was gathered from solid waste facility reports submitted by operators of permitted facilities (both public and private), and from annual solid waste management reports submitted by local governments.

Please note:

Due to the significance to our program of the January 1, 1998 deadline for closure of all unlined landfills in North Carolina, this year's annual report will include all available information of its effects up to the date of this document's publication

Special thanks:

We acknowledge with gratitude the assistance of local government staff in North Carolina counties and municipalities

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Table of Contents

List of Tables

List of Figures

Overview and Summary

This report on the state of solid waste managment in North Carolina for FY 1996-97 may be summarized as follows:

1. North Carolina has made tremendous progress toward ensuring adequate capacity in this state for environmentally protective solid waste disposal facilities.
2. North Carolina is not likely to achieve the goal of reducing waste by 40 percent by the year 2001.

The state's solid waste management plan, published in 1992, ranked the provision of environmentally protective disposal facilities as the chief waste management priority of the state. As this report goes to press, all but two of North Carolina's active landfills are equipped with liner and leachate systems. These systems provide far greater protection to the environment and public health than standards prior to January 1, 1998 required.[1]

While North Carolina's current needs for solid waste disposal are being met, success in achieving the state's waste reduction goal, which was formally established by General Statute 130A-309, remains elusive.[2]

In FY 1996-97, 1.08 tons of waste per person were landfilled. This statistic represents the third year in a row that disposal facility reports showed no reduction in waste. Unless the current trend is dramatically reversed, the state will not make progress toward its waste reduction goal.

Local governments and industry have recently submitted solid waste management plans to the state in satisfaction of statutory planning requirements. The purpose of these local plans is to identify and implement programs or actions to reduce, reuse, recycle or otherwise manage solid waste. When these plans have been reviewed, the state will begin the process of updating the state's plan. This process, which requires the participation of members of the regulated community and other interested parties, will provide state and local government leaders in solid waste management an opportunity to re-examine strategies for achieving meaningful waste reduction.

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[1] Two unlined landfills remain open pending the results of litigation.

[2] The goal was originally set in the Solid Waste Management Act of 1989, and revised by amendment to that act in 1991.

A Challenging Year

Several major events made FY 1996-97 an unusual year with respect to waste management in North Carolina. Local, comprehensive 10-year solid waste management plans were developed, new legislative changes affected several programs, two hurricanes struck eastern North Carolina, and municipal solid waste landfill owners and operators were preparing to meet a deadline for liner requirements

Comprehensive 10-Year Planning

All local governments in North Carolina are required to be a part of a local 10-year comprehensive solid waste management plan. Each plan must include an evaluation of the local waste stream, assessments of current and intended programs, and an assessment of the full cost of the local solid waste programs.

General Statute 130A-309.09A also requires that each plan:

> Include a goal for the reduction of municipal solid waste on a per capita basis by 30 June 2001 and a goal for the further reduction of municipal solid waste by 30 June 2006. The solid waste reduction goals shall be determined by the unit or units of local government that prepare the plan, and shall be determined so as to assist the State, to the maximum extent practical, to achieve the State's forty percent (40%) municipal solid waste reduction goal . . .

Plans received thus far show goals ranging from negative 25 percent to 50 percent for 2001 and negative 20 percent to 61 percent for 2006. Negative goals were set in cases where waste in a given locale was increasing. The relationship of the local goals to the state goal is still being analyzed.

Industries with on-site waste disposal facilities were also directed by statute to have a waste management plan in effect by July 1, 1997. These plans are required to show a waste reduction goal, examine waste reduction and management options, and develop a 10-year management strategy. Industrial goals ranged from zero to 75 percent. The wastes managed at these facilities include ash, sludge, lime mud, rock and concrete.

A total of 120 waste management plans were prepared in 1997 (see **Table 1**). Eighty-three counties planned with or without their local municipalities; 14 municipalities chose to prepare plans separate from their counties. Municipalities that chose to plan separately ranged in population size from large areas such as Raleigh to small towns such as Southern Shores. Five regions prepared plans: the Albemarle Regional Solid Waste Management Authority; Coastal Regional Solid Waste Management Authority; Bladen, Cumberland, and Hoke counties; Edgecombe and Nash counties; and Pasquatank and Camden counties. US Marine Corp Base-Camp LeJeune and US Army-Fort Bragg also prepared individual plans.

Table 1: Number of Solid Waste Plans Prepared

Plan Prepared By	Number of Plans
Counties	83
Municipalities	14
Regions	5
Military Bases	2
Industrial Facilities	17
TOTAL	120

The state has reviewed the plans to make sure all local governments and industrial on-site facilities in North Carolina are covered in a plan. In FY 1997-98, the information obtained from the plans will be compiled and analyzed.

Landfill Liners Became a Requirement

The regulations collectively known as the "'98 Rule" (15A NCAC 13B .0103; .0503, and .1627) require municipal solid waste landfills to be equipped with a liner system or cease operation by January 1, 1998.

During the period July 1997 through December 16, 1997 (just after the fiscal year covered in this report), the state achieved substantial compliance with the '98 Rule. There were three exceptions. Two counties were unable to meet the deadline, but entered into consent agreements with the state. Under the agreements, these counties will move stockpiled waste received after January 1 to a lined facility by dates set under consent agreements. As this report is being prepared, a third county is in litigation with the state regarding its compliance with the rule.

Several of the counties that closed unlined landfills had to make the transition to new facilities under difficult circumstances. Since Cherokee County's new facility was not prepared to receive waste on January 1, the county stored some waste in roll-off containers and directed other waste to a transfer station on the Cherokee Indian Reservation.

Cleveland County's transfer station was not completed by the 1998 deadline, so the county used a cleared area over their closed landfill as a temporary dumping pad. When the transfer station was completed, all waste stored over the closed landfill after the 1998 deadline was reloaded into larger vehicles for transfer to an out-of-state facility.

Durham County had a similar problem with completion of a transfer station. The county used a makeshift, temporary station to transfer 100 tons per day to an out-of-state facility.

These efforts were undertaken in very wet, difficult conditions during a month of higher than normal rainfall, but the counties remained in compliance with the regulation.

Like the municipal solid waste landfills, industrial landfills (ILFs) had a '98 deadline to meet. ILFs had until January 1, 1998 to demonstrate to the Division of Waste Management that they could continue to operate without exceeding state groundwater standards. ILFs that did not meet this requirement closed.

Legislative Changes

The 1997 Session of the General Assembly passed several solid waste management bills with the following results:

- The Scrap Tire Management Account, which was scheduled to expire on June 30, 1997, has been extended by five years. Funds from the account may now be used to establish grants that will encourage recycling of scrap tire material.

- The Division of Waste Management has been directed to write a rule to govern disposal of fetal remains.

- The Division of Waste Management has been directed to write rules that will permit an alternative to the current regulatory design requirement for landfill liners.

- Notices of open dumps may be recorded at the office of the Register of Deeds by the Division of Waste Management.

- Permit applicants may be required to provide assurance of their financial ability to meet permit conditions and to demonstrate that they have a record of substantial compliance with environmental regulations.

- Requirements for certified landfill operator training have been modified to provide conditions under which certain persons may be exempt from examination.

- A temporary position has been established in the division's Solid Waste Section to assist counties in their efforts to prevent out-of-state tires from being presented for free disposal in county programs.

Hurricanes Bertha and Fran

On July 12, 1997, Hurricane Bertha struck 17 eastern counties. On September 6, 1997, Hurricane Fran devastated the North Carolina coast and traveled into the piedmont region, creating disaster areas of 63 counties (see **Figure 1**). Consequently, there was a substantial increase in the quantity of waste requiring management in FY 1996-97. Hurricane Bertha increased waste disposed in coastal counties, while Hurricane Fran increased waste disposed in the whole eastern half of the state.

The actual amount of waste generated by Hurricane Fran will never be known. Great quantities of downed trees remain where they fell; in rural areas much of what was generated was managed on site. In urban areas, the waste from downed trees was most often hauled to large staging areas where the Army Corps of Engineers either mulched or burned the material. A significant amount of this material also went into existing and new land clearing and inert debris (LCID) landfills and some went into construction and demolition (C&D) landfills as well as municipal solid waste (MSW) landfills.

In addition to downed trees and stumps, waste attributable to Fran included demolition debris from the destroyed buildings, material damaged as a result of lost power or flooding, and waste associated with the large number of individuals who came to the state for the recovery effort.

Figure 1: Counties Affected by Hurricane Fran

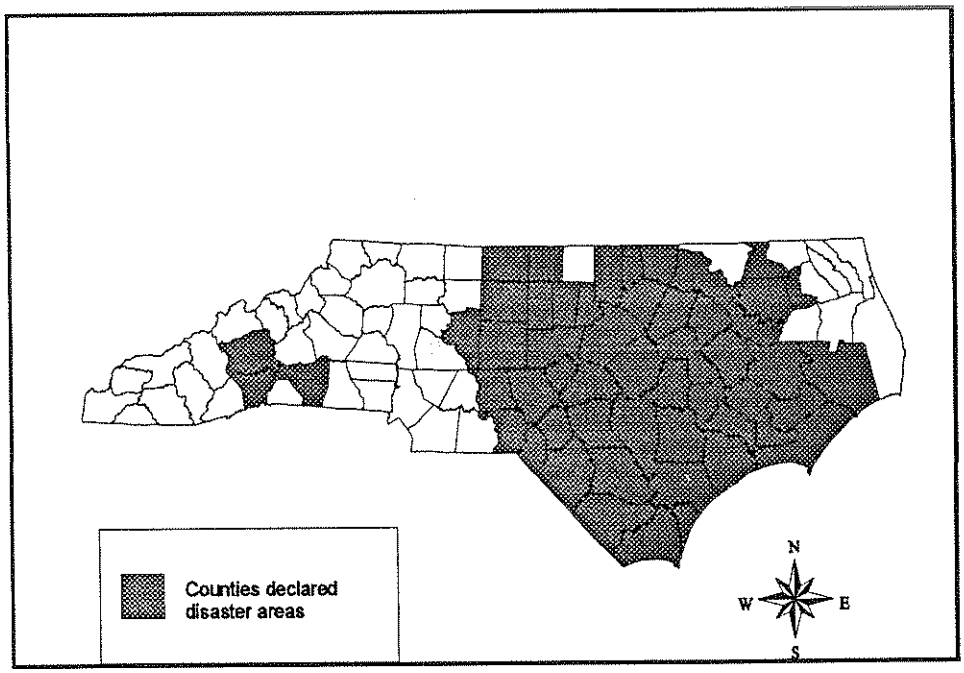
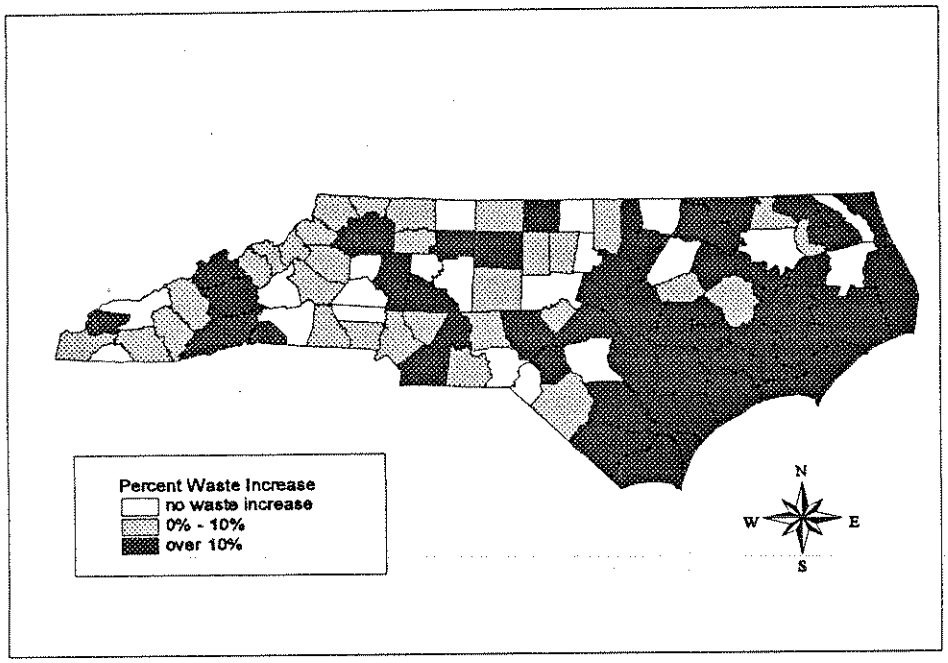


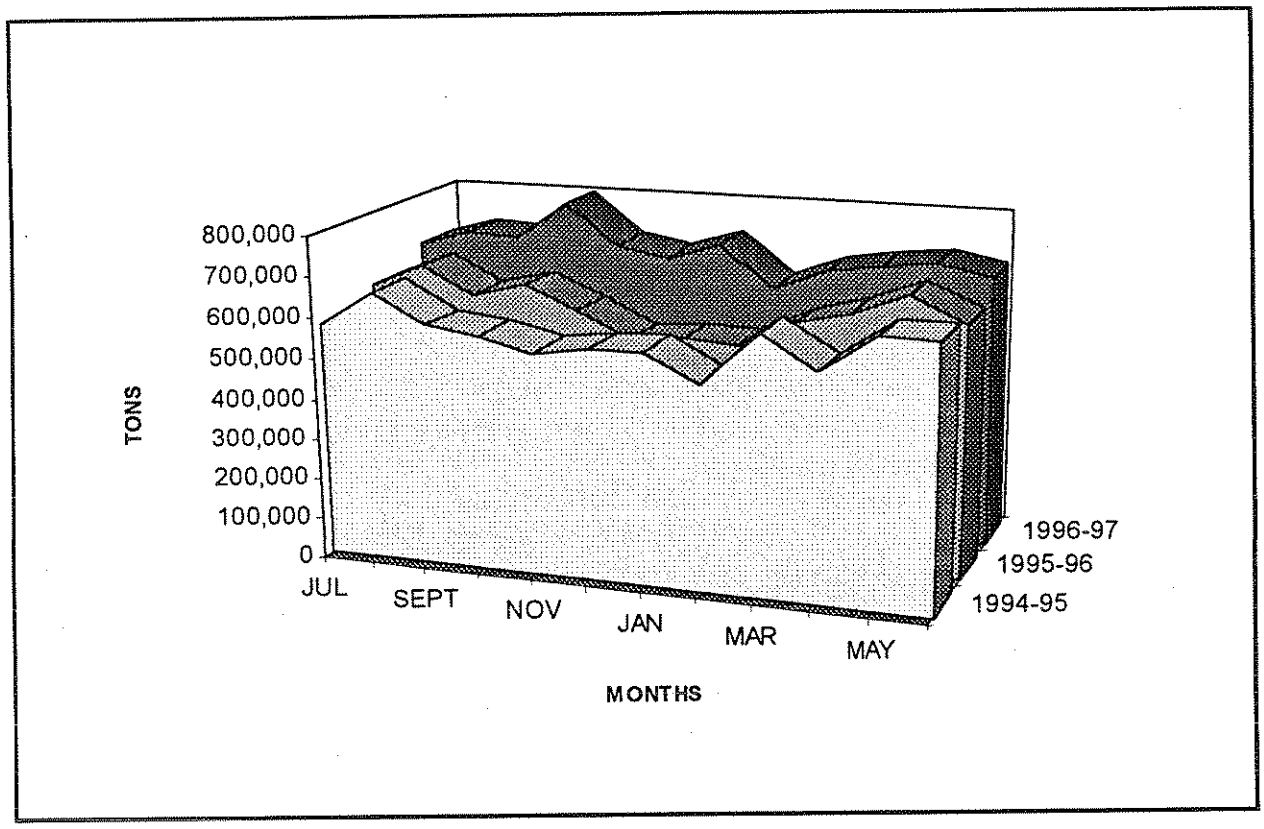
Figure 2 shows the counties that had a per capita waste disposal increase of more than 10 percent from the previous year.

Figure 2: Per Capita Increase in Waste Disposed from FY 1995-96 to FY 1996-97



In order to estimate how much waste resulted from Hurricane Fran, several calculations were made. The amount of waste disposed by North Carolina each month for the past three years was compared to that disposed as a result of the hurricane (see **Figure 3**). FY 1996-97 shows a sharp increase in waste disposed beginning in October, just after Hurricane Fran made landfall. The increased waste disposed tapered off in February, about the time the heaviest cleanup subsided.

Figure 3: NC Waste Disposed, FYs 1994-95 to 1996-97



Counties were divided into two classifications: those affected and those not affected by Fran. A comparison was made of how much waste increased during the past two years in each of the two groups of counties. This comparison showed the substantial percentage by which waste increased in Fran counties over the waste in non-Fran counties.

Using three different assumptions, the increase in waste from Fran may have been by as little as 387,324 tons of waste or by as much as 714,788 tons. **Table 2** presents three different assumptions used to estimate the effect of Fran on North Carolina permitted facilities.

Table 2: Hurricane Fran Waste Estimations

Classifications	% change 94/95 to 95/96	% change 95/96 to 96/97	Tons Disposed	Fran Waste Estimate
Non-Fran counties	4%	8%		
Fran counties	-1%	16%	5,439,630	
Assumptions - Percent change in Fran counties				
1. Same as Non-Fran counties 95/96 to 96/97		8%	5,052,306	387,324
2. Same ratio as in 94/95 to 95/96 (5%)		3%	4,818,403	621,227
3. Same as Fran counties 94/95 to 95/96		-1%	4,724,842	714,788
Linear Regression Figure for NC			*7,979,184*	*762,549*

The first assumption is that the Fran counties would have experienced at least as much increase in waste as the non-Fran counties (8 percent) in the same period of time. According to this assumption, close to 400,000 tons are attributable to Hurricane Fran. A second assumption is that the Fran counties would have experienced an increase in waste while keeping a similar ratio to the non-Fran counties (5 percent) from FY 1994-95 to FY 1995-96. If this assumption is valid, more than 600,000 tons of waste are attributable to Fran. A third assumption is that Fran counties continued disposal of waste at the same rate as from FY 1994-95 to FY 1995-96, when a 1 percent decrease in waste managed was recorded. This final assumption indicates that close to 715,000 tons could be the result of Hurricane Fran.

The amount of waste the entire state would have disposed in FY 1996-97 if no hurricanes had occurred can be estimated by simple linear regression. The amount of waste projected for FY 1996-97 was 7,979,184 tons, which is 762,549 tons less than the actual amount disposed. The increase may not be entirely due to Hurricane Fran; some of it may also be due to the continued strong economy in North Carolina. Previous reports have compared several economic indicators (i.e., housing starts, non-farm employment growth, non-farm building permits, and personal income growth) to the rate of waste disposal and found strong correlations between economic growth and waste disposed.

It is worth noting that some facilities may have under-reported waste received during the period the hurricanes occurred. Given the overwhelming amount of waste that facilities were receiving on a daily basis, it is likely that some facilities' ability to properly record all that was being received was compromised.

For the purposes of estimating progress toward the state waste reduction goal and forecasting future waste disposal rates, the final estimate of the waste directly attributable to Hurricane Fran for this report is 700,000 tons. This amount is a rough accommodation of the three assumptions noted above, the linear regression estimate for North Carolina waste disposed in FY 1996-97, and the fact that actual wastes managed may have been under-reported.

Waste Management and Environmental Quality

January 1, 1998, the deadline for closure of all unlined landfills in North Carolina, represented a major milestone for the practice of solid waste management in this state. Active landfills in North Carolina are now required by law to be equipped with environmentally protective liners and leachate systems.

The state has come a long way since the 1960s, when the accepted practice was to dig a hole in the earth and dispose waste materials without regard for effects on the surrounding environment. Birds, vectors, scavengers, fire, and chemical leakages into groundwater were all a part of the environmental and health liability of these open dumps.

Rules became stricter in the 1970s, as public awareness of environmental issues increased. Throughout the 1970s and '80s, most counties operated a local landfill for waste disposal. These landfills were required to cover the waste disposed with six inches of dirt daily.

More technologically advanced "lined" landfills began operating in the '90s. Their bases are "sealed" against the surrounding earth with layers of compacted clay, and their interior structures are equipped with leachate systems to reduce the likelihood of ground and surface water contamination.

January 1, 1998 also marks a more active interest by solid waste managers in the separate treatment of different types of wastes. Most local governments that are not host to unlined landfills must transfer waste to dispose it properly, and many seek to minimize that expense by reducing the waste that must be hauled. An expected result of the '98 deadline has been the increased number of construction and demolition landfills. These unlined facilities are relatively inexpensive to build and operate, and are only permitted to receive a specific waste type that does not represent a known threat to groundwater.

Groundwater Trends

The number of landfill sites known to be contaminating groundwater has increased as more groundwater data is collected. An estimated 100 unlined landfill units that have operated under a permit from the NC Division of Waste Management are now known to be affecting the groundwater. Due to limited staff resources, it has been necessary to focus on those sites with the highest estimated potential for risk. Water quality assessments are currently being conducted at 80 of these sites. Once the results of water quality assessments indicate the nature and extent of contamination at a given site, remediation options can be evaluated. Many of these sites are nearing completion of the prescribed assessment.

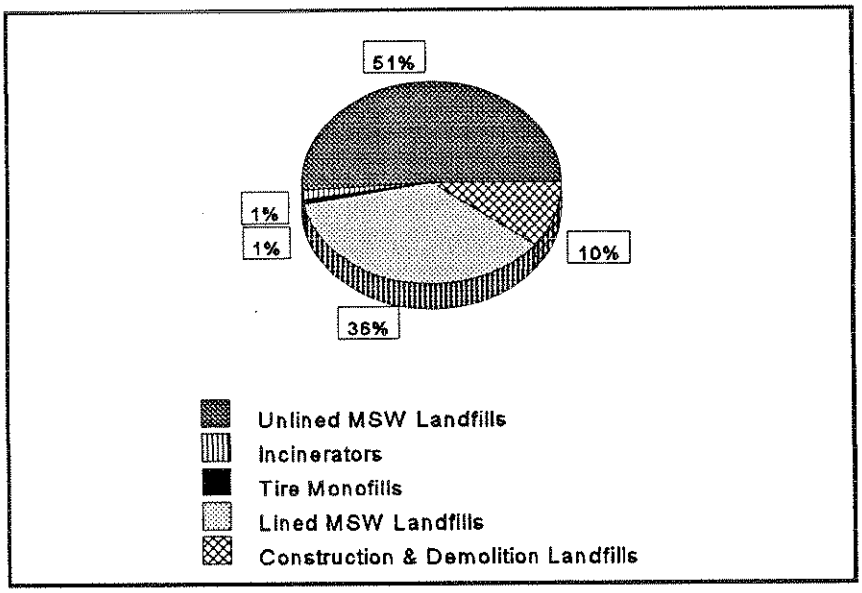
Non-point Source Pollution and Implications

Unlined landfills that are contaminating groundwater contribute to the pollution and the nutrient loading in surface waters, which may increase the stress of some of the critical watersheds in the state. Septage land application sites are also contributing nutrients to these surface waters through surface run-off and shallow aquifer discharge. Conclusions about the actual effect of septage land application sites on surface water pollution await further data.

Waste Management Facilities

In FY 1996-97, approximately 8.5 million tons of solid waste were managed in North Carolina facilities. As **Figure 6** indicates, the principle method of management was landfilling in unlined landfills. All unlined landfills are required to be closed after January 1, 1998.

Figure 4: Municipal Solid Waste Management, by Facility Type, FY 1996-97



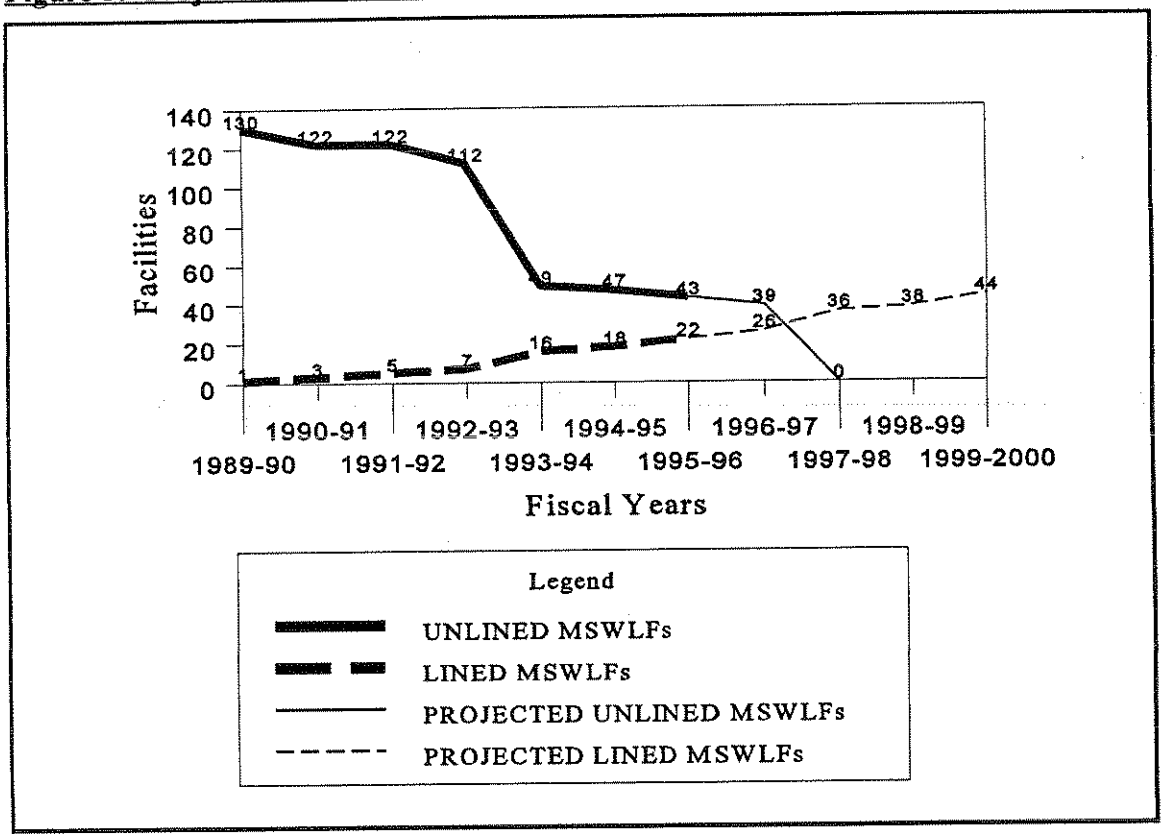
A significant trend in solid waste management is the steady decline in the number of municipal solid waste landfills (MSWs) and industrial landfills (ILFs) and a corresponding increase in the number of transfer stations, construction and demolition landfills, and land-clearing and inert debris landfills. The trend began in 1991 with the adoption of the '98 Rule, and was dramatically accelerated this fiscal year, as the 1998 deadline approached.

Municipal Solid Waste Landfills

In FY 1996-97, eight permits to construct lined MSWLFs were issued, two draft permits for lined MSWLFs were submitted to public comment, and eight applications for lined landfill permits were submitted to staff for review. Once permitting and construction processes are complete (probably during FY 1999-2000), 42 lined MSWLFs are expected to be in operation (see **Figure 7**).

There were 66 active MSWLFs operating in the state in FY 1996-97. By the end of January 1998, there were 35 MSWLFs in operation.

Figure 5: Projected Number of Permitted MSW Landfills, FYs 1989-90 to 1999-00



Industrial Landfills

The 1995 revision to the '98 Rule requires industrial landfills (ILFs) to demonstrate that their landfill design will ensure that the groundwater standards will not be exceeded at their compliance boundaries or be closed by January 1, 1998. Six of the 27 ILFs active in 1997 closed after January 1, 1998. Two of the remaining ILFs are lined.

Construction and Demolition Landfills

There are currently 41 construction and demolition (C&D) landfills. This increase over last fiscal year's total of 28 reflects the closure of unlined, county MSW landfills and the attendant expense of transferring waste to out-of-county regional lined landfills. Given the especially cumbersome, heavy nature of construction and demolition waste, local governments have economic incentive to avoid the cost of transferring it to regional facilities by establishing C&Ds. Thus, the number of "stand alone" C&Ds (those that are located separate from MSWs) increased by more than 50 percent this fiscal year to 19.

In addition to the economic incentive for establishing C&Ds is the relative ease of siting them over closed landfills. It has been convenient to site C&Ds adjacent to existing landfills; six such facilities are currently in operation. However, since implementation of a policy decision by the section that allows permits to be issued for C&Ds sited over closed landfills, there have been 16 C&Ds established at closed landfill sites.

It is estimated that anywhere from 20 to 30 new C&Ds will be permitted during FY 1997-98.

Transfer Stations

Twelve new transfer facilities began operation in FY 1996-97. By the end of January 1998, there were 61 transfer stations permitted to operate in North Carolina. This increase, which reflects the movement of waste from unlined or closed landfill facilities to lined facilities or facilities out of state, is expected to continue in FY 1997-98.

As of March 1, 1998, there were 67 counties transferring waste to an out-of-county landfill.

Incineration and Mixed Waste Processing

Only one municipal solid waste incinerator, the New Hanover County Waste-To-Energy facility, remains in operation in North Carolina.

BCH Energy, L.P., which was operational in the last fiscal year, officially closed both the refuse derived fuel (RDF) fired waste-to-energy facility located in Bladen County and the associated mixed waste processing facility (MWP) located in Cumberland County. Carolina Energy, L.P. halted construction of similar facilities in Lenoir and Wilson counties. Counties that had planned to send their waste to one of these facilities are now sending their waste to a regional landfill.

The Future of Landfill Management

A primary goal of solid waste management in North Carolina for the last 10 years has been to increase protection of groundwater by requiring all active MSWLFs to be equipped with a liner system by January 1, 1998. The emphasis now shifts to improving liner system design, ensuring proper landfill construction, and increasing the quality of landfill operations.

The Solid Waste Section is currently considering revisions to the liner design for municipal solid waste landfills. Under the existing rule, the only acceptable liner system is the composite liner of two feet of compacted clay and 60 mils of high density polyethylene. The section is working with the regulated community to develop an alternative liner system that will be as effective as the current regulatory design, but more economical to construct.

Another aspect of landfill management that is receiving increased attention is the theory of MSW landfill operation. The current operational concept allows the landfill to function as a "dry tomb." That is, it contains waste in a condition that discourages waste decomposition. A more recent concept that allows landfills to be operated as "bioreactors" is under consideration. In contrast to the "dry tomb " concept, this approach allows the introduction of additional liquid, usually in the form of waste-water treatment plant sludges, leachate, and gas condensate, into a lined landfill to accelerate the decomposition of waste.

Disposal Capacity in North Carolina and Neighboring States

Despite the significant number of landfills that closed to comply with the '98 Rule, North Carolina does not lack adequate disposal capacity. The state is host to a mixture of local government landfills that accept only local waste, local government landfills that accept waste from other counties, and regional public and private landfills that accept waste from all across the state.

A survey of places such as Tennessee, South Carolina, Virginia, and Georgia indicates that adequate disposal capacity is also available for the foreseeable future in neighboring states.

Data from the survey, which projected estimates for 1998, can be summarized as follows:

Georgia	93 MSWLFs are expected to be in operation, 39 of which will be lined. Of these lined MSWLFs, 14 will be private.
Tennessee	46 MSWLFs are expected to be in operation, 36 of which will be lined. About half of the lined landfills will be private.

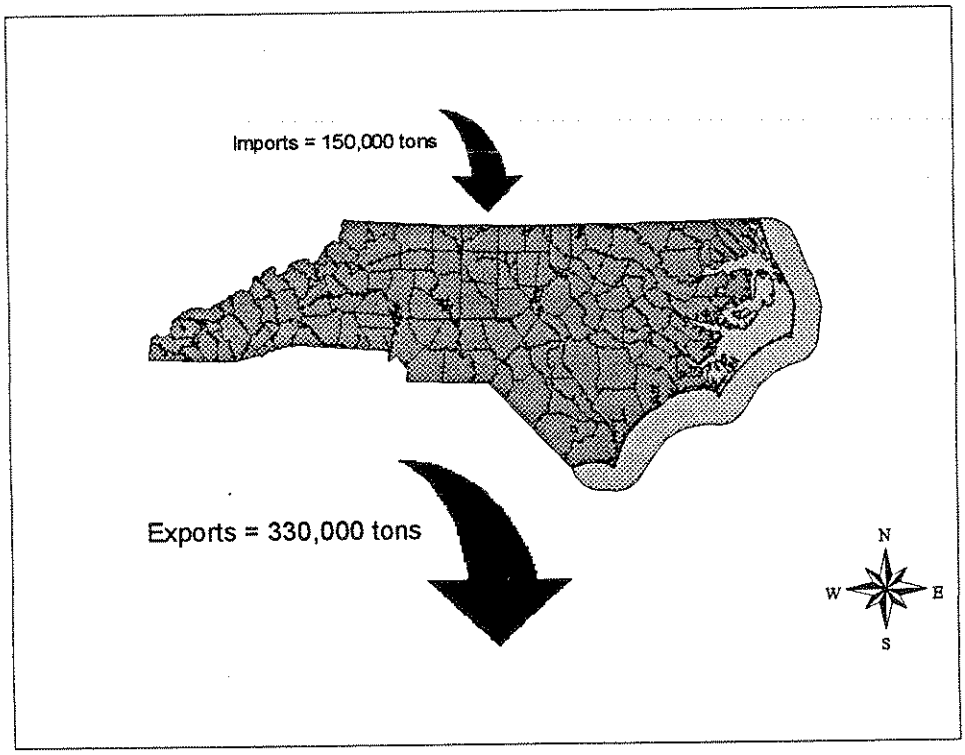
South Carolina	15 MSWLFs are expected to be in operation, 13 of which will be lined. Of these lined landfills, 10 will be private. (South Carolina's unlined landfills will close October 1, 1998.)
Virginia	110 operating MSWLFs are expected to be in operation, 75 of which will be lined. Of these lined landfills, 20 will be private.

In most of these states, the unlined MSWLFs will be allowed to use their remaining capacity for periods ranging from two to five years from 1997.

Waste Imports and Exports

North Carolina is a net waste exporter. The state exported more than 300,000 tons and imported approximately 150,000 tons in FY 1996-97 (see **Figure 9**). Waste exports are tracked through North Carolina transfer station reports and by voluntary reporting of out-of-state facilities. Waste imports to North Carolina facilities are tracked through the annual facility reporting process.

Figure 6: Waste Imports and Exports, FY 1996-97



As shown in **Table 5**, North Carolina imported approximately 150,000 tons of waste from 11

states in FY 1996-97. Sixty-nine percent of the waste was municipal solid waste, 24 percent was scrap tires, 7 percent was medical waste, and less than 1 percent was industrial waste.

Of the waste imported, approximately 30 percent consisted of special wastes (wastes requiring special management, such as tires, medical waste, and white goods). These wastes were generally transported longer distances than ordinary municipal solid waste. Medical waste was transported relatively long distances to medical waste incinerators located in Alamance and Mecklenburg counties. Scrap tires were transported long distances to collection facilities in Forsyth, Harnett, and Cabarrus counties.

The majority of the municipal solid waste imports in North Carolina were received by Piedmont Landfill in Guilford County.

Table 3: Waste Imported and Exported to North Carolina, FY 1996-97

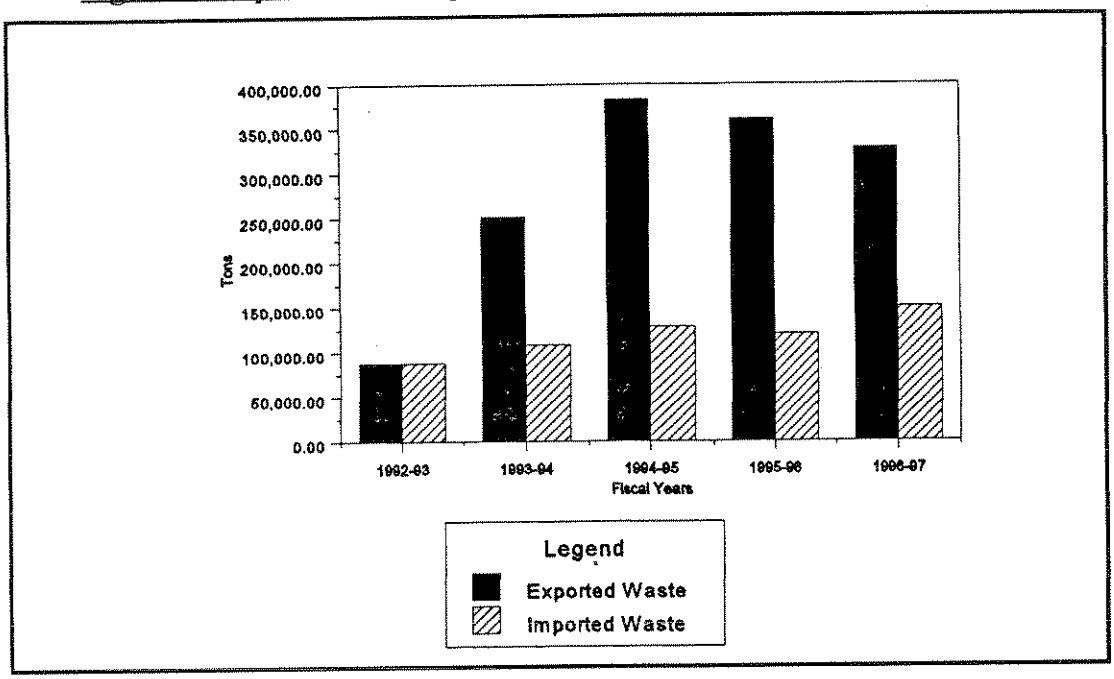
Waste Type	Tons Imported	Source	Tons Exported	Destination
Municipal Solid Waste	103,509.87	VA, WV	326,959.93*	GA, SC
Medical Waste	9,850.51	GA, KY, MD, NY, OH, PA, SC, TN, VA, WV		
Industrial Waste	161.47	SC, TN, VA		
Scrap Tires	35,756.25	FL, GA, SC, TN, VA, WV		
TOTAL	149,278.10		326,959.93	

* An additional 3,000 tons, most of which was industrial waste, was probably exported to Pennsylvania and Kentucky based on 1996 calendar year data. Exact tonnage figures are incomplete because those states count waste based on the calendar year rather than the fiscal year.

North Carolina exported waste to several neighboring states. The majority of the waste was transported to South Carolina. Other recipients of North Carolina waste were Pennsylvania, Georgia, and Kentucky, which received relatively small quantities.

While the 2:1 ratio of exports to imports has been relatively stable for the past several years, some fluctuation occurred this year. Exports decreased this fiscal year by 9 percent from FY 1995-96. Waste imports increased to 150,000 tons, a 25 percent increase above the 119,000 tons imported in FY 1995-96. (see **Figure 7**).

Figure 7: Imported and Exported Waste, FYs 1991-92 to 1996-97



Waste Management Fees

Until the late 1980s most of the landfills in the state did not charge a tipping fee, but were funded by local government ad valorem taxes. Private landfills then began charging tipping fees, as did several local governments. Some local governments set up enterprise funds to finance comprehensive solid waste management programs. These fees escalated quickly from a few dollars in the late 1980s to the mid-twenty dollar range, now common in North Carolina. The tipping fees charged at many of the publicly owned unlined facilities allowed those local governments to fund recycling programs and build reserves to construct new facilities.

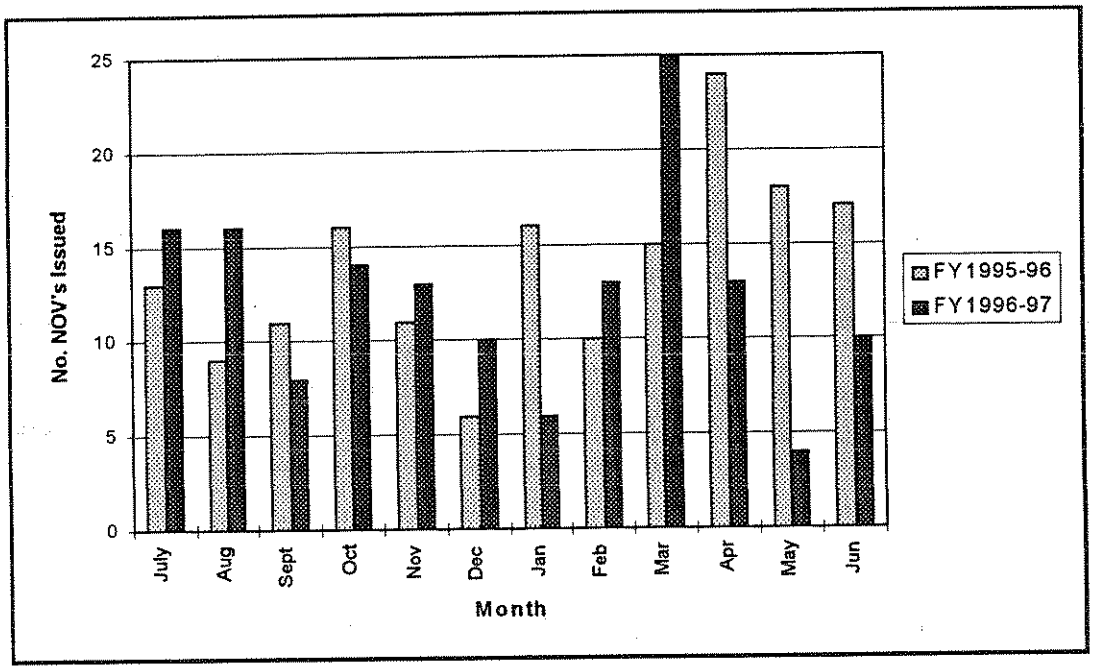
The solid waste management annual report for FY 1990-91 reported that 30 of the 105 operating landfills did not charge a tipping fee that year. The average amount charged by landfills that did require tipping fees was $14.60. By FY 1993-94, the average MSWLF tipping fee was $26.53. In FY 1996-97, these fees ranged from $20 to $50 per ton, with the average tipping fee for public and private MSWLFs (including C&D landfills) about $26.75, only a few cents more than the previous year's average of $26.36.

Illegal Disposal Trends

Illegal disposal of solid waste is widespread in North Carolina, and appears to be especially prevalent for construction and demolition waste and land clearing waste.

In FY 1995-96, the Solid Waste Section placed a high priority on enforcement of the cleanup of illegal dump sites and deterrence of illegal disposal activities. In FY 1996-97, those efforts resulted in an 11 percent reduction in the number of open dump activities that required enforcement actions (see **Figure 8**). Yet the problem of illegal disposal continues to overwhelm the resources of regional investigators.

Figure 8: Open Dump Notice of Violations, FYs 1995-96 and 1996-97



While many local governments take some responsibility for enforcing local illegal dumping ordinances or codes, only about half of the counties in the state commit staff resources to enforcement.

Counties that have not identified disposal capacity in their comprehensive solid waste management plan, particularly for land clearing and inert debris and construction and demolition wastes, will need to do so to determine what actions must be taken to assure that generators in a given locale send their waste to appropriately permitted facilities.

Wastes Managed Through Special Practices

Several waste materials require special handling, including tires, white goods, septage, and household hazardous waste.

Scrap Tires

The Scrap Tire Management Program began in 1989 and has been increasingly effective in managing tires over the past eight years. Legislative changes were made in 1993 and 1997 to make the program responsive to changing needs.

A major aspect of the program has been the prohibition on tire disposal fees at county facilities that receive funds from the advance disposal tax on new tires. This prohibition has removed economic incentives for tire dumping, which in turn has led to a drastic reduction in this form of illegal disposal.

In FY 1996-97 approximately 7.3 million tires were generated in North Carolina. County tire facilities received nine million tires. The counties have received two million tires more than expected each year since disposal fees at county collection sites were discontinued. Illegal disposal of out-of-state tires is probably the chief reason for the disproportionate number of tires received by these facilities.

About one third of North Carolina tires (approximately 47,000 tons) were recycled in FY 1996-97, while the remainder were landfilled. A new emphasis is now being placed on stimulating end use of scrap tire materials. Grants will be made available to help companies make equipment modifications or other changes needed to use tire products.

The Scrap Tire Disposal Account (STDA) was created in October 1993. The purpose of the account is to help fund remediation of stockpiled, or "nuisance" scrap tire dumps sites in North Carolina and to fund county scrap tire programs that incur a deficit. State contracted cleanup at the eight largest high priority sites began in November 1994. At present, there are 293 known sites in the state containing about 5.6 million tires. More than 4.7 million tires have been cleared from 220 sites. Forty other sites are currently under clean up. A number of these sites are under state funded contracts with local county scrap tire management programs.

Additional sites are discovered each year.

White Goods

"White goods" are defined in the general statutes as: "refrigerators, ranges, water heaters, freezers, unit air conditioners, washing machines, dishwashers, and clothes dryers, and other similar domestic and commercial large appliances."

For many years, illegal dumping, burning, and on-site disposal of solid wastes was a way of life in this state. Appliances were frequently dumped in woodlands, in streams, and down road banks. The presence of these dumped white goods often encouraged dumping of other types of wastes, such as tires, shingles, and household garbage.

The White Goods Management Program, which became effective in 1994, imposed a privilege tax that created revenues for counties to use for local management of discarded white goods. Counties were also required by law to provide collection sites that received white goods at no cost to the disposer.

The White Goods Management Program helped "jump start" local programs by providing funds for daily operations, purchase of specialized equipment, construction of collection and loading areas, and cleanup of illegal dump sites. There has been strong progress in cleaning up some of the traditional "hidden" dumping spots along back roads and in wooded areas. The existence of these infrastructures has encouraged a general cleanup of white goods abandoned outside homes, on farms, and the perimeter of other properties. The availability of the collection sites has also drastically reduced the creation of new illegal dump sites in the past four years.

Another measure of the program's success is a simple comparison of collection reports before and after the program took effect. Only 25,749 tons (approximately 643,000 appliances) were managed through county programs in FY 1991-92. In FY 1996-97, 46,358 tons (approximately 1,152,000 appliances) were managed. Thus, only two years after the program began, collection of goods that might otherwise have been discarded illegally had soared.

Discarded white goods have some market value as scrap metal and have been recovered for years by North Carolina scrap yard dealers and metal recoverers. Recycling white goods material is not a simple task. Management of white goods is made somewhat difficult by the presence of chloro-fluorocarbons in some appliances. Further, white goods have generally had lower market value than other forms of scrap metal. One cause of lowered value is the mix of metals in appliances. For example, since motors contain copper and the appliance body is generally made of steel, the process of separating the metals for marketing purposes adds expense. Appliances also have begun to use less steel and more plastic, which has resulted in less value per unit.

Costs for white goods management are minimal in counties that had ready access to markets for scrap metal. In fact, many counties accumulated surplus funds in FY 1996-97. In most counties,

however, the local white goods programs are not self-sustaining; some funding is needed for daily operations.

The White Goods Management Program Act will expire July 1998, eliminating the funding source for local management programs. Without funding from this program, counties would almost certainly have to impose tipping fees. The imposition of tipping fees would in turn lead to an increase in illegal dumping.

Counties reported spending $2,756,769 for daily operating costs for white goods management during FY 1996-97. An additional $2,312,268 was reportedly spent for capital improvements, such as equipment and site improvements.

Household Hazardous Waste

Household Hazardous Waste (HHW) temporary collection activity was steady for FY 1996-97. Like the previous year, there were nine collection events. The hosting communities were Albemarle Regional Solid Waste Management Authority (Dare County), North Wilkesboro (Carolina Mirror Co.), Reidsville, Winston-Salem, and the counties of Ashe, Gaston, New Hanover and Stanly.

There are currently 10 permanent HHW collection facilities in North Carolina, two of which are operated by permitted treatment, storage and disposal facilities (TSDs) under their hazardous waste permit.

Septage Management

Septage continues to be managed in North Carolina almost entirely through land application and discharges at wastewater treatment plants. In FY 1996-97, 54 counties across the state hosted approximately 185 permitted land application sites. Septage pumpers were granted access to wastewater treatment plants in 55 counties. Yet, in nine counties (Avery, Chowan, Granville, Hyde, Jones, New Hanover, Madison, Mitchell and Vance), there is no approved means of septage management.

The number of companies managing food service grease trap pumpings through alternative means has increased to five. Carolina By-products, Valley Proteins, Able Septic Tank Service, and Wallace Woodall Vacuum Pumpers are involved in recycling grease trap pumpings. B & B Concrete is successfully composting grease trap pumpings.

Many wastewater treatment plants have become more restrictive as to when and where septage may be discharged. Receiving stations have been installed at some plants in lieu of allowing pumpers to use various manholes. These installations make it easier for the treatment plants to

monitor the quality and quantity of septage discharged. Treatment plants have also begun charging higher fees for septage discharges.

Land Application and Nutrient Management Planning

Nutrient management planning is required for all wastes that are beneficially reused through land application. This includes not only the land application of septage, but also materials such as wood ash, whey, and tobacco dust. The purpose of a nutrient management plan is to be certain that nutrients are applied to a site in quantities that can reasonably be used by a crop and at times that crop is capable of taking up the nutrients.

Waste products are tested, usually by the North Carolina Department of Agriculture (NCDA) Waste Analysis Lab, to determine the quantities of nutrients in the waste and the calcium carbonate equivalency. Quantities of nitrogen, potassium, phosphorus, and some micronutrients in a waste are provided by the NCDA lab. Calcium carbonate equivalency measures a given waste's potential effectiveness as a liming agent. Additional testing may be required, depending on the type of waste and its origin. Soil testing is required of sites to determine nutrient levels in the soil prior to application.

Application rate determinations are based on the nutrient needs of the crop being grown on the site or the site specific needs of the soil and the nutrient content of the waste. Application rates may be limited to certain times of the year. If a waste is high in nitrogen, the annual application rate is usually limited to the pounds of nitrogen needed to produce a realistic yield of the crop on any specific site. Nitrogen is normally the limiting nutrient, but other nutrients can be limiting, depending on the waste and the nutrient levels in the soil.

State Progress Toward the Waste Reduction Goal

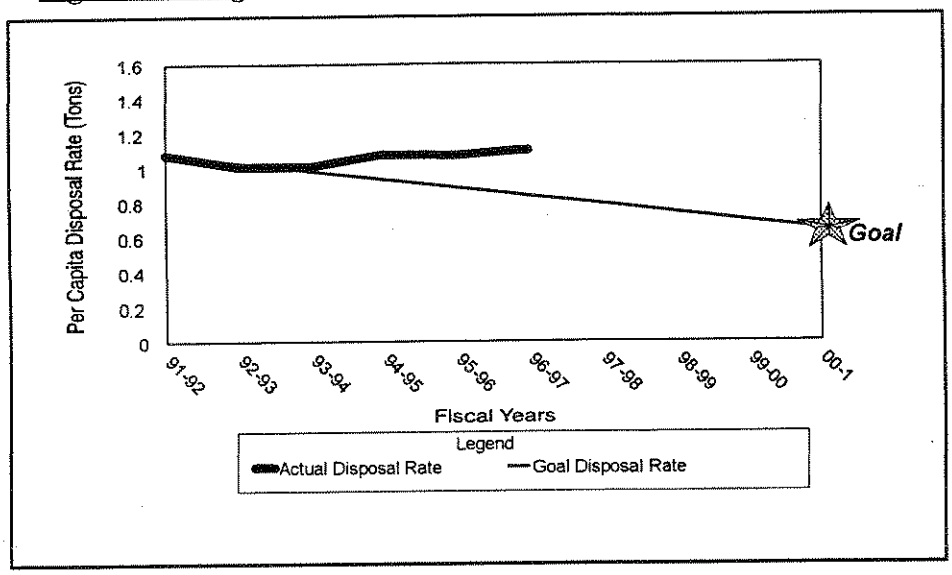
In 1991, amendments to the Act to Improve the Management of Solid Waste established a statewide waste reduction goal of 40 percent to be achieved by June 30, 2001. The state measures waste reduction by comparing the approximate amount of waste each person disposed (per capita disposal rate) in the base year (FY 1991-92) to the per capita rate in the current year.

In other words:

Total Waste Disposed ÷ Population = Per Capita Disposal Rate

The per capita rate for the FY 1991-92 base year was 1.08 tons. Each year is compared to the base year to measure progress toward the goal. After a slight decrease in the first two years, the per capita disposal rate (adjusted for hurricane Fran) has increased to 1.10 tons in FY 1996-97 **(see Figure 9)**.

Figure 9: Progress Toward 40% Waste Reduction Goal (Adjusted)



To achieve the state goal of 40 percent waste reduction by June 30, 2001, the state's current per capita disposal rate would have to decrease to .65 tons per person. Between 2 million and 3 million tons of waste now being disposed by landfilling or incineration would either have to be managed in some other way (reused, recycled, composted, or mulched) or not be generated (source-reduced).

Table 4 shows the amount of municipal solid waste (MSW) disposed each year, the state population, and the per capita rates of disposal. Municipal solid waste is calculated by adding North Carolina waste landfilled in municipal solid waste landfills and construction and demolition landfills, waste burned in municipal solid waste incinerators, and tires buried in tire monofills.

Waste not included in the calculation includes waste disposed in industrial landfills, waste disposed in land clearing and inert debris landfills, and waste disposed in medical waste incinerators.

Waste reduction is measured from the base year FY 1991-92; disposal figures have been collected since FY 1990-91.

As **Table 4** reflects, the per capita disposal rate decreased temporarily in FY 1992-93 and FY 1993-94 before rising again to the base year level in FY 1994-95. In FY 1996-97, the per capita disposal rate increased to 1.20 tons or 1.10 (using the adjustments for Hurricane Fran).

Table 4: NC Per Capita Disposal Rates and Waste Reduction, FYs 1990-91 to 1996-97

Fiscal Years	Tons Disposed	Population	Per Capita Disposal Rate	Percent Waste Reduction from Base Year 1991-92
1996-97	8,041,734.00 (adjusted)	7,323,085	1.10	-2%
1996-97	8,741,733.62	7,323,085	1.19	-11%
1995-96	7,722,794.78	7,194,238	1.07	0%
1994-95	7,624,144.85	7,064,470	1.08	0%
1993-94	7,038,505.34	6,949,095	1.01	6%
1992-93	6,890,818.15	6,836,977	1.01	6%
1991-92	7,257,428.09 (managed)	6,739,959	1.08 (Base Year)	
1991-92	6,822,890.35	6,739,959	1.01	
1990-91	7,161,455.00	6,648,689	1.07	

The base year per capita disposal rate (7th line of 4th column) was calculated by dividing the FY 1991-92 amount of tons managed by the state's July 1991 population. The tons managed figure (7th line of 2nd column) was determined by adding the total amount of municipal solid waste disposed in landfills and incinerators to the amount of waste managed through recycling, composting, and mulching efforts of local governments in FY 1991-92. Recycling, composting, and mulching were added to the amount of tons disposed in recognition of the fact that some local governments had begun waste reduction programs prior to 1991. Industrial waste managed at private industrial landfills is not included in these calculations.

In **Table 5**, some waste reduction progress is shown against some measures of economic growth. For example, while North Carolina has increased waste by 11 percent on a per capita basis in FY 1996-97, there has been a 15 percent drop in waste disposed relative to the increase in generation that is indicated by higher retail sales.

The relatively strong showing against economic factors suggests that commercial and industrial waste diversion activities are helping to keep the waste stream down despite a fast growing economy. However, as with the per capita measurement, many of these economic measures also show an upward trend since FY 1994-95.

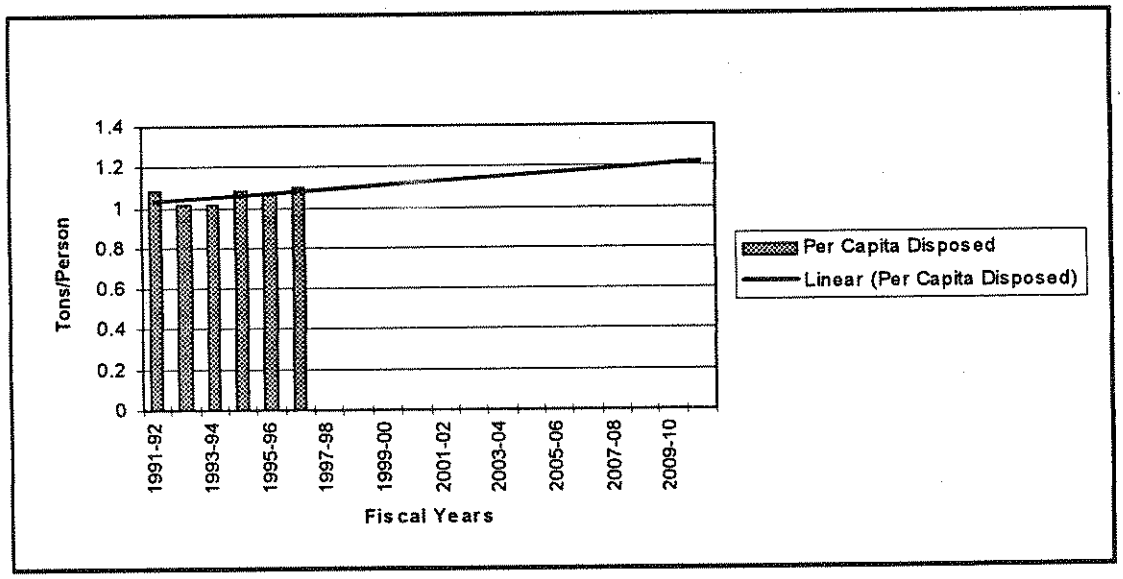
Table 5: Percentage Waste Reduction from FY 1991-92 for Various Factors

Measured against	FY 92-93	FY 93-94	FY 94-95	FY 95-96	FY 96-97
Population (per capita)	0%	6%	6%	0%	-11%
Industrial Production	11%	14%	14%	12%	5%
Retail Sales	10%	15%	14%	19%	15%
Employment	8%	9%	5%	5%	-4%
Housing Starts	13%	24%	24%	25%	20%

Forecasting North Carolina Waste Disposal

North Carolina per capita disposal rates can be projected using linear regression trend lines and past disposal data. **Figure 10** shows a linear trend that projects North Carolina per capita disposal through FY 2009-10. For purposes of this report, the FY 1996-97 per capita rate was adjusted to exclude Hurricane Fran waste, because it is assumed that North Carolina will not experience such a dramatic storm again within the next 10 years.

Figure 10: Annual Per Capita Disposal Projections to FY 2009-10



North Carolina's population is expected to continue growing, which means that the state will be faced with increasing amounts of waste to manage. A linear regression analysis of the next 10 years forecasts that the state will dispose of more than 1.2 tons per capita. This figure represents a 9 percent increase from existing rates, and is almost twice the rate needed to meet the state waste reduction goal.

Waste Reduction Efforts

Diversion of solid waste from disposal in North Carolina is accomplished through public and private sector activities. North Carolina has no formal means of tracking the recycling, reduction, and composting efforts of the private sector; local government annual reports provide the only reliable and quantifiable information on statewide waste diversion programs.

Local government waste diversion efforts through FY 1996-97 have been "slow but steady." There have been no marked improvements or declines in these efforts in the past few fiscal years. While local curbside, drop-off, and special programs are now a permanent feature of solid waste management in North Carolina, these efforts do not address a significant enough portion of the total waste stream to achieve the state's waste reduction goal by themselves. It is likely that any substantial progress toward the state's waste reduction goal will be the result of private rather than public sector activity.

Source Reduction and Reuse Programs

The top of the solid waste management hierarchy, source reduction, continues to receive scant attention from local governments in the form of formal programs. As indicated by **Table 6**, only 110 out of 619 local governments have dedicated source reduction programs.

Table 6: Trends in Publicly Targeted Source Reduction Programs

Program Type	FY 1993-94	FY 1994-95	FY 1995-96	FY 1996-97
Backyard Composting	90	92	70	82
Grasscycling	52	49	40	41
Xeriscaping	10	12	12	11
Enviroshopping	35	35	27	36
Promote Use of Non-Toxics	29	38	34	39
Junk Mail Reduction	16	20	40	56
Other	14	11	10	9
Total Local Governments	**106**	**132**	**83**	**110**

Table 7 shows the numbers of local government programs promoting reuse of discarded materials. Few local governments have reuse programs, although paint exchanges have grown in popularity. The use of swap sheds is expected to expand in the coming fiscal years, partly as a result of grant funding from DPPEA.

Table 7: Trends in Local Government Reuse Programs

Program Type	FY 1993-94	FY 1994-95	FY 1995-96	FY 1996-96
Swap Shop	N/A	N/A	13	10
Paint Exchange	12	17	22	28
Waste Exchange	14	18	13	11
Other	N/A	N/A	N/A	4
Total Local Governments	**N/A**	**N/A**	**37**	**42**

Recycling Programs

Growth in the number of recycling programs operated by local governments has slowed considerably since FY 1994-95. Basic curbside and drop-off systems established in the late 1980s and early 1990s are now solidly entrenched, but not increasing in number. Greater recycling by local governments will likely take place in the future by making the most of existing curbside and dropoff efforts or the addition of new types of programs (e.g., local programs targeting construction and demolition wastes).

A total of 399 local governments (98 counties and 301 municipalities) reported having recycling programs in FY 1996-97. This number represents a change of less than one percent from FY 1995-96. An additional 71 municipalities reported participation in county recycling efforts, which indicates that very few municipalities (48 or less than 12 percent) were not covered in some way by recycling services.

Figure 11 shows the trends in county recycling programs since FY 1991-92. Drop-off programs are the principle recovery method for the counties, and have remained at a steady rate of implementation throughout the past five fiscal years. The number of county curbside programs has also remained steady since FY 1994-95. In FY 1996-97, there were 193 drop-off programs, 260 curbside programs, and 103 "other" programs statewide.

Figure 11: Trends in County Recycling Programs, FYs 1991-92 to 1996-97

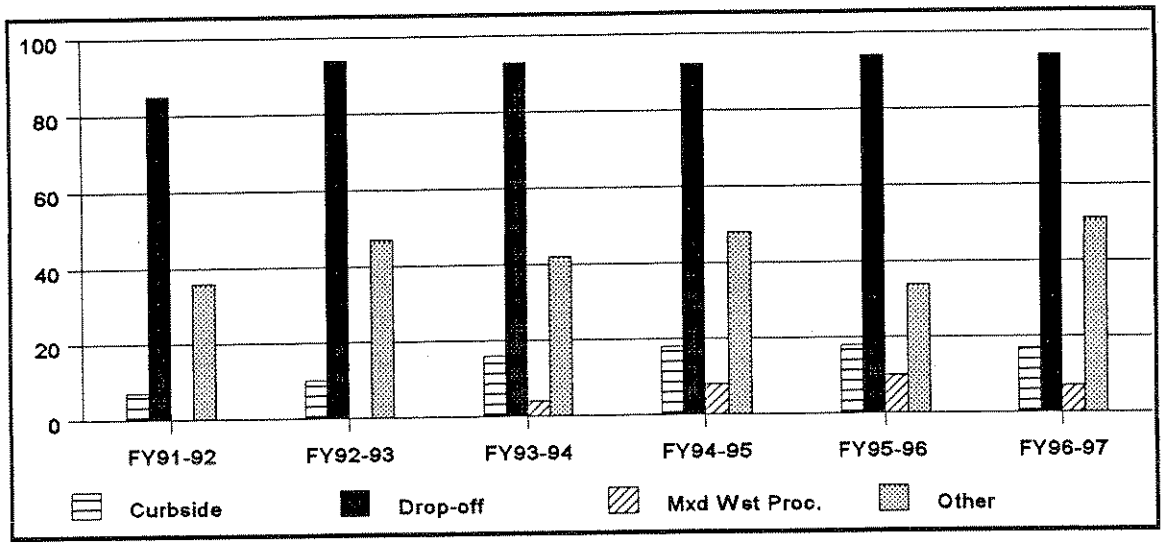
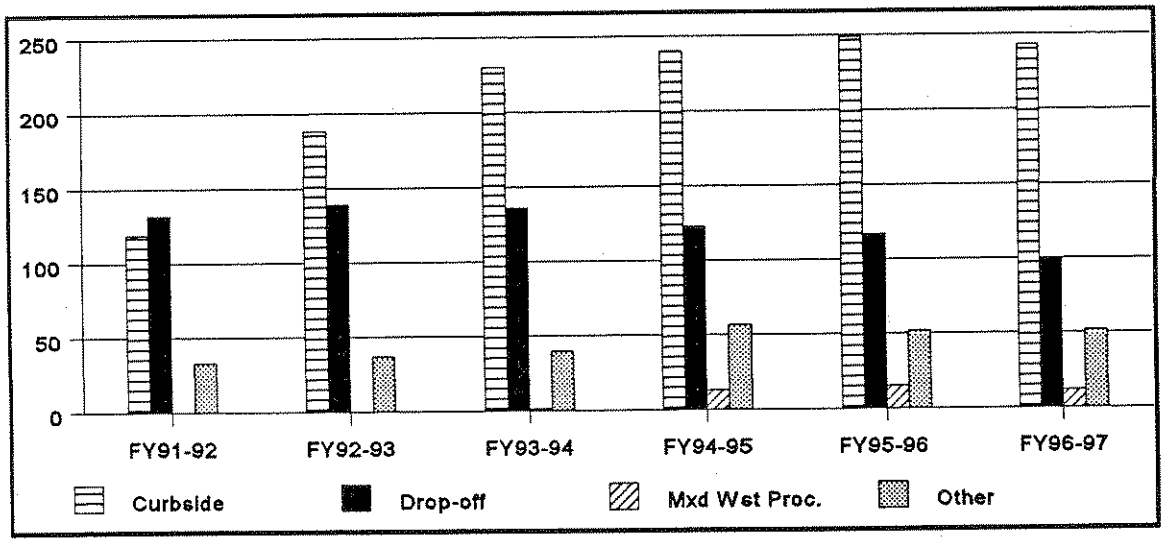


Figure 12 shows the trends in municipal recycling programs. In contrast to the counties, curbside is clearly the recovery method of choice for most municipalities. Drop-off programs remain significant, although the number of municipal drop-off programs has fallen over time. "Other" programs have remained steady throughout the past three fiscal years, while mixed waste processing appears to be declining as a chosen recovery method.

Figure 12: Trends in Municipal Recycling Programs, FYs 1991-92 to 1996-97



Local governments rely heavily on private sector contractors for implementation of recovery programs. **Table 8** shows that dependence on contractors is especially strong in curbside programs. "Other" programs, such as school recycling or special recycling drives, tend to be operated by local governments themselves.

Table 8: Public vs. Private Operation of Local Recycling Programs in FY 1996-97

Program Type	Percentage Using Private Contractors	
	Counties	Municipalities
Curbside	82%	76%
Drop-off	51%	51%
Other Programs	31%	31%

One way for local governments to increase diversion of solid wastes through recycling programs is to extend curbside and drop-off services to commercial and industrial "customers" (as well as the standard residential sector). **Table 9** shows how many programs offered commercial or industrial generators recycling services in the past three years. Commercial businesses are included in almost half of all curbside and dropoff programs.

Table 9: Local Governments Providing Recycling Services to Commercial & Industrial Generators (percentage of all programs in parentheses)

Fiscal Year	Curbside		Drop-off	
	Commercial	Industrial	Commercial	Industrial
FY 1994-95	118 (48%)	23 (9%)	114 (53%)	49 (23%)
FY 1995-96	119 (48%)	25 (10%)	106 (48%)	45 (20%)
FY 1996-97	112 (43%)	16 (6%)	103 (53%)	35 (18%)

Recycling, Yard Waste, and Special Waste Tonnages

Table 10 shows the tonnage history of diversion efforts by local government programs from FY 1990-91 to the present. The most rapidly growing sector of diversion during these years has been "organic," and, within that category, yard wastes. Driven by a substantial increase in the organic category, overall diversion exceeded 1 million tons for the first time in FY 1996-97. The increase in organic waste managed by local governments probably reflects the aftermath of the two hurricanes that hit the state in 1996.

Most other commodities have seen steady growth. The drop in glass and plastic for FY 1996-97 may be in part due to the large amount of recyclables reported as a "commingled" number in local government reports for the year. The commingled numbers, which usually result from the inability of cities and counties to get specific commodity breakdowns from their contractors, is reflected in the "other" row.

Table 10: Local Government Diversion of Materials from Disposal FYs 1990-91 to 1996-97

Material	FY 90-91	FY 91-92	FY 92-93	FY 93-94	FY 94-95	FY 95-96	FY 96-97
Paper	99,488	98,729	151,676	164,806	185,270	206,394	213,609
Glass	16,816	25,997	32,611	37,537	38,088	47,857	40,911
Plastic	2,878	6,128	9,264	9,797	12,339	15,726	12,471
Metal*	30,875	34,148	44,302	51,468	59,483	65,504	76,150
Organic**	105,871	267,428	378,516	350,142	495,034	498,583	640,410
Special wastes***	607	1,265	1,715	2,106	2,466	2,851	3,708
Other****	N/A	N/A	4,272	16,387	5,987	9,259	33,576
Total	256,715	433,695	622,356	632,243	798,667	846,184	1,020,835

* Includes white goods, aluminum cans, steel cans, and other metals
**Includes yard waste, pallets, and wood waste
*** Includes motor oil, batteries, and antifreeze
****Includes tons reported as commingled

As in past years, curbside and dropoff programs were the principle means of recovering recyclables in FY 1996-97. Mixed waste processing decreased as a chosen recovery method while the tons collected in "other" programs increased. The decline in mixed waste processing reflects the closing of the BACH facility in Cumberland county, which had been chosen as the principle recycling option by a number of counties in southeastern North Carolina.

Table 11: Local Government Recovery of Recyclable Materials by Method, FY 1996-97
(FY 1995-96 numbers in parentheses)

Program Type	Total Tons	Percentage of Recovery
Curbside	154,555 (145,134)	39%
Drop-off	161,970 (163,237)	41%
Mixed Waste Processing	12,657 (18,374)	3%
Other Programs	67,894 (34,443)	17%

Table 12 shows recovery tonnages for specific materials during the past five full fiscal years. FY 1996-97 marked the first decline in collected plastics and steel cans, though the decrease may in part be due to commingled reporting problems noted above).

Table 12: Local Government Recovery Tonnages for Specific Commodities

Material	Tons of Material Recovered				
	FY 1992-93	FY 1993-94	FY 1994-95	FY 1995-96	FY 1996-97
Newspaper	85,728	97,534	109,927	104,034	110,242
Cardboard	27,679	42,905	51,464	60,491	59,559
Magazines	1,289	2,739	2,749	3,643	4,018
Office Paper	13,500	4,921	5,777	5,769	5,753
Mixed Paper	15,004	6,973	12,616	28,382	25,852
Other Paper	315	2,720	1,735	4,075	8,185
Clear Glass	18,580	21,276	19,802	22,722	19,607
Brown Glass	7,612	8,920	9,802	15,418	12,267
Green Glass	6,419	7,341	8,485	9,717	9,038
Aluminum Cans	4,484	4,208	4,785	5,469	4,650
Steel Cans	3,179	4,289	6,503	8,895	6,942
White Goods	28,769	34,126	41,296	39,996	45,717
PETE	4,857	5,308	6,883	9,660	7,342
HOPE	3,501	4,118	5,390	6,046	4,240

As previously noted, yard waste programs are a significant method of waste diversion in North Carolina. **Table 13** reports the tonnages for these programs in FY 96-97, and shows how specific materials were handled. In FY 1996-97, there was a substantial rise in the amount of yard waste managed through local mulching and composting operations, probably as a result of the effects of Hurricanes Fran and Bertha.

Table 13: Yard Waste Management by NC Local Governments in FY 1996-97 (in tons)

Destination of materials	Number of Local Goats. using destination	Leaves and Grass	Limbs and Brush	Mixed Yard Waste	Totals by Destination *(FY 1995-96 tons in parentheses)*
End Users (direct delivery)	80	31,388	24,273	9,850	65,512 (46,944)
Local Government mulch/compost facility	183	78,884	138,898	336,800	554,582 (435,191)
TOTAL					620,095* (485,134)
Other Public Facility	54	16,752	42,232	50,505	109,489** (67,956)
Private Facility	34	14,910	42,548	17,118	74,576 (47,420)
LCID landfill	80	N/A	N/A	209,760	209,760*** (85,693)

* Counted as the total yard waste diversion by local goals and included in Organic figure in Table 11 above.
** Excluded from diversion to avoid double counting with local government mulch/compost facility figure.
*** Excluded from diversion because use constitutes disposal.

Diversion of Special Wastes

Table 14 reports the diversion efforts of local governments for "special" wastes in FY 1996-97. The amount of used oil collected through local programs jumped dramatically in FY 1996-97. Lead acid battery collection also increased, but the amount of antifreeze collected declined by more than 50 percent. The numbers of local household hazardous waste programs, permanent HHW facilities, and tons diverted through these programs continued to increase. HHW programs in FY 1996-97 remained expensive, costing local governments an average $2000 per ton.

Table 14: Local Government Programs Targeting Special Wastes

Material	FY 1993-94	FY 1994-95	FY 1995-96	FY 1996-97
Used Motor Oil				
No. of Local Programs	122	118	118	128
No. of Sites	360	368	407	421
Gallons Collected	391,178	484,386	499,244	704,318
Antifreeze				
No. of Local Programs	N/A	30	59	48
No. of Sites	N/A	112	206	91
Gallons Collected	N/A	9,379	18,859	9,026
Lead Acid Batteries				
No. of Local Programs	92	N/A	85	90
No. of Sites	N/A	N/A	311	344
No. of Batteries Collected	36,637	35,281	50,458	59,112
Household Hazardous Waste				
No. of Local Programs	14	19	19	20
No. of Permanent Sites	2	6	6	7
Tons Collected	368.76	397.95	445.74	653.24

Local Government Educational Efforts and Estimated Public Participation Rate

The long-term success of diversion efforts for all materials depends greatly on public education. Unfortunately, many local diversion programs in North Carolina receive no such support. More than half of all curbside programs (137 out of 260) and more than one-third of drop-off programs (71 out of 193) have no accompanying promotional or educational campaign. If this shortfall in educational efforts continues, waste diversion through local recovery programs will fail to increase and could perhaps even decline.

Since there was no dramatic increase in either educational programs or the tonnage of recovered recyclable materials for FY 1996-97, it is likely that the overall state public recycling participation rate remained under 50 percent (last year's estimate was 47 percent). Local governments will not meet reduction goals set forth in their 10 year solid waste plans if this trend does not change.

"Pay-As-You-Throw" Programs

A clearly demonstrated method for increasing waste reduction practices by households is the adoption of a local "pay-as-you-throw" program. Residents participating in such programs (also known as "unit based" or "variable rate" systems) pay for waste collection services on the basis of the amount they generate. This system provides households an incentive to reduce, recycle, and compost as much as possible. As of FY 1996-97, nine counties and 22 municipalities reported

some sort of variable rate pricing of solid waste services. Many programs charge households by the size or number of carts they use for solid waste disposal; some charge per bag. Local waste reduction rates statewide would benefit from the wider adoption of these types of programs.

Local Government Disposal Diversion Ordinances

Another effective means of increasing waste reduction within a community is the passage of an ordinance that bans or discourages from disposal certain commodities in the waste stream. This method has been used effectively in North Carolina to encourage cardboard recycling by private generators. More recently, it has been used to increase recovery rates for household recyclables. The City of Durham has recently joined Alamance, Pasquotank and Wayne counties in placing disposal restrictions on the mix of materials usually targeted by curbside programs. Overall, local government reports for FY 1996-97 indicate that as many as 35 counties and 36 municipalities have some form of disposal diversion ordinance.

Local Solid Waste Collection Issues

Most local governments offered solid waste collection services to households in FY 1996-97. More than half of municipalities also served commercial customers; many fewer served industrial customers. **Table 15** below shows an account of these services:

Table 15: Local Government Solid Waste Collection Services and Sector Served

	Residential	Commercial	Industrial
Municipalities	389 (75%)	282 (54%)	88 (17%)
Counties	79 (79%)	29 (29%)	18 (18%)

The prevailing pattern for municipalities serving the residential sector is once per week collection service (73 percent), although more than 100 cities still provide twice per week solid waste collections. For counties, staffed collection centers are the dominant solid waste collection method (69 percent). Some local governments manage solid waste collection through the letting of franchises in their jurisdiction. Nine municipalities and eight counties have franchise systems covering residential wastes; 13 cities and 13 counties have franchises for commercial wastes.

Local Solid Waste Administration and Funding Issues

Sixty-two counties and 40 municipalities report using enterprise funds to manage solid waste services. Local governments relied most heavily on property taxes (337 total), and then household fees (207) as the major source of finance for solid waste collection services. Many local governments also depend on those sources, along with recycling revenues, to cover recycling program costs. Thirty-three counties also use tipping fees, which remain the most widely used financing method for county disposal programs.

Eighty-eight counties and 122 municipalities report employing a "solid waste manager" for the administration of waste programs. Sixty-nine counties and 104 municipalities have designated recycling coordinators. Local governments appear to have increased the amount of their resources devoted to solid waste enforcement activities: 57 counties and 71 municipalities report having solid waste enforcement programs.

Recycling Markets and Private Sector Recycling Activity

The NC Recycling Business Assistance Center (RBAC) tracks recycling market prices through a quarterly survey of processors across the state. **Table 16** shows the price history for materials during FY 1996-97. PETE plastic suffered from low prices brought on by the global surplus of virgin PETE production capacity. Paper prices bounced back from the lows of FY 1995-96, while prices for aluminum and steel cans and glass went through their usual fluctuations.

Table 16: Price Trends for Select Materials Between October 1996 and July 1997

Material	October, 1996	January, 1997	April, 1997	July, 1997
Aluminum cans, lbs. Loose	$.48	$.50	$.53	$.41
Steel cans, gross ton baled	$71	$57	$52	$62
PETE, lbs. baled	$.03	$.04	$.05	$.05
HOPE, lbs. baled	$.11	$.18	$.19	$.23
Newsprint, ton baled	$27	$20	$25	$33
Corrugated, ton baled	$58	$53	$70	$83
Office paper, ton baled	$116	$113	$122	$108
Magazines, ton baled	0	$0	$0	$20
Mixed paper, ton baled	$17	$0	$12	$8
Clear glass, ton	$36	$37	$37	$34
Brown glass, ton	$21	$26	$25	$23
Green glass, ton	$8	$8	$8	$8

Recycling markets for new materials can be expected to expand through the rest of the 1990s, as entrepreneurs take advantage of new technologies and end-use opportunities. Expansion will not be without some difficulties. For example, a company with a promising collection program for old carpet recently was forced to suspend operations in the Triad area because end-use markets were still unable to take the materials. Collins & Aikman in Georgia and Allied-Signal in Virginia have indicated such capacity will be available sometime in the next two years.

To encourage the growth of recycling markets, with accompanying increases in capital investment and job formation, North Carolina should explore the establishment of a revolving loan fund for recycling businesses. The state should develop this fund through partnerships with private sector financing organizations such as community development banks, rather than a state-operated fund.

New Opportunities in Waste Reduction

Opportunities to expand local recycling efforts arise continually. Textile recycling companies have sought to work with local programs in North Carolina in the past year; at least a few jurisdictions (Cumberland and Henderson counties) have implemented textile recovery at almost no cost. Vinyl siding recovery is also increasingly viable, usually at little or no cost to local governments. At least one jurisdiction, Pitt County, is building a transfer station for waste gypsum wallboard to take advantage of a new recycling market in Goldston. A number of communities are expanding reuse opportunities available to citizens through the establishment of "swap sheds" at staffed convenience centers. For a complete list of these programs, contact North Carolina Division of Pollution Prevention and Environmental Assistance.

FY 1996-97 was an active year for C&D debris recycling in North Carolina. A large-scale private central processing center was established in Pitt County, and another is planned in Mecklenburg County. Construction material reuse shops in Durham and Raleigh continued to expand. A study conducted by Woodbin2 in Cary documented the feasibility of source-separated recycling of construction wastes, including the willingness of builders to engage in such a program. Finally, Orange County recently implemented a program to conduct disposal site recovery of usable construction wastes.

Construction and demolition recovery, as well as other commercial and industrial waste diversion, can be expected to expand in North Carolina. However, that expansion may be slowed by the continued low tipping fees at North Carolina disposal facilities. Because the trend of low tipping fees will probably continue, motivation for private sector waste reduction will have to come by means other than the cost of disposal. Such incentives may include: 1) the expansion of financially attractive marketing opportunities; 2) the extension of municipal and county recycling services to private generators; and 3) the passage of local or state laws that would discourage disposal of certain commodities.

Composting

Composting continues to attract interest as a waste management method in North Carolina, but the level of interest is increasing slowly. Generators of relatively small amounts of source separated organic wastes have generally shown more interest than the larger generators.

In an effort to educate the public about the methods and advantages of composting, the Department of Environment and Natural Resources helped sponsor the "Composting in the Carolinas" conference in FY 1996-97. Participants included local governments, private industries and other interested individuals. Funding for the conference and scholarships for attendees was provided by the Solid Waste Section and the Division of Pollution Prevention and Environmental Assistance.

Culled fruit, trout and seafood processing waste, restaurant waste, mixed paper, manures and hatchery waste are among the source separated organics being composted in North Carolina. Currently, there are no mixed waste composting facilities operating in this state.

Compost facilities are expected to open in 1998 at Camp Lejeune and the North Carolina Zoological Park.

Recovered Material Use

The North Carolina Division of Waste Management has developed and implemented a Recovery and Reuse Program that allows the case-by-case evaluation of industrial process byproducts for beneficial use. The purpose of the program is to divert wastes from landfills; the incentive for generator participation is the avoidance of disposal costs.

Any person who owns or has control over a solid waste material may submit a proposal to the division that the material should be classified "recovered." The applicant must demonstrate that the material meets the statutory definition of a recovered material, and may be subject to certain conditions of use, including notification and recordation requirements.

To date, the division has authorized the recovery and reuse of two categories of waste materials: waste ceramic tile and waste concrete siding material. Five other categories of waste materials are currently under review for classification as a recovered material.

Other Available Information

Additional solid waste information is available in the following reports:

- Annual Report on State Agency Waste Reduction and Buy-Recycled Activities
- Solid Waste Trust Fund Annual Report
- NC DPPEA Annual Report
- White Goods Account Annual Report
- Scrap Tire Disposal Account Annual Report

Please contact NC DPPEA at (919) 733-6500 or NC DWM, Solid Waste Section at (919) 733-0692 for copies of these reports.

APPENDIX A-1 PUBLIC AND PRIVATE MUNICIPAL SOLID WASTE LANDFILLS (INCLUDES CONSTRUCTION AND DEMOLITION LANDFILLS), DESCENDING ORDER OF TONS, FY 1996-97

PERMIT	FACILITY	TONS FY 91-92	TONS FY 92-93	TONS FY 93-94	TONS FY 94-95	TONS FY 95-96	TONS FY 96-97	LINED LANDFILL FY 96-97	TIPPING FEE FY 96-97
1304	BFI-CHARLOTTE MTR SPEEDWAY LANDFILL	404,978.70	493,962.61	536,526.51	548,442.00	593,658.69	621,833.22	YES	$32.28
3406	WM-PIEDMONT SANITARY LANDFILL	142,067.36	146,847.90	350,508.77	507,123.30	552,898.66	606,859.05	YES	$30.00
803	ADDINGTON-EAST CAROLINA REG LANDFILL	0.00	0.00	154,583.16	282,654.49	361,516.87	358,283.63	YES	$38.06
8201	BFI-SAMPSON COUNTY C&D UNIT***	N/A	N/A	N/A	N/A	18,686.23	191,253.54	NO	$10.90
3402	WINSTON-SALEM LANDFILL (FORSYTH CO)	210,246.46	216,125.79	258,632.45	300,571.34	299,140.39	310,660.31	YES	$25.00
9201	RALEIGH, CITY OF - LANDFILL (WAKE CO)	258,796.00	267,984.00	268,428.00	288,370.95	296,906.21	310,331.69	NO	$25.00
4103	GREENSBORO LANDFILL (GUILFORD CO)	327,574.00	283,000.00	285,068.45	277,940.86	284,828.75	309,798.48	NO	$30.00
6013	NORTH MECKLENBURG C&D LANDFILL	0.00	0.00	110,881.33	195,345.10	248,115.27	281,168.16	NO	$20.00
8201	BFI - SAMPSON COUNTY DISPOSAL, INC.	33,234.59	34,975.86	97,003.97	163,174.54	231,232.73	258,193.81	YES	$19.06
9214	BFI - HOLLY SPRINGS DISPOSAL, INC	0.00	0.00	87,176.52	196,607.12	234,408.03	219,503.93	NO	$22.00
3201	DURHAM CITY LANDFILL (DURHAM CO)	208,360.00	194,281.00	206,575.00	206,381.00	177,360.00	207,611.00	NO	$39.50
6705	ONSLOW COUNTY LANDFILL	63,530.27	69,992.56	76,450.22	79,105.84	80,597.83	138,548.06	NO	$38.50
9203	WAKE COUNTY LANDFILL (FELTONSVILLE)	92,433.74	100,764.82	97,259.43	106,524.22	120,639.12	165,870.50	NO	$25.00
9209	WAKE COUNTY LANDFILL (NORTH)	150,967.70	122,444.10	119,382.59	110,378.52	114,287.33	163,856.94	YES	$25.00
6504	NEW HANOVER COUNTY LANDFILL	80,575.58	83,273.11	82,189.00	80,786.00	114,365.00	163,648.00	YES	$32.00
1803	CATAWBA COUNTY LANDFILL	129,948.00	136,459.00	144,450.00	148,852.00	160,186.00	155,675.40	NO	$30.00
2601	CUMBERLAND COUNTY LANDFILL (ANN ST)	160,880.67	179,920.67	178,479.98	186,366.00	97,371.90	151,124.00	NO	$48.00
1101	BUNCOMBE COUNTY LANDFILL	141,928.01	143,267.00	96,753.33	102,185.39	119,083.00	147,652.00	NO	$28.00
2504	CRSWMA* INT. REGIONAL LANDFILL	0.00	0.00	69,184.92	110,797.99	118,679.00	144,202.00	YES	$48.00
4903	IREDELL COUNTY SANITARY LANDFILL	0.00	0.00	85,180.65	125,741.55	103,585.50	143,752.00	YES	$27.00
6201	MONTGOMERY COUNTY LANDFILL	28,800.00	42,542.43	94,875.75	138,041.07	188,684.81	131,895.71	NO	$24.00
9801	WILSON COUNTY LANDFILL	117,112.00	121,419.00	123,875.12	112,522.65	119,131.00	124,151.63	NO	$30.00
5403	LENOIR COUNTY LANDFILL	67,323.66	74,062.00	71,568.70	77,319.43	74,418.00	118,153.20	NO	$20.00
1203	BURKE COUNTY LANDFILL	64,619.00	68,081.55	72,669.35	99,953.51	102,602.39	105,917.08	NO	$23.00
9601	WAYNE COUNTY LANDFILL	97,386.32	101,716.09	92,544.75	86,820.38	90,832.99	103,103.36	NO	$20.00
4104	HIGH POINT (GUILFORD CO)	0.00	0.00	83,750.71	98,794.81	93,248.30	101,578.60	YES	$36.00
3606	GASTON COUNTY LANDFILL	153,105.00	161,864.00	130,097.00	80,204.00	81,208.47	96,296.53	NO	$24.50
5101	JOHNSTON COUNTY LANDFILL	70,045.00	68,578.00	74,151.00	72,960.64	78,095.00	95,004.24	NO	$31.00
7803	ROBESON COUNTY	91,048.50	80,676.70	80,588.00	92,548.35	90,886.20	93,836.00	NO	$32.50
2602	US ARMY FORT BRAGG LANDFILL	39,996.00	36,000.00	34,954.00	45,238.00	71,062.00	90,182.00	NO	$0.00
4302	HARNETT COUNTY LANDFILL	54,770.00	49,985.00	55,254.25	68,063.69	73,555.45	89,566.80	NO	$25.00
6401	NASH COUNTY LANDFILL	79,402.87	78,454.78	81,645.51	80,908.32	91,896.03	87,289.41	NO	$29.00
2906	DAVIDSON COUNTY LINED LANDFILL	0.00	0.00	0.00	73,652.58	92,136.71	86,544.20	YES	$33.00
3301	EDGECOMBE COUNTY LANDFILL	71,037.00	78,894.52	73,759.15	73,225.00	64,989.03	83,967.53	NO	$29.00

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9001	UNION COUNTY LANDFILL	71,787.37	79,465.89	84,001.19	77,257.39	75,305.00	81,649.00	NO	$30.00
1401	CALDWELL COUNTY LANDFILL	62,112.59	66,951.53	68,029.87	75,670.80	74,870.64	79,107.55	NO	$35.00
7601	RANDOLPH COUNTY LANDFILL	75,533.00	77,660.00	74,677.00	75,658.00	74,100.00	77,295.00	NO	$24.00
4501	HENDERSON COUNTY LANDFILL	77,763.00	77,501.00	56,091.00	59,925.00	67,451.00	77,160.00	NO	$26.00
1007	BRUNSWICK COUNTY LANDFILL	76,560.00	80,477.00	76,005.31	79,917.00	83,116.00	75,613.00	NO	$0.00
2301	CLEVELAND COUNTY LANDFILL	64,749.87	67,888.77	65,878.77	71,298.20	70,479.65	75,511.17	NO	$26.00
6703	US MARINE CORPS CAMP LEJEUNE LF	83,823.43	83,823.43	46,532.51	33,636.04	39,356.10	70,133.26	NO	$0.00
104	AUSTIN QUARTER SWM FACILITY	0.00	0.00	23,169.68	77,253.44	67,484.30	65,896.50	YES	$30.67
8003	ROWAN COUNTY LANDFILL	85,708.00	88,639.00	97,180.00	105,367.00	83,378.00	65,640.52	YES	$31.00
6204	UWHARRIE ENVIRON. REG. LANDFILL	0.00	0.00	0.00	0.00	13,054.60	62,125.77	YES	$32.00
7904	ROCKINGHAM COUNTY LANDFILL	0.00	0.00	0.00	0.00	52,473.92	59,828.61	YES	$34.00
6801	ORANGE COUNTY REGIONAL LANDFILL	121,318.00	125,452.00	121,345.00	124,611.00	57,889.11	58,590.00	YES	$33.00
9704	WILKES COUNTY MSW LANDFILL	0.00	0.00	32,924.56	53,892.00	41,371.83	57,827.33	YES	$35.00
9101	VANCE COUNTY LANDFILL	40,053.06	38,242.34	43,603.47	45,826.74	49,369.27	56,501.21	NO	$35.00
8301	SCOTLAND COUNTY LANDFILL	43,041.84	45,668.00	50,062.00	48,654.00	57,150.00	55,867.00	NO	$29.00
8401	ALBEMARLE, CITY-LANDFILL (STANLY CO)	67,498.00	69,503.00	54,627.00	48,187.00	47,033.00	54,003.00	NO	$23.00
2401	ARS-COLUMBUS COUNTY LANDFILL	44,536.31	45,361.11	88,446.90	100,015.14	47,185.20	52,377.00	NO	$22.00
8103	RUTHERFORD COUNTY LANDFILL (CENTRAL)	52,047.64	64,894.31	77,057.00	69,039.85	50,076.40	50,934.28	NO	$37.00
8602	SURRY COUNTY LANDFILL	45,907.00	51,518.00	52,260.00	53,341.00	50,065.34	47,836.00	NO	$22.00
1301	BFI-CHARLOTTE MTR SPEEDWAY C&D LF	0.00	0.00	0.00	0.00	29,482.28	43,014.17	NO	$18.00
4204	HALIFAX COUNTY LANDFILL	52,309.79	52,036.12	49,887.82	165,160.44	37,728.24	42,905.00	NO	$27.00
3901	GRANVILLE COUNTY LANDFILL (OXFORD)	36,341.03	39,190.64	46,242.50	45,697.88	43,212.48	42,770.78	NO	$28.00
1302	CABARRUS COUNTY LANDFILL	59,335.70	57,641.70	61,247.98	52,691.21	44,795.08	41,827.30	NO	$28.00
4407	HAYWOOD COUNTY WHITE OAK LANDFILL	0.00	0.00	22,451.00	34,735.95	38,630.05	39,339.80	YES	$25.00
6801	ORANGE COUNTY C&D UNIT***	N/A	N/A	N/A	N/A	31,341.93	37,832.00	NO	$33.00
9003	GRIFFIN FARMS C&D LANDFILL	0.00	0.00	0.00	0.00	17,070.00	34,550.00	NO	$19.00
3412	WINSTON-SALEM CITY OF C&D LANDFILL	N/A	N/A	N/A	N/A	N/A	34,274.95	NO	$10.00
4903	IREDELL COUNTY C&D UNIT***	N/A	N/A	N/A	N/A	24,278.30	31,860.00	NO	$8.00
5503	LINCOLN COUNTY LANDFILL	42,297.00	44,194.64	40,873.00	34,090.00	34,237.56	31,596.00	YES	$32.00
5002	JACKSON COUNTY LANDFILL	16,703.00	19,309.07	20,033.57	24,296.36	26,812.60	27,366.34	NO	$50.00
3902	GRANVILLE COUNTY LANDFILL	17,915.14	19,320.50	17,585.40	20,457.35	21,224.11	26,788.36	NO	$28.00
2001	CHEROKEE COUNTY LANDFILL	15,926.00	17,610.69	18,374.00	24,617.50	23,057.71	22,395.41	NO	$36.00
201	ALEXANDER COUNTY LANDFILL	25,182.00	20,712.00	21,477.00	21,671.04	22,026.45	21,770.83	NO	$33.00
8603	SURRY COUNTY LANDFILL (ELKIN)	26,726.00	21,604.00	22,191.00	22,110.81	18,970.05	21,273.00	NO	$22.00

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5703	MACON COUNTY LANDFILL	3,648.70	16,645.53	17,108.79	18,779.02	19,473.54	19,986.82	YES	$30.00
2803	DARE COUNTY C&D LANDFILL	0.00	0.00	0.00	16,649.39	14,638.01	18,416.94	NO	$10.00
501	ASHE COUNTY LANDFILL	17,756.20	18,000.17	17,946.35	15,993.26	14,540.47	15,853.48	YES	$30.00
4002	GREENE COUNTY LANDFILL	13,305.00	8,729.64	9,669.16	10,177.63	10,774.15	15,702.67	NO	$20.00
8807	TRANSYLVANIA COUNTY SANITARY LF	3,220.00	16,384.00	18,874.00	16,451.60	9,294.38	11,532.75	YES	$40.00
07A**	BEAUFORT COUNTY DEMO LANDFILL	0.00	0.00	0.00	0.00	8,844.73	11,239.64	NO	$15.00
104	AUSTIN QUARTER C&D UNIT***	N/A	N/A	N/A	N/A	9,299.15	10,823.88	NO	$30.67
5803	MADISON COUNTY C&D UNIT***	N/A	N/A	N/A	N/A	1,062.41	10,481.43	NO	$12.00
8103	RUTHERFORD COUNTY C&D UNIT***	N/A	N/A	N/A	N/A	12,103.66	9,743.65	NO	$37.00
5901	MARTIN COUNTY C&D LANDFILL	0.00	0.00	0.00	0.00	3,529.75	8,140.83	NO	$20.00
5803	MADISON COUNTY LANDFILL	0.00	0.00	7,411.37	10,773.30	9,954.27	7,867.95	YES	$28.00
7002	PASQUOTANK COUNTY C&D LANDFILL	0.00	0.00	0.00	0.00	1,794.45	7,274.79	NO	$25.00
7301	PERSON COUNTY C&D LANDFILL	0.00	0.00	0.00	7,041.93	8,101.63	6,134.10	NO	$35.00
3003	DAVIE COUNTY C&D LANDFILL	0.00	0.00	0.00	0.00	6,859.21	6,039.70	NO	$39.00
5301	LEE COUNTY C&D LANDFILL	0.00	0.00	0.00	3,893.33	5,370.26	5,668.65	NO	$18.00
5704	MACON COUNTY C&D LANDFILL	0.00	0.00	2,625.46	4,378.75	4,356.15	3,680.62	NO	$30.00
10002	YANCEY-MITCHELL C&D LANDFILL	0.00	0.00	0.00	3,253.91	3,599.85	3,483.99	NO	$0.00
9902	YADKIN COUNTY C&D LANDFILL	0.00	0.00	0.00	1,687.81	2,728.18	3,318.88	NO	$40.00
5503	LINCOLN COUNTY C&D UNIT***	N/A	N/A	N/A	N/A	3,052.57	3,311.00	NO	$16.00
9502	WATAUGA COUNTY C&D LANDFILL	0.00	0.00	0.00	0.00	2,522.01	3,093.70	NO	$37.00
4303	HARNET CO ANDERSON CRK C&D LANDFILL	N/A	N/A	N/A	N/A	N/A	1,889.84	NO	$25.00
9404	WASHINGTON COUNTY C&D LANDFILL	0.00	0.00	0.00	0.00	102.70	1,084.25	NO	$38.00
603	AVERY COUNTY C&D LANDFILL	N/A	N/A	N/A	N/A	N/A	265.87	NO	$23.00
7304	ADDINGTON - UPPER PIEDMONT REG LF	N/A	N/A	N/A	N/A	N/A	150.48	YES	$25.44
10001	YANCEY-MITCHELL COUNTY LANDFILL	30,915.00	21,072.00	18,259.54	0.00	0.00	0.00	N/A	N/A
9902	YADKIN COUNTY LANDFILL	20,487.33	22,529.86	8,214.95	0.00	0.00	0.00	N/A	N/A
9702	WILKES COUNTY LANDFILL (ROARING RIVER)	1,637.00	6,501.00	0.00	0.00	0.00	0.00	N/A	N/A
9701	WILKES COUNTY LANDFILL	55,722.00	55,832.00	9,584.70	0.00	0.00	0.00	N/A	N/A
9502	WATAUGA COUNTY LANDFILL	32,881.82	35,208.00	27,438.50	0.00	0.00	0.00	N/A	N/A
9402	WASHINGTON COUNTY LANDFILL	13,233.05	14,735.51	4,225.78	0.00	0.00	0.00	N/A	N/A
9301	WARREN COUNTY LANDFILL	10,968.00	8,976.00	6,571.00	0.00	0.00	0.00	N/A	N/A
9204	SORRELLS SANITARY LANDFILL	37,530.00	50,138.00	DNR	0.00	0.00	0.00	N/A	N/A
8803	TRANSYLVANIA COUNTY LANDFILL	25,620.00	0.00	0.00	0.00	0.00	0.00	N/A	N/A
8701	SWAIN COUNTY LANDFILL	5,521.30	6,152.27	4,859.24	0.00	0.00	0.00	N/A	N/A

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8501	STOKES COUNTY LANDFILL	16,784.00	16,671.26	7,633.04	0.00	0.00	0.00	N/A	N/A
8102	RUTHERFORD COUNTY LANDFILL (SOUTH)	31,228.58	3,184.21	0.00	0.00	0.00	0.00	N/A	N/A
7901	ROCKINGHAM COUNTY LANDFILL	37,377.46	60,661.85	77,891.04	47,175.36	0.00	0.00	N/A	N/A
7702	RICHMOND COUNTY LANDFILL	60,103.48	36,885.79	4,855.66	0.00	0.00	0.00	N/A	N/A
7502	POLK COUNTY LANDFILL	8,808.86	7,515.49	6,062.57	1,556.60	0.00	0.00	N/A	N/A
7401	PITT COUNTY LANDFILL	124,008.00	119,270.00	125,313.00	101,769.00	0.00	0.00	N/A	N/A
7301	PERSON COUNTY LANDFILL (ROXBORO)	22,528.99	25,251.59	23,281.29	0.00	0.00	0.00	N/A	N/A
7201	PERQUIMANS CHOWAN GATES LANDFILL	24,700.00	26,410.31	8,547.00	0.00	0.00	0.00	N/A	N/A
7101	PENDER COUNTY LANDFILL	17,875.79	17,277.29	10,606.33	0.00	0.00	0.00	N/A	N/A
7002	PASQUOTANK COUNTY LANDFILL	30,004.99	31,638.80	22,915.18	0.00	0.00	0.00	N/A	N/A
6902	PAMLICO COUNTY LANDFILL	10,600.00	11,895.54	2,044.42	0.00	0.00	0.00	N/A	N/A
6601	NORTHAMPTON COUNTY LANDFILL	18,890.00	14,435.18	2,715.23	315.91	0.00	0.00	N/A	N/A
6301	MOORE COUNTY LANDFILL	70,706.43	58,114.30	27,225.61	12,290.55	0.00	0.00	N/A	N/A
6001	MECKLENBURG COUNTY LANDFILL	150,603.00	0.00	25,246.00	0.00	0.00	0.00	N/A	N/A
5901	MARTIN COUNTY LANDFILL	30,086.00	30,690.00	8,398.51	1,935.63	0.00	0.00	N/A	N/A
5802	MADISON COUNTY LANDFILL	11,154.00	10,404.59	2,706.34	0.00	0.00	0.00	N/A	N/A
5702	MACON COUNTY LANDFILL (HIGHLANDS)	4,267.04	3,655.53	1,299.51	0.00	0.00	0.00	N/A	N/A
5701	MACON COUNTY LANDFILL (FRANKLIN)	9,531.32	1,011.49	0.00	0.00	0.00	0.00	N/A	N/A
5601	MCDOWELL COUNTY LANDFILL	27,460.96	30,279.63	26,484.07	4,460.53	0.00	0.00	N/A	N/A
5301	LEE COUNTY LANDFILL	46,750.83	43,398.70	13,548.46	0.00	0.00	0.00	N/A	N/A
5201	JONES COUNTY LANDFILL	4,360.00	2,878.00	2,734.45	0.00	0.00	0.00	N/A	N/A
5001	WESTERN CAROLINA UNIV. LANDFILL	430.45	402.42	108.34	0.00	0.00	0.00	N/A	N/A
4901	IREDELL COUNTY LANDFILL	127,100.00	124,625.00	31,226.80	0.00	0.00	0.00	N/A	N/A
4701	HOKE COUNTY LANDFILL	17,515.04	19,150.05	2,149.76	0.00	0.00	0.00	N/A	N/A
4601	HERTFORD COUNTY LANDFILL	14,269.00	14,819.00	11,531.30	0.00	0.00	0.00	N/A	N/A
4404	CANTON LANDFILL (HAYWOOD CO)	13,957.00	34,592.00	17,470.05	0.00	0.00	0.00	N/A	N/A
4403	HAYWOOD COUNTY LANDFILL	39,240.00	50,878.47	12,434.28	0.00	0.00	0.00	N/A	N/A
4303	HARNETT COUNTY LF (ANDERSON CRK)	13,691.00	11,841.00	7,586.19	578.47	0.00	0.00	N/A	N/A
4101	HIGH POINT LANDFILL (GUILFORD CO)	118,118.30	126,083.78	19,335.44	0.00	0.00	0.00	N/A	N/A
3801	GRAHAM COUNTY LANDFILL	4,422.96	4,741.00	3,566.00	0.00	0.00	0.00	N/A	N/A
3501	FRANKLIN COUNTY LANDFILL	27,887.46	32,477.41	22,325.72	0.00	0.00	0.00	N/A	N/A
3101	DUPLIN COUNTY LANDFILL	31,571.92	29,913.64	8,745.48	0.00	0.00	0.00	N/A	N/A
3001	DAVIE COUNTY LANDFILL	15,109.98	18,284.35	9,174.70	0.00	0.00	0.00	N/A	N/A
2904	THOMASVILLE, LANDFILL (DAVIDSON CO)	0.00	0.00	0.00	0.00	0.00	0.00	N/A	N/A

APPENDIX A-1 PUBLIC AND PRIVATE MUNICIPAL SOLID WASTE LANDFILLS (INCLUDES CONSTRUCTION AND DEMOLITION LANDFILLS), DESCENDING ORDER OF TONS, FY 1996-97

PERMIT	FACILITY	TONS FY 91-92	TONS FY 92-93	TONS FY 93-94	TONS FY 94-95	TONS FY 95-96	TONS FY 96-97	LINED LANDFILL FY 96-97	TIPPING FEE FY 96-97
2902	DAVIDSON COUNTY LANDFILL	132,258.00	121,503.00	31,388.89	0.00	0.00	0.00	N/A	N/A
2802	DARE COUNTY LANDFILL (EAST LAKE)	50,101.00	52,052.36	20,851.53	0.00	0.00	0.00	N/A	N/A
2701	CURRITUCK COUNTY LANDFILL	13,721.00	15,001.00	4,589.00	0.00	0.00	0.00	N/A	N/A
2503	CRAVEN COUNTY LANDFILL	77,108.17	68,675.15	19,658.86	0.00	0.00	0.00	N/A	N/A
2201	CLAY COUNTY LANDFILL	3,965.60	3,425.00	1,806.65	0.00	0.00	0.00	N/A	N/A
1901	CHATHAM COUNTY LANDFILL	30,552.00	29,805.00	9,372.66	0.00	0.00	0.00	N/A	N/A
1701	CASWELL COUNTY LANDFILL	5,102.43	4,818.11	5,554.57	0.00	0.00	0.00	N/A	N/A
1602	CARTERET COUNTY LANDFILL	84,433.00	78,281.00	22,808.00	0.00	0.00	0.00	N/A	N/A
901	BLADEN COUNTY LANDFILL	24,810.00	28,330.00	20,944.18	0.00	0.00	0.00	N/A	N/A
801	BERTIE COUNTY LANDFILL	17,255.30	16,864.00	5,944.10	0.00	0.00	0.00	N/A	N/A
702	BEAUFORT COUNTY LANDFILL	50,100.00	50,400.00	18,175.96	9,573.00	0.00	0.00	N/A	N/A
601	AVERY COUNTY LANDFILL	10,800.00	2,830.00	3,560.00	0.00	0.00	0.00	N/A	N/A
401	ANSON COUNTY LANDFILL	13,942.30	15,702.29	10,786.60	0.00	0.00	0.00	N/A	N/A
302	ALLEGHANY COUNTY LANDFILL	13,995.00	7,684.00	6,615.35	0.00	0.00	0.00	N/A	N/A
101	ALAMANCE COUNTY LANDFILL	89,089.64	76,632.91	21,076.80	0.00	0.00	0.00	N/A	N/A
	MOORE COUNTY C&D STOCKPILE	0.00	0.00	0.00	0.00	10,425.78	14,088.94	N/A	$25.00
	MCDOWELL COUNTY C&D STOCKPILE	0.00	0.00	0.00	0.00	3,961.49	4,231.11	N/A	$32.00
	POLK COUNTY C&D STOCKPILE	0.00	0.00	0.00	0.00	1,577.17	2,379.72	N/A	$25.00
	NORTHAMPTON COUNTY C&D STOCKPILE	0.00	0.00	0.00	0.00	438.36	1,578.62	N/A	$10.00
	HARNETT COUNTY C&D STOCKPILE	0.00	0.00	0.00	0.00	1,969.39	0.00	N/A	N/A
	TOTAL TONS	6,716,162.88	6,662,482.70	6,707,785.86	7,151,413.76	7,324,742.81	8,388,236.45		

C&D = Construction and Demolition waste

*CRSWMA = Coastal Regional Solid Waste Management Authority

** permit conditions include acceptance of C&D waste

***C&D Unit data reported separately from MSW landfill beginning FY1995-96

APPENDIX A-2: SCRAP TIRE MONOFILLS, DESCENDING ORDER, FY 1996-97

PERMIT	FACILITY	TONS FY 90-91	TONS FY 91-92	TONS FY 92-93	TONS FY 93-94	TONS FY 94-95	TONS FY 95-96	TONS FY 96-97
1303	U S TIRE RECYCLING PARTNERS, LP	15,444.00	17,094.25	17,873.23	31,787.33	38,359.40	28,312.76	50,495.01
4304	CENTRAL CAROLINA TIRE RECYCLING	0.00	2,764.61	4,824.43	18,191.71	31,650.57	27,832.89	19,886.16
	TOTAL TONS*	15,444.00	19,858.86	22,697.66	49,979.04	70,009.97	56,145.64	70,381.17

*Tons landfilled (less tons recycled or reused)

APPENDIX A-3: INCINERATION FACILITIES, DESCENDING ORDER, FY 1996-97

PERMIT	FACILITY	NET TONS FY 91-92	NET TONS FY 92-93	NET TONS FY 93-94	NET TONS FY 94-95	NET TONS FY 95-96	GROSS TONS FY 96-97	ASH TONS FY 96-97	NET TONS FY 96-97
6505	NEW HANOVER CO WTE FACILITY	64,002.68	62,104.40	53,373.00	59,619.00	84,647.97	133,128.00	53,564.00	79,564.00
903	BCH ENERGY GENERATION FACILITY	0.00	0.00	0.00	0.00	48,122.79	0.00	N/A	N/A
6010	NORTHEAST WTE FACILITY	54,136.00	50,585.00	52,757.00	51,311.00	0.00	0.00	N/A	N/A
6506	TOWN OF WRIGHTSVILLE BEACH	3,805.70	2,217.20	0.00	0.00	0.00	0.00	N/A	N/A
	TOTAL TONS	57,941.70	52,802.20	52,757.00	51,311.00	132,770.76	133,128.00	53,564.00	79,564.00

WTE = Waste to Energy

APPENDIX A-4: PRIVATE INDUSTRIAL LANDFILLS, DESCENDING ORDER, FY 1996-97

PERMIT	FACILITY	TONS FY 91-92	TONS FY 92-93	TONS FY 93-94	TONS FY 94-95	TONS FY 95-96	TONS FY 96-97
7302	CP&L ROXBORO S E PLANT	528,486.00	632,421.90	476,730.86	410,668.40	547,749.97	496,564.58
4406	CHAMPION INTERNATIONAL CORP LF NO. 6	389,689.00	379,899.00	328,233.00	303,310.00	345,674.00	343,938.00
2402	INTERNATIONAL PAPER RIEGELWOOD MILL LF	194,929.00	268,341.00	75,116.00	264,689.00	69,833.00	295,426.20
3605	FMC CORPORATION LANDFILL	184,462.00	154,923.00	166,444.00	190,814.00	185,829.00	206,760.00
1804	DUKE POWER-MARSHALL STEAM STATION LF	329,457.00	344,543.80	400,874.68	142,886.81	90,924.64	77,393.67
2302	CLEVELAND CONTAINER SERVICE	67,155.00	73,918.00	124,516.00	91,134.00	75,675.00	76,192.00
8503	DUKE POWER BELEWS CREEK ASH LANDFILL	242,268.00	164,675.00	191,070.00	105,680.00	44,830.00	75,680.00
9401	WEYERHAEUSER PAPER CO	99,732.30	119,283.00	108,960.00	95,330.20	45,534.00	49,909.00
3405	R J REYNOLDS TOBACCO CO LANDFILL	59,576.71	48,997.79	47,683.72	47,185.91	48,881.00	42,809.39
4203	CHAMPION INTERNATIONAL	17,839.10	21,768.80	29,568.10	22,764.70	40,242.60	22,656.40
5404	DUPONT CO - KINSTON SITE	8,227.00	57,011.31	37,737.74	22,072.54	25,595.00	21,094.00
2502	WEYERHAEUSER COMPANY	6,633.00	8,249.00	9,979.00	6,506.00	6,506.00	19,245.00
8801	ECUSTA ASH LANDFILL	10,999.70	10,134.90	11,475.80	11,784.30	12,965.30	14,295.30
1102	BASF CORPORATION	25,726.00	20,652.00	45,500.00	17,262.00	12,308.00	9,915.00
8805	ECUSTA PROCESS WASTE LANDFILL	7,522.10	7,026.00	6,817.10	6,741.30	5,140.20	5,533.50
9703	ABTCO, INC.	3,999.00	4,288.00	4,034.40	4,062.30	4,225.80	3,443.30
5603	COLLINS & AIKMAN SANITARY LANDFILL	6,846.70	6,440.00	6,618.00	6,603.00	4,747.00	3,404.70
1006	DUPONT	20,767.85	23,852.30	22,078.32	27,946.17	17,961.51	2,028.03
7602	EVEREADY BATTERY COMPANY, INC	612.70	337.80	402.00	465.27	367.52	250.89
6004	DUKE POWER-MCGUIRE SITE LANDFILL	90.80	463.20	23.35	14.40	72.92	144.30
9210	CP&L SHEARON HARRIS LF	176.00	162.33	172.51	49.27	32.41	41.38
1001	CP & L BRUNSWICK PLANT SANITARY LANDFI	194.00	323.00	639.80	15.44	9.98	23.71
8806	DUPONT BREVARD PLANT	490.20	412.00	376.60	428.20	273.90	0.00
6603	GEORGIA-PACIFIC	530.40	816.80	824.06	109.11	0.00	0.00
4503	CRANSTON PRINT WORKS	DNR	0.00	1,875.00	3,224.00	2,456.00	0.00
802	R J REYNOLDS TOBACCO CO	766.30	702.60	605.00	1,079.50	674.50	0.00
	TOTAL TONS	2,207,175.86	2,349,642.53	2,098,355.04	1,789,926.82	1,588,509.25	1,766,748.35

APPENDIX A-5: TRANSFER STATIONS, PERMIT ORDER, FY 1996-97

PERMIT	TRANSFER STATION	TIPPING FEE FY 96-97	TONS FY 96-97	DISPOSAL DESTINATION AND PERMIT NUMBER FY 96-97	DESTINATION LINED FY 96-97
303	ALLEGHANY COUNTY TRANSFER FACILITY	$24.50	7,711.13	PIEDMONT LANDFILL (FORSYTH)(3406)	YES
402	ANSON COUNTY TRANSFER STATION	$35.00	19,421.90	MONTGOMERY CO. LF/UWHARRIE ENV. (6201)	NO
602	AVERY COUNTY TRANSFER STATION	$23.00	13,341.93	BFI CHARLOTTE MOTOR SPEEDWAY V (1304)	YES
703	ARS-BEAUFORT TRANSFER STATION	$40.00	51,272.04	EAST CAROLINA REGIONAL LANDFILL (BERTIE)(803)	YES
904	BLADEN COUNTY TRANSFER STATION	$28.00	10,994.23	BCH ENERGY MRF (CUMBERLAND) (2605)	N/A
			12,130.23	BFI SAMPSON CO. LANDFILL (8201)	YES
1001	BRUNSWICK CO TRANSFER/SOUTHPORT	$0.00	7,915.00	BRUNSWICK CO. LANDFILL (1007)	NO
			6,629.00	BCH ENERGY MRF (CUMBERLAND) (2605)	N/A
1008	BRUNSWICK CO TRANSFER/LELAND	$0.00	11,594.00	BRUNSWICK CO. LANDFILL (1007)	NO
			3,656.00	BCH ENERGY MRF (CUMBERLAND) (2605)	N/A
1009	BRUNSWICK CO TRANSFER/OCEAN ISLE BEACH	$0.00	5,099.00	BRUNSWICK CO. LANDFILL (1007)	NO
			4,833.00	BCH ENERGY MRF (CUMBERLAND) (2605)	N/A
1104	WASTE MANAGEMENT OF ASHEVILLE	$32.00	77,457.22	PALMETTO LANDFILL, SPARTANBURG, SC	YES
1108	BUNCOMBE COUNTY TRANSFER STATION	$28.00	7,049.00	BUNCOMBE COUNTY LANDFILL (1101)	YES
1604	CARTERET COUNTY TRANSFER STATION	$60.50	69,388.00	CRSWMA INTERIM REGIONAL LANDFILL (2504)	YES
1903	ARS - CHATHAM COUNTY TRANSFER STATION	$35.42	23,952.62	PIEDMONT LANDFILL (FORSYTH)(3406)	YES
2202	CLAY COUNTY TRANSFER STATION	$48.00	1,227.77	CHEROKEE COUNTY, GEORGIA	N/A
2804	DARE COUNTY TRANSFER STATION	$47.74	42,193.10	EAST CAROLINA ENVIRONMENTAL (BERTIE) (803)	YES
3002	DAVIE COUNTY TRANSFER STATION	$47.00	18,970.73	CITY OF WINSTON-SALEM LANDFILL (3402)	YES
3102	DUPLIN COUNTY TRANSFER STATION	$45.00	32,814.24	BFI SAMPSON CO. LANDFILL (8201)	YES
			37.89	NEW HANOVER WASTE TO ENERGY (6505)	N/A
3502	FRANKLIN COUNTY TRANSFER STATION	$15.00	36,766.62	PIEDMONT LANDFILL (FORSYTH) (3406)	YES
3608	WASTE MANAGEMENT OF CAROLINAS	$26.50	146,779.95	PALMETTO LANDFILL, SPARTANBURG, SC	YES
4305	HARNETT COUNTY TRANSFER STATION	$25.00	1,021.52	HARNETT CO. LANDFILL (4302)	NO
4602	HERTFORD COUNTY TRANSFER STATION	$42.00	3,290.77	EAST CAROLINA ENVIRONMENTAL (BERTIE) (803)	YES
4702	HOKE COUNTY TRANSFER STATION	$46.00	16,977.67	UWHARRIE ENV. REG. LANDFILL (MONTGOMERY) (620	YES
4904	MOORESVILLE TRANSFER STATION	$0.00	21,674.00	IREDELL COUNTY LANDFILL (4903)	YES
5304	ARS - LEE COUNTY TRANSFER STATION	$35.42	52,068.78	PIEDMONT LANDFILL (FORSYTH) (3406)	YES
5602	McDOWELL CO TRANSFER FACILITY	$32.00	33,348.42	BURKE CO. LANDFILL (1203)	NO
6014	CCC-CHARLOTTE TRANSFER STATION	$31.00	63,455.14	RICHLAND COUNTY LANDFILL, SC	N/A
6302	UWHARRIE ENV INC/MOORE CTY TS	$29.40	28,138.47	MONTGOMERY CO. LF/UWHARRIE ENV. (6201)	NO
			32,750.05	UWHARRIE ENV. REG. LANDFILL (MONTGOMERY) (620	YES
6903	PAMLICO COUNTY TRANSFER STATION	$60.50	6,599.00	CRSWMA INTERIM REGIONAL LANDFILL (2504)	YES
7003	PASQUOTANK CO. TRANSFER STATION	$52.00	28,368.42	EAST CAROLINA ENVIRONMENTAL (BERTIE) (803)	YES
7103	PENDER COUNTY TRANSFER STATION	$54.00	13,895.26	BFI SAMPSON CO. LANDFILL (8201)	YES

APPENDIX A-5: TRANSFER STATIONS, PERMIT ORDER, FY 1996-97

PERMIT	TRANSFER STATION	TIPPING FEE FY 96-97	TONS FY 96-97	DISPOSAL DESTINATION AND PERMIT NUMBER FY 96-97	DESTINATION LINED FY 96-97
			4,995.00	BCH ENERGY MRF (CUMBERLAND) (2605)	N/A
			295.00	NEW HANOVER CO. INCINERATOR (6505)	N/A
7202	PERQUIMANS-CHOWAN-GATES TRANSFER ST.	$45.00	18,494.66	EAST CAROLINA ENVIRONMENTAL (BERTIE) (803)	YES
7303	PERSON COUNTY TRANSFER STATION	$35.00	20,133.76	PIEDMONT LANDFILL (FORSYTH)(3406)	YES
			92.97	ADDINGTON - UPPER PIEDMONT REG. LANDFILL (7304)	YES
7404	PITT COUNTY TRANSFER STATION	$42.00	118,662.06	EAST CAROLINA ENVIRONMENTAL (BERTIE) (803)	YES
7503	POLK COUNTY TRANSFER STATION	$45.00	3,009.09	PALMETTO LANDFILL, SPARTANBURG, SC	YES
7703	RICHMOND COUNTY TRANSFER STATION	$38.50	38,226.71	MONTGOMERY CO. LF/UWHARRIE ENV. (6201)	NO
7902	REIDSVILLE, CITY OF TRANSFER FACILITY	$21.61	5,644.30	PIEDMONT LANDFILL (FORSYTH) (3406)	YES
7903	EDEN, CITY OF TRANSFER STATION	$0.00	11,199.29	ROCKINGHAM CO. LANDFILL (7904)	YES
8004	EAST SPENCER WASTE TRANSFER FACILITY	$33.00	69,839.48	PIEDMONT LANDFILL (FORSYTH) (3406)	YES
9211	CARY, TOWN OF - TRANSFER STATION	$0.00	13,481.07	BFI SAMPSON CO. LANDFILL (8201)	YES
			7,010.93	WAKE CO. LANDFILL (9203)	NO
				WAKE CO. LANDFILL (9209)	YES
9215	WASTE MANAGEMENT OF RAL-DUR	$39.50	22,065.00	PIEDMONT LANDFILL (FORSYTH) (3406)	YES
			21,156.00	BFI SAMPSON CO. LANDFILL (8201)	YES
9302	WARREN COUNTY TRANSFER STATION	$57.00	9,075.00	EAST CAROLINA REGIONAL LANDFILL (BERTIE) (803)	YES
9503	WATAUGA COUNTY TRANSFER FACILITY	$37.00	35,667.80	PIEDMONT LANDFILL (FORSYTH) (3406)	YES
9903	YADKIN COUNTY TRANSFER FACILITY	$40.00	13,737.33	BFI CHARLOTTE MOTOR SPEEDWAY V (1304)	YES
10003	YANCEY-MITCHELL TRANSFER STATION	$36.95	17,701.13	PALMETTO LANDFILL, SPARTANBURG, SC	YES
*	BRUNSWICK COUNTY LF TRANSFER STATION	$0.00	15,901.00	BCH ENERGY MRF (CUMBERLAND) (2605)	N/A
*	CURRITUCK CO. (ALBEMARLE REG. SWM AUTH.)	$46.64	18,348.10	EAST CAROLINA ENVIRONMENTAL (BERTIE) (803)	YES
*	TOWN OF EDENTON	$0.00	4,984.74	EAST CAROLINA ENVIRONMENTAL (BERTIE) (803)	YES
TOTAL TONS TRANSFERRED			1,382,542.52		

*was unpermitted, permit-pending, or temporary in FY 1996-97

APPENDIX B: COUNTY WASTE REDUCTION, ALPHABETICAL ORDER, FY 1996-97

COUNTY	POPULATION FY 96-97 Jul-97	MSW MANAGED FY 91-92	MSW TONS DISPOSED FY 92-93	MSW TONS DISPOSED FY 93-94	MSW TONS DISPOSED FY 94-95	MSW TONS DISPOSED FY 95-96	MSW TONS DISPOSED FY 96-97	BASE YEAR PER CAPITA FY 91-92	PER CAPITA RATE FY 96-97	% WASTE REDUCTION FY 96-97**
ALAMANCE*	117,823	99,301.89	77,599.29	74,841.82	82,613.45	79,538.43	80,131.35	*	*	*
ALEXANDER	30,584	25,716.32	20,712.00	21,477.00	21,671.04	22,096.90	21,816.34	0.90	0.71	21%
ALLEGHANY	9,610	14,130.83	7,730.65	8,344.81	7,181.03	7,367.21	7,864.55	1.45	0.82	44%
ANSON	23,791	14,229.30	15,703.82	14,428.79	17,920.67	18,847.06	19,431.50	0.61	0.82	-33%
ASHE	23,483	18,089.13	18,056.01	18,481.43	18,620.54	16,689.38	18,375.10	0.81	0.78	3%
AVERY	15,229	11,130.09	2,952.16	12,688.37	14,338.05	14,009.34	14,540.23	0.74	0.95	-28%
BEAUFORT	43,210	52,669.00	52,914.30	52,044.49	51,972.27	48,679.11	60,352.27	1.24	1.40	-12%
BERTIE	20,532	17,371.98	16,864.00	18,155.55	16,659.85	20,635.57	20,139.46	0.86	0.98	-14%
BLADEN	30,090	25,048.21	28,330.00	26,195.87	22,369.31	15,083.65	36,333.89	0.86	1.21	-40%
BRUNSWICK	62,866	78,123.11	80,805.94	76,830.54	80,980.60	104,972.33	129,795.67	1.48	2.06	-39%
BUNCOMBE*	190,852	159,040.21	152,762.69	152,397.96	167,000.46	179,570.04	209,992.47	*	*	*
BURKE	82,486	78,005.51	68,540.36	69,574.69	72,894.30	74,197.31	78,492.28	1.02	0.95	6%
CABARRUS	113,598	95,215.19	83,841.32	92,507.75	105,525.94	99,325.79	106,492.86	0.94	0.94	1%
CALDWELL	74,265	65,531.52	67,461.78	68,831.52	76,733.08	75,402.89	80,022.99	0.92	1.08	-17%
CAMDEN	6,356	1,850.16	1,991.60	2,070.54	1,989.37	2,024.97	1,998.20	0.31	0.31	-2%
CARTERET	58,341	86,894.30	78,481.53	54,908.51	52,101.29	56,284.75	70,012.34	1.62	1.20	26%
CASWELL	21,451	5,136.12	4,818.11	7,081.54	7,703.53	8,976.26	13,154.13	0.25	0.61	-149%
CATAWBA*	128,055	151,559.31	136,462.83	144,538.66	149,404.28	161,181.09	157,234.88	*	*	*
CHATHAM*	44,380	33,235.13	30,109.23	31,919.95	31,710.37	29,885.99	29,334.38	*	*	*
CHEROKEE	22,070	16,020.17	17,623.89	16,708.00	17,487.30	15,543.09	16,595.26	0.78	0.75	3%
CHOWAN	14,152	13,691.72	13,182.67	12,349.10	15,071.80	12,722.99	13,231.16	0.99	0.93	5%
CLAY	7,840	4,172.34	3,425.00	2,467.65	2,358.60	2,514.77	1,467.77	0.57	0.19	67%
CLEVELAND*	90,306	73,137.50	68,606.32	66,913.66	72,500.29	71,221.49	76,908.42	*	*	*
COLUMBUS	51,852	45,199.16	45,361.11	68,512.34	51,884.72	47,690.31	53,076.05	0.91	1.02	-13%
CRAVEN*	87,174	86,649.01	69,274.99	54,861.07	55,259.42	60,277.04	69,955.49	*	*	*
CUMBERLAND	294,195	227,301.67	218,485.71	227,883.25	249,848.17	267,929.40	263,324.21	0.81	0.90	-10%
CURRITUCK	16,372	13,792.48	15,001.00	13,358.78	16,186.33	16,676.63	18,528.29	1.00	1.13	-14%
DARE	26,542	51,299.83	50,260.74	43,207.43	53,332.92	52,124.97	58,453.13	2.23	2.20	1%
DAVIDSON	138,718	139,616.85	122,370.71	118,453.76	123,067.45	128,618.69	112,691.31	1.08	0.81	25%
DAVIE	30,590	19,348.40	18,380.80	18,108.54	21,979.93	25,997.45	25,156.30	0.68	0.82	-21%
DUPLIN*	43,535	33,309.90	30,709.73	31,306.58	32,021.07	32,334.70	38,360.08	*	*	*
DURHAM*	194,956	218,971.80	195,038.13	209,860.73	223,293.51	254,613.65	254,507.48	*	*	*
EDGECOMBE	56,054	71,471.38	78,894.52	74,322.38	73,729.66	65,975.79	84,360.86	1.25	1.50	-20%
FORSYTH*	284,188	304,289.69	286,079.05	320,279.19	345,804.57	380,873.73	433,444.91	*	*	*
FRANKLIN	42,738	28,701.81	32,477.41	29,113.80	29,404.00	30,461.39	37,549.45	0.76	0.88	-16%
GASTON	179,184	165,099.79	163,093.42	168,278.11	177,660.88	179,627.62	195,594.14	0.93	1.09	-17%

APPENDIX B: COUNTY WASTE REDUCTION, ALPHABETICAL ORDER, FY 1996-97

COUNTY	POPULATION FY 96-97 Jul-97	MSW MANAGED FY 91-92	MSW TONS DISPOSED FY 92-93	MSW TONS DISPOSED FY 93-94	MSW TONS DISPOSED FY 94-95	MSW TONS DISPOSED FY 95-96	MSW TONS DISPOSED FY 96-97	BASE YEAR PER CAPITA FY 91-92	PER CAPITA RATE FY 96-97	% WASTE REDUCTION FY 96-97**
GATES	9,864	5,896.67	5,832.71	4,058.43	3,368.86	3,614.59	4,013.71	0.63	0.41	35%
GRAHAM	7,538	4,508.08	4,741.00	4,631.00	4,438.60	4,847.96	5,412.14	0.62	0.72	-15%
GRANVILLE	41,921	54,547.90	58,759.72	63,980.07	66,524.74	65,266.93	69,834.49	1.39	1.67	-20%
GREENE	17,180	13,917.46	9,342.85	10,422.02	10,527.79	10,968.74	15,753.26	0.90	0.92	-2%
GUILFORD	377,722	471,540.90	452,645.06	435,861.01	447,544.04	449,957.22	497,874.88	1.35	1.32	2%
HALIFAX	56,523	54,906.78	52,265.76	50,407.88	166,059.54	38,206.45	43,478.38	0.98	0.77	21%
HARNETT	79,488	69,073.39	62,479.25	64,193.35	70,166.48	78,257.95	92,861.73	1.01	1.17	-15%
HAYWOOD	50,639	57,841.80	85,470.47	52,355.33	35,082.40	38,630.05	40,223.12	1.21	0.79	34%
HENDERSON	77,558	81,497.83	77,761.09	71,569.86	75,896.02	68,950.07	87,521.87	1.14	1.13	1%
HERTFORD	22,214	14,288.00	14,819.00	13,691.24	16,958.58	14,719.28	15,049.18	0.63	0.68	-7%
HOKE	28,144	18,331.15	19,173.39	12,424.99	16,777.51	14,719.21	17,323.32	0.80	0.62	23%
HYDE	5,191	3,240.96	3,351.62	2,218.23	2,078.80	3,221.47	3,594.81	0.59	0.69	-18%
IREDELL	106,233	131,282.18	124,812.55	116,650.27	134,919.73	129,140.26	177,544.73	1.36	1.67	-23%
JACKSON	29,238	18,660.87	19,711.49	20,189.21	24,296.36	26,812.60	27,366.34	0.68	0.94	-37%
JOHNSTON	99,215	74,169.34	69,416.75	75,205.59	74,231.56	79,822.25	104,901.60	0.88	1.06	-20%
JONES	9,322	4,360.00	2,878.00	3,932.28	2,825.60	2,684.63	3,875.02	0.47	0.42	11%
LEE	47,402	48,341.02	45,474.19	47,838.07	52,115.04	53,663.74	58,050.67	1.16	1.22	-6%
LENOIR	59,262	67,692.88	74,556.23	72,578.21	78,945.21	75,268.19	118,655.45	1.17	2.00	-71%
LINCOLN	56,808	44,442.34	45,067.93	46,610.00	47,288.79	46,343.92	39,947.88	0.87	0.70	19%
MACON	27,050	19,738.31	21,312.55	21,033.76	23,157.77	23,888.42	24,207.44	0.82	0.89	-9%
MADISON	18,194	11,676.23	10,548.13	10,269.47	10,996.98	11,190.07	18,568.80	0.68	1.02	-49%
MARTIN	25,762	30,111.58	30,690.00	20,300.58	20,265.70	20,021.85	23,513.00	1.19	0.91	24%
MCDOWELL	38,317	29,179.96	30,279.63	33,038.60	33,049.92	33,499.39	33,505.88	0.82	0.87	-7%
MECKLENBURG*	593,514	677,573.24	617,277.17	747,434.81	847,896.57	917,479.37	929,186.33	*	*	*
MITCHELL	14,652	15,768.10	11,567.00	12,745.33	11,994.80	9,242.50	9,306.19	1.11	0.64	43%
MONTGOMERY	24,382	28,873.00	21,588.14	26,561.77	41,156.86	27,808.73	30,935.88	1.23	1.27	-3%
MOORE	68,126	74,061.56	58,488.88	73,877.63	82,804.85	76,236.12	85,783.46	1.23	1.26	-2%
NASH	86,026	84,593.77	78,454.78	81,695.17	80,925.39	92,311.58	87,712.92	1.09	1.02	6%
NEW HANOVER*	143,430	157,646.89	151,075.83	165,651.48	181,652.04	202,913.54	324,486.77	*	*	*
NORTHAMPTON	20,858	19,527.80	14,515.70	7,461.99	8,957.47	9,643.72	10,840.21	0.94	0.52	45%
ONSLOW	150,216	158,344.22	154,526.10	124,749.30	115,187.02	130,246.38	247,351.68	1.04	1.65	-59%
ORANGE	106,045	131,067.45	125,766.70	122,147.09	126,309.52	90,396.89	99,389.76	1.36	0.94	31%
PAMLICO	12,010	8,541.24	8,196.50	5,390.22	4,898.83	5,613.00	6,963.91	0.75	0.58	22%
PASQUOTANK*	33,848	30,150.34	29,647.20	27,507.88	28,045.19	28,997.63	32,336.50	*	*	*
PENDER	35,978	18,187.76	17,444.49	15,833.43	21,295.16	16,679.83	69,014.61	0.60	1.92	-219%
PERQUIMANS	10,756	7,519.55	7,394.93	8,785.66	4,787.00	6,947.03	9,650.74	0.73	0.90	-23%

APPENDIX B: COUNTY WASTE REDUCTION, ALPHABETICAL ORDER, FY 1996-97

COUNTY	POPULATION FY 96-97 Jul-97	MSW MANAGED FY 91-92	MSW TONS DISPOSED FY 92-93	MSW TONS DISPOSED FY 93-94	MSW TONS DISPOSED FY 94-95	MSW TONS DISPOSED FY 95-96	MSW TONS DISPOSED FY 96-97	BASE YEAR PER CAPITA FY 91-92	PER CAPITA RATE FY 96-97	% WASTE REDUCTION FY 96-97**
PERSON	32,514	24,249.07	25,251.59	27,816.48	27,090.47	29,373.68	27,041.04	0.80	0.83	-4%
PITT*	119,236	132,896.09	120,058.98	125,864.94	124,337.51	116,768.78	119,643.37	*	*	*
POLK	16,195	9,327.33	7,515.49	6,884.75	7,996.88	7,203.42	9,946.65	0.63	0.61	*
RANDOLPH	118,722	78,663.37	77,711.28	80,297.26	82,229.09	81,558.37	83,788.04	0.73	0.71	3%
RICHMOND	45,840	60,752.03	58,619.57	42,434.05	30,209.74	38,863.35	38,083.98	1.35	0.83	39%
ROBESON	112,005	104,700.17	88,563.88	98,287.51	98,943.97	96,165.91	104,543.04	0.99	0.93	6%
ROCKINGHAM	89,250	71,480.71	75,228.09	80,752.35	86,255.92	83,975.90	86,397.41	0.83	0.97	-17%
ROWAN	121,003	90,081.47	89,479.30	104,974.78	107,014.02	104,247.88	115,307.17	0.80	0.95	-19%
RUTHERFORD	59,334	89,175.34	68,322.46	77,716.87	70,327.74	63,090.93	61,644.46	1.56	1.04	33%
SAMPSON	51,498	33,545.35	32,492.71	34,821.71	37,058.10	39,221.27	52,591.13	0.70	1.02	-46%
SCOTLAND	35,030	39,867.42	38,645.81	43,191.56	47,544.66	52,860.87	48,258.30	1.17	1.38	-18%
STANLY	54,588	69,288.07	70,276.73	57,644.01	57,412.72	56,195.49	60,960.60	1.32	1.12	16%
STOKES	42,222	17,976.32	18,354.91	13,182.17	9,783.13	10,387.56	10,409.01	0.47	0.25	48%
SURRY	65,866	73,595.30	73,187.82	75,074.52	75,459.60	69,035.39	74,903.51	1.18	1.14	4%
SWAIN	11,847	5,650.66	6,152.27	6,668.64	5,582.48	6,168.33	5,536.33	0.50	0.47	7%
TRANSYLVANIA	27,558	30,072.05	16,482.27	19,161.63	18,372.28	15,012.72	17,147.72	1.16	0.62	46%
TYRRELL	3,671	2,984.83	1,742.86	1,561.61	1,777.18	1,912.47	1,470.92	0.79	0.40	49%
UNION	102,083	77,842.49	79,870.19	84,243.75	78,317.58	106,582.23	148,696.87	0.90	1.46	-62%
VANCE	40,621	43,266.86	38,242.34	43,724.35	48,175.44	49,965.17	56,841.26	1.11	1.40	-26%
WAKE*	539,187	569,621.89	542,427.42	575,618.80	733,521.30	770,895.64	871,034.63	*	*	*
WARREN	18,183	10,978.00	8,976.00	11,878.43	9,369.46	9,728.31	9,217.12	0.63	0.51	20%
WASHINGTON	13,504	11,699.36	12,992.65	10,415.26	8,490.66	8,194.28	9,502.40	0.84	0.70	17%
WATAUGA	40,451	36,755.38	35,360.04	34,265.17	30,680.23	34,694.28	37,127.14	0.99	0.92	7%
WAYNE*	112,386	106,149.38	102,716.65	94,724.72	99,109.98	92,474.68	103,847.52	*	*	*
WILKES	62,762	58,817.60	62,581.61	43,375.52	54,627.82	42,323.69	58,659.93	0.97	0.93	4%
WILSON	68,460	120,870.35	121,443.14	124,457.17	113,711.70	120,307.84	124,931.46	1.82	1.82	0%
YADKIN	34,737	20,778.78	22,529.86	11,906.31	15,880.40	16,140.30	17,268.05	0.67	0.50	26%
YANCEY	16,248	15,576.12	9,725.43	10,955.65	11,158.02	11,262.67	12,278.78	1.01	0.76	25%
TOTAL	7,323,085	7,257,428.09	6,896,686.96	7,038,505.34	7,624,144.85	7,722,794.78	8,741,733.62	1.08	1.19	-11%
TOTAL ADJUSTED FOR HURRICANE FRAN							8,041,734.00		1.10	-2%

*see Appendix B-cont. for counties using alternative base year

**Waste reduction formula: (base year per capita minus current year per capita) divided by base year per capita

NOTE: It is recognized that many FY1996-97 waste reduction rates are abnoramlly low due to the affects of Hurricane Fran.

APPENDIX B cont.: COUNTIES USING APPROVED ALTERNATIVE BASE YEARS, FY 1996-97

COUNTY	POPULATION FY 96-97	ALTERNATIVE BASE YEAR TONNAGE	MSW TONS DISPOSED FY 93-94	MSW TONS DISPOSED FY 94-95	MSW TONS DISPOSED FY 95-96	MSW TONS DISPOSED FY 96-97	ALTERNATIVE BASE YEAR PER CAPITA	PER CAPITA RATE FY 96-97	% WASTE REDUCTION FY 96-97
ALAMANCE (FY89-90)	117,823	117,861.83	74,841.82	82,613.45	79,538.43	80,131.35	1.10	0.68	38%
BUNCOMBE (FY88-89)	190,852	157,660.00	152,397.96	167,000.46	179,570.04	209,992.47	0.91	1.10	-21%
CATAWBA (FY89-90)	128,055	179,351.00	144,538.66	149,404.28	161,181.09	157,234.88	1.51	1.23	19%
CHATHAM (90-91)	44,380	34,315.00	31,919.95	31,710.37	29,885.99	29,334.38	0.89	0.66	25%
CLEVELAND (FY90-91)	90,306	74,096.00	66,913.66	72,500.29	71,221.49	76,908.42	0.87	0.85	3%
CRAVEN (FY90-91)	87,174	98,536.00	54,861.07	55,259.42	60,277.04	69,955.49	1.21	0.80	33%
DUPLIN (FY90-91)	43,535	48,900.00	31,306.58	32,021.07	32,334.70	38,360.08	1.22	0.88	28%
DURHAM (FY88-89)	194,956	224,196.00	209,860.73	223,293.51	254,613.65	254,507.48	1.31	1.31	0%
FORSYTH (FY88-89)	284,188	357,474.00	320,279.19	345,804.57	380,873.73	433,444.91	1.34	1.53	-14%
MECKLENBURG (89-90)	593,514	695,214.00	747,434.81	847,896.57	917,479.37	929,186.33	1.39	1.57	-13%
NEW HANOVER (88-89)	143,430	168,504.00	165,651.48	181,652.04	202,913.54	324,486.77	1.44	2.26	-57%
PASQUOTANK (FY90-91)	33,848	32,081.00	28,031.72	28,045.19	28,997.63	32,336.50	1.02	0.96	7%
PITT (FY89-90)	119,236	177,390.00	125,864.94	124,337.51	116,768.78	119,643.37	1.66	1.00	39%
WAKE (FY 88-89)	539,187	544,520.00	575,618.80	733,521.30	770,895.64	871,034.63	1.40	1.62	-15%
WAYNE (FY90-91)	112,386	111,167.00	94,724.72	99,109.98	92,474.68	103,847.52	1.06	0.92	13%