

# North Carolina

## SOLID WASTE MANAGEMENT

*Annual Report*

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*July 1, 1998 - June 30, 1999*

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Department of Environment  
and Natural Resources  
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Reduce, Reuse, Recycle



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This document, required by state law, is 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.

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## Introduction

Ten years ago, the North Carolina General Assembly adopted the *Solid Waste Management Act of 1989* (Act). This Act did four basic things regarding solid waste management:

- it established goals and policies;
- it established landfill bans on specific materials;
- it established new waste management programs; and
- it required reporting and planning for both state and local governments.

Each of these has been accomplished, to one degree or another, and indeed solid waste in North Carolina is far better managed than it was ten years ago. This Act, coupled with the regulatory requirements for more protective sanitary landfills (known as "Subtitle D" requirements or the "98 Rule") resulted in significant changes to and improvement in the management of solid waste in North Carolina.

### Goals and policies

The Act focused on waste reduction; safe, protective management of waste being disposed; and the establishment of policies that lead to changes in North Carolina solid waste management. Some of the major results have been the growth of the recycling industry in North Carolina, implementation of recycling programs in industry, development of local government recycling and waste reduction programs, and "buy recycled" initiatives.

Sustaining and enhancing the efforts devoted to the waste reduction goals and policies has been difficult as solid waste management has improved and addressing solid waste management issues is no longer seen as an emergency. It has logically lost public attention as other environmental and public health issues have emerged and therefore, waste reduction has lost momentum. Though the state reduction goal will not be met, the goal has served as a strong incentive and has guided program development.

### Landfill bans

Yard waste, used motor oil, white goods (appliances), untreated regulated medical waste, aluminum cans and whole scrap tires were banned from landfill disposal in the Act. These bans have been successful in reducing demand for landfill space, encouraging recycling, and reducing the risk to the environment and public health inherent in a landfill.

### New programs

Some of the new programs developed since implementation of the Act include:

- ❖ management of scrap tires;
- ❖ clean-up of nuisance scrap tire sites;
- ❖ recycling in state and local governments;
- ❖ regulation of medical waste;
- ❖ establishment of compost requirements;
- ❖ training of landfill operators;
- ❖ environmental education; and
- ❖ use of recycled materials.

These programs have enhanced the state's public health, increased protection of the environment, and contributed to the conservation of resources and improvement of North Carolina's economy.

### Reporting and planning

Prior to 1989 there was no reporting of solid waste activity in the state. Information available was often incorrect, anecdotal and highly unreliable. State and local solid waste management plans did not exist. This Annual Report marks the ninth report on solid waste management since passage of the Act and provides detailed information on waste disposal, recycling and other solid waste related activities. Local governments report annually on their waste management programs, are in the third year of their ten-year plans and are currently updating their plan through 2010. This report satisfies reporting requirements of the *Solid Waste Management Act of 1989*.

A state solid waste management plan was adopted in 1991. It was developed as a result of the Act and set forth goals and programs to guide solid waste management for the following ten years. The North Carolina Department of Environment and Natural Resources is in the process of updating the 1991 state plan using public forums, surveys and input from individuals involved in solid waste management. **This "bottom-up" planning approach is being used to establish solid waste management goals, direction and programs for the next ten-year period.** This approach was taken to solicit a large range of ideas, discussions and concerns from those directly involved in solid waste management across the state.

## Part 1 Overview and Summary

The state of solid waste management in North Carolina for Fiscal Year 1998-99 can be summarized as follows:

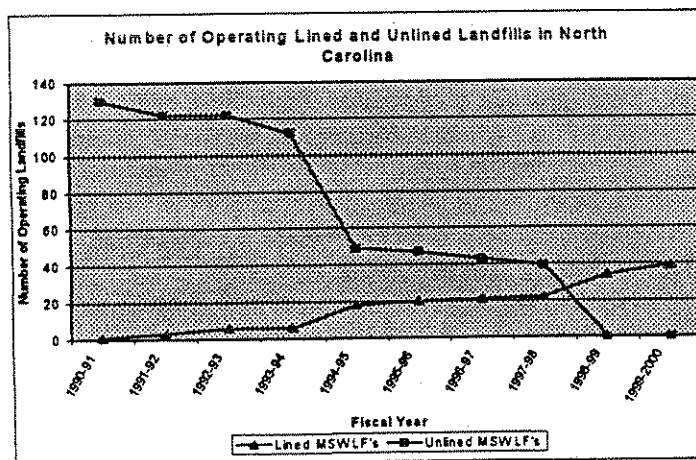
1. For the first time, an entire year's worth of municipal solid waste landfilled in North Carolina was placed in lined facilities.
2. Waste exports increased over the past fiscal year.
3. Recycling continued strong.
4. Waste generation continued to increase.
5. Increased landfill requirements resulted in solid waste management infrastructure changes.

**By strengthening solid waste legislation and regulations the environment and public health of North Carolina has been enhanced and waste management techniques other than landfilling have gained in popularity.** The consequences of these actions are implementation of new programs, development of new types of facilities, establishment of tip fees, increased private sector involvement in solid waste management, and additional options for recycling or disposal of a variety of materials.

## Part 2 Regulated Waste Management Facilities & Activities

### Municipal Solid Waste (MSW) Landfills

Since the January 1, 1998 implementation of the requirement that all municipal solid waste (MSW) landfills have landfill liners and leachate collection systems

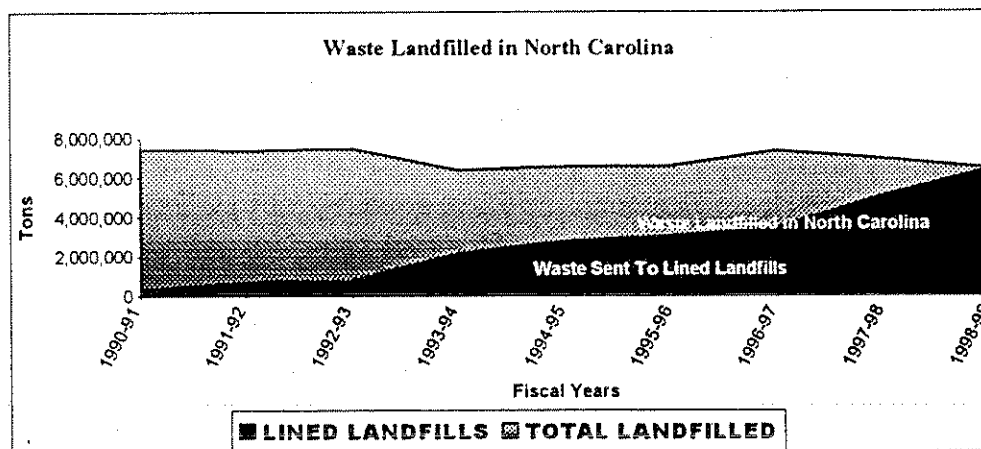




(Subtitle D requirements), all non-compliant landfills across North Carolina have closed. As a result, 1998-99 was the first entire reporting year that all MSW landfilled in North Carolina was in lined landfills. In 1990 there were 130 unlined MSW landfills, all of which are now closed.

Currently, there are 39 lined and operating MSW landfills in North Carolina. This transition achieved the primary goal in the initial state plan of having an adequate capacity of environmentally protective solid waste disposal facilities to meet the needs of the citizens of North Carolina.

In Fiscal Year 1990-91, 338,845 tons or 4.8% of MSW was disposed in lined landfills. During the Fiscal Year 1998-99, 7,161,455 tons of MSW, or 100%, was disposed in lined facilities. Although the chart appears to reflect that solid waste has decreased over the past ten years, the chart is not reflective of waste being exported to lined out of state landfills. **The reduction in number of landfills in the state and increase in tons managed in more protective landfills across the state is one of the more dramatic changes in North Carolina solid waste management in the last ten years.**



As the number of landfills decreased and the volume of wastes sent to lined landfills increased several other changes to North Carolina waste occurred. One of the major changes is the movement of construction and demolition (C & D) waste out of MSW landfills into facilities dedicated to C & D waste.

#### Transfer Stations: Waste Imports and Exports

As fewer landfills for MSW exist, transfer stations have become a prominent part of North Carolina's solid waste infrastructure. These facilities receive waste from a variety of sources including individual homeowners and businesses, local governments, and private waste hauling companies. At the transfer station these wastes are consolidated into larger truckloads (typically a tractor-trailer with cargo loads of 20 tons) that are more suitable for transporting greater distances. The City of Durham, for example, has the state's largest transfer station volume. The city loads waste for transfer 90 miles to a landfill in Brunswick County, Virginia.

Currently, there are 64 transfer stations operating in North Carolina. Municipal solid waste tonnages or exports from these facilities have increased significantly over the past fiscal year. In Fiscal Year 1998-99, 2,825,120 tons of waste was received at North Carolina transfer stations, or 31% of the waste landfilled (MSW and C&D).

### *Waste Imports*

Waste imports to North Carolina facilities are tracked through the annual facility reporting process. In Fiscal Year 1998-99, 90,956 tons of waste was imported to North Carolina. This represented a decrease over Fiscal Year 1997-98's 101,509 tons and continues the downturn from a high of 103,510 tons in Fiscal Year 1996-97. Virginia exported 73,317 tons to North Carolina. This waste was primarily from the Danville area and was disposed of in the Piedmont Sanitary Landfill in Forsyth County.

### *Waste Exports*

Waste exports are tracked through North Carolina transfer station reports and by voluntary reporting of out-of-state facilities. In Fiscal Year 1998-99, 1,166,875 tons, or 13% of North Carolina waste was exported out of state. If only municipal solid waste (no C&D or industrial waste) is considered, this figure represents 15% of total municipal solid waste disposed in Fiscal Year 1998-99. Landfills in Georgia, South Carolina, Tennessee, and Virginia were the recipients of North Carolina's exported waste.

There was an increase of 536,012 tons from the previous year's 630,863 tons. Part of the increase can be attributed to the City of Durham transferring a full year of waste in Fiscal Year 1998-99 (FY 1997-98 represented only six months).

### *Construction and Demolition (C & D) Landfills*

Prior to the lined landfill requirements C & D waste was primarily disposed in the same landfill as municipal solid waste. As more restrictive requirements were implemented for municipal solid waste there was an increase in separate C & D facilities. Though this waste may still be disposed of in lined landfills, it primarily goes to C & D facilities. These facilities receive 16% of the State's waste stream (MSW & C & D). While there is no historical base on which to analyze trends in C & D waste disposal, it is clear that this material is an important segment of the State's waste stream. Though not a part of this current report, it is obvious that the impact of Hurricane Floyd in September 1999 will have a significant impact on the State's infrastructure of C & D facilities.

### *Incinerators*

Since Fiscal Year 1995-96 there has been one operational municipal solid waste incinerator in North Carolina, the New Hanover County Waste-to-Energy facility. The tonnages at this facility had a slight decrease from a high of 133,439 tons in Fiscal Year 1995-96 to 127,589 in Fiscal Year 1998-99. Waste incinerated achieves an 80% reduction in volume and a similar weight reduction. The waste incinerated in New Hanover is used for energy production. Approximately 6,000 British Thermal Units (BTU's) are produced per pound of solid waste. This equates to one-half that of coal.

### *Industrial Landfills*

In Fiscal Year 1998-99 the 21 private industrial landfills in North Carolina disposed of 1,693,235 tons of solid waste. These facilities are primarily associated with power plants, paper mills or a particular industrial plant. This tonnage is not counted by the state when calculating the state per capita disposal rate.

### Part 3 Consequences of Increased Landfill Requirements

#### Tipping fees

In addition to transfer stations, fewer total number of landfills, C & D landfills separate from MSW landfills and previously mentioned changes in solid waste management, there have been other changes to solid waste management in the past ten years. One of the consequences of the higher standards for landfill construction and operation was the implementation of the tip fee for landfill use. Prior to 1989, most landfills did not have scales to weigh the solid waste entering the facility and did not charge a fee for disposal of waste. A local government usually owned and operated the landfill and funding was from general revenues. As costs associated with higher standards increased and pressure was put on the local government general fund from many different sources, solid waste services were among those government services which moved from general fund support to a form of self-supporting operations frequently referred to as an "enterprise fund".

Landfill tip fees in North Carolina in 1998-99 averaged approximately \$31 per ton. This average is somewhat misleading and should not be accepted as an accurate reflection of landfill costs. Some form of public funds support many of the local government landfills. Large corporations that are vertically integrated with waste hauling operations and transfer station facilities primarily own the privately held landfills in North Carolina. Additionally, these corporations have multiple sources of revenue and therefore the tip fee may not be an accurate reflection of costs.

#### Private Sector Landfills

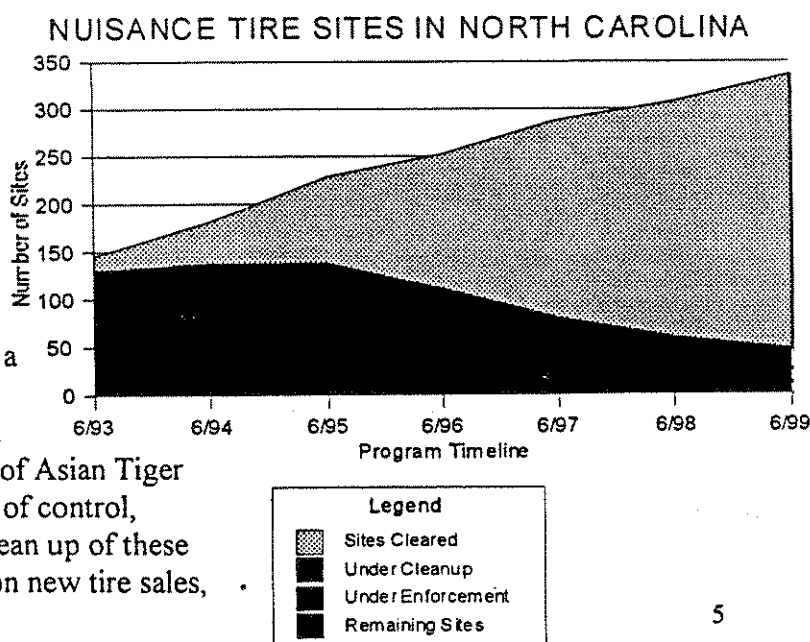
An additional consequence of increased landfill standards was the movement from publicly-operated solid waste facilities toward privately-owned or operated facilities. This phenomenon of publicly-operated landfills occurred during the 1990's. This was not only related to solid waste but to many other local government activities, nor was it confined to North Carolina. An additional consequence of this has been the movement of waste across state borders. Presently three large landfills located in neighboring states accept significant amounts of North Carolina solid waste.

### Part 4 Consequences of the Solid Waste Management Act of 1989

A feature of the 1989 solid waste management legislation was the establishment of a variety of waste management programs. The cumulative impact while, difficult to measure, has certainly improved the public health and environment of the state.

#### Elimination of Scrap Tire Sites

A significant accomplishment has been the virtual elimination of nuisance scrap tire sites. These sites ranged in size from a few hundred to over a million scrap tires and represented a major public health and environmental threat due to the presence of Asian Tiger Mosquitoes and the potential to burn out of control, producing cancer-causing smoke. The clean up of these sites, funded by an advance disposal fee on new tire sales,

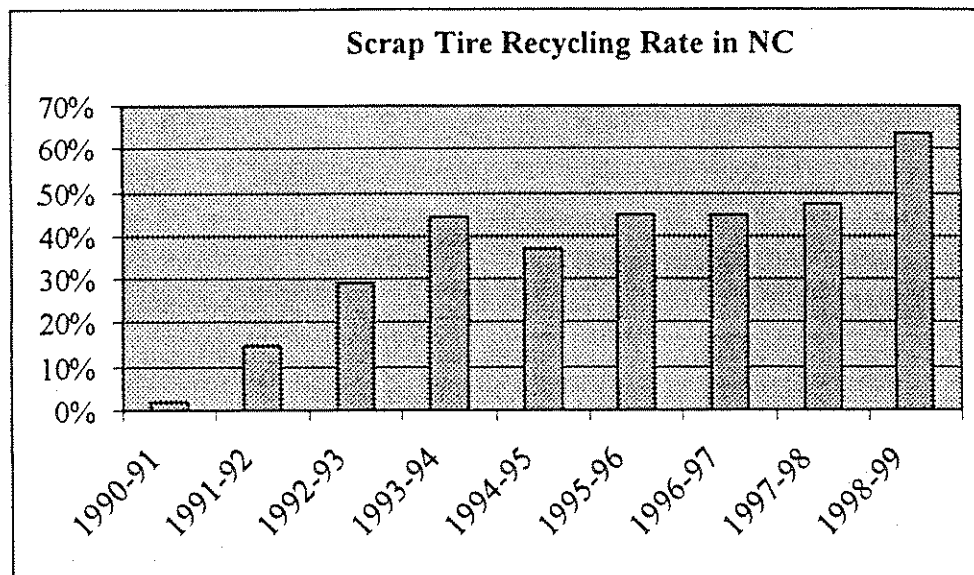


has been aided by use of prison inmate work details. The clean-up program has a statutory provision for cost recovery which has enabled the state to recover costs associated with clean up for some of these sites. This cost recovery provision has prompted a number of known site clean-ups by responsible parties and the state has additional evidence of sites being cleaned up that were not part of the state inventory of sites.

### Scrap Tire Management

Scrap tires present unique disposal and environmental problems. Landfill disposal of whole scrap tires was banned in 1989 as part of the Scrap Tire Management Act. This required more cutting and processing of scrap tires, which has led to significant increases in tire recycling. Landfill disposal of whole tires is

not appropriate because they use large amounts of space, cannot be compacted, and tend to "float" to the surface due to vibration and the presence of trapped gas.



### Recycling

Recycling of disposed tires has increased from about two percent in 1990-91 to over 60% in Fiscal Year 1998-99. The largest use of recycled tires is in civil engineering mainly in construction of septic tank drainfields in South Carolina. There has been some use as tire-derived fuel and crumb rubber, but the tonnage is much lower.

### Scrap Tire Monofills

Processing at scrap tire monofills has increased over 50% since Fiscal Year 1993-94. During last fiscal year 127,098 tons of tires were received at the two disposal sites in North Carolina. Of this amount 30% was from out-of-state.

### Medical Waste Management

Comprehensive medical waste management regulations were enacted in 1989 to cover packaging, labeling, storage, transporting, and treatment of medical waste. The regulations define regulated medical waste and designate appropriate types of treatment for various types of medical waste.

Incineration was widely used at hospitals to treat regulated medical waste prior to 1990. During the 1990's most hospitals closed their incinerators as a result of increasingly stringent air quality regulations. Most hospitals have begun to send waste off-site for treatment, but some have shown interest in alternatives to incineration for on-site treatment of their waste.

A number of innovative technologies have been developed for treating medical waste. This includes use of microwave energy, infra-red heat, and plasma arc. Several steam sterilization technologies have also been approved which use treatment parameters other than those specified in the regulations.

The Solid Waste Section has approved ten innovative technologies for use in North Carolina. Microwave treatment, used by Forsyth Hospital in Winston-Salem and Moore Regional Hospital in Pinehurst, is the only new technology to be used by North Carolina hospitals. SafeWaste uses microwave technology on mobile units to treat medical waste on-site at various hospitals.

### Approved Alternative Technologies

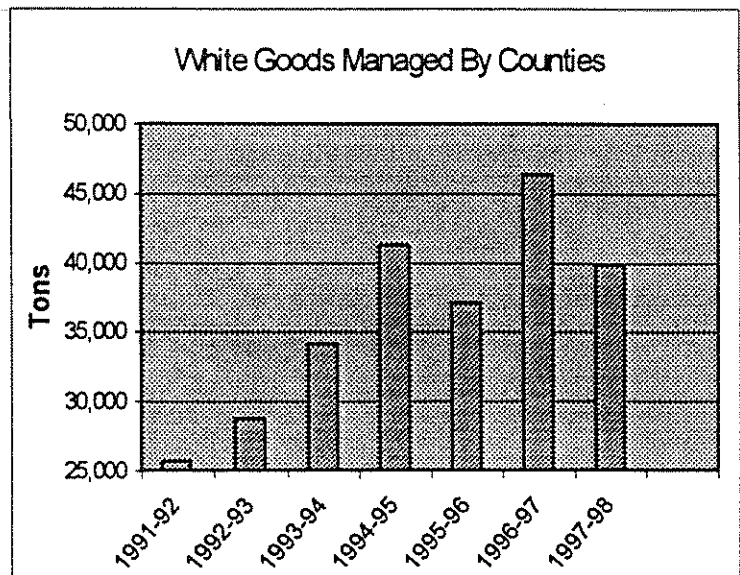
COMPANY	EQUIPMENT NAME	TYPE OF TECHNOLOGY
Spintech, Inc	TAPS	Thermal treatment
Winfield Environ Corp	Winfield Condor	Shred/Chemical treatment (chlorine dioxide)
Mediclean Tech, Inc	IWP-1000	Shred/Chemical (chlorine dioxide)
Ecomed Company	Ecomed	Shred/Chemical (iodophor)
Medical Safetec, Inc.	Medical Safetec	Shred/Chemical (sodium hypochlorite)
Medifor-X Corporation	Dispoz-All 2000	Infra-red heat treatment
Isolyzer Company	Sharps Disposal System	Chemically treat/solidify
D.O.C.C. Inc.	Demolyzer	Thermal treatment
Steris Corporation	Steris 20/EcoCycle 10	Shred/Chemical sterilant (peracetic acid)
MedAway, International	MedAway 1	Dry heat sterilization
Sterile Technology Industries, Inc.		Shred/Heat/Chemical (sodium hypochlorite)
EWMC		"Reverse polymerization"

#### White Goods Management

"White goods" are defined in GS 130A-290 (a)(44) as: "refrigerators, ranges, water heaters, freezers, unit air conditioners, washing machines, dishwashers, and clothes dryers, and other similar domestic and commercial large appliances." Discarded white goods generally have lower market value than other forms of scrap metals, and environmental concerns about chlorofluorocarbon refrigerants (CFCs) in some appliances have made white goods management more difficult.

Prior to 1989, proper management of disposed white goods received low priority, and appliances were frequently dumped in woodlands, streams, and down road banks. The presence of dumped white goods often encouraged dumping of other types of wastes, such as tires, shingles, and household garbage.

White goods were banned from landfill disposal in 1989 to encourage recycling and proper management. More comprehensive white goods management laws were enacted in 1993, which included



an advance disposal fee to cover the cost of white goods management. The advance disposal fee and restriction on local governments charging a white goods disposal fee will be in effect through June 30, 2001.

**A major accomplishment of the white goods management program has been to drastically reduce illegal dumping of white goods by requiring counties to provide collection sites and to receive white goods at no cost to the disposer.** The white goods program has also provided funds and equipment for counties to clean up existing white goods dumps.

### Septage

Domestic septage from septic tanks and portable toilet waste are managed in North Carolina through land application and by discharges at wastewater treatment plants. Grease trap pumpings are also managed through land application, by wastewater treatment plants, and sometimes by recycling.

In Fiscal Year 1998-99, there were 162 permitted land application sites in use in 54 counties. Wastewater plants in approximately 77 counties allowed some form of septage to be discharged and treated. Twelve counties (Avery, Beaufort, Chowan, Clay, Granville, Hoke, Hyde, Jones, Madison, New Hanover, Perquimans and Yancey) have no approved means of managing the septage produced in those counties.

Many of the wastewater treatment plants that allow the discharge of domestic septage and portable toilet waste do not accept grease trap pumpings. There are four companies in North Carolina that will collect and recycle or render the grease trap pumpings and one company that will compost it.

### Composting

In the state solid waste management hierarchy composting is preferred over the practice of landfilling, the least desirable management technique. The division continues to use the rules allowing compost pilot or demonstration projects to encourage composting. These rules enable interested parties to implement and study composting programs and techniques with minimal initial expense and paperwork.

**Composting in North Carolina is a viable but under-used method of managing wastes.** The compost process will breakdown organic wastes to a relatively stable and pathogen-free material that can be used as a soil amendment or as a source of nutrients.

Most of the material that is composted today in North Carolina is classified as yard waste. Yard waste includes silvicultural wastes and untreated and unpainted wood wastes. This is a direct result of the state's ban on placing yard waste in MSW landfills. There are 17 permitted yard waste facilities in the state and over 100 smaller notification sites. The notification sites are generally used by smaller towns, are less than two acres in size, and process less than 6000 cubic yards of waste in a three-month period.

There are eleven permitted compost facilities and ten permitted compost pilot or demonstration projects in the state that receive materials in addition to yard waste. The facilities are primarily small and receive less than 1,000 cubic yards of material per three-month period. Among the materials composted at these facilities are restaurant waste, food processing waste, animal waste,

source separated mixed paper, fish and seafood processing waste, hatchery waste, agricultural waste and waste engineered wood products.

### Land Application

The division supports the beneficial reuse of waste products through approval of projects for the land application of wastes such as tobacco dust, wood ash, and whey. These wastes can provide valuable nutrients or act as soil liming agents.

Nutrient management planning is required on all sites that receive waste for beneficial reuse. The purpose of a nutrient management plan is to ensure that nutrients are applied to a site in quantities and during a season that the crop will benefit. Nitrogen is normally the nutrient that determines the application rate. There were nine permits allowing generators to land apply waste following certain best management practices in Fiscal Year 1998-99.

## Part 5 Waste Reduction Efforts

Annual Reports received from local governments provide data on source reduction, recycling, and composting activities statewide, as well as other aspects of solid waste management. In addition to this local data, the *1998 NC Markets Assessment* report completed by the Division of Pollution Prevention and Environmental Assistance (DPPEA) provides supplementary information on the overall recycling picture for North Carolina.

### Trends in County and Municipal Source Reduction and Reuse Programs

The number of local government reuse and source reduction programs remained relatively constant in Fiscal Year 1998-99. The number of counties and municipalities with source reduction or reuse programs dropped from 123 to 110 during Fiscal Year 1998-99. This drop can most likely be attributed to improved reporting by local governments.

Program Type	FY 1993-94	FY 1994-95	FY 1995-96	FY 1996-97	FY 1997-98	FY 1998-99
<b>Source Reduction Programs</b>						
Backyard Composting	90	92	70	82	81	53
Grass Cycling	52	49	40	41	43	41
Xeriscaping	10	12	12	11	13	12
Junk Mail Reduction	16	20	40	56	55	57
Enviroshopping	35	35	27	36	35	35
Promotion of Non-toxics	29	38	34	39	35	30
Other	14	11	10	9	1	5
<b>Reuse Programs</b>						
Swap Shops	N/A	N/A	13	10	17	23
Paint Exchange	12	17	22	28	25	27
Waste Exchange	14	18	13	11	14	8
Pallet Exchange	N/A	N/A	N/A	N/A	N/A	7
Other	N/A	N/A	N/A	4	6	15
<b>Local Governments with Programs</b>	<b>N/A</b>	<b>N/A</b>	<b>104</b>	<b>116</b>	<b>123</b>	<b>110</b>

The most noticeable change in source reduction programs was the drop in backyard composting programs, which fell from 81 in Fiscal Year 1997-98 to 53 in Fiscal Year 1998-99. Previous questions on the Local Annual Report form inquiring about backyard composting programs were

clarified in Fiscal Year 1998-99, which resulted in more accurate reporting. Local governments with backyard composting programs distributed over 13,000 backyard composting bins since programs began to appear in the early 1990's. **At an average of 275 pounds per bin, these distributions result in an estimated 1788 tons of solid waste diverted from disposal facilities per year.**

Swap shop programs continued to increase at a steady pace in Fiscal Year 1998-99. Six new programs were added last year bringing a total of 23 programs now in operation. The popularity of these reuse programs is expected to continue to grow in the future.

### Tonnages Diverted or Recovered

The table below presents tonnages of recyclable materials collected by local governments from Fiscal Year 1991-92 through Fiscal Year 1998-99. Fiscal Year 1998-99 data indicates a 6.75% increase in recovery over Fiscal Year 1997-98. This increase to 960,000 tons was driven mainly by a rise in the recovery of paper, organics and "other" materials. The "other" category had the largest percentage increase (77%) and is reflective of increased local government activity in construction and demolition debris recycling.

Glass recovery fell just over 4% in Fiscal Year 1998-99, expanding this downward trend to three years. The recovery of metals also experienced a decrease in Fiscal Year 1998-99. Unlike the steady decrease in glass each year, the decrease in metal recovery is likely the result of weak markets for steel experienced during the Fiscal Year 1998-99. Special wastes and plastics recovery each experienced small increases in recovery during the year.

Material	FY 91-92	FY 92-93	FY 93-94	FY 94-95	FY 95-96	FY 96-97	FY 97-98	FY 98-99
Total Paper	98,729	151,676	164,806	185,270	212,577	228,025	216,121	233,339
Total Glass	25,997	32,611	37,537	38,088	49,601	44,978	43,449	41,623
Total Plastics	6,128	9,264	9,797	12,339	16,253	13,699	14,399	14,835
Total Metal*	34,148	44,302	51,468	59,483	65,977	77,252	81,262	77,564
Total Organics**	267,428	378,516	350,142	495,034	498,583	640,410	504,554	525,033
Special Wastes***	1,265	1,715	2,106	2,466	3,212	3,230	3,527	3,817
Other	N/A	4,272	16,387	5,987	333	12,762	35,977	63,794
<b>Totals</b>	<b>433,695</b>	<b>622,356</b>	<b>632,243</b>	<b>798,667</b>	<b>846,536</b>	<b>1,020,356</b>	<b>899,290</b>	<b>960,005</b>
Per Capita Recovery (lbs.)	128.54	182.17	182.00	226.19	235.59	279.19	242.03	254.40
Recovery Ratio (Recycling:Disposal)	0.06	0.09	0.09	0.10	0.11	0.13	0.11	0.10

\* Includes white goods, aluminum cans, steel cans, and other metals.

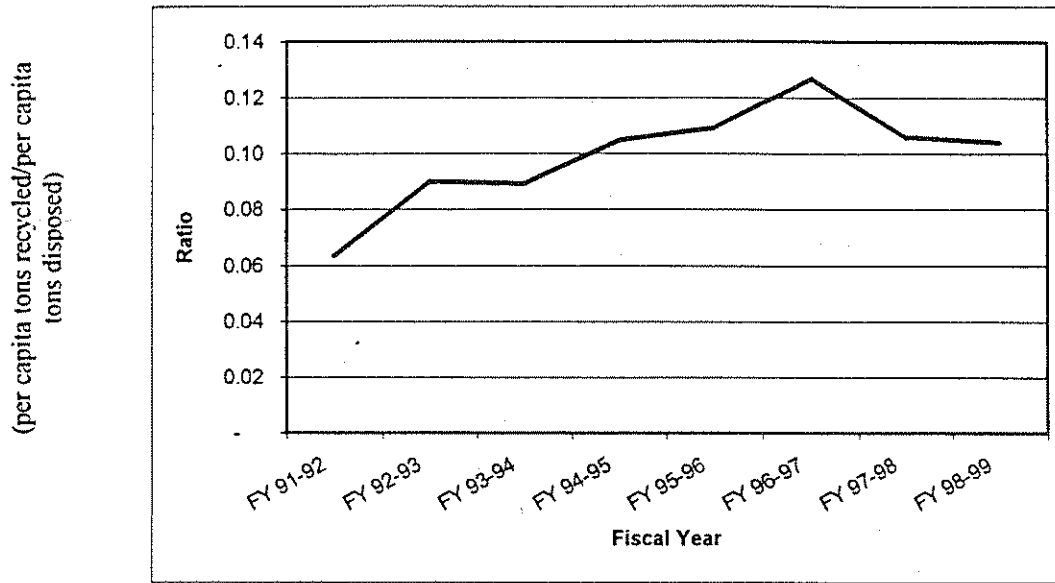
\*\* Includes yards waste, pallets, and wood waste.

\*\*\* Includes used oil, oil filters, antifreeze and batteries.

While local government recovery increased 6.75% in Fiscal Year 1998-99, disposal in North Carolina increased by 6.91%. The chart below shows the ratio of local government recovery to disposal in the state. **It is clear from this figure that local governments are no longer keeping pace with increasing disposal.** Although local government recovery programs made steady



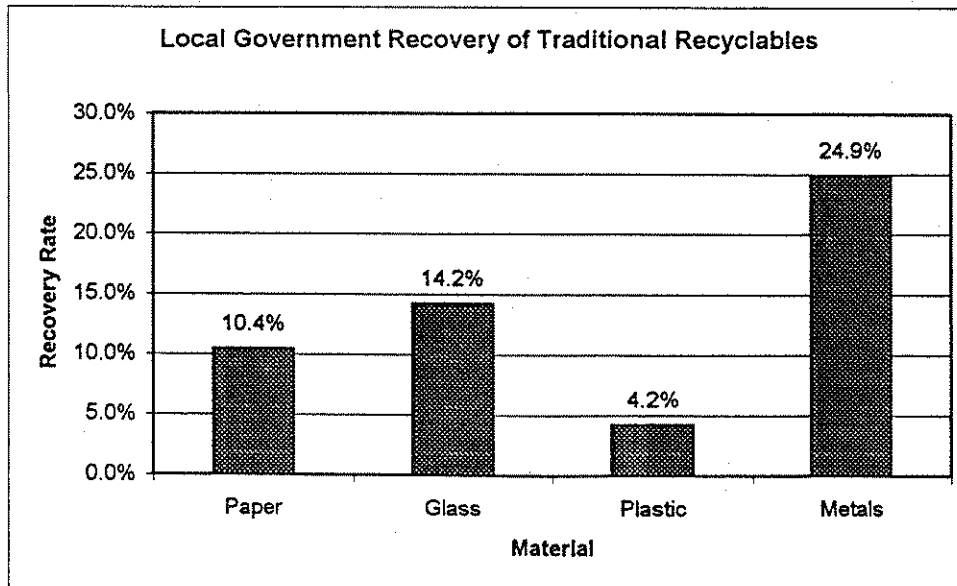
ground until Fiscal Year 1996-97, the past two years can be characterized by a steady decline in the recovery ratio.



**Room For Improvement**

Although local governments have made great strides in recycling since the early 1990's there is room for improvement. Metals enjoy the highest recovery rate of traditional recyclables at approximately 25%. The higher recovery rate for metals is likely due to the state's advanced disposal fee for "white goods" (e.g., refrigerators) which places a \$3.00 tax on the purchase of white goods to help ensure they are recovered.

Glass, paper and plastic recovery rates are 14%, 10% and 4%, respectively. Although it is fair to assume that no local government can recover 100% of any material due to private recovery efforts and waste streams that are outside the control of local governments, it is also fair to assume that through the use of comprehensive recovery programs, local governments could quickly double the recovery rates provided in the chart below. Such comprehensive approaches include program expansions, disposal diversion ordinances, pay as you throw, and increased public education.



*Trends in County and Municipal Recycling Programs*

Since the early-1990's, local governments have provided a consistent level of recycling services. The numbers of various kinds of recovery programs have held steady, giving the vast majority of North Carolina citizens' dependable access to recycling opportunities.

For counties, the recovery method of choice remained "drop-off" programs. Ninety-three counties offer that service as opposed to eighteen counties offering curbside collection. By contrast, as in years past, the majority of municipal programs were curbside (261) rather than drop-off (90). Fourteen counties and 45 municipalities provided both curbside and drop-off programs. In addition to traditional service to households, over 40% of local governments offered commercial businesses access to curbside and drop-off programs. Less than 15% of the local governments extended curbside and drop-off to industrial users. Sixteen curbside and thirteen drop-off programs were added in Fiscal Year 1998-99, while two small municipalities cut curbside service and three others discontinued all recycling programs. Local government reliance on mixed waste processing recovery remained low with twelve programs in the State.

The cities of Kannapolis and Fayetteville are the only municipalities with over 30,000 residents that provide no recycling services of any kind. Robeson County is the only county with no public recycling program.

Local governments continued to go beyond offering traditional services in Fiscal Year 1998-99 by operating 30 school recycling programs; and providing 20 recycling "drives"; and 19 specific commercial-industrial collection programs. In all, communities offered 147 "other" programs in Fiscal Year 1998-99 to expand recovery efforts.

The table below shows the tonnage collected through the major types of recovery programs in Fiscal Year 1998-99. Both curbside and drop-off tonnages increased from the previous year and remained slightly weighted to curbside. Most significantly, tonnage collected in "other" programs increased 33% over Fiscal Year 1997-98 levels, accounting for over a quarter of all public sector recovery. As curbside and drop-off programs maintain their patterns of slow growth, the implementation of "other" programs (e.g., C & D or school recycling) may become increasingly important in expanding recycling.

Program Type	Total Tons	Percentage of Recovery
Curbside	162,450	37%
Drop-off	155,163	35%
Mixed Waste Processing	8,184	2%
Other Programs	115,308	26%

In conducting their recycling programs, local governments relied heavily on private contractors to operate curbside collections – less than a quarter of all communities conduct their own curbside pick-ups. However, 54% of drop-off services were more likely to be operated directly with local government employees.

Although popular interest in recycling and participation rates have lagged in the past few years, local government maintenance of public recycling services provides a strong foundation for increasing recovery efforts in the future.

**Typical Programs**

To develop an understanding of local government activity in waste reduction it is important to identify what constitutes the average waste reduction program in North Carolina. It is also important to highlight the communities that have developed outstanding programs and use such programs as models for other local governments. The following section outlines what an average county or municipal waste reduction program encompasses and provides a glimpse of what some communities have done to develop outstanding programs.

The average county waste reduction program in North Carolina is still quite **limited in scope**. The average county has a drop-off recycling program and one "other" recycling program, but no reuse or source reduction program (including backyard composting). The average county has a mulching or composting program, but does not have a local disposal diversion ordinance and does not use pay as you throw.

The average county also has not expanded recycling programs beyond the most traditional materials. Most counties recycle all three colors of glass; PET and HDPE plastic bottles; aluminum and steel cans; white goods; old newspapers and corrugated cardboard. Expansion into less traditional materials, such as mixed paper, textiles or construction and demolition debris is quite limited.

In general, the average North Carolina county has implemented a basic recycling program, but has gone no further. The table below provides a visual account of the average county waste reduction program. The average local government uses less than half of the program elements listed. **To meet local waste reduction goals, it is imperative that counties and municipalities expand existing recycling programs and add programs** outlined in the table below. The average per capita recovery for county programs is 88.17 pounds per person and ranges from zero pounds per person to 585 pounds per person. Although these per capita rates exclude municipal recovery and county compost and mulching programs, it is a good indicator of the level (or lack thereof) of activity at the county level.

Program	Yes/No	Program	Yes/No
Backyard Composting	No	Local Disposal Ban	No
Source Reduction	No	Pay As You Throw	No
Reuse Program	No	Recycles Oil	Yes
Recycling Program	Yes	Recycles Oil Filters	No
Curbside	No	Recycles Antifreeze	No
Drop-off	Yes	Recycles Batteries	Yes
One Other Program	Yes	HHW Collection	No
Two Other Programs	No	Mulching/Composting	Yes
Education Program	Yes	C&D Reuse/Recycling	No

**Exemplary Programs**

Two counties that have gone beyond the norm and implemented exemplary waste reduction programs are Orange County (Orange Community Recycling) and Craven County. Both counties accomplished this by addressing multiple waste generation sectors (e.g., commercial, construction and demolition) and by assuming a strong role in waste reduction in both incorporated and unincorporated areas of the county. This comprehensive approach, along with a high level of

services provided, has resulted in Orange and Craven County achieving, respectively, 35% and 52% waste reduction rates. As could be expected, both counties have recovery rates higher than the state average. Craven County recovers approximately 585 pounds per capita and Orange County recovers over 197 pounds per capita.

Programs or services provided by Orange and Craven Counties are identified below. Both counties offer many more outlets for waste reduction than the average county. The aspects that truly set these programs apart from others in North Carolina are Orange County's **aggressive commercial recycling program**, Craven County's use of **pay as you throw** to provide direct economic incentives to reduce waste, and the **recovery of construction and demolition debris (C&D)** by both counties.

Program	Yes/No		Program	Yes/No	
	Orange	Craven		Orange	Craven
Backyard Composting	Yes	Yes	Local Disposal Ban	Yes	No
Source Reduction	Yes	Yes	Pay As You Throw	No	Yes
Reuse Program	Yes	Yes	Recycles Oil	Yes	Yes
Recycling Program	Yes	Yes	Recycles Oil Filters	Yes	No
Curbside	Yes	Yes	Recycles Antifreeze	Yes	Yes
Drop-off	Yes	Yes	Recycles Batteries	Yes	Yes
One Other Program	Yes	No	HHW Collection	Yes	No
Two Other Programs	Yes	No	Mulching/Composting	Yes	Yes
Education Program	Yes	Yes	C&D Reuse/Recycling	Yes	Yes

Although the presence of county-run programs within municipal programs makes it difficult to identify what the average municipal waste reduction program looks like, it is fair to assume that the largest 15 municipal programs maintain enough autonomy from county programs to be characterized independently.

### NC's Fifteen Largest Municipalities

Municipality	July 1, 1998 Population
Charlotte	521,478
Raleigh	269,211
Greensboro	205,260
Winston-Salem	173,524
Durham	162,273
Fayetteville	121,338
Cary	86,613
High Point	74,213
Jacksonville	74,213
Asheville	68,294
Wilmington	65,058
Gastonia	62,077
Rocky Mount	57,837
Greenville	56,853
Goldensboro	47,814

These larger cities should have the resources available to develop strong programs and to provide leadership to smaller communities in North Carolina.

An analysis of the 15 largest municipalities found that they rarely implemented anything beyond basic recycling programs. In fact, the only attributes common to at least half of these cities are curbside and drop-off recycling, an education program, a mulching or composting program and a source reduction program. It should be noted that of the 15 largest municipalities in the state, one community, the City of Fayetteville, currently does not operate a recycling program.

To be true waste reduction leaders in the state, these communities need to implement additional programs that expand the waste reduction opportunities available. However, less than half of the 15 largest cities have backyard composting programs or "other" recycling programs. It should be noted that although these 15 municipalities likely generate large quantities of construction and demolition debris, only one is operating a C&D reuse or recycling program. None of the 15 cities in the analysis are using pay-às-you throw to provide incentives for reduction.

More than half of the 15 largest communities in the state are recovering less than the statewide municipal recovery average of 109 pounds per capita for traditional recyclables. **Leadership from large cities in North Carolina is truly limited.** Most municipalities in North Carolina should be able to recover over 150 pounds per capita. Of the 15 cities analyzed, only Greensboro, Cary and High Point have managed to recover over 150 pounds per capita. If the remaining cities in the analysis were able to meet this target it would result in a 47,000 ton, or 11%, increase in recovery. North Carolina municipalities should follow the examples provided by Greensboro, Cary and High Point in expanding programs to comprehensively address waste reduction.

### Education and Participation

Of the 409 local governments with recycling programs in North Carolina, 50%, or 203 communities, indicated having an education program to inform citizens of program requirements and the benefits of waste reduction. The table below shows that providing education to the public is critical for local governments to operate efficient and effective waste reduction programs. **Participation is 21% higher in municipal curbside programs that provide education to the public.** Furthermore, these programs recover an average of **110 pounds more per household served.** Local governments without education programs are missing opportunities to maximize the efficiency of their waste reduction programs.

Local Government	Number of Programs	Participation (weighted avg)	Pounds per household participating	Pounds per household served
Curbside w/ education	117	64%	532.01	340.40
Curbside w/o education	145	53%	433.83	230.11

**The lack of strong educational efforts is a clear detriment to higher waste diversion.** The average participation rate for all local government recycling programs is 45% (56 % for curbside and 32% for drop-off). To improve participation rates local governments should pursue options such as increased education; economic incentives for reduction (e.g., pay as you throw); disposal diversion ordinances and locally mandated recycling. An increase in the average statewide participation rate from 45% to 70% or 75% would equate to an estimated **200,000 ton increase in diversion.** Although an increase in participation would result in a dramatic increase in recovery, the expansion of existing programs into new materials (e.g., mixed paper) also has the potential to substantially increase recovery.

**Yard Waste**

Local government yard waste management data for Fiscal Year 1998-99 is presented below. As in years past, yard waste diversion represented over half of all waste diversion accomplished by county and municipal governments. The table shows a slight increase in the total amount of diversion, but also a very large increase in the amount of actual yard waste disposed in C & D landfills by local governments (the state yard waste disposal ban applies to MSW landfills only – yard waste may still be disposed in C&D and LCID [land-clearing & inert debris landfills] ). Over 85% of this increase in yard waste disposed occurred in 4 counties: Buncombe, Cumberland, Wake, and Wayne. The large increase in yard waste materials sent to “other public facilities” is in part reflected in increases in the other categories listed.

Destination of Materials	Number of Local Govts using destination	FY 98-99 Total tons by destination	Change from FY 97-98
End Users (direct delivery)	85	79,966	+ 6%
Local Government mulch/ compost facility	192	435,117	+ 5%
<b>TOTAL DISPOSAL DIVERSION</b>		<b>515,083*</b>	<b>+ 5%</b>
Other Public Facility	77	91,526	+ 96%
Private Facility	27	75,394	+ 6%
C & D Landfill	46	224,420	+ 114%
LCID Landfill	51	59,064	- 4%
<b>YARD WASTE TOTALS</b>		<b>873,961**</b>	<b>+ 20%</b>

\* Tonnages under the row for Total Disposal Diversion not included in diversion because of data redundancy, uncertainty about actual disposition of the waste, and actual disposal of noted tonnages.

\*\* Yard Waste Totals exclude tonnages for “other public facilities” because it is assumed these tons were captured under other categories.

**Construction and Demolition Waste**

Construction and demolition (C&D) debris recycling continues to be an area that needs further growth. As much as a third of disposed waste in North Carolina can be characterized as construction and demolition debris. In 1998-99 local government C&D debris recovery increased to 52,000 tons as compared to approximately 25,000 tons in Fiscal Year 1997-98. This increase represents improved reporting as well as a realization by some local governments that C&D debris recovery is critical to meeting both local and state waste reduction goals.

Thirty local governments reported operating a C&D recycling or salvage program during Fiscal Year 1998-99. Although most of these programs are small in scale, they represent the building blocks for larger programs and provide strong waste reduction examples to other communities. It should be noted that **four of the five counties with the highest per capita recovery rates are operating C&D recycling or salvage programs.**

The recovery of C&D debris is still in its infancy in North Carolina and developing an infrastructure should be addressed from both the public and the private sector. The Division of Pollution Prevention & Environmental Assistance (DPPEA) is attempting to address infrastructure development through grants devoted to expanding C&D recovery efforts. It is likely that grants, combined with an increased interest in C&D recovery, will result in a steady increase in recovery programs over the next few years.

**Special Waste**

Local government management of used motor oil, oil filters, antifreeze, lead acid batteries, and household hazardous waste (HHW) is presented in the table below. For the second year in a row,

used oil collections enjoyed a healthy gain, although DPPEA estimates there may still be as many as 4,000,000 gallons of "do-it-yourselfer" motor oil still not being captured. A factor perhaps explaining the gallon increase is the 11% increase in the number of public oil collection sites from the previous year. Oil filter collections increased slightly last year, although clearly these programs are still a novelty among local governments. The number of HHW programs dropped slightly, but the tonnage collected increased 55% while the aggregate average cost dropped 14% from the previous year. Antifreeze and lead acid battery collection efforts appear steady.

	FY 95-96	FY 96-97	FY 97-98	FY 98-99
<b>Used Motor Oil</b>				
Number of local programs	118	122	115	127
Gallons collected	601,744	575,859	646,646	736,436
<b>Oil Filters</b>				
Number of local programs	N/A	N/A	8	11
Tons collected	N/A	N/A	~6	6.61
<b>Antifreeze</b>				
Number of local programs	59	48	46	46
Gallons collected	18,859	9,026	8,770	9,568
<b>Lead Acid Batteries</b>				
Number of local programs	85	90	84	79
Number collected	50,458	59,112	61,118	58,237
<b>Household Hazardous Waste</b>				
Number of programs	19	20	20	17
Number of permanent sites	8	7	9	10
Tons collected	389.95	653.24	657.29	1,017.78
Total cost reported	N/A	\$1,402,485 (\$2,147/ton)	\$1,301,638 (1,875/ton)	\$1,672,271 (\$1,643/ton)

Conversions: Oil, 1 gal = 7.4 lbs.; Antifreeze, 1 gal = 8.42 lbs.; Lead Acid Battery, 1 battery = 35.9 lbs.

### Solid Waste Collection

The table below represents the sectors for which local governments either collect or contract for the collection of solid waste. The sectors served by local government remained relatively constant in Fiscal Year 1998-99. Local governments continue to view residential solid waste collection as their core service, although about half also provide collection services for the commercial sector. Only a small percentage of local governments provided collection services for the industrial sector.

	Residential	Commercial	Industrial
Municipalities	399 (76%)	295 (57%)	100 (19%)
Counties	82 (82%)	26 (26%)	19 (19%)

To meet the need for such services, some local governments develop franchise agreements to regulate and provide for certain aspects of solid waste collection. Franchises are most commonly used to ensure a solid waste collection infrastructure is in-place for commercial and industrial generators. However, in Fiscal Year 1998-99 three percent of local governments also relied solely on franchise agreements for the collection of residential solid waste.

In contrast to solid waste collection, it should be noted that some local governments provide or contract for the provision of recycling services outside of the residential sector. Although this is not yet a common practice, since 25% are providing curbside commercial recycling, local

governments should be encouraged to **expand into commercial and industrial recycling wherever possible**. In addition to improving diversion rates, expansion into commercial and industrial recycling can also improve efficiency of existing programs and develop the economies of scale necessary to add new materials and expand local processing capabilities.

### Recycling Market Prices

Prices paid for recyclable materials indicate the relative health of recycling markets. Among the many sources of information on market prices, the NC Recycling Business Assistance Center (RBAC) conducts a quarterly survey of processors in the eastern, central, and western areas of the state. The survey is published on the back page of RBAC's newsletter, *Recycling Works*. The prices for the three regions were averaged for four quarters and are presented below.

Of note in Fiscal Year 1998-99 was the precipitous drop in steel can market prices, reflecting the effects of the Asian economic recession and the related drastic oversupply of scrap in US markets. Prices for plastics also failed to rise above relatively low levels last year, also a product of the Asian crisis and competition from increases in virgin resin production. Aluminum prices, on the other hand, rose steadily and paper prices enjoyed a healthy increase toward the end of the fiscal year. Glass prices remained remarkably consistent throughout the year.

During fall and winter of 1999-2000, steel can prices started to rebound and aluminum prices continued moving upward. Paper prices remained the highest since the dramatic price increases of 1995. Plastic markets, however, remained depressed.

Material	August 1998	November 1998	February 1999	May 1999
Aluminum Cans, lbs. Loose	\$.39	\$.42	\$.43	\$.45
Steel Cans, gross tons, baled	\$67	\$42	\$3	\$11
PETE, lbs., baled	\$.12	\$.08	\$.06	\$.06
HDPE, lbs., baled	\$.11	\$.06	\$.06	\$.07
Newsprint, ton baled	\$28	\$32	\$28	\$38
Corrugated, ton baled	\$46	\$48	\$25	\$76
Sorted office white paper, ton baled	\$120	\$127	\$127	\$140
Mixed paper, ton baled	\$12.5	\$10	\$10	\$12.5
Clear glass, ton	\$36	\$36	\$36	\$36
Brown glass, ton	\$26	\$26	\$26	\$25
Green glass, ton	\$8	\$8	\$8	\$7

It has become commonplace for "the lack of markets" to be blamed for the stagnation in local recycling programs in North Carolina. A review of the market prices over the past two fiscal years does indicate that there are indeed fluctuations in material prices, reflecting the volatility that is common in any commodity market. **At no time, however, have market prices indicated a lack of demand for recyclable materials.** On the contrary, over the past two Annual Report periods, prices for some of the leading materials collected by local governments have remained remarkably steady. Prices for newspaper, for example, never went below \$28 per ton, occasionally spiking to the high \$30's and low \$40's. Aluminum cans only once went below 40 cents/pound. Even with the collapse of steel can prices in Fiscal Year 1998-99, steel cans continued to be successfully collected and marketed by North Carolina local governments.

### Other Notable Events in Waste Reduction during Fiscal Year 1998-99

North Carolina took an important step in support of recycling markets at the end of Fiscal Year 1998-99 when the State Division of Purchase and Contracts in the Department of Administration



followed the federal government lead and removed virgin paper from many of the state term purchase contracts. In its place, "dual purpose" paper (copy paper) with 30% post-consumer content and numerous other recycled paper grades were made available to all state and local agencies (who may buy from the state term contract) at prices competitive with virgin paper. Similar efforts to "close the recycling loop" were also implemented for other products under Governor Jim Hunt's "NC Project Green" environmental sustainability initiative for state agencies.

North Carolina also considerably improved its newsprint recycling law in the 1998-99 General Assembly session. Negotiations between newsprint publishers and the state resulted in maintenance of the high recycled content standards for newspapers in North Carolina but also added new incentives for publishers to help expand recovery of newspapers and magazines statewide. In the spirit of the law, the *Raleigh News and Observer* (N&O) has steadily worked to increase its recycling services, offering local governments in the eastern Piedmont no-cost programs for newspaper and magazine collection. As part of its recycling efforts, the N&O backhauls loads of 100% post-consumer newsprint into North Carolina from mills in Georgia.

One other recycling measure of note was briefly considered by the General Assembly during the 1998-99 session: Senate Bill 1000 to place an advanced disposal fee on the sale of motor oil and use the proceeds to increase the collection of used motor oil, oil filters, and oil bottles statewide. Although the bill was not brought up for committee action, its sponsor, Senator Fountain Odom, indicated the bill would be reintroduced in the 1999-2000 "short session." It is anticipated that the bill would dramatically improve the used motor oil recycling infrastructure in North Carolina, as it has already done in South Carolina (which passed a similar law in 1991).

One of the most encouraging signs for recycling in North Carolina is the persistent level of entrepreneurial activity in the collection, processing, and end-use of previously disposed materials. In Fiscal Year 1998-99, numerous private companies either started or expanded operations that resulted in real diversion of materials from disposal facilities and conversion of those materials into "value-added" products. Perhaps most promising, recycling businesses began to target some of the largest and most problematic waste streams that have had a relatively weak recycling infrastructure, such as construction and demolition wastes, organics (e.g., food wastes), and electronics (e.g., computers and cathode ray tubes). To encourage these developments, the state, in partnership with the Community Center for Self Help in Durham, established a Recycling Revolving Loan Fund to improve access to capital by recycling companies.

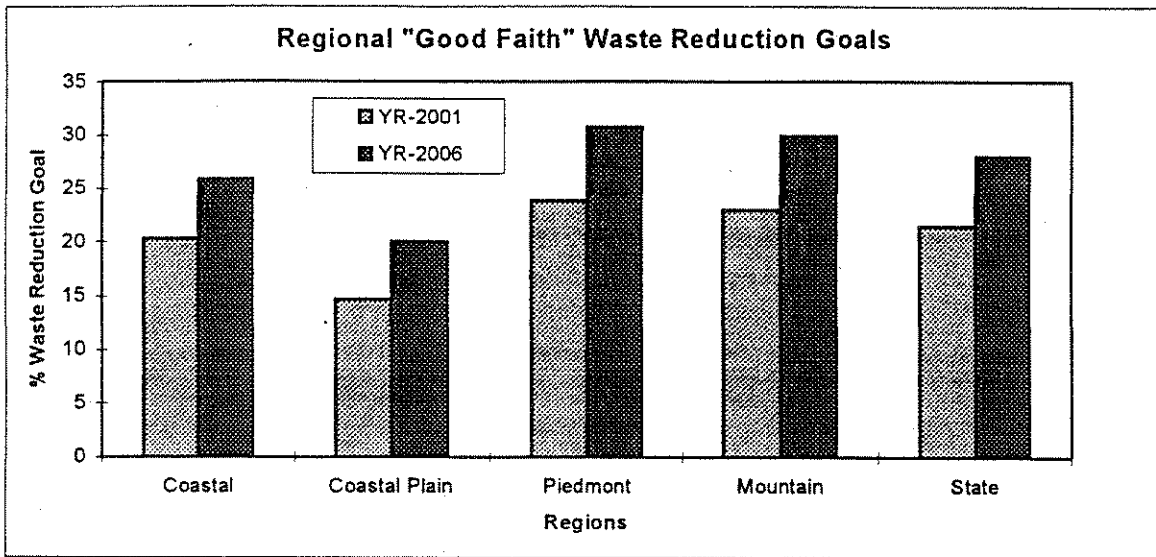
Waste reduction still faces many challenges in North Carolina. Low tipping fees continue to hamper recycling efforts, providing an incentive for waste generators to continue to dispose of recyclable materials in landfills. Some areas of the state have also struggled with the loss or lack of local recycling processing centers, which can provide a strong and necessary foundation for increasing recycling collections. Low disposal costs and gaps in local and regional infrastructures will need to be addressed if the state hopes to turn around its trend toward increasing disposal of solid wastes.

## **Part 6      Waste Reduction Goals**

North Carolina's "Act to Improve the Management of Solid Waste"<sup>1</sup> set a statewide waste reduction goal of 40% on a per capita basis. All local governments in North Carolina are required

<sup>1</sup> This legislation was originally passed in 1989, but was amended in 1991 and 1995.

by the Act to be a part of a local ten-year comprehensive solid waste management plan. General Statute 130A-309.09A requires that in addition to addressing other waste issues, each plan:



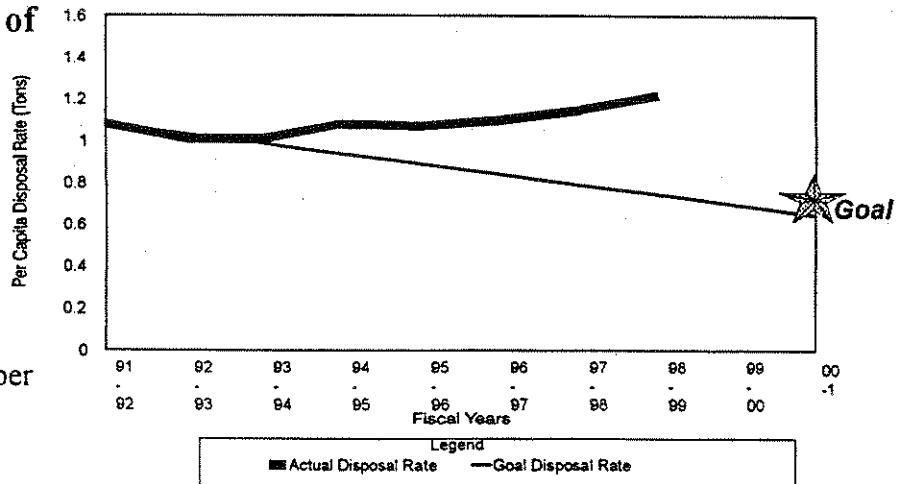
*Include a goal for the reduction of municipal solid waste on a per capita basis by 30 June 2001 and a goal for the further reduction of municipal solid waste by 30 June 2006. The solid waste reduction goals shall be determined by the unit or units of local government that prepare the plan, and shall 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...*

In 1998 the Solid Waste Section completed analysis of local government solid waste management plans developed in compliance with this law. A comparison of the goals in local plans to the state goal (using an average weighted relative to population) shows that if each of the local plans were successful in achieving their chosen goals, a 27% reduction could be achieved. This "good faith" effort from local government falls far short of the state's own 40% reduction goal. However, this goal if achieved would be a remarkable accomplishment.

As the local governments update their individual plans during Fiscal Year 1999-2000 the goals are expected to be less aggressive than the past plans.

### Part 7 Assessment of State Waste Reduction Progress

The state measures waste reduction by comparing the amount of waste each person disposed (per capita disposal rate) in the base year (Fiscal Year 1991-92) to the per capita rate in the current year.



**Formula: Total Tons Disposed ÷ Population = Per Capita Disposal Rate**

The per capita rate for the Fiscal Year 1991-92 base year was 1.01 tons. Each year is compared to the base year to measure progress toward the goal. When new programs to reduce waste were implemented in 1991-93 the per capita disposal rate decreased slightly. This also compares to a downturn in the state and national economy. However, the disposal rate continues to climb as Fiscal Year 1998-99 shows a record per capita disposal rate of 1.22 tons.

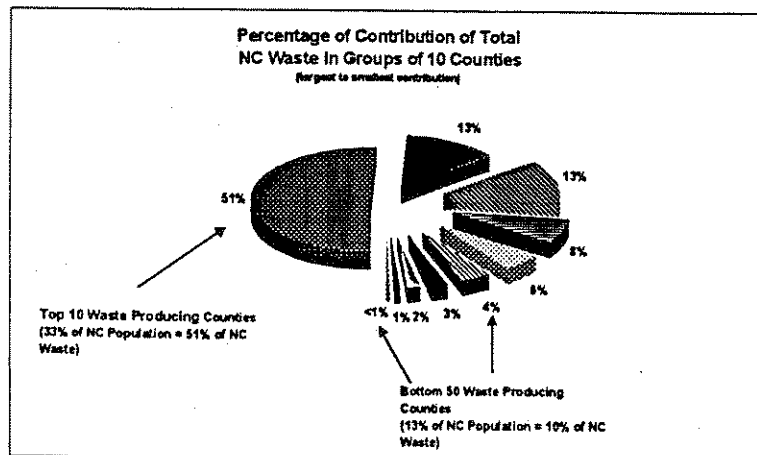
Fiscal Years	Tons Disposed	Population	Per Capita Disposal Rate	Percent Waste Reduction from Base Year 1991-92
1998-99	9,214,323	7,544,360	1.22	-13%
1997-98	8,493,921	7,431,161	1.15	-6%
1996-97	8,041,734.00 (adjusted)	7,323,085	1.10	-2%
1996-97	8,741,733.62	7,323,085	1.20	-11%
1995-96	7,722,794.78	7,194,238	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 Rate)	
1991-92	6,822,890.35	6,739,959	1.01	
1990-91	7,161,455.00	6,648,689	1.07	

\* The 1996-97 fiscal year is adjusted by subtracting 700,000, the tonnage estimated to have been created by Hurricanes Bertha and Fran.

\*\* The tons managed figure 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 tons disposed in recognition of the fact that some local governments had begun waste reduction prior to 1991.

Some of the factors influencing the high waste disposal rate and failure to make progress toward the waste reduction goal include: **changes in the dynamics of solid waste management since 1991** (loss of flow control by local governments, alternative technologies not developing); **lack of commitment** (it was "just a goal"- not a mandate, few resources were devoted to it); and **economics** (landfills remain an inexpensive option, a strong economy encourages waste).

**In Fiscal Year 1998-99 ten of the state's most populated and urban counties held 33% of the state's population but generated 51% of the state's waste. Conversely, 1/2 of North Carolina's counties had 13% of the state's population and produced 10% of the waste landfilled or incinerated during the same fiscal year.**



These ten counties also produced 56% of the retail sales; 54% percent of total authorized construction, and had a 28% higher average median household income than the remaining counties<sup>2</sup>. The per capita disposal rate was 1.55 for the ten counties listed below. This per capita disposal rate is 33% above the state rate. **If North Carolina is to make progress towards the waste reduction goal, these counties must have a greater impact on the state's disposal rate.** If these ten counties reduced their per capita disposal rate to the state rate (1.22), the state per capita would drop to 1.09.

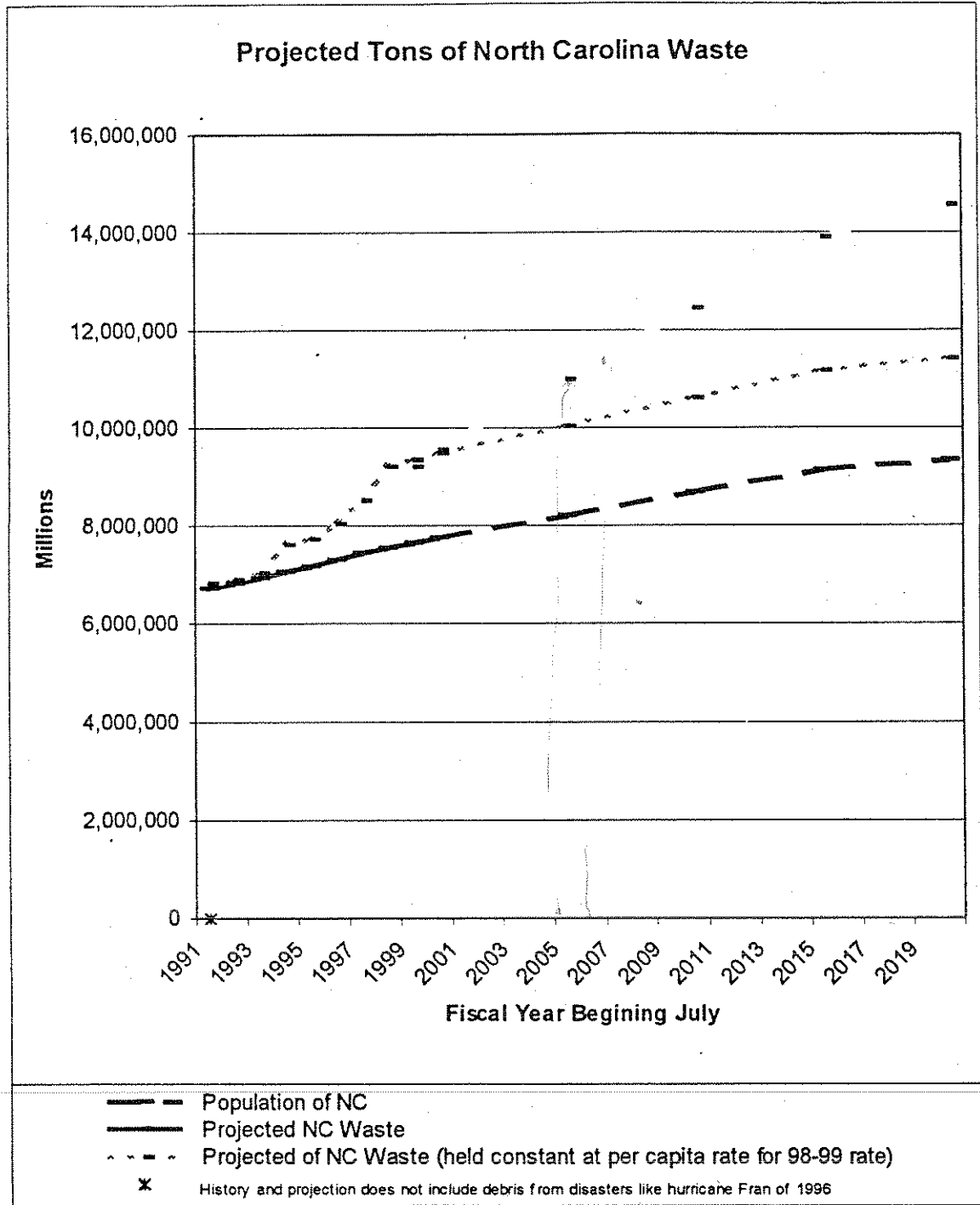
Counties listed below are projected to increase in population an average rate of 13.4% over the next ten years. To offset population increases new programs and initiatives, such as composting or C & D recycling, need to be implemented, especially in these ten counties.

County	Population July 1998	Tons Disposed FY 98-99	Tons (%) of Total Disposed	Cumulative Tons Disposed	Cumulative Tons (%) Disposed
MECKLENBURG	624,464.00	1,214,764.14	13.18%	1,214,764.14	13%
WAKE	575,696.00	1,001,578.21	10.87%	2,216,342.35	24%
GUILFORD	388,519.00	525,915.86	5.71%	2,742,258.21	30%
FORSYTH	290,790.00	445,673.58	4.84%	3,187,931.79	35%
CUMBERLAND	295,053.00	366,067.27	3.97%	3,553,999.06	39%
NEW HANOVER	149,975.00	266,602.19	2.89%	3,820,601.25	41%
GASTON	181,028.00	250,699.95	2.72%	4,071,301.20	44%
BUNCOMBE	192,459.00	224,805.74	2.44%	4,296,106.94	47%
DURHAM	200,219.00	219,208.80	2.38%	4,515,315.74	49%
IREDELL	111,624.00	167,214.33	1.81%	4,682,530.07	51%
<b>TOTAL</b>	<b>3,011,825</b> <b>(33% of</b> <b>Total NC</b> <b>Population)</b>	<b>4,682,529.07</b>	<b>50.81%</b>		

## Part 8 Forecasting North Carolina Waste Disposal

Achieving the 40% state waste reduction goal by the year 2001 would equate to a reduction in the current per capita disposal rate of 1.22 tons to .64 tons per person. The projected population of 7,734,401 for 2000, which is one year prior to 2001, would necessitate a reduction of over 4,500,000 tons of waste currently being disposed of by landfilling or incineration. This waste would need to be managed either through recycling, composting/mulching, or reuse. This goal is not attainable given the factors indicated above. However, by virtue of having the goal, **attention has been focused on waste reduction and has lead to a lower waste disposal rate than without such a goal.**

<sup>2</sup> calculated from data at NC Dept of Commerce and NC Dept of Labor Web sites



Future waste disposal quantities can be forecasted through linear regression analysis with records back to Fiscal Year 1990-91. This analysis shows the dramatic effect on an increasing per capita rate coupled with population growth. At this rate, **North Carolina would need nearly twice the existing landfill capacity over the next 20 years than exists today.**

Holding the rate constant at 1.22 tons per person per year (Fiscal Year 1998-99 rate) greatly reduces the need for additional disposal capacity. However, keeping the rate constant may be difficult. Note: using this same regression analysis to forecast from Fiscal Year 1990-91 to Fiscal Year 1998-99 was accurate to within five percent of the actual amount disposed.

## Part 9 Additional Information

Additional solid waste information can be found in the following reports:

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

For additional documents or more information please contact:

Division of Waste Management, Solid Waste Section  
(919) 733-0692, telephone (919) 733-4810, fax  
<http://wastenot.enr.state.nc.us>

Division of Pollution Prevention and Environmental Assistance  
(919) 733-6500, telephone (919) 715-6794, fax  
<http://www.p2pays.org>

APPENDIX A-1: PUBLIC AND PRIVATE MUNICIPAL SOLID WASTE LANDFILLS (INCLUDES CONSTRUCTION AND DEMOLITION LANDFILLS\*\*), DESCENDING ORDER OF TONS, FY 1998-1999

PERMIT #	FACILITY	TONS							FACILITY TYPE
		1993-1994	1994-1995	1995-1996	1996-1997	1997-1998	1998-1999		
1304	BFI-CHARLOTTE MTR SPEEDWAY LANDFILL V	536,527	548,442	593,659	621,833	875,286	941,848	MSWLF	
8201	BFI-SAMPSON COUNTY DISPOSAL INC	97,004	163,175	231,233	258,194	385,527	574,579	MSWLF	
6204	UWHARRIE ENV. REG. LANDFILL			13,055	62,126	293,753	547,286	MSWLF	
9209	WAKE COUNTY LANDFILL						533,345	MSWLF	
0803	ADDINGTON-EAST CAROLINA REG LF	154,583	282,654	361,517	358,284	365,737	411,117	MSWLF	
3406	PIEDMONT SANITARY LANDFILL	350,509	507,123	552,899	606,859	551,748	379,945	MSWLF	
9214	BFI-HOLLY SPRINGS DISPOSAL INC	87,177	196,607	234,408	219,504	254,901	310,069	CDLF	
3402	WINSTON-SALEM, CITY OF - LANDFILL	258,632	300,571	299,140	310,660	299,740	305,930	MSWLF	
7304	ADDINGTON-UPPER PIEDMONT REG LF				150	104,026	256,943	MSWLF	
4112	GREENSBORO, CITY OF, SOLID WASTE MAN FA					192,362	250,375	MSWLF	
6013	NORTH MECKLENBURG C&D LANDFILL	110,881	195,345	248,115	281,168	246,232	228,934	CDLF	
1803	CATAWBA COUNTY LANDFILL					184,526	165,360	MSWLF	
2504	*CRSWMA - INTERIM REGIONAL LF	69,185	110,798	118,679	144,202	130,558	138,816	MSWLF	
2601	CUMBERLAND COUNTY LANDFILL						138,603	MSWLF	
4903	IREDELL COUNTY SANITARY LF	75,334	108,342	103,586	143,752	119,003	118,742	MSWLF	
4104	HIGH POINT CITY OF - LANDFILL	83,751	98,795	93,248	101,579	110,687	117,836	MSWLF	
3606	GASTON COUNTY LANDFILL					150,775	111,395	MSWLF	
1107	BUNCOMBE COUNTY MSW LANDFILL					85,466	109,734	MSWLF	
1403	FOOTHILLS ENVIRONMENTAL LANDFILL						106,779	MSWLF	
6709	ONslow COUNTY SUBTITLE D LANDFILL					47,458	105,477	MSWLF	
6504	NEW HANOVER COUNTY LANDFILL	82,189	80,786	114,365	163,648	155,442	101,105	MSWLF	
9606	WAYNE COUNTY					37,216	99,601	MSWLF	
5102	JOHNSTON COUNTY LANDFILL					61,933	96,923	MSWLF	
2906	DAVIDSON CO MSW LINED LANDFILL		73,653	92,137	86,544	79,403	95,524	MSWLF	

APPENDIX A-1: PUBLIC AND PRIVATE MUNICIPAL SOLID WASTE LANDFILLS (INCLUDES CONSTRUCTION AND DEMOLITION LANDFILLS\*\*), DESCENDING ORDER OF TONS, FY 1998-1999

PERMIT #	FACILITY	TONS							FACILITY TYPE
		1993-1994	1994-1995	1995-1996	1996-1997	1997-1998	1998-1999		
7803	ROBESON COUNTY LANDFILL							90,378	MSWLF
3412	WINSTON-SALEM CITY OF C&D LANDFILL			34,275	84,509				CDLF
7904	ROCKINGHAM COUNTY LANDFILL		52,474	59,829	69,056				MSWLF
0104	AUSTIN QUARTER SWM FACILITY	16,357	68,240	67,484	65,897	69,765	79,128		MSWLF
1301	BFI-CHARLOTTE MOTOR SPEEDWAY			29,482	43,014	21,510	73,687		CDLF
8003	ROWAN COUNTY LANDFILL	97,180	105,367	83,378	65,641	71,762	63,812		MSWLF
9704	WILKES COUNTY MSWLF	32,925	53,892	41,372	57,827	58,196	63,217		MSWLF
2301	CLEVELAND COUNTY LANDFILL						62,479		MSWLF
2608	FORT BRAGG C&D LANDFILL					33,104	61,263		CDLF
6801	ORANGE COUNTY LANDFILL	100,217	61,058	57,889	58,590	59,305	60,368		MSWLF
6708	CAMP LEJEUNE MSW LANDFILL					19,629	58,694		MSWLF
9203	WAKE COUNTY CDLF					20,879	57,933		CDLF
4903	IREDELL COUNTY C&D UNIT	9,847	17,400	24,278	31,860	30,620	45,471		CDLF
4103	GREENSBORO, CITY OF CDLF					29,319	45,292		CDLF
4407	HAYWOOD CO WHITE OAK LANDFILL	22,451	34,736	38,630	39,340	42,899	44,023		MSWLF
9003	GRIFFIN FARMS C&D LANDFILL			17,070	34,550	36,460	40,951		CDLF
5503	LINCOLN COUNTY LANDFILL	40,873	34,090	34,238	31,596	35,391	38,438		MSWLF
2601	CUMBERLAND COUNTY C&D UNIT					23,674	36,381		CDLF
5703	MACON COUNTY LANDFILL	17,109	18,779	19,474	19,987	27,205	36,130		MSWLF
6801	ORANGE COUNTY C&D UNIT	21,128	63,553	31,342	37,832	30,168	33,667		CDLF
8203	BFI-SAMPSON COUNTY C&D UNIT			18,686	191,254	25,712	32,414		CDLF
1107	MOORE CO. C&D STOCKPILE	9,851	12,291	10,426	14,089	17,369	32,138		CDLF
8401	BUNCOMBE COUNTY C&D UNIT					15,089	30,899		CDLF
	ALBEMARLE, CITY OF, CDLF					10,173	28,651		CDLF



APPENDIX A-1: PUBLIC AND PRIVATE MUNICIPAL SOLID WASTE LANDFILLS (INCLUDES CONSTRUCTION AND DEMOLITION LANDFILLS\*\*\*), DESCENDING ORDER OF TONS, FY 1998-1999

PERMIT #	FACILITY	TONS							FACILITY TYPE
		1993-1994	1994-1995	1995-1996	1996-1997	1997-1998	1998-1999		
8301	SCOTLAND COUNTY CDLF					12,058	28,212	CDLF	
1007	BRUNSWICK COUNTY CDLF					14,254	26,865	CDLF	
2803	DARE COUNTY C&D LANDFILL				18,417	20,469	21,788	CDLF	
8606	SURRY COUNTY LANDFILL		16,649	14,638		26,855	21,660	MSWLF	
3902	GRANVILLE COUNTY CDLF					7,744	20,656	CDLF	
8602	SURRY COUNTY C&D LANDFILL						19,488	CDLF	
9801	WILSON COUNTY CDLF					11,973	19,352	CDLF	
1302	CABARRUS COUNTY CDLF					5,107	19,236	CDLF	
3301	EDGCOMBE COUNTY CDLF					5,878	18,935	CDLF	
2002	CHEROKEE COUNTY MSW FACILITY					8,248	18,374	MSWLF	
5403	LENOIR COUNTY CDLF					15,832	18,104	CDLF	
0501	ASHE COUNTY LANDFILL						17,877	MSWLF	
9601	WAYNE COUNTY CDLF					5,154	17,630	CDLF	
8807	TRANSYLVANIA COUNTY LANDFILL	18,874	16,452	9,294	11,533	14,082	15,585	MSWLF	
9002	UNION COUNTY C&D						15,481	CDLF	
0105	COBLE'S C&D LANDFILL						14,111	CDLF	
2301	CLEVELAND COUNTY CDLF					5,857	13,069	CDLF	
1203	BURKE COUNTY CDLF					4,647	12,738	CDLF	
0104	AUSTIN QUARTER C&D UNIT	6,813	9,014	9,299	10,824	10,499	10,240	CDLF	
5901	MARTIN COUNTY C&D LANDFILL		1,936	3,530	8,141	9,189	9,775	CDLF	
4303	HARNETT CO ANDERSON CRK C&D LANDFILL					1,890	9,737	CDLF	
8103	RUTHERFORD COUNTY C&D UNIT	8,142	14,935	12,104	9,744	8,527	9,559	CDLF	
5301	LEE COUNTY C&D LANDFILL	2,484	3,893	5,370	5,669	6,833	9,537	CDLF	
07A	BEAUFORT COUNTY DEMO LANDFILL		9,573	8,845	11,240		8,914	CDLF	

APPENDIX A-1: PUBLIC AND PRIVATE MUNICIPAL SOLID WASTE LANDFILLS (INCLUDES CONSTRUCTION AND DEMOLITION LANDFILLS\*\*\*), DESCENDING ORDER OF TONS, FY 1998-1999

PERMIT #	FACILITY	TONS							FACILITY TYPE
		1993-1994	1994-1995	1995-1996	1996-1997	1997-1998	1998-1999		
7002	PASQUOTANK COUNTY C&D LANDFILL			1,794	7,275	8,606	8,276	CDLF	
4302	HARNETT COUNTY CDLF					3,066	7,208	CDLF	
5704	HIGHLANDS C&D LANDFILL				3,681	4,531	7,018	CDLF	
5504	BFI-LAKE NORMAN LANDFILL	2,625	4,379	4,356			6,766	CDLF	
4002	GREENE COUNTY CDLF					554	6,051	CDLF	
9101	VANCE COUNTY CDLF					3,619	5,633	CDLF	
6401	NASH COUNTY CDLF						5,453	CDLF	
	MCDOWELL CO. C&D STOCKPILE	2,600	4,461	3,961	4,231	2,887	5,323	CDLF	
5803	MADISON COUNTY LANDFILL	7,411	10,773	9,954	7,868	4,683	4,642	MSWLF	
3003	DAVIE COUNTY C&D LANDFILL			6,859	6,040	6,528	4,518	CDLF	
5101	JOHNSTON COUNTY C&D LANDFILL						4,494	CDLF	
8401	ALBEMARLE, CITY OF-LANDFILL					29,748	4,488	MSWLF	
5002	JACKSON COUNTY LANDFILL CDLF					552	4,437	CDLF	
5503	LINCOLN COUNTY C&D UNIT			3,053	3,311	5,411	4,341	CDLF	
5803	MADISON COUNTY C&D UNIT			1,062	10,481	1,378	4,083	CDLF	
9902	YADKIN COUNTY C&D LANDFILL	2,127	1,688	2,728	3,319	4,026	4,004	CDLF	
4204	HALIFAX COUNTY CDLF					2,591	3,765	CDLF	
10002	YANCEY-MITCHELL C&D LANDFILL			3,254	3,484	2,831	3,477	CDLF	
0201	ALEXANDER COUNTY CDLF					1,448	2,840	CDLF	
	COLUMBUS COUNTY C&D STOCKPILE						1,884	CDLF	
9404	WASHINGTON COUNTY C&D LANDFILL			103	1,084	509	1,454	CDLF	
	POLK CO. C&D STOCKPILE	356	1,557	1,577	2,380	1,374	1,402	CDLF	
9502	WATAUGA COUNTY C&D LANDFILL			2,522	3,094	2,698	1,280	CDLF	
	NORTHAMPTON CO. C&D STOCKPILE	169	316	438	1,579	916	964	CDLF	

**APPENDIX A-1: PUBLIC AND PRIVATE MUNICIPAL SOLID WASTE LANDFILLS (INCLUDES CONSTRUCTION AND DEMOLITION LANDFILLS\*\*), DESCENDING ORDER OF TONS, FY 1998-1999**

PERMIT #	FACILITY	TONS							FACILITY TYPE
		1993-1994	1994-1995	1995-1996	1996-1997	1997-1998	1998-1999		
0603	AVERY COUNTY C&D LANDFILL				266	1,077	879		CDLF
2902	DAVIDSON COUNTY LANDFILL	31,389							MSWLF
3001	DAVIE COUNTY LANDFILL	9,175							MSWLF
3101	DUPLIN COUNTY LANDFILL	8,745							MSWLF
3201	DURHAM, CITY OF LANDFILL	206,575	206,381	177,360	207,611	105,849			MSWLF
3301	EDGECOMBE COUNTY LANDFILL	73,759	73,225	64,989	83,968	44,677			MSWLF
3501	FRANKLIN COUNTY LANDFILL	22,326							MSWLF
3606	GASTON COUNTY LANDFILL	130,097	80,204	81,208	96,297				MSWLF
4103	GREENSBORO CITY OF - LANDFILL	285,068	277,941	284,829	309,798	173,895			MSWLF
3801	GRAHAM COUNTY LANDFILL	3,566							MSWLF
4404	CANTON TOWN OF - LANDFILL	17,470							MSWLF
3901	GRANVILLE COUNTY LANDFILL	46,243	45,698	43,212	42,771	14,549			MSWLF
3902	GRANVILLE COUNTY LANDFILL	17,585	20,457	21,224	26,788	18,109			MSWLF
4002	GREENE COUNTY LANDFILL	9,669	10,178	10,774	15,703	4,926			MSWLF
4101	HIGH POINT CITY OF - LANDFILL	19,335							MSWLF
4204	HALIFAX COUNTY LANDFILL	49,888	165,160	37,728	42,905	17,229			MSWLF
4403	HAYWOOD COUNTY LANDFILL	12,434							MSWLF
4303	HARNETT CO ANDERSON CREEK LANDFILL	7,586							MSWLF
0101	ALAMANCE COUNTY LANDFILL	21,077							MSWLF
2802	DARE COUNTY LANDFILL	20,852							MSWLF
4501	HENDERSON COUNTY LANDFILL	56,091	59,925	67,451	77,160	45,035			MSWLF
1602	CARTERET COUNTY LANDFILL	22,808							MSWLF
4302	HARNETT COUNTY LANDFILL	55,254	68,064	73,555	89,567	39,894			MSWLF
0201	ALEXANDER COUNTY LANDFILL	21,477	21,671	22,026	21,771	10,644			MSWLF

APPENDIX A-1: PUBLIC AND PRIVATE MUNICIPAL SOLID WASTE LANDFILLS (INCLUDES CONSTRUCTION AND DEMOLITION LANDFILLS\*\*), DESCENDING ORDER OF TONS, FY 1998-1999

PERMIT #	FACILITY	TONS							FACILITY TYPE
		1993-1994	1994-1995	1995-1996	1996-1997	1997-1998	1998-1999		
1301	BFI-CHARLOTTE MOTOR SPEEDWAY							0	MSWLF
9701	WILKES COUNTY LANDFILL	9,585							MSWLF
4601	HERTFORD COUNTY LANDFILL	11,531							MSWLF
0401	ANSON COUNTY LANDFILL	10,787							MSWLF
0501	ASHE COUNTY LANDFILL	17,946	15,993	14,540	15,853		16,309		MSWLF
0302	ALLEGHANY COUNTY LANDFILL	6,615							MSWLF
0601	AVERY COUNTY LANDFILL	3,560							MSWLF
0702	BEAUFORT COUNTY LANDFILL	12,522							MSWLF
0801	BERTIE COUNTY LANDFILL	5,944							MSWLF
0901	BLADEN COUNTY LANDFILL	17,174							MSWLF
1007	BRUNSWICK COUNTY LANDFILL	76,005	79,917	83,116	75,613		73,162		MSWLF
1803	CATAWBA COUNTY LANDFILL	144,450	148,852	160,186	155,675				MSWLF
1203	BURKE COUNTY LANDFILL	72,669	99,954	102,602	105,917		50,575		MSWLF
2701	CURRITUCK COUNTY LANDFILL	4,589							MSWLF
1302	CABARRUS COUNTY LANDFILL	61,248	52,691	44,795	41,827		21,649		MSWLF
1401	CALDWELL COUNTY LANDFILL	68,030	75,671	74,871	79,108		62,030		MSWLF
1701	CASWELL COUNTY LANDFILL	5,555							MSWLF
1901	CHATHAM COUNTY LANDFILL	9,373							MSWLF
2001	CHEROKEE COUNTY LANDFILL	18,374	24,618	23,058	22,395		8,329		MSWLF
2201	CLAY COUNTY LANDFILL	1,807							MSWLF
2301	CLEVELAND COUNTY LANDFILL	65,879	71,298	70,480	75,511		39,037		MSWLF
2401	ARS - COLUMBUS COUNTY	88,447	100,015	47,185	52,377		21,147		MSWLF
2503	CRAVEN COUNTY LANDFILL	19,659							MSWLF
2601	CUMBERLAND COUNTY LANDFILL	178,480	186,366	97,372	151,124		197,992		MSWLF

APPENDIX A-1: PUBLIC AND PRIVATE MUNICIPAL SOLID WASTE LANDFILLS (INCLUDES CONSTRUCTION AND DEMOLITION LANDFILLS\*\*), DESCENDING ORDER OF TONS, FY 1998-1999

PERMIT #	FACILITY	TONS							FACILITY TYPE
		1993-1994	1994-1995	1995-1996	1996-1997	1997-1998	1998-1999		
2602	US ARMY - FT. BRAGG LANDFILL	34,954	45,238	71,062	90,182	41,066		MSWLF	
1101	BUNCOMBE COUNTY LANDFILL	96,753	102,185	119,083	147,652	26,570		MSWLF	
9209	WAKE COUNTY LANDFILL	119,383	110,379	114,287	163,857	329,511		MSWLF	
9502	WATAUGA COUNTY LANDFILL	27,439						MSWLF	
8103	RUTHERFORD COUNTY LANDFILL	68,915	54,105	50,076	50,934	24,961		MSWLF	
8301	SCOTLAND COUNTY LANDFILL	50,062	48,654	57,150	55,867	28,618		MSWLF	
	ALBEMARLE, CITY OF	54,627	48,187	47,033	54,003			MSWLF	
8501	STOKES COUNTY LANDFILL	7,633						MSWLF	
8602	SURRY COUNTY LANDFILL	52,260	53,341	50,065	47,836	17,961		MSWLF	
8603	SURRY COUNTY LANDFILL	22,191	22,111	18,970	21,273	7,971		MSWLF	
8701	SWAIN COUNTY LANDFILL	4,859						MSWLF	
9001	UNION COUNTY LANDFILL	84,001	77,257	75,305	81,649	38,859		MSWLF	
9101	VANCE COUNTY LANDFILL	43,603	45,827	49,369	56,501	26,290		MSWLF	
7803	ROBESON COUNTY LANDFILL	80,588	92,548	90,886	93,836	51,782		MSWLF	
9203	WAKE COUNTY LANDFILL	97,259	106,524	120,639	165,871	78,538		MSWLF	
7601	RANDOLPH COUNTY LANDFILL	74,677	75,658	74,100	77,295	42,875		MSWLF	
9301	WARREN COUNTY LANDFILL	6,571						MSWLF	
9402	WASHINGTON COUNTY LANDFILL	4,226						MSWLF	
10001	YANCEY/MITCHELL CO.	18,260						MSWLF	
9601	WAYNE COUNTY LANDFILL	92,545	86,820	90,833	103,103	49,159		MSWLF	
9801	WILSON COUNTY LANDFILL	123,875	112,523	119,131	124,152	62,874		MSWLF	
9902	YADKIN COUNTY LANDFILL	6,088						MSWLF	
6001	HARRISBURG ROAD C&D LANDFILL	25,246						CDLF	
7301	PERSON COUNTY LANDFILL	1,401	7,042	8,102	6,134			CDLF	

APPENDIX A-1: PUBLIC AND PRIVATE MUNICIPAL SOLID WASTE LANDFILLS (INCLUDES CONSTRUCTION AND DEMOLITION LANDFILLS\*\*\*), DESCENDING ORDER OF TONS, FY 1998-1999

PERMIT #	FACILITY	TONS							FACILITY TYPE
		1993-1994	1994-1995	1995-1996	1996-1997	1997-1998	1998-1999		
7803	ROBESON COUNTY CDLF					0			CDLF
	HARNETT COUNTY C&D STOCKPILE		578	1,969					CDLF
	PERSON COUNTY C&D STOCK PILE					0			CDLF
9201	RALEIGH CITY OF - LANDFILL	268,428	288,371	296,906	310,332	147,097			MSWLF
6301	MOORE COUNTY LANDFILL	17,374							MSWLF
4901	IREDELL COUNTY LANDFILL	31,227							MSWLF
5001	WESTERN CAROLINA UNIVERSITY	108							MSWLF
5002	JACKSON COUNTY LANDFILL	20,034	24,296	26,813	27,366	14,421			MSWLF
5101	JOHNSTON COUNTY LANDFILL	74,151	72,961	78,095	95,004	29,011			MSWLF
5201	JONES COUNTY LANDFILL	2,734							MSWLF
5301	LEE COUNTY LANDFILL	11,065							MSWLF
5403	LENOIR COUNTY LANDFILL	71,569	77,319	74,418	118,153	46,377			MSWLF
5601	MCDOWELL COUNTY LANDFILL	23,884							MSWLF
5702	MACON COUNTY LANDFILL	1,300							MSWLF
5802	MADISON COUNTY LANDFILL	2,706							MSWLF
7901	ROCKINGHAM COUNTY LANDFILL	77,891	47,175						MSWLF
6201	MONTGOMERY COUNTY LANDFILL	94,876	138,041	188,685	131,896	51,903			MSWLF
4701	HOKE COUNTY LANDFILL	2,150							MSWLF
6401	NASH COUNTY LANDFILL	81,646	80,908	91,896	87,289	37,751			MSWLF
6601	NORTHAMPTON COUNTY LANDFILL	2,546							MSWLF
6703	US MARINE CORPS CAMP LEJUENE	46,533	33,636	39,356	70,133	15,550			MSWLF
6705	ONSLow COUNTY MUNICIPAL SW LANDFILL	76,450	79,106	80,598	138,548	45,402			MSWLF
6902	PAMLICO COUNTY LANDFILL	2,044							MSWLF
7002	PASQUOTANK COUNTY LANDFILL	22,915							MSWLF

APPENDIX A-1: PUBLIC AND PRIVATE MUNICIPAL SOLID WASTE LANDFILLS (INCLUDES CONSTRUCTION AND DEMOLITION LANDFILLS\*\*), DESCENDING ORDER OF TONS, FY 1998-1999

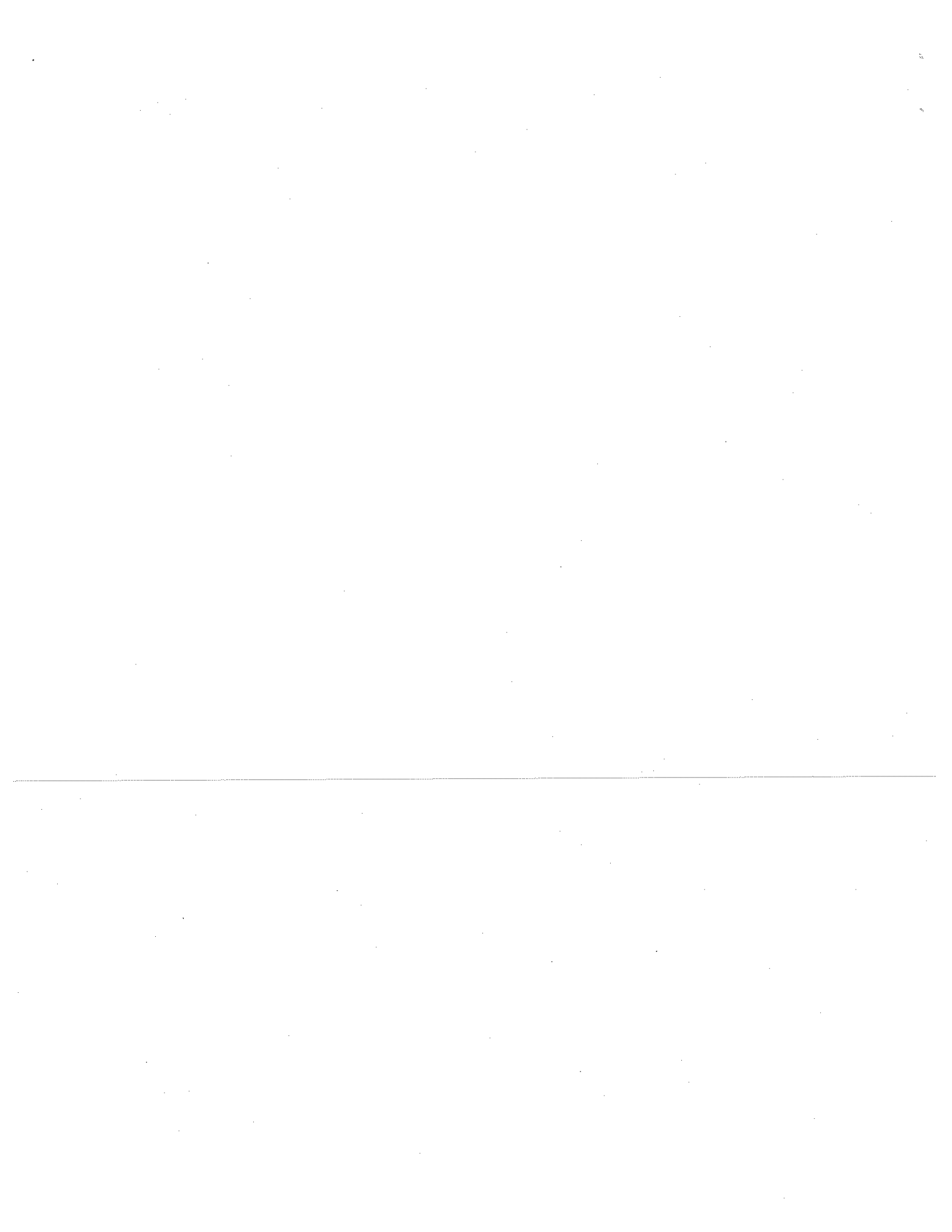
PERMIT #	FACILITY	TONS						FACILITY TYPE
		1993-1994	1994-1995	1995-1996	1996-1997	1997-1998	1998-1999	
7101	PENDER COUNTY LANDFILL	10,606						MSWLF
7201	PERQUIMANS-CHOWAN COUNTY LANDFILL	8,547						MSWLF
7301	PERSON COUNTY LANDFILL	21,880						MSWLF
7401	PITT COUNTY LANDFILL	125,313	101,769					MSWLF
7502	POLK COUNTY LANDFILL	5,707						MSWLF
5901	MARTIN COUNTY LANDFILL	8,399						MSWLF
<b>TOTAL TONS</b>		<b>6,693,506</b>	<b>7,151,414</b>	<b>7,324,743</b>	<b>8,388,236</b>	<b>8,025,394</b>	<b>8,036,358</b>	

CD = Construction and Demolition Waste

\*CRSWMA = Coastal Regional Solid Waste Management Authority

\*\*Permit conditions include acceptance of CD waste

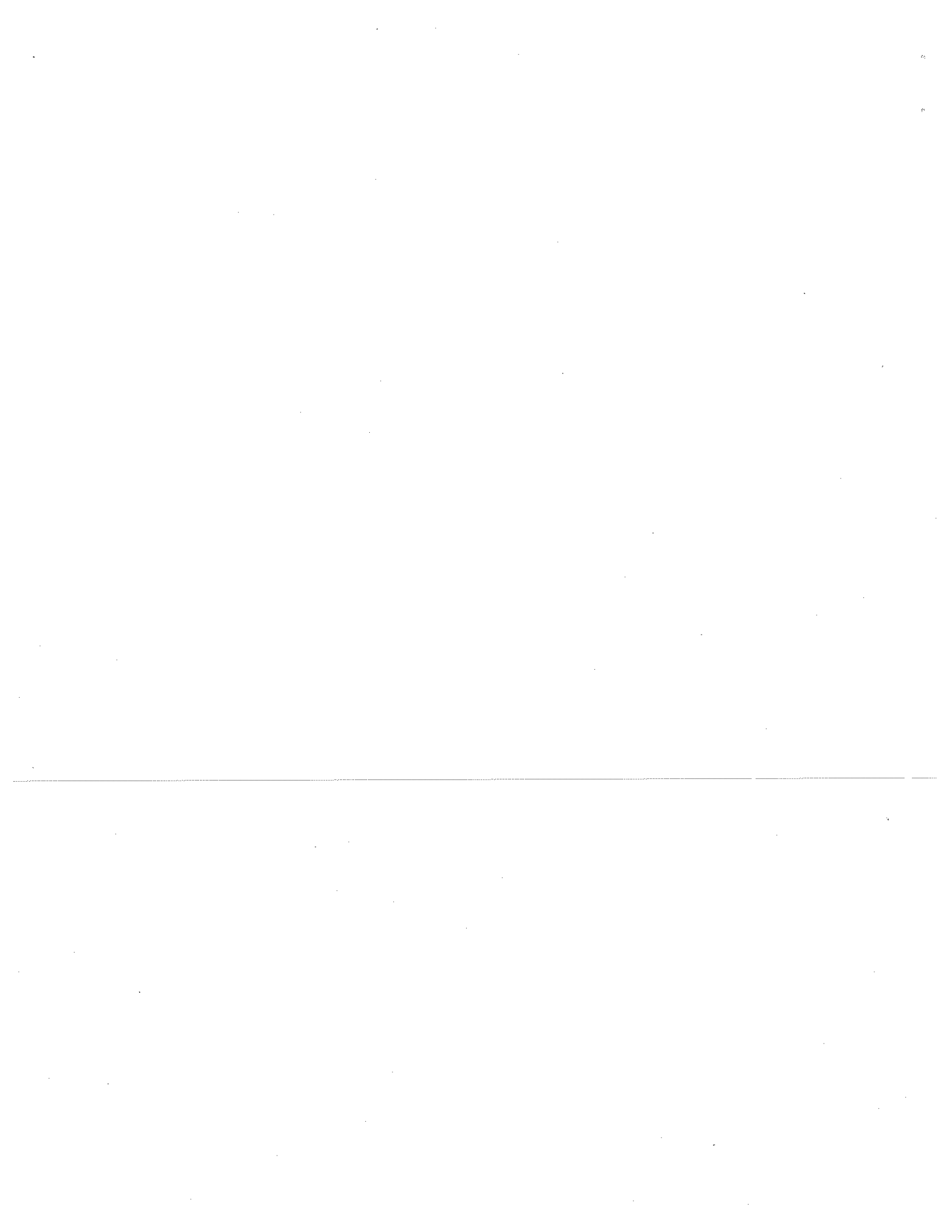
\*\*\*CD Unit data reported separately from MSW landfill beginning 1995-1996





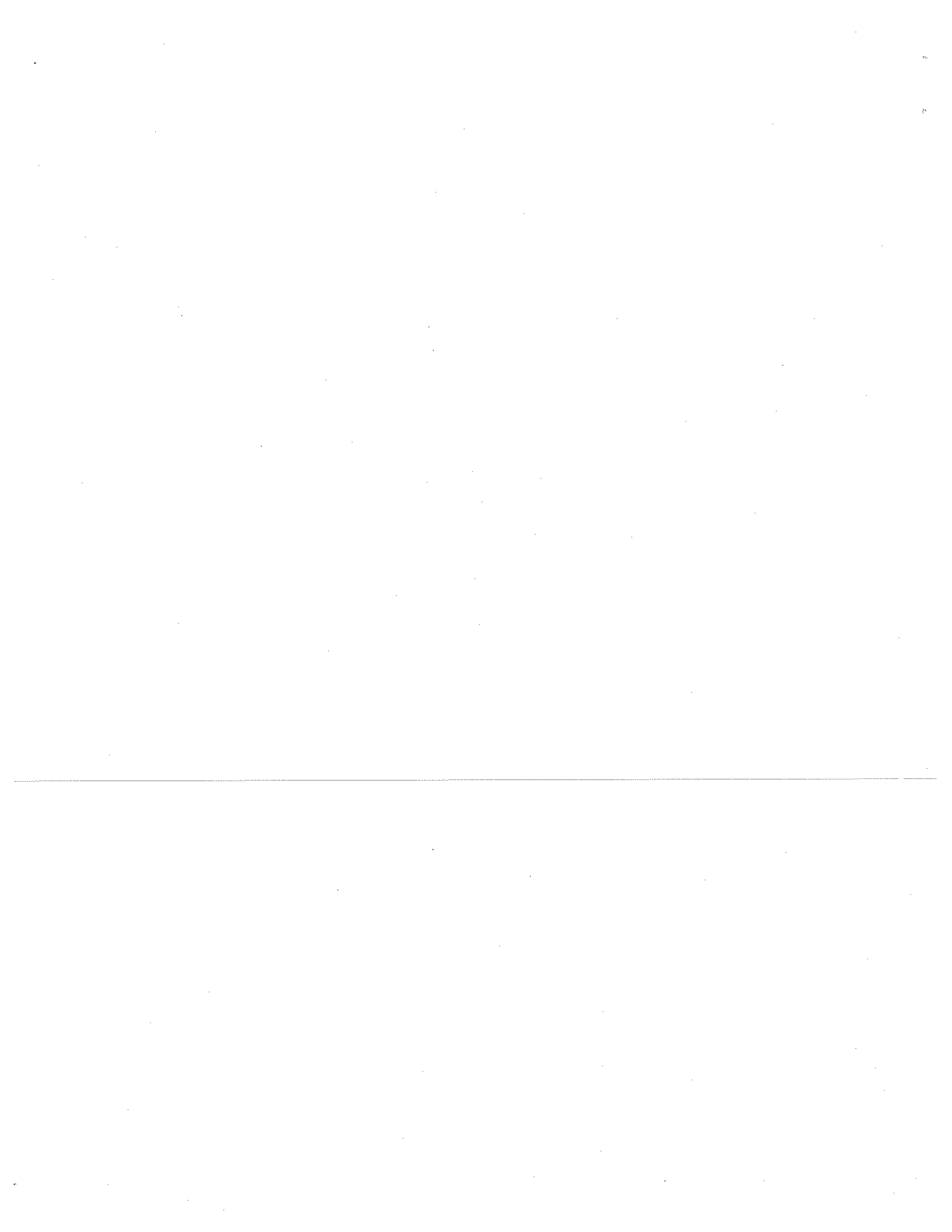
APPENDIX A-2: SCRAP TIRE MONOFILLS , DESCENDING ORDER OF TONS, FY 1998-1999

PERMIT #	FACILITY	TONS						
		1993-1994	1994-1995	1995-1996	1996-1997	1997-1998	1998-1999	
1303	US TIRE DISPOSAL	45,410	59,014	39,877	71,170	67,182	76,297	
4304	CENTRAL CAROLINA TIRE MONOFILL	24,256	38,598	38,127	37,583	41,188	50,801	
<b>TOTAL TONS RECEIVED</b>		<b>69,666</b>	<b>97,613</b>	<b>78,004</b>	<b>108,753</b>	<b>108,370</b>	<b>127,098</b>	



APPENDIX A-3: INCINERATION FACILITIES, DESCENDING ORDER OF TONS, FY 1998-1999

PERMIT #	FACILITY	TONS						
		1993-1994	1994-1995	1995-1996	1996-1997	1997-1998	1998-1999	
6505	NEW HANOVER WASTE-TO-ENERGY FACILITY	81,793	95,283	133,439	133,128	129,200	127,589	
0903	BCH ENERGY GENERATION FACILITY			65,532				
6010-I	NORTHEAST WASTE-TO-ENERGY	72,496	70,771					
	TOTAL TONS	154,289	166,054	198,971	133,128	129,200	127,589	



APPENDIX A-4: PRIVATE INDUSTRIAL LANDFILLS, DESCENDING ORDER OF TONS, FY 1998-1999

PERMIT #	FACILITY	TONS						
		1993-1994	1994-1995	1995-1996	1996-1997	1997-1998	1998-1999	
7302	CAROLINA POWER & LIGHT CO	476,731	410,668	547,750	496,565	631,416	496,305	
1804	DUKE POWER/MARSHALL STEAM PLT	400,875	142,887	90,925	77,394		288,556	
4406	BLUE RIDGE PAPER PRODUCTS, INC.	328,233	303,310	345,674	343,938	324,005	242,312	
2402	INTERNATIONAL PAPER	75,116	264,689	69,833	295,426	64,987	234,794	
2302	CLEVELAND CONTAINER SERVICE	124,516	91,134	75,675	76,192		93,788	
8503	DUKE POWER/BELEWS CREEK ST PLT	191,070	105,680	44,830	75,680	79,015	83,909	
9401	WEYERHAEUSER	108,960	95,330	45,534	49,909	84,432	76,147	
4204	HALIFAX COAL ASH LANDFILL						47,995	
3405	R J REYNOLDS	47,684	47,186	48,881	42,809	40,309	39,021	
3413-TEMP	UNITED METALS RECYCLING, FORSYTH COUNT					29,030	21,665	
2502	WEYERHAEUSER	9,979	6,506	6,506	19,245	20,410	14,601	
1102	BASF CORPORATION	22,750	17,262	12,308	9,915	12,514	12,716	
3605	FMC CORPORATION LITHIUM DIV	166,444	190,814	185,829	206,760		12,548	
8801	ECUSTA ASH LANDFILL	11,476	11,784	12,965	14,295	14,938	12,538	
8805	ECUSTA LANDFILL	6,817	6,741	5,140	5,534	5,250	5,981	
9703	ABT CO INC	4,034	4,062	4,226	3,443	3,937	3,607	
6004	DUKE POWER COMPANY	23	14	73	144	189	3,260	
5603	COLLINS & AIKMAN	6,618	6,603	4,747	3,405	2,647	2,796	
7602	EVEREADY BATTERY	402	465	368	251	290	451	
9210	CAROLINA POWER & LIGHT CO	173	49	32	41		126	
1006	E.I. DU PONT DENEMOURS CO./CAPE FEAR P					197	119	
4503	CRANSTON PRINT WORKS	1,875	3,224	2,456				
5404	DUPONT	37,738	22,073	25,595		21,094		
4203	CHAMPION INTERNATIONAL	29,568	22,765	40,243			22,656	

APPENDIX A-4: PRIVATE INDUSTRIAL LANDFILLS, DESCENDING ORDER OF TONS, FY 1998-1999

PERMIT #	FACILITY	TONS					
		1993-1994	1994-1995	1995-1996	1996-1997	1997-1998	1998-1999
0802	R J REYNOLDS LANDFILL	605	1,080	675			
6702	WEYERHAEUSER		7,101				
8806	DUPONT	377	428	274			
1001	CAROLINA POWER & LIGHT CO.	640	15	10	24		
6603	GEORGIA PACIFIC	824	109	0			
<b>TOTAL TONS</b>		<b>2,053,527</b>	<b>1,761,981</b>	<b>1,570,548</b>	<b>1,764,720</b>	<b>1,313,566</b>	<b>1,693,235</b>

APPENDIX A-5: TRANSFER STATIONS, DESCENDING ORDER ON TRANSFER STATION'S PERMIT #, 1998-1999

PERMIT #	FACILITY	1998-1999	DISPOSAL DESTINATION	PERMIT #
0303-T	ALLEGHANY COUNTY TRANSFER FACILITY	1,697	BFI-CHARLOTTE MTR SPEEDWAY LANDFILL V	1304
0303-T	ALLEGHANY COUNTY TRANSFER FACILITY	5,935	PIEDMONT SANITARY LANDFILL	3406
0402-T	ANSON COUNTY TRANSFER STATION	16,847	LEE COUNTY LANDFILL, SC	0803
0703-T	ARS - BEAUFORT TRANSFER STATION	45,963	ADDINGTON-EAST CAROLINA REG LIF	6204
1903-T	ARS - CHATHAM CO TRANSFER STATION	26,375	UWHARRIE ENV. REG. LANDFILL	3406
1903-T	ARS - CHATHAM CO TRANSFER STATION	16	PIEDMONT SANITARY LANDFILL	3406
5304-T	ARS - LEE COUNTY TRANSFER STATION	17	PIEDMONT SANITARY LANDFILL	6202-MRF
5304-T	ARS - LEE COUNTY TRANSFER STATION	860	UWHARRIE ENVIRONMENTAL MRF	6204
5304-T	ARS - LEE COUNTY TRANSFER STATION	59,813	UWHARRIE ENV. REG. LANDFILL	4304
0602-T	AVERY COUNTY TRANSFER STATION	17,515	BRISTOL LANDFILL, VA	8201
0904-T	BLADEN COUNTY TRANSFER STATION	416	CENTRAL CAROLINA TIRE MONOFILL	1010-T
0904-T	BLADEN COUNTY TRANSFER STATION	24,540	BFI-SAMPSON COUNTY DISPOSAL INC	1007
1008-T	BRUNSWICK CO TRANSFER/LELAND	329	BRUNSWICK COUNTY TRANSFER STATION	1010-T
1008-T	BRUNSWICK CO TRANSFER/LELAND	693	BRUNSWICK COUNTY LANDFILL	1007
1009-T	BRUNSWICK CO TRANSFER/OCEAN ISLE BEAC	235	BRUNSWICK COUNTY TRANSFER STATION	1007
1009-T	BRUNSWICK CO TRANSFER/OCEAN ISLE BEAC	604	BRUNSWICK COUNTY LANDFILL	1007
1001-T	BRUNSWICK CO TRANSFER/SOUTHPORT	636	BRUNSWICK COUNTY LANDFILL	1010-T
1001-T	BRUNSWICK CO TRANSFER/SOUTHPORT	145	BRUNSWICK COUNTY TRANSFER STATION	8201
1010-T	BRUNSWICK COUNTY TRANSFER STATION	57,638	BFI-SAMPSON COUNTY DISPOSAL INC	1403
1205-T	BURKE COUNTY TRANSFER FACILITY	15,895	FOOTHILLS ENVIRONMENTAL LANDFILL	6204
1205-T	BURKE COUNTY TRANSFER FACILITY	48,764	UWHARRIE ENV. REG. LANDFILL	

APPENDIX A-5: TRANSFER STATIONS, DESCENDING ORDER ON TRANSFER STATION'S PERMIT #, 1998-1999

PERMIT #	FACILITY	1998-1999	DISPOSAL DESTINATION	PERMIT #
1604	CARTERET COUNTY TRANSFER STATION	67,017	*CRSWMA - INTERIM REGIONAL LF	2504
9211	CARY TOWN OF - TRANSFER STATION	2,016	WAKE COUNTY LANDFILL	9203
9211	CARY TOWN OF - TRANSFER STATION	12,623	BFL-SAMPSON COUNTY DISPOSAL INC	8201
9807-T	CCC-WILSON TRANSFER STATION	43,525	BRUNSWICK LANDFILL, VA	
2510-T	CHERRY POINT T. S.	7,064	*CRSWMA - INTERIM REGIONAL LF	2504
3212-T	CITY OF DURHAM TRANSFER STATION	192,762	BRUNSWICK LANDFILL, VA	
3211-T	CITY OF DURHAM TRANSFER STATION #1	18,468	BRUNSWICK LANDFILL, VA	
2202-T	CLAY COUNTY TRANSFER STATION	3,914	PINEBLUFF LANDFILL, GA	
2403-T	COLUMBUS COUNTY T. S.	37,686	BFL-SAMPSON COUNTY DISPOSAL INC	8201
2403-T	COLUMBUS COUNTY T. S.	906	CENTRAL CAROLINA TIRE MONOFILL	4304
2703-T	CURRITUCK TRANSFER STATION	2,826	ADDINGTON-EAST CAROLINA REG LF	0803
2804-T	DARE COUNTY TRANSFER STATION	48,474	ADDINGTON-EAST CAROLINA REG LF	0803
3102	DUPLIN COUNTY TRANSFER STATION	25,294	BFL-SAMPSON COUNTY DISPOSAL INC	8201
5407-T	DUPONT KINSTON TRANSFER FACILITY	13,416	BFL-SAMPSON COUNTY DISPOSAL INC	8201
8004-T	EAST SPENCER WASTE TRANSFER FACILITY	19,125	UWHARRIE ENV. REG. LANDFILL	6204
8004-T	EAST SPENCER WASTE TRANSFER FACILITY	65,345	PIEDMONT SANITARY LANDFILL	3406
7903-T	EDEN, CITY OF TRANSFER STATION	5,202	ROCKINGHAM COUNTY LANDFILL	7901
7903-T	EDEN, CITY OF TRANSFER STATION	5,986	ROCKINGHAM COUNTY LANDFILL	7901
3302-T	EDGCOMBE COUNTY TRANSFER STATION	33,226	BERTIE COUNTY LANDFILL	0801
3302-T	EDGCOMBE COUNTY TRANSFER STATION	630	CENTRAL CAROLINA TIRE MONOFILL	4304
2606-T	FORT BRAGG TRANSFER STATION	19,479	UWHARRIE ENV. REG. LANDFILL	6204



APPENDIX A-5: TRANSFER STATIONS, DESCENDING ORDER ON TRANSFER STATION'S PERMIT #, 1998-1999

PERMIT #	FACILITY	1998-1999	DISPOSAL DESTINATION	PERMIT #
3502-T	FRANKLIN COUNTY TRANSFER STATION	23,647	PIEDMONT SANITARY LANDFILL	3406
3502-T	FRANKLIN COUNTY TRANSFER STATION	16,374	ADDINGTON-UPPER PIEDMONT REG LF	7304
9607-T	GOLDSBORO TRANSFER STATION	12,614	WAYNE COUNTY LANDFILL	9601
4307-T	HARNETT CNTY-DUNN/ERWIN T.S.	47,341	UWHARRIE ENV. REG. LANDFILL	6204
4305-T	HARNETT COUNTY TRANSFER STATION	5,886	UWHARRIE ENV. REG. LANDFILL	6204
4504-T	HENDERSON COUNTY TRANSFER FACILITY	37,366	PALMETTO LANDFILL, SC	
4602-T	HERTFORD COUNTY TRANSFER STATION	3,199	ADDINGTON-EAST CAROLINA REG LF	0803
4702	HOKE COUNTY TRANSFER STATION	17,760	UWHARRIE ENV. REG. LANDFILL	6204
5405-T	LENOIR COUNTY TRANSFER FACILITY	55,095	BFI-SAMPSON COUNTY DISPOSAL INC	8201
5602-T	McDOWELL CO TRANSFER FACILITY	572	US TIRE DISPOSAL	1303
5602-T	McDOWELL CO TRANSFER FACILITY	27,442	BFI-CHARLOTTE MOTOR SPEEDWAY	1301
4904-T	MOORESVILLE TRANSFER STATION	43,824	IREDELL COUNTY LANDFILL	4901
6903	PAMLICO COUNTY TRANSFER STATION	6,773	*CRSWMA - INTERIM REGIONAL LF	2504
7003-T	PASQUOTANK COUNTY TRANSFER STATION	26,085	ADDINGTON-EAST CAROLINA REG LF	0803
7103-T	PENDER CO TRANSFER STATION	520	CENTRAL CAROLINA TIRE MONOFILL	4304
7103-T	PENDER CO TRANSFER STATION	1,341	BFI-SAMPSON COUNTY DISPOSAL INC	8201
7202-T	PERQUIMANS-CHOWAN-GATES TRANSFER	20,137	ADDINGTON-EAST CAROLINA REG LF	0803
7404-T	PITT COUNTY TRANSFER STATION	2,054	CENTRAL CAROLINA TIRE MONOFILL	4304
7404-T	PITT COUNTY TRANSFER STATION	123,103	ADDINGTON-EAST CAROLINA REG LF	0803
7503-T	POLK COUNTY TRANSFER STATION	4,014	PALMETTO LANDFILL, SC	
7503-T	POLK COUNTY TRANSFER STATION	268	US TIRE DISPOSAL	1303

APPENDIX A-5: TRANSFER STATIONS, DESCENDING ORDER ON TRANSFER STATION'S PERMIT #, 1998-1999

PERMIT #	FACILITY	1998-1999	DISPOSAL DESTINATION	PERMIT #
7603-T	RANDOLPH COUNTY TRANSFER FACILITY	86,946	BFI-CHARLOTTE MTR SPEEDWAY LANDFILL V	1304
7902-T	REIDSVILLE, CITY OF TRANSFER FACILITY	5,958	PIEDMONT SANITARY LANDFILL	3406
7703-T	RICHMOND COUNTY TRANSFER STATION	36,558	MONTGOMERY COUNTY LANDFILL	6201
6402T	ROCKY MOUNT TRANSFER STATION	84,742	BRUNSWICK LANDFILL, VA	
8104-T	RUTHERFORD COUNTY TRANSFER FACILITY	46,532	PALMETTO LANDFILL, SC	
8302-T	SCOTLAND COUNTY T.S.	23,348	UWHARRIE ENV. REG. LANDFILL	6204
9221-T	SOUTH WAKE TRANSFER STATION	172,569	WAKE COUNTY LANDFILL	9203
	TRIBAL TRANSFER STATION	12,285	PALMETTO LANDFILL, SC	
9005-T	UNION COUNTY TRANSFER STATION	64,297	UWHARRIE ENV. REG. LANDFILL	6204
6014	USA WASTE SERVICES TRANSFER ST.	270,897	LEE COUNTY LANDFILL, SC	
6302	UWHARRIE ENV INC/MOORE CTY TS	55,113	UWHARRIE ENV. REG. LANDFILL	6204
9302-T	WARREN COUNTY TRANSFER STATION	8,631	PERSON COUNTY LANDFILL	7301
9806-T	WASTE INDUSTRIES WILSON TRANSFER ST.	54,652	BFI-SAMPSON COUNTY DISPOSAL INC	8201
9102-T	WASTE INDUSTRIES-VANCE COUNTY	41,122	ADDINGTON-UPPER PIEDMONT REG LF	7304
1104	WASTE MANAGEMENT OF ASHEVILLE	130,755	PALMETTO LANDFILL, SC	
3608	WASTE MANAGEMENT OF CAROLINAS	139,142	PALMETTO LANDFILL, SC	
9215-T	WASTE MANAGEMENT OF RAL-DUR	42,494	ADDINGTON-UPPER PIEDMONT REG LF	7304
9215-T	WASTE MANAGEMENT OF RAL-DUR	8,952	KERNERSVILLE, CITY OF - LANDFILL	3404
9215-T	WASTE MANAGEMENT OF RAL-DUR	31,597	BFI-SAMPSON COUNTY DISPOSAL INC	8201
9503-T	WATAUGA CO TRANSFER FACILITY	40,483	IRIS GLEN LANDFILL, TN	
4205-T	WELDON, TOWN OF, T.S.	10,097	ADDINGTON-EAST CAROLINA REG LF	0803

APPENDIX A-5: TRANSFER STATIONS, DESCENDING ORDER ON TRANSFER STATION'S PERMIT #, 1998-1999

PERMIT #	FACILITY	1998-1999	DISPOSAL DESTINATION	PERMIT #
4205-T	WELDON, TOWN OF, T.S.	39,936	BRUNSWICK LANDFILL, VA	
9903	YADKIN COUNTY TRANSFER FACILITY	14,839	BEI-CHARLOTTE MTR SPEEDWAY LANDFILL V	1304
10003-T	YANCEY-MITCHELL TRANSFER STATION	20,342	PALMETTO LANDFILL, SC	
<b>TOTAL TONS</b>		<b>2,867,614</b>		



APPENDIX B: COUNTY POPULATION, WASTE DISPOSAL, PER CAPITA RATE AND PERCENT REDUCTION, FY 1998-1999

COUNTY	POPULATION		MSW TONS DISPOSED							PER CAPITA		% WASTE REDUCTION
	JULY 1998	1991-1992	1995-1996	1996-1997	1997-1998	1998-1999	1991-1992	1998-1999	1998-1999**			
ALAMANCE*	121,937	99,742	79,538	80,131	88,901	113,694	0.91	0.93	-2%			
ALEXANDER	31,540	8,880	22,097	21,816	21,192	20,925	0.90	0.66	26%			
ALLEGHANY	9,733	17,060	7,367	7,865	7,795	7,732	1.45	0.79	45%			
ANSON	23,894	14,831	18,847	19,432	19,898	18,035	0.61	0.75	-24%			
ASHE	23,870	16,389	16,689	18,375	18,877	21,038	0.81	0.88	-9%			
AVERY	15,595	16,060	14,009	14,540	14,571	16,281	0.74	1.04	-41%			
BEAUFORT	43,468	40,118	48,679	60,352	42,283	54,006	0.99	1.24	-25%			
BERTIE	20,102	12,600	20,636	20,139	23,178	20,484	0.86	1.02	-18%			
BLADEN	30,551	47,110	15,084	36,334	30,657	38,098	0.86	1.25	-45%			
BRUNSWICK	67,441	70,836	104,972	129,796	151,765	108,579	1.48	1.61	-9%			
BUNCOMBE*	192,459	192,476	179,570	209,992	198,703	224,806	0.90	1.17	-30%			
BURKE*	83,996	54,507	74,197	78,492	64,963	79,003	1.02	0.94	8%			
CABARRUS	119,494	88,078	99,326	106,493	134,481	136,245	0.94	1.14	-21%			
CALDWELL	75,278	45,866	75,403	80,023	80,904	107,431	0.92	1.43	-55%			
CAMDEN	6,320	2,397	2,025	1,998	3,775	3,009	0.31	0.48	-54%			
CARTERET	59,881	105,358	56,285	70,012	58,526	67,763	1.62	1.13	30%			
CASWELL	22,396	5,810	8,976	13,154	8,856	9,228	0.25	0.41	-65%			
CATAWBA*	131,256	131,201	161,181	157,235	153,828	166,451	1.26	1.27	-1%			
CHATHAM*	46,163	33,100	29,886	29,334	30,256	34,360	0.84	0.74	11%			
CHEROKEE	22,692	15,841	15,543	16,595	16,417	18,374	0.78	0.81	-4%			
CHOWAN	14,325	12,254	12,723	13,231	9,551	15,081	0.99	1.05	-6%			
CLAY	8,206	4,720	2,515	1,468	2,383	3,914	0.57	0.48	16%			
CLEVELAND	91,410	74,096	71,221	76,908	74,749	81,228	0.86	0.89	-3%			
COLUMBUS	52,261	35,880	47,690	53,076	37,568	38,404	0.91	0.73	19%			
CRAVEN*	89,546	97,402	60,277	69,955	51,080	51,681	1.05	0.58	45%			
CUMBERLAND	295,053	255,639	267,929	263,324	335,705	366,067	0.81	1.24	-53%			

APPENDIX B: COUNTY POPULATION, WASTE DISPOSAL, PER CAPITA RATE AND PERCENT REDUCTION, FY 1998-1999

COUNTY	POPULATION		MSW TONS MANAGED					MSW TONS DISPOSED					PER CAPITA RATE		% WASTE REDUCTION
	JULY 1998	1991-1992	1995-1996	1996-1997	1997-1998	1998-1999	1991-1992	1998-1999	BASE YEAR PER CAPITA	1998-1999	PER CAPITA RATE	1998-1999**			
CURRITUCK	16,947	14,569	16,677	18,528	19,095	21,934	1.00	1.29				-29%			
DARE	28,218	46,770	52,125	58,453	66,333	68,991	2.23	2.44				-10%			
DAVIDSON	142,512	125,903	128,619	112,691	121,326	123,967	1.08	0.87				19%			
DAVIE	31,881	19,070	25,997	25,156	26,741	23,403	0.68	0.73				-8%			
DUPLIN*	44,639	48,900	32,335	38,360	37,243	38,949	0.82	0.87				-6%			
DURHAM*	200,219	218,210	254,614	254,507	246,571	253,439	1.17	1.27				-8%			
EDGECOMBE	54,872	64,079	65,976	84,361	101,426	86,228	1.25	1.57				-26%			
FORSYTH*	290,790	278,242	380,874	433,445	440,241	445,674	1.14	1.53				-34%			
FRANKLIN	44,414	25,881	30,461	37,549	39,184	43,462	0.76	0.98				-29%			
GASTON	181,028	149,198	179,628	195,594	224,255	250,700	0.93	1.38				-49%			
GATES	9,986	5,392	3,615	4,014	4,403	4,687	0.63	0.47				26%			
GRAHAM	7,536	4,710	4,848	5,412	0	6,672	0.62	0.89				-43%			
GRANVILLE	43,650	46,336	65,267	69,834	64,004	59,941	1.39	1.37				1%			
GREENE	18,071	15,254	10,969	15,753	8,679	11,293	0.48	0.62				-30%			
GUILFORD	388,519	453,446	449,957	497,875	619,485	525,916	1.35	1.35				0%			
HALIFAX	55,182	60,000	38,206	43,478	39,763	38,773	0.98	0.70				28%			
HARNETT	83,411	71,349	78,258	92,862	68,721	65,745	1.01	0.79				22%			
HAYWOOD	51,922	136,295	38,630	40,223	43,755	45,324	1.21	0.87				28%			
HENDERSON	80,562	89,488	68,950	87,522	95,125	87,636	1.14	1.09				5%			
HERTFORD	21,684	12,475	14,719	15,049	14,586	14,567	0.63	0.67				-7%			
HOKE	29,624	20,306	14,719	17,323	16,834	18,042	0.80	0.61				24%			
HYDE	5,301	3,043	3,221	3,595	1,248	5,501	0.50	1.04				-108%			
IREDELL	111,624	152,340	129,140	177,545	150,528	167,214	1.19	1.50				-26%			
JACKSON	29,354	17,445	26,813	27,366	43,986	19,452	0.68	0.66				3%			
JOHNSTON	106,918	72,048	79,822	104,902	117,438	105,199	0.88	0.98				-12%			
JONES	8,786	3,648	2,685	3,875	2,266	2,177	0.47	0.25				47%			

APPENDIX B: COUNTY POPULATION, WASTE DISPOSAL, PER CAPITA RATE AND PERCENT REDUCTION, FY 1998-1999

COUNTY	POPULATION JULY 1998	MSW TONS MANAGED	MSW TONS DISPOSED						BASE YEAR PER CAPITA PER CAPITA	PER CAPITA RATE	% WASTE REDUCTION
			1995-1996	1996-1997	1997-1998	1998-1999	1991-1992	1998-1999			
LEE	49,456	45,981	53,664	58,051	61,277	78,594	1.16	1.59	-37%		
LENOIR	59,024	60,347	75,268	118,655	95,019	74,802	1.17	1.27	-8%		
LINCOLN	59,121	52,640	46,344	39,948	54,435	58,691	0.87	0.99	-14%		
MACON	28,350	35,580	23,888	24,207	24,381	28,133	0.82	0.99	-21%		
MADISON	18,592	12,090	11,190	18,569	6,064	8,751	0.68	0.47	31%		
MARTIN	25,545	25,956	20,022	23,513	24,880	25,380	1.19	0.99	17%		
MCDOWELL	40,457	28,900	33,499	33,506	31,272	33,790	0.82	0.84	-2%		
MECKLENBURG*	624,464	650,910	917,479	929,186	1,051,342	1,214,764	1.29	1.95	-51%		
MITCHELL	14,716	15,648	9,243	9,306	10,691	11,408	1.11	0.78	30%		
MONTGOMERY	24,661	18,096	27,809	30,936	14,531	31,872	1.23	1.29	-5%		
MOORE	70,839	72,690	76,236	85,783	87,953	99,060	1.23	1.40	-14%		
NASH	88,469	78,495	92,312	87,713	49,967	64,926	1.09	0.73	33%		
NEW HANOVER*	149,975	159,849	202,914	324,487	167,086	266,602	1.28	1.78	-39%		
NORTHAMPTON	20,837	12,384	9,644	10,840	12,562	20,301	0.94	0.97	-4%		
ONslow	148,324	133,598	130,246	247,352	130,087	166,651	1.04	1.12	-8%		
ORANGE	108,752	95,123	90,397	99,390	92,819	97,299	1.36	0.89	34%		
PAMLICO	12,037	6,795	5,613	6,964	6,155	6,977	0.75	0.58	23%		
PASQUOTANK*	35,146	32,081	28,998	32,336	32,655	33,740	0.97	0.96	1%		
PENDER	38,424	18,133	16,680	69,015	13,691	21,488	0.60	0.56	7%		
PERQUIMANS	11,040	6,862	6,947	9,651	6,526	7,082	0.73	0.64	12%		
PERSON	33,330	42,996	29,374	27,041	27,520	29,153	0.80	0.87	-9%		
PITT	123,155	143,300	116,769	119,643	109,242	117,616	1.21	0.96	21%		
POLK	16,683	9,318	7,203	9,947	8,678	10,791	0.63	0.65	-3%		
RANDOLPH	124,444	74,700	81,558	83,788	90,824	99,893	0.73	0.80	-10%		
RICHMOND	45,791	47,662	38,863	38,084	37,607	36,573	1.35	0.80	41%		
ROBESON	113,682	85,584	96,166	104,543	61,943	105,632	0.99	0.93	6%		

APPENDIX B: COUNTY POPULATION, WASTE DISPOSAL, PER CAPITA RATE AND PERCENT REDUCTION, FY 1998-1999

COUNTY	POPULATION JULY 1998	MSW TONS MANAGED		MSW TONS DISPOSED				BASE YEAR PER CAPITA		% WASTE REDUCTION
		1991-1992	1995-1996	1996-1997	1997-1998	1998-1999	1991-1992	1998-1999		
ROCKINGHAM	89,510	81,947	83,976	86,397	92,429	101,537	0.83	1.13	-37%	
ROWAN	124,687	90,131	104,248	115,307	121,963	132,575	0.80	1.06	-33%	
RUTHERFORD	59,568	60,259	63,091	61,644	56,150	56,717	1.56	0.95	39%	
SAMPSON	53,631	36,000	39,221	52,591	48,556	48,323	0.70	0.90	-29%	
SCOTLAND	35,196	45,282	52,861	48,258	46,064	44,159	1.17	1.25	-7%	
STANLY	55,752	62,328	56,195	60,961	64,054	72,753	1.32	1.30	1%	
STOKES	43,647	18,086	10,388	10,409	11,098	9,848	0.47	0.23	52%	
SURRY	67,611	82,056	69,035	74,904	52,796	56,335	1.18	0.83	29%	
SWAIN	12,200	4,663	6,168	5,536	160	5,614	0.50	0.46	8%	
TRANSYLVANIA	28,205	27,930	15,013	17,148	20,659	22,237	1.16	0.79	32%	
TYRRELL	3,625	1,768	1,912	1,471	0	1,946	0.79	0.54	32%	
UNION	109,995	105,570	106,582	148,597	96,064	140,246	0.90	1.28	-42%	
VANCE	41,448	46,954	49,965	56,841	55,255	55,022	1.11	1.33	-20%	
WAKE*	575,696	523,880	770,896	871,035	874,300	966,631	1.29	1.68	-30%	
WARREN	18,170	13,490	9,728	9,217	8,665	9,358	0.63	0.52	18%	
WASHINGTON	13,078	10,005	8,194	9,502	8,655	9,861	0.84	0.75	10%	
WATAUGA	41,160	32,206	34,694	37,127	35,645	43,132	0.99	1.05	-6%	
WAYNE	114,246	111,167	92,475	103,848	93,616	126,459	1.00	1.11	-11%	
WILKES	63,663	92,978	42,324	58,660	58,303	63,261	0.97	0.99	-2%	
WILSON	69,133	108,637	120,308	124,931	124,913	110,119	1.82	1.59	12%	
YADKIN	35,834	25,800	16,140	17,268	20,574	19,336	0.67	0.54	19%	
YANCEY	16,474	15,648	11,263	12,279	11,302	12,082	1.01	0.73	27%	
<b>NC STATE</b>	<b>7,544,360</b>	<b>7,215,151</b>	<b>7,722,795</b>	<b>8,741,727</b>	<b>8,504,523</b>	<b>9,214,323</b>	<b>1.08</b>	<b>1.22</b>	<b>-13%</b>	
<b>JUN 1996-1997 TONS ADJUSTED FOR HURRICANE FRAN</b>				<b>8,041,734</b>						

\*See Appendix B-Contd. for counties using alternate base year

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



APPENDIX B Contd.: COUNTIES USING APPROVED ALTERNATE BASE YEARS, FY 1998-1999

\*ALTERNATE BASE YEAR COUNTIES

COUNTY	POPULATION MSW TONS MANAGED		MSW TONS DISPOSED					BASE YEAR PER CAPITA		% WASTE REDUCTION
	JUN-1999	ALTERNATE BASE YEAR	JUN-1996	JUN-1997	JUN-1998	JUN-1999	JUN-1992	JUN-1999		
ALAMANCE (FY89-90)	121,937	117,862	79,538	80,131	88,901	113,694	1.10	0.93	15%	
BUNCOMBE (FY88-89)	192,459	157,660	179,570	209,992	198,703	224,806	0.91	1.17	-28%	
CATAWBA (FY89-90)	131,256	179,351	161,181	157,235	153,828	166,451	1.51	1.27	16%	
CHATHAM (90-91)	46,163	34,315	29,886	29,334	30,256	34,360	0.89	0.74	16%	
CLEVELAND (FY90-91)	91,410	74,096	71,221	76,908	74,749	81,228	0.87	0.89	-2%	
CRAVEN (FY90-91)	89,546	98,536	60,277	69,955	51,080	51,681	1.21	0.58	52%	
DUPLIN (FY90-91)	44,639	48,900	32,335	38,360	37,243	38,949	1.22	0.87	29%	
DURHAM (FY88-89)	200,219	224,196	254,614	254,507	246,571	253,439	1.31	1.27	3%	
FORSYTH (FY88-89)	290,790	357,474	380,874	433,445	440,241	445,674	1.34	1.53	-14%	
MECKLENBURG (89-90)	624,464	695,214	917,479	929,186	1,051,342	1,214,764	1.39	1.95	-40%	
NEW HANOVER (88-89)	149,975	168,504	202,914	324,487	167,086	266,602	1.44	1.78	-23%	
PASQUOTANK (FY90-91)	35,146	32,081	28,998	32,336	32,655	33,740	1.02	0.96	6%	
PITT (FY89-90)	123,155	177,390	116,769	119,643	109,242	117,616	1.66	0.96	42%	
WAKE (FY 88-89)	575,696	544,520	770,896	871,035	874,300	966,631	1.40	1.68	-20%	
WAYNE (FY90-91)	114,246	111,167	92,475	103,848	93,616	126,459	1.06	1.11	-4%	



## Quick Waste Stream Analysis

Using data obtained from the "Solid Waste Management Annual Reports" and the "1998 North Carolina Markets Assessment", this assessment identifies local government recovery of materials in the State of North Carolina. "State Tonnage" represents the quantity of each material generated from residential, commercial and institutional sources. "Current Recovery" provides data on local government recovery efforts only, and therefore private recovery from commercial and institutional sources is not reflected in the data. Similar assessments are available for all NC counties and municipalities based on local population figures.

Quick Waste Stream Analysis For:		State of North Carolina			
STATISTICS		Recovery (lbs/capita):			
Community Population (7/1/98):	7,547,090	Ave. Municipal Recovery (lbs/capita):		116.88	
Total FY 98-99 Recovery (tons):	441,057.99	Ave. County Recovery (lbs/capita)*:		109.06	
				105.12	
		* (County recovery includes municipalities)			
Material	State Tonnage	Current Recovery	Tons Left in Waste Stream	Percent Recovered	Average LG Recovery
<b>Total Paper</b>	<b>2,239,935.27</b>	<b>233,306.05</b>	<b>2,006,629.21</b>	<b>10.4%</b>	<b>10.1%</b>
Newsprint	294,608.47	142,240.82	152,367.65	48.3%	42.9%
Corrugated Cardboard	889,598.97	60,799.87	828,799.09	6.8%	7.0%
Magazines	125,999.59	4,302.02	121,697.57	3.4%	2.9%
Office Paper	194,839.22	4,803.05	190,036.17	2.5%	3.1%
Mixed Paper	707,681.68	18,888.61	688,793.08	2.7%	3.7%
Other Paper	27,207.34	2,271.68	24,935.66	8.3%	1.6%
<b>Total Glass</b>	<b>293,737.41</b>	<b>41,614.30</b>	<b>252,123.12</b>	<b>14.2%</b>	<b>14.5%</b>
Clear	146,869.22	19,302.78	127,566.44	13.1%	13.8%
Green	76,371.58	9,106.00	67,265.59	11.9%	13.9%
Amber	70,496.61	13,205.52	57,291.09	18.7%	16.5%
<b>Total Plastic</b>	<b>349,699.42</b>	<b>14,831.39</b>	<b>334,868.03</b>	<b>4.2%</b>	<b>2.2%</b>
PETE	56,270.15	8,536.98	47,733.17	15.2%	15.5%
HDPE	124,371.47	6,058.10	118,313.37	4.9%	3.7%
Other Plastic	169,057.80	236.31	168,821.49	0.1%	0.1%
<b>Aluminum Cans</b>	<b>45,121.45</b>	<b>4,612.58</b>	<b>40,508.87</b>	<b>10.2%</b>	<b>10.8%</b>
<b>Steel Cans (Bi-Metal)</b>	<b>81,220.50</b>	<b>7,306.64</b>	<b>73,913.87</b>	<b>9.0%</b>	<b>8.9%</b>
<b>White Goods</b>	<b>108,024.68</b>	<b>46,505.54</b>	<b>61,519.14</b>	<b>43.1%</b>	<b>40.5%</b>
<b>Pallets and Wood Crates</b>	<b>455,421.97</b>	<b>5,553.68</b>	<b>449,868.29</b>	<b>1.2%</b>	<b>7.3%</b>
<b>Food Wastes</b>	<b>899,765.93</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>0.0%</b>
<b>Textiles (post consumer)</b>	<b>183,523.35</b>	<b>579.69</b>	<b>182,943.66</b>	<b>0.3%</b>	<b>0.0%</b>
<b>Commingled Tonnage</b>	<b>N/A</b>	<b>-</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>
<b>Other Materials Collected</b>					
Other Metal	N/A	19,137.29	N/A	N/A	N/A
Other Wood	N/A	4,396.50	N/A	N/A	N/A
Other Material	N/A	12,071.40	N/A	N/A	N/A
Other Material	N/A	50,476.65	N/A	N/A	N/A
Other Material	N/A	666.28	N/A	N/A	N/A
<b>Special Wastes</b>					
Used Oil (Gallons)	14,135,845.08	736,436.00	13,399,409.08	5.2%	7.0%
Used Oil Filters (# Filters)	12,419,674.46	12,687.00	12,406,987.46	0.1%	0.0%
HHW (tons)	N/A	1,017.78	N/A	N/A	N/A

