

# Trends in Solid Waste Management North Carolina

SWANA NORTH CAROLINA CHAPTER  
Annual Spring Technical Conference  
May 1, 2007



## Waste Disposal in North Carolina

### Fact versus Perception



Division of Waste  
Management  
NC DENR

- *'52 Refuse Disposal by Sanitary Landfill* by the NC Div of Sanitary Engineering / State Board of Health



Division of Waste  
Management

NC DENR

- '67 *SW Mgmt Survey*

- Federally funded 3 positions
- 479 disposal sites
- 23 were deemed “protective”

- '69 *Solid Waste Disposal Act*

- *State Board of Health assist Local Govt*
- *Insect & Rodent Control Section > Solid Waste and Vector Control Section*
- *9 State funded positions*



Division of Waste  
Management

NC DENR

- '71 *Rules and Regulations Providing Standards for Solid Waste Disposal*
  - 456 dumps > 160 landfills
  - Language changed from just disposal to “Reduction” “Reuse” “Recycling”



# Wake up calls...

Division of Waste  
Management

NC DENR

# '80s medical waste on beaches



Division of Waste  
Management

NC DENR

# '87 NYC trash barge



Division of Waste  
Management

NC DENR

- Belief that capacity in NC does not exist
- Late '80s - draft of Subtitle D language
- NC policy to protect groundwater outside of landfills

# '89 Solid Waste Management Act

Established:

goals & policies

new programs

landfill bans

reporting requirements

planning requirements

1987 garbage barge from New York City



Division of Waste  
Management  
NC DENR

- '91 EPA Revisions to Subtitle D of RCRA
- '98 Adoption of present .1600 rules



Division of Waste  
Management  
NC DENR

# North Carolina Solid Waste Management Annual Report July 1, 2005 – June 30, 2006

*State of North Carolina  
Michael F. Easley, Governor  
Department of Environment and Natural Resources  
William G. Ross Jr., Secretary*

*Division of Waste Management  
Dexter Matthews, Director*

*Division of Pollution Prevention and Environmental Assistance  
Gary Hunt, Director*

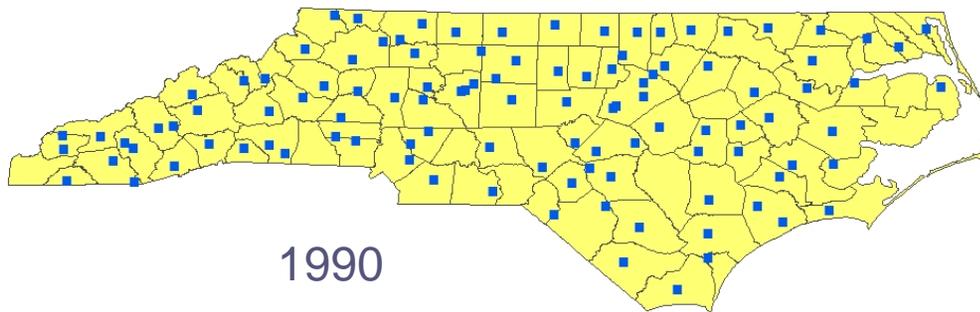
*Solid Waste Section  
Paul Crissman, Chief*

*Community and Business Section  
Scott Mouw, Chief*

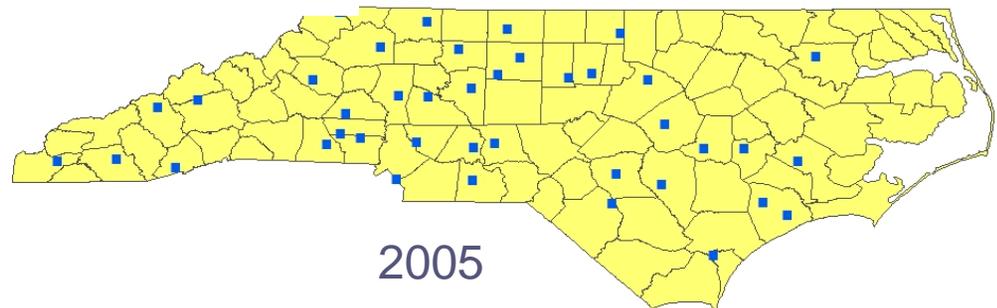
**Reduce-Reuse-Recycle**

**<http://www.wastenotnc.org/swhome/AR05-06.pdf>**

# Municipal Solid Waste Landfills in North Carolina 1990 and 2005



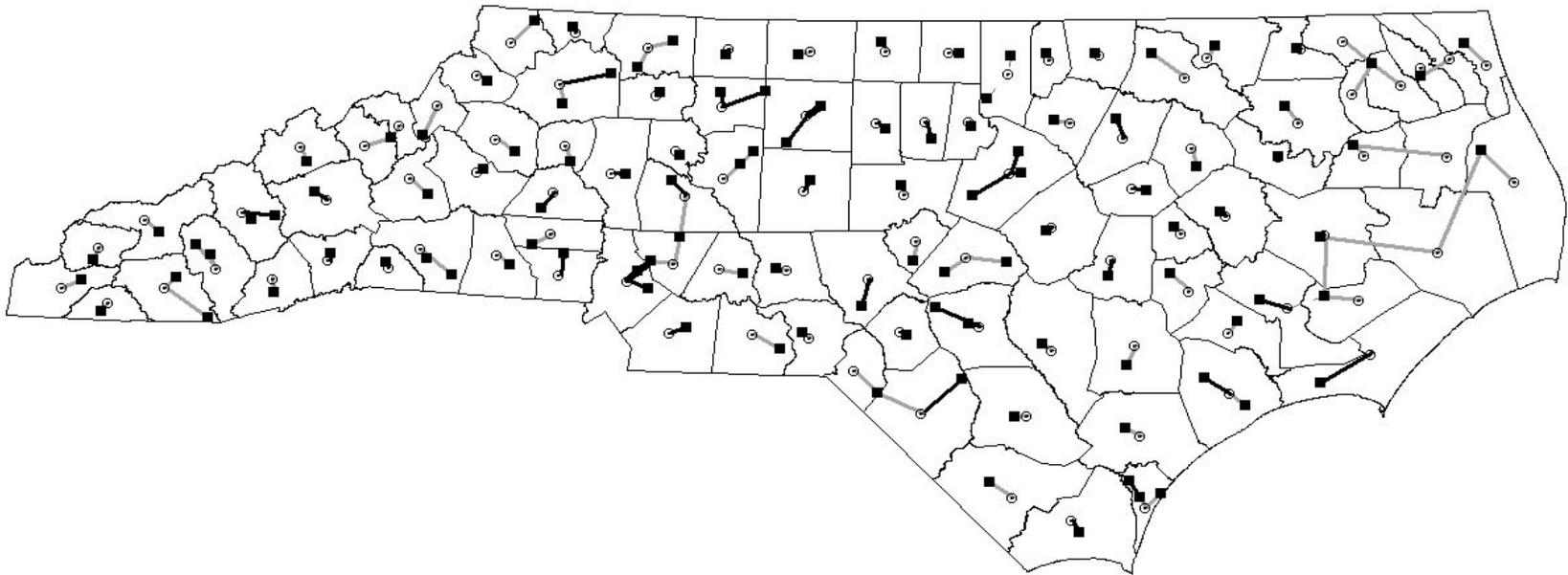
1990



2005

Division of Waste  
Management  
NC DENR

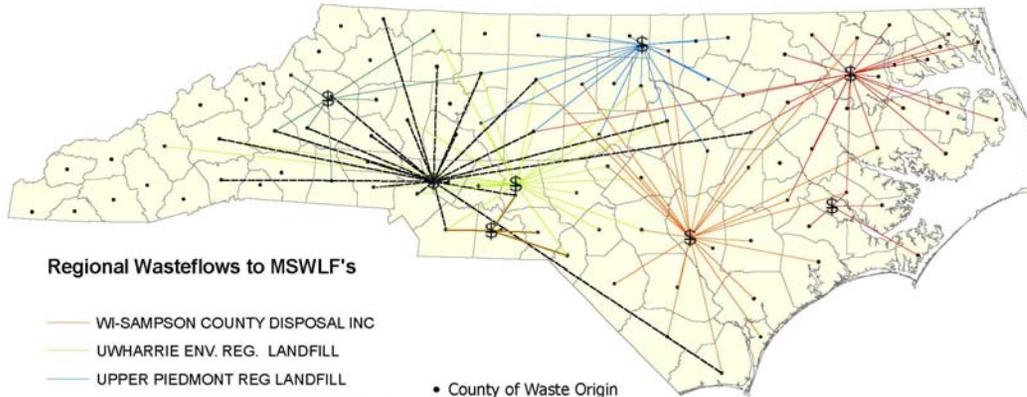
# Municipal Solid Waste Flow FY 1990-1991



Division of Waste  
Management

NC DENR

# Wasteflows to Regional Landfills in North Carolina For FY 2005-2006



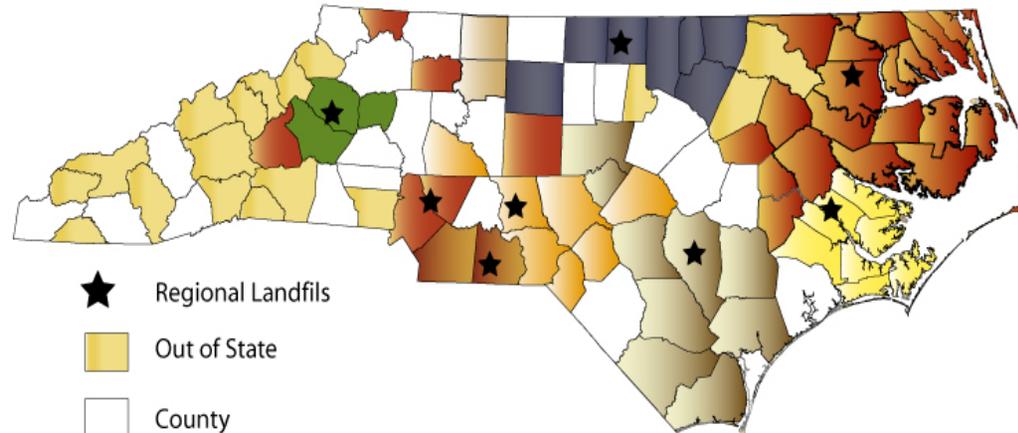
## Regional Wasteflows to MSWLF's

- WI-SAMPSON COUNTY DISPOSAL INC
- UWHARRIE ENV. REG. LANDFILL
- UPPER PIEDMONT REG LANDFILL
- FOOHILLS ENVIRONMENTAL LANDFILL
- EAST CAROLINA REG LANDFILL
- CRSWMA - LONG TERM REGIONAL LANDFILL
- CHAMBERS DEVELOPMENT MSWLF
- BFI-CHARLOTTE MTR SPEEDWAY LANDFILL V

• County of Waste Origin

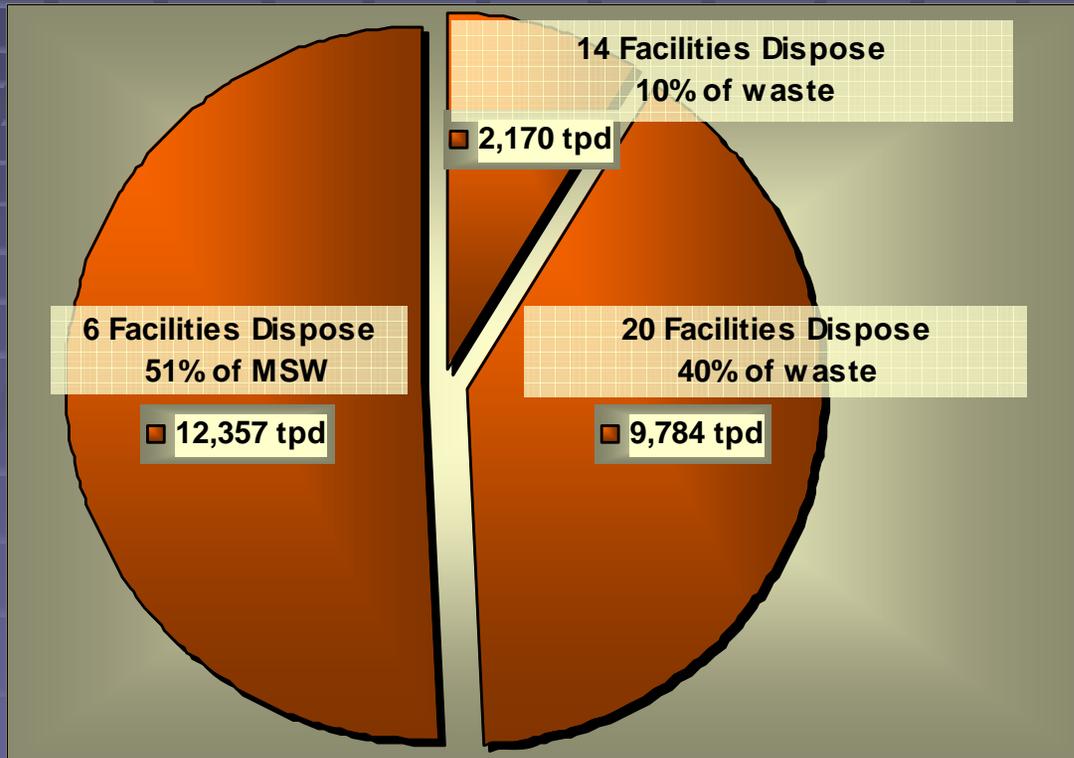
Created - 1-08-07  
 Data - North Carolina Division of Solid Waste Database  
 Map by - Garrett Davis and Environmental Finance Center - UNC Chapel Hill  
 Funding by - NCDENR

## Primary Waste Destination by County for FY 2005-2006



- ★ Regional Landfills
- Out of State
- County
- Foothills Environmental
- Upper Piedmont
- East Carolina
- BFI Charlotte
- Uwharrie Environmental
- CRSWMA
- Chambers
- WI-Sampson

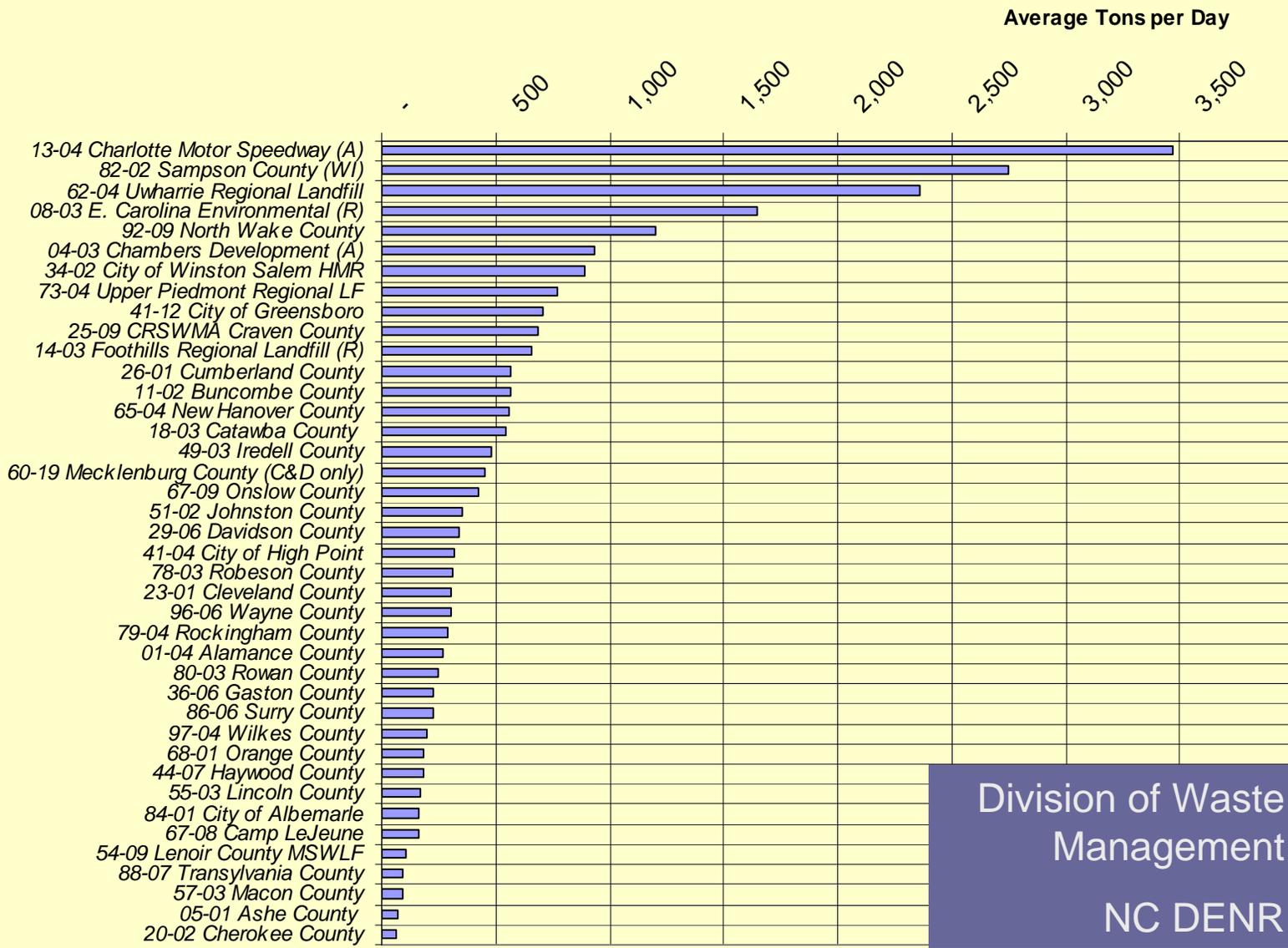
# MSW waste disposal



Division of Waste  
Management

NC DENR

# MSW Facilities Average Tons per Day



Division of Waste  
Management  
NC DENR

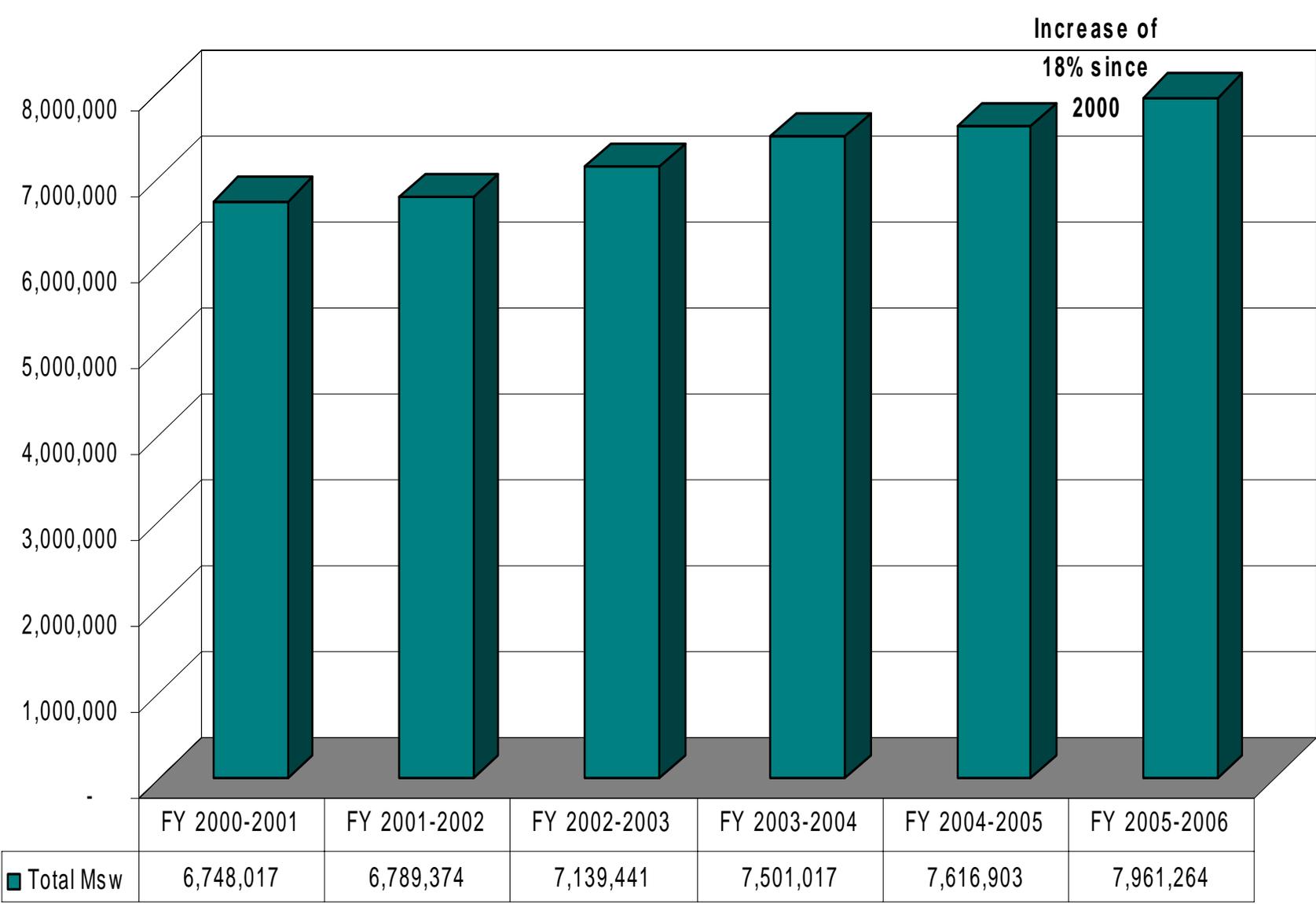
# Disposal rates

Fiscal Years	Tons Disposed	Population	Per Capita Disposal	Inc%/Dec-%
2005-2006	11,753,004	8,663,914	1.36	27%
2004-2005	11,029,485	8,541,263	1.29	21 %
2003-2004	10,713,444	8,418,090	1.27	19 %
2002-2003	10,236,960	8,323,375	1.23	15 %
2001-2002	9,999,284	8,188,008	1.22	14 %
2000-2001	9,752,510	8,049,313	1.21	13 %
1999-2000	10,267,137	7,938,062	1.29	21 %
1998-1999	9,214,323	7,797,501	1.18	10 %
1997-1998	8,607,578	7,645,512	1.13	5 %
1996-1997	8,741,727	7,490,812	1.17	9 %
1995-1996	7,722,795	7,336,228	1.05	2 %
1994-1995	7,624,144	7,180,525	1.06	-1 %
1993-1994	7,038,505	7,036,927	1.00	-7 %
1992-1993	6,890,818	6,892,673	1.00	-7 %
1991-1992	(managed) 7,257,428	6,781,321	(Base Year Rate) 1.07	
1990-1991	7,161,455	6,632,448	1.08	

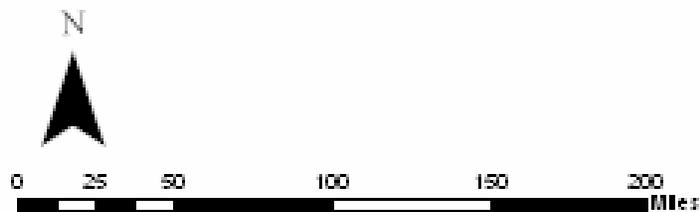
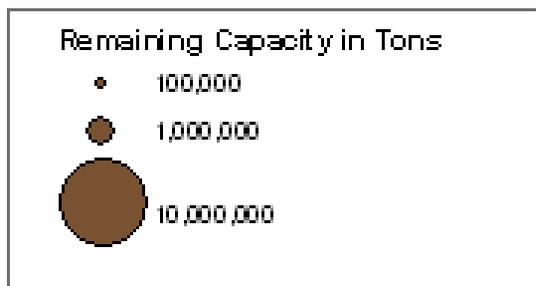
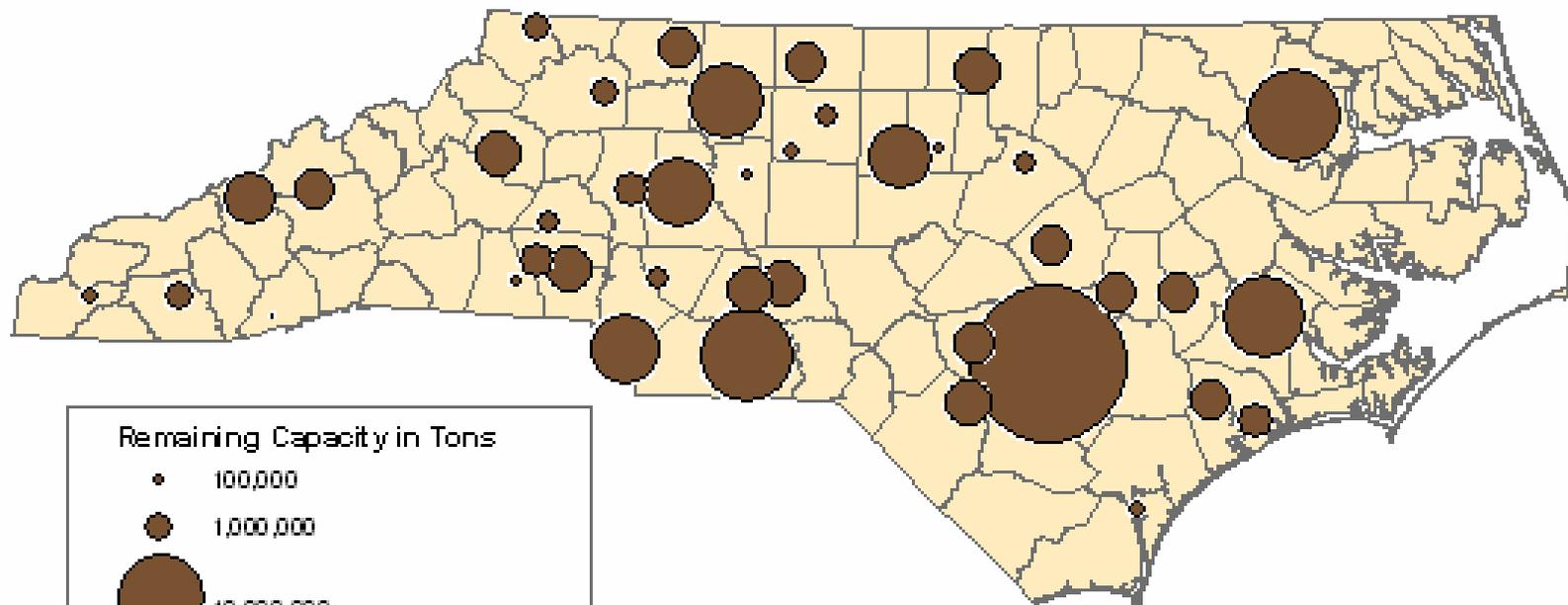
Division of Waste  
Management

NC DENR

# Municipal Solid Waste Waste Disposal in North Carolina FY 2000-2001 to FY 2005-2006



# Remaining Total MSWLF Capacity in Tons As of FY 2005-2006



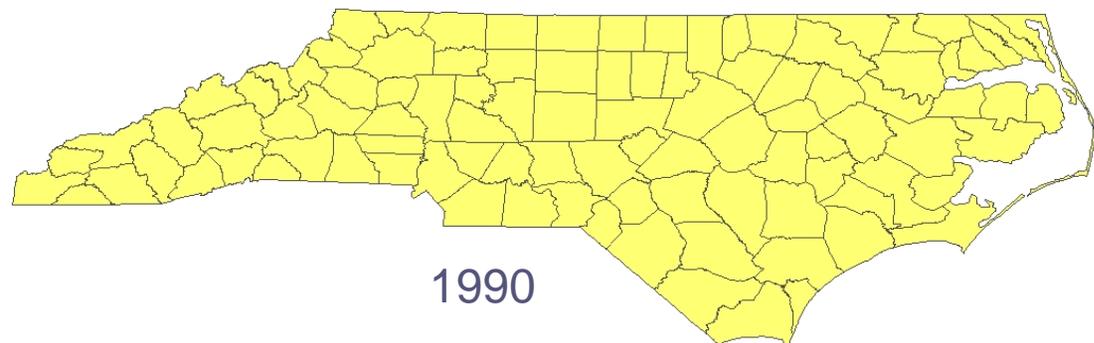
# C&D landfills



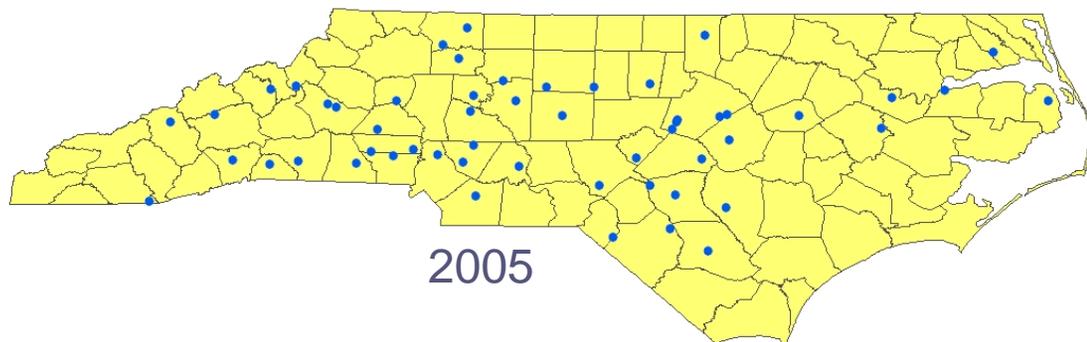
Division of Waste  
Management

NC DENR

# Construction & Demolition Landfills in North Carolina 1990 and 2005



1990

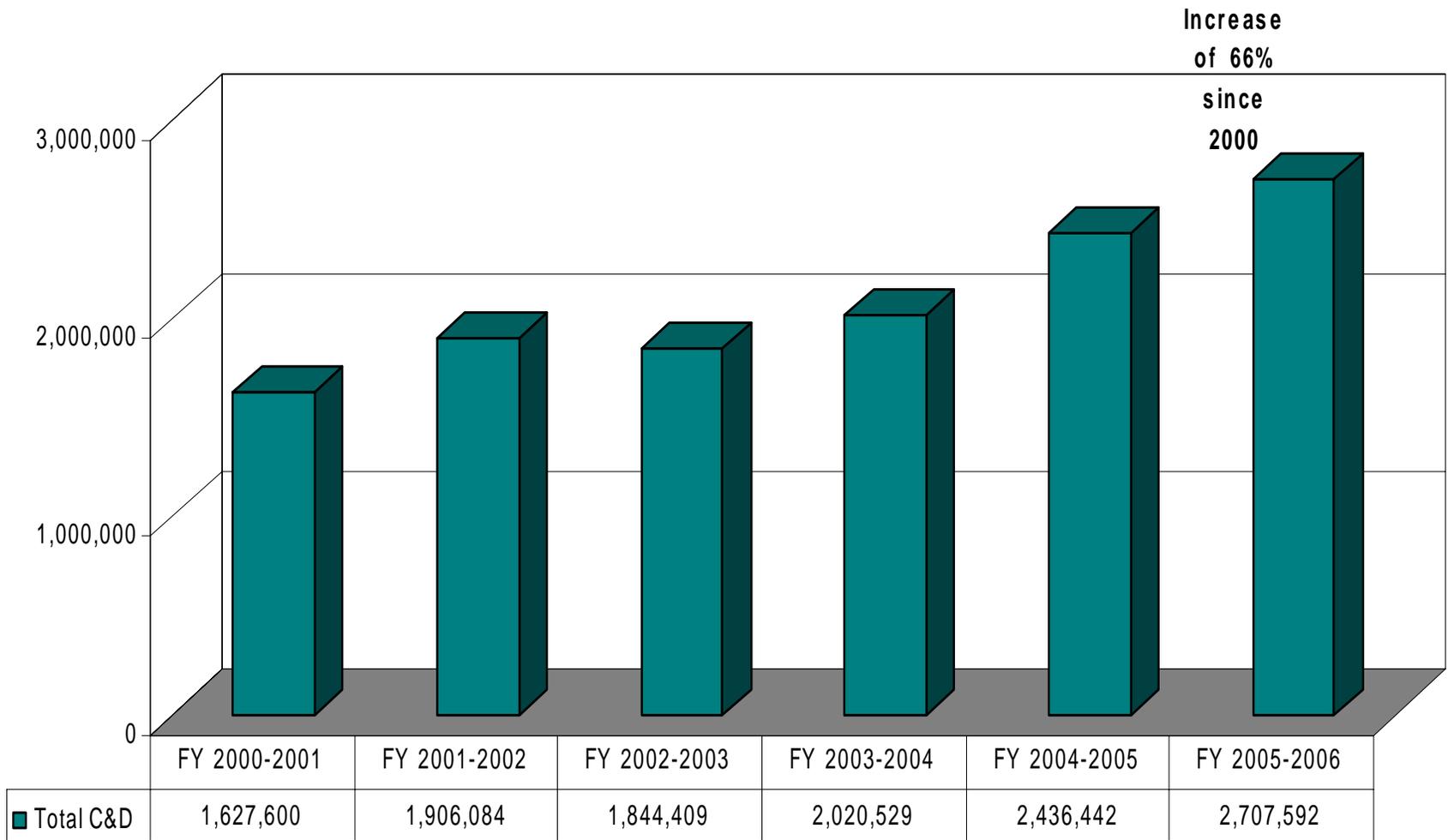


2005

Division of Waste  
Management

NC DENR

# Construction and Demolition Waste Disposal in North Carolina FY 2000-2001 to FY 2005-2006



# TRANSFER STATIONS



Division of Waste  
Management

NC DENR

# Transfer Station Growth in North Carolina from 1990-2005



▲ Transfer Station



Created - 1-08-07

Data - North Carolina Division of Solid Waste Database

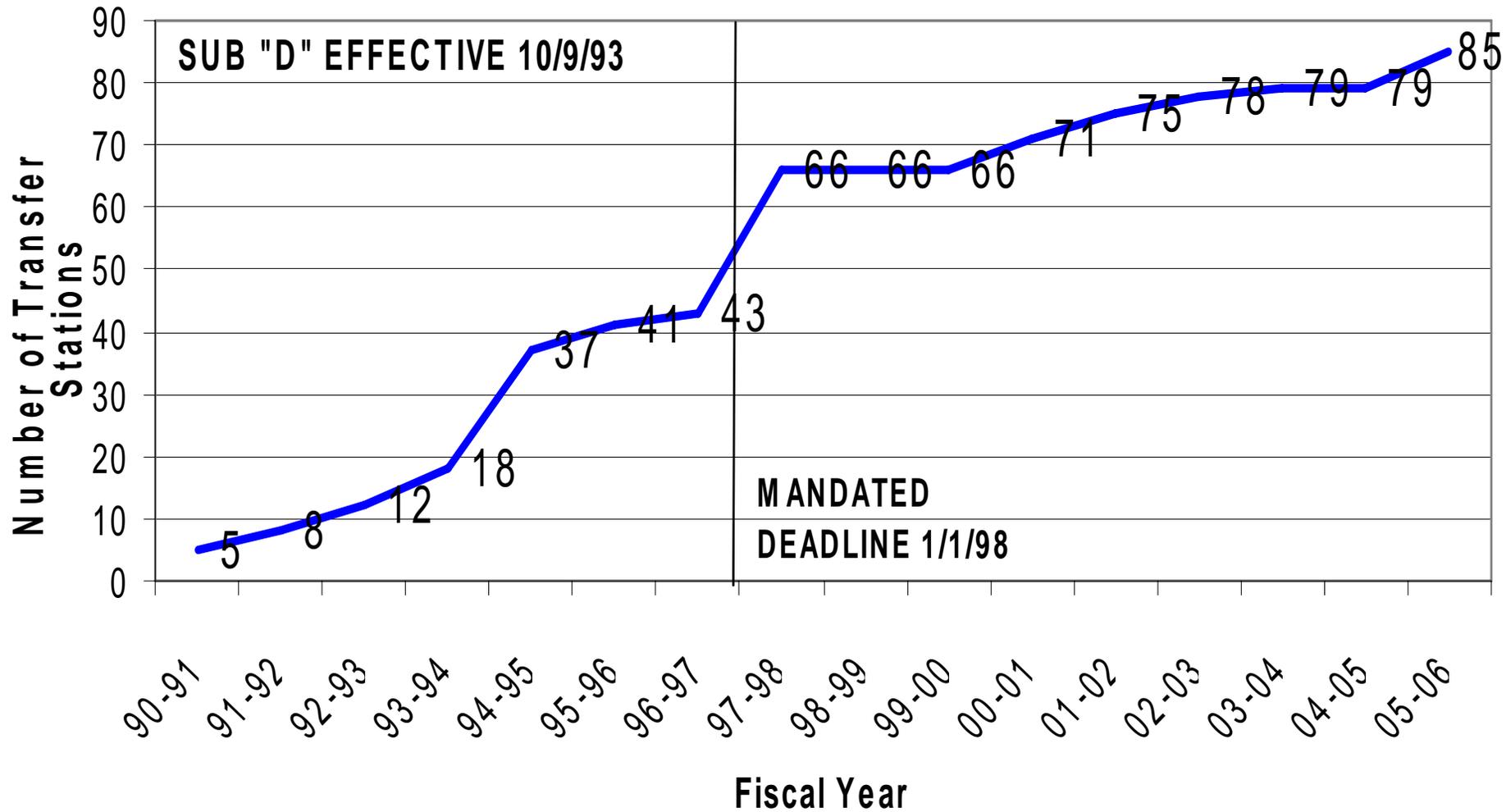
Map by - Garrett Davis and Environmental Finance Center - UNC Chapel Hill

Funding by - NCDENR

Division of Waste  
Management

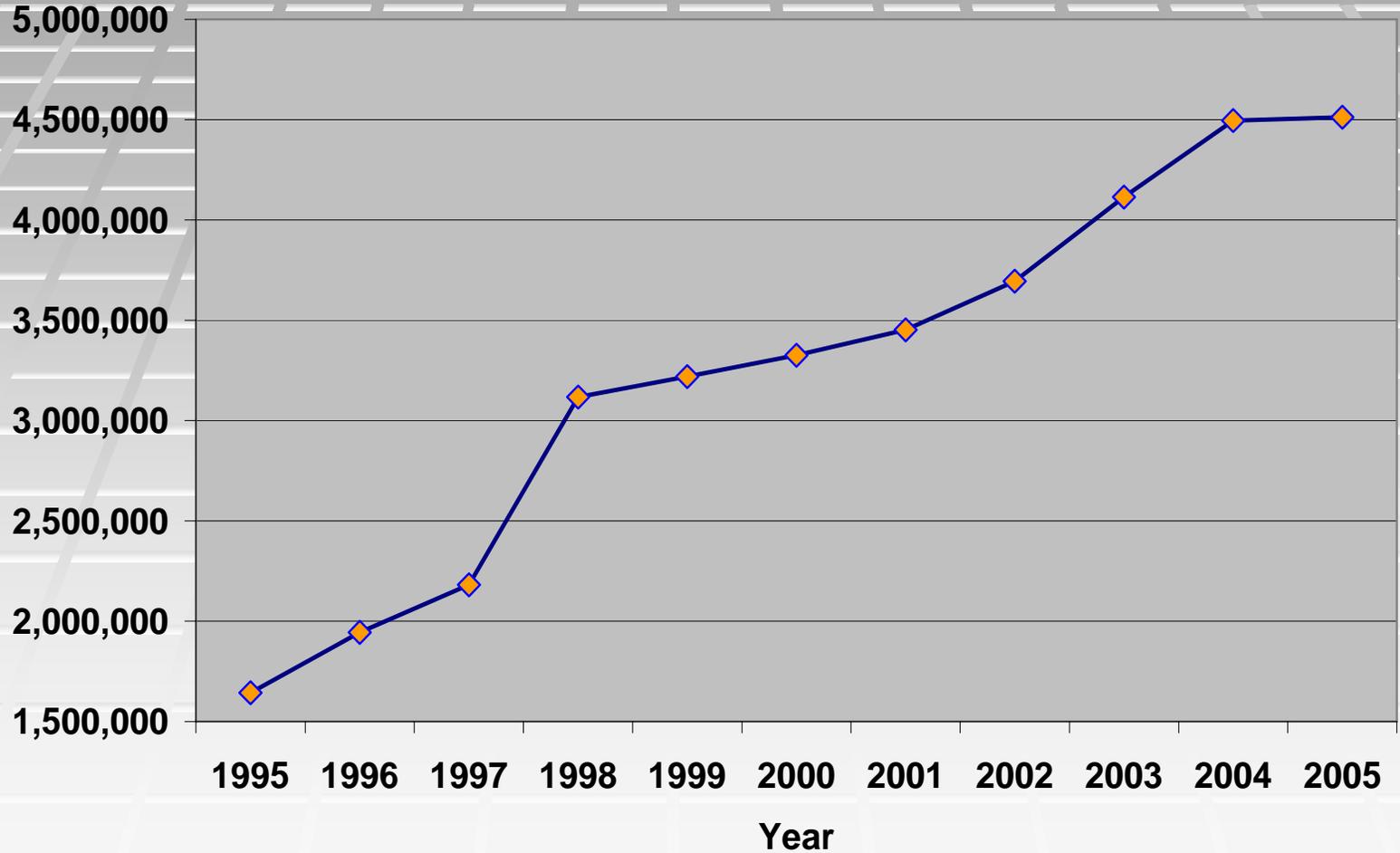
NC DENR

# Active Transfer Stations



# Transfer Stations

## Annual Tons Received at Facilities

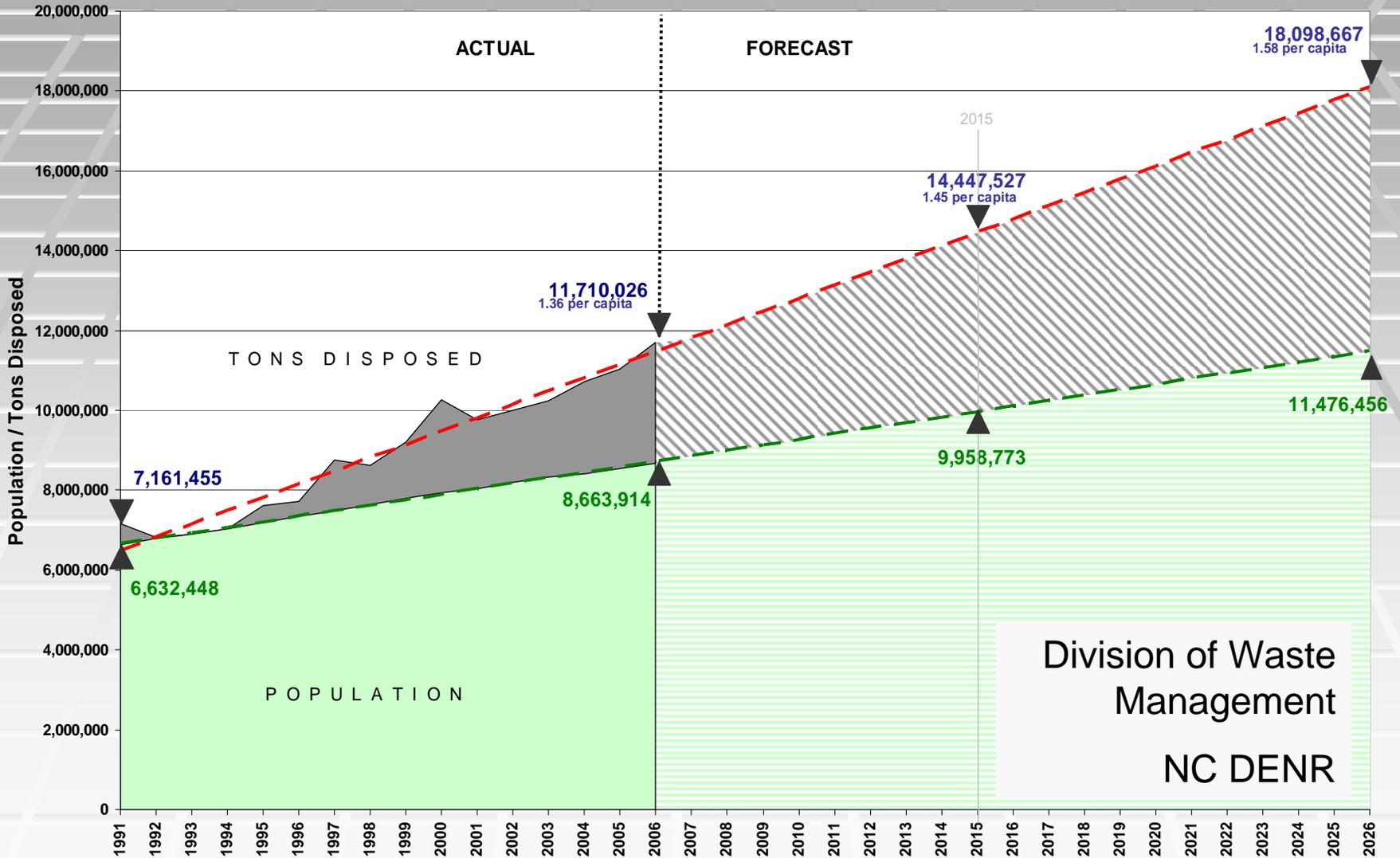


# Compliance

Facility Type	# Facilities	Inspections
▪ Municipal Solid Waste landfills (MSWLF)	177	2 354
▪ Construction and Demolition landfills (CDLF)	86	2 172
▪ Industrial landfills (INDUS)	37	2 74
▪ Treatment and Processing facilities (TP)	28	2 56
▪ Mixed Waste Processors (MWP)	19	2 38
▪ Household Hazardous Waste facilities (HHW)	15	2 30
▪ Incinerators (INCIN)	8	2 16
▪ Tire Monofill landfills (TIRELF)	4	2 8
▪ Tire collection /processing facilities (TIRETP)	11	1 11
▪ Medical Waste facilities	5	2 0
▪ Composting facilities (COMP)	52	1 52
▪ Transfer facilities (TRANS)	104	2 208
▪ Land Clearing and Inert Debris Landfills (LCID)	152	1 152
▪ Land Clearing and Inert Debris Notified sites	731	0 0
▪ Pre-Regulatory Demolition landfills (DEMO)	158	0 0
	—	—
<b>Total</b>	<b>1587</b>	<b>1171</b>

# Solid Waste Landfill Study

North Carolina Solid Waste Disposal 20-Year Forecast  
 Straight line Population and Straight line Disposal



A photograph of a landfill site. In the foreground, there is a large, sprawling pile of garbage, including plastic bags, crumpled paper, and other debris. In the middle ground, several trucks are visible, some with their beds raised, dumping waste. The background shows a line of trees under a clear sky.

# Solid Waste in North Carolina

## The future:

**More of the same**

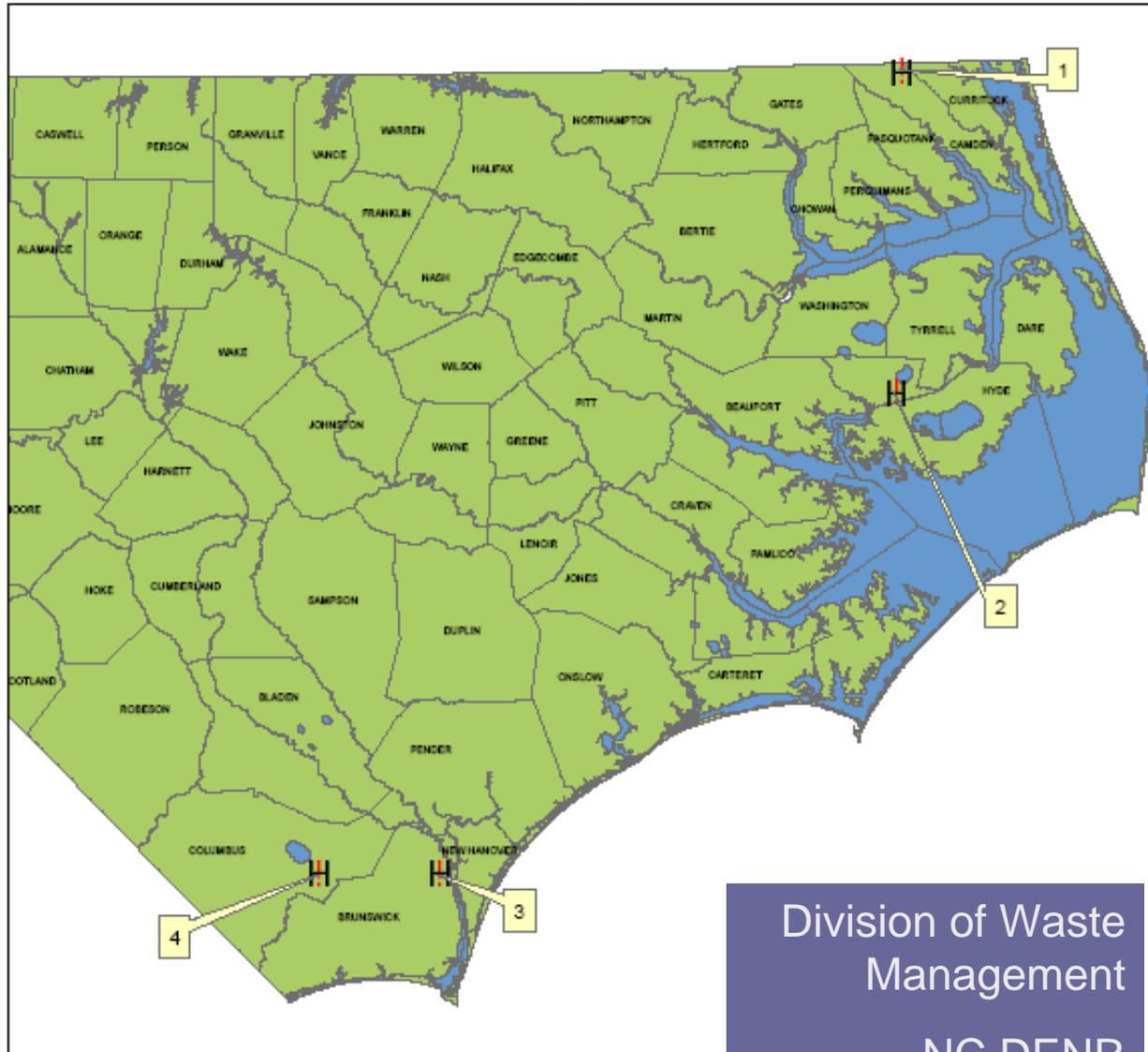
*(Probably continue to have more and more waste)*

**Yet very different**

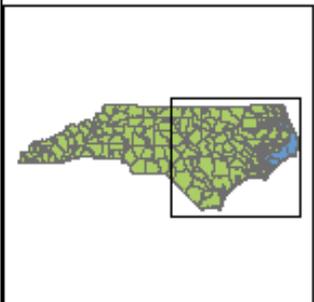
*(Probably become one of the nation's leading importers of waste)*

# Fact vs Perception

## Proposed Landfills in Eastern North Carolina



1. Black Bear, LLC Waste Industries (MSW Landfill)
2. Alligator River, LLC (C&D Landfill)
3. North Carolina Resource Conservation, LLC  
Sims Group USA Corp.  
formerly HugoNEU (Autofluff Recycler)
4. Riegel Ridge, LLC Waste Management, Inc. (MSW Landfill)



Division of Waste Management  
NC DENR

# Fact vs Perception

- Who will take financial responsibility for closed landfills?
- How can host government protect and improve local community when landfills are built?
- Should landfills go in areas of flooding, wetlands, sensitive flora/fauna?
- What effects do landfill gases, leachate have on surroundings?
- Will landfill increase traffic to a dangerous degree?
- Will transportation of waste on barges & rail cause new contamination?
- Is hazardous waste disposed of in NC landfills?
- Does building large landfills make Recycle/Reduce/Reuse less attractive ?

Division of Waste  
Management

NC DENR

# Fact vs Perception

**GENERAL ASSEMBLY OF NORTH CAROLINA**

**SESSION 2005**

**H 3**

**HOUSE BILL 1093\***

**Senate Agriculture/Environment/Natural Resources Committee Substitute Adopted  
7/12/06**

**Third Edition Engrossed 7/13/06**

**Short Title: *Moratorium Imposed on New Landfills***

**Referred to: April 4, 2005**

**A BILL TO BE ENTITLED**

**AN ACT TO impose a moratorium on the consideration of Permit applications and issuance of permits for the construction of new landfills in the state and to direct the environmental review commission to study issues related to solid waste disposal in order to protect Public health and the environment.**

# Fact vs Perception

**SECTION 4.** Study. – The Environmental Review Commission, with the assistance of the Division of Waste Management of the Department of Environment and Natural Resources, shall study issues related to solid waste. The Commission shall specifically study measures concerning:

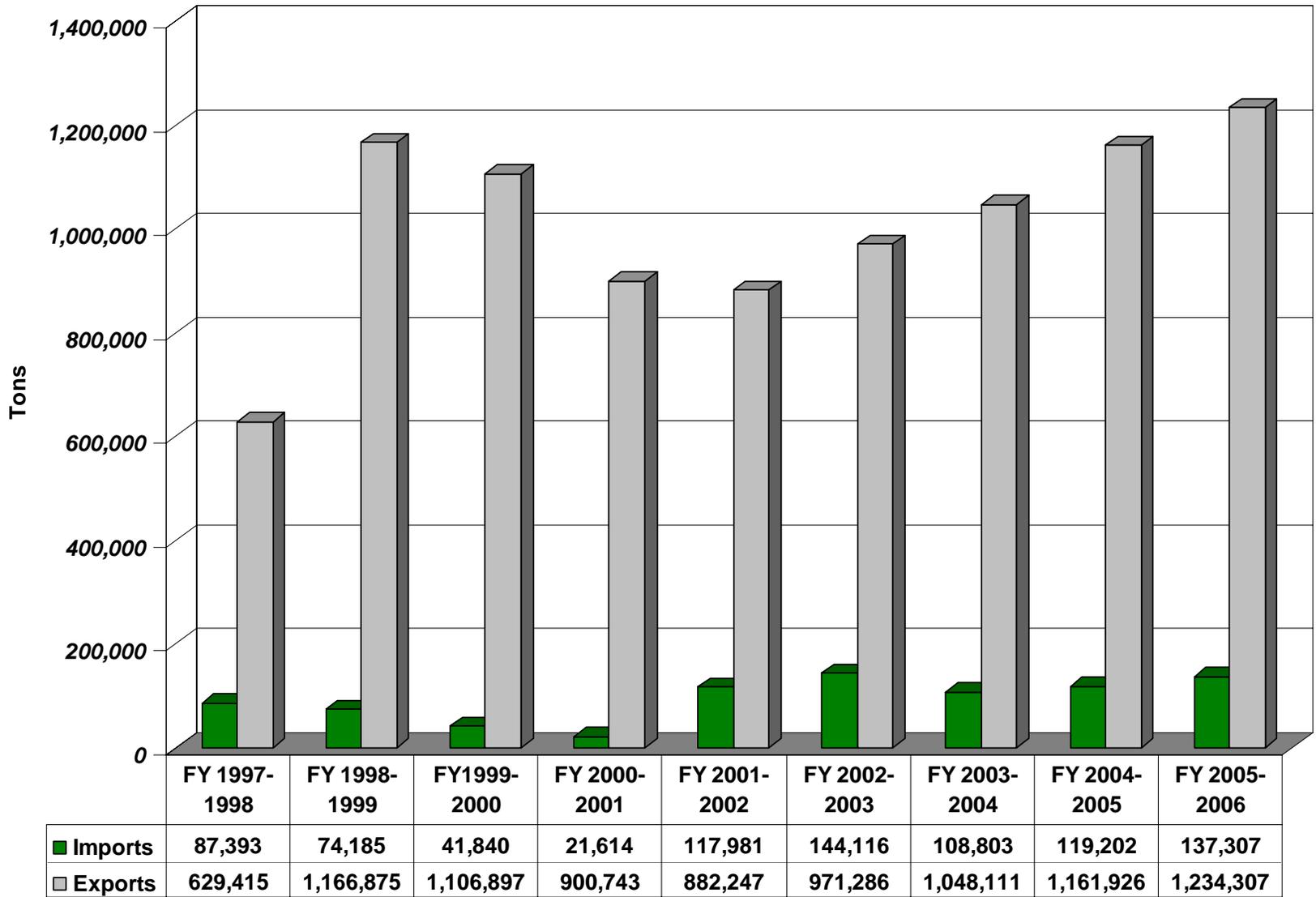
- (1) Financial **responsibility** requirements for solid waste landfills, including the application of requirements to limited liability companies and other business entity structures of applicants seeking solid waste landfill permits.
- (2) Application of franchise requirements and **local government** approval for solid waste landfill permits, including adequacy of public notice and comment, community studies, and site designations prior to local government approval.
- (3) Siting, design, and operational requirements for landfills for the disposal of construction or demolition waste, municipal solid waste, or industrial solid waste that are proposed in areas susceptible to **flooding** from natural disasters, areas with **high water tables**, and other **environmentally sensitive** areas.
- (4) Formation of dangerous **chemicals and gases** in flood-prone landfill environments.
- (5) **Traffic** considerations for proposed landfills.
- (6) Regulatory oversight and staffing for permitting and compliance of solid waste landfills, and inspection of waste containers on **barges, railways**, and trucks.
- (7) Compliance with statutory prohibitions on disposal of certain types of solid waste and measures to prevent disposal of **hazardous waste** in solid waste and construction and demolition landfills.
- (8) Ways to **reduce** the amount of solid waste disposed of within North Carolina landfills, including statewide tipping fees, bans on the disposal of certain types of waste in landfills, more aggressive recycling requirements, and enhanced regulatory requirements for landfills and other solid waste management facilities.

Division of Waste  
Management

NC DENR

# Solid Waste Landfill Study

## Actual Imports / Exports

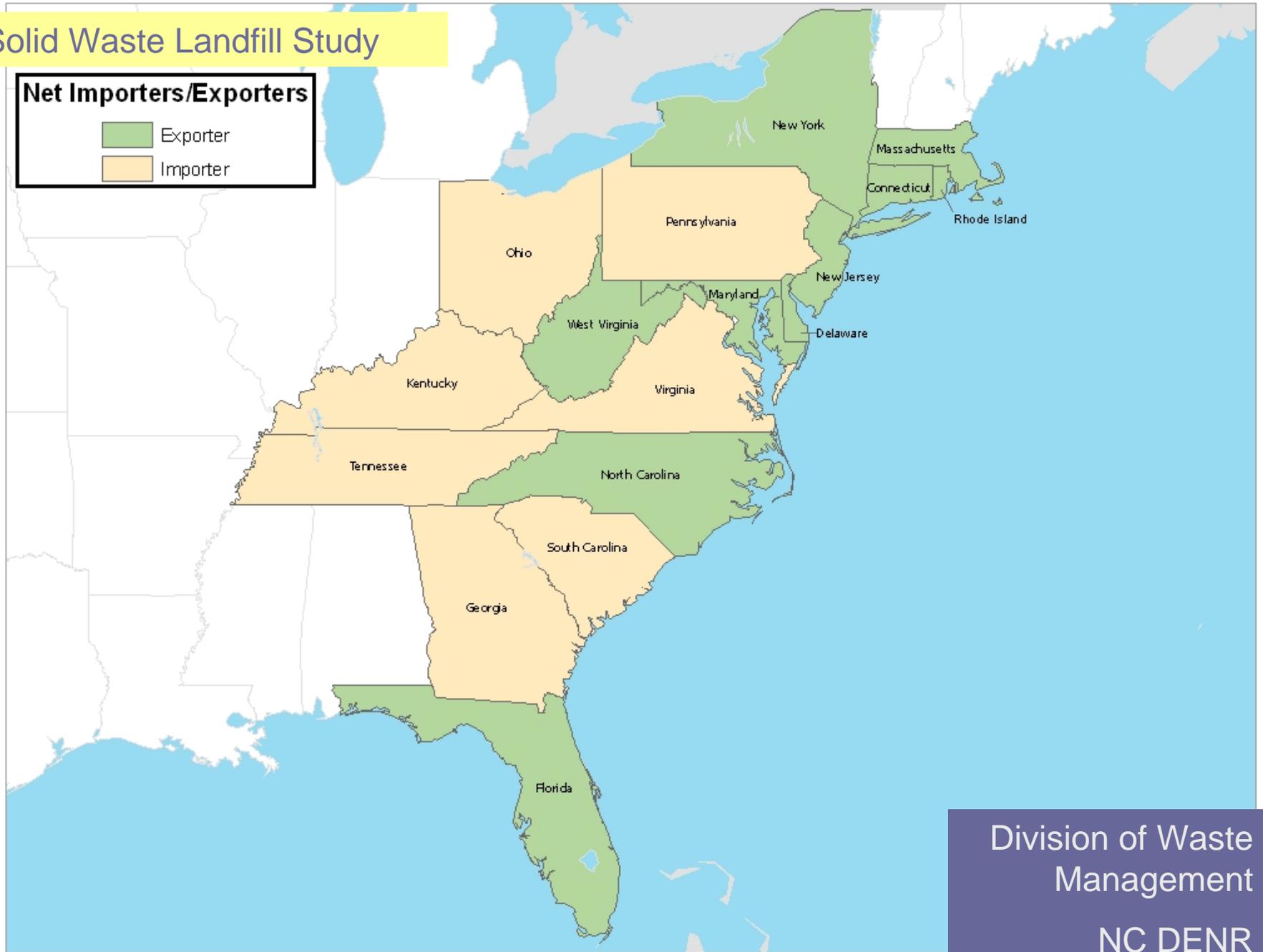


Fiscal Year

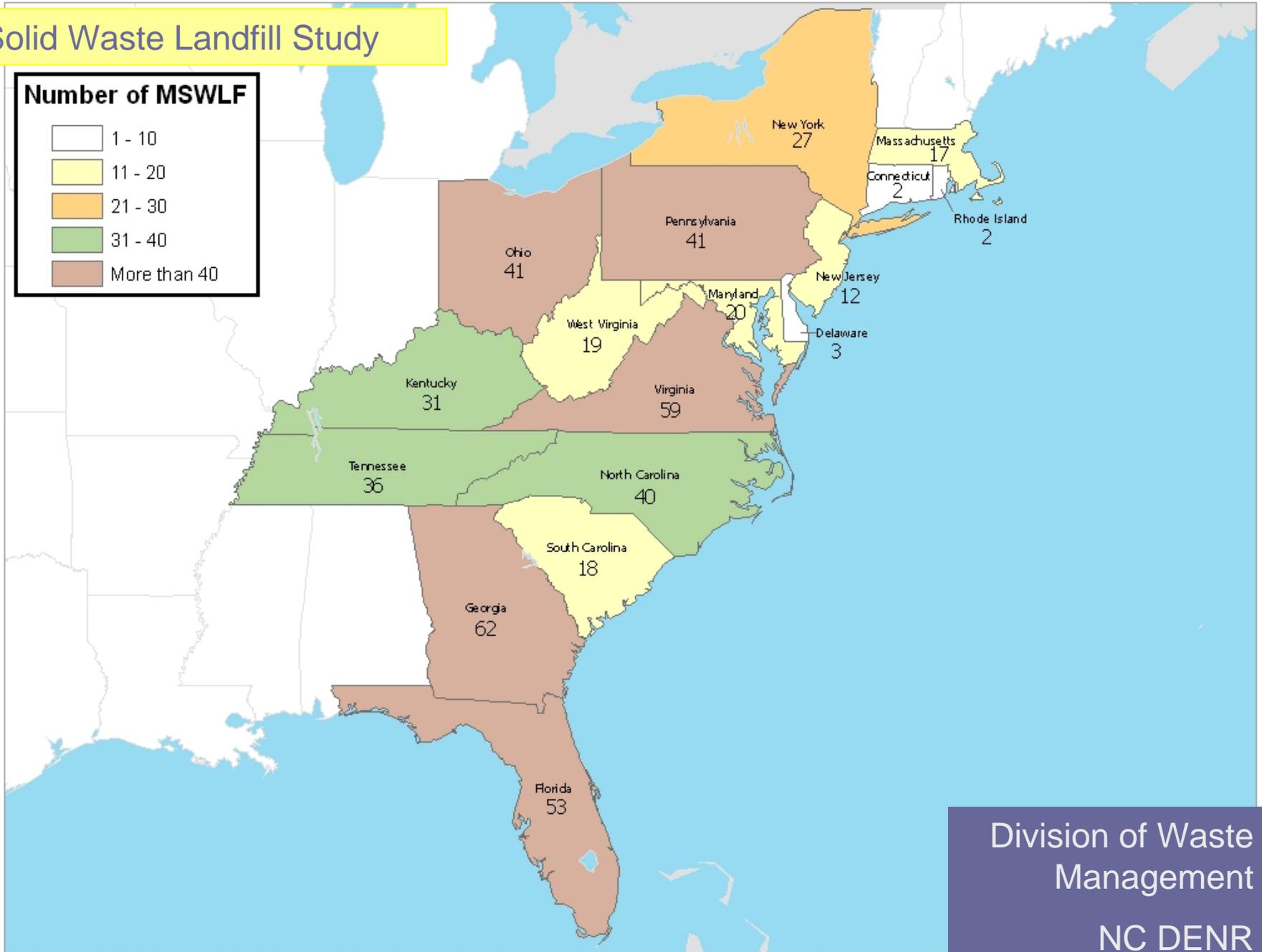
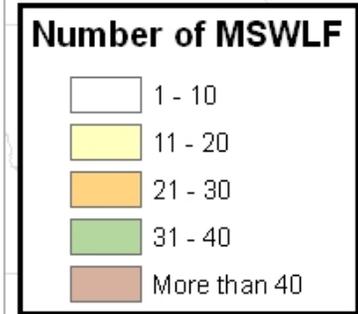
# Solid Waste Landfill Study

## Net Importers/Exporters

- Exporter
- Importer

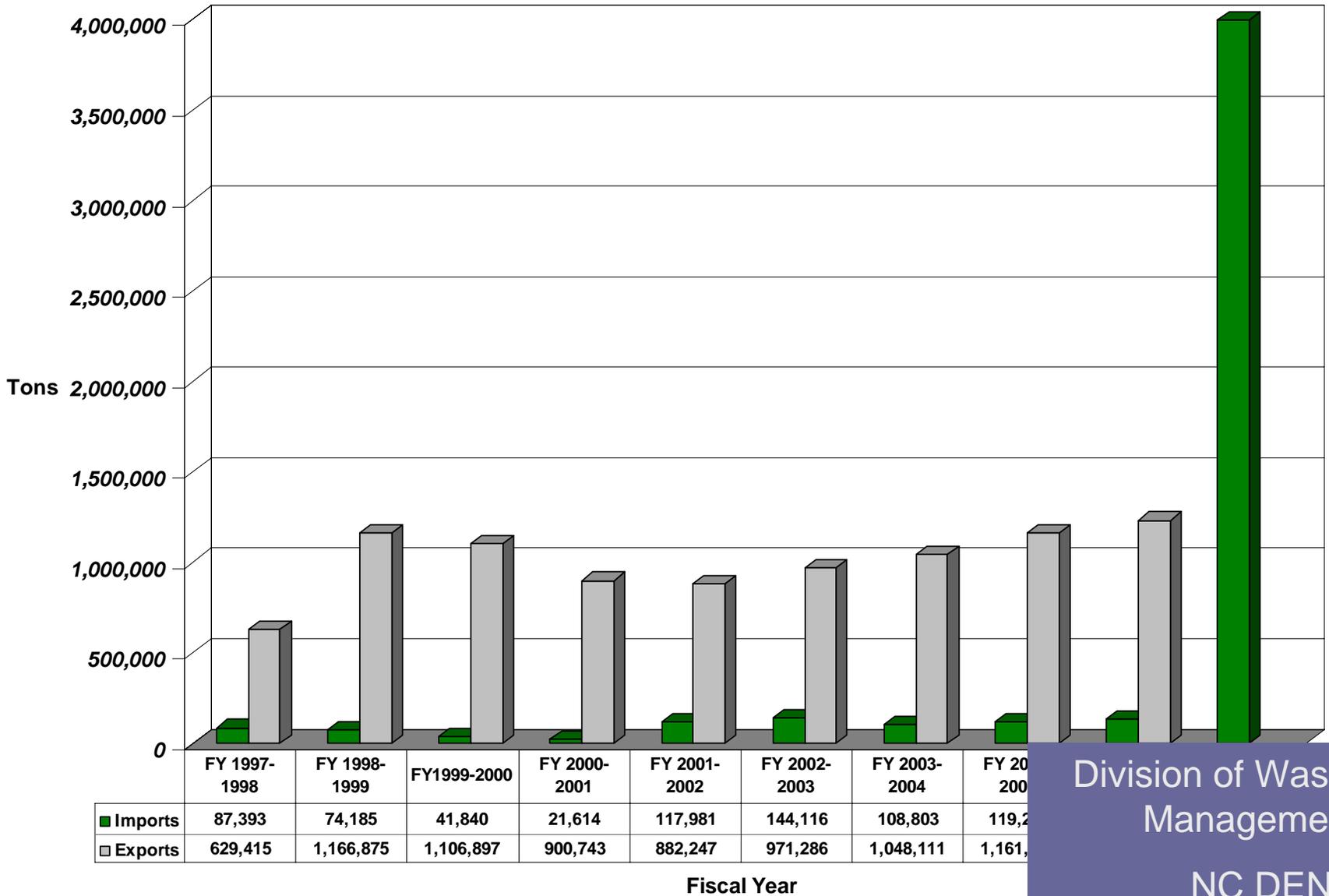


# Solid Waste Landfill Study



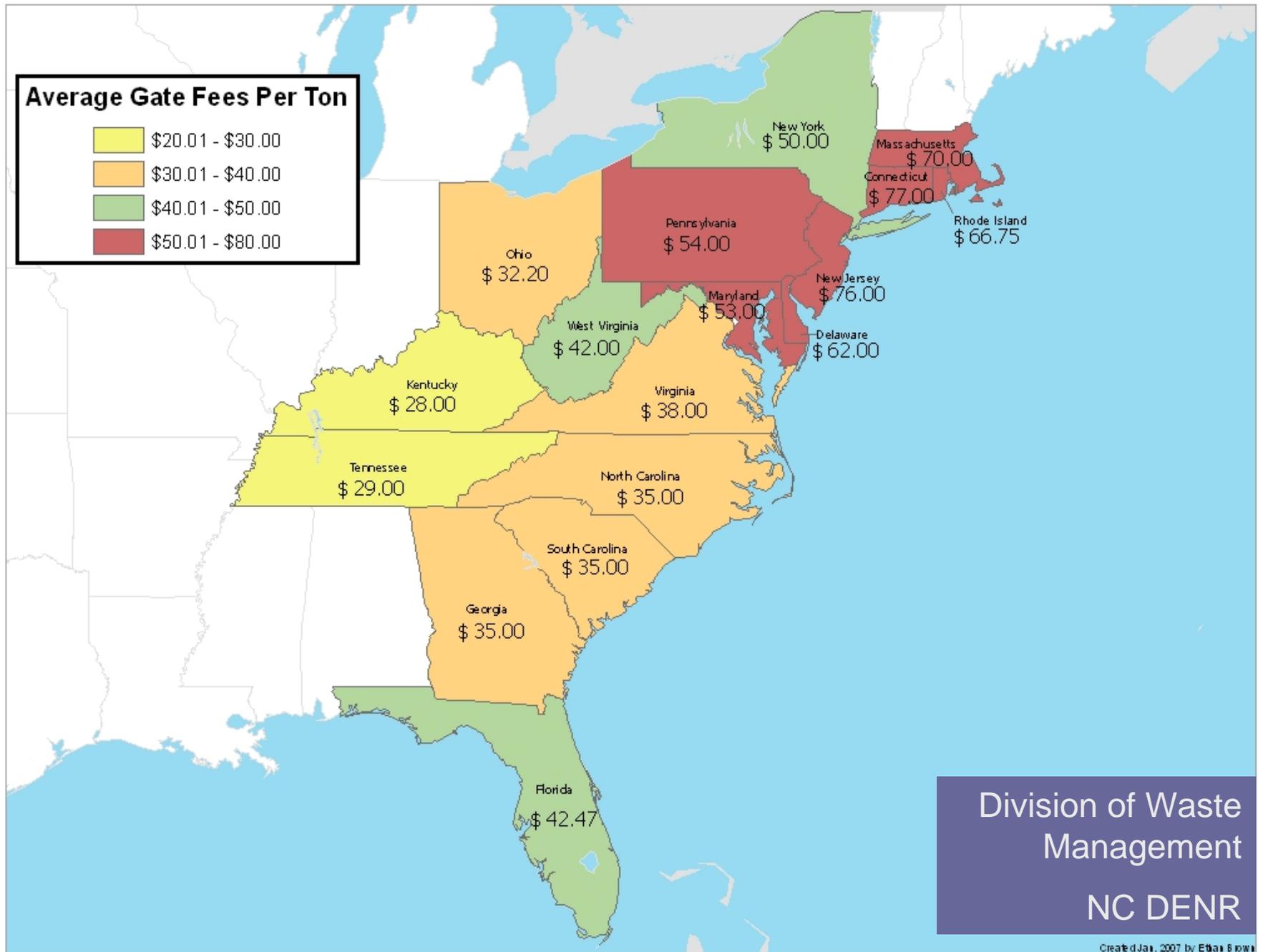
# Solid Waste Landfill Study

## Forecast Imports / Exports



Division of Waste Management  
NC DENR

### Average Gate Fees Per Ton



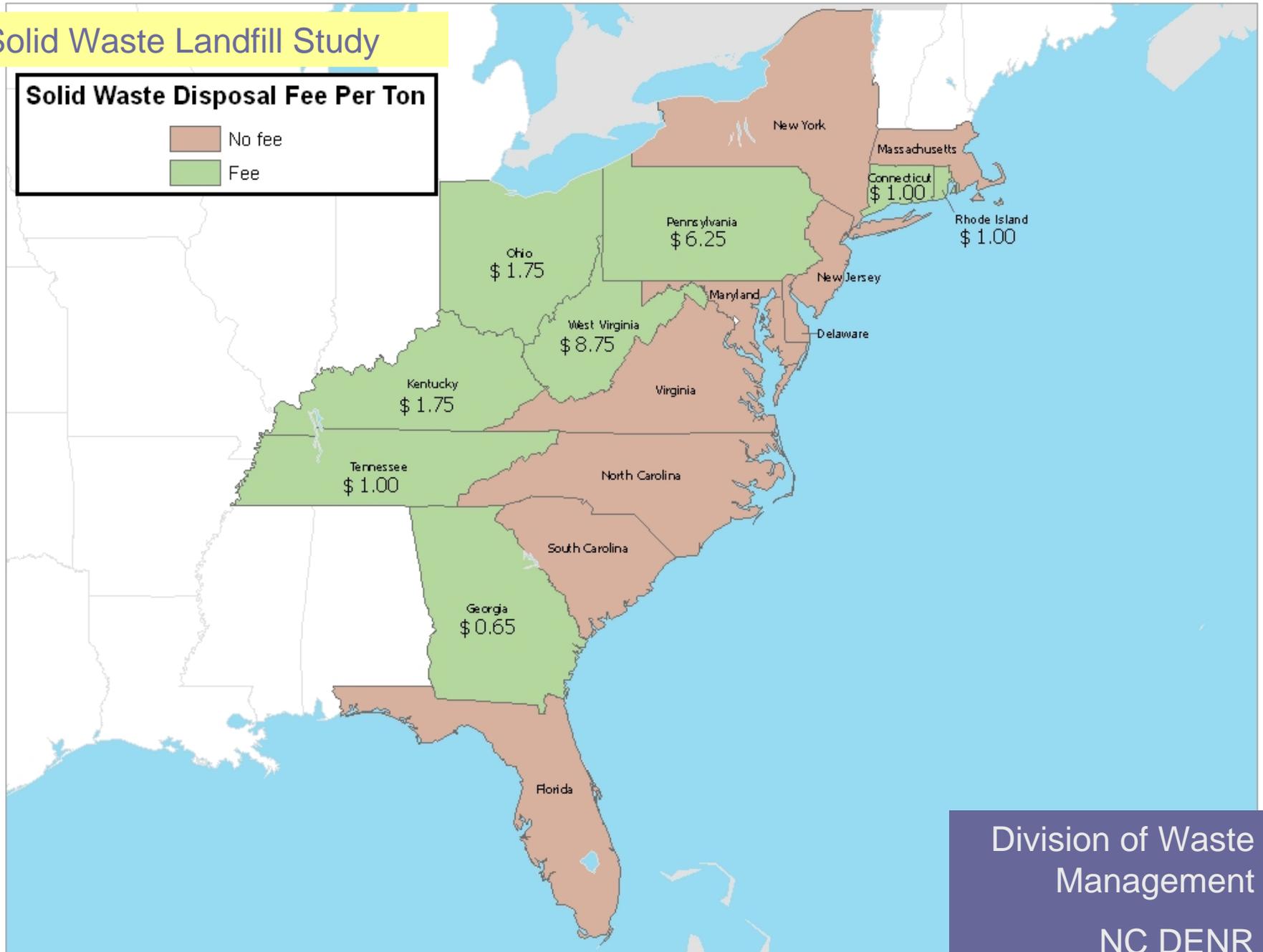
Division of Waste  
Management

NC DENR

# Solid Waste Landfill Study

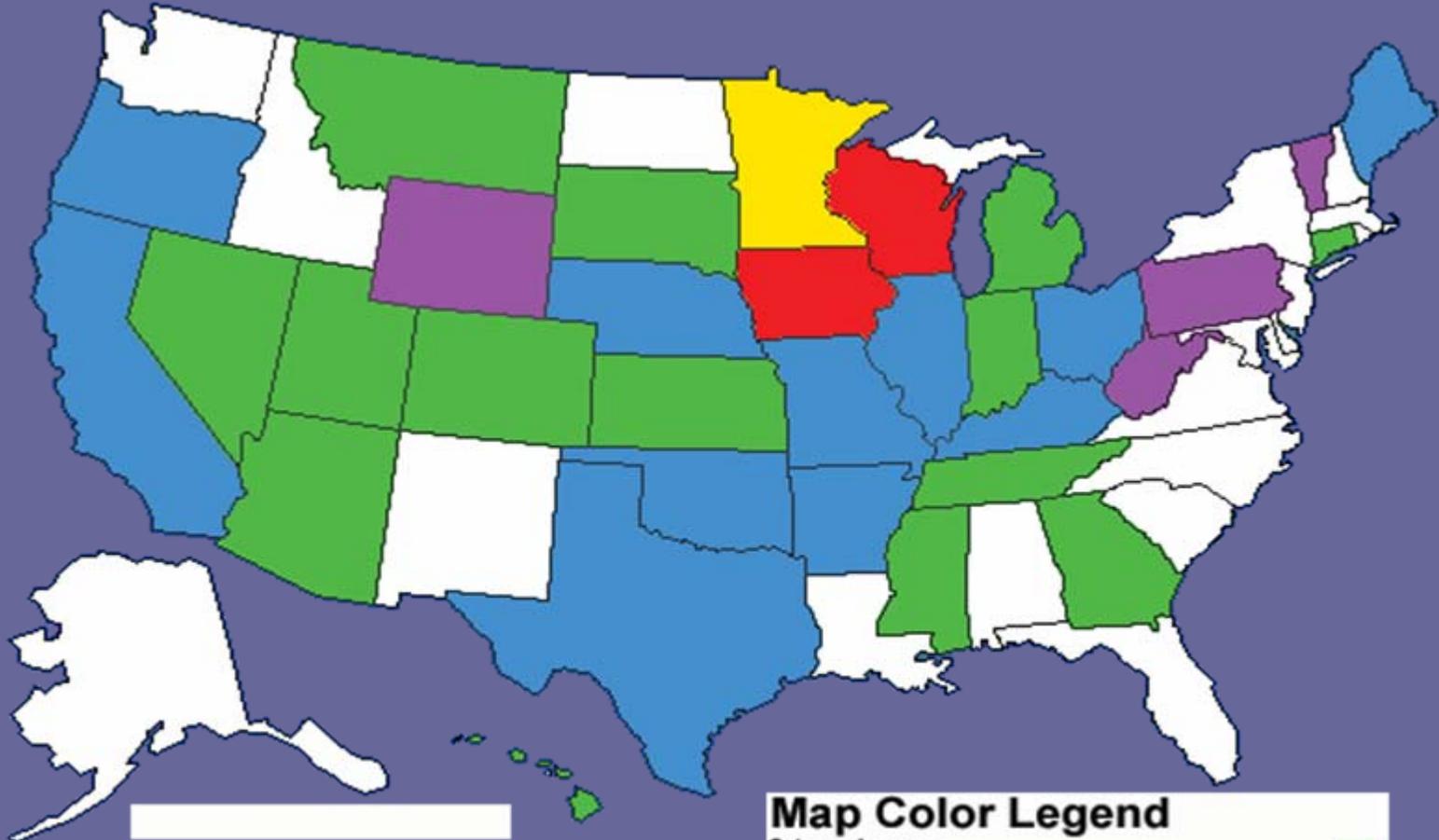
## Solid Waste Disposal Fee Per Ton

- No fee
- Fee



# Solid Waste Landfill Study

## States with Solid Waste Disposal Fee



**Map Color Legend**

- \$1 or less - ■
- Greater than \$1 and less than \$3 - ■
- Greater than \$3 and less than \$5 - ■
- Greater than \$5 - ■
- State tax on waste generators - ■
- No Fee - ■

# Solid Waste Landfill Study

## Municipal Solid Waste Landfill Liners

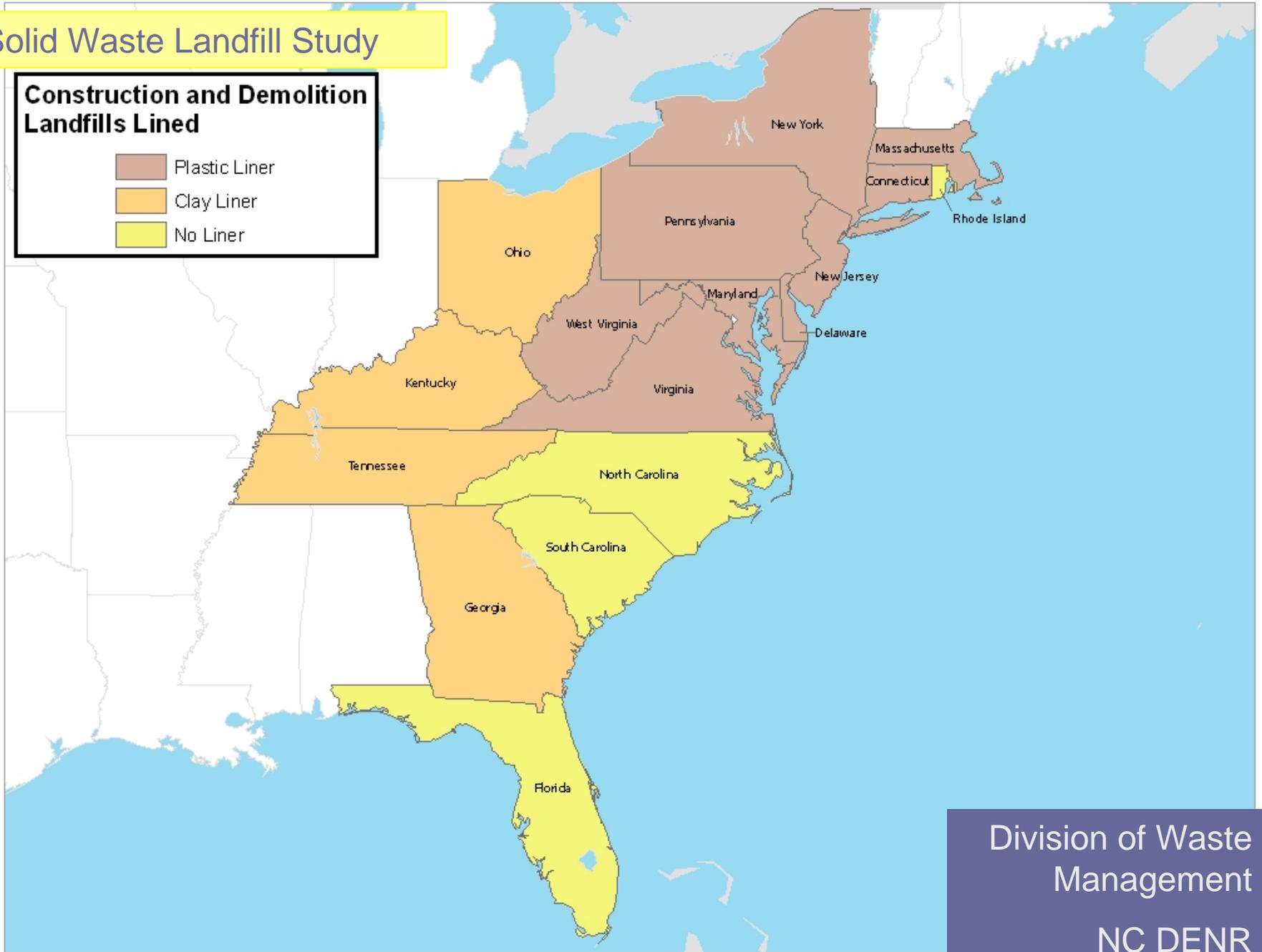
- Single
- Double



# Solid Waste Landfill Study

## Construction and Demolition Landfills Lined

- Plastic Liner
- Clay Liner
- No Liner



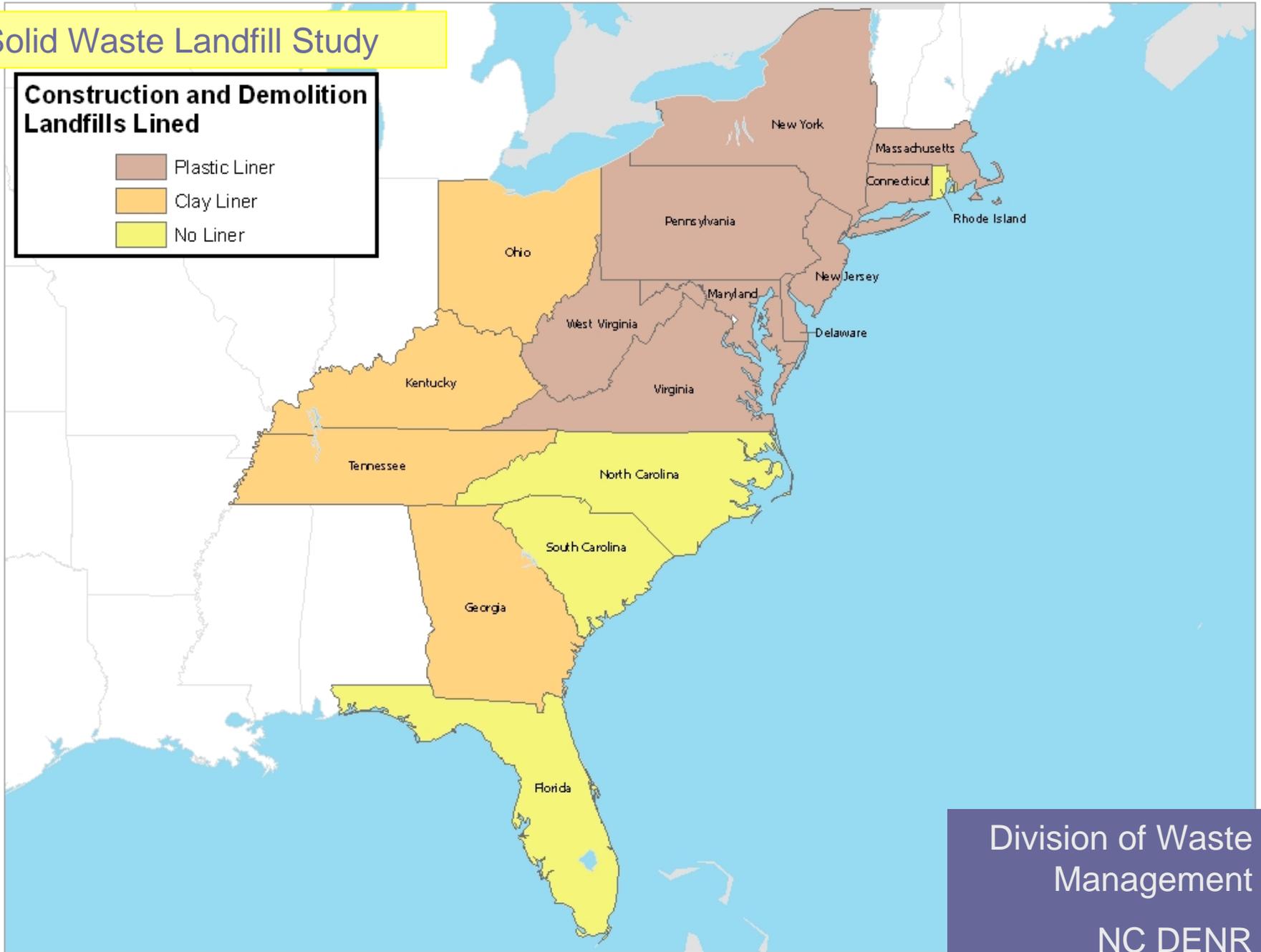
Division of Waste  
Management

NC DENR

# Solid Waste Landfill Study

## Construction and Demolition Landfills Lined

- Plastic Liner
- Clay Liner
- No Liner



Division of Waste  
Management  
NC DENR

# Solid Waste Landfill Study

## Construction and Demolition Landfills Lined

- Plastic Liner
- Clay Liner
- No Liner

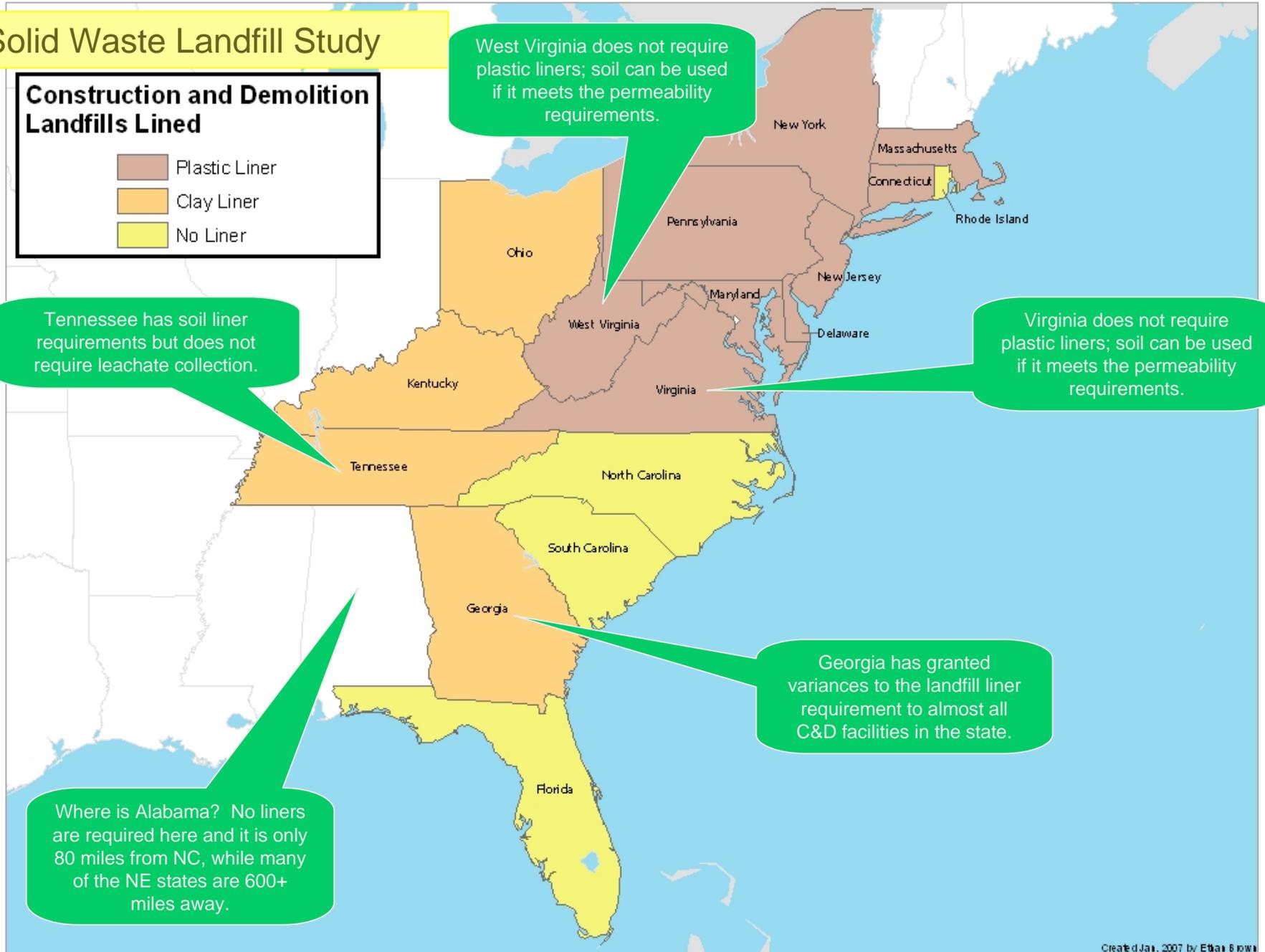
West Virginia does not require plastic liners; soil can be used if it meets the permeability requirements.

Tennessee has soil liner requirements but does not require leachate collection.

Virginia does not require plastic liners; soil can be used if it meets the permeability requirements.

Georgia has granted variances to the landfill liner requirement to almost all C&D facilities in the state.

Where is Alabama? No liners are required here and it is only 80 miles from NC, while many of the NE states are 600+ miles away.



# Solid Waste Landfill Study

## Construction and Demolition Landfills Lined

-  Plastic Liner
-  Clay Liner
-  No Liner

West Virginia does not require plastic liners; soil can be used if it meets the permeability requirements.

West Virginia requires a Subtitle D Composite or approved alternative. Applicant may model gw at relevant point of compliance to use an alternative liner or no liner

Virginia does not require plastic liners; soil can be used if it meets the permeability requirements.

- Virginia requires one of :
- 1) 1 foot compacted 1 x 10<sup>-7</sup> cm/sec clay.
  - 2) Synthetic liner on prepared subgrade
  - 3) In place soil equivalent to (1) above
  - 4) Double liner with leak detection (and no monitoring wells)

Tennessee has soil liner requirements but does not require leachate collection.

True, Tenn regs require 5 feet of 1 x 10<sup>-5</sup> clay and do not require leachate collection.

Georgia has granted variances to the landfill liner requirement to almost all facilities in the state.

Georgia's regs requires liner designs that can be modeled to ensure compliance of groundwater standards at relevant point of compliance.

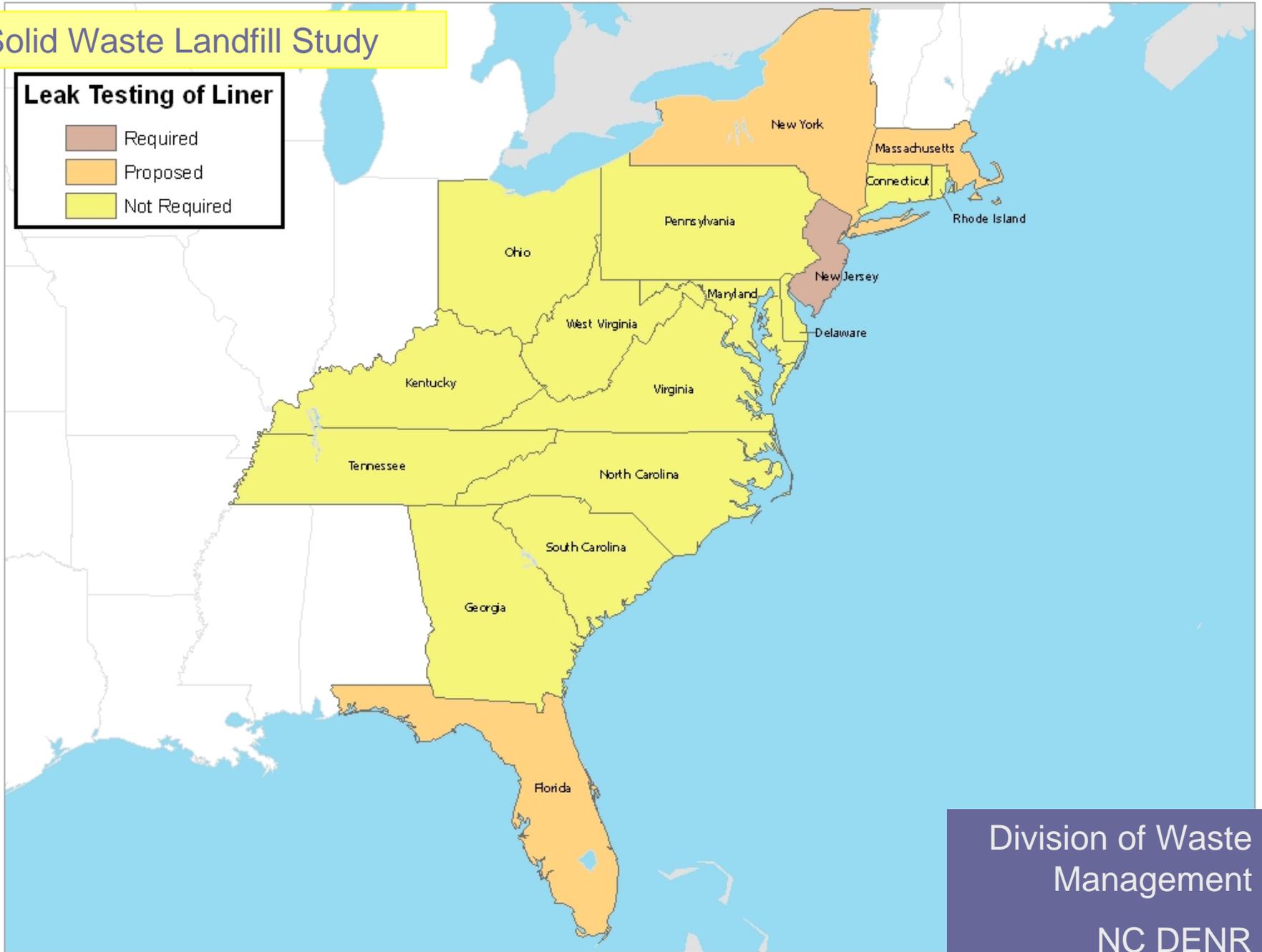
Where is Alabama? No liners are required here and it is only 80 miles from NC, while many of the NE states are 600+ miles away.

Because of Hurricane Katrina we chose not to look at this state.

# Solid Waste Landfill Study

## Leak Testing of Liner

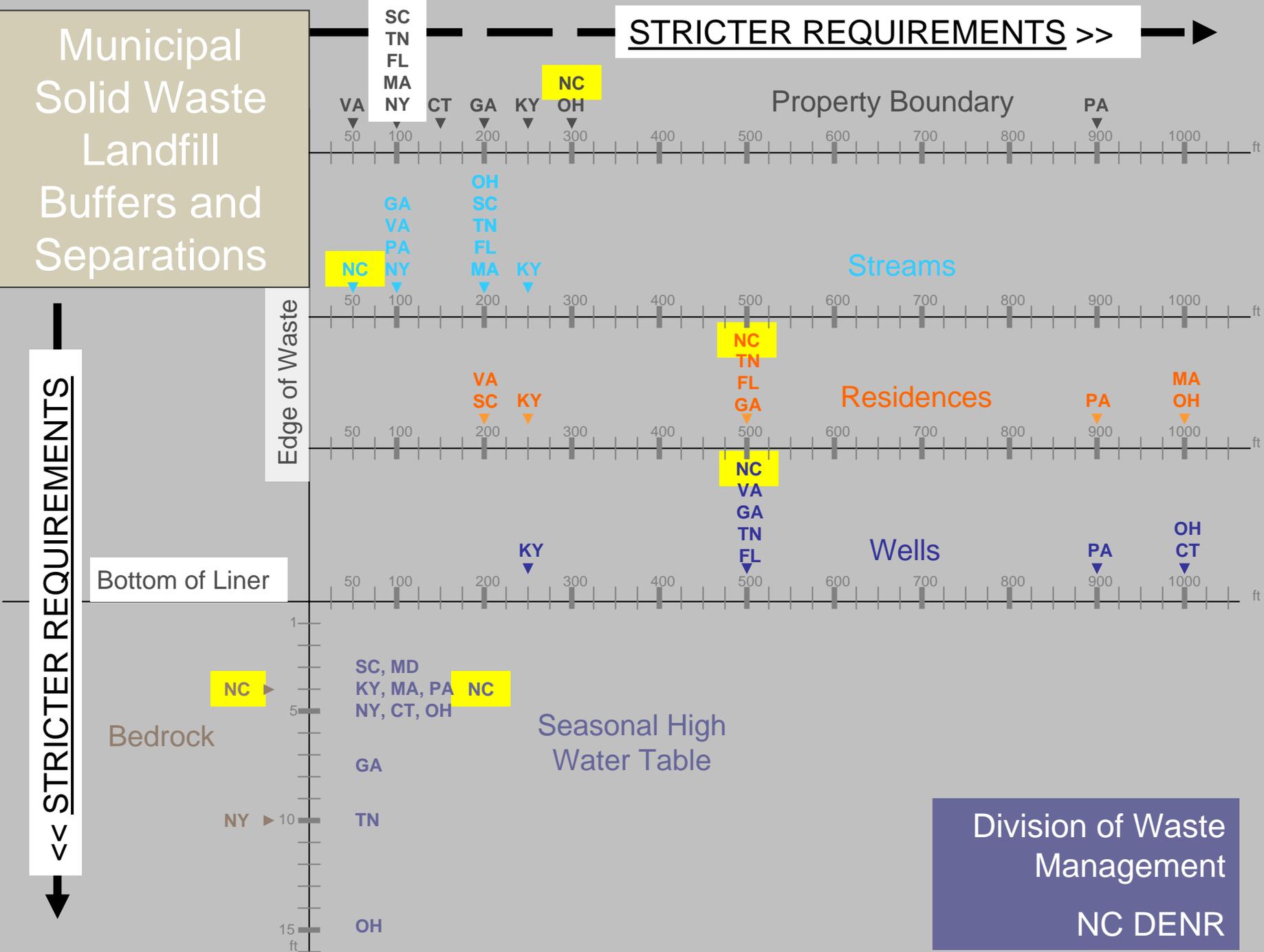
- Required
- Proposed
- Not Required



# Municipal Solid Waste Landfill Buffers and Separations

**STRICTER REQUIREMENTS >>**

**<< STRICTER REQUIREMENTS**

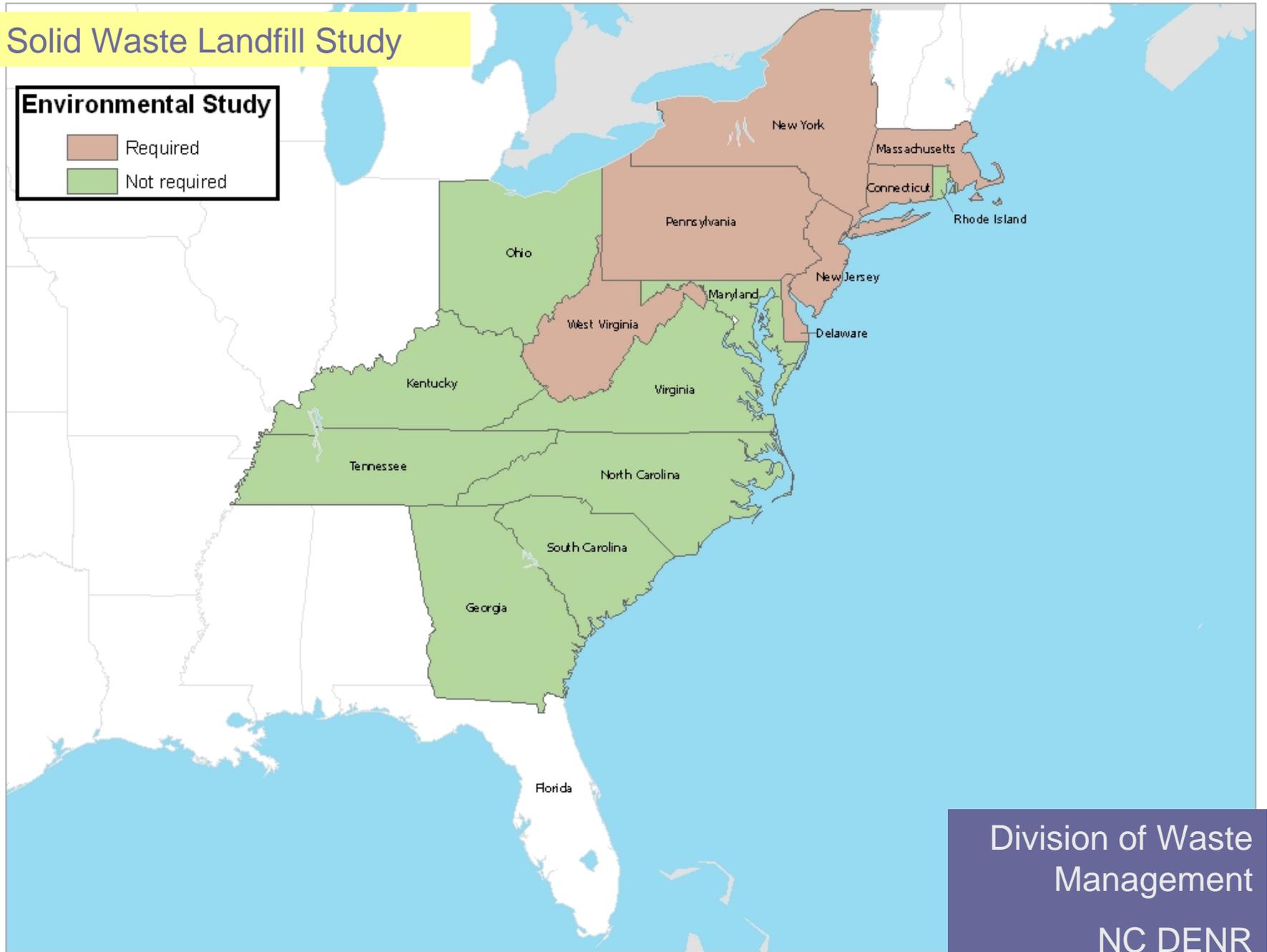


Division of Waste Management  
NC DENR

# Solid Waste Landfill Study

**Environmental Study**

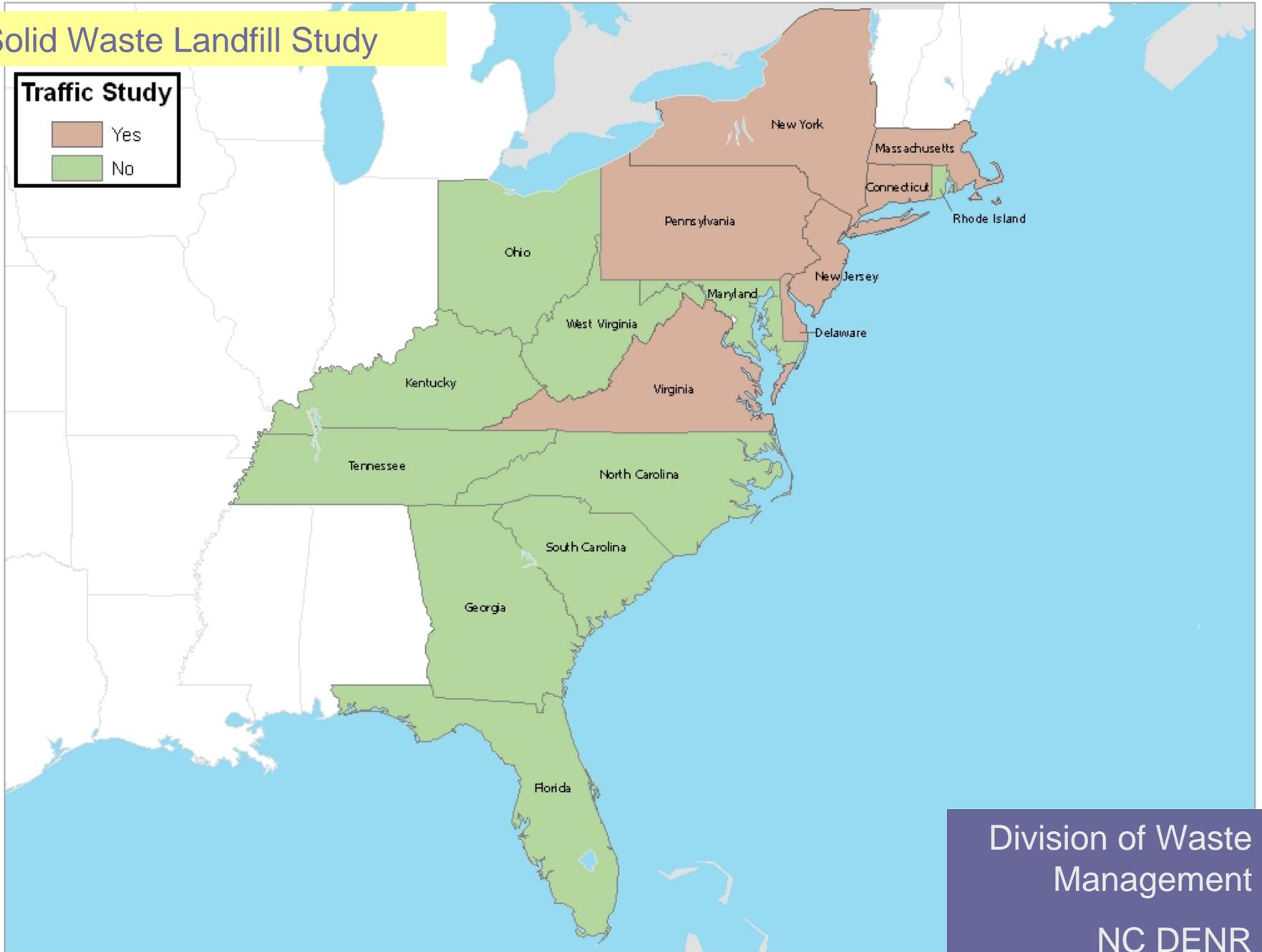
- Required
- Not required



# Solid Waste Landfill Study

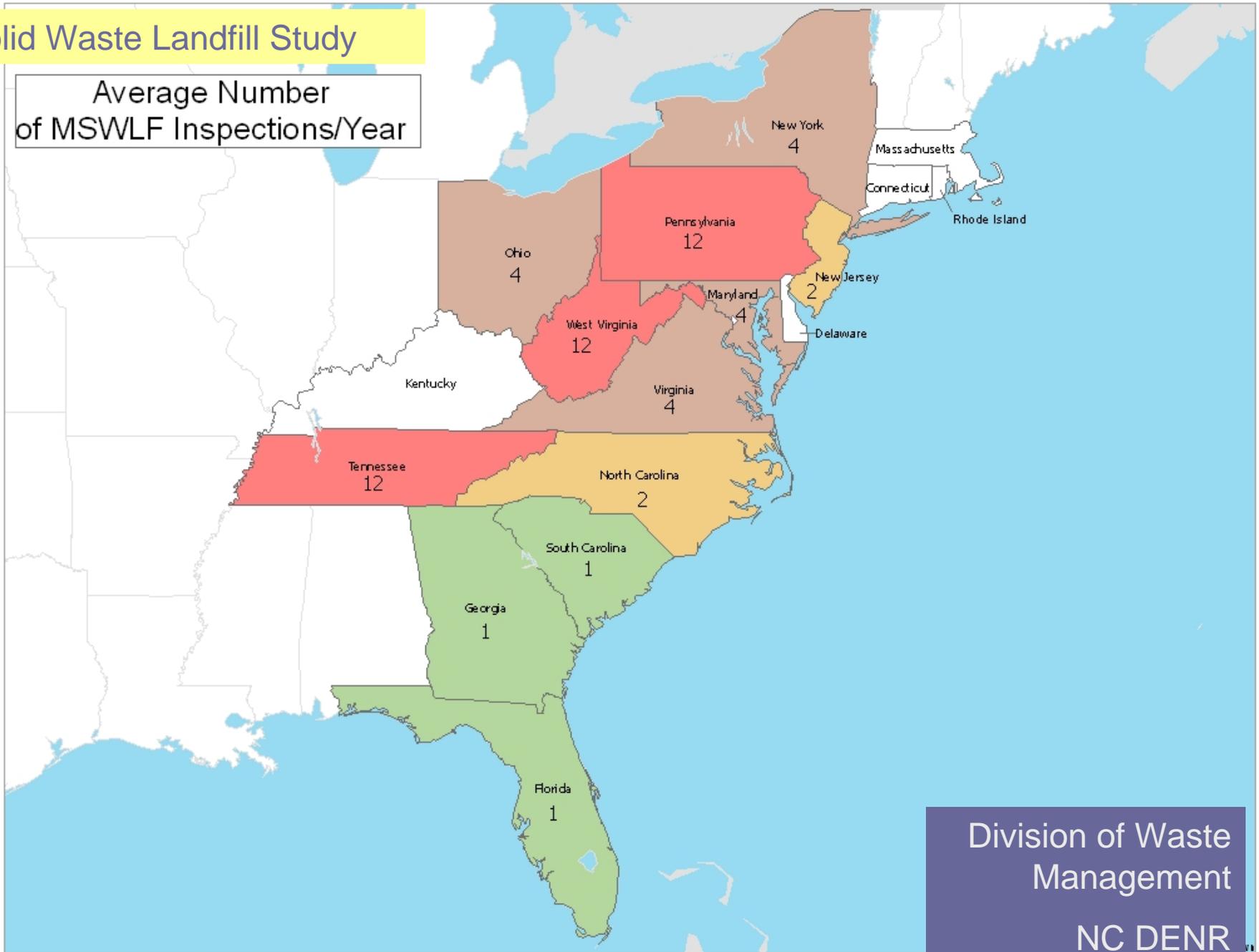
## Traffic Study

- Yes
- No



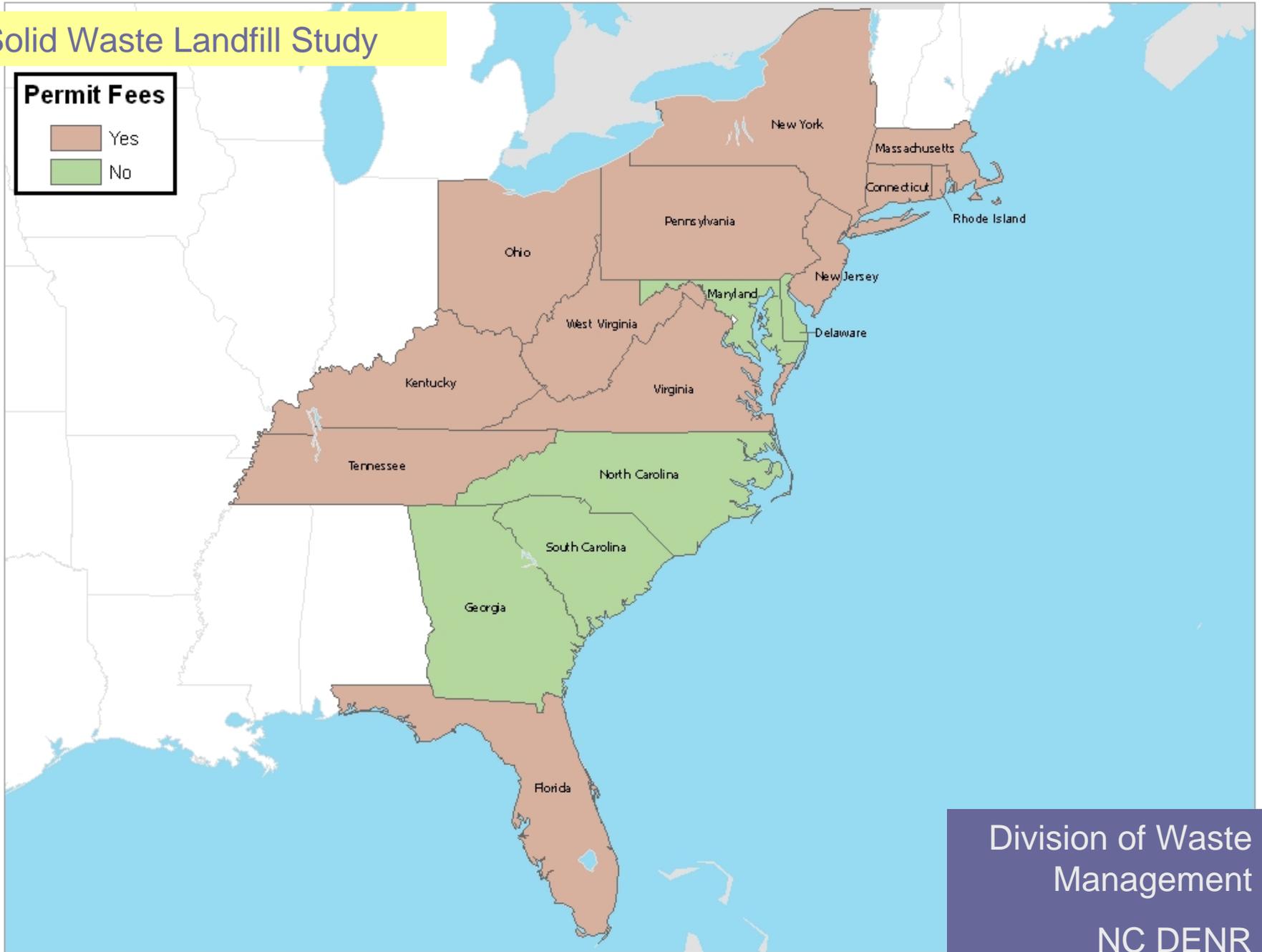
# Solid Waste Landfill Study

Average Number  
of MSWLF Inspections/Year



Division of Waste  
Management  
NC DENR

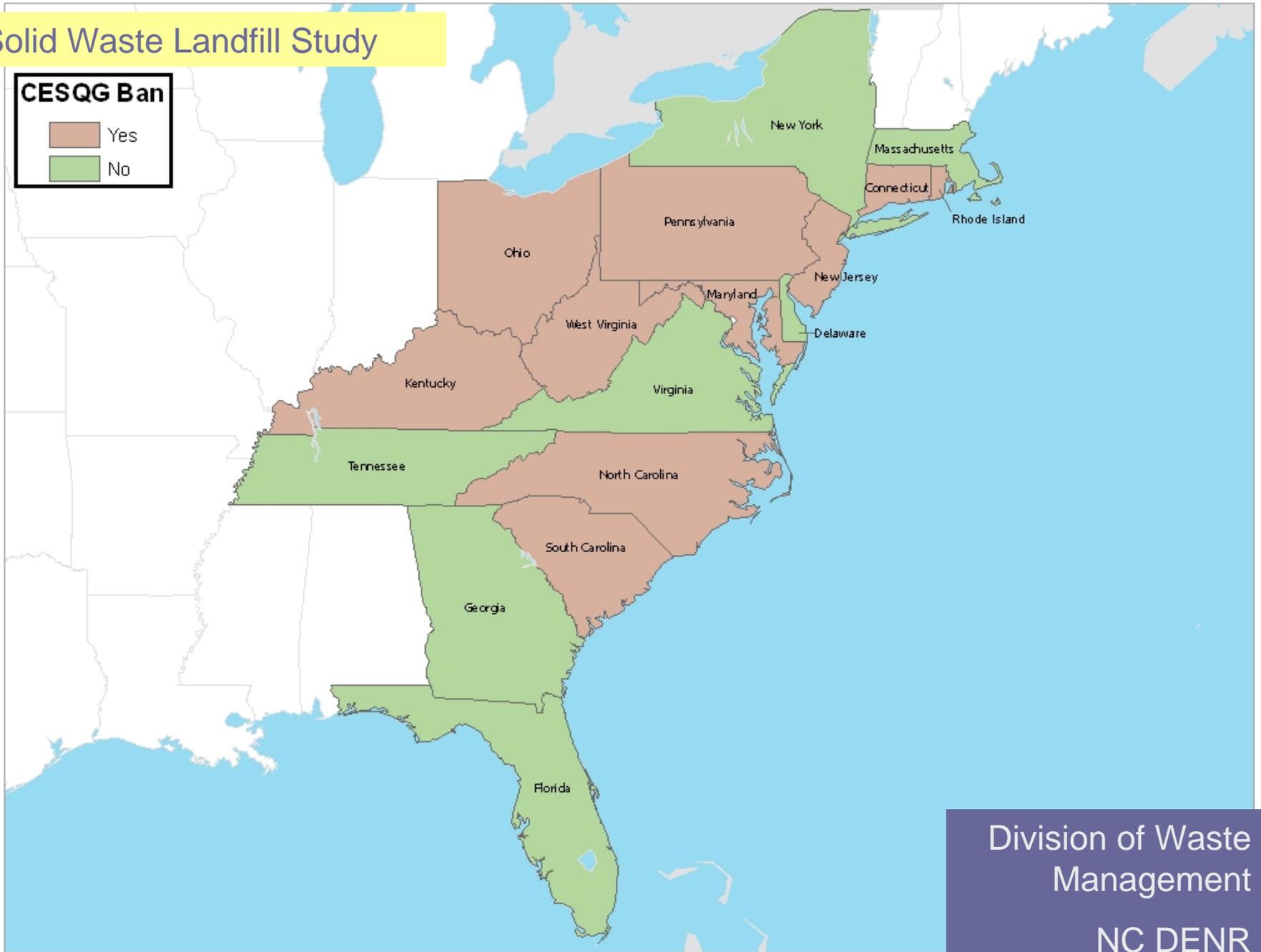
# Solid Waste Landfill Study



# Solid Waste Landfill Study

## CESQG Ban

- Yes
- No



Division of Waste  
Management

NC DENR

# Solid Waste Landfill Study

State	Aluminum Cans	Anti-freeze	CESQG	LCID	Lead Acid Batteries	Oyster Shells	Pesticide Containers	Rigid Plastic Containers*	Sewage Sludge	Tires	Untreated Regulated Medical Waste	Used Oil*	White Goods	Wood Pallets*	Yard Trash
NC	X	X	X		X	X		X		X	X	X	X	X	X
CT			X								X				
DE													X		X
FL					X					X			X		X
GA										X					X
KY			X							X					
MD			X						X	X	X		X		
NJ			X												
NY					X										
OH			X							X			X		X
PA			X							X					X
RI	X		X	X	X			X		X	X		X	X	X
SC			X	X											
TN		X			X					X		X			
VA										X					
WV			X				X		X	X	X				

\* Bans take effect 2009 in NC.

# For More Information...

- Ellen Lorscheider  
Division of Waste Management  
Solid Waste Section  
1646 Mail Service Center  
Raleigh, NC 27699-1646  
Phone 919.508.8499  
email- [ellen.lorscheider@ncmail.net](mailto:ellen.lorscheider@ncmail.net)  
<http://wastenotnc.org>