

159PRLFSF546



DocumentID PRLF010

SITENAME BRUNSWICK

DocumentType Correspondence (C)

RptSegment 1

DocDate 6/15/2010

DocRcvd 6/15/2010

Box SF546

AccessLevel Public

Division Waste Management

Section Superfund

Program IHS (IHS)

DocCat Facility



North Carolina Department of Environment and Natural Resources
Division of Waste Management

Beverly Eaves Perdue
Governor

Dexter R. Matthews
Director

Dee Freeman
Secretary

June 15, 2011

Mr. Lawrence M. George
Marshall Miller & Associates, Inc.
5900 Triangle Drive
Raleigh, North Carolina 27617

Re: Task Order 63: Approved as Complete
Dupont Dump
Brunswick County, NC
NONCD0000666

Dear Mr. George:

The Pre-Regulatory Landfill Unit has received and reviewed the site summary report for the Dupont Dump. Based on that review, Task Order 63 is approved as complete and can be invoiced.

Please submit an itemized invoice no later than June 22, 2011.

If you have any questions, please contact me at (919) 508-8463.

Sincerely,

Bruce E. Lefler, Jr., Hydrogeologist
Pre-Regulatory Landfill Unit
Inactive Hazardous Sites Branch
Superfund Section



North Carolina Department of Environment and Natural Resources
Division of Waste Management

Beverly Eaves Perdue
Governor

Dexter R. Matthews
Director

Dee Freeman
Secretary

1/20/2010

Mr. Marty Lawing
Brunswick County Manager
PO Box 249
Bolivia, NC 28422

Subject: Pre-Regulatory Landfill Sites in Brunswick County

Dear Mr. Lawing:

The General Assembly of North Carolina enacted Senate Bill 1492 which created a program to assess the public health and environmental hazards at landfill and dump sites that operated prior to 1983 and to develop and implement remedial action plans at sites requiring remediation. The Pre-Regulatory Landfill Unit (Unit) was created in the Inactive Hazardous Sites Branch (IHSB) to oversee these activities. The purpose of this letter is to make you aware of the sites identified in your county and to provide general guidance of relevant state statutes.

Based on the information obtained by the Unit, the sites listed below tentatively qualify under Senate Bill 1492.

<u>ID Number</u>	<u>Site Name</u>	<u>Site Address</u>
NONCD0000160	Boiling Springs Lake Dump	Lubee Rd & Sioux Rd, Boiling Springs
NONCD0000149	Bolivia Refuse Disposal	161 Danford Rd, Bolivia
NONCD0000666	Dupont Dump	Cedar Hill Rd, Leland
NONCD0000155	Long Beach Refuse Disposal	4110 Airport Rd, Long Beach
NONCD0000158	Yaupon Beach Dump	McGlammetry St, Oak Island
NONCD0000656	Ocean Isle Dump	Hale Swamp Rd, Ocean Isle
NONCD0000150	Grissettown Landfill	Angels Club Dr, Seaside
NONCD0000152	Shallotte Sanitary Landfill	2930 Pocono Trail SW, Shallotte
NONCD0000159	Shallotte Refuse Dump	Whiteville Rd NW, Shallotte
NCD0210020541	Sunny Point Base Landfill	Sunny Point Rd, Southport
NONCD0000151	Winnabow Landfill	5719 Belmont Rd NE, Winnabow

Work at these sites may be performed using the Unit's resources or through local government actions. The Unit has prioritized the sites statewide based on their threat to public health and the environment and will perform assessments and implement remedial actions based on this priority. Local governments may opt to perform the work at any time under the guidance of the Unit. Reimbursement of local government

costs may be available for assessments and remedial actions to abate an imminent hazard as funds are available. The conditions for reimbursement include approval of the assessment and remediation plan by the Unit and certified accounting of costs. A document, IHSB *Guidelines for Addressing Old Landfills & Dumps*, was developed to assist local governments and the Unit in this work. It is available on our web site, http://wastenotnc.org/sfhome/IHSBRNCH_OldLandfills.HTM , for your review.

An additional purpose in notifying you of these sites is to provide information to assist in your responsibilities in the permitting of private drinking water wells. The General Assembly enacted legislation which required local health departments to implement programs for the permitting, inspecting, and testing of private drinking water wells by July 1, 2008. State well construction standards in 15A NCAC 2C require a minimum horizontal separation of 500 feet between a water supply well and a landfill or disposal site. More precise location information for the sites in your county may be requested from the Unit.

If you are aware of additional sites, have additional information on the identified sites, or need further information, please contact me at (919) 508-8484.

Sincerely,



Aaron Shear, Hydrogeologist
Pre-Regulatory Landfill Unit
Inactive Hazardous Sites Branch
Superfund Section

cc: Mr. David Stanley, III – Brunswick County Environmental Health Director

January 28, 2011

MEMORANDUM

TO: File

FROM: Brian Wright, Hydrogeologist
Pre-Regulatory Landfill Unit

RE: Response to Mr. Mark Weeks (Brunswick County Health Department)

DOCUMENT

Brunswick County contacted me regarding locations of the following sites:

Ocean Isle Dump (NONCD0000656)

DuPont Dump (NONCD0000666)

Grisset Town Landfill (NONCD0000150)

Shalotte Refuse Dump (NONCD0000159)

Yaupon Beach Dump (NONCD0000158)

He indicated that if I provided him with the latitude and longitude of the above sites it would be all he would need. I sent him an email on January 28, 2011 giving him the latitude and longitude of these sites.



North Carolina Department of Environment and Natural Resources

Dexter R. Matthews, Director

Division of Waste Management

Michael F. Easley, Governor
William G. Ross Jr., Secretary

February 26, 2007

<SAL> <FIRST> <LAST>, County Manager
County of <MUNICIPALITY>
<ADDRESS>
<TOWN>, North Carolina <ZIP>

Subject: Assessment, Cleanup, and Redevelopment of Old Landfill Sites Within Your Jurisdiction

Dear <SAL> <LAST>:

Governor Easley released his proposed budget February 22, 2007. Included in the budget is a specific item I believe should be of interest to you from a fiscal, environmental and public health protection perspective.

There are approximately 700 old landfills statewide and <LANDFILL#> old landfills in your local area that closed before the State permitting system became effective. These landfills are listed on the Old Landfill Sites portion of the Inactive Hazardous Sites Inventory maintained by the Superfund Section, Division of Waste Management. Any person, including local governments, that arranged for disposal or disposed of waste in the landfills may be held liable for the cleanup of the site. I have attached a report that identifies the location of known old landfill sites in <COUNTY NAME> County that may have closed prior to 1983 and thus qualify for the program described in this letter.

The Division has surveyed old landfills in 47 counties. The results of the survey indicate reason for concern about potential public health and safety impacts of these sites if they are not addressed. Seventy percent of the sites surveyed had a school, church, residence, day care or drinking water source within 1000 feet. The Division has found 102 old landfills that have a drinking water well within 500 feet. Thirteen of the landfills surveyed have residences built over the old landfill. The cost of assessment and cleanup of these old landfill sites can be as high as several million dollars.

Governor Easley's budget establishes a partnership between the State and local governments to both clean up the old landfill sites and provide funding for redevelopment of the sites. Many are in prime locations for redevelopment opportunities. The Governor's budget proposes to pay for cleanup and redevelopment of these sites through a surcharge on disposal of solid waste. The funding mechanism is a fair one. It is based on the idea that those who use solid waste disposal facilities should share responsibility for cleanup of sites used for solid waste disposal in the past that may have been lawful at the time, but did not meet standards that we now know are necessary to protect public health and safety.

The proposed \$2.00 per ton disposal surcharge would apply to residential, commercial, industrial, and construction and demolition debris type waste that is either disposed at a landfill or passes through a transfer station for disposal out-of-state. The State would use revenue from the surcharge to contract for cleanup of the old landfill sites and to provide grants to local government for redevelopment. The funds could also be used across the state to clean up other hazardous substance disposal sites that have no viable responsible party.

The only tool currently available to the State to ensure cleanup when it is needed is an enforcement action against those who owned, operated, or contributed to old landfills. The Governor's proposal would avoid placing an unreasonable

burden on any one local government and allow us to use our resources for actual cleanup rather than legal action. When old landfill sites were in use, North Carolina citizens, businesses, and industries benefited from their existence as a place to dispose of waste. The surcharge on waste disposal is a way for citizens, businesses, and industries to form a partnership for cleanup and redevelopment of these old landfill sites.

There is great interest this session of the General Assembly in strengthening requirements for landfills permitted in North Carolina. I encourage you to take a close look at legislation that will be introduced, specifically this initiative and what it can bring to your jurisdiction.

If you have questions regarding the program for clean-up of old landfills, please contact Jack Butler, Chief of the Superfund Section, at jack.butler@ncmail.net or call (919)508-8450.

Sincerely,

A handwritten signature in black ink, appearing to read "Dexter R. Matthews". The signature is written in a cursive style with some loops and flourishes.

Dexter R. Matthews, Director

cc: David Thompson, NCACC
Jack Butler, Chief – Superfund Section



North Carolina Department of Environment and Natural Resources

Dexter R. Matthews, Director

Division of Waste Management

Michael F. Easley, Governor
William G. Ross Jr., Secretary

February 27, 2007

<SAL> <FIRST> <LAST>
<TITLE>, <MUNICIPALITY>
<ADDRESS>
<TOWN>, North Carolina <ZIP>

Subject: Assessment, Cleanup, and Redevelopment of Old Landfill Sites Within Your Jurisdiction

Dear <SAL> <LAST>:

Governor Easley released his proposed budget February 22, 2007. Included in the budget is a specific item I believe should be of interest to you from a fiscal, environmental and public health protection perspective.

There are approximately 700 old landfills statewide and <LANDFILL#> old landfills in your local area that closed before the State's permitting system became effective. These landfills are listed on the Old Landfill Sites portion of the Inactive Hazardous Sites Inventory maintained by the Superfund Section, Division of Waste Management. Any person, including local governments, that arranged for disposal or disposed of waste in the landfills may be held liable for the cleanup of the site. I have attached a report that identifies the location of known old landfill sites in your area that may have closed prior to 1983 and thus qualify for the program described in this letter.

The Division has surveyed old landfills in 47 counties. The results of the survey indicate reason for concern about potential public health and safety impacts of these sites if they are not addressed. Seventy percent of the sites surveyed had a school, church, residence, day care or drinking water source within 1000 feet. The Division has found 102 old landfills that have a drinking water well within 500 feet. Thirteen of the landfills surveyed have residences built over the old landfill. The cost of assessment and cleanup of these old landfill sites can be as high as several million dollars.

Governor Easley's budget establishes a partnership between the State and local governments to both clean up the old landfill sites and provide funding for redevelopment of the sites. Many are in prime locations for redevelopment opportunities. The Governor's budget proposes to pay for cleanup and redevelopment of these sites through a surcharge on disposal of solid waste. The funding mechanism is a fair one. It is based on the idea that those who use solid waste disposal facilities should share responsibility for cleanup of sites used for solid waste disposal in the past that may have been lawful at the time, but did not meet standards that we now know are necessary to protect public health and safety.

The proposed \$2.00 per ton disposal surcharge would apply to residential, commercial, industrial, and construction and demolition debris type waste that is either disposed at a landfill or passes through a transfer station for disposal out-of-state. The State would use revenue from the surcharge to contract for cleanup of the old landfill sites and to provide grants to local government for redevelopment. The funds could also be used statewide to clean up other hazardous substance disposal sites that have no viable responsible party.

The only tool currently available to the State to ensure cleanup when it is needed is an enforcement action against those who owned, operated, or contributed to old landfills. The Governor's proposal would avoid placing an unreasonable

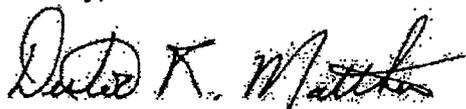
1646 Mail Service Center, Raleigh, North Carolina 27699-1646
Phone 919-508-8400 \ FAX 919-715-3605 \ Internet <http://wastenotnc.org>
An Equal Opportunity / Affirmative Action Employer - Printed on Dual Purpose Recycled Paper

burden on any one local government and allow us to use our resources for actual cleanup rather than legal action. When old landfill sites were in use, North Carolina citizens, businesses, and industries benefited from their existence as a place to dispose of waste. The surcharge on waste disposal is a way for citizens, businesses, and industries to form a partnership for cleanup and redevelopment of these old landfill sites.

There is great interest this session of the General Assembly in strengthening requirements for landfills permitted in North Carolina. I encourage you to take a close look at legislation that will be introduced, specifically this initiative and what it can bring to your jurisdiction.

If you have questions regarding the program for clean-up of old landfills, please contact Jack Butler, Chief of the Superfund Section at jack.butler@ncmail.net or (919) 508-8450.

Sincerely,

A handwritten signature in black ink, appearing to read "Dexter R. Matthews". The signature is written in a cursive, somewhat stylized font.

Dexter R. Matthews, Director

cc: Ellis Hankins, NCLM
Jack Butler, Chief – Superfund Section

The mailing list for these letters is filed in a folder in the first file cabinet drawer for the old landfill sites.

A statewide Old Landfill Inventory report is filed in a folder in the first file cabinet drawer for the old landfill sites.

Please supply information with asterisk only. If you have questions, contact Gordon Layton.

N. C. SOLID & HAZ WASTE BRANCH
SOLID WASTE FACILITY MASTER

~~270~~ L70
Co. Brunswick

* PERMIT NO: 10 06 PERMIT DATE 8/1/84 COUNTY CODE 10
 * FACILITY TYPE: S/D NAME: E.I. DUPONT de NEMOUKS PHONE: _____
CAPE FEAR PLANT
 * LOCATION. Street/State Rd: SR 1426 * Town/comnty: Phoenix / Brunswick Co.
 Latitude: _____ Longitude: _____

	*PERMIT HOLDER	* PROPERTY OWNER
Type(P, I, C, S, F)	* <u>I</u>	* _____
Name:	* <u>E.I. DUPONT</u>	* <u>SAME</u>
Street	* <u>P.O. BOX 2042</u>	* _____
City, ST, Zip	* <u>Wilmington NC 28402</u>	* _____
	* OPERATOR	* CONTACT PERSON (at landfill only!)
Name:	* <u>SAME</u>	* <u>Cliff Blick</u>
Street	* _____	* <u>P.O. BOX 2042</u>
City, ST, Zip	* _____	* <u>Wilmington NC 28402</u>
Phone	* _____	* <u>919-371-4223</u>

CHARACTERISTICS. Operation Category: __ ; Type: __ ; Subtype: __ Size: __

Monitoring Well (Y/N): 6; Waste Type* I; Inspection Freq: 4
ID 02 I

Codes

FACILITY TYPE	PERMIT HOLDER	WASTE TYPE
S - Sanitary Landfill	P - Private	SW- Municipal--Non-Hazardous Solid Waste
D - Demolition Landfill	I - Industry	F - Flyash
TP- Treatment and Processing	C - County/City	S - Sludge
I - Incinerator	S - State	O - Other
T - Transfer	F - Federal	<u>I - INDUSTRIAL</u>

NOTES: (1) Contact person is person at landfill and landfill number.
 (2) If operator and property owner are same as permit holder, indicate with "Same."

Please supply information with asterisk only. If you have questions, contact Gordon Layton .

N. C. SOLID & HAZ WASTE BRANCH
SOLID WASTE FACILITY MASTER

Co. Brunswick

* PERMIT NO: 10 06 PERMIT DATE 8/89 COUNTY CODE 10
 * FACILITY TYPE: SFD NAME: E.I. DUPONT de NEAWARES PHONE: _____
Cape Fear Plant
 * LOCATION. Street/State Rd: SR 1426 * Town/comnty: Phoenix
Brunswick Co.
 Latitude: _ _ _ Longitude: _ _ _

	* PERMIT HOLDER	* PROPERTY OWNER
Type(P, I, C, S, F)	*	*
Name:	* <u>E.I. DUPONT</u>	* <u>same</u>
Street	* <u>P.O. BOX 2042</u>	*
City, ST, Zip	* <u>Wilmington NR 28402</u>	*
	* OPERATOR	* CONTACT PERSON (at landfill only!)
Name:	* <u>same</u>	* <u>Cliff Blich</u>
Street	*	* <u>P.O. Box 2042</u>
City, ST, Zip	*	* <u>Wilmington NC 28402</u>
Phone	*	* <u>919-371-4223</u>

CHARACTERISTICS. Operation Category: _ ; Type: _ ; Subtype: _ Size: _
 Monitoring Well (Y/N): 6; Waste Type* I; Inspection Freq: 4
 ID 02

Codes

<u>FACILITY TYPE</u>	<u>PERMIT HOLDER</u>	<u>WASTE TYPE</u>
S - Sanitary Landfill	P - Private	SW- Municipal--Non-Hazardous Solid Waste
D - Demolition Landfill	I - Industry	F - Flyash
TP- Treatment and Processing	C - County/City	S - Sludge
I - Incinerator	S - State	O - Other
T - Transfer	F - Federal	<i>I - INDUSTRIAL</i>

NOTES: (1) Contact person is person at landfill and landfill number.
 (2) If operator and property owner are same as permit holder, indicate with "Same."

Please supply information with asterisk only. If you have questions, contact Gordon Layton.



N. C. SOLID & HAZ WASTE BRANCH
SOLID WASTE FACILITY MASTER

12/83
~~Brunswick~~

* PERMIT NO: 10 07 PERMIT DATE 8, 83 COUNTY CODE 10
* FACILITY TYPE: S *NAME: Brunswick Co. LF "Clemmons" PHONE: ---
* LOCATION. Street/State Rd: SR 1401 of 175 * Town/comnty: Brunswick

Latitude: --- Longitude: ---

	*PERMIT HOLDER	* PROPERTY OWNER
Type(P, I, C, S, F)	* <u>C</u>	*
Name:	* <u>Brunswick Co.</u>	* <u>Ed Clemmons</u>
Street	* <u>P.O. BOX 249</u>	* <u>RT 1 SUPPLY</u>
City, ST, Zip	* <u>Bolivia N.C. 28422</u>	* <u>SUPPLY NC</u>
	* OPERATOR	* CONTACT PERSON (at landfill)
Name:	* <u>MAJOR White</u>	* <u>J.B. Coleman only!</u>
Street	* <u>P.O. BOX 249</u>	* <u>P.O. BOX 249</u>
City, ST, Zip	* <u>Bolivia N.C. 28422</u>	* <u>Bolivia N.C. 28422</u>
Phone	* <u>919-253-4347</u>	* <u>919-253-4347</u>

CHARACTERISTICS: Operation Category: ; Type: ; Subtype: Size:

Monitoring Well (Y/N): B; Waste Type: SW; Inspection Freq: 4

ID 02

Codes

<u>FACILITY TYPE</u>	<u>PERMIT HOLDER</u>	<u>WASTE TYPE</u>
S - Sanitary Landfill	P - Private	SW- Municipal--Non-Hazardous
D - Demolition Landfill	I - Industry	Solid Waste
TP- Treatment and Processing	C - County/City	F - Flyash
I - Incinerator	S - State	S - Sludge
T - Transfer	F - Federal	O - Other

NOTES: (1) Contact person is person at landfill and landfill number.
(2) If operator and property owner are same as permit holder, indicate with "Same."

Please supply information with asterisk only. If you have questions, contact Gordon Layton .

N. C. SOLID & HAZ WASTE BRANCH
SOLID WASTE FACILITY MASTER

Co. ~~Brunswick~~

* PERMIT NO: 10-01 PERMIT DATE 7/80 COUNTY CODE 10
 * FACILITY TYPE: S * NAME: CAROLINA Power & LIGHT PHONE: _____
 * LOCATION. Street/State Rd: Hwy 87 * Town/comnty: Southport
 Latitude: _____ Longitude: _____

Type (P, I, C, S, F)	* PERMIT HOLDER	* PROPERTY OWNER
Name:	* <u>I</u>	* _____
Street	* <u>CP&L</u>	* <u>CP&L</u>
City, ST, Zip	* <u>411 Fayetteville St. Box 1551</u>	* _____
	* <u>RATEL NC. 27602</u>	* _____
Name:	* OPERATOR	* CONTACT PERSON (at landfill
Street	* <u>SAME</u>	* <u>CRAVEN MARTIN only!</u>
City, ST, Zip	* _____	* <u>P.O. Box 10429 PHOT SERVICES</u>
Phone	* _____	* <u>SOUTHPORT NC 28461</u>
	* _____	* <u>919-457-9521 0429</u>

CHARACTERISTICS. Operation Category: __; Type: __; Subtype: __ Size: 1

Phase 8 Monitoring Well (Y/N): 3; Waste Type: SW; Inspection Freq: 4
 → Field Person ID: 02

Codes

FACILITY TYPE	PERMIT HOLDER	WASTE TYPE
S - Sanitary Landfill	P - Private	SW- Municipal--Non-Hazardous
D - Demolition Landfill	I - Industry	Solid Waste
TP- Treatment and Processing	C - County/City	F - Flyash
I - Incinerator	S - State	S - Sludge
T - Transfer	F - Federal	O - Other

NOTES: (1) Contact person is person at landfill and landfill number.
 (2) If operator and property owner are same as permit holder, indicate with "Same."

Inactive - Closing date _____

DOUBLE ✓

Please supply information with asterisk only. If you have questions, contact Gordon Layton .

N. C. SOLID & HAZ WASTE BRANCH
SOLID WASTE FACILITY MASTER

opening date
7/7/80
G. [unclear]

* PERMIT NO: 10-01 PERMIT DATE 7/80 COUNTY CODE 10
* FACILITY TYPE: S * NAME: CAROLINA Power & LIGHT PHONE: ---
* LOCATION. Street/State Rd: Hwy 87 * Town/comnty: Southport
Bladen Co.
Latitude: --- Longitude: ---

Type(P, I, C, S, F)
Name:
Street
City, ST, Zip

* PERMIT HOLDER
* I
* CP&L
* 411 Peachtree St. Box 1551
* RALEIGH N.C. 27602

* PROPERTY OWNER
* CP&L
* ---
* ---

Name:
Street
City, ST, Zip
Phone

* OPERATOR
* SAME
* ---
* ---
* ---

* CONTACT PERSON, (at landfill
* CRANER MARTIN only!)
* P.O. Box 10429 Plant Service
* SOUTHPORT NC 28461
* 919-457-9521 0429

CHARACTERISTICS. Operation Category: ---; Type: ---; Subtype: --- Size: ---

Phase 1 Monitoring Well (Y/N): 3; Waste Type: SW; Inspection Freq: 4
Field Person ID 02

Codes

<u>FACILITY TYPE</u>	<u>PERMIT HOLDER</u>	<u>WASTE TYPE</u>
S - Sanitary Landfill	P - Private	SW- Municipal--Non-Hazardous Solid Waste
D - Demolition Landfill	I - Industry	F - Flyash
TP- Treatment and Processing	C - County/City	S - Sludge
I - Incinerator	S - State	O - Other
T - Transfer	F - Federal	

NOTES: (1) Contact person is person at landfill and landfill number.
(2) If operator and property owner are same as permit holder, indicate with "Same."

Inactive
Closing date _____



Brunswick
dwrc

STATE OF NORTH CAROLINA
DEPARTMENT OF HUMAN RESOURCES

HUGH H. TILSON, M.D.
DIRECTOR

Division of Health Services

JAMES B. HUNT, JR.
GOVERNOR

SARAH T. MORROW, M.D., M.P.H.
SECRETARY

EASTERN REGIONAL OFFICE
404 ST. ANDREWS STREET
GREENVILLE, N.C. 27834
Telephone 756-1343

December 18, 1979



MEMORANDUM

TO: Mr. James F. Stamey
Assistant Chief
Environmental Health Section

FROM: M. P. Bell *MPB*
Regional Engineer
Eastern Regional Office

SUBJECT: Proposed Nuclear Storage Site

As you are aware, I participated in the simulated nuclear accident in Brunswick County on December 7 and 8. In preparing for this exercise, a site was selected for temporary storage of low level solid waste material. This proposed site is the Department of Transportation Maintenance Yard in Shallotte.

As a result of an on-site investigation of this proposed location, Mr. Terry Dover of our Solid and Hazardous Waste Management Branch concluded that use of this proposed site would be questionable and that a more isolated site should be located. I concur with Mr. Dover's recommendation.

As a follow up to the simulated exercise, I recommend that our office contact the Department of Transportation and select a more suitable site for solid waste storage in preparation for an actual event.

/ae

cc: *✓* Mr. O. W. Strickland

DEPARTMENT OF HUMAN RESOURCES
DIVISION OF HEALTH SERVICES
SANITARY ENGINEERING SECTION

Brusswick
AWC

REPORT OF INVESTIGATION OR INSPECTION OF Shallotte DOT Yard

Place visited Shallotte, North Carolina Date November 13 1979
Address SR 1348, Mulberry Street, Shallotte, NC Time spent 5 hours
By whom Terry F. Dover, Eastern Program Supervisor for Solid & Hazardous Waste Management,
Division of Health Services
Persons contacted Mr. Harry White, DOT Maintenance Supervisor
(Owner, agent, tenant, manager, other)
Reason for visit Locate a nuclear waste storage site

Copies to:

REPORT:

A 20,000 square foot open area was decided upon within the fenced area of the Shallotte DOT maintenance yard. Mr. Harry White was contacted and provided assistance on the location.

This site is located within the city limits of Shallotte. There are two residences and one church located within three-hundred feet of the site, another residence which is under construction will be within two-hundred feet. The drinking water well for the town is also within the immediate area.

CONCLUSION:

It is felt that a more isolated site should be found which would not come under the public criticism that this site will.

TFD:bm



CHEMICALS DIVISION

P.O. BOX 668, SOUTHPORT, N. C. 28461

CALLER Sept 21 1979
11:17

Brunswick
Swire

September 13, 1979

Mr. O. W. Strickland
North Carolina Department of Human Resources
P. O. Box 2091
Raleigh, North Carolina 27611



Dear Mr. Strickland:

Re: Land Application of Soil Amendments

On August 17th I wrote to you with details of the land application of yeast and biodegradable solids by-products to nearby farmland with an indication that the experimental application for several years has not provided for any buildup in the groundwater.

It was indicated that Pfizer was negotiating for purchase of additional land so that we can continue to apply the soil amendments at the proper rates. We have now obtained an option on an additional 581 acres of land which we consider suitable for development as a farm. Attached is a plot plan of this land.

We would like to have our representatives meet with your designated people at a mutually convenient date prior to October 15 so that we may exercise the option to purchase the property with some assurance that we can use it for the intended purpose.

I suggest that you call John Nicholson or me at 919-457-5011 to confirm an appointment and location.

Yours sincerely,

PFIZER INC.

Robert C. Nubel
Plant Manager

RCN/jg

xc: J. Nicholson
C. Wakild



CHEMICALS DIVISION

P.O. BOX 668, SOUTHPORT, N. C. 28461

Brunswick Co.

*Brunswick
SWC*



August 17, 1979

Mr. O. W. Strickland
North Carolina Department of Human Resources
P. O. Box 2091
Raleigh, North Carolina 27611

Dear Mr. Strickland:

Review of our groundwater data for the last several years has been conducted by Mr. C. Wakild of the Division of Environmental Management. Attached is a copy of a letter to Mr. C. Wakild requesting review of a land application procedure, and also results of the self-monitoring reports.

The land farming operation has been successful since crops have improved and there is no increasing nitrogen trend. Additional land has been obtained to allow us to restrict the loading to levels recommended by Dr. L. B. King of the North Carolina State Department of Soil Science. Copies of his report, a plat plan of additional acreage acquired, and a plot plan of land cleared at the plant site are enclosed. Recently when inspecting the land with Mr. R. Shiver, the local groundwater representative of the Division of Environmental Management, it was evident that the land is similar in nature to the land currently in use at the plant site. Groundwater at local wells should not be effected, with the possible exception of one farmhouse well that is owned by Pfizer and which will be monitored.

We are also clearing additional land at our plant site to maintain proper nitrogen loading of the land as recommended by Dr. L. B. King of the North Carolina State Department of Soil Science (a copy of his report is enclosed for your files and a plot plan of cleared acreage at the plant site is attached).

You may recall that our method of operation is to take 25 cubic yard loads of neutralized yeast or biodegradable solids in tractor trailers to the farm site. The material is transferred within approximately 24 hours to a 7 cubic yard Big Wheels manure spreader and spread on the land at a prescribed rate. New land can handle 75 to 100 tons per acre which is tilled into the ground several times before planting. When hay crops are harvested 25 tons per acre are applied without tilling. We have found that millet and coastal bermuda grass in the summer and rye and rye grass in the winter are the crops that consume nitrogen at the best rates.

Mr. O. W. Strickland
August 17, 1979
Page Two

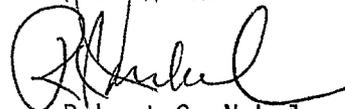
In the future we plan a similar operation but expect to transport the yeast slurry in tank trucks to the farm site and transfer to a 1500 gallon tank on a Big Wheels spreader. The slurry will be applied to the land at the same rate of nitrogen application that we have used. The material will be neutralized with lime in an agitated tank and we expect a more uniform pH than is possible with the present solid application.

We also are negotiating for another plot of land and would like to discuss the site before purchase.

After you have reviewed the data we would suggest a meeting and possibly a site inspection.

Yours sincerely,

PFIZER INC.



Robert C. Nubel
Plant Manager

RCN/jg

xc: Mr. C. Wakild

TO: JOHN NICHOLSON

FROM: BILL CRAWFORD

RE: PFIZER FARM WELL MONITORING (SHALLOW WELLS IN GROUNDWATER IN FARM FIELDS)

August 17, 1979

WELL NO.	W #1	W# 4	W#6	W#7	W#9
PERIOD					
4th Qt. 76					
pH	6.2	6.1	6.4	5.8	5.8
TKN	2.2	0.9	1.9	0.8	0.8
1st Qt 77					
pH	5.8	5.5	5.4	5.9	5.3
TKN	1.6	0.8	0.84	0.42	0.88
3rd. Qt 78					
pH	6.9	6.4	6.0	6.6	6.1
TKN	.86	.18	.38	.74	1.06
4th Qt. 78					
pH	6.1	6.1	5.8	5.9	8.0
TKN	2.4	1.68	2.40	3.36	1.60
1st Qt 79					
pH	6.2	5.7	5.5	7.0	5.4
TKN	1.1	0.6	2.8	1.8	1.1
2nd Qt 79					
pH	7.2	6.1	5.8	7.6	6.1
TKN	1.08	0.34	0.28	1.04	0.2

BILL CRAWFORD

WCC/jg

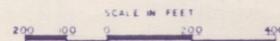
Additional results (Last 2 '77 , 1st 2 '78) are not available because samples were unable to be taken.

MAP FOR PFIZER, INC.

DAVID SWAIN TRACT
F. H. SWAIN, SR TRACT
DOUGLAS BAILEY TRACT
ROBERT Y. WILLING TRACT
SMITHVILLE TOWNSHIP BRUNSWICK COUNTY, N.C.
SCALE: 1" = 400' JAN-MAR, 1979

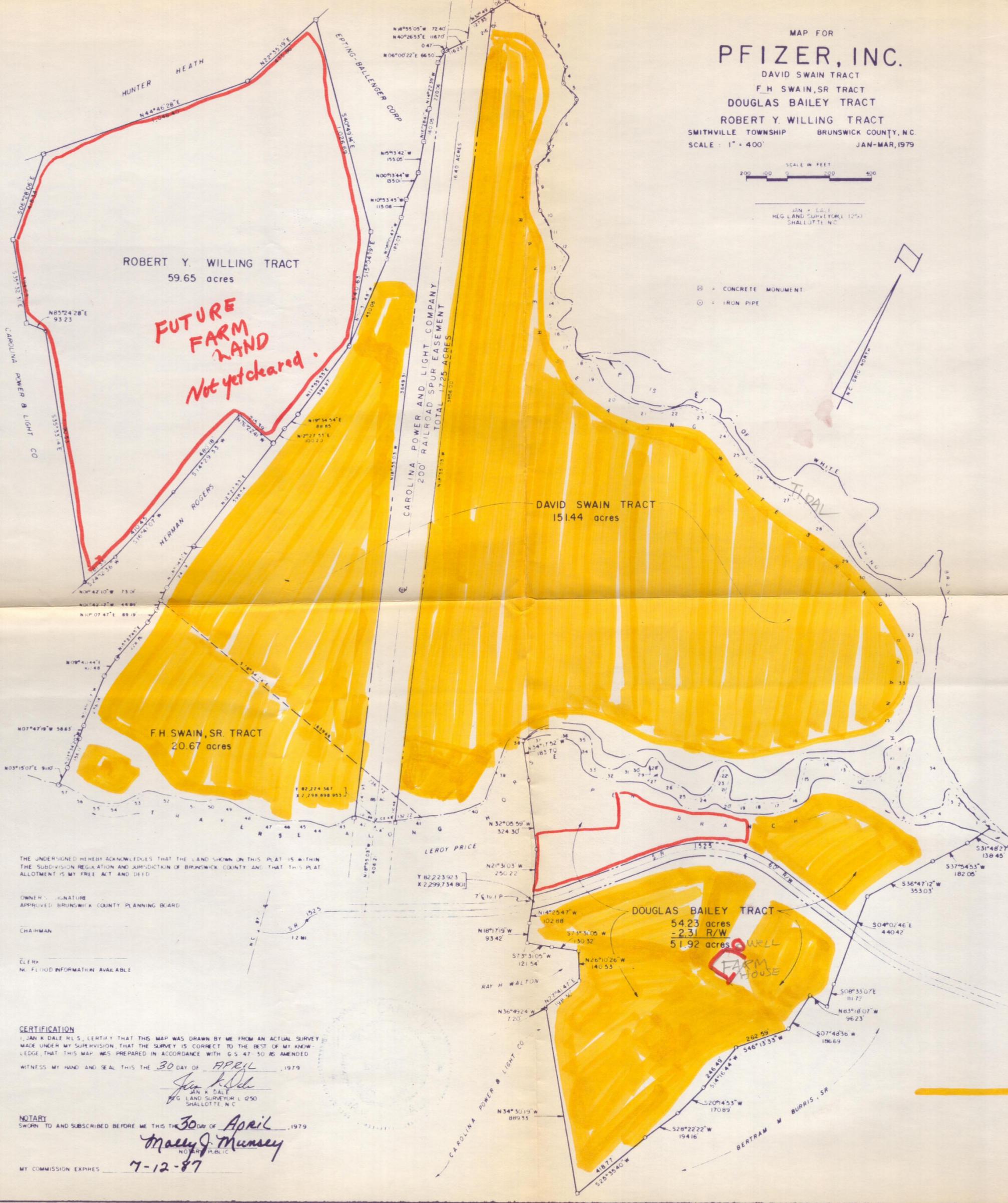


VICINITY MAP
SCALE: 1" = 2 MI



JAN. K. DALE
REG. LAND SURVEYOR, 12743
SHALLOTTE, N.C.

- = CONCRETE MONUMENT
- = IRON PIPE



HORSE PEN BRANCH		
NO	BEARING	DISTANCE
1	N75°21'0" W	128.77
2	N71°36'0" W	14.78
3	S19°09'2" E	34.78
4	S59°48'24" W	87.76
5	S41°33'38" W	87.59
6	N79°36'3" W	82.67
7	N35°34'19" W	79.36
8	N54°45'21" W	27.00
9	S33°14'18" W	12.45
10	S34°56'27" E	97.70
11	S34°25'7" W	128.7
12	S67°33'57" W	103.70
13	N52°35'51" W	5.00
14	S67°46'19" W	14.79
15	S59°18'27" E	13.67
16	S51°31'22" W	6.55
17	S58°29'53" W	37.17
18	S55°49'13" W	88.34
19	S41°15'50" A	14.1
20	N44°12'47" A	5.14
21	N10°35'31" W	105.86
22	N4°13'06" W	56.4
23	S35°49'12" W	147.7
24	S45°31'51" W	89.7
25	N66°53'54" W	86.10
26	S44°35'42" W	128.4
27	N12°12'44" W	82.50
28	N55°35'19" W	54.75
29	S03°34'03" W	67.74
30	S86°33'22" W	97.7
31	S03°55'37" W	58.9
32	S73°14'49" W	87.5
33	N62°16'36" W	87.22
34	N2°46'14" W	26.85
35	N72°28'27" W	5.9
36	S48°44'11" W	139.45
37	S58°27'17" W	116.59
38	S77°43'06" W	49.14
39	S02°27'47" E	3.8
40	S47°56'10" W	137.8
41	S48°31'14" W	4.12
42	S61°33'17" W	10.17
43	S45°42'14" W	38.4
44	S80°58'09" W	32.29
45	S45°16'19" W	71.10
46	S57°39'21" W	61.05
47	S75°22'21" W	76.2
48	N66°27'36" W	138.85
49	S81°11'25" W	3.45
50	S45°16'27" W	99.4
51	S75°33'28" W	14.75
52	S71°54'12" W	138.4
53	S37°36'31" W	127.14
54	S61°35'52" W	112.74
55	S76°33'34" W	10.85
56	N81°11'21" W	9.2
57	N88°24'23" W	2.44

WHITE SPRING BRANCH		
NO	BEARING	DISTANCE
1	S69°37'21" E	16.17
2	S42°35'21" E	26.19
3	S67°12'34" E	179.4
4	S16°43'41" E	75.4
5	S61°15'12" E	31.5
6	S16°28'41" W	143.9
7	S78°11'14" E	32.72
8	S41°36'18" W	24.1
9	S28°3'41" E	24.33
10	S57°39'39" E	17.17
11	S12°3'07" E	66.16
12	S41°59'43" E	5.18
13	S08°12'51" E	123.26
14	S01°45'24" E	3.76
15	S47°24'18" W	114.17
16	N40°59'13" E	89.76
17	S45°38'43" E	119.32
18	S84°51'36" E	67.42
19	S57°45'46" E	141.46
20	S81°31'11" E	164.0
21	N44°4'16" E	128.8
22	N43°16'18" E	54.40
23	S81°16'21" E	181.9
24	S14°47'21" E	11.15
25	S17°42'44" E	137.0
26	S75°43'31" E	154.7
27	S78°03'45" E	184.0
28	S69°41'55" E	134.6
29	S6°31'22" E	61.8
30	N7°48'37" E	11.5
31	S78°56'14" E	281.2
32	S26°56'27" E	123.5
33	S14°42'11" E	14.14
34	S16°16'44" E	66.17

THE UNDERSIGNED HEREBY ACKNOWLEDGES THAT THE LAND SHOWN ON THIS PLAT IS WITHIN THE SUBDIVISION REGULATION AND JURISDICTION OF BRUNSWICK COUNTY AND THAT THIS PLAT ALLOTMENT IS MY FREE ACT AND DEED.

OWNER'S SIGNATURE
APPROVED: BRUNSWICK COUNTY PLANNING BOARD

CHAIRMAN

CLERK
NO FLOOD INFORMATION AVAILABLE

CERTIFICATION
I, JAN. K. DALE RLS, CERTIFY THAT THIS MAP WAS DRAWN BY ME FROM AN ACTUAL SURVEY MADE UNDER MY SUPERVISION, THAT THE SURVEY IS CORRECT TO THE BEST OF MY KNOWLEDGE, THAT THIS MAP WAS PREPARED IN ACCORDANCE WITH G.S. 47-30 AS AMENDED.
WITNESS MY HAND AND SEAL THIS THE 30 DAY OF APRIL, 1979

Jan K Dale
JAN. K. DALE
REG. LAND SURVEYOR, 1250
SHALLOTTE, N.C.

NOTARY
SWORN TO AND SUBSCRIBED BEFORE ME THIS 30 DAY OF APRIL, 1979
Maeley J. Munsey
NOTARY PUBLIC
MY COMMISSION EXPIRES 7-12-87

CLEARED FARM LAND

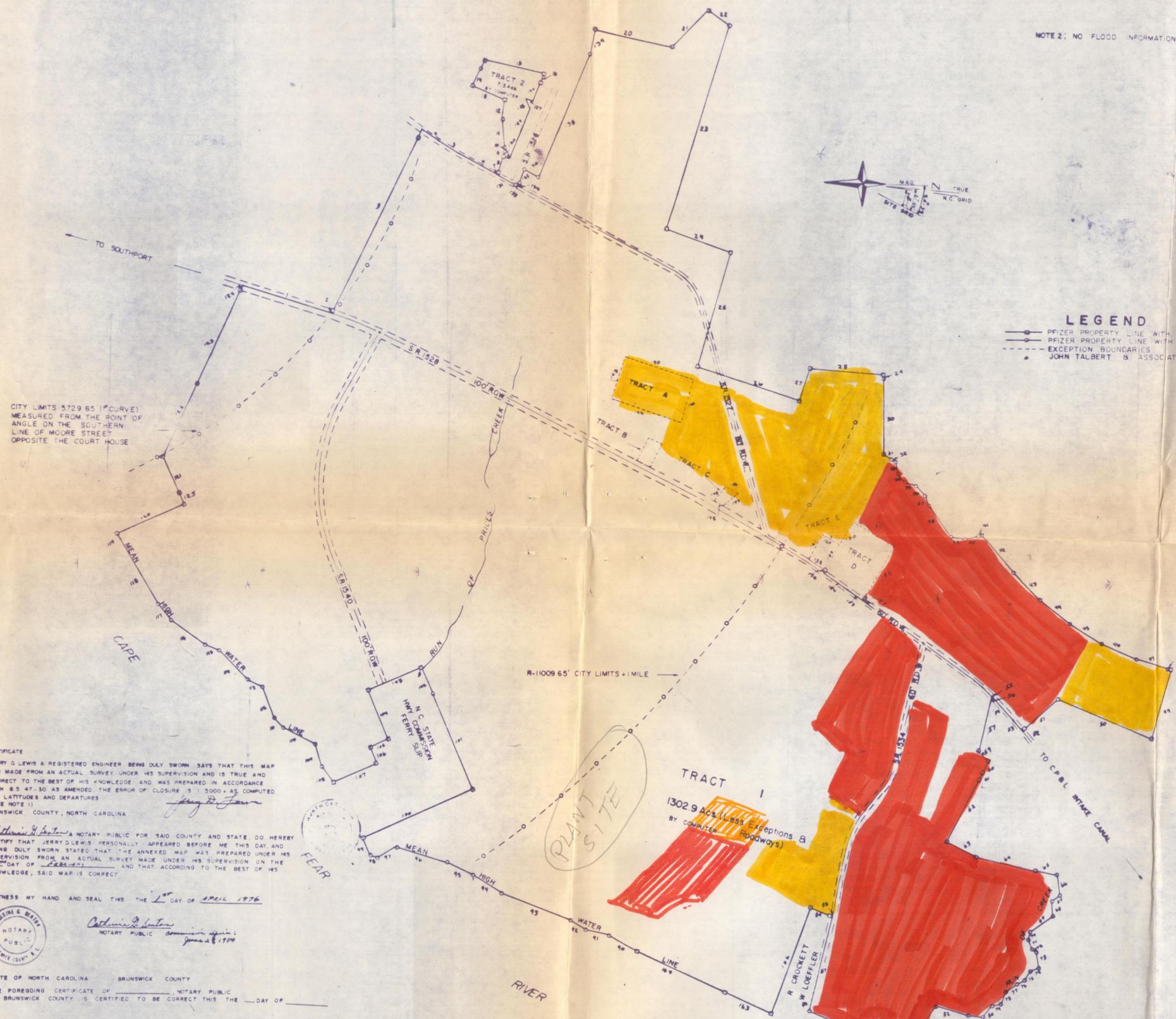
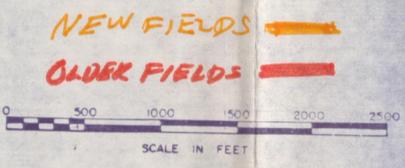
TRACT NO.	EXCEPTION OWNER	NET ACRES
A	ROBERT DAVIS	7.650
B	CAROLINA POWER AND LIGHT CO. (NOT SURVEYED)	
C	CAROLINA POWER AND LIGHT CO.	5.49
D	MARJORIE STEVENS	7.44
E	Pfizer Inc. TO BRUNSWICK COUNTY	1.37

NOTE 1: TRACTS A, C, D, & E SURVEYED TO TIE-IN WITH SURVEY MADE BY JOHN T. TALBERT REG. ENGR. AS SHOWN ON MAP RECORDED IN THE BRUNSWICK COUNTY, NORTH CAROLINA REGISTRY MAP BOOK 10 PAGE 131.

NOTE 2: NO FLOOD INFORMATION AVAILABLE

TRAVERSE DATA			TRAVERSE DATA		
LINE NO.	BEARING	DISTANCE	LINE NO.	BEARING	DISTANCE
99	S61°13'30"W	203.32	1	N16°5'30"E	969.75
100	N23°44'30"W	274.14	2	N65°13'30"W	50.39
101	S66°15'30"W	668.40	3	N65°13'30"W	2058.76
102	S64°14'00"W	317.29	4	N34°18'10"E	200.0
103	S23°48'30"E	600.10	5	N23°44'00"E	252.18
104	N66°04'30"E	449.16	6	N26°34'00"E	472.55
105	S23°45'30"E	225.00	7	N72°40'00"W	30.39
106	N66°04'30"E	100.89	8	N12°40'00"W	150.49
107	S23°45'30"E	570.00	9	N72°40'00"W	30.30
108	S52°46'00"W	87.79	10	S64°42'30"W	21.4
109	S71°12'30"W	257.84	11	S64°18'30"W	516.39
110	S25°48'30"W	378.24	12	N80°32'30"W	193.37
111	S46°05'00"W	217.5	13	S21°38'00"W	335.70
112	S69°19'00"W	114.48	14	N72°00'00"E	306.79
113	S25°40'30"W	8.63	15	N12°28'00"E	638.25
114	S44°43'00"W	110.27	16	S67°47'00"E	100.65
115	S23°30'30"W	57.00	17	OMITTED	
116	S33°48'10"W	32.324	18	OMITTED	
117	S49°44'30"W	231.47	19	OMITTED	
118	S60°41'00"W	729.34	20	N05°22'20"E	817.14
119	S50°40'30"W	44.66	21	N46°01'00"W	553.73
120	N24°59'30"W	183.78	22	N33°29'00"E	295.00
121	S65°00'30"W	426.47	23	S74°46'30"E	2201.00
122	N65°13'30"W	853.13	24	N15°27'30"E	721.45
123	N65°22'30"W	045.44	25	S74°47'10"E	1288.50
124	N65°22'30"W	8.85	26	N17°08'40"E	1105.85
125	N65°00'30"W	39.88	27	N73°55'00"W	379.57
126	S67°47'00"E	39.88	28	N05°44'30"E	776.77
127	S22°21'00"W	99.0	29	N76°40'00"E	291.7
128	N67°24'00"E	38.28	30	N89°57'00"E	800.29
129	S66°54'00"E	548.35	31	N31°09'00"E	92.00
130	S21°59'00"W	15.21	32	N30°50'13"E	54.75
131	N26°34'00"E	221.90	33	N77°32'03"E	30.54
132	OMITTED		34	N50°27'26"E	117.15
133	N26°34'00"E	30.10	35	N12°04'30"E	125.25
134	N88°25'30"W	30.10	36	N47°43'00"E	53.65
135	N68°05'00"W	10.00	37	N72°04'50"E	104.75
136	N27°34'00"E	48.65	38	N55°09'50"E	406.50
137	OMITTED		39	N09°45'06"E	147.44
138	N68°35'00"W	431.64	40	N18°12'34"W	64.29
139	N9°13'00"W	236.01	41	N03°20'46"E	7.50
140	N16°30'20"E	72.48	42	N50°02'26"E	516.83
141	S74°46'47"E	468.91	43	N46°12'26"E	393.90
142	S16°30'23"W	71.49	44	N38°47'11"E	393.55
143	N74°46'30"W	48.93	45	N31°17'01"E	393.45
144	OMITTED		46	N23°47'01"E	393.16
145	N52°31'30"W	300.34	47	N16°17'01"E	393.16
146	N33°24'15"E	147.96	48	N08°27'01"E	4.00
147	S18°25'50"E	200.40	49	S74°16'19"E	772.42
148	S27°34'55"W	100.30	50	S23°26'41"W	1064.73
149	OMITTED		51	S42°14'38"E	359.47
150	N59°46'35"W	316.36	52	S42°14'38"E	30.00
151	N29°15'05"E	501.45	53	S49°22'09"W	22.42
152	S60°14'00"E	663.99	54	S47°22'53"W	328.17
153	S14°15'57"W	204.85	55	S43°24'45"W	1065.1
154	S34°36'45"W	309.09	56	S74°11'00"E	35.78
155	OMITTED		57	S74°11'00"E	533.22
156	N53°46'35"W	300.00	58	OMITTED	
157	S60°41'00"W	310.09	59	N44°40'25"E	61.15
158	N32°36'45"E	200.00	60	S64°33'05"E	153.18
159	N52°46'35"W	200.00	61	S67°52'05"E	84.90
160	S34°16'45"W	200.00	62	S62°26'35"E	17.60
161	S59°46'35"E	300.00	63	N26°36'15"E	340.90
162	S70°52'52"E	151.15	64	N12°11'15"E	506.79
163	S24°25'28"W	539.50	65	N10°49'37"E	185.31
164	S24°10'48"W	1001.00	66	N78°37'52"E	224.50
			67	S38°49'58"E	94.15
			68	N84°21'02"E	165.30
			69	S27°55'58"E	285.00
			70	S83°30'28"E	89.30
			71	N67°00'32"E	103.00
			72	N41°28'12"E	52.15
			73	N76°47'32"E	172.20
			74	S22°14'53"E	91.30
			75	S58°48'43"E	107.95
			76	S28°44'03"E	92.75
			77	S37°48'53"E	147.55
			78	S68°11'23"E	138.05
			79	S4°08'53"E	92.65
			80	S54°20'53"E	152.00
			81	S05°39'47"W	153.00
			82	S3°54'07"W	352.45
			83	S57°52'53"E	501.00
			84	S25°59'18"E	88.25
			85	S21°50'00"W	042.10
			86	N74°14'30"W	215.07
			87	N76°52'30"W	81.51
			88	S21°32'20"W	30.00
			89	S21°32'20"W	230.18
			90	S28°56'30"W	354.61
			91	S12°28'30"W	229.69
			92	S29°50'30"W	199.44
			93	S15°45'00"W	736.69
			94	S31°14'30"W	347.52
			95	S25°54'00"W	314.48
			96	S15°03'30"W	525.08
			97	S32°07'30"E	227.55
			98	S28°38'10"W	83.33

LEGEND
 ○ Pfizer Property Line with Concrete Monument
 ○ Pfizer Property Line with Iron Pipe
 --- Exception Boundaries
 * John Talbert & Associates, Inc., Traverse Data



CERTIFICATE
 JERRY D. LEWIS A REGISTERED ENGINEER BEING DULY SWORN SAYS THAT THIS MAP WAS MADE FROM AN ACTUAL SURVEY UNDER HIS SUPERVISION AND IS TRUE AND CORRECT TO THE BEST OF HIS KNOWLEDGE AND WAS PREPARED IN ACCORDANCE WITH G.S. 47-30 AS AMENDED THE ERROR OF CLOSURE IS 1/5000+ AS COMPUTED BY LATITUDES AND DEPARTURES
 (SEE NOTE 1)
 BRUNSWICK COUNTY, NORTH CAROLINA
 JERRY D. LEWIS
 REGISTERED ENGINEER
 NOTARY PUBLIC
 JERRY D. LEWIS
 NOTARY PUBLIC
 JUNE 16, 1976

WITNESS MY HAND AND SEAL THIS THE 16th DAY OF APRIL 1976
 JERRY D. LEWIS
 NOTARY PUBLIC
 STATE OF NORTH CAROLINA BRUNSWICK COUNTY
 THE FOREGOING CERTIFICATE OF JERRY D. LEWIS, NOTARY PUBLIC OF BRUNSWICK COUNTY IS CERTIFIED TO BE CORRECT THIS THE 16th DAY OF APRIL 1976

REGISTER OF DEEDS
 STATE OF NORTH CAROLINA BRUNSWICK COUNTY
 FILED FOR REGISTRATION ON THE 16th DAY OF APRIL 1976
 AT 10:15 (A.M.) P.M. AND DULY RECORDED IN MAP BOOK PAGE 131
 REGISTER OF DEEDS

JERRY LEWIS ENGINEERS, INC.
 CONSULTING ENGINEERS
 SHALLOTTE, NORTH CAROLINA

PROPERTY OF
 Pfizer, Inc.
 SMITHVILLE TOWNSHIP
 BRUNSWICK CO., NORTH CAROLINA

SURVEYED BY J.D.L.
 DRAWN BY J.D.L.
 DATE 3-8-75

CHECKED BY J.D.L.
 CHECKED BY J.D.L.
 DATE 3-8-75 SHEET 1 OF 1

Mineralization of Nitrogen in Fermentation Residue from Citric Acid Production¹

LARRY D. KING AND ROY L. VICK, JR.²

ABSTRACT

One of the byproducts of commercial citric acid production is presscake: a mixture of microbial biomass, CaSO₄, and a filter aid such as perlite. Large production plants produce this byproduct at rates of over 50 metric tons/day. Since the material is often applied to agricultural land, it is important to know the rate of release of N and other plant nutrients so that appropriate application rates can be determined.

Wafers (1.5 cm diam by 0.6 cm thick) of presscake were incorporated into a loamy sand at rates supplying 223, 446, and 669 ppm N and surface-applied to supply 446 ppm N. Powdered presscake was also incorporated at the 446-ppm-N rate. The mixtures were incubated for 32 weeks.

Nitrate accumulated rather rapidly during the first 8 weeks, with little accumulation thereafter. At the end of the experiment, NO₃-N levels at the 446-ppm-N rate were 57% of the applied N with incorporated wafers, 32% with incorporated powder, and 28% with surface-applied wafers. Gaseous N losses were 31% of the applied N with incorporated wafers, 61% with powder, and 55% with surface-applied wafers. Addition of presscake increased levels of extractable P and Ca in most treatments.

Additional Index Words: presscake, yeast, P, Ca, denitrification, ammonia volatilization, cotton seed meal.

Fermentation of various substrates is an important means of commercially producing materials such as pharmaceutical chemicals, alcoholic beverages, food supplements, enzymes, and organic acids (11). The product formed by fermentation includes microbial cells, unused substrate, and products of metabolism other than those being sought. After the desired product has been removed, the remaining byproduct may be used for some other purpose (e.g., animal feed) or it must be disposed of properly. Since fermentation byproducts contain plant nutrients and organic matter, they are sometimes used as soil amendments. For example, in Denmark enzyme production byproducts containing approximately 4% N and 0.3 to 4% P (L. D. King, unpublished data) are applied to farmland as a method of utilization and disposal (D. E. Wilbur, Novo Lab., Inc., personal communication). The pharmaceutical industry in Connecticut produces about 47,000 metric tons of byproduct per year (2) and much of this is applied to farmland (John Nicholson, Pfizer Chemicals Div., personal communication).

Citric acid is produced by fermenting molasses or other carbon sources with microorganisms such as yeasts or molds. Nitrogen, P, K, Mg, and S are generally added as a nutrient source for the organism (9). After the fermentation process, several separating steps are

taken to recover the citric acid. The byproduct of one of the filtration steps is presscake: a mixture of biomass, CaSO₄, and a filter aid such as perlite (2). Calcium hydroxide is added to this material to neutralize the acidity prior to applying it to agricultural land. Since citric acid plants produce this byproduct at rates over 50 metric tons of wet material per day (20 metric tons/day of dry material), a well-managed land application system is essential. One of the inputs to the management system is data on the rate of release of plant nutrients from the material. This data allows the adjustment of application rates to provide adequate nutrients for maximum crop production but to prevent the application of excess nutrients which might find their way into surface or ground water. The objective of this study was to determine the rate of release of plant nutrients from presscake (in this case a mixture of yeast biomass, CaSO₄, and perlite) when added to soil in a laboratory incubation study.

The specific results of this study will be beneficial to the relatively few manufacturers of citric acid. However, since commercial fermentation is used rather widely, and since many of the substrates used are similar (i.e., sugars and starches), the rate of release of nutrients from citric acid presscake should serve as a general guide for release rates from other fermentation byproducts.

MATERIALS AND METHODS

The surface layer (0-20 cm) of Ogeechee loamy sand (fine-loamy, siliceous, thermic Typic Ochraquults, pH 4.9, 85% sand, 13% silt, 2% clay) was air-dried and screened (20 mesh). Technical grade CaCO₃ was added at 1.5 g/kg of soil to raise the pH to 6.0. Sufficient quantities of soil were weighed into plastic containers to supply 500 g of oven-dry soil per container.

To better simulate the particle size which might exist if presscake were applied with a manure spreader, moist presscake was formed into 1.5-cm-diam by 0.6-cm-thick wafers. The wafers were applied to the soil as shown by the treatments in Table 1. In treatment 5 presscake which had been oven dried and powdered in a mortar and pestle was used. The presscake treatments were added to the soil and sufficient water added to bring the soil moisture content to 14.5% (0.1 bar tension). Sufficient containers were set up so that three replications of each treatment could be analyzed at 2, 4, 8, 16, and 32 weeks. A randomized complete block statistical design was used. The treatments were incubated in darkness at room temperature (20-25°C). Distilled water was added twice weekly to return the moisture content to 14.5%.

The presscake was analyzed for total N by a Kjeldahl procedure

Table 1—Treatments used in the incubation study.

Treatment	Presscake rate g/100 g soil	N supplied by presscake ppm, oven dry soil basis	Presscake form	Application method
1 (control)	--	0	--	--
2	0.77	223	Wafer	Incorporated
3	1.54	446	Wafer	Incorporated
4	2.31	669	Wafer	Incorporated
5	1.54	446	Powder	Incorporated
6	1.54	446	Wafer	Surface

¹Pap. no. 5472 of the J. Ser. of the North Carolina Agric. Exp. Stn., Raleigh, NC 27607. This work was supported in part by funds provided by Pfizer Chemicals Div., Pfizer, Inc., Groton, Conn. Received 5 Dec. 1977.

²Assistant Professor and former senior honor student, Dep. of Soil Sci., North Carolina State Univ., Raleigh.

modified to include NO₃ (5); NH₄ by ammonia electrode (1); NO₃ by ultraviolet absorption as described by Gambrell et al. (3); P colorimetrically (8); K by flame photometry; Ca, Mg, Mn, Cu, Zn and Fe by atomic absorption spectroscopy; and B by a modification of the curcumin method (4).

At the end of each period, soil samples were extracted with 2N KCl for determination of NH₄ and NO₃. A 1:1 soil/water suspension was used for pH and electrical conductivity measurements. At the 4-week sampling date the soils were also extracted with 0.05N HCl + 0.025N H₂SO₄ to determine "plant available" P, K, Ca, and Mg (10). At the termination of the experiment, a sample of the original soil (which had been stored air dry) and the 32-week samples were dried, ground in a ball mill, and analyzed for total N.

RESULTS AND DISCUSSION

Presscake analysis is shown in Table 2. Essentially all of the nitrogen present in the presscake was in the organic form. Relative to total N all plant nutrients except Ca were quite low. Micronutrients were also low and, thus, there should be no danger of micronutrient toxicities resulting from agricultural use of the presscake.

Increasing rates of incorporated wafers resulted in increased levels of accumulated NO₃ by the 4-week sampling date (Table 3). The NO₃ accumulated rather rapidly during the first 4 weeks but after 8 weeks there was no significant change in the level of accumulated NO₃ at the 223- and 669-ppm-N rates. At the 446-ppm rate the increase from 16 to 32 weeks was significant. Deducting the amount of NO₃ contributed by the control treatment, the accumulated NO₃ was 49, 57, and 51% of the applied N for the 223, 446, and 669 ppm N rates, respectively, by the 32-week sampling date. Thus, about half of the applied N can be expected to accumulate as NO₃ and most of this accumulation occurs during the first 8 weeks.

Ammonium concentrations present in the samples were generally a function of application rate. After the 2-week sampling date, concentrations decreased with time and by 16 weeks there was no significant effect of treatments.

Although no statistical comparison can be made, at the 446- and 669-ppm-N rates the soil pH at 2 weeks ap-

Table 2—Presscake composition and amount of major plant nutrients supplied by the presscake rates.

Parameter	Composition	Presscake rate (N basis)		
		223	446	669
	%	ppm, oven dry basis		
Total N	2.91	223	446	669
NH ₄ -N	0.007	0.5	1.0	1.5
NO ₃ -N	0.093	7	14	21
P	0.12	9	18	27
K	0.035	3	6	9
Ca	2.76	211	422	633
Mg	0.020	2	4	6
Na	0.10	8	16	24
	ppm			
Mn	13	--	--	--
Cu	3	--	--	--
Zn	7	--	--	--
Fe	368	--	--	--
B	1	--	--	--

peared to be higher than the initial soil pH (Table 4). This was probably a result of NH₄ accumulation, since the pH dropped as NH₄ decreased and NO₃ accumulated. The 223-ppm-N rate was not significantly different from the control treatment during most of the experiment but, at weeks 4, 8, and 32, the two higher rates resulted in pH values lower than those in the control.

The effect of presscake rate on soil electrical conductivity (EC) (Table 4) was similar to the effect on NO₃ accumulation, that is, after the second week EC increased significantly with increasing presscake rate. The values reported here are higher than one would find under field conditions because there was no leaching of salts via rainfall as would be the case in the field. However, since EC > 2,000 μmhos/cm in a 1:1 soil/water suspension can result in inhibition of seed germination, the data do suggest that poor germination could result if a dry period followed presscake application.

The effect of presscake particle size and method of application at the 446-ppm-N rate on the accumulation

Table 3—Effect of application rate of incorporated presscake wafers on concentrations of NO₃-N and NH₄-N in the soil.

Time	Presscake-applied N, ppm, oven dry soil			
	0	223	446	669
weeks	ppm, oven dry soil			
	NO ₃ -N			
0	18	25	31	38
2	29 b*	65 c	79 d	73 c
4	41 b	128 b	220 c	271 b
8	45 b	164 a	263 b	391 a
16	45 b	158 ab	254 b	411 a
32	70 a	180 a	324 a	413 a
	NH ₄ -N			
0	1	2	3	
2	2 a	26 a	89 a	165 a
4	1 a	2 b	13 b	75 b
8	2 a	2 b	3 c	24 c
16	2 a	1 b	2 c	10 d
32	1 a	1 b	1 c	1 d

* Within each N species, values in the same column followed by the same letter and values in the same row underscored by the same line are not significantly different at the 5% level of probability.

Table 4—Effect of application rate of incorporated presscake wafers on soil pH and electrical conductivity.

Time	Presscake-applied N, ppm, oven dry soil			
	0	223	446	669
weeks	pH			
0	6.0	6.0	6.0	6.0
2	6.4 a*	6.2 a	6.6 a	7.3 a
4	6.3 a	5.7 ab	5.4 b	5.5 b
8	5.4 b	5.4 c	5.2 c	5.0 d
16	5.7 b	5.6 bc	5.4 b	5.4 bc
32	5.9 a	5.5 c	5.2 c	5.3 c
	Conductivity			
	μmhos/cm			
2	250 c	540 c	680 d	680 d
4	340 bc	1,020 b	1,630 c	1,850 c
8	420 abc	1,260 a	1,990 b	2,840 b
16	520 ab	1,370 a	2,370 a	3,050 ab
32	600 a	1,400 a	2,480 a	3,090 a

* Within each parameter, values in the same column followed by the same letter and values in the same row underscored by the same line are not significantly different at the 5% level of probability.

Table 5—Effect of presscake particle size and method of application on concentrations of NO₃-N and NH₄-N in the soil.

Time weeks	Presscake-applied N, ppm, oven dry soil			
	0	446	446	446
	Incorporated powder		Wafer	
		Surface	Incorporated	
	ppm, oven dry soil			
	NO ₃ -N			
0	18	31	31	31
2	29 b*	32 c	61 c	79 d
4	41 b	112 b	121 b	220 c
8	45 b	126 b	146 b	263 b
16	45 b	136 b	141 b	254 b
32	70 a	212 a	194 a	324 a
	NH ₄ -N			
0	1	2	2	2
2	2 a	70 a	33 a	89 a
4	1 a	6 b	5 b	13 b
8	2 a	2 b	3 b	3 c
16	2 a	1 b	2 b	2 c
32	1 a	1 b	1 b	1 c

* Within each N species, values in the same column followed by the same letter and values in the same row underscored by the same line are not significantly different at the 5% level of probability.

of NO₃ and NH₄ is shown in Table 5. The NO₃ levels resulting from the incorporation of powdered presscake and surface-applied wafers were not significantly different from each other throughout the experimental period. However, they were always lower than NO₃ levels with incorporated wafers. The powder and surface wafers resulted in lower NH₄ levels than did incorporated wafers through the 4-week sampling date. At the 2-week sampling date, in contrast with the NO₃ data, NH₄ with incorporated powder was significantly higher than NH₄ with surface wafers.

Soil pH was generally lowered more by the incorporated wafer treatment than by the other treatments (Table 6). The powder and surface wafer treatments were not different from each other except at the 16-week sampling date. Conductivity values showed the same trend noted with NO₃ accumulation in Table 5. This trend and the same trend noted between NO₃ and EC in Tables 3 and 4 is to be expected, that is, changes in EC measure the total quantity of ions coming into solution due to decomposition of the presscake, and NO₃ is one of those ions.

Table 7—The effect of presscake applications on plant available P, K, Ca, and Mg (extractable with 0.05N HCl + 0.025N H₂SO₄) at the 4-week sampling date.

Treatment, ppm N	P	K	Ca	Mg
	ppm			
Control	8.2 d*	65 ab	1,090 c	76 a
Incorporated wafers				
223	11.7 c	63 b	1,260 bc	77 a
446	15.4 ab	66 ab	1,450 ab	80 a
669	18.1 a	68 a	1,660 a	85 a
Incorporated powder				
446	8.0 d	62 b	1,240 bc	78 a
Surface wafer				
446	12.3 bc	66 ab	1,490 ab	91 a

* Values within the same column followed by the same letter are not significantly different at the 5% level of probability.

Table 6—Effect of presscake particle size and method of application on soil pH and electrical conductivity.

Time weeks	Presscake-applied N, ppm, oven dry soil			
	0	446	466	466
	Incorporated powder		Wafer	
		Surface	Incorporated	
	pH			
0	6.0	6.0	6.0	6.0
2	6.4 a*	6.9 a	6.3 a	6.6 a
4	6.3 a	6.0 a	5.6 ab	5.4 b
8	5.4 b	5.4 b	5.4 b	5.2 c
16	5.7 b	5.4 b	5.9 a	5.4 b
32	5.9 a	5.4 b	5.7 ab	5.2 c
	Conductivity			
	μmhos/cm			
2	250 c	360 c	440 d	680 d
4	340 bc	970 b	790 c	1,630 c
8	420 abc	1,040 b	1,190 b	1,990 b
16	520 ab	1,400 a	1,490 a	2,370 a
32	600 a	1,560 a	1,550 a	2,580 a

* Within each parameter, values in the same column followed by the same letter are not significantly different at the 5% level. Conductivity values on the same row underscored by the same line and pH values in the same row underscored by the same type of line are not significantly different at the 5% level.

At the 4-week sampling date all of the presscake treatments except the incorporated powder significantly increased levels of plant-available P above levels in the control (Table 7). About 30% of the applied P was found in an available form. The lack of effect of incorporated powder suggests that the intimate mixing of presscake and soil resulted in more soil fixation of P than when presscake was applied as wafers. None of the presscake treatments significantly affected K levels as compared to levels in the control. Calcium levels were increased above levels in the control by the two higher incorporated wafer treatments and the surface wafer treatment. About 85% of the applied Ca was found in an available form. Presscake treatments had no effect on Mg levels.

The unexpected effect of presscake particle size on rate of NO₃ accumulation noted early in the study prompted a parallel study. Since the powdered presscake was oven dried prior to application, it was hypothesized that the drying process had made the N in the presscake less available to microbial attack. To test this hypothesis a quantity of wafers was made from moist

Table 8—The effect of presscake particle size and drying on N mineralization, conductivity, and pH.

Parameter	Control	Presscake				Cotton seed meal
		Wafer		Crumb		
		Moist	Dry	Moist	Dry	
NO ₃ -N, ppm	38 c*	222 a	225 a	196 b	197 b	232 a
NH ₄ -N, ppm	0 b	32 a	39 a	42 a	29 a	33 a
Conductivity, μmhos/cm	430 d	2,090 b	2,080 b	1,800 c	1,845 c	2,230 a
pH	6.0 a	5.8 a	5.8 a	5.9 a	5.7 a	5.0 b

* Values for the same parameter followed by the same letter are not significantly different at the 5% level of probability.

Table 9—The effect of presscake applications on total N at 32 weeks.

Treatment, ppm N	Total N			% of applied N		
	Initially†	At 32 weeks	Loss	Total N‡ loss	NO ₃ -N‡	Total N mineralized (N loss + NO ₃ -N)
	ppm			%		
Control	851	833 d*	18 d	--	--	--
Incorporated wafers						
223	1,074	984 c	90 c	32 b	49 a	81 a
446	1,297	1,140 b	157 b	31 b	57 a	88 a
669	1,520	1,272 a	248 a	34 b	51 a	85 a
Incorporated powder						
446	1,297	1,008 c	288 a	61 a	32 b	93 a
Surface wafers						
446	1,297	1,032 c	265 a	55 a	28 b	83 a

* Values in the same column followed by the same letter are not significantly different at the 5% level.

‡ Value of the control deducted.

† Total N of the original soil + mycelium-applied N.

yeast and half of the wafers oven dried. Moist presscake was also passed through a 20-mesh screen to produce crumbs. Half of the crumbs were oven dried. The moist and dry wafers and crumbs were incorporated with soil at rates to supply 500 ppm N. A treatment using cotton seed meal to supply 500 ppm N was also included to provide a comparison between presscake and a material that has been used extensively as an organic N fertilizer. The same incubation, extraction, and analytical techniques used in the first experiment were used in this parallel experiment. The samples were incubated for 4 weeks.

Oven drying the presscake had no significant effect on levels of NO₃, NH₄, EC, or pH in either the wafer or crumb treatments (Table 8). However, accumulation of NO₃ and the EC were significantly higher in the wafer treatments as compared to the crumb treatments. There was no effect of presscake particle size on NH₄ or pH. The cotton seed meal treatment resulted in NO₃ and NH₄ accumulations and conductivity which were not significantly different from the wafer treatments. However, the pH with cotton seed meal was significantly lower than the pH with any other treatment. Evidently, the Ca in the presscake was sufficient to partially neutralize the acidity resulting from nitrification.

Total N analysis at the 32-week sampling date of the original study showed that the effect of presscake particle size on NO₃ levels was related to gaseous loss of N (Table 9). In the incorporated wafer treatments the gaseous loss was about 32% of the applied N. The loss with incorporated powder was 61% of the applied N. Loss from surface-applied wafers was 55%. The lack of significant differences in total N mineralized shows that the differences in levels of accumulated NO₃ were caused by differences in the amount of gaseous loss of N rather than differences in mineralization rate. Since no measurements of NH₃ volatilization were made, it is impossible to partition the gaseous loss into NH₃ volatilization and denitrification. Similar studies with sewage sludge have shown that gaseous N losses result from both NH₃ volatilization and denitrification (6, 7, 12).

The gaseous loss noted in the present study is not directly transferable to field conditions. For example, the presence of a growing crop would offer an additional sink for the mineralized N and could reduce N loss. The results do suggest that loss will occur in the field and the method of application (surface vs. incorporation) will have an effect on the magnitude of the loss.

CONCLUSIONS

Based on analyses of the original presscake and the incubated soil-presscake mixture, the presscake is mainly a N and Ca source and, to a lesser extent, a source of P. Most of the N which is mineralized and accumulates as NO₃ does so in 8 weeks. Application of presscake to the soil surface and incorporation of powdered presscake both result in appreciable gaseous loss of N. This gaseous loss offers an important management option in utilizing or disposing of fermentation residues. If land area is limited, then surface application of residues would be desirable to promote N loss. Where maximum N utilization is desired, incorporation of small clumps of residue (as might be produced by a manure spreader) should be practiced.

ACKNOWLEDGMENTS

We appreciate the technical assistance of Robert Hill and Ann Gamble.

LITERATURE CITED

- Banwart, W. L., M. A. Tabatabai, and J. M. Bremner. 1972. Determination of ammonium in soil extracts and water samples by an ammonia electrode. *Commun. Soil Sci. Plant Anal.* 3:449-458.
- DeRoo, H. C. 1975. Agricultural and horticultural utilization of fermentation residues. *Conn. Agric. Exp. Stn. Bull.* 750. p. 1-2.
- Gambrell, R. P., J. W. Gilliam, and S. B. Weed. 1975. Denitrification in subsoils of the North Carolina Coastal Plain as affected by soil drainage. *J. Environ. Qual.* 4:311-316.
- Grinstead, R. R., and S. Snider. 1967. Modification of the curcumin method for low level boron determination. *Analyst* 92: 532-533.
- Jackson, M. L. 1958. *Soil chemical analysis*. Prentice-Hall Inc., Englewood Cliffs, N.J. p. 183-193.
- King, L. D. 1972. Mineralization and gaseous loss of nitrogen in soil-applied liquid sewage sludge. *J. Environ. Qual.* 2:356-358.
- King, L. D., and H. D. Morris. 1974. Nitrogen movement resulting from surface application of liquid sewage sludge. *J. Environ. Qual.* 3:238-243.
- Murphy, J., and J. P. Riley. 1962. A modified single solution method for the determination of phosphate in natural waters. *Anal. Chim. Acta.* 27:31-36.
- Noyes, R. 1969. Citric acid production processes. Noyes Development Corp., Park Ridge, N.J. 157 p.
- Olsen, S. R., and L. A. Dean. 1965. Phosphorus. *In* C. A. Black (ed.) *Methods of soil analysis*. Agronomy 9:1035-1049. Am. Soc. of Agron., Madison, Wis.
- Pelczar, M. J., Jr., and R. D. Reid. 1972. *Microbiology*. McGraw-Hill, New York. p. 809-830.
- Ryan, J. A., D. R. Keeney, and L. M. Walsh. 1973. Nitrogen transformations and availability of an anaerobically digested sewage sludge in soil. *J. Environ. Qual.* 2:489-492.



STATE OF NORTH CAROLINA
DEPARTMENT OF HUMAN RESOURCES

Division of Health Services

EASTERN REGIONAL OFFICE
404 ST. ANDREWS STREET
GREENVILLE, N.C. 27834

October 11, 1977

JAMES B. HUNT, JR.
GOVERNOR

SARAH T. MORROW, M.D., M.P.H.
SECRETARY



Mr. Cray Milligan
Brunswick County Manager
Southport, NC 28461

Dear Mr. Milligan:

There is a noticeable improvement in the Brunswick County solid waste program. I have seen evidence of this during my last two visits to your area. Closing and locking the entrance gates have no doubt helped. Another thing that stands out is the operators seem to take pride in their work. This pride is sadly lacking in many operations. I strongly believe the most important part of any program is the supervisor. I believe you have a good one in Mr. Benton.

JW

As a regulatory agency many people think we are not concerned with operational costs. The increasing cost of solid waste management is a big concern throughout the state. The only way that I know to combat this is through good equipment maintenance and better operational efficiency.

An additional cost that Brunswick County will be faced with in the near future is replacing the tractors at the Leland and Ocean Isle landfills with larger tractors. The increasing volume of waste at these sites will soon make this necessary.

According to Mr. Benton, the Ocean Isle and Leland landfills will last another one to one and one half years. You may be able to use some of the adjacent land at the Ocean Isle site if it is obtainable, but it appears that most of the suitable land has been used at the Leland site. This will require moving to a new area for that operation. It is hoped that you will soon start making plans for this because finding suitable land, getting site approval, and preparing operational plans can be very time consuming.

If I can be of any help to you, please call on me.

Sincerely,

Fred J. Wood

Fred J. Wood
District Sanitarian
Solid Waste & Vector Control Branch

/bgb

cc: Each County Commissioner
Mr. Ed Harris
Mr. Tink Benton
Mr. O. W. Strickland

July 18, 1977



Mr. W. M. Harrison
Chief of Environmental Engineering
Seaboard Coast Line Railroad Company
500 Water Street
Jacksonville, Florida 32202

Subject: Water Pollution Control Improvements
Seaboard Coast Line Railroad Company
Davis Yard
Brunswick County

Dear Mr. Harrison:

JM

Preliminary drawings of proposed improvements for the railroad's locomotive fueling and freight car cleaning waste treatment and disposal facilities have been reviewed.

Proposed improvements include the construction of an additional 1300 feet bituminous paved car cleaning apron, concrete lined ditches to transport wastewater into two (2), two million gallon holding ponds (clay lined) in series, an effluent weir with flow meter. Also proposed is the construction of concrete dikes and floors around the fuel oil storage tanks and skimmed oil storage tank with the water from the oil/water separator discharged to the concrete lined ditch. Finally, it is proposed to construct an 8.05 acre chemical land fill for the disposal of residual solid materials. These materials will be scraped from the cleaning apron prior to car washing.

This office believes that with proper operation and maintenance, the proposed waste treatment and disposal concept will enable the railroad to comply with effluent limits contained in NPDES Permit Number NC0026948. Furthermore, the construction of concrete dikes and floors around fuel oil storage facilities should eliminate the oil spill problems which have been experienced at the Davis Yard.

While this Division will incorporate the proposed chemical land fill as a part of the water pollution control facilities into the NPDES Permit, the Department of Human Resources, Health Services Division, has primary regulatory authority over construction and operation of land fills. Therefore, prior to this Agency's final approval of the proposed improvements, appropriate approval documents must be obtained from the Department of Human Resources. You are advised to contact Mr. Fred Wood at 404 Saint Andrews Street, Greenville, North Carolina, 27834,

Mr. W. M. Harrison
Page 2
July 18, 1977

telephone (919) 756-1343. Please find enclosed, a copy of the Department of Human Resources' regulation governing land fills. Information contained in the regulations should answer most of your questions regarding construction and operation. Mr. Wood will be able to give more information as required.

While staff of this Section concur in the conceptual design of treatment facilities described in the second paragraph, no construction should be initiated until approvable plans and specifications have been submitted to the Division of Environmental Management and an authorization to construct has been issued. If you have any questions, please contact the Southeastern Field Office, 3143 Wrightsville Avenue, Wilmington, N.C. 28401, telephone 919/762-3394.

Sincerely,

Original Signed by

L. P. BENTON, JR.
L. P. Benton, Jr., Chief
Water Quality Section

cc: Mr. R. A. Carter
Mr. Fred Wood
SEFO

May 23, 1976

Mr. Ed Clemmons
Brunswick County Dog Pound
Post Office Box 394
Supply, North Carolina 28462

Dear Mr. Clemmons: *EVK*

Reference is hereby made to part "G" of Section XI --
Operational Requirements for Sanitary Landfills as contained
in the Division of Health Services "Rules and Regulations
Providing Standards for Solid Waste Disposal".

Small animal carcasses, such as dogs, are to be covered
immediately upon deposit at the landfill operational site.

If this office can be of further assistance, do not
hesitate to call.

A copy of the regulations are attached for your use.

Yours truly,

Jerry G. Perkins, Assistant Head
Solid Waste & Vector Control Branch
Sanitary Engineering Section

JGP:bm

cc: Mr. Torry F. Dover



August 7, 1975

Mr. Michael G. Nugent
Planner

✓ Brunswick County Planning Board
Office of the County Planner JHR
Post Office Box 376
Southport, North Carolina 28461

Dear Mr. Nugent:

In reply to your letter of August 1, 1975, this agency has established the following basic standards with regard to the disposal of solid waste:

1. Sanitary landfill area will require one acre foot per 1,000 persons per year.
2. The disposal site shall be located near the center of highest solid waste generation.
3. The volume of solid waste will determine the size and type of equipment for proper sanitary landfill operations.
4. The size of the sanitary landfill operation will dictate the amount of personnel needed for the proper operation of the disposal site to meet our regulations.

If additional information is needed, I shall appreciate hearing from you.

Very truly yours,

Sidney H. Usry, Head
Solid Waste & Vector Control Branch
Sanitary Engineering Section

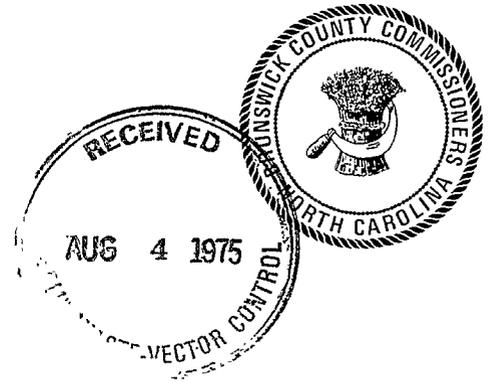
SHU:bm

BRUNSWICK COUNTY PLANNING BOARD

Office of the County Planner

P. O. Box 876
Southport, North Carolina 28461

Telephone: 457-5528
Area Code 919



August 1, 1975

Mr. S. H. Usry
Solid Waste and Vector Control Branch
Division of Health Services
Bath Building
306 N. Wilmington St.
Raleigh, N. C. 27601

Dear Mr. Usry:

The Brunswick County Planning Department is currently in the process of preparing a community facilities inventory and analysis pursuant to the North Carolina Coastal Area Management Act. An important element of this effort is the evaluation of the various services provided by the County presently. In order to perform this evaluation and plan for needs, evaluative standards are needed. This letter is requesting any such standards which your agency may have developed concerning disposal site acreage needs as a function of population, location criteria, capital equipment, personnel etc.

Your consideration and assistance with this request will be greatly appreciated.

Thank you.

Sincerely,

Michael G. Nugent
Planner

MGN/rw

1 cc. sent to 1000 pm/pm/you
Center generation
Valium to be drug.
San - ab

N. C. STATE BOARD OF HEALTH
CHECK-OFF SHEET FOR PROPOSED SANITARY LANDFILL SITES



COUNTY Brunswick LOCATION Hwy 211 ACRES 20

PROPERTY OWNER Weyerhaeuser Company PROPOSED OPERATOR Brunswick County

1. Is this site within the boundaries of a public water supply watershed? Watershed _____ YES _____ NO
2. Does any portion of this site contain floodplain areas? YES _____ NO
3. Are there public or private wells nearby that could be affected? YES _____ NO
Nearest well in feet 900 (Elaborate in Comments Section)
4. Are there springs present on the site? Number _____ YES _____ NO
5. Will this site require dyking? YES _____ NO
6. Will this site require piping of surface drainage? YES _____ NO
7. Not precluding required boring information, does this site have adequate cover material for the sanitary landfill development? YES NO _____
8. Will this site require diversion of surface water? YES NO _____
Receiving stream for surface drainage from site Bowling Green Creek
9. Will this site require extensive preparation, such as clearing? YES _____ NO
(Elaborate in Comments Section)
10. Will this site require a new all-weather access road? YES NO _____
(Elaborate in Comments Section)
11. Evaluate the following:

	<u>POOR</u>	<u>GOOD</u>	<u>EXCELLENT</u>
A. Surface soil conditions as related to cover requirements.	_____	<input checked="" type="checkbox"/>	_____
B. Location as related to population density	_____	<input checked="" type="checkbox"/>	_____
C. Accessibility to users	_____	<input checked="" type="checkbox"/>	_____
12. Based on the observations made above and otherwise, do you recommend that the requestor proceed with the requirements of Section IX of the North Carolina State Board of Health "Rules and Regulations Providing Standards for Solid Waste Disposal"? YES NO _____
13. COMMENTS: (Include any requirements noted by you for the sanitary landfill development and operation) This land is adjacent to the south part landfill & appears similar to the land now being used
14. Number of borings recommended for a representative sampling of the site 5-10
15. Percent of usable land 100. Include sketch of site on back of this form.

Feb 12 1975
(DATE)

[Signature]
N. C. State Board of Health
District Sanitarian for Solid Waste
or
Sanitary Engineer

[Handwritten marks]

NORTH CAROLINA
STATE BOARD OF HEALTH
REGIONAL OFFICE
GREENVILLE

Brunswick
ERN

Wsy
Info
WJ

January 9, 1975

Mr. Neil Mallory
Manager
Brunswick County Board of Commissioners
Hood Building
Southport, North Carolina 28461

RE: Brunswick County Water System
Phase I

Dear Mr. Mallory:

Reference is made to our discussion of January 3, 1975 regarding the location of the water supply wells for Phase I of the Brunswick County Water System in the vicinity of the Sanitary Landfill presently being operated by Brunswick County.

This office has submitted previous correspondence to you approving the locations of the proposed wells. After a thorough investigation of this situation, which included consultation with the Ground Water Division of the Department of Natural and Economic Resources and the U. S. Geological Survey, it was the opinion of this office that the landfill would have no significant effect on the water quality in the nearby wells provided that the wells be located at least 900 feet from any portion of the Brunswick County sanitary landfill. Our approvals were issued with that stipulation and the potential for expansion of the existing landfill in the same area was considered in issuing the well site approvals. In reviewing the map which you presented to me showing the proposed area for expansion of the existing landfill, we feel that expansion of the landfill into this area would have no significant effect on the nearby water supply wells provided that the wells be kept at least 900 feet from any portion of the landfill. The map indicates that this distance requirement will not be violated.

Your interest and cooperation in this matter is appreciated. If you have any questions concerning this matter or if we can be

Mr. Neil Mallory
Page 2
January 9, 1975

of further assistance, please do not hesitate to contact us.

Very truly yours,

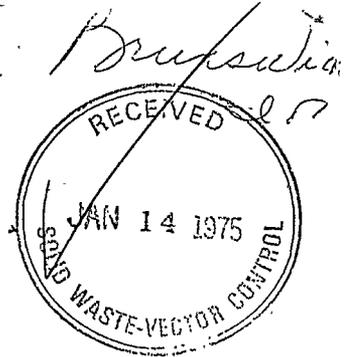
Michael P. Bell

Michael P. Bell, P.E.
Regional Engineer
Water Supply Branch
Sanitary Engineering Section

dlb

cc: Peirson and Whitman, Inc.
Brunswick County Health Department
Mr. W. J. Stevenson

NORTH CAROLINA
STATE BOARD OF HEALTH
REGIONAL OFFICE
GREENVILLE



January 13, 1975

Mr. Neil Mallory
County Manager
Brunswick County
P. O. Box 876
Southport, NC 28461

RE: The Brunswick County Landfill
Near Southport

Dear Mr. Mallory:

As you are aware, the County Landfill near Southport, at the present rate of use, will be completely filled by mid or late summer. A decision will soon have to be made whether to acquire some of the adjacent land or move to a new location.

Since I was involved with Mr. Clemmons in acquiring the original site, I know how difficult it is to obtain suitable land in Brunswick County. Mr. Clemmons, who is well aware of the requirements for a sanitary landfill told me that he did not know of any site in the general area that the County could acquire that would meet state standards.

According to our records this landfill has been in operation almost three years. Closing out and moving to a new location will have several disadvantages. You may have to move several miles and this could increase the haul cost to the people who use the site. This would particularly hurt the municipalities if their haul mileage is increased. They are already hard pressed with increasing collection costs. Individuals who haul their own waste may start dumping along the roads and woodlands. It has been my experience in other parts of the state that when a landfill is closed, people tend to continue using it even with locked gates and closed signs.

If it is determined that this land is suitable for a sanitary landfill, I believe the county should make an effort to acquire it.

Mr. Neil Mallory
Page 2
January 13, 1975

If I can be of any assistance to you, please let me know.

Sincerely,



Fred J. Wood
Solid Waste & Vector Control Branch
Sanitary Engineering Section

bgb

cc: O. W. Strickland

December 30, 1974

Mr. Neil Mallory
County Manager, Brunswick County
P. O. Box 876
Southport, N. C. 28461

Dear Mr. Mallory:

Your letter of December 18, 1974, requesting an extension of the variance now granted Brunswick County in their solid waste management program has been received. JWR

This request has been discussed with Mr. Wood and others here in our office in Raleigh. Considering the excellent manner in which the program has been operated, this office does grant the request for the extension until July 1, 1975.

I would like to thank you and your new board for allowing Mr. Wood and me to discuss your solid waste program with you at your last meeting.

Sincerely,

O. W. Strickland, Supervisor
Solid Waste Management Unit
Solid Waste & Vector Control Branch
Sanitary Engineering Section

OWS/ct

cc: Each County Commissioner
Mr. Fred Wood
Mr. Edwin Clemmons
Mr. Richard Walker

BRUNSWICK COUNTY
OFFICE OF THE COUNTY MANAGER

P. O. Box 876
Southport, North Carolina 28461

Telephone: 457-6096
Area Code 919

Neil Mallory
County Manager



December 18, 1974

Mr. O. W. Strickland, Supervisor
Solid Waste Management Unit
Solid Waste & Vector Control Branch
Sanitary Engineering Section
P. O. Box 2091
Raleigh, North Carolina, 27602

Dear Mr. Strickland:

As you may recall, in your letter of April 29, 1974, your office approved the operation of the Brunswick County Landfills in accordance with Section XI of the Division of Health Services' Rules and Regulations with the exceptions of paragraphs E, F., G, and M. These exceptions were allowed until sixty days after the container program was implemented but not later than January 1, 1975. By this date it was understood that the County would close two of the existing five landfills and fully comply with all regulations of the Division of Health Services' Rules and Regulations except covering at the end of each work day and the covering of special waste as soon as it arrives at the disposal site.

To date, Brunswick County has initiated the container system. However, we do have a large amount of open trenching unused at the two landfills that would be closed. Due to this investment, Brunswick County hereby requests a six month extension of compliance with paragraphs E, F, G, and M of Section XI of the Division of Health Services' Rules and Regulations in order that the county may utilize the existing trenches.

On behalf of the County, I would like to thank you and Mr. Fred Wood for your assistance in the successful operation of Brunswick County's Solid Waste Management Program. Should additional information be necessary pertaining to our request, please let me know.

Sincerely yours,

Neil Mallory
Neil Mallory
County Manager

NM:cg

cc: County Commissioners
Mr. Fred Wood
Messrs. Edwin Clemmons and Richard Walker

JSP

BRUNSWICK COUNTY
OFFICE OF THE COUNTY MANAGER

P. O. Box 876
Southport, North Carolina 28461

Telephone: 457-6096
Area Code 919



Neil Mallory
County Manager

May 14, 1974

Mr. O. W. Strickland, Supervisor
Solid Waste Management Unit
Solid Waste & Vector Control Branch
Sanitary Engineering Section
State of N. C.
Division of Health Services
P. O. Box 2091
Raleigh, North Carolina, 27602

Dear Mr. Strickland:

The Brunswick County Board of Commissioners in formal session May 9, 1974 discussed your letter of April 29, 1974 pertaining to the county's solid waste program. Brunswick County will begin making the recommended changes in its solid waste program after implementing the container system.

Thank you for your assistance in this matter.

Sincerely yours,

Neil Mallory
Neil Mallory
County Manager

NM:cg

cc: County Commissioners

Mr. Edwin Clemmons
Sanitary Landfill Director

607

April 29, 1974

Mr. Neil Mallory
County Manager
P. O. Box 876
County of Brunswick
Southport, N. C. 28461

Dear Mr. Mallory:

With reference to your letter of March 15, 1974, and our conference in Wrightsville Beach on April 11, 1974, in regards to the Brunswick County solid waste management program, this office will consider the following program for the County.

J & R

The operation of three solid waste disposal sites, one in each of the following areas, Southport, Leland and Shallotte, to serve the total population of the County. The sites shall be operated in accordance with Section XI of the Division of Health Services Rules and Regulations with the exceptions of paragraphs E, F, G and M which will be covered under a variance as stated in Section XIV until sixty days after the container program has been implemented but not later than January 1, 1975. It is further understood that the variance in paragraph M does not relieve the responsibility of keeping a site manager on the site during the work day. A variance may also be extended after January 1, 1975, to the requirement of cover at the end of each work day and the covering of special waste as soon as it arrives at the disposal site. It is recommended that consideration be given to placing a piece of equipment at each site as soon as possible as the sites could then be operated in full compliance and would also be less expensive than providing site managers and moving one piece of equipment from site to site.

This office looks forward to working with Brunswick County in bringing their solid waste program into full compliance and wish to express appreciation of the fine cooperation we have received.

Mr. Neil Mallory
April 29, 1974
Page 2

If at any time we can be of assistance, please let us know.

Sincerely,

O. W. Strickland, Supervisor
Solid Waste Management Unit
Solid Waste & Vector Control Branch
Sanitary Engineering Section

OWS/ct
cc: Mr. Fred Wood
Each County Commissioner

BRUNSWICK COUNTY
OFFICE OF THE COUNTY MANAGER

P. O. Box 876
Southport, North Carolina 28461

Telephone: 457-6096
Area Code 919

Neil Mallory
County Manager



March 15, 1974

Mr. O. W. Strickland, Supervisor
Solid Waste Management Unit
Solid Waste & Vector Control Branch
Sanitary Engineering Section
P. O. Box 2091
Raleigh, North Carolina, 27602

Dear Mr. Strickland:

As you are well aware, Brunswick County has been operating a multiple landfill system (5 sites) for the past two years with the approval of your office. Brunswick County is knowledgeable of the Rules and Regulations Providing Standards for Solid Waste Disposal as prepared by the Sanitary Engineering Section that are to become effective July 1, 1974 and the county is striving to comply with them in their entirety.

During the past few months Brunswick County has taken steps to improve its Landfill System. These steps include putting a full-time attendant at two landfill sites plus two additional employees to supervise the remaining three sites on a rotating basis. Also, the County Commissioners in a special meeting, March 11, 1974 accepted a bid from Simpson Equipment Corporation to provide Brunswick County a refuse collection truck equipped with a front end loader and compactor body and 100 refuse collection containers to be placed throughout the county. Based on the delivery date, this equipment is to be in operation July 1, 1974. This will greatly help in getting more solid waste to the landfills for proper disposal.

Even with the above improvements, Brunswick County will not be able to fully comply with the operational requirements for sanitary landfills as adopted by your department. Therefore, Brunswick County is respectfully requesting a variance as provided in Section XIV to paragraphs E, F, G, and M of Section XI of the Rules and Regulations Providing Standards For Solid Waste Disposal until October 1, 1975. This request is based on the following:

- (1) In order for Brunswick County to fully comply with the above paragraphs of Section XI, it will be necessary to change our multiple system to a single

landfill for the county. With the present investment in the land of the multiple sites, it is not economically feasible to abandon the existing sites until all sites are fully used. We expect by October 1, 1975 these sites will be used to maximum capacity. Also changing to a single landfill system will place a burden on the municipalities in transporting their solid waste to the single site. A delay until October 1, 1975 will give the municipalities an opportunity to budget necessary changes in their system to transport their solid waste to the county's single landfill;

- (2) The recent improvements the county has made in its landfill system is an attempt to comply with the requirements of Section XI. These improvements include the adding of a full-time attendant at the two largest landfills, plus two additional employees to supervise the three remaining sites on a rotating basis; and
- (3) The purchase of a refuse collection truck and 100 refuse containers is a further step taken by the county to improve solid waste disposal for the residents of Brunswick County.

Based on the above, Brunswick County would certainly appreciate your favorable consideration for a variance and we will be glad to provide additional information should you desire.

Sincerely yours,

Neil Mallory
Neil Mallory
County Manager

NM:cg

cc: County Commissioners

15.00

$$\begin{array}{r}
 2600 \\
 15 \\
 \hline
 13000 \\
 2600 \\
 \hline
 39000
 \end{array}$$

(2600)

$$\begin{array}{r}
 / \\
 5
 \end{array}$$

5600

7200

$$\begin{array}{r}
 5600 \\
 5600 \\
 5600 \\
 \hline
 16800 \\
 7200 \\
 \hline
 24000
 \end{array}$$

$$\begin{array}{r}
 7200 \\
 3 \\
 \hline
 21600
 \end{array}$$

(32) 5.3.5

Brunswick
L+R

July 5, 1974

Mayor Beamon Hewitt
P. O. Box 27
Shalotte, N. C. 28459

Dear Mayor Hewitt:

Mr. Fred Wood, District Sanitarian, and I have discussed your solid waste collection program in Shalotte. Mr. Wood made a study of your present program a few weeks ago. The Town of Shalotte has more commercial waste than most towns of this size but we are not surprised considering the location.

Mr. Wood and I would recommend for you and your Board's consideration the following program and equipment.

One (1) eighteen Cu. Yd. rear or side loader compactor truck to be used for total collections. Require business establishments to purchase adequate containers for on-site storage. A requirement that all boxes be broken down before placing in the container would reduce the on-site storage volume needs.

The Town to provide twice per week household pick-ups; with 200 homes, this would be 400 pick-ups per week. Provide five times per week pick-ups at the 94 businesses and that would be 470 pick-ups or a total of 870 pick-ups per week.

Two men using the above recommended truck would need to make 174 pick-ups per day, five days per week, to serve the Town. This is less than half the number of pick-ups that are assigned to the average collection truck in North Carolina.

If this office can be of further assistance or if there are questions, please let us know.

Sincerely,

O. W. Strickland, Supervisor
Solid Waste Management Unit
Solid Waste & Vector Control Branch
Sanitary Engineering Section

OWS/cc
cc: Mr. Fred Wood



Send report to Mr. Beamon ~~the~~ Hewette Mayor of Shalotte

Shalotte populot. on 1970 597

200 Homes

94 Business

A planned annexation would increase this by approximately 20%.

Commercial Waste Volume per Week

Six trailers 18x5x6 located behind business 25 load per week =
500 Cu. yds

1 open truck 12x7.5x4 Six loads per week =
78 Cu yds

Total 578 yds per Week.

Much of this business waste is cardboard boxes not broken down.

Homes 200. 597 people x 2 lbs per day
398 Cu yds per week

Total per week 976 Cu. yds loose waste per week.

This is hard to believe but they told me that 26 Man days per week is spent on collection

I would recommend the town buy a 18yd rear or side loader truck and require the business establishments to purchase adequate containers volume. They would have break down their boxes.

BRUNSWICK COUNTY
OFFICE OF THE COUNTY MANAGER
SOUTHPORT, NORTH CAROLINA 28461



December 5, 1973

Neil Mallory
~~JERRY K. DEWEE~~
COUNTY MANAGER

Mr. O. W. Strickland, Supervisor
Solid Waste Management Unit
Solid Waste & Vector Control Branch
Sanitary Engineering Section
P. O. Box 2091
Raleigh, North Carolina, 27602

Dear Mr. Strickland:

The following is submitted in reference to your request of November 26, 1973 as to the progress being made by Brunswick County in updating its solid waste program.

- elw*
- (1) Bids were opened November 5, 1973 by the Board of Commissioners for a refuse truck equipped with a front end loader and a refuse collection body and for 100 refuse containers to be placed throughout the unincorporated areas of the county.
 - (2) On November 19, 1973, the Chairman of the Board of Commissioners appointed a committee consisting of two Commissioners, the County Attorney, the Sanitary Landfill Director, and myself to review the bids and to submit a recommendation to the Board of Commissioners December 17, 1973.
 - (3) On November 27, 1973, this committee met individually with all vendors submitting a bid to discuss their bid and equipment in detail. This committee also plans a field trip in nearby counties December 11, 1973 to observe similar equipment in operation.
 - (4) The Sanitary Landfill Director has been reviewing potential sites for the landfill with the Soil Conservation Service and has a meeting scheduled with Mr. Terry Dover of your office December 10, 1973 in connection with same.

Should additional information be desired, please let me know.

Sincerely yours,

Neil Mallory
Neil Mallory
County Manager

NM:cg

cc: County Commissioners

November 26, 1973

Mr. Neil Mallory
Manager
County of Brunswick
Southport, N. C.

Dear Mr. Mallory:

In reviewing my records I do not find any recent report on the status of the Brunswick County solid waste program.

It is requested that this office be informed as to the progress being made in updating your program so that it will meet the requirements by July 1, 1974.

If this office can be of assistance, please let me know.

Very truly yours,

O. W. Strickland, Supervisor
Solid Waste Management Unit
Solid Waste & Vector Control Branch
Sanitary Engineering Section

OWS/ct

cc: Mr. Terry Dover

December 21, 1978

Mr. Gerald Kraynak
3143 Wrightsville Avenue
Wilmington, North Carolina 28401

Dear Mr. Kraynak:

The Brunswick County Landfill Plans are enclosed for your review and comments. Since we currently have a 30 to 45-day review process, we are requesting the following:

1. ^{SW & VC} Return comments within twenty-one (21) days. If no verbal or written communication is received within twenty-one (21) days, we will assume there are no objections.
2. If there are major objections or questions, please call me. I would be glad to meet with you on site, or discuss by telephone, any questions or problems.
3. Please return plans with comments.

Sincerely,

Williams L. Meyer,
Environmental Engineer
Solid Waste & Vector Control Branch
Sanitary Engineering Section

WLM/wss

Enclosure

May 15, 1978

Mr. Cray Milligan
County Manager
Brunswick County
Box 876 *JTK*
127 East Moore Street
Southport, North Carolina 28461

Dear Mr. Milligan:

Mr. Fred J. Wood, District Sanitarian, has discussed with me the possibility of your opening another landfill in Brunswick County. We feel that it is best to operate the smallest number of sites that can possibly provide service to the County, but we are not against the locating of an additional site if you and your board feel that it is needed.

Please feel free to work with Mr. Wood in locating a site. He will inform you of the necessary procedure for approval.

Sincerely,

O. W. Strickland, Supervisor
Solid Waste Management Unit
Solid Waste & Vector Control Branch
Sanitary Engineering Section

OWS/wss

cc: Mr. Fred J. Wood

41
Inactive

N. C. STATE BOARD OF HEALTH
CHECK-OFF SHEET FOR PROPOSED SANITARY LANDFILL SITES

COUNTY Brunswick Co. LOCATION Grissetown Section Hwy 904 ACRES 5
 PROPERTY OWNER International Paper Co PROPOSED OPERATOR Brunswick

1. Is this site within the boundaries of a public water supply watershed? Watershed Calabash River YES _____ NO
2. Does any portion of this site contain floodplain areas? YES _____ NO
3. Are there public or private wells nearby that could be affected? YES _____ NO
 Nearest well in feet 500 (Elaborate in Comments Section)
4. Are there springs present on the site? Number _____ YES _____ NO
5. Will this site require dyking? YES _____ NO
6. Will this site require piping of surface drainage? YES _____ NO
7. Not precluding required boring information, does this site have adequate cover material for the sanitary landfill development? YES NO _____
8. Will this site require diversion of surface water? YES _____ NO
 Receiving stream for surface drainage from site Calabash River
9. Will this site require extensive preparation, such as clearing? YES NO _____
 (Elaborate in Comments Section)
10. Will this site require a new all-weather access road? YES NO _____
 (Elaborate in Comments Section)
11. Evaluate the following:

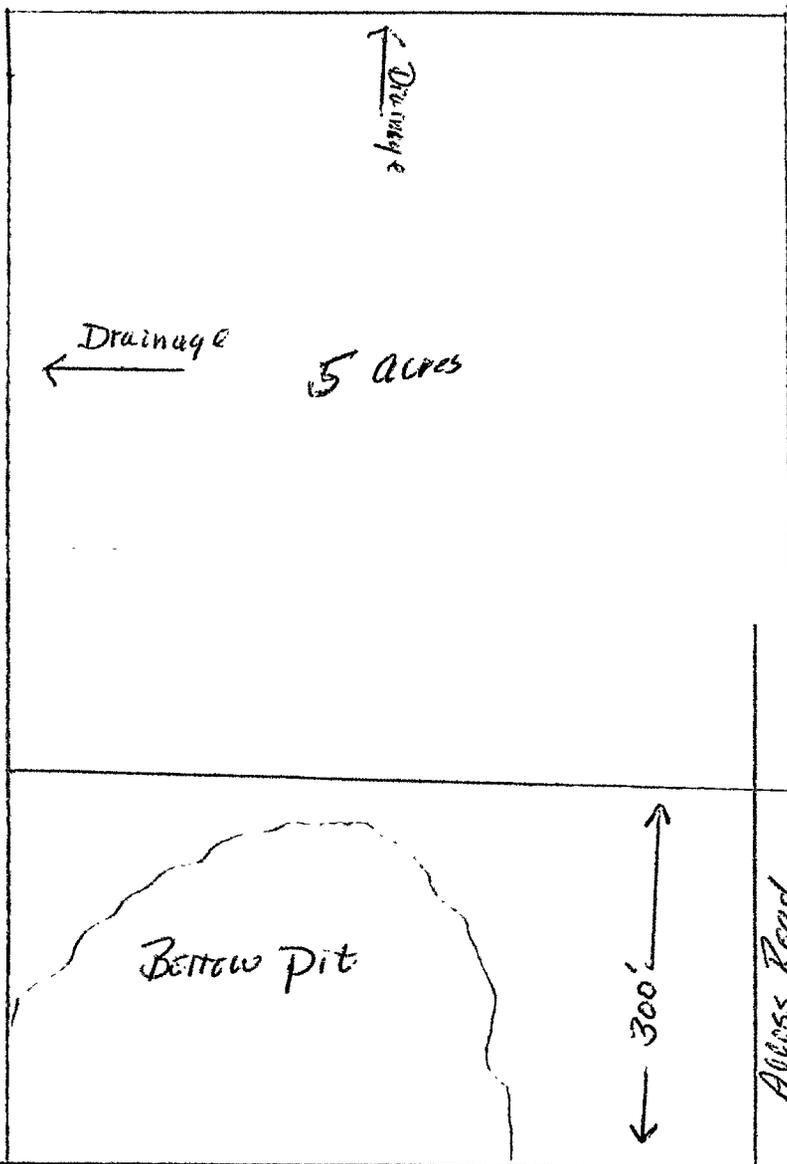
	POOR	GOOD	EXCELLENT
A. Surface soil conditions as related to cover requirements.	_____	<input checked="" type="checkbox"/>	_____
B. Location as related to population density	_____	<input checked="" type="checkbox"/>	_____
C. Accessibility to users	_____	<input checked="" type="checkbox"/>	_____
12. Based on the observations made above and otherwise, do you recommend that the requestor proceed with the requirements of Section IX of the North Carolina State Board of Health "Rules and Regulations Providing Standards for Solid Waste Disposal"? YES NO _____
13. COMMENTS: (Include any requirements noted by you for the sanitary landfill development and operation) 3 Drainage will be away from private water supply (500')
9. Paper Co. will cut timber 10-5.H.R will construct access road.
14. Number of borings recommended for a representative sampling of the site 3
15. Percent of usable land 100%. Include sketch of site on back of this form.

Feb 9 1972
(DATE)

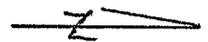
Ind. [Signature]
 N. C. State Board of Health
 District Sanitarian for Solid Waste
 or
 Sanitary Engineer

Low area

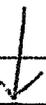
Low area - No Surface Stream



The first 300' is to be used as a buffer zone and will not be filled



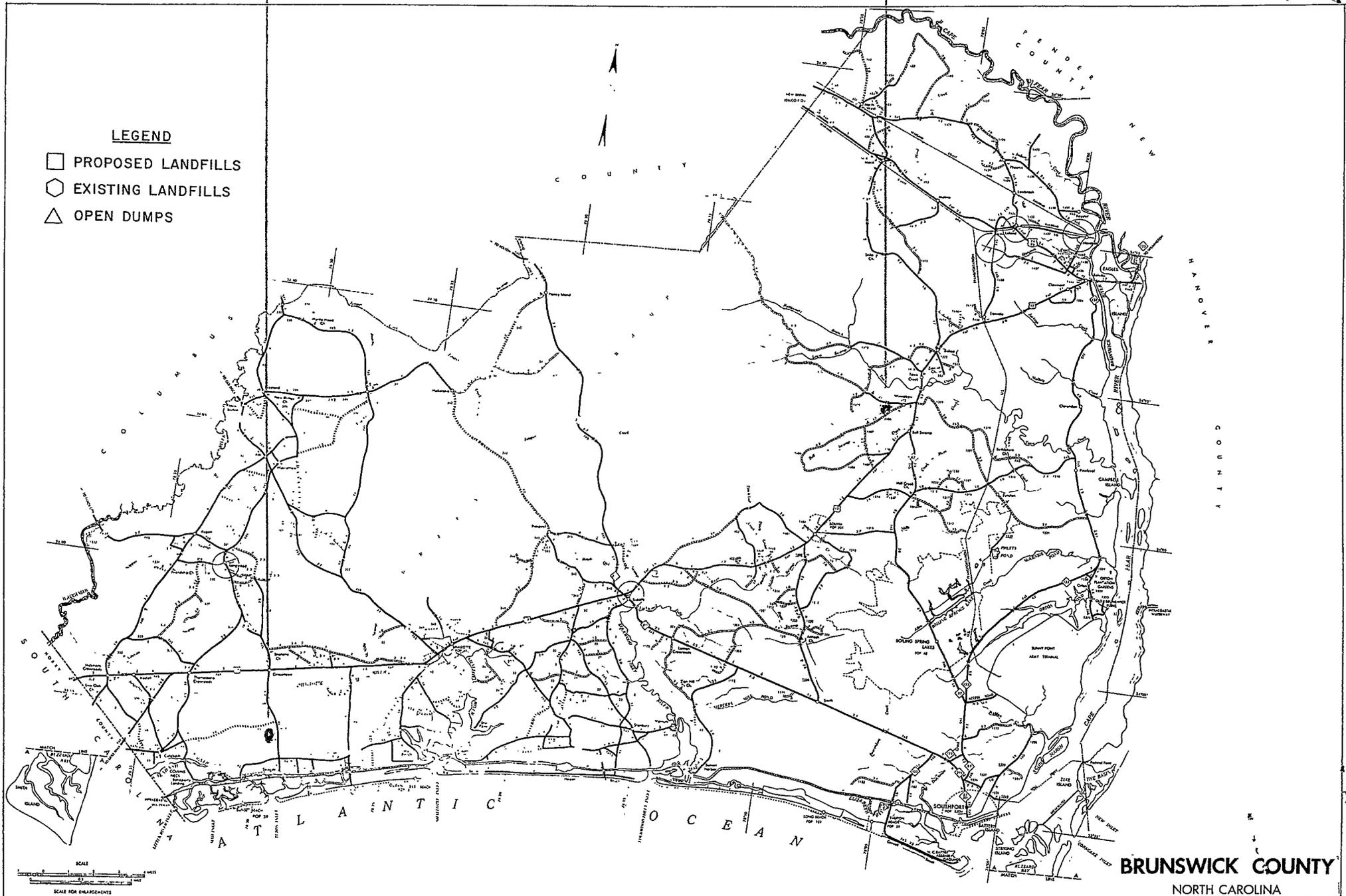
House



Hwy 904

Grissetown Site

Winnabow Site



May 14, 1971

Mr. W. A. Kopp, Chairman
Brunswick County Commissioners
Southport, North Carolina 28461

Re: Proposed Solid Waste Disposal Plan
for Brunswick County

Dear Mr. Kopp:

The Solid Waste Disposal Plan for Brunswick County as presented to this agency at a meeting on May 5, 1971, is approved on a provisional basis. The provisional approval for a multiple site program is provided on the basis of our understanding that solid waste deposited at each of the sites proposed will be covered every other day. All other requirements of the "Rules and Regulations Providing Standards for Solid Waste Disposal" must be adhered to in this program.

After further analysis of the proposed plan, it is the opinion of this agency that the operational cost estimate is too low and could create operational and fiscal problems as the program develops.

Very truly yours,

Sidney H. Usry, Chief
Solid Waste & Vector Control Section
Sanitary Engineering Division

SHU:bm

November 7, 1972

MEMORANDUM

TO: Mr. Terry F. Dover

FROM: Jerry C. Perkins

As per our conversation on November 6, 1972, the following items need to be discussed on site with Dupont officials in Brunswick County.

1. The boring locations on the topography map. *elr*
2. Adequacy of cross sectional drawings.
3. An overall site view by aerial photo or other appropriate means.

Your working copy of the submitted proposal is enclosed.

JCP:clf

July 24, 1972

Mr. Edwin S. Clemmons
Sanitary Landfill Director
Brunswick County
Office of the County Manager
Southport, North Carolina 28461

SHU
Dear Mr. Clemmons:

In reply to your request of July 18, 1972, the modification of the original sanitary landfill plan will be acceptable to this agency. The use of the utility trailers would appear to be a satisfactory solution to the problem that has been created in the northwest section of the county.

This modification is accepted as part of the original plan which was made provisional regarding the period of time that the multiple-site program could be in operation. It is still expected that the county-wide program will progress toward being in full compliance as specified in the original application.

Very truly yours,

Sidney H. Usry, Chief
Solid Waste & Vector Control Section
Sanitary Engineering Division

SHU:bm
cc: Mr. Terry F. Dover

BRUNSWICK COUNTY
OFFICE OF THE COUNTY MANAGER
SOUTHPORT, NORTH CAROLINA 28461

JERRY D. LEWIS
COUNTY MANAGER

July 18, 1972

TELEPHONE: 457-6096
AREA CODE 919

Mr. O. W. Strickland
N. C. Department of Health
Raleigh, North Carolina

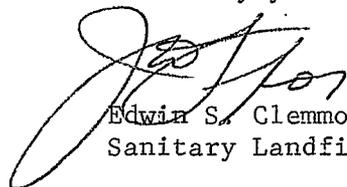
Dear Mr. Strickland:

This is to confirm our telephone conversation of July 17, 1972, concerning the modifications of the approved sanitary landfill plan for Brunswick County, North Carolina. The original plan approved by the North Carolina State Board of Health called for six sanitary landfill sites and was prepared by the North Carolina Department of Local Affairs. At the present time, we have five of these sites in operation and we are extremely proud of the utilization of these landfills by the citizens of Brunswick County, and, needless to say, it has been a tremendous help in alleviating the solid waste disposal problems which we have had in Brunswick County.

We have encountered problems, however, in locating a suitable site for the landfill to be located in the northwest part of the county due to a high water table in this area and, as discussed in our telephone conversation, we would like to modify this plan to utilize five sanitary landfill sites and to locate utility trailers in the northwest section of our county, which will be emptied daily into an approved site so that we can serve all of the citizens of this county. We feel that this is a step in the right direction when related to the problems of solid waste disposal in Brunswick County and we, therefore, request your approval of this modification to the original sanitary landfill plan. Needless to say, these trailer sites will be operated and maintained in accordance with your requirements.

Should you have any additional questions, please do not hesitate to call me.

Sincerely yours,



Edwin S. Clemmons
Sanitary Landfill Director

ESC:ew

RECEIVED

JUL 21 1972

SANITARY ENGINEERING
DIVISION

Brunswick
JHK

March 30, 1972

Mrs. Robert E. Latham
345 Palomar Street
Fayetteville, North Carolina 28304

Dear Mrs. Latham:

Your letter to Governor Scott regarding the litter problem on Ocean Isle Beach has been referred to this office for reply. I regret that there are no specific regulations regarding the disposal of trash or litter from pier operations and am sure that this creates a problem along the beach area. I suggest that you contact the officials of Ocean Isle Beach and request that they require the pier operators to provide receptacles for the disposal of wastes generated on the pier. These receptacles should be emptied on a regular basis in order to adequately solve the problem.

If this office can provide you with additional information or assistance, I shall appreciate hearing from you.

Very truly yours,

Sidney H. Usry, Chief
Solid Waste & Vector Control Section
Sanitary Engineering Division

SHU:bm
cc: Mr. Weldon Denny

From

GOVERNOR SCOTT'S OFFICE

To Dept. of Health & Cos. Date: 3-23-72
Sanitary Engineering Div.

PLEASE: Board of Health.

- Draft a reply for the Governor's signature.
- Reply, noting the letter was referred to you by the Governor.
- Phone me at your convenience.
- For your information.
- Investigate.
- Sign.
- Approve.

AND:

- Return the attached material.
- For your files.

REMARKS:

Harpe
Wells

RECEIVED

RECEIVED

MAR 27 1972

MAR 27 1972

N. C. Dept. of Water & Air Resources
Raleigh, N. C.

SANITARY ENGINEERING
DIVISION

Wsa
WD
March 17-1972

Dear Governor Scott

I would like to know if any-
thing can be done about the litter
that is piled up on the Ocean
Isle Beach. Last summer
during swimming season it was
bad, but since fishing season
opened last Oct it had gotten worse.
Fishermen throw paper cups cans
and bottles from the pier and it all
returns to the beach. The police
patrol the beach, but do not seem
to care about the litter.

I hope you can do something
about this appalling condition.

RECEIVED

MAR 21 1972

GOVERNOR'S
OFFICE

Yours truly
Mrs. Robert E. Latham
345 Palomar St.
Fayetteville, NC

28304

BRUNSWICK COUNTY
OFFICE OF THE COUNTY MANAGER
SOUTHPORT, NORTH CAROLINA 28461

JERRY D. LEWIS
COUNTY MANAGER

TELEPHONE: 457-6096
AREA CODE 919

October 19, 1971

Mr. Sid Usry, Chief
Solid Waste & Vector Control Section
State Board of Health
P. O. Box 2091
Raleigh, North Carolina, 27602

Dear Mr. Usry:

As you know, we are in the process of implementing a sanitary landfill program in Brunswick County, and to this extent, we have been investigating various sites to determine their suitability for this use. Mr. Fred Wood of your organization has been extremely helpful to us in determining the suitability of different sites for use as sanitary landfills.

With Mr. Woods' assistance, we have selected the first site in this program and attached, for your information, is a Brunswick County map indicating the geographical location of this site together with aerial photographs indicating the locations of the various residences (all of which have individual well water sources) industrial buildings, and water courses in the immediate area. Also, attached is a geological formation study conducted by the Soil Conservation Service. It is our intention to dig open trenches on this landfill site and to use the spoil from these trenches as cover material in accordance with your regulations. We anticipate that this site, a copy of the plot plan attached, will serve approximately 5,000 people and will be used for the disposal of solid waste from primarily rural residents together with some industrial and commercial usage. The attached plot plan also indicates our method of ingress and egress and the anticipated land utilization which will, when completely utilized, consist from two to three feet of cover material and reset with pine trees. We anticipate using a front end loader for site maintenance and a tractor and low boy trailer for movement of this equipment. Mr. Edwin S. Clemmons, of Supply, North Carolina is currently responsible for the acquisition, implementation, and operation of these sites, and I might add, Mr. Clemmons through his previous years of experience working with various woodland organizations in Brunswick County, is extremely knowledgeable of the types of soils and conditions in Brunswick County. It is the intent that this site would be reforested upon complete utilization of the land and it is anticipated that this site will serve the intended area for approximately ten years.

(continued)

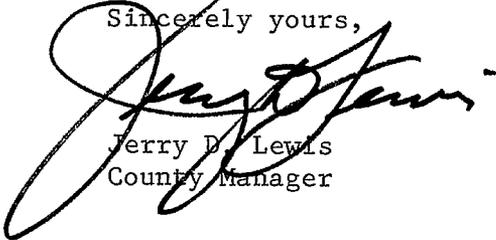
Mr. Sid Usry -- October 19, 1971

Page II

Based on the above information together with the attached documents, we, therefore, request your approval of this sanitary landfill site.

Should you have additional questions, please do not hesitate to call us.

Sincerely yours,

A large, stylized handwritten signature in black ink, appearing to read "Jerry D. Lewis".

Jerry D. Lewis
County Manager

JDL:cg

Enc:

file

Brunswick
MP

STATE OF NORTH CAROLINA
DEPARTMENT OF WATER AND AIR RESOURCES

ROBERT W. SCOTT
GOVERNOR

S. VERNON STEVENS, JR.
CHAIRMAN

P. D. DAVIS
J. NELSON GIBSON, JR.
WAYNE MABRY
HUGH L. MERRITT
LEE L. POWERS
J. AARON PREVOST
W. GRADY STEVENS



P. GREER JOHNSON
VICE-CHAIRMAN

RAYMOND S. TALTON
JOSEPH E. THOMAS
GLENN M. TUCKER
H. W. WHITLEY

GEORGE E. PICKETT, DIRECTOR
TELEPHONE 829-3003
E. C. HUBBARD, ASST. DIRECTOR
TELEPHONE 829-3006
RALEIGH, N. C. 27611
P. O. Box 27048

In Reply, Refer To:
WQ71TFA

May 6, 1971

RECEIVED

MAY 11 1971

TO: Mr. Randolph Hendricks
Planning Coordinator
State Planning Division
Department of Administration
Raleigh, North Carolina

SANITARY ENGINEERING
DIVISION

FROM: Mr. D. L. Coburn, Chief *D.L.C.*
Water Quality Division
Department of Water and Air Resources

SUBJECT: Clearinghouse Notification No. 71-0530

Subject notification has to do with proposed solid waste facilities for Brunswick County.

The North Carolina State Board of Health has primary jurisdiction in connection with approval of solid waste facilities and this Department has no comment on these facilities at this time.

cc: Mr. T. F. Armstrong
Mr. Joe L. Hudson
Mr. Marshall Staton ✓
Mr. C. R. Smart, Jr.

[Handwritten mark]

May 18, 1971

Mr. Randolph Hendricks
Planning Coordinator
State Planning Division
Department of Administration
Raleigh, North Carolina

Re: CH 71-0530
Solid Waste Disposal System
Brunswick County

Dear Mr. Hendricks:

MR

This application describes a proposed project to establish a county-wide solid waste disposal system in Brunswick County.

The plan for this proposed project was developed for Brunswick County by an agency other than the State Board of Health. Enclosed is a copy of our letter of May 14, 1971 to Mr. H. A. Popp, Chairman, Brunswick County Commissioners, in which the plan was approved by the State Board of Health on a provisional basis. You will note from this letter that in our opinion the estimated total project cost shown in the application is too low.

The delay in providing you with comments on this application was occasioned by the necessity for our staff to meet with representatives of Brunswick County to discuss the proposed project.

Very truly yours,

Marshall Stetson
Marshall Stetson, Director
Sanitary Engineering Division

cc: Mr. Gene Barnett
Mr. Fred Wood
Mr. Sidney Hary

Enclosure

JDF/b1

Copy sent to R. Hendricks
5-19-71

JACOB KOOMEN, M.D., M.P.H.
STATE HEALTH DIRECTOR
AND SECRETARY-TREASURER



W. BURNS JONES, JR., M.D., M.P.H.
ASSISTANT STATE HEALTH DIRECTOR

James S. Raper, M.D.
President
Asheville

Lenox D. Baker, M.D.
Vice-President
Durham

Charles T. Barker, D.D.S.
New Bern

Ben W. Dawsey, D.V.M.
Gastonia

NORTH CAROLINA

STATE BOARD OF HEALTH

P. O. BOX 2091
RALEIGH, NORTH CAROLINA 27602

May 14, 1971

Joseph S. Hunt, Jr., M.D.
Southern Pines

J. M. Larky
Hickory

Paul L. Morris, M.D.
Burlington

Ernest A. Randleman, Jr., B.S.Ph.
Mount Airy

Jesse H. Meredith, M.D.
Winston-Salem

Mr. W. A. Kopp, Chairman
Brunswick County Commissioners
Southport, North Carolina 28461

Re: Proposed Solid Waste Disposal Plan
for Brunswick County

Dear Mr. Kopp:

The Solid Waste Disposal Plan for Brunswick County as presented to this agency at a meeting on May 5, 1971, is approved on a provisional basis. The provisional approval for a multiple site program is provided on the basis of our understanding that solid waste deposited at each of the sites proposed will be covered every other day. All other requirements of the "Rules and Regulations Providing Standards for Solid Waste Disposal" must be adhered to in this program.

After further analysis of the proposed plan, it is the opinion of this agency that the operational cost estimate is too low and could create operational and fiscal problems as the program develops.

Very truly yours,

Sidney H. Usry, Chief
Solid Waste & Vector Control Section
Sanitary Engineering Division

DEPARTMENT OF ADMINISTRATION
State Planning Division
Clearinghouse and Information Center
Raleigh, North Carolina 27603

Mr. Franklin
RECEIVED

NOTIFICATION REFERRAL

MAY 3 1971

ACTION REQUESTED

TO: Name Mr. B. Gene Barrett, Planning Officer **SANITARY ENGINEERING**
Agency State Board of Health **DIVISION**

Re: Clearinghouse Notification No. 71-0530

The attached Notification to Clearinghouse of Intent to Apply for Assistance is referred to you for review and comment in accordance with Project Notification and Review System procedures established under Bureau of the Budget Circular No. A-95.

RESPONSE REQUESTED BY May 12, 1971

In each response, please refer to the Clearinghouse Notification No. shown above. If your agency does not wish to submit written comments, you may respond by telephone.

It is recommended that you contact the applicant directly if your agency needs additional information on the proposed application, or if there are any questions which may be resolved in this way.

Please reply to: Clearinghouse and Information Center
116 West Jones Street
Telephone 829-4375

[Handwritten mark]
CIC Form # 2
1/71

10.418

<p align="center">APPLICATION</p> <p align="center">FEDERAL ASSISTANCE FOR PUBLIC WORKS AND FACILITY TYPE PROJECTS</p> <p><i>(Please read the Instructions before completing this application. Submit application in original and one copy. Attach additional sheets if necessary.)</i></p>	DO NOT WRITE IN THIS AREA - FOR GOVERNMENT USE ONLY			
	IA NO.		REFERRAL	
	AGENCY	DATE RECEIVED	DATE REFERRED	TO
AGENCIES ASSUMING JURISDICTION				
AGENCY	DATE	PROJECT COMPONENT	PROJECT NO.	

1A. APPLICANT (Exact legal name or proposed name if not incorporated)

Brunswick County North Carolina 28461
 CITY OR TOWN (County) (State) (Zip code)

Southport

1B. TYPE OF ORGANIZATION (Check appropriate box)

STATE GOV. AGENCY LOCAL GOV. UNIT NON-PROFIT ORGANIZATION OTHER (Specify)

2. LOCALITIES TO BE SERVED

CITIES, TOWNS, OR AREAS <i>(List separately)</i>	COUNTY	POPULATION		
		1960	CURRENT (Est.)	TO BE SERVED BY PROJECT
Brunswick County		20,278	24,700	24,700

3. DESCRIPTION AND PURPOSE OF PROPOSED PROJECT

A. DESCRIPTION

The purpose of this project is to establish six (6) Sanitary Landfills and associated operating equipment in Brunswick County.

B. PUBLIC INTEREST AND NECESSITY

This project is necessary to provide proper refuse disposal areas and techniques to alleviate present sub-standard methods of disposal and associated severe health problems.

C. PLANNING AGENCY (County, Multi-county, Regional, etc.)

REVIEWED BY PLANNING AGENCY (Attach comments) NOT REVIEWED BY PLANNING AGENCY (If not, explain)

4. METHOD OF FINANCING (In thousands of dollars)

SOURCE OF FUNDS	COMPONENTS				TOTAL (5)
	WASTE		WATER (3)	OTHER (Describe in G. below) (4)	
	TREATMENT (1)	COLLECTION (2)			
A. FEDERAL GRANT REQUESTED	\$	\$	\$	\$ 33,000	\$ 33,000
B. FEDERAL LOAN REQUESTED					
C. OTHER FEDERAL CONTRIBUTION				22,000	22,000
D. STATE CONTRIBUTION				-0-	-0-
E. APPLICANT CONTRIBUTION				-0-	-0-
F. ESTIMATED TOTAL PROJECT COST	\$	\$	\$	11,000 \$ 66,000	11,000 \$ 66,000

G. Sanitary Landfills

5. OTHER FEDERAL ASSISTANCE - PREVIOUS OR PENDING

NAME OF AGENCY	TYPE OF ASSISTANCE	INDEBTEDNESS OUTSTANDING, IF ANY	AMOUNT REQUESTED
None			

The applicant represents that the data in this application are true and correct to the best of his knowledge and belief and that the filing of this application has been duly authorized by the governing body of the applicant.

EXACT LEGAL (Corporate) NAME OF APPLICANT (If unincorporated, enter proposed name)

Brunswick County, North Carolina

ATTEST (Signature of attesting officer)

Jerry D. Lewis

TITLE Jerry D. Lewis

Clerk to Board

BY (Signature of authorized officer)

W. A. Kopp, Jr.

TITLE W. A. Kopp, Jr.

Chairman, Board of County Commissioners

NOTE: Additional Information May Be Requested To Support This Application.

(DO NOT WRITE IN THIS SPACE - FOR GOVERNMENT USE ONLY)

RECEIVED
APR 22 1974

BRUNSWICK COUNTY
OFFICE OF THE COUNTY MANAGER
SOUTHPORT, NORTH CAROLINA 28461

JERRY D. LEWIS
COUNTY MANAGER

TELEPHONE: 457-6096
AREA CODE 919

April 21, 1971

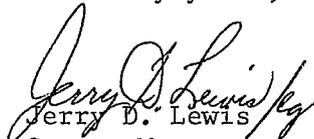
Mr. Sidney H. Usry, Director
Solid Waste & Vector Control Division
North Carolina State Board of Health
Raleigh, North Carolina

Dear Mr. Usry:

I have been instructed by the Brunswick County Board of Commissioners to request an appointment for a delegation composed of Brunswick County officials to present for your consideration and approval a Solid Waste Disposal Program for Brunswick County which was prepared by the Division of Community Planning, Local Affairs Committee in Fayetteville, N. C.

I would appreciate your consideration of this request at your earliest possible convenience.

Sincerely yours,


Jerry D. Lewis
County Manager

JDL:cg

cc: Mr. W. A. Kopp, Jr., Chairman
Mr. J. T. Clemmons
Mr. Robert Simmons
Mr. John Bray
Mr. Vardell Hughes

RECEIVED

APR 23 1971

SANITARY ENGINEERING
DIVISION

*Meeting planned for May 3, 1971
at 10:30 a.m. by 22 22 22*

Spilberg -

Brunswick
J+R

September 14, 1970

Mr. Paul G. Butler, Jr.
Community Planner
Eastern Area Office
N. C. State Department of Local Affairs
2904 Fort Bragg Road
Fayetteville, North Carolina 28303

Dear Mr. Butler:

Through an error on my part, I gave you the date of October 21, 1970, for the meeting with the Brunswick County Commissioners. This meeting is scheduled for September 21, 1970, at 2:00 P.M.

Very truly yours,

Sidney H. Usry, Chief
Solid Waste & Vector Control Section
Sanitary Engineering Division

SHU:bm

September 11, 1970

Mr. Paul G. Butler, Jr.
Community Planner
Eastern Area Office
N. C. State Department of Local Affairs
2904 Fort Bragg Road
Fayetteville, North Carolina 28303

Dear Mr. Butler:

The scheduled meeting with the Brunswick County Commissioners for the purpose of discussing a solid waste program will be held at 2:00 P.M., October 21, 1970. It is our understanding that this meeting will be held in the conference room that is utilized by the County Commissioners.

Very truly yours,

Sidney H. Usry, Chief
Solid Waste & Vector Control Section
Sanitary Engineering Division

SHU:bm



STATE OF NORTH CAROLINA
DEPARTMENT OF LOCAL AFFAIRS

G. IRVIN ALDRIDGE
DIRECTOR

RALEIGH 27602

GEORGE J. MONAGHAN
ADMINISTRATOR
COMMUNITY PLANNING

Eastern Area Office, 2904 Fort Bragg Road, Fayetteville 28303

September 3, 1970

21.
Paul G. Butler

Mr. Sidney Usry, Chief
Sanitary Engineering Division
North Carolina State Health Department
P. O. Box 2091
Raleigh, North Carolina

Dear Mr. Usry:

It is my understanding that your office is conducting a survey and study which could lead to a solid-waste disposal program in Brunswick County. This office could render assistance in initiating this project by classifying it as an Action Assistance Program under the present planning contract we have with the County.

I would like to discuss project implementation in more detail with you. I will be in Raleigh September the 8th and 9th and will call your office to determine a convenient time for us to discuss this subject further. I look forward to seeing you at that time.

Sincerely yours,

A handwritten signature in cursive script that reads "Paul G. Butler, Jr.".

Paul G. Butler, Jr.
Community Planner
Eastern Area Office

PGB:vk

RECEIVED

SEP 3 1970

SANITARY ENGINEERING
DIVISION

COMMUNITY SOLID WASTE PRACTICES
COMMUNITY DESCRIPTION REPORT

1. STATE NC 2. COUNTY Brunswick 3. COMMUNITY Southeast

4 5 6 7 8 9 10 11 12

0 1

4. DOES THE COMMUNITY OPERATE OR EXERCISE JURISDICTION OVER ALL OR ANY PART OF A SOLID WASTE COLLECTION OR DISPOSAL SYSTEM? (Check appropriate categories)

OPERATE	<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO	DISPOSAL	<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO
EXERCISE JURISDICTION	<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO		<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO

5. IF THE COMMUNITY IS A COUNTY, DISTRICT, OR OTHER POLITICAL JURISDICTION CONTAINING INCORPORATED PLACES, LIST SUCH INCORPORATED PLACES INCLUDED IN THIS COMMUNITY

a. [] [] [] [] b. [] [] [] [] c. [] [] [] []

19 20 21 22 23 24 25 26 27 28 29 30

IF ADDITIONAL ENTRIES ARE REQUIRED, CHECK HERE (31) AND MAKE ADDITIONAL ENTRIES IN ITEM #39.

6. IF THE COMMUNITY IS A COUNTY, DISTRICT, OR OTHER POLITICAL JURISDICTION CONTAINING INCORPORATED PLACES, LIST SUCH INCORPORATED PLACES THAT HAVE BEEN OR WILL BE SURVEYED SEPARATELY

a. [] [] [] [] b. [] [] [] [] c. [] [] [] []

32 33 34 35 36 37 38 39 40 41 42 43

IF ADDITIONAL ENTRIES ARE REQUIRED, CHECK HERE (44) AND MAKE ADDITIONAL ENTRIES IN ITEM #39.

7. POPULATION OF COMMUNITY, 1960 CENSUS. 2034 8. EST. CURRENT POPULATION 2230 9. TOTAL AREA OF COMMUNITY (Sq. miles) [] [] [] []

45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62

10. WHICH PLANNING AGENCIES INCLUDE SOLID WASTES AS PART OF THEIR COMPREHENSIVE PLANNING? (Check all appropriate categories)

63 NO AGENCY 64 LOCAL 65 COUNTY 66 REGIONAL

SOURCE	GARBAGE				OTHER REFUSE				Do not use	12. LEGISLATIVE-ADMINISTRATIVE REGULATIONS FOR ON-SITE STORAGE ENFORCED PRINCIPALLY BY (Check one only)
	REGULATIONS		ENFORCED		REGULATIONS		ENFORCED			
	YES	NO	YES	NO	YES	NO	YES	NO		
HOUSEHOLD	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	67 68	<input type="checkbox"/> NO ENFORCEMENT
COMMERCIAL	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	69 70	<input type="checkbox"/> OPERATIONAL AUTHORITY
INDUSTRIAL	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	71 72	<input checked="" type="checkbox"/> POLICE
AGRICULTURAL	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	73 74	<input type="checkbox"/> HEALTH AUTHORITY
INSTITUTIONAL	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	75 76	<input type="checkbox"/> OTHER (Specify)

SOURCE	PUBLIC AGENCY		PRIVATE COLLECTOR		INDIVIDUAL	15. CLASSES OF HOUSEHOLD REFUSE NOT COLLECTED (Check appropriate categories)	16. HOUSEHOLD REFUSE COLLECTION FREQ.			
	15	16	17	18			TYPES OF REFUSE COLLECTED SEPARATELY	1 PER WEEK	2 PER WEEK	OTHER
HOUSEHOLD	1	0	0			GARBAGE	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	51
COMMERCIAL	1	0	0			RUBBISH	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	52
INDUSTRIAL	1	0	0			YARD REFUSE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	53
INSTITUTIONAL	1	0	0			ASHES	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	54
DEAD ANIMALS	1	0	0			COMBUSTIBLES	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	55
ABANDONED VEHICLES				1	0	NON-COMBUSTIBLES	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	56
						BULKY ITEMS (Refrigerators, etc.)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	57
						OTHER (Specify)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	58
						OTHER (Specify)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	59 60
						OTHER (Specify)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	61 62
						OTHER (Specify)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	63 64

COMMUNITY DESCRIPTION REPORT (PAGE 3)

D I S P O S I T I O N S	26. INDICATE BELOW THE NUMBER OF REDUCTION AND/OR DISPOSAL SITES UTILIZED BY THE COMMUNITY'S PUBLIC COLLECTORS, PRIVATE COLLECTORS AND/OR INDIVIDUAL HAULERS (Enter Numbers)				28. USE OF COMPLETED LAND DISPOSAL SITES <i>(List no. of sites in each category as applicable)</i>				29. NUMBER OF PROMISCUOUS DUMPS WITHIN THE COMMUNITY'S BOUNDARIES KNOWN TO BE ACTIVE (Enter Number) <table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td style="width: 20px; height: 20px; text-align: center;">42</td><td style="width: 20px; height: 20px; text-align: center;">43</td></tr></table> IF INFORMATION IS NOT AVAILABLE, CHECK HERE <input type="checkbox"/>				42	43							
	42	43																			
	SITES		PUBLICLY OPERATED		PRIVATELY OPERATED		COMPLETED SITE USE		NUMBER		30. ESTIMATED NUMBER OF HOUSEHOLD GARBAGE GRINDERS INSTALLED (Enter Number) <table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px; text-align: center;">1</td><td style="width: 20px; height: 20px; text-align: center;">2</td></tr></table>								1	2	
					1	2															
	LAND DISPOSAL SITES		<table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px; text-align: center;">/</td><td style="width: 20px; height: 20px;"></td></tr></table>				/		<table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table>						RECREATIONAL AREA OR PARK		<table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table>				
			/																		
	INCINERATORS		<table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table>						<table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table>						PARKING LOT		<table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table>				
TRANSFER STATIONS		<table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table>						<table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table>						LIGHT CONSTRUCTION		<table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table>					
HOG FEEDING LOTS		<table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table>						<table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table>						HEAVY CONSTRUCTION		<table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table>					
COMPOST PLANTS		<table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table>						<table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table>						AGRICULTURE		<table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table>					
TEPEE BURNERS		<table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table>						<table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table>						NO SPECIFIC USE		<table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td style="width: 20px; height: 20px; text-align: center;">2</td><td style="width: 20px; height: 20px;"></td></tr></table>		2			
2																					
OTHER (Specify)		<table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td style="width: 20px; height: 20px; text-align: center;">78</td><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table>		78				<table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td style="width: 20px; height: 20px; text-align: center;">79</td><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table>		79				OTHER (Specify)		<table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table>					
78																					
79																					
Do not use		<table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px; text-align: center;">0</td><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px; text-align: center;">7</td></tr></table>			0		7	<table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table>						Do not use 35		<table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table>					
	0		7																		
27. REDUCTION AND/OR DISPOSAL SITES SERVING THE COMMUNITY				28. USE OF COMPLETED LAND DISPOSAL SITES <i>(List no. of sites in each category as applicable)</i>				29. NUMBER OF PROMISCUOUS DUMPS WITHIN THE COMMUNITY'S BOUNDARIES KNOWN TO BE ACTIVE (Enter Number) <table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table>													
TOTAL		<table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td style="width: 20px; height: 20px; text-align: center;">1</td><td style="width: 20px; height: 20px;"></td></tr></table>		1		NUMBER OUTSIDE COMMUNITY		<table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td style="width: 20px; height: 20px; text-align: center;">1</td><td style="width: 20px; height: 20px;"></td></tr></table>		1		RECREATIONAL AREA OR PARK		<table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table>							
1																					
1																					
NUMBER WITHIN COMMUNITY		<table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table>				<table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table>						PARKING LOT		<table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table>							
17		18		19		20		LIGHT CONSTRUCTION		<table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table>											
15		16		21		22		HEAVY CONSTRUCTION		<table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table>											
17		18		23		24		AGRICULTURE		<table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table>											
17		18		25		26		NO SPECIFIC USE		<table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td style="width: 20px; height: 20px; text-align: center;">2</td><td style="width: 20px; height: 20px;"></td></tr></table>		2									
2																					
17		18		27		28		OTHER (Specify)		<table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table>											
17		18		29		30		OTHER (Specify)		<table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table>											
17		18		31		32		OTHER (Specify)		<table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table>											
17		18		33		34		OTHER (Specify)		<table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table>											
17		18		35		36		Do not use 38		<table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table>											
17		18		37		38		Do not use 41		<table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table>											
17		18		39		40		Do not use 41		<table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table>											
17		18		41		42		Do not use 41		<table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table>											
17		18		43		44		Do not use 41		<table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table>											
17		18		45		46		Do not use 41		<table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table>											
17		18		47		48		Do not use 41		<table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table>											
17		18		49		50		Do not use 41		<table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table>											
17		18		51		52		Do not use 41		<table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table>											
17		18		53		54		Do not use 41		<table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table>											
17		18		55		56		Do not use 41		<table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table>											
17		18		57		58		Do not use 41		<table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table>											
17		18		59		60		Do not use 41		<table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table>											
17		18		61		62		Do not use 41		<table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table>											
17		18		63		64		Do not use 41		<table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table>											
17		18		65		66		Do not use 41		<table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table>											
17		18		67		68		Do not use 41		<table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table>											
17		18		69		70		Do not use 41		<table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table>											
17		18		71		72		Do not use 41		<table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table>											
17		18		73		74		Do not use 41		<table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table>											
17		18		75		76		Do not use 41		<table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table>											
17		18		77		78		Do not use 41		<table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table>											
17		18		79		80		Do not use 41		<table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table>											
17		18		81		82		Do not use 41		<table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table>											
17		18		83		84		Do not use 41		<table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table>											
17		18		85		86		Do not use 41		<table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table>											
17		18		87		88		Do not use 41		<table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table>											
17		18		89		90		Do not use 41		<table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table>											
17		18		91		92		Do not use 41		<table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table>											
17		18		93		94		Do not use 41		<table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table>											
17		18		95		96		Do not use 41		<table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table>											
17		18		97		98		Do not use 41		<table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table>											
17		18		99		100		Do not use 41		<table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table>											
17		18		101		102		Do not use 41		<table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table>											
17		18		103		104		Do not use 41		<table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td style="width: 20px; height: 20px;"></td></tr></table>											

with rat poison for at least a week. This will prevent the rat population from migrating to other areas.

There is nothing in these recommendations that would prevent the individual from disposing of his own refuse as long as it is done in a manner approved by the Health Director.

Supervision: In order that adequate supervision may be provided, it is recommended that the Brunswick County Health Department be put in charge of the operation. This would consist of: promotion of this program, education of the public, and supervision of the landfill operation.

SECTION V - Cost Analysis

The following cost estimates are based on the operation of two (2) sanitary landfills for the total population of Brunswick County, and a container system for collection as recommended in Section IV of this report.

Capital Investment Landfill

Sites

Two (2) sites - 10 acres each (20 acres @ \$300/acre)	\$ 6,000.00
---	-------------

Equipment

Two (2) high-lift loaders with multi-purpose bucket, cabs and heaters (Allis Chalmers HD6G or equal) @ \$22,500/each	45,000.00
--	-----------

Structures

Two (2) structures to provide shelter for equipment and office space @ \$1,500/each	3,000.00
---	----------

Miscellaneous

Site preparation (access roads, sign, etc.)	8,000.00
---	----------

Legal fees	500.00
------------	--------

Survey and plans	1,000.00
------------------	----------

Supervision of site preparation	<u>500.00</u>
---------------------------------	---------------

TOTAL	\$64,000.00
-------	-------------

Capital Investment Container System (County)

One (1) Dumpmaster (24-cu. yd.)	\$23,500.00
Sixty-two (62) containers of four (4) cu. yd. each @ \$250/container	15,500.00

Miscellaneous

Site preparation for containers @ \$50/container	<u>3,100.00</u>
--	-----------------

TOTAL	\$42,100.00
-------	-------------

Bolivia

Three (3) containers - 8 cu. yd. each @ \$495/container	\$ 1,485.00
---	-------------

Annual Operating Cost Landfills

Two (2) loader operators @ \$6,000	\$12,000.00
------------------------------------	-------------

Fuel & repairs @ \$3,000	6,000.00
--------------------------	----------

Equipment depreciation @ \$3,000	6,000.00
----------------------------------	----------

Miscellaneous (s.s., ins., etc.)	<u>5,000.00</u>
----------------------------------	-----------------

TOTAL	\$29,000.00
-------	-------------

Annual Operating Cost Container System

One (1) dumpmaster operator	\$ 6,000.00
-----------------------------	-------------

Fuel and repairs (25,000 miles @ \$.25/mile)	6,250.00
--	----------

Equipment depreciation	4,000.00
------------------------	----------

Miscellaneous (s.s., ins., etc.)	<u>1,500.00</u>
----------------------------------	-----------------

TOTAL	\$17,750.00
-------	-------------

TOTAL ANNUAL OPERATING COST	\$46,750.00
-----------------------------	-------------

Note:

1. Containers would be serviced twice a week or as needed.
2. The containers would serve for household waste only. Other type waste would be transported to the disposal site by the individual or by contract collector.

ONE (1) SITE TO SERVE BRUNSWICK COUNTY

Capital Investment - Landfill

Site

One (1) site of 20 acres @ \$300/acre \$ 6,000

Equipment

One (1) high-lift loader with multi-purpose bucket, cab and heater 32,000
 (International 175-B, Caterpillar 955-K, or Allis-Chalmers HD7G or equal)

Structure

One (1) structure to provide shelter for equipment and office space 3,000

Miscellaneous

Site preparation (access road, signs, etc.) 5,000
 Legal fees 500
 Survey and plans 1,000
 Supervision of site preparation 500

TOTAL CAPITAL INVESTMENT \$48,000

Annual Operation Cost

One (1) loader operator \$ 6,000
 One (1) assistant operator 5,000
 Fuel and repairs 3,500
 Equipment depreciation 3,500
 Miscellaneous (s.s., ins., trenching, etc.) 4,000

\$22,000

REVISED MAY, 1973

SURVEY DATA
and
PROPOSED MANAGEMENT PROGRAM
for
SOLID WASTE DISPOSAL
in
BRUNSWICK COUNTY

Prepared By
SANITARY ENGINEERING DIVISION
NORTH CAROLINA STATE BOARD OF HEALTH
Raleigh, N. C.

SECTION I - Introduction

In the overall environmental sanitation picture of rapidly expanding urban communities of North Carolina, the problem of how to handle the estimated 4,511,000 tons of refuse produced annually offers one of our greatest challenges. This is a problem of the community as well as the individual and continual disregard on the part of either will certainly result in unnecessary disease and annoyance. Lack of understanding, carelessness and indifference is largely responsible for our present problems. Frequently, individual effort is fruitless without public control, but, at the same time, efforts of public health agencies are doomed to failure without support of individual citizens.

Refuse which is contaminated with disease organisms originating in the home or institutions provides food and shelter for many of our most important public health pests, insects and rodents. It is, therefore, necessary that refuse be handled in an acceptable manner from the point of origin to that of disposal. Refuse, at the point of origin, is largely the responsibility of the producer and must be stored in an approved manner. Refuse collection is accomplished in three ways: (1) by the individual, (2) by a governmental agency using public funds, and (3) by private contract garbage collectors who are paid by the individual receiving the service. Refuse disposal is normally accomplished by (1) the individual who utilizes his own land or disposal areas belonging to private or public agencies, (2) by governmental agencies who utilize publicly-owned disposal areas or (3) by private collectors who provide their own disposal areas or utilize that of a public agency. No longer is the old-fashioned, insanitary refuse dump acceptable in today's society as a means of refuse disposal. An open dump is aesthetically offensive because of smoke and odors and is responsible for the reduction of adjacent land values, and are gradually being replaced by the sanitary landfill or other sanitary means of refuse disposal.

SECTION II - Legal Aspects

Authority to Regulate

State Board of Health

"Rules and Regulations Providing Standards for Solid Waste Disposal" adopted by the North Carolina State Board of Health as directed by Article 13B of Chapter 130 of the General Statutes shall be used as minimum standards for solid waste management.

Local Board of Health

County or district boards of health may adopt more stringent regulations as provided by General Statute 130-17.

Boards of Commissioners

County boards of commissioners have authority to regulate under G.S. 153-272 through 275, the collection and disposal of refuse by private persons and firms outside municipal boundaries.

In exercising this authority, the board of commissioners may:

- (1) Issue licenses or permits for the collection and disposal of refuse.
- (2) Prohibit collection and disposal by unlicensed persons.
- (3) Grant licensed persons exclusive rights to collect in designated areas.
- (4) Regulate the fees charged for private collection services.
- (5) Operate collection and disposal services.

Authority to Finance

The 1967 General Assembly amended G.S. 153-77 and G.S. 153-80 of the County Finance Act to authorize the issuance of bonds for sanitary landfills and for vehicles and equipment.

SECTION III - The Refuse Problem in Brunswick County

The present solid waste management program in Brunswick County has been in operation about two years. The program was implemented with an understanding between the North Carolina State Board of Health and the Brunswick County Commissioners that it would be updated prior to July 1, 1974, to meet the requirements of the North Carolina State Board of Health "Rules and Regulations Providing Standards for Solid Waste Disposal."

The general information covers the present program:

On-Site Storage: Section IV, Solid Waste Storage, of the North Carolina State Board of Health "Rules and Regulations Providing Standards for Solid Waste Disposal" are applicable in Brunswick County but are not being enforced to any great extent.

Collection: The municipalities provide collection service once or twice per week. Private collectors are serving an estimated 20 percent of the rural population including the beach areas that are not incorporated.

The County is providing two trailers located in the Waccamaw and Freeland communities for the people of these areas.

Disposal: The County is operating five land disposal sites which will not meet the operational requirements of the North Carolina State Board of Health "Rules and Regulations Providing Standards for Solid Waste Disposal" but have been operated much better than most county programs of this type due to the excellent supervision given by Mr. Edwin S. Clemmons.

SECTION IV - Recommendations

To upgrade the solid waste management program in Brunswick County so that it will protect the health of the people, improve the county's environment, meet

the requirements of the North Carolina State Board of Health "Rules and Regulations Providing Standards for Solid Waste Disposal", and be economically feasible it is recommended that:

Storage: Solid waste storage be upgraded to meet the standards as set forth in Section IV of the North Carolina State Board of Health "Rules and Regulations Providing Standards for Solid Waste Disposal."

Collection: Solid waste collection within a municipality be the responsibility of the municipality. Collection may be by municipality owned and operated equipment or by contract with private collectors.

House-to-house collection in unincorporated areas be left to private collectors for a fee.

A container system be provided for collection service for those areas where house-to-house collection service is not available, is not economically feasible, and for those individuals who desire to take their own waste to a collection point. The container system could utilize either a mothertruck and four-cubic yard containers or a forty-cubic yard system. Both systems will be included in this report. The container system would be used instead of multi-landfills.

Disposal: One (1) sanitary landfill be operated in accordance with the North Carolina State Board of Health "Rules and Regulations Providing Standards for Solid Waste Disposal" to serve the total population of Brunswick County. The landfill should be located in the Supply area as shown on the enclosed map.

After the sanitary landfill is open, the present site shall be closed in accordance with Section XIII - C (1-4) of the North Carolina State Board of Health "Rules and Regulations Providing Standards for Solid Waste Disposal."

SECTION V - Cost Analysis

The following cost estimates are based on the operation of one (1) sanitary landfill and a container system as recommended in Section IV and described in Appendix A:

Capital Investment - Landfill

Site

One (1) site of forty (40) acres	No Cost Estimate Made on Land
----------------------------------	----------------------------------

Equipment

The equipment now owned by the county will be adequate for operating the landfill. As this equipment needs replacing, it is recommended that a loader of a size larger be secured due to an expected increase of solid waste with the new industry.

Structure

One (1) structure to provide shelter for equipment and office space	\$ 6,000
---	----------

Miscellaneous

Site preparation (access road, gates, signs, etc.)	<u>10,000</u>
--	---------------

TOTAL	\$16,000
-------	----------

Container System - (Mothertruck & 4-cubic yard Containers)

One (1) mothertruck (30 or 31 cubic yard)	\$28,000
One (1) pickup truck	3,000
One-hundred (100) containers (4-cu. yd.) @ \$275 each	27,500
One (1) trailer for moving containers	500
Forty (40) container sites @ \$50/site	<u>2,000</u>

TOTAL	\$61,000
-------	----------

Container System - (40-cu. yd. Containers)

One (1) all hydraulic lifting unit mounted on a standard cab over truck chassis	\$25,000
One (1) pickup truck	3,000
Ten (10) containers (40-cu. yd.) @ \$2,500/container	25,000
Nine (9) container sites @ \$1,500/site	<u>13,500</u>

TOTAL	\$66,500
-------	----------

Estimated Annual Operating Cost - (Landfill)

One (1) equipment operator	\$ 7,200
One (1) gateman and assistant equipment operator	6,000
Fuel and Repairs (loader)	4,000
Earth moving (trenching)	6,000
Miscellaneous (s.s., ins., utilities, etc.)	<u>5,000</u>
TOTAL	\$28,200

Container System - (4-cu. yd. containers)

One (1) truck operator	\$ 7,200
Fuel & repairs (35,000 miles per year) @ 25¢/mile	8,750
Miscellaneous (s.s., ins., etc.)	<u>3,000</u>
TOTAL	\$18,950

Container System - (40-cu. yd. containers)

One (1) truck operator	\$ 7,200
Fuel & repairs (35,000 miles per year) @ 35¢/mile	12,250
Miscellaneous (s.s., ins., etc.)	<u>3,000</u>
TOTAL	\$22,450

Administration

One (1) supervisor of solid waste management	\$10,000
Fuel and repairs (pickup)	2,400
Miscellaneous (s.s., ins., etc.)	<u>1,000</u>
TOTAL	\$13,400

Estimated Annual Operation Cost - (Landfill & Small Containers)

Sanitary landfill	\$28,200
Container system (4-cu. yd. containers)	18,950
Administration	<u>13,400</u>
TOTAL	\$60,550

Estimated Annual Operation Cost - (Landfill & Large Containers)

Sanitary landfill	\$28,200
Container system (40-cu. yd. containers)	22,400
Administration	<u>13,400</u>
TOTAL	\$64,000

NOTE:

1. The containers would be serviced twice per week.

2. Municipalities, industry, and private collectors would haul directly to the landfill.
3. This recommended solid waste program can be operated in Brunswick County for an annual operating cost of about \$2.50 per person per year (not including equipment depreciation).

SECTION VI - Conclusion

1. The amount of solid waste generated in Brunswick County makes the one landfill concept the only economically feasible system.
2. The haul distance would not be prohibitive for private collectors, industry, and municipalities. A properly operating compactor truck can be expected to serve 16 families per cubic yard capacity of the truck before it must go to the landfill where homes are served twice per week. The standard 16-cubic yard compactor truck should average serving 256 families per load or an average of 896 people.
3. The Solid Waste and Vector Control Section of the State Board of Health, through your local health department, is available to assist in any way possible.

APPENDIX A

Container System - Small Containers

Studies in other counties have shown that a mothertruck can average between 20-25 miles per hour on a route including container pickup and cleaning around containers.

It is estimated that the truck serving Brunswick County would travel 620 miles per week. Using an average speed of 20 miles per hour, it would require 31 hours to service the route, leaving nine hours per week for truck maintenance, etc. Many cities in North Carolina operate their truck twice this many hours.

Container System - Large Containers

The container sites will be constructed so that the top of a container will be twenty-four (24) inches above the drive-up ramp. An all weather road and ramp will be provided at each site. It is estimated that one-half acre of land will be needed at each site.

The operation of the system will utilize nine (9) container sites. An extra tenth (10th) container will be used so that an empty container can be taken to each site to replace the loaded container that is removed. By using the extra container, only half the miles will be driven per year.

It is estimated that the truck would travel 600 miles per week. Using an average speed of 35 miles per hour, this will require about 17 hours per week travel time, allowing ten (10) minutes per container dumped for dumping at the landfill and thirty (30) minutes per container for loading and site cleaning, it will require twelve (12) hours per week for some; thus, making a total of twenty-nine (29) hours per week. This would allow eleven (11) hours per week for equipment maintenance or during the major summer season, the containers could be serviced more often than twice per week if needed.

Conclusion

The capital investment and annual operating cost for each system is about the same.

There would be less down time and a longer life for the truck servicing the large containers.

The large containers can be used for more types of waste but the number of sites is limited so the people would have to drive farther to a container.

The small containers are limited in size but could be placed so that a great percentage of the people would be within two to three miles of a container.

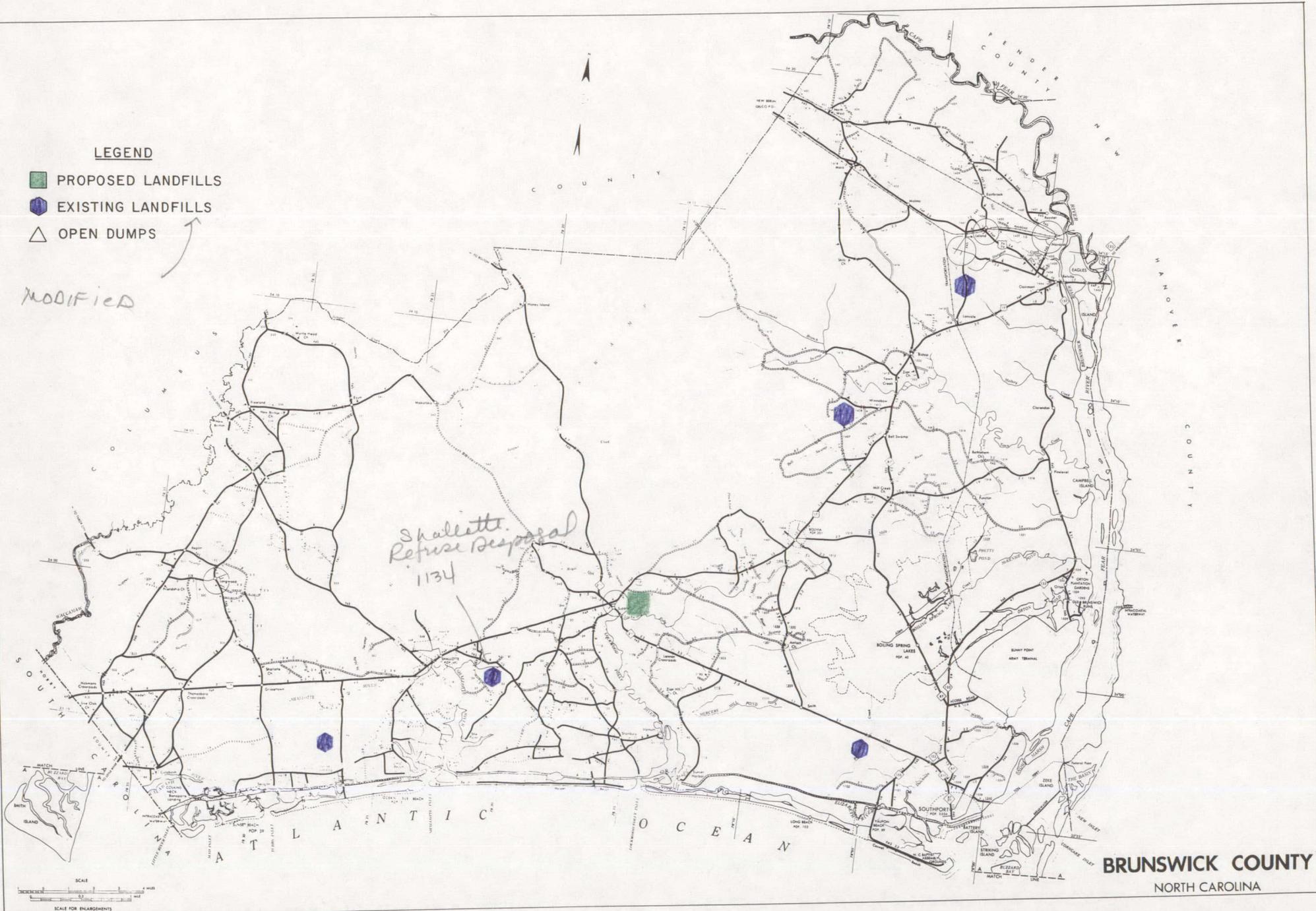
Either system would serve the needs of the people of Brunswick County, provided the program has excellent supervision and it made a people's program.

LEGEND

- PROPOSED LANDFILLS
- EXISTING LANDFILLS
- OPEN DUMPS

MODIFIED

*Skalletts
Refuse Disposal
1134*



BRUNSWICK COUNTY
NORTH CAROLINA

SURVEY DATA
and
PROPOSED MANAGEMENT PROGRAM
for
SOLID WASTE DISPOSAL
in
BRUNSWICK COUNTY

Prepared By
SANITARY ENGINEERING DIVISION
NORTH CAROLINA STATE BOARD OF HEALTH
Raleigh, N. C.

SECTION I - Introduction

In the overall environmental sanitation picture of rapidly expanding urban communities of North Carolina, the problem of how to handle the estimated 4,511,000 tons of refuse produced annually offers one of our greatest challenges. This is a problem of the community as well as the individual and continual disregard on the part of either will certainly result in unnecessary disease and annoyance. Lack of understanding, carelessness and indifference is largely responsible for our present problems. Frequently, individual effort is fruitless without public control, but, at the same time, efforts of public health agencies are doomed to failure without support of individual citizens.

Refuse which is contaminated with disease organisms originating in the home or institutions provides food and shelter for many of our most important public health pests, insects and rodents. It is, therefore, necessary that refuse be handled in an acceptable manner from the point of origin to that of disposal. Refuse, at the point of origin, is largely the responsibility of the producer and must be stored in an approved manner. Refuse collection is accomplished in three ways: (1) by the individual, (2) by a governmental agency using public funds, and (3) by private contract garbage collectors who are paid by the individual receiving the service. Refuse disposal is normally accomplished by (1) the individual who utilizes his own land or disposal areas belonging to private or public agencies, (2) by governmental agencies who utilize publicly-owned disposal areas or (3) by private collectors who provide their own disposal area or utilize that of a public agency. No longer is the old-fashioned, insanitary refuse dump acceptable in today's society as a means of refuse disposal. An open dump is aesthetically offensive because of smoke and odors and is responsible for the reduction of adjacent land values, and are gradually being replaced by the sanitary landfill or other sanitary means of refuse disposal.

SECTION II - Legal Aspects

Authority to Regulate

Boards of Health

County boards of health have the authority to regulate the collection and disposal of refuse. This authority is based on the broad powers as set forth in G. S. 130-17 which permits boards of health to make rules and regulations as necessary to protect and to advance public health. Such regulations typically cover three major areas:

- (1) The type of container in which garbage is stored.
- (2) Sanitation standards for equipment used in the collection of refuse.
- (3) Standards and methods for disposal.

Attached to this report is a copy of an ordinance that has been prepared for adoption by the local boards of health for the control of storage, collection, and disposal of refuse.

Boards of Commissioners

County boards of commissioners have authority to regulate under G.S. 153-272 through 275, the collection and disposal of refuse by private persons and firms outside municipal boundaries.

In exercising this authority, the board of commissioners may:

- (1) Issue licenses or permits for the collection and disposal of refuse.
- (2) Prohibit collection and disposal by unlicensed persons.
- (3) Grant licensed persons exclusive rights to collect in designated areas.
- (4) Regulate the fees charged for private collection services.
- (5) Operate collection and disposal services.

Authority to Finance

The 1967 General Assembly amended G. S. 153-77 and G. S. 153-80 of the County Finance Act to authorize the issuance of bonds for sanitary landfills and for vehicles and equipment.

SECTION III - The Refuse Problem in Brunswick County

The survey of Brunswick County was completed in 1968 and the data has been summarized on the attached table. In addition, the following general information was gathered in regard to the storage, collection, and disposal of refuse.

Storage: Some 18,126 people are living in areas of Brunswick County where there are no administrative regulations governing on-site storage. Refuse is stored on the ground, in 55-gallon barrels, or in other type containers, many of which have no lids. This provides ideal conditions for the breeding and feeding of flies, rats, and other pests.

Collection: The refuse in the municipalities and in an estimated 10 percent of Brunswick County is collected once or twice a week.

Disposal: The study reveals that an estimated 14,029 tons of household, commercial, industrial, and institutional refuse is being collected annually by the municipalities and private collection firms in Brunswick County. This amount of refuse is being placed at the seven land disposal sites shown on the enclosed map. All sites are operated as open dumps.

The study reveals that there are approximately 16,314 people living in rural Brunswick County who have no collection or disposal service. Computing their annual production rate at less than the urban dweller, an estimated 5,840 tons of refuse is produced by them annually. Part of this tonnage is being burned and part is buried, but a large part is cluttering our farms, woodlands, streams, and highways. The specific amount of solid waste produced by the large summer population is not known, but is of sufficient volume to be a major factor considered in preparing this report.

SECTION IV - Recommendations

To protect the health of the people of Brunswick County and to prevent the depreciation of the county's environment, the following plan for storage, collection, and

disposal of refuse is recommended.

Storage: Under authority stated in Section II of this report, the Brunswick County Board of Health should adopt ordinances that shall require all householders to provide containers of a type approved by the Health Director. Every such container shall be constructed of metal, or equally durable material, in such a manner as to be strong, watertight, not easily corrodible, fly and rodent proof, be equipped with handles and shall have a capacity of not more than 32 gallons.

Businesses and institutions shall provide containers that are in accordance with those required for householders other than size which may vary with the approval of the Health Director.

Collection: It is recommended that house-to-house collection in unincorporated areas of Brunswick County be left to private enterprise (private collectors). The private agencies should be regulated under authority as stated in Section II of this report.

It is also recommended that a container system be provided for collection in those unincorporated areas where door-to-door service is not available or is not economically feasible.

Disposal: In the preparation of recommendations for the disposal of refuse by the sanitary landfill method, it is necessary to consider the length of haul, volume of refuse, population density, and cost to county and the municipalities. Based on these factors, it is recommended that:

(1) The Brunswick County Board of Commissioners, in cooperation with the municipalities, provide two sanitary landfills in the general vicinity of the proposed locations shown on the enclosed map to serve the total population of Brunswick County.

(2) After the county sites are opened, the present dumps should be closed and covered with two feet of compacted earth. Note: Soon after these dumps are closed and before they are covered with earth, they should be heavily baited

with rat poison for at least a week. This will prevent the rat population from migrating to other areas.

There is nothing in these recommendations that would prevent the individual from disposing of his own refuse as long as it is done in a manner approved by the Health Director.

Supervision: In order that adequate supervision may be provided, it is recommended that the Brunswick County Health Department be put in charge of the operation. This would consist of: promotion of this program, education of the public, and supervision of the landfill operation.

SECTION V - Cost Analysis

The following cost estimates are based on the operation of two (2) sanitary landfills for the total population of Brunswick County, and a container system for collection as recommended in Section IV of this report.

Capital Investment Landfill

Sites

Two (2) sites - 10 acres each (20 acres @ \$300/acre)	\$ 6,000.00
---	-------------

Equipment

Two (2) high-lift loaders with multi-purpose bucket, cabs and heaters (Allis Chalmers HD6G or equal) @ \$22,500/each	45,000.00
--	-----------

Structures

Two (2) structures to provide shelter for equipment and office space @ \$1,500/each	3,000.00
---	----------

Miscellaneous

Site preparation (access roads, sign, etc.)	8,000.00
---	----------

Legal fees	500.00
------------	--------

Survey and plans	1,000.00
------------------	----------

Supervision of site preparation	<u>500.00</u>
---------------------------------	---------------

TOTAL	\$64,000.00
-------	-------------

Capital Investment Container System (County)

One (1) Dumpmaster (24-cu. yd.)	\$23,500.00
Sixty-two (62) containers of four (4) cu. yd. each @ \$250/container	15,500.00

Miscellaneous

Site preparation for containers @ \$50/container	<u>3,100.00</u>
--	-----------------

TOTAL	\$42,100.00
-------	-------------

Bolivia

Three (3) containers - 8 cu. yd. each @ \$495/container	\$ 1,485.00
---	-------------

Annual Operating Cost Landfills

Two (2) loader operators @ \$6,000	\$12,000.00
------------------------------------	-------------

Fuel & repairs @ \$3,000	6,000.00
--------------------------	----------

Equipment depreciation @ \$3,000	6,000.00
----------------------------------	----------

Miscellaneous (s.s., ins., etc.)	<u>5,000.00</u>
----------------------------------	-----------------

TOTAL	\$29,000.00
-------	-------------

Annual Operating Cost Container System

One (1) dumpmaster operator	\$ 6,000.00
-----------------------------	-------------

Fuel and repairs (25,000 miles @ \$.25/mile)	6,250.00
--	----------

Equipment depreciation	4,000.00
------------------------	----------

Miscellaneous (s.s., ins., etc.)	<u>1,500.00</u>
----------------------------------	-----------------

TOTAL	\$17,750.00
-------	-------------

TOTAL ANNUAL OPERATING COST	\$46,750.00
-----------------------------	-------------

Note:

1. Containers would be serviced twice a week or as needed.
2. The containers would serve for household waste only. Other type waste would be transported to the disposal site by the individual or by contract collector.

3. Municipalities and industry would transport their refuse to the disposal site, with the exception of the small communities which could be served by the container system.
4. Based on the solid waste disposal for the total population of Brunswick County, with an estimated population of 21,032 people, the annual operation cost for disposal would be \$1.38 per person.
5. The container system serving the rural population which is estimated to be 18,126 people, the annual operation cost would be 98 cents per person.

SECTION VI - Conclusion

- (1) The problem of refuse disposal in Brunswick County is due to a number of factors.
 - (a) There are more disposable items on the market today than ever existed in the past as many containers are no longer the returnable and reusable types, but are disposables.
 - (b) The pounds of disposable items per capita per day have doubled over the past decade.
 - (c) A large and increasing beach area, with thousands of tourists.
- (2) This is a problem that affects the total population from the farmer who is being dumped upon to the person who lives near an open dump.
- (3) The Solid Waste and Vector Control Section of the State Board of Health, through your local health department, is available to assist in any way possible.
- (4) The recommendations of this report were made to meet the anticipated needs for a ten-year period. Before the end of this time, exhaustive studies of new methods should be made and incorporated in plans for the future.

**SUMMARY OF SOLID WASTE COLLECTION
& DISPOSAL SURVEY DATA
BRUNSWICK COUNTY**

Total Population: 21,032
Urban: 2,906 Rural: 18,126

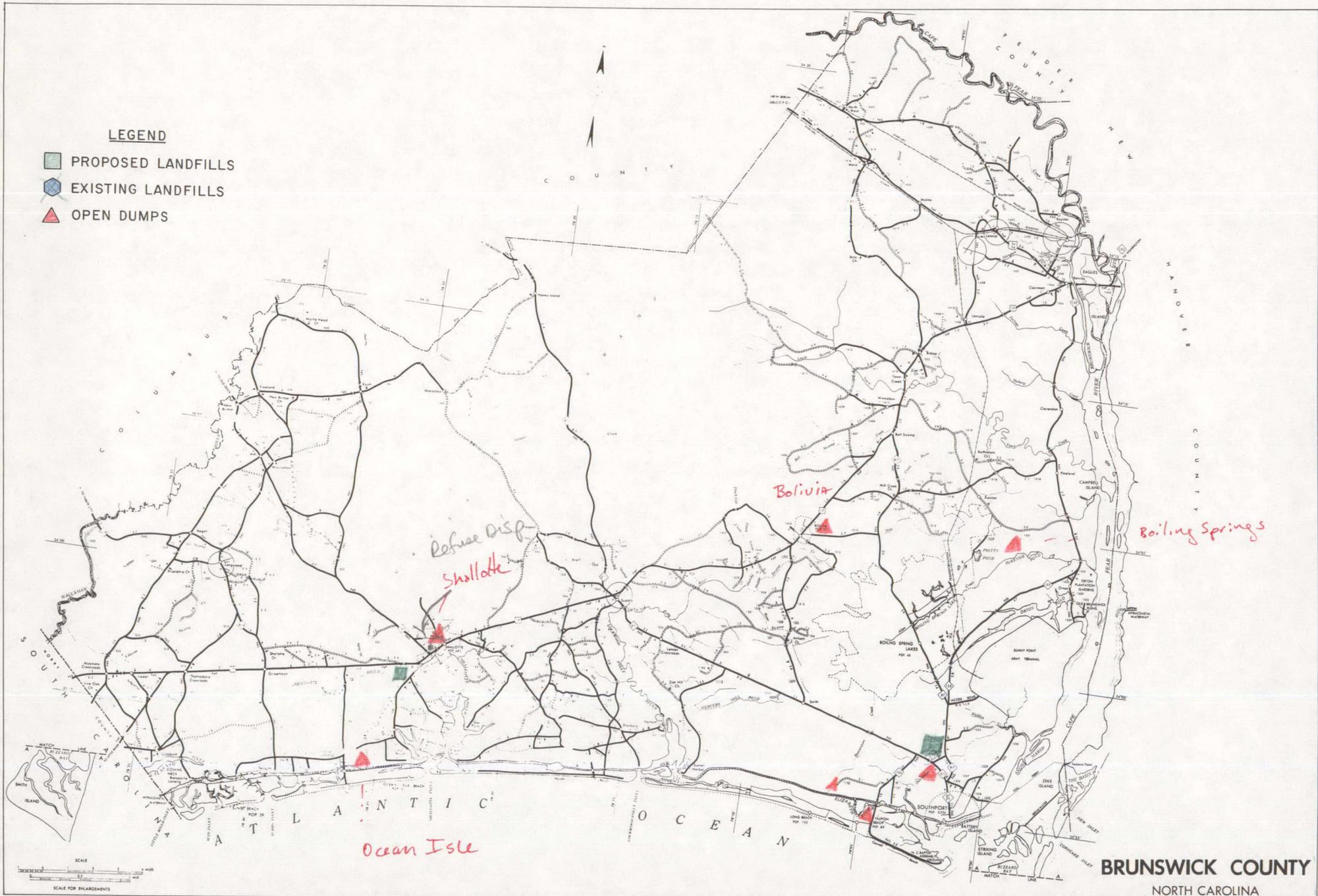
Total Area (sq.mi.) 873
Date Compiled: 1968

UNIT	AREA (sq.mi.)	POPULATION	QUANTITY PER ANNUM (tons)	TOTAL EXPENDI- TURES	COLLECTION					DISPOSAL				SEE NOTE NO.		
					BY	NO. OF MEN	NO. OF TRUCKS		FREQUENCY		BY	NO. OF MEN	EQUIPMENT		USABLE ACRES	
							COMP.	OTHER	RES.	COMM.			NO.			TYPE
Southport		2,034	4,505		PA						OD	1	0		9	
Boiling Springs			104		PA						OD				1	
Bolivia		201	585		PA						OD				1	
Shallotte		480	3,510		PA						OD				3	
Ocean Isle			1,170		PA						OD				2	
Long Beach		102	3,765		PA						OD				27	
Yaupon Beach		89	390		PA						OD				1	
Brunswick Co.		16,314	5,840		(No Collection or Disposal Provided)											

NOTES:

LEGEND

-  PROPOSED LANDFILLS
-  EXISTING LANDFILLS
-  OPEN DUMPS



BRUNSWICK COUNTY
NORTH CAROLINA

RULES AND REGULATIONS GOVERNING THE STORAGE, COLLECTION,
TRANSPORTING, AND DISPOSAL OF REFUSE IN _____
COUNTY, NORTH CAROLINA

Be It Ordained By The _____ Board of Health:

That the following regulations for the protection of public health are hereby adopted pursuant to authority granted by Section 17 of Chapter 130 of the General Statutes of North Carolina, and shall govern the storage, collection, transporting, and disposal of refuse throughout _____ County, except that these regulations shall not apply to the area within any municipality, sanitary district, or other governmental unit which operates its own refuse collection and disposal system.

SECTION I - DEFINITIONS

The following definitions shall apply in the interpretation and enforcement of these regulations:

- A. The word "refuse" means garbage or rubbish.
- B. The word "garbage" means all putrescible solid wastes, including vegetable matter, animal offal, and carcasses of small animals, but excluding human body wastes, animal manure, and recognizable industrial by-products. Used milk cartons, or other discarded food containers that are not dry and clean shall be included in this definition.
- C. The word "rubbish" means non-putrescible solid wastes.
- D. The term "Health Director" means the director of the _____ County Health Department, or his authorized representative.
- E. The word "person" means any individual, firm, governmental unit, organization, partnership, corporation, or company.
- F. The term "refuse collector" means any person who collects or transports refuse, other than one who removes refuse from his own premises.

SECTION II - REFUSE STORAGE

No owner, occupant, tenant, or lessee of any premises shall permit any garbage or other refuse to accumulate upon such premises that is not stored in a manner approved by the Health Director.

- (1) Garbage shall be stored in a container of a type approved by the Health Director. Every such container shall be constructed of metal, or equally durable material, in such a manner as to be strong, water tight, not easily corrodible, fly proof, and rodent proof, shall have a capacity of not more than 32 gallons; shall have handles designed for lifting; and shall have fly-tight covers which shall be kept in place at all times, except when garbage or other refuse is being deposited in or removed from such container. A sufficient number of containers shall be provided to hold at least one week's accumulation of garbage. Each garbage container shall be kept clean so that no odor or other nuisance will exist.

- (2) Rubbish shall be stored in such a manner that it will not provide harborage to rats, nor cause a fire hazard.

SECTION III - REFUSE COLLECTION

The owner, occupant, tenant, or lessee of any premises upon which garbage is stored shall remove, or cause to be removed, all garbage from said premises at least once a week. Refuse collectors shall remove all refuse from the premises, when they receive compensation for this service, at least once a week. The work shall be done in a clean and orderly manner, without causing damage to the container. Any refuse that is spilled shall be cleaned up, and the premises left in a sanitary condition.

SECTION IV - REFUSE TRANSPORTATION

No refuse collector shall transport refuse in a conveyance that has not been approved by the Health Director. Such conveyances shall be leak proof, and covered with a canvas, or other substantial material, unless it is constructed in such a manner as to prevent leakage or spillage of the refuse. Truck beds in which garbage is hauled shall be cleaned daily.

SECTION V - REFUSE DISPOSAL

No refuse collector, or other person, shall dispose of refuse, except by one of the following methods; provided that this section shall not be construed to prevent any person from properly disposing of refuse from his own residence, or business establishment, by burning or burying it in a safe and sanitary manner approved by the Health Director.

- (1) By burning refuse in an incinerator of a type approved by the Health Director as safe and sanitary.
- (2) By burying refuse in a sanitary landfill that is designed, operated, and equipped in accordance with the recommendations in Special Bulletin No. 479 of the North Carolina State Board of Health, Refuse Disposal By Sanitary Landfill. This bulletin is hereby incorporated by reference pursuant to authority granted by Article 4 of Chapter 130 of the General Statutes of North Carolina, and becomes a part of these regulations as fully as if set out verbatim herein. A copy of said bulletin is on file in the office of the Clerk of the Superior Court of _____ County, and in the office of the Health Director.

SECTION VI - REFUSE COLLECTOR PERMITS

- A. No person shall collect, transport, or dispose of refuse without a written permit from the Health Director; provided that this sub-section shall not apply to any person disposing of refuse from his own residence, or business establishment. The Health Director shall issue such permit only when, upon inspection, he finds that the facilities, equipment, and proposed operating methods of the applicant are in compliance with the requirements of these regulations.

SECTION VII - REVOCATION OF PERMITS

- A. Whenever upon the inspection of facilities, equipment, or operating methods of any person holding a permit to collect, transport, or dispose of refuse, the Health Director finds that conditions or practices exist which are in violation of the provisions of these regulations, the Health Director shall give notice in writing to such person that unless such conditions or practices are corrected within ten days, the permit will be revoked. At the end of such ten-day period, the Health Director shall make a re-inspection, and if he finds that such conditions or practices have not been corrected, he shall give notice in writing to such person that his permit has been revoked. Upon the receipt of this notice, such person shall immediately cease to collect, transport, or dispose of refuse. No such permit shall be reinstated by the Health Director until he finds, upon inspection, that all provisions of these regulations have been complied with, except that following a hearing, as hereinafter provided, such permit may be reinstated by order of the County Board of Health.
- B. Upon written petition from a person whose permit to collect, transport, or dispose of refuse has been denied or revoked, the County Board of Health shall hold a hearing at which time such person shall be given an opportunity to show that his permit should not have been denied or revoked. No such hearing shall be held unless written petition therefor shall have been filed in the office of the Health Director on or before the tenth day following the day on which said permit was denied or revoked. The Health Director shall convey the request for a hearing to the Chairman of the County Board of Health as soon as practicable. Such hearing shall be held within _____ days following the receipt of such petition by the Chairman. After such hearing, the County Board of Health may either approve the denial or revocation of such permit, or order that it be issued or reinstated, depending upon its findings as to whether or not these regulations have been complied with.

SECTION VIII - PENALTY

Any person who violates any rules and regulations adopted by a local Board of Health shall be guilty of a misdemeanor, and fined not exceeding fifty dollars (\$50) or imprisoned not exceeding thirty days (30), as provided by Section 203 of Chapter 130 of the General Statutes of North Carolina.

SECTION IX - CONFLICTING REGULATIONS REPEALED

All regulations or parts of regulations in conflict herewith are repealed only to the extent necessary to give these regulations full force and effect.

SECTION X - SEVERABILITY

If any provision of these rules and regulations, or the application thereof to any person or circumstance, is held invalid, the remainder of the rules and regulations, or the application of such provision to other persons or circumstances, shall not be affected thereby.

SECTION XI - EFFECTIVE DATE

These regulations shall be in full force and effect from and after _____ :

AN ACT TO AUTHORIZE COUNTIES TO REGULATE THE COLLECTION OF GARBAGE

ARTICLE 22

Garbage Collection and Disposal

G. S. 153-272. Control of Private Collectors. -- The board of county commissioners of any county is hereby empowered to regulate the collection and disposal of garbage by private persons, firms, or corporations outside of the incorporated cities and towns of the county for the purpose of encouraging and attempting to insure an adequate and continuing service of garbage collection and disposal where the board deems it to be desirable. In the exercise of such power, the board may issue a license to any private person, firm, or corporation to collect and/or dispose of garbage; may prohibit the collection and/or disposal of garbage by unlicensed persons, firms, or corporations; may grant to licensed persons, firms, or corporations the exclusive right to collect and/or dispose of garbage for compensation within a specified area and prohibit unauthorized persons, firms, or corporations from collecting and/or disposing of garbage within said area; and may regulate the fees charged by licensed persons, firms, and corporations for the collection and/or disposal of garbage to the end that reasonable compensation may be provided for such services. The board may adopt regulations pursuant to the power herein granted, and the violation of any such regulation shall be a misdemeanor, subject to a fine not exceeding fifty dollars, or imprisonment not exceeding thirty days; each week that any such violation continues to exist shall be a separate offense. (1961, c. 514, s.1)

G. S. 153-273. County collection and disposal. -- The board of county commissioners of any county is hereby empowered to establish and operate garbage collection and/or disposal facilities in areas outside of incorporated cities and towns where, in its opinion, the need for such facilities exists. The board may contract with any city or town to collect and/or dispose of garbage in any such area. In the disposal of garbage, the board may use any vacant land owned by the county, or it may acquire suitable sites for such purpose. The board may make appropriations to carry out the

activities herein authorized. The board may impose fees for the use of disposal facilities, and in the event it shall provide for the collection of garbage, it shall charge fees for such collection service sufficient in its opinion to defray the expense of collection. (1961, c. 514, s.1)

G. S. 153-274. Powers of local boards of health unaffected. -- Nothing in this article shall affect the powers of local boards of health to control the keeping, removal, collection, and disposal of garbage, insofar as the exercise of any such power is necessary to protect and advance the public health. (1961, c. 514, s.1)

G. S. 153-275. Powers granted herein supplementary. -- The powers granted to counties by this article shall be deemed supplementary to any powers heretofore or hereafter granted by any other law, either general, special, or local, for the same or similar purpose, and in any case where the provisions of this article conflict with or are different from the provisions of such other law, the board of county commissioners may in its discretion proceed in accordance with the provisions of such other law, or, as an alternative method, in accordance with the provisions of this article. (1961, c. 514, s.1)

Sec. 1a. The provisions of this Act shall not apply to Vance County.

Note:

Chapter 904 of the 1961 Session Laws exempts Johnston County from all provisions of this article.

Chapter 912 of the 1961 Session Laws authorizes Dare County Board of Commissioners to levy ad volorem tax in areas of the county in which the county provides garbage collection service.

AN ALTERNATE PROPOSAL
FOR MEETING
THE SOLID WASTE DISPOSAL NEEDS
in
BRUNSWICK COUNTY, NORTH CAROLINA
March, 1971

The preparation of this report was financed in part by an urban planning assistance grant from the US Department of Housing and Urban Development under provisions of the Housing Act of 1954, as amended.

ABSTRACT

TITLE: An Alternate Proposal for Meeting the Solid Waste Disposal Needs in Brunswick County, North Carolina

AUTHOR: North Carolina Department of Local Affairs, Division of Community Planning

SUBJECT: A solid waste disposal plan utilizing the multi-site landfill system.

DATE: March, 1971

LOCAL PLANNING AGENCY: Resources Development Commission for Brunswick County

SOURCES OF COPIES OF DOCUMENT: Brunswick County Board of Commissioners
County Office Building
Southport, North Carolina

N.C. Division of Community Planning
P.O. Box 1991
Raleigh, North Carolina

HUD PROJECT No.: NCP-110

SERIES No.: NA

No. OF PAGES: 19

ABSTRACT: A plan for solid waste disposal is presented which utilizes the multi-site landfill system. This plan is intended as an alternate to a plan prepared by the North Carolina State Board of Health which utilized a dual landfill system augmented by a series of containers dispersed about the county. This plan outlines the storage, collection, disposal, supervision and operational aspects of the solid waste disposal program. The legal aspects of the program are summarized. The capital investment and operational costs are analyzed. The general locations of proposed landfill sites are identified.

CONTENTS

List of Figures and Tables	ii
FORWARD	1
INTRODUCTION	3
LEGAL ASPECTS	3
Boards of Health	4
Boards of Commissioners	4
REFUSE PROBLEM IN BRUNSWICK COUNTY	4
SOLID WASTE DISPOSAL PROGRAM	5
Storage	5
Collection	5
Disposal	5
Supervision	7
Operation	7
COST ANALYSIS	7
Capital Investment Costs	8
Operating Costs	9
APPENDIX	
Rules and Regulations Governing the Storage Collection, Transporting, and Disposal of Refuse in Brunswick County, North Carolina	12
An Act to Authorize Counties to Regulate the Collection of Garbage	16
Recommended Entrance Sign	18

LIST OF FIGURES AND TABLES

Figures

1. Proposed Landfill Sites for Brunswick County 6

Tables

1. Capital Investment Needs 8
2. Source of Funds for Capital Investment 9
3. Annual Operating Costs 9
4. Source of Funds for Operating Costs 10

FORWARD

The Brunswick County Board of Commissioners want to implement a solid-waste disposal plan for the county. The problem of what to do with the growing amount of garbage, rubbish, trash, litter, and junk that is being dumped on private and public land, along the roadside, and on the beaches, is creating considerable concern among the citizens of county. Piles of refuse are eyesores to local residents as well as to tourists who contribute heavily to the local economy during the summer months.

The open dumps are not only ugly, but could be dangerous to the general well-being and safety by enhancing the possibility of the spreading of disease and creation of nuisances such as rats. Furthermore, open dumps destroy the forestry resources of the county. The large land owners, such as the paper companies, have suffered damage caused by dumping which clutters logging roads, blocks drainage ditches, destroys pine tree seedlings and starts fires. Fires starting from open dumps have destroyed thousands of acres of woodlands in Brunswick County.

In 1968, local officials requested the Solid Waste and Vector Control Section of the North Carolina State Board of Health to make a survey of existing refuse disposal points in Brunswick County and to recommend a plan to meet future solid waste disposal needs in the county. The study was presented to the County Commissioners during the fall of 1970. Generally, the study concluded that no effective disposal system was in effect in the rural areas of the county. People were burying or burning their trash as always, although nowadays many items cannot be as easily disposed of as in the past. To meet this crisis, the study recommended establishing two sanitary landfills; one near Shallotte and one near Southport. Furthermore, 62 containers of four cubic yards each were to be strategically located throughout the county. Also, three larger containers capable of handling eight cubic yards were to be located in and around Bolivia. The total capital investment was estimated to be \$107,585, with an annual operating cost of \$46,750.

The Brunswick County Board of Commissioners did not feel that the proposed program was financially feasible for the county. Realizing that some measures had to be taken to meet the problem being created by solid waste disposal, the Commissioners sought an alternate solution. The Division of Community Planning, N.C. Department of Local Affairs, was, at that time, engaged in a planning program for the county. Part of the planning program involved technical assistance in designated action areas. The Planning Board, in conjunction with the Board of County Commissioners, asked DCP to prepare a solid waste disposal plan utilizing the multi-site sanitary landfill system. This report is the result of that request.

The plan proposed in this report is similar in many aspects to the multi-site plans which have been prepared by the NC State Board of Health. The preparation of this plan involved close coordination with many local officials and county residents. It is hoped that this solid-waste disposal plan will be acceptable and one which will be implemented.

The Solid Waste and Vector Control Section of the NC State Board of Health has been most helpful in assisting in the preparation of this plan. It should be understood that prior to receiving any Federal assistance to implement a solid waste program, the NC State Board of Health must endorse the plan. Recently the NC State Board of Health has been favoring the container system as was originally proposed for Brunswick County. Bearing these facts in mind, the following multi-site sanitary landfill program is presented to the Brunswick County Board of Commissioners as an alternate means to meet the solid waste disposal needs of the county.

INTRODUCTION

Located in Southeastern North Carolina, Brunswick County is one of the larger counties in the state with a total land area of 855 square miles. The 1970 Census population is 24,223 - with a population density of 28 persons per square mile. Farming and fishing have accounted for a sizeable segment of the income in Brunswick County. Within the last two decades, industry and the tourist trade have made a significant contribution to the economy of the county.

With this growth, the problem of how to handle the tons of refuse produced annually offers one of the greatest challenges to face the county. This is a problem of the community as well as the individual and continual disregard on the part of either will certainly result in unnecessary disease and annoyance. Lack of understanding, carelessness and indifference is largely responsible for our present problems. Frequently, individual effort is fruitless without public control, but, at the same time, efforts of public health agencies are doomed to failure without support of individual citizens.

Refuse which is contaminated with disease organisms originating in the home or institutions provide food and shelter for many of our most important public health pests, insects and rodents. It is, therefore, necessary that refuse be handled in an acceptable manner from the point of origin to that of disposal. Refuse at the point of origin, is largely the responsibility of the producer and must be stored in an approved manner. Refuse collection is accomplished in three ways: (1) by the individual, (2) by a governmental agency using public funds, and (3) by private contract garbage collectors who are paid by the individual receiving the service. Refuse disposal is normally accomplished by (1) the individual who utilizes his own land or disposal areas belonging to private or public agencies, (2) governmental agencies who utilize publicly-owned disposal areas or (3) by private collectors who provide their own disposal area or utilize that of a public agency. No longer is the old-fashioned, unsanitary refuse dump acceptable in today's society as a means of refuse disposal. An open dump is aesthetically offensive because of smoke and odors and is responsible for the reduction of adjacent land values, and are gradually being replaced by the sanitary landfill or other sanitary means of refuse disposal.

The Solid Waste Disposal program presented in this report is specifically oriented to the particular needs and resources of rural Brunswick County.

LEGAL ASPECTS¹

North Carolina has adopted enabling legislation that allows county Boards of Health and Boards of Commissioners to exercise their general police power to protect health by regulating storage, collection, and disposal of solid waste.

¹Sanitary Engineering Division, North Carolina State Board of Health, Survey Data and Proposed Management Programs for Solid Waste Disposal in Brunswick County, p. 2.

Boards of Health

County Boards of Health have the authority to regulate the collection and disposal of refuse. This authority is based on the broad powers as set forth in GS 130-17 which permits boards of health to make rules and regulations as necessary to protect and to advance public health. Such regulations typically cover three major areas:

1. The type of container in which garbage is stored.
2. Sanitation standards for equipment used in the collection of refuse.
3. Standards and methods for disposal.

Attached to this report is a copy of an ordinance that has been prepared for adoption by the local boards of health for the control of storage, collection, and disposal of refuse. (See Appendix A.)

Boards of Commissioners

County Boards of Commissioners have authority to regulate under G.S. 153-272 through 275, the collection and disposal of refuse by private persons and firms outside municipal boundaries. (See Appendix B.)

In exercising this authority, the Board of Commissioners may:

1. Issue licenses or permits for the collection and disposal of refuse.
2. Prohibit collection and disposal by unlicensed persons.
3. Grant licensed persons exclusive rights to collect in designated areas.
4. Regulate the fees charged for private collection services.
5. Operate collection and disposal services.

REFUSE PROBLEM IN BRUNSWICK COUNTY

It is estimated that 8,841 tons of refuse is produced annually by the people of Brunswick County. The amount is determined by judging that rural people produce two pounds of refuse per day. Part of this tonnage is being burned, part is buried and some is fed to livestock, but a large part is cluttering farms, woodlands, streams, rivers, beaches, and highways. The specific amount of solid waste produced by the large summer population is not known, but is of sufficient volume to be considered a major factor, especially in regards to the location of landfill sites.

SOLID WASTE DISPOSAL PROGRAM

To protect the health of the people of Brunswick County and to prevent the depreciation of the county's environment, the following plan for storage, collection, and disposal of refuse is recommended.

Storage

Under the authority granted in the General Statutes, the Brunswick County Board of Health should adopt ordinances that require all householders to provide containers of a type approved by the Health Director. (See Appendix A.) Every such container should be constructed of metal or equally durable material, in such a manner as to be strong, watertight, not easily corrodible, fly and rodent proof, be equipped with handles and should have a capacity of not more than 32 gallons.

Business and institutions should provide containers that are in accordance with those required for householders other than size which may vary with the approval of the Health Director.

Collection

It is recommended that house-to-house collection in unincorporated areas of Brunswick County be left to private enterprise (private collectors). The private agencies should be regulated by the County Commissioners as provided for in the General Statutes.

Disposal

It is hoped that a landfill will be within five to six miles of every citizen in the county. Of course, there will be some areas that are not within this radius of a landfill. The "green swamp" area which is divided by Highway 211, is such an area. None of the prepared sites will serve over 5,000 people on a year-round basis, therefore, five acres have proven to be a large enough site area to handle the refuse created by this number of people for many years. This should be true even when the summer population is considered by the three sites closest to the coast. Because of the strong feeling of the Board of Commissioners that a landfill should generally be located in each of the six townships in the county and that such landfills would be accessible to the majority of the population, it is recommended that six sanitary landfills be established. The six disposal sites should be in the general vicinity of the location shown in Figure 1. Essentially, the sites will be covered every other day. The possibility of covering the three sites near the coast every day is being considered.

After the county sites are opened, the present dumps, including those on private property, should be closed and covered with two feet of compacted earth. All materials at existing roadside dumps should be hauled to one of the landfills or holes should be dug at each site or dump before covering or removing.

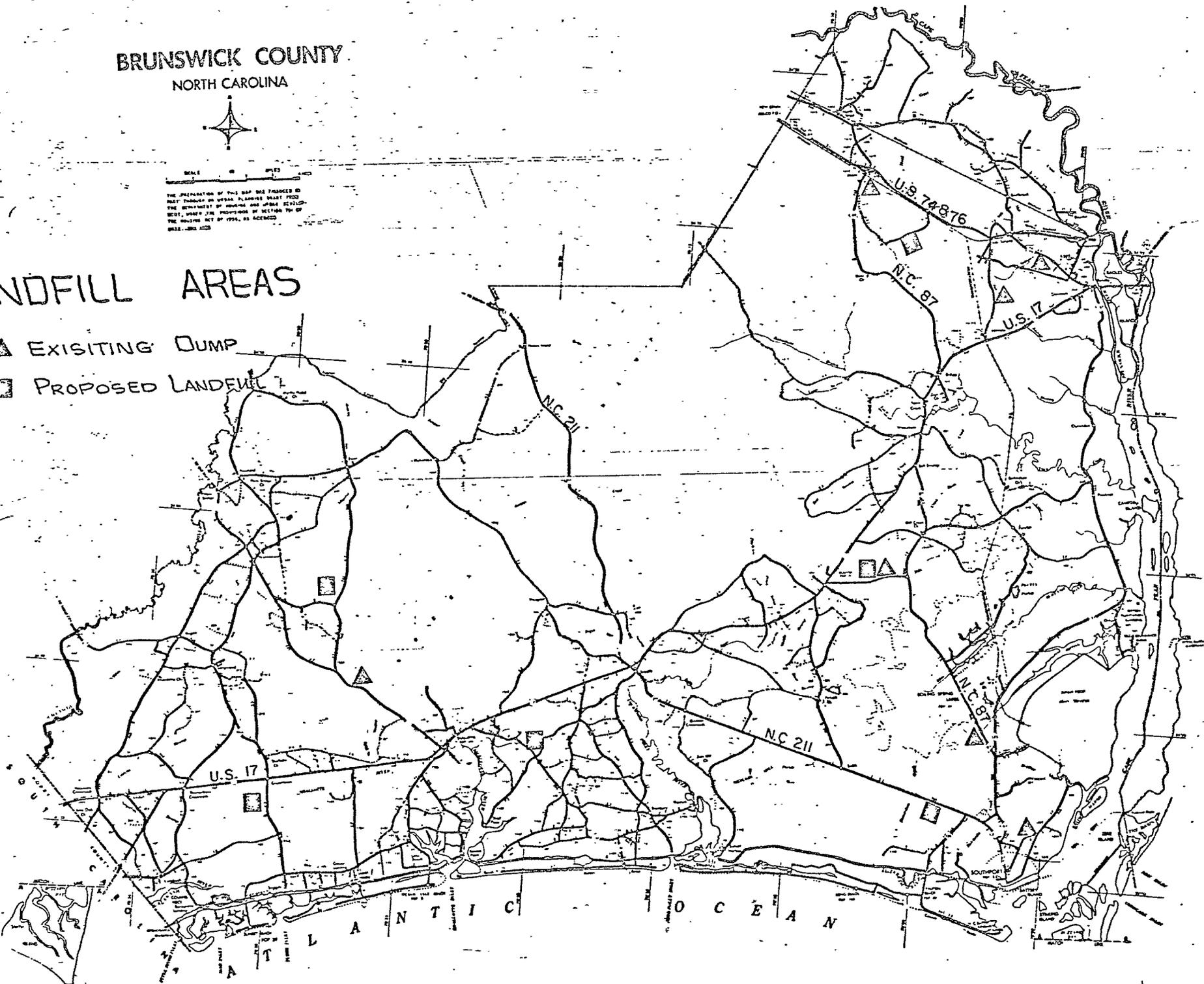
BRUNSWICK COUNTY NORTH CAROLINA



SCALE 1" = 1 MILE
THE PREPARATION OF THIS MAP WAS FINANCED IN PART THROUGH AN AGRICULTURAL MEASUREMENT ACTIVITY OF THE DEPARTMENT OF AGRICULTURE AND FOOD SECURITY, UNDER THE PROVISIONS OF SECTION 101 OF THE HOUSE BILL OF 1991, AS AMENDED
DATE: 1991

LANDFILL AREAS

- ▲ EXISTING DUMP
- PROPOSED LANDFILL



There is nothing in these recommendations that would prevent the individual from disposing if his own refuse as long as it is done in a manner approved by the Health Director.

Supervision

It is recommended that the responsibility for initiating the program be with the County Manager. He should secure the sites, obtain bids on the equipment, and hire qualified personnel. The County Sanitarian should be kept abreast and informed of these activities. Once the program is implemented, it is recommended that the Brunswick County Health Department be put in charge to insure adequate supervision. The latter would promote the program, educate the public, and supervise the landfill operation.

Operation

Figure 1 shows the approximate location of each landfill. It is hoped that a site will be within five miles of almost everyone in the county. The sites initially would be operated as modified sanitary landfills with compacting and covering on an every other day basis. Hopefully, the trench method will be employed at every site. If the water table is too high, the refuse should be placed on top of the ground and cover material should be placed over it.

The equipment that is suggested in Table 1 will be used in the following manner:

The high-lift loader will be used to compact the solid waste at each site before it is covered. The bucket on the front of the loader will be used to secure cover material that will be placed over the compacted waste. It is recommended that the piece of equipment have an inclosed cab with heat and air conditioning to insure comfortable working conditions for the operator. A low-boy trailer truck will transfer the piece of equipment from site to site. Finally, a dump truck should be provided to clean up existing dumps, be available to haul away waste created by various county agencies, and to serve as a general utility vehicle for the county disposal program.

The recommendations of this report were made to meet the anticipated needs for a ten-year period. Before the end of this time, studies of new methods should be made and incorporated in plans for the future.

COST ANALYSIS

The multi-site solid waste disposal program for Brunswick County will require an initial capital investment of \$66,000, and will require an annual expenditure of \$35,100 for operation. On a per capita basis, this means that the program can be launched for an investment of \$2.76 per county resident and can be operated each year for a cost of \$1.45 per county resident. At these cost levels, the 8,841 tons of refuse generated in the county each year can be disposed of at a cost of \$3.97 per ton.

Capital Investment Costs

To get the solid waste disposal program underway, Brunswick County must acquire land for the disposal sites, equipment to handle the refuse, and structures to protect the equipment. These initial capital investments are itemized in Table 1 and are estimated to total \$66,000.

Table 1
CAPITAL INVESTMENT NEEDS

<u>Capital Investment Item</u>	<u>Estimated Cost</u>
<u>Sites</u>	
Six sites of five acres each (30 acres at \$300 per acre)	\$ 9,000
<u>Equipment</u>	
One High Lift Loader with cab, air conditioning and heater	\$31,000
One dump truck	6,000
One Low-boy trailer truck	4,000
	<u>\$41,000</u>
<u>Structures</u>	
Equipment Shelter, office and fencing surrounding the site	\$ 3,000
<u>Miscellaneous</u>	
Site preparation (access roads, signs, trenching)	\$10,000
Legal Fees	2,000
Surveying	1,000
	<u>\$13,000</u>
<u>GRAND TOTAL</u>	<u>\$66,000</u>

Funds for the initial capital investment are available from three sources - local funds provided by the county, and grant and loan funds from the Farmers Home Administration (see Table 2). The County Finance Act permits counties to issue bonds to finance the purchase of sanitary landfill sites and equipment to operate the sites. It is estimated that Brunswick County could issue bonds for \$22,000 for this purpose.

The Farmers Home Administration (FHA) makes grant and loan funds available to counties for initiating solid waste disposal programs. According to the guidelines, FHA will make a grant to Brunswick County to cover one-half of the initial capital investment cost, which in this case would be \$33,000. The remaining \$11,000 would have to be available from local funds.

Table 2
SOURCE OF FUNDS FOR CAPITAL INVESTMENT

Source	Amount
Brunswick County Local Funds	\$11,000
Grant from Farmers Home Administration	33,000
Loan from Farmers Home Administration	<u>22,000</u>
TOTAL	\$66,000

Operating Costs

The annual expense for operating the six landfill sites is estimated to be \$35,100. These costs are itemized in Table 3.

The funds for operating the landfill program are available from two sources - the county and the municipalities in the county that would utilize the landfill sites. The county would derive its share of the operating costs through a three and one-half cent tax levy which would produce approximately \$24,500. The remaining funds would be contributed by the municipalities according to a plan based on municipal population and the amount of solid waste created. Table 4 summarizes the distribution of operating costs according to this cost sharing plan.

Table 3
ANNUAL OPERATING COSTS

Item	Cost		
One loader operator	\$6,000		
One assistant	5,000		
Six site managers at \$1,680 each	10,080		
Equipment depreciation	4,500	6200	1700
Fuel to operate equipment at the sites	1,460	3500	2040
Fuel to move the equipment between the sites	1,500	2000	500
Repairs	1,000	—	—
Night lights	360		
Liability Insurance at \$200 per site	1,200		
Payment on Loan	2,000		
Miscellaneous (Social Security, Employee Ins., etc.)	<u>2,000</u>		
TOTAL	\$35,100		\$11,270

Table 4
 SOURCE OF FUNDS FOR OPERATING COSTS

Source	Funds
<u>Brunswick County</u>	
Three and one-half cent tax levy	<u>\$24,500</u>
County Share	<u>\$24,500</u>
Municipalities	<u>\$10,600</u>
TOTAL	<u>\$35,100</u>

When the tourists and summer residents are taken into consideration, the beaches should pay a greater share than shown in Table 4. The specific amount will have to be determined by officials from the respective beaches and county officials. Factors to be considered should include the cost to the beaches in the past for disposal of solid wastes, growth potential, financial capacity and whether extra equipment and personnel are necessary to cover the three sites closest to beaches everyday during the summer. Furthermore, it is recommended that a special rate be established for industries and private collectors that use the sites. A survey of other landfill operations in Eastern North Carolina revealed that private collectors, commercial, and industrial users are not charged more than fifty cents per cubic yard for use of the landfill. It is recommended that a fee schedule between twenty-five cents and fifty cents be established for industrial users and private collectors. There should be no charge to the general public for use of the landfill sites.

APPENDIX A

RULES AND REGULATIONS GOVERNING THE STORAGE, COLLECTION, TRANSPORTING, AND DISPOSAL OF REFUSE IN BRUNSWICK COUNTY, NORTH CAROLINA²

Be It Ordained By The Brunswick County Board of Health:

That the following regulations for the protection of public health are hereby adopted pursuant to authority granted by Section 17 of Chapter 130 of the General Statutes of North Carolina, and shall govern the storage, collection, transporting, and disposal of refuse throughout Brunswick County, except that these regulations shall not apply to the area within any municipality, sanitary district, or other governmental unit which operates its own refuse collection and disposal system.

SECTION I - DEFINITIONS

The following definitions shall apply in the interpretation and enforcement of these regulations:

- A. The word "refuse" means garbage or rubbish.
- B. The word "garbage" means all putrescible solid wastes, including vegetable matter, animal offal, and carcasses of small animals, but excluding human body wastes, animal manure, and recognizable industrial by-products. Used milk cartons, or other discarded food containers that are not dry and clean shall be included in this definition.
- C. The word "rubbish" means non-putrescible solid wastes.
- D. The term "Health Director" means the director of the Brunswick County Health Department, or his authorized representative.
- E. The word "person" means any individual, firm, governmental unit, organization, partnership, corporation, or company.
- F. The term "refuse collector" means any person who collects or transports refuse, other than one who removes refuse from his own premises.

SECTION II - REFUSE STORAGE

No owner, occupant, tenant, or lessee of any premises shall permit any garbage or other refuse to accumulate upon such premises that is not stored in a manner approved by the Health Director.

- (1) Garbage shall be stored in a container of a type approved by the Health Director. Every such container shall be constructed of metal, or equally durable material, in such a manner as to be strong, water tight, not easily corrodible, fly proof, and rodent proof, shall have a capacity of not more than 32 gallons; shall have handles

²Model ordinance recommended by the State Board of Health.

designed for lifting; and shall have fly-tight covers which shall be kept in place at all times, except when garbage or other refuse is being deposited in or removed from such container. A sufficient number of containers shall be provided to hold at least one week's accumulation of garbage. Each garbage container shall be kept clean so that no odor or other nuisance will exist.

- (2) Rubbish shall be stored in such a manner that it will not provide harborage to rats, nor cause a fire hazard.

SECTION III - REFUSE COLLECTION

The owner, occupant, tenant, or lessee of any premises upon which garbage is stored shall remove, or cause to be removed, all garbage from said premises at least once a week. Refuse collectors shall remove all refuse from the premises, when they receive compensation for this service, at least once a week. The work shall be done in a clean and orderly manner without causing damage to the container. Any refuse that is spilled shall be cleaned up, and the premises left in a sanitary condition.

SECTION IV - REFUSE TRANSPORTATION

No refuse collector shall transport refuse in a conveyance that has not been approved by the Health Director. Such conveyances shall be leak proof, and covered with a canvas, or other substantial material, unless it is constructed in such a manner as to prevent leakage or spillage of the refuse. Truck beds in which garbage is hauled shall be cleaned daily.

SECTION V - REFUSE DISPOSAL

No refuse collector, or other person, shall dispose of refuse, except by one of the following methods; provided that this section shall not be construed to prevent any person from properly disposing of refuse from his own residence, or business establishment, by burning or burying it in a safe and sanitary manner approved by the Health Director.

- (1) By burning refuse in an incinerator of a type approved by the Health Director as safe and sanitary.
- (2) By burying refuse in a sanitary landfill that is designed, operated, and equipped in accordance with the recommendations in Special Bulletin No. 479 of the North Carolina State Board of Health, Refuse Disposal By Sanitary Landfill. This bulletin is hereby incorporated by reference pursuant to authority granted by Article 4 of Chapter 130 of the General Statutes of North Carolina, and becomes a part of these regulations as fully as if set out verbatim herein. A copy of said bulletin is on file in the office of the Clerk of the Superior Court of Brunswick County, and in the office of the Health Director.

SECTION VI - REFUSE COLLECTOR PERMITS

- A. No person shall collect, transport, or dispose of refuse without a written permit from the Health Director; provided that this subsection shall not apply to any person disposing of refuse from his own

residence, or business establishment. The Health Director shall issue such permit only when, upon inspection, he finds that the facilities, equipment, and proposed operating methods of the applicant are in compliance with the requirements of these regulations.

SECTION VII - REVOCATION OF PERMITS

- A. Whenever upon the inspection of facilities, equipment, or operating methods of any person holding a permit to collect, transport, or dispose of refuse, the Health Director finds that conditions or practices exist which are in violation of the provisions of these regulations, the Health Director shall give notice in writing to such person that unless such conditions or practices are corrected within ten days, the permit will be revoked. At the end of such ten-day period, the Health Director shall make a re-inspection, and if he finds that such conditions or practices have not been corrected, he shall give notice in writing to such person that his permit has been revoked. Upon the receipt of this notice, such person shall immediately cease to collect, transport, or dispose of refuse. No such permit shall be reinstated by the Health Director until he finds, upon inspection, that all provisions of these regulations have been complied with, except that following a hearing, as hereinafter provided, such permit may be reinstated by order of the County Board of Health.
- B. Upon written petition from a person whose permit to collect, transport, or dispose of refuse has been denied or revoked, the County Board of Health shall hold a hearing at which time such person shall be given an opportunity to show that his permit should not have been denied or revoked. No such hearing shall be held unless written petition therefor shall have been filed in the office of the Health Director on or before the tenth day following the day on which said permit was denied or revoked. The Health Director shall convey the request for a hearing to the Chairman of the County Board of Health as soon as practicable. Such hearing shall be held within _____ days following the receipt of such petition by the Chairman. After such hearing, the County Board of Health may either approve the denial or revocation of such permit, or order that it be issued or reinstated, depending upon its findings as to whether or not these regulations have been complied with.

SECTION VIII - PENALTY

Any person who violates any rules and regulations adopted by a local Board of Health shall be guilty of a misdemeanor, and fined not exceeding fifty dollars (\$50) or imprisoned not exceeding thirty days (30), as provided by Section 203 of Chapter 130 of the General Statutes of North Carolina.

SECTION IX - CONFLICTING REGULATIONS REPEALED

All regulations or parts of regulations in conflict herewith are repealed only to the extent necessary to give these regulations full force and effect.

SECTION X - SEVERABILITY

If any provision of these rules and regulations, or the application thereof to any person or circumstance, is held invalid, the remainder of the rules and regulations, or the application of such provision to other persons or circumstances, shall not be affected thereby.

SECTION XI - EFFECTIVE DATE

These regulations shall be in full force and effect from and after
_____.

APPENDIX B

AN ACT TO AUTHORIZE COUNTIES TO REGULATE THE COLLECTION OF GARBAGE

ARTICLE 22³

Garbage Collection and Disposal

G.S. 153-272. Control of Private Collectors. -- The board of county commissioners of any county is hereby empowered to regulate the collection and disposal of garbage by private persons, firms, or corporations outside of the incorporated cities and towns of the county for the purpose of encouraging and attempting to insure an adequate and continuing service of garbage collection and disposal where the board deems it to be desirable. In the exercise of such power, the board may issue a license to any private person, firm or corporation to collect and/or dispose of garbage; may prohibit the collection and/or disposal of garbage by unlicensed persons, firms, or corporations; may grant to licensed persons, firms, or corporations the exclusive right to collect and/or dispose of garbage for compensation within a specified area and prohibit unauthorized persons, firms, or corporations from collecting and/or disposing of garbage within said area; and may regulate the fees charged by licensed persons, firms, and corporations for the collection and/or disposal of garbage to the end that reasonable compensation may be provided for such services. The board may adopt regulations pursuant to the power herein granted, and the violation of any such regulation shall be a misdemeanor, subject to a fine not exceeding fifty dollars, or imprisonment not exceeding thirty days; each week that any such violation continues to exist shall be a separate offense. (1961, c. 514, §.1)

G.S. 153-273. County collection and disposal. -- The board of county commissioners of any county is hereby empowered to establish and operate garbage collection and/or disposal facilities in areas outside of incorporated cities and towns where, in its opinion, the need for such facilities exists. The board may contract with any city or town to collect and/or dispose of garbage in any such area. In the disposal of garbage, the board may use any vacant land owned by the county, or it may acquire suitable sites for such purpose. The board may make appropriations to carry out the activities herein authorized. The board may impose fees for the use of disposal facilities, and in the event it shall provide for the collection of garbage, it shall charge fees for such collection service sufficient in its opinion to defray the expense of collection. (1961, c. 514, s.1)

G.S. 153-274. Powers of local boards of health unaffected. -- Nothing in this article shall affect the powers of local boards of health to control the keeping, removal, collection, and disposal of garbage, insofar as the exercise of any such power is necessary to protect and advance the public health. (1961, c. 514, s.1)

³North Carolina General Statutes, Chapter 153.

G.S. 153-275 Powers granted herein supplementary. -- The powers granted to counties by this article shall be deemed supplementary to any powers heretofore or hereafter granted by any other law, either general, special, or local, for the same or similar purpose, and in any case where the provisions of this article conflict with or are different from the provisions of such other law, the board of county commissioners may in its discretion proceed in accordance with the provisions of such other law, or, as an alternative method, in accordance with the provisions of this article. (1961, c. 514, s.1)

Sec. 1a. The provisions of this Act shall not apply to Vance County.

Note:

Chapter 904 of the 1961 Session Laws exempts Johnston County from all provisions of this article.

Chapter 912 of the 1961 Session Laws authorizes Dare County Board of Commissioners to levy ad valorem tax in areas of the county in which the county provides garbage collection service.

RECOMMENDED ENTRANCE SIGN

4' - 0"

RELATIVE SIZE

SANITARY LANDFILL

OPERATED BY

BRUNSWICK COUNTY
IN COOPERATION WITH

HOURS OF OPERATION

MON-FRI. 8³⁰ AM - 4³⁰ PM
SAT. 8³⁰ AM - 1⁰⁰ PM
SUN. CLOSED

RULES & REGULATIONS

1. DUMP ONLY DURING OPEN HOURS
2. DUMP IN AREA DESIGNATED BY ATTENDANT
3. NO FLAMMABLE, POISONOUS OR BULKY ITEMS
4. NO BURNING
5. NO SCAVENGING
6. KEEP PETS AND CHILDREN INSIDE VEHICLE

FEE SCHEDULE

GENERAL PUBLIC (UP TO 3- 35 GAL. CONTAINERS)	• • •	NO CHARGE
PRIVATE COLLECTORS COMMERCIAL INDUSTRIAL OTHER	} • • • •	\$.35 PER CU. YD.

IN CASE OF EMERGENCY CALL _____

FULL

1/3

2/3

1/3

1/3

2/3

1/2

1/3

1/3

1/3

1/2

1/3

1/3

1/3

1/3

1/3

1/2

1/3

1/3

1/3

6' - 0"

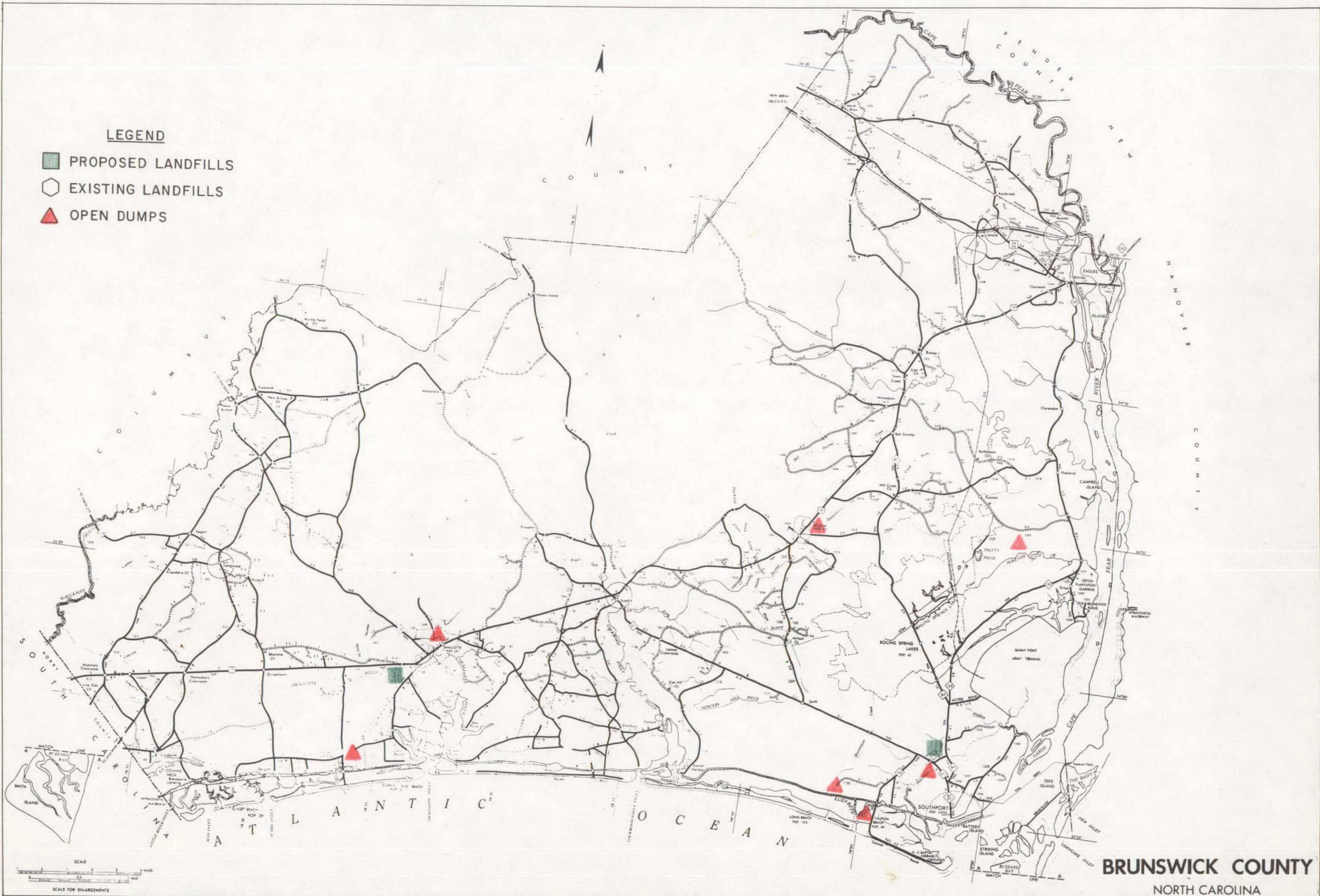
TECHNICAL ASSISTANCE WAS PROVIDED BY:

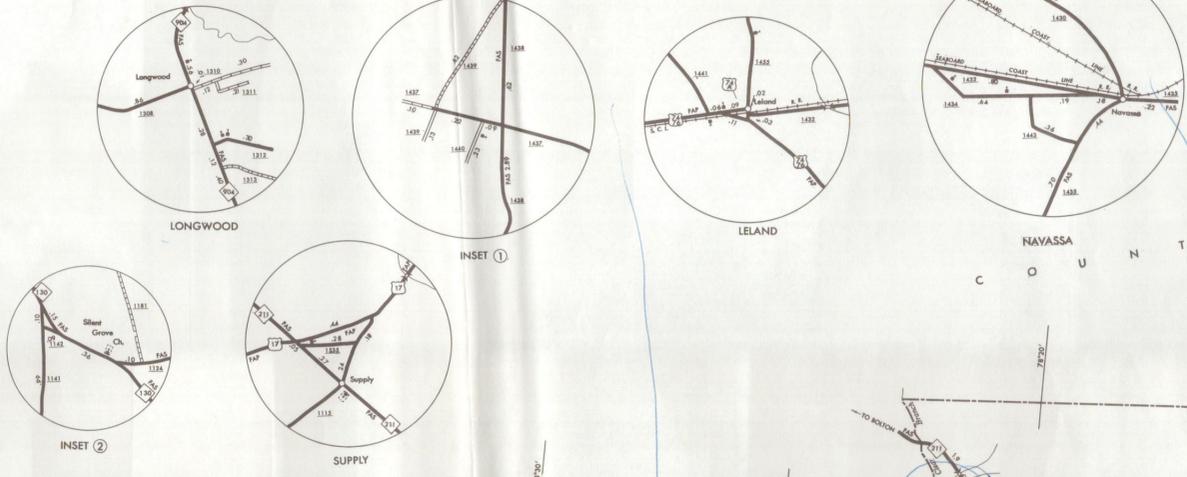
State of North Carolina Department of Local Affairs
.. G. Irvin Aldridge, Director
Division of Community Planning
.. George Monaghan, Administrator
Eastern Area Office, Fayetteville, N.C.
.. Clifford G. Strassenburg, Director
.. *Paul G. Butler, Jr., Planner-in-Charge
.. William C. Burgess, Jr., Draftsman
Joyce B. Sawyers, Secretary

*Responsible for preparing this report.

LEGEND

-  PROPOSED LANDFILLS
-  EXISTING LANDFILLS
-  OPEN DUMPS



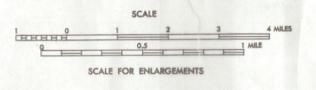


- LEGEND**
- IMPASSABLE ROAD OR TRAIL
 - PRIMITIVE OR UNIMPROVED ROAD
 - GRADED AND DRAINED ROAD
 - SOIL GRAVEY OR STONE SURFACED ROAD
 - HARD SURFACED ROAD
 - 4 LANE UNDIVIDED HIGHWAY
 - DIVIDED HIGHWAY
 - HIGHWAY WITH FRONTAGE ROADS
 - FCA
 - FULL CONTROL ACCESS
 - FEDERAL AID INTERSTATE ROAD
 - FEDERAL AID PRIMARY ROAD
 - FEDERAL AID SECONDARY ROAD
 - FAS
 - NON-SYSTEM ROAD
 - PROJECTED LOCATION
 - INTERSECTION DISTANCE
 - TRAFFIC CIRCLE
 - HIGHWAY INTERCHANGE
 - DETAILED HIGHWAY INTERCHANGE
 - INTERSTATE HIGHWAY "1"
 - U.S. NUMBERED HIGHWAY
 - N.C. NUMBERED HIGHWAY
 - 1180
 - SECONDARY ROAD NUMBER
 - RAILROAD, ANY NUMBER OF TRACKS
 - USED BY SINGLE OPERATING COMPANY
 - RAILROAD, ANY NUMBER OF TRACKS
 - USED BY MORE THAN ONE OPERATING COMPANY ON SAME OR ADJACENT COMPANY'S WAY
 - RAILROAD STATION
 - GRADE CROSSING
 - UNDERPASS
 - OVERPASS
 - RAILROAD TUNNEL
 - ARMY, NAVY OR MARINE CORPS FIELD
 - COMMA OR MUNICIPAL AIRPORT
 - MARKED AIRSTRIP FIELD
 - HANGAR ON FIELD "X" IN SYMBOL
 - DOCK, PIER OR LANDING
 - FREE OR TOLL FERRY
 - LIGHT, NAUTICAL
 - LIGHTHOUSE
 - COAST GUARD STATION
 - CANAL
 - HARBOR, STREAM
 - WIDE STREAM
 - DAM WITH LOCK
 - DAM
 - RESERVOIR, POND OR LAKE
 - PROMINENT PEAK, HEMERAL
 - PROTECT BOUNDARY
 - ROAD THROUGH MOUNTAIN PASS
 - HIGHWAY BRIDGE OVER 20 FT.
 - DRAW SPAN ON BRIDGE
 - HIGHWAY TUNNEL
 - FORD
 - STATE LINE
 - COUNTY LINE
 - CITY LIMITS
 - RESERVATION OR PARK BOUNDARY
 - INSET AREA
 - DELIMITED AREA, POPULATION EST.
 - COUNTY SEAT
 - OTHER TOWNS AND VILLAGES
 - TRIANGULATION STATION
 - INCORPORATED CITY OR VILLAGE, CHURCHES
 - CHURCH
 - CHURCH WITH CEMETERY
 - SARCOPHAGUS
 - CORRECTIONAL OR PRISON BLDG.
 - STATE HIGHWAY GARAGE
 - HIGHWAY SUB-OFFICE
 - REST AREA

BRUNSWICK COUNTY

NORTH CAROLINA

PREPARED BY THE
 NORTH CAROLINA STATE HIGHWAY COMMISSION
 PLANNING AND RESEARCH DEPARTMENT
 IN COOPERATION WITH THE
 U.S. DEPARTMENT OF TRANSPORTATION
 FEDERAL HIGHWAY ADMINISTRATION



NOTE: MAP INCLUDES ONLY STATE MAINTAINED ROADS OR IMPORTANT NON-SYSTEM ROADS. AVIATION NOT SHOWN ON FRONTAGE ROADS. ROADS SHOWN AS OF JAN. 1, 1970

