555SERBSF10,632

555SERBSF10,632

Site Name (Subject):	TOWN CREEK REGIONAL WWTP
Site ID (Document ID):	NCD980843528
Document Name (DocType):	Contractor Report (CONTR)
Report Segment:	
Description:	Site Inspection Prioritization
Date of Document:	8/1/1994
Date Received:	
Box: *Enter SF and # with no spaces*	SF10,632
Access Level:	PUBLIC
Division:	WASTE MANAGEMENT
Section:	SUPERFUND
Program (Document Group):	SERB (SERB)
Document Category:	FACILITY

Print Report for Record | Go to New Blank Record | Go to New Record - (default to last record values) | Delete Record

To NC

BLACK & VEATCH Waste Science, Inc.

1201 Pacific Avenue, Suite 1100, Tacoma, Washington 98402-4301, (206) 383-1436, Fax: (206) 383-8930

RECEIVED
FEB 14 1995
SUPERFUND SECTION

U.S. Environmental Protection Agency
Town Creek Regional Wastewater Treatment Plant
Work Assignment 12

BVWS Project 52012.460
August 1, 1994

REC'D.
JAN 31 1995

Mr. Narindar Kumar
Chief, Site Assessment Section
U.S. Environmental Protection Agency
345 Courtland Street, NE
Atlanta, Georgia 30365

DATE REPORT ACCEPTED 12-1-94
DISPOSITION NFRAP
SAM SIGNATURE Cynthia Gurley

Subject: Site Inspection Prioritization
Town Creek Regional Wastewater Treatment Plant
Rowan County, North Carolina
EPA ID NCD980843528

Dear Mr. Kumar:

BLACK & VEATCH Waste Science, Inc. has been tasked by the U.S. Environmental Protection Agency (EPA) to conduct a Site Inspection Prioritization at the Town Creek Regional Wastewater Treatment Plant site (the site) in Spencer, Rowan County, North Carolina. In accordance with the Town Creek Regional Wastewater Treatment Plant's scope of work, a preliminary Hazard Ranking System (HRS) score was prepared to determine the need for future activities at the site.

The Town Creek Regional Wastewater Treatment Plant is an active facility that serves the city of Salisbury and surrounding areas (Ref. 2, p. 1). Former wastewater treatment plant employees reported that solvents and miscellaneous waste liquids from the Proctor Chemical Company were buried at various locations surrounding

the facility from the late 1960s to early 1970s (Ref. 2, p. 1, Appendix E). Former employees reported that liquid substances were poured directly into trenches or were buried in drums (Ref. 2, p. 2). According to witnesses, trenches were 6 to 8 feet deep and were covered with soil (Ref. 2, p. 3). Chemicals assumed to have been buried at the site based on Proctor Chemical Companies typical waste streams include acetone, 1,2-dichloroethane, methyl ethyl ketone, methyl isobutyl ketone, toluene, and xylene (Ref. 2, p. 3).

Three burial areas were identified at the facility (Ref. 2, p. 3). In October 1984, the North Carolina Department of Human Resources, Division of Health Services performed a Site Inspection at the Town Creek Wastewater Treatment Plant site (Ref. 2). One upgradient groundwater sample, one downgradient surface water and sediment sample, and one soil sample were collected and analyzed for organic and inorganic contaminants (Ref. 2, pp. 3, 4). No contamination was detected on site (Ref. 2, App. B).

A preliminary HRS score for the Town Creek Wastewater Treatment Plant site was calculated using Site Inspection Worksheets. Pathways evaluated include groundwater migration, surface water migration, and air migration. The soil exposure pathway was not evaluated because observed surficial contamination has not been detected in soil at the facility (Ref. 2, App. B). Assumptions used to score the site are outlined in the Site Inspection Worksheets. The site was evaluated as a single source contaminated soil area. The combined burial areas in which the solvent was disposed was reported to be no larger than 2 acres (Ref. 2, App. E). Therefore, a Hazardous Waste Quantity value of 10 was used.

The site lies within the Piedmont physiographic province (Ref. 2, p. 3). The land surface in the Piedmont is underlain by clay-rich, unconsolidated material derived from in situ weathering of the underlying bedrock known as saprolite (Ref 11, p. 252). The area is underlain by fractured igneous and metamorphic rocks which, along with the residual soil, form an interconnected aquifer (Ref. 10, p. 1). The amount of water contained in the rocks decreases with depth, due to decreased weathering and fracturing (Ref. 10, p. 1). Most wells drilled in the Salisbury area are not drilled deeper than 250 to 300 feet below land surface (bls) (Ref. 10, p. 1).

Outside the Salisbury, Spenser and East Spenser city limits, private wells tapping the bedrock aquifer are used for potable water supply (Refs. 1; 6). At the site area, the bedrock aquifer lies approximately 10 feet bls and in some areas may crop out along rivers and streams (Ref. 2, App. E; Ref. 9). A layer of low-permeability clay overlies the bedrock aquifer (Ref. 9). The bedrock is composed of an igneous or metamorphic bedrock that is often weathered at its surface (Ref. 2, p. 3). The Likelihood of Release score for the groundwater pathway was based on a potential to release to the bedrock aquifer. The groundwater migration pathway was based on the nearest well within 0.25 mile of the site, and an assumed total target population of 4,354 people consuming drinking water from the bedrock aquifer within 4 miles of the site. The total score for the groundwater pathway was 1.51.

Surface water at the site migrates approximately 0.1 mile to an unnamed stream, then travels approximately 0.2 miles to Town Creek. From Town Creek, surface water flows approximately 1.5 miles southeast to High Rock Lake, then another 1/3 mile to Crane Creek. Crane Creek, approximately 4-miles long, empties into the Yadkin River. Surface water flows southeast in the Yadkin River throughout the remainder of the 15-mile target distance. The surface water migration pathway Likelihood of Release score of 470 was based on a calculated potential to release from overland/flood migration. The potential to release was calculated using conservative assumptions for drainage area and flood frequency. Surface water in this area is the source of drinking water for municipal water supply (Ref. 6). The city of Salisbury and surrounding communities obtain water from a surface water intake along the Yadkin River upstream of the surface water migration pathway (Ref. 1; 6). The closest downstream intake is at the High Point Lake Dam in the Yadkin River, which serves the city of Denton (Refs. 12; 13). This intake is located approximately 11 miles downstream of the Town Creek WWTP. The Denton municipal water system supplies water to 9,000 connections, or approximately 23,000 people (Ref. 14).

The human food chain portion of the surface water migration pathway was based on data indicating that High Rock Lake and the Yadkin River are fished both for sport and commercially (Ref. 16). High Rock Lake and the Yadkin River are fished commercially for catfish (Ref. 16). No actual contamination was observed, and the target score represents a potential for contamination. The human food chain portion of the surface water migration pathway scored the highest of the three surface water

pathways portions because of a high target score for potential contamination of fisheries downstream of the site. There are no federally-listed or state-listed endangered or threatened aquatic species in any downstream surface water bodies within the target limit distance of the site (Ref. 17, 18). The total score for the surface water pathway was 0.94.

The soil exposure HRS score was not evaluated. No soil contamination was observed during the site investigation (Ref. 2, p. 4).

The air migration pathway score was based on an assumed potential to release score of 500. The targets category for air was dominated by the nearest individual score within 0.25 mile of the site and the potential target population of approximately 20,600 people living within a 4-mile radius of the site (Refs. 1; 5). No known rare species, high quality natural communities, or significant natural areas occur at the site or within a 0.25-mile radius of the site (Ref. 19). However, several rare species, high quality natural communities, and significant natural areas occur within a 4-mile radius of the site (Ref 19). A federally listed endangered or threatened specie of plants, the schweinitz's sunflower (helianthus schweinitzii), is known to occur in both Rowan and Davidson Counties (Ref. 19). The 4-mile radius encompasses both counties (Ref. 1); therefore it was assumed federally listed endangered or threatened species occur within 0.25 miles to 4 miles of the site when evaluating potential contamination sensitive environments. Wetland areas are found both east and north of the site (Ref. 1). North of the site, wetlands surround the Yadkin River. East of the site, a small wetland area is found near High Rock Lake. These wetland areas were also used when the site was scored for potential contamination of sensitive environments. The score for the air migration pathway was 1.22.

HRS SCORING SUMMARY

S_{gw} = 1.51
S_{sw} = 0.94
S_{soil} = 0.0
S_{air} = 1.22

OVERALL SCORE = 1.08

Due to the low overall score, no further action is recommended for the Town Creek Regional Wastewater Treatment Plant. Attached are all references used during this evaluation. If you have any questions or comments, please contact me at (206) 383-1436 or Victor Blix at (404) 643-2320.

Very truly yours,

BLACK & VEATCH Waste Science, Inc.

Susan Martin

Susan M. Martin
Project Engineer

sm
Enclosure

REFERENCES

1. U.S. Geological Survey, 7.5 minute series Topographic Quadrangle Maps of North Carolina: Salisbury, North Carolina, 1962 (Revised 1987); Southmont, North Carolina,1962 (Revised 1976).

2. D. Mark Durway, North Carolina Department of Human Resources, Division of Health Services, Solid and Hazardous Waste Management Branch, Site Inspection Report, Town Creek Regional Wastewater Treatment Plant, Heiligtown Road, Salisbury, North Carolina, November 7, 1984.

3. U.S. Dept. of Commerce, Economics and Statistics Administration, Bureau of the Census, Census of Population Housing, Summary Population and Housing Characteristics, Florida, 1990.

4. Randy Trillaman, Environment, Health, and Natural Resources Department, Water Resources Division, Groundwater Section, personal conversation with Sue Martin, BLACK & VEATCH Waste Science, Inc., July 13, 1994.

5. U.S. Environmental Protection Agency, Graphical Exposure Modeling System (GEMS) Data Base. Compiled from U.S. Bureau of the Census data, 1983.

6. Barret Laciter, Salisbury Water Utility, City Engineer, personal conversation with Sue Martin, BLACK & VEATCH Waste Science, Inc., July 13, 1994.

7. D. M. Hershfield, U.S. Weather Bureau, U.S. Department of Commerce, Rainfall Frequency Atlas of the United States, 2-Year, 24-Hour Rainfall, Technical Paper No. 40, May 1961.

8. Ed Muire, Rowan County Environmental Division, personal conversation with Sue Martin, BLACK & VEATCH Waste Science, Inc., July 13, 1994.

9. Robert Mason, U.S. Geological Survey, personal conversation with Sue Martin, BLACK & VEATCH Waste Science, Inc., July 13, 1994.

10. Harry E. LeGrand, U.S. Geological Survey, Geology and Ground Water in the Stateville Area, North Carolina, Bulletin Number 68, 1954.

11. Linda Aller, Truman Bennett, Jay H. Lehr, Rebecca J. Petty, and Glen Hackett, National Water Well Association, "Drastic: A Standardized System for Evaluating Ground Water Pollution Potential Using Hydrogeologic Settings, April, 1987.

12. Alridge Renn, Environment, Health, and Natural Resources Department, Division of Environmental Management, personal conversation with Sue Martin, BLACK & VEATCH Waste Science, Inc., July 19, 1994.

13. Alridge Renn, Environment, Health, and Natural Resources Department, Division of Environmental Management, personal conversation with Sue Martin, BLACK & VEATCH Waste Science, Inc., July 19, 1994.

14. Jeff Dennard, Denton Water Department, Supervisor of Water and Wastewater, personal conversation with Sue Martin, BLACK & VEATCH Waste Science, July 19, 1994.

15. Robert Mason, U.S. Geological Survey, personal conversation with Sue Martin, BLACK & VEATCH Waste Science, July 19, 1994.

16. Wayne Chapmin, Rowan County District Biologist, personal conversation with Sue Martin, BLACK & VEATCH Waste Science, September 15, 1994.

17. Dick Biggins, U.S. Fish and Wildlife Service, personal conversation with Sue Martin, BLACK & VEATCH Waste Science, September 19, 1994.

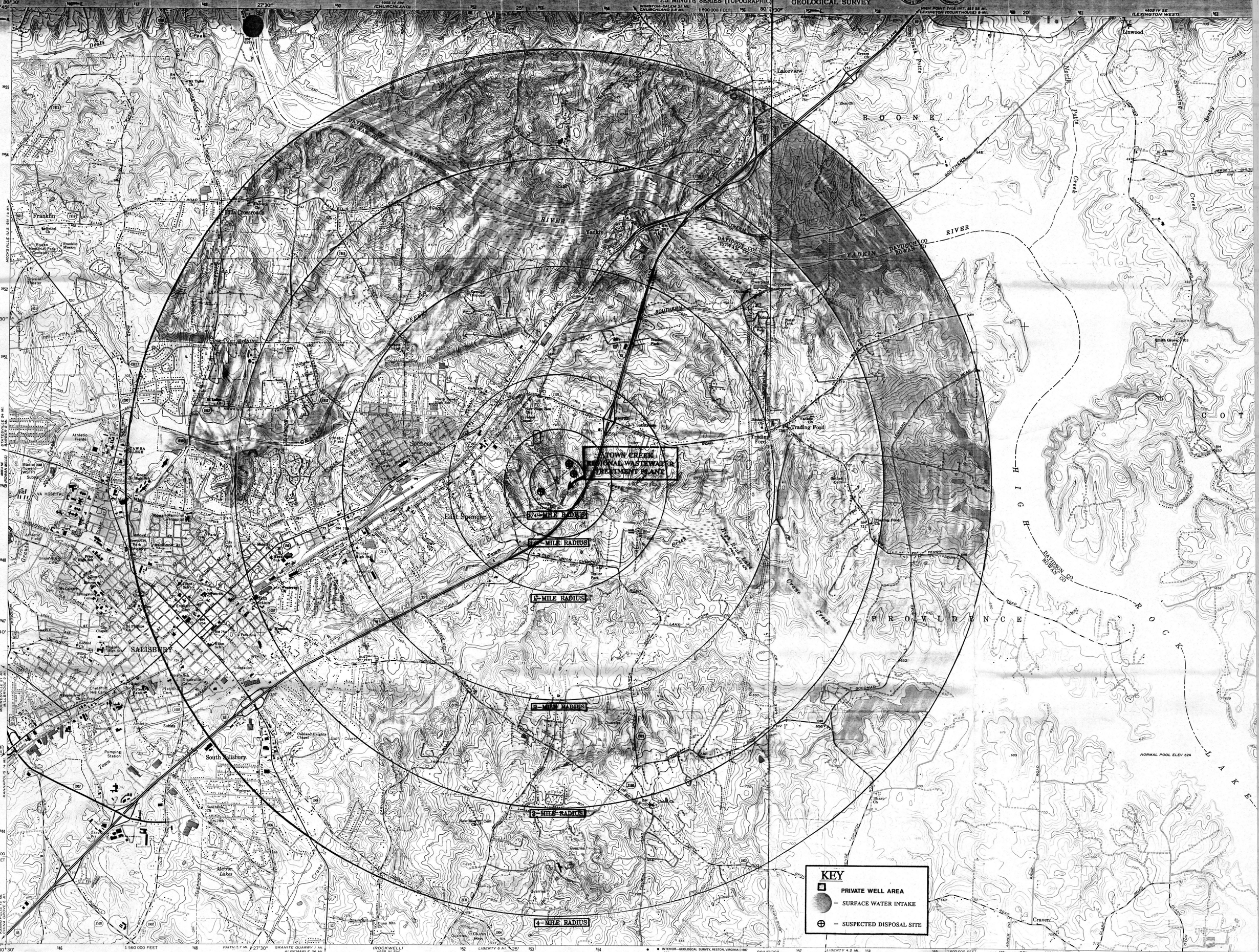
18. John Alderman, North Carolina Wildlife Resources Commission, personal conversation with Sue Martin, BLACK & VEATCH Waste Science, September 26, 1994.

19. Inge Smith, Information Specialist, Natural Heritage Program, personal letter to Sue Martin, BLACK & VEATCH Waste Science, October 4, 1994.

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SALISBURY QUADRANGLE
NORTH CAROLINA
7.5 MINUTE SERIES (TOPOGRAPHIC)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY



Mapped, edited, and published by the Geological Survey

Control by USGS and USC&GS

Topography by photogrammetric methods from aerial photographs taken 1960. Field checked 1962

Polyconic projection. 1927 North American datum
10,000-foot grid based on North Carolina coordinate system
1000-meter Universal Transverse Mercator grid ticks, zone 17, shown in blue

To place on the predicted North American Datum 1983 move the projection lines 10 meters south and 18 meters west as shown by dashed corner ticks

Fine red dashed lines indicate selected fence and field lines where generally visible on aerial photographs. This information is unchecked

Red tint indicates areas in which only landmark buildings are shown

UTM GRID AND 1987 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

SCALE 1:24 000

CONTOUR INTERVAL 10 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U. S. GEOLOGICAL SURVEY
DENVER, COLORADO 80225 OR RESTON, VIRGINIA 22092
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

ROAD CLASSIFICATION

Heavy-duty — Light-duty
Medium-duty — Unimproved dirt
Interstate Route — U. S. Route — State Route

QUADRANGLE LOCATION

Revisions shown in purple and woodland compiled in cooperation with State of North Carolina agencies from aerial photographs taken 1984 and other sources. This information not field checked
Map edited 1987

SALISBURY, N. C.
35080-F4-TF-024

1962
PHOTOREVISED 1987
DMA 4955 III NW–SERIES V842

Mapped, edited, and published by the Geological Survey

Control by USGS and USC&GS

Topography by photogrammetric methods from aerial photographs taken 1960. Field checked 1962

Polyconic projection. 1927 North American datum
10,000-foot grid based on North Carolina coordinate system
1000-meter Universal Transverse Mercator grid ticks, zone 17, shown in blue

To place on the predicted North American Datum 1983 move the projection lines 10 meters south and 18 meters west as shown by dashed corner ticks

Fine red dashed lines indicate selected fence and field lines where generally visible on aerial photographs. This information is unchecked

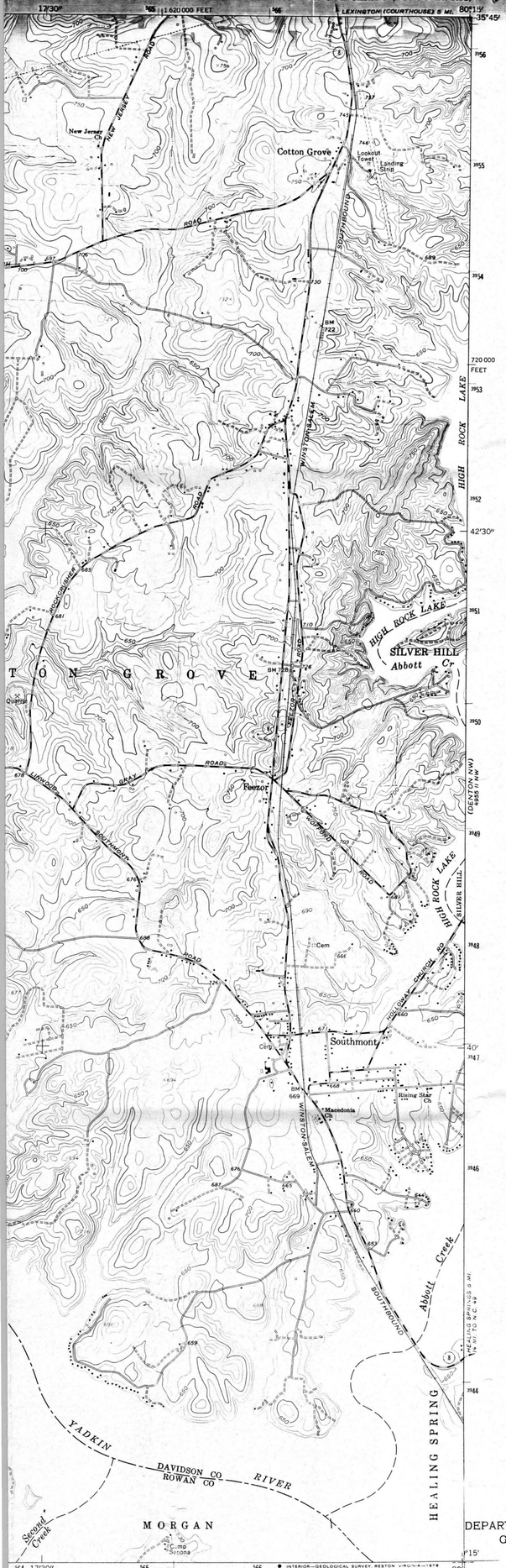
UTM GRID AND 1962 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

SCALE 1:24 000

CONTOUR INTERVAL 10 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U. S. GEOLOGICAL SURVEY, RESTON, VIRGINIA 22092
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

SOUTHMONT QUADRANGLE
NORTH CAROLINA
7.5 MINUTE SERIES (TOPOGRAPHIC)



ROAD CLASSIFICATION

Heavy-duty — Light-duty
Medium-duty — Unimproved dirt
Interstate Route — U.S. Route — State Route

QUADRANGLE LOCATION

Map photoinspected 1978
No major culture or drainage changes observed

SOUTHMONT, N. C.
-537.5'—W8015/7.5

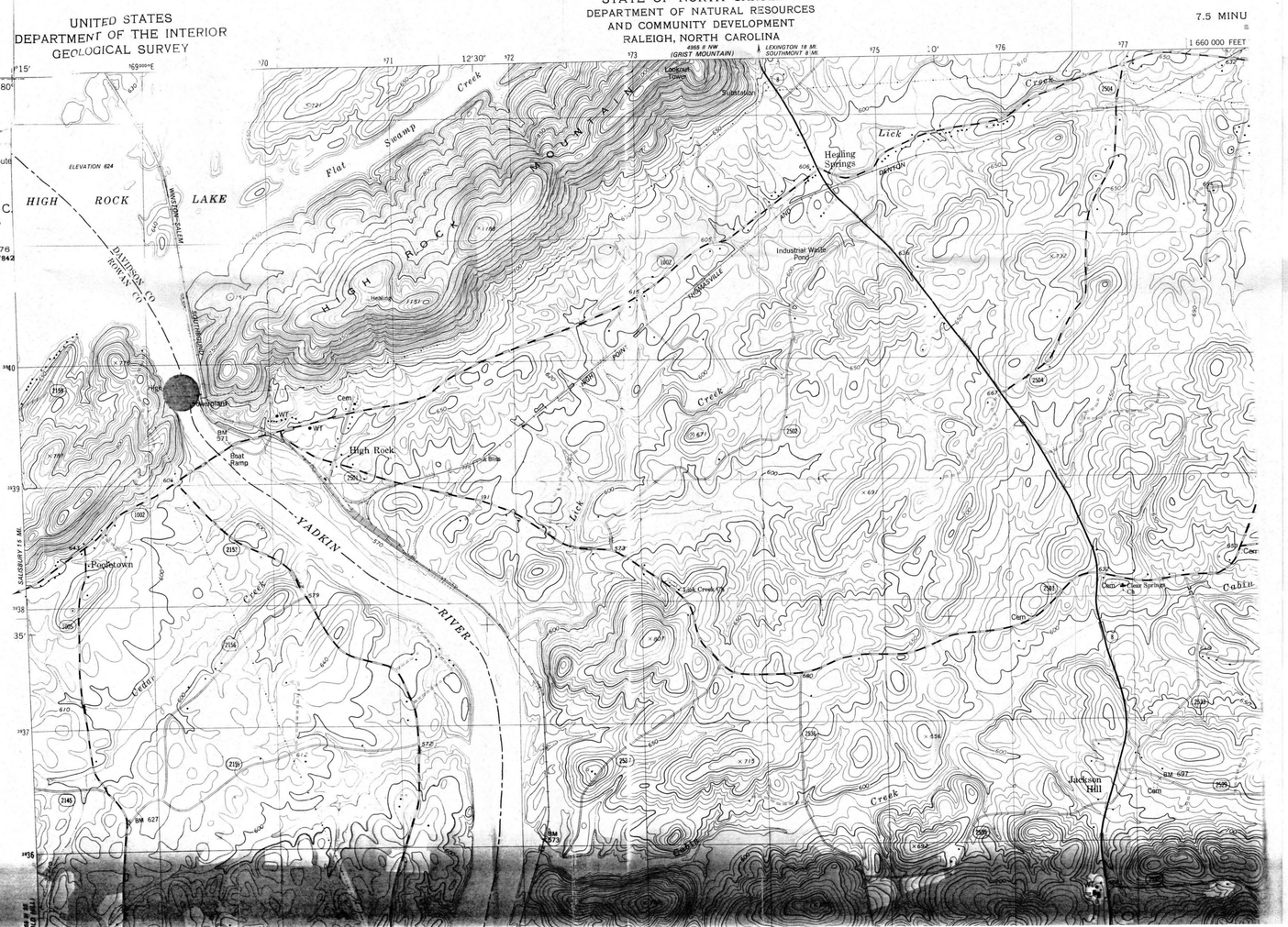
1962
PHOTOINSPECTED 1978
AMS 4955 III NE—SERIES V842

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

STATE OF NORTH CAROLINA
DEPARTMENT OF NATURAL RESOURCES
AND COMMUNITY DEVELOPMENT
RALEIGH, NORTH CAROLINA

HIGH

7.5 MINU



Site Inspection Report

NC D980843528

Town Creek Regional Waste Water Treatment Plant

Heiligtown Road
Salisbury, North Carolina

November 7, 1984

D. Mark Durway, Geologist

North Carolina Department of Human Resources
Division of Health Services
Solid and Hazardous Waste Management Branch
RCRA 3012 Program

Recommend
SIP - CP
K. Cain
6/20/91

Summary

It has been reported by various former employees of the City of Salisbury that during the late 1960s, solvents and miscellaneous waste liquids from Proctor Chemical Company, Salisbury, N.C., were buried at various locations surrounding the Town Creek Waste Water Treatment Plant. It is unclear as to whether Proctor had authority to dispose of waste at these locations, which are on city property; and a point of interest is that Proctor never notified its actions under CERCLA or RCRA.

To date, three burial sites have been indicated, none of which have been confirmed due to our lack of the sophisticated equipment necessary for an in-depth subsurface investigation. The Lab Analysis appendix in this report indicates that while several of these locations have been sampled, contaminated material has yet to be found.

It is recommended that the Town Creek Waste Water Treatment Plant be further investigated.

Location

Town Creek Regional Waste Water Treatment Plant is located at the following address:

Heiligtown Road
Salisbury, Rowan County, NC 28144

Compass coordinates are:

35° 41' 00" N latitude
80° 24' 40" W longitude

(See Appendix A, Maps)

Site Layout

The aerial photo and USGS quad provide ample insight as to site layout and setting (Appendix A, Maps).

Site History

The City of Salisbury operates Town Creek Waste Water Treatment Plant, and uses the public property surrounding the facility to landfarm sludge. During the late 1960s, Proctor Chemical Company of Salisbury allegedly used the landfarming area north of the Waste Water Treatment Plant facility to dispose of solvents, and possibly other chemical wastes which they generated. Proctor Chemical Company never notified under CERCLA or RCRA that the Town Creek WWTP or surrounding area had been used by them to dispose of hazardous wastes. Proctor was liquidated in January 1983, and taken over by National Starch and Chemical Company.

The information gathered concerning specific incidents of burial at the WWTP facility and adjacent city property is that three sites are thought to have been used (Appendix A, Maps). At each site trenches were dug; some anonymous sources claim that drums were placed in these trenches and buried, while others indicate that liquids were poured directly into them. It appears that plant growth is partially inhibited at the northeastern-most alleged site.

Summary Trip Report

On October 9, 1984, our site inspection team met City of Salisbury officials at the Town Creek WWTP. We found little, if any, physical evidence that chemicals had been buried at the three alleged sites; and samples taken the following day from the upgradient monitorinhg well, and at a nearby creek downgradient from an alleged site, revealed no contamination.

It is concluded from the site visit that a more in-depth subsurface investigation, using more sophisticated equipment than was available to us, will be required in order to document the sites at Town Creek, and to determine what further action must be taken

The N.C. Solid and Hazardous Waste Management Branch site inspection team consisted of the following:

Bill Meyer, Environmental Engineer
Gary Babb, Geologist
Mark Durway, Geologist

Representing the City of Salisbury on site were:

Kelly Patton, Superintendent of Water and Waste Water Treatment Plants

Sabrina Eury, Assistant and Operator Trainee

Environmental Setting

The topographic components at the Town Creek facility consist of the following: gently to moderately sloping country-side (overall average slope approximately 5° in a SSE direction, with a maximum of 13° and minimum approaching nil); a pond near the WWTP; and Town Creek and its few small tributaries.

Of particular interest to our party was the control topography might have on groundwater at the northeastern-most site; there, the alleged site lies steeply upgradient from a nearby creek (see Maps, USGS quad). Chemical analysis of water and sediment samples taken downstream, however, revealed no contamination (Appendix B, Lab Analysis, Field Samples No. 1585 and 1586).

Soil types vary from red clay to the more permeable, lithic- and organic-rich varieties which reflect the continuous weathering of local parent

rock and decomposition of vegetation. Bedrock in the NC Piedmont tends to be igneous or metamorphic, and often weathered at the surface (saprolite).

In general, geologic controls on groundwater in the NC Piedmont are as follows: Groundwater will move freely through most soil and saprolite, as such are is permeable and porous. Unweathered crystalline rock, on the contrary, facilitates groundwater movement and storage only where joints and fractures exist. At the Town Creek facility upgradient and downgradient wells have been drilled with water tables at approximately 16.0' and 9.5', respectively (Appendix C, Well Data). Drilled drinking water wells in the NC Piedmont, however, tend to range between 100' and 300' deep in order to assure constant supply and quality.

Rowan County receives an average rainfall of approximately 45"/yr., the seasonal fluctuation of which has a direct effect on the seasonal fluctuation of the water table.

The nearest residents to the Town Creek facility live approximately 0.3 miles north of, and upgradient from, the WWTP. There are in excess of 500 residents within a one-mile radius of the site.

Water supply for residents living near the WWTP is predominantly from private wells; however, persons within the city limits (Appendix A, map of city) are connected to a public supply.

Waste Types and Quantities

Lack of information regarding waste types, quantities, and disposal points has not facilitated our effort to properly evaluate the hazardous waste sites at Town Creek. Presently, three alleged sites and their approximate locations are known: however, confirmation that these are actual disposal sites will require future investigation using more sophisticated detection equipment than we have access to.

Disposal at the sites is said to have been in trenches, 6' to 8' deep. Liquid substances were poured directly into these trenches or buried in drums, according to witnesses; the trenches were then covered with dirt.

Proctor Chemical Company (now National Starch and Chemical Co.) generated, transported, and disposed of the chemicals at Town Creek. Based on their typical waste streams, chemicals assumed to have been buried are:

Xylene
Toluene
Methyl ethyl ketone
Methyl isobutyl ketone
Acetone
1,2 - dichloroethane

Laboratory Data

Samples were taken at three locations, during our site inspection, and analyzed for organics and inorganics at the N.C. Division of Health Services

Laboratory in Raleigh, NC (Appendix B, Lab Analysis). They were as follows:

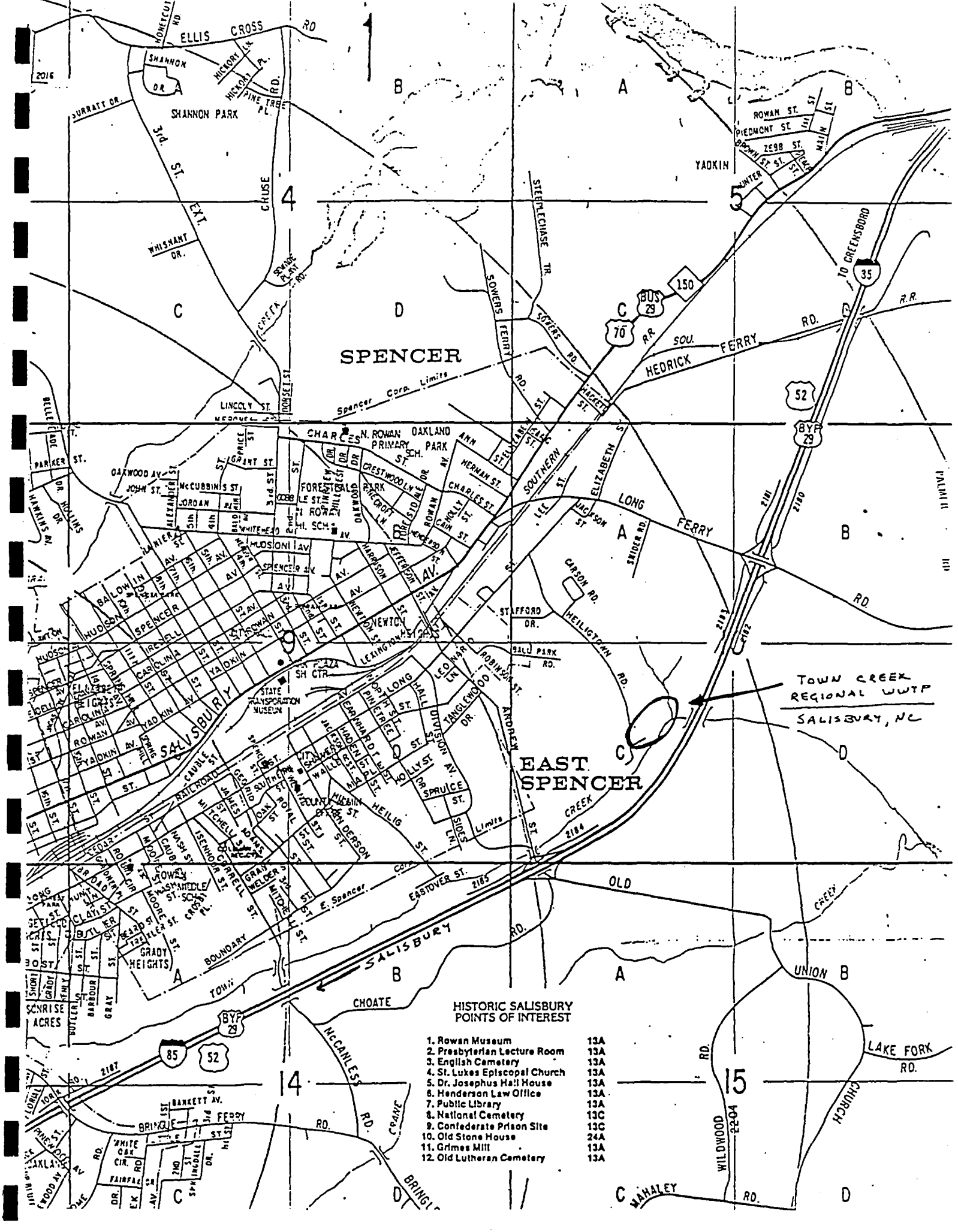
Type	Location	Lab Results
Groundwater	Upgradient monitoring well	No contamination
Stream	Near northeastern-most site	No contamination
Stream sediment	Near northeastern-most site	No contamination

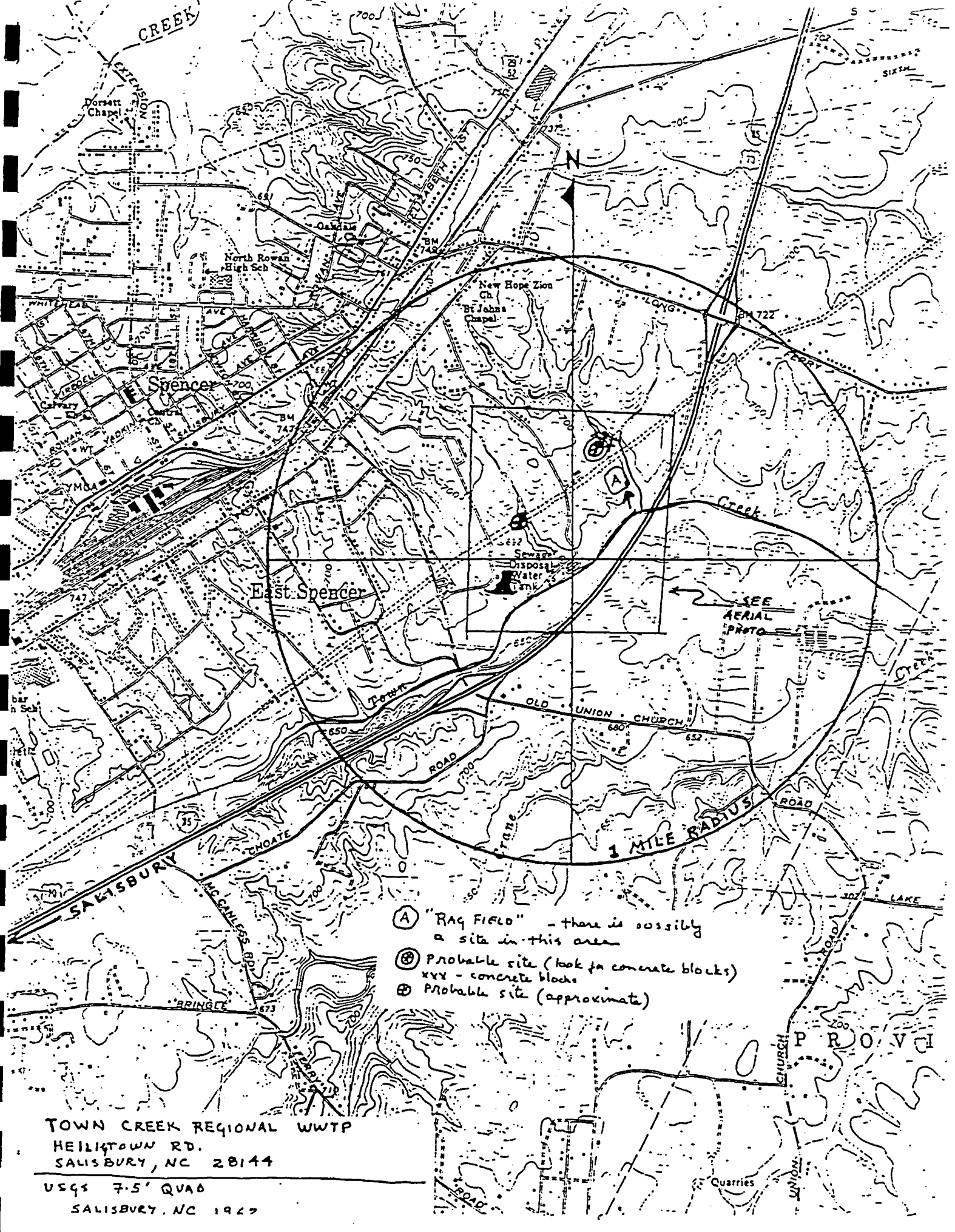
A fourth sample was mailed to us by Kelly Patton, Superintendent of Water and WWTPs, City of Salisbury. The sample came from a trench which City of Salisbury officials excavated over an alleged site within the "Rag Field" on October 19, 1984. (This site is located in the southeastern-most corner of the "Rag Field". See Maps). The sample looked like green soil; it had no odor; and inorganic and organic chemical analysis at the State lab showed no contaminants (Appendix B). Perhaps the sample represented sludge from a past landfarming operation.

More samples need to be taken as soon as site locations are more clearly defined.

APPENDIX A

MAPS


SPENCER
EAST SPENCER
SALISBURY
SHANNON PARK
YADKIN
TOWN CREEK REGIONAL WWTP
SALISBURY, NC
HISTORIC SALISBURY POINTS OF INTEREST
1. Rowan Museum 13A
2. Presbyterian Lecture Room 13A
3. English Cemetery 13A
4. St. Luke's Episcopal Church 13A
5. Dr. Josephus Hall House 13A
6. Henderson Law Office 13A
7. Public Library 13A
8. National Cemetery 13C
9. Confederate Prison Site 13C
10. Old Stone House 24A
11. Grimes Mill 13A
12. Old Lutheran Cemetery 13A



TOWN CREEK REGIONAL WWTP
HEILIGTOWN RD.
SALISBURY, NC 28144

USGS 7.5' QUAD
SALISBURY, NC 1962

N
A
A "RAG FIELD (possibly a site in this area)
PROBABLE SITE (look for concrete blocks
XXX - CONCRETE BLOCKS
PROBABLE SITE (APPROXIMATE)
TOWN CREEK

APPENDIX B

LAB ANALYSIS

N. C. DEPARTMENT OF HUMAN RESOURCES
DIVISION OF HEALTH SERVICES
STATE LABORATORY OF PUBLIC HEALTH
P. O. BOX 28047 - 306 N. WILMINGTON ST., RALEIGH 27611

Site Number 80-000001002X Field Sample Number 1609

Name of Site Town Creek WWTP Site Location Salisbury

Collected By Bobb ID# 12 Date Collected 10/10/84 Time 2:00 PM

Type of Sample:

Environmental	Concentrate	Comments
X Groundwater	Solid	WELL TU
Surface Water	Liquid	
Soil	Sludge	
Other	Other	

INORGANIC CHEMISTRY

Extractables Parameter	Results mg/l	Total Parameter	Results mg/l	Parameter	Results mg/l
Arsenic		✓ Arsenic	<0.01	✓ Chloride	2
Barium		✓ Barium	<0.1	✓ Conductivity	114 µmhos
Cadmium		✓ Cadmium	<0.005	✓ Copper	<0.05
Chromium		✓ Chromium	<0.01	✓ Fluoride	<0.10
Lead		✓ Lead	<0.03	✓ Iron	5.14
Mercury		✓ Mercury	<0.0002	✓ Manganese	0.99
Selenium		✓ Selenium	<0.005	✓ Nitrate	9.8
Silver		✓ Silver	<0.05	✓ pH	6.4
		✓ Sb	<0.05	✓ Sulfates	5
				✓ TDS	155
				✓ Zinc	0.05
				✓ TOC	8

RECEIVED NOV 1 1984 SOLID & HAZARDOUS WASTE MANAGEMENT BRANCH

ORGANIC CHEMISTRY

Parameter	Results mg/l	Parameter	Results mg/l	Parameter	Results mg/l
Endrin		Toxaphene		PCB's	
Lindane		2,4-D		Petroleum	
Methoxychlor		2,4,5-TP(Silvex)		EDB	
				TOX	

MICROBIOLOGY

Parameter
(MF) Coliform Colonies/100mls
(MPN) Coliform Colonies/100mls

RADIOCHEMISTRY

Parameter	Results PCi/l
Gross Alpha	
Gross Beta	

Date Received _____ Date Reported 10-31-84

Date Extracted _____ Date Analyzed _____

Reported By _____ Lab Number 44444 OCT 12 84

DHS 3191 (Revised 2/84)
Solid and Hazardous Waste

N. C. DEPARTMENT OF HUMAN RESOURCES
DIVISION OF HEALTH SERVICES
STATE LABORATORY OF PUBLIC HEALTH
P. O. BOX 28047 - 306 N. WILMINGTON ST., RALEIGH 27611

KUSH

Case Number 80-0000001002X Field Sample Number 1584

Name of Site Town Creek WWTP Site Location Salisbury

Collected By Robb ID# 12 Date Collected 10/10/84 Time 2:00 PM

Type of Sample:

Environmental	Concentrate	Comments
X Groundwater	___ Solid	WELL TW
___ Surface Water	___ Liquid	
___ Soil	___ Sludge	
___ Other	___ Other	

INORGANIC CHEMISTRY

Extractables		Total			
Parameter	Results mg/l	Parameter	Results mg/l	Parameter	Results mg/l
___ Arsenic		___ Arsenic		___ Chloride	
___ Barium		___ Barium		___ Conductivity	
___ Cadmium		___ Cadmium		___ Copper	
___ Chromium		___ Chromium		___ Fluoride	
___ Lead		___ Lead		___ Iron	
___ Mercury		___ Mercury		___ Manganese	
___ Selenium		___ Selenium		___ Nitrate	
___ Silver		___ Silver		___ pH	
				___ Sulfates	
				___ TDS	
				___ Zinc	
				___ TOC	

RECEIVED OCT 24 1984 SOLID & HAZARDOUS WASTE MANAGEMENT BRANCH

ORGANIC CHEMISTRY

Parameter	Results mg/l	Parameter	Results mg/l	Parameter	Results mg/l
___ Endrin		___ Toxaphene		___ PCB's	
___ Lindane		___ 2,4-D		___ Petroleum	
___ Methoxychlor		___ 2,4,5-TP(Silvex)		___ EDB	
		✓ P&T-GC/MS	No purgeables	___ TOX	~15.6 ug Cl/l
		detected by EPA Method 624.			

MICROBIOLOGY

Parameter
___ (MF) Coliform Colonies/100mls
___ (MPN) Coliform Colonies/100mls

RADIOCHEMISTRY

Parameter	Results PCi/l
___ Gross Alpha	
___ Gross Beta	

Date Received 10/11/84 J.D. Date Reported 10/19/84

Date Extracted TOX 10/11/84 T.W. Date Analyzed TOX 10/16/84 TW

Reported By John L. Neal Lab Number 405661

DHS 3191 (Revised 2/84)
Solid and Hazardous Waste

N. C. DEPARTMENT OF HUMAN RESOURCES
DIVISION OF HEALTH SERVICES
STATE LABORATORY OF PUBLIC HEALTH
P. O. BOX 28047 - 306 N. WILMINGTON ST., RALEIGH 27611

NUH

Site Number 80-000001002 X Field Sample Number 1586
Name of Site Town Creek WWTP Site Location Salisbury
Collected By Babb ID# 12 Date Collected 10/10/84 Time 1:45 PM

Type of Sample:

Environmental	Concentrate	Comments
___ Groundwater	___ Solid	Stream sediment sample
___ Surface Water	___ Liquid	
X Soil	___ Sludge	
___ Other	___ Other	

INORGANIC CHEMISTRY

Extractables		Total			
Parameter	Results mg/l	Parameter	Results mg/l	Parameter	Results mg/l
___ Arsenic		___ Arsenic		___ Chloride	
___ Barium		___ Barium		___ Conductivity	
___ Cadmium		___ Cadmium		___ Copper	
___ Chromium		___ Chromium		___ Fluoride	
___ Lead		___ Lead		___ Iron	
___ Mercury		___ Mercury		___ Manganese	
___ Selenium		___ Selenium		___ Nitrate	
___ Silver		___ Silver		___ pH	
				___ Sulfates	
				___ TDS	
				___ Zinc	
				___ TOC	

RECEIVED OCT 24 1984 SOLID & HAZARDOUS WASTE MANAGEMENT BRANCH

ORGANIC CHEMISTRY

Parameter	Results mg/l	Parameter	Results mg/l	Parameter	Results mg/l
___ Endrin		___ Toxaphene		___ PCB's	
___ Lindane		___ 2,4-D		___ Petroleum	
___ Methoxychlor		___ 2,4,5-TP(Silvex)		___ EDB	
				___ TOX	
		√ P&T/GC-MS No purgeables detected by EPA Method 624			

MICROBIOLOGY

Parameter
___ (MF) Coliform Colonies/100mls
___ (MPN) Coliform Colonies/100mls

RADIOCHEMISTRY

Parameter	Results PCi/l
___ Gross Alpha	
___ Gross Beta	

Date Received 10/11/84 U.P. Date Reported 10/19/84
Date Extracted Date Analyzed
Reported By John R. Neal Lab Number 405552

DHS 3191 (Revised 2/84)
Solid and Hazardous Waste

N. C. DEPARTMENT OF HUMAN RESOURCES
DIVISION OF HEALTH SERVICES
STATE LABORATORY OF PUBLIC HEALTH
P. O. BOX 28047 - 306 N. WILMINGTON ST., RALEIGH 27611

RUSH

Site Number 80-000001002X Field Sample Number 1585
Name of Site Town Creek WWTP Site Location Salisbury
Collected By Babb ID# 12 Date Collected 10/10/84 Time 1:30 PM
Type of Sample:

Environmental	Concentrate	Comments
___ Groundwater	___ Solid	Stream sample
X Surface Water	___ Liquid	
___ Soil	___ Sludge	
___ Other	___ Other	

INORGANIC CHEMISTRY

Extractables		Total			
Parameter	Results mg/l	Parameter	Results mg/l	Parameter	Results mg/l
___ Arsenic		___ Arsenic		___ Chloride	
___ Barium		___ Barium		___ Conductivity	
___ Cadmium		___ Cadmium		___ Copper	
___ Chromium		___ Chromium		___ Fluoride	
___ Lead		___ Lead		___ Iron	
___ Mercury		___ Mercury		___ Manganese	
___ Selenium		___ Selenium		___ Nitrate	
___ Silver		___ Silver		___ pH	
				___ Sulfates	
				___ TDS	
				___ Zinc	
				___ TOC	

RECEIVED OCT 24 1984 DIVISION OF SOLID WASTE MANAGEMENT

ORGANIC CHEMISTRY

Parameter	Results mg/l	Parameter	Results mg/l	Parameter	Results mg/l
___ Endrin		___ Toxaphene		___ PCB's	
___ Lindane		___ 2,4-D		___ Petroleum	
___ Methoxychlor		___ 2,4,5-TP(Silvex)		___ EDB	
		1 Pet. GC/MS	No purgeables	___ TOX	8.8 ug Cl-/l
		detected by	EPA Method	624-	

MICROBIOLOGY

Parameter
___ (MF) Coliform Colonies/100mls
___ (MPN) Coliform Colonies/100mls

RADIOCHEMISTRY

Parameter	Results PCi/l
___ Gross Alpha	
___ Gross Beta	

Date Received 10/11/84 V.P. Date Reported 10/19/84
Date Extracted TOX 10/17/84 P/T 10/18/84 Date Analyzed 10/17/84 (TOX) mw
Reported By John L. Neal Lab Number 405667

DHS 3191 (Revised 2/84)
Solid and Hazardous Waste

N. C. DEPARTMENT OF HUMAN RESOURCES
DIVISION OF HEALTH SERVICES
STATE LABORATORY OF PUBLIC HEALTH
P. O. BOX 28047 - 306 N. WILMINGTON ST., RALEIGH 27611

Site Number 80-000001002X Field Sample Number 1610
Name of Site Town Creek WWTP Site Location Salisbury
Collected By Babb ID# 12 Date Collected 10/10/84 Time 1:30 PM

Type of Sample:

Environmental	Concentrate	Comments
___ Groundwater	___ Solid	Stream sample
✓ Surface Water	___ Liquid	
___ Soil	___ Sludge	
___ Other	___ Other	

INORGANIC CHEMISTRY

Extractables		Total			
Parameter	Results mg/l	Parameter	Results mg/l	Parameter	Results mg/l
___ Arsenic		✓ Arsenic	<0.01	✓ Chloride	7
___ Barium		✓ Barium	<0.1	✓ Conductivity	180 µmhos
___ Cadmium		✓ Cadmium	<0.005	✓ Copper	<0.05
___ Chromium		✓ Chromium	<0.01	✓ Fluoride	<0.10
___ Lead		✓ Lead	<0.03	✓ Iron	0.15
___ Mercury		✓ Mercury	<0.0002	✓ Manganese	0.06
___ Selenium		✓ Selenium	<0.005	✓ Nitrate	1.1
___ Silver		✓ Silver	<0.05	✓ pH	7.6
		✓ Sb	<0.05	✓ Sulfates	4
				✓ TDS	135
				✓ Zinc	<0.05
				✓ TOC	5

RECEIVED NOV 1 1984 SOLID & HAZARDOUS WASTE MANAGEMENT BRANCH

ORGANIC CHEMISTRY

Parameter	Results mg/l	Parameter	Results mg/l	Parameter	Results mg/l
___ Endrin		___ Toxaphene		___ PCB's	
___ Lindane		___ 2,4-D		___ Petroleum	
___ Methoxychlor		___ 2,4,5-TP(Silvex)		___ EDB	
				___ TOX	

MICROBIOLOGY

Parameter
___ (MF) Coliform Colonies/100mls
___ (MPN) Coliform Colonies/100mls

RADIOCHEMISTRY

Parameter	Results PCi/l
___ Gross Alpha	
___ Gross Beta	

Date Received ___ Date Reported 10-31-84
Date Extracted ___ Date Analyzed ___
Reported By ___ Lab Number 44445 OCT 12 84

DHS 3191 (Revised 2/84)
Solid and Hazardous Waste

RK Norway, 2178
E.H.W
program

N. C. DEPARTMENT OF HUMAN RESOURCES
DIVISION OF HEALTH SERVICES
STATE LABORATORY OF PUBLIC HEALTH
P. O. BOX 28047 - 306 N. WILMINGTON ST., RALEIGH 27611

A.S.A.

001471

te Number _____ Field Sample Number 1 ~~INORGANIC~~

me of Site Town Creek WWTP Site Location Salisbury, Rowan Co., NC

llected By Kelly Patton ID# City of Salisbury WWTP Superintendent Date Collected 10-19-84 Time PM

pe of Sample:

Environmental	Concentrate	Comments
___ Groundwater	___ Solid	Sample submitted in
___ Surface Water	___ Liquid	plastic container
X Soil	___ Sludge	poor seal
___ Other	___ Other	

INORGANIC CHEMISTRY

Extractables		Total			
Parameter	Results mg/l	Parameter	Results mg/l	Parameter	Results mg/l
___ Arsenic		___ Arsenic		___ Chloride	
___ Barium		___ Barium		___ Conductivity	
___ Cadmium		___ Cadmium		___ Copper	
___ Chromium		___ Chromium		___ Fluoride	
___ Lead		___ Lead		___ Iron	
___ Mercury		___ Mercury		___ Manganese	
___ Selenium		___ Selenium		___ Nitrate	
___ Silver		___ Silver		___ pH	
				___ Sulfates	
				___ TDS	
				___ Zinc	
				___ TOC	

ORGANIC CHEMISTRY

Parameter	Results mg/l	Parameter	Results mg/l	Parameter	Results mg/l
___ Endrin		___ Toxaphene		___ PCB's	
___ Lindane		___ 2,4-D		___ Petroleum	
___ Methoxychlor		___ 2,4,5-TP(Silvex)		___ EDB	
✓ XYLENE	a/	✓ METHANOL	a/	___ TOX	
✓ TOLUENE		✓ METHYL ETHYL KETONE		✓ METHYL ~~ETO~~ KETONE	a/
~~[illegible]~~		1,2 Dichloroethane		✓ ACETONE	

MICROBIOLOGY

Parameter
___ (MF) Coliform Colonies/100mls
___ (MPN) Coliform Colonies/100mls
___
___

RADIOCHEMISTRY

Parameter	Results PCi/l
___ Gross Alpha	
___ Gross Beta	
___	

a/ No compounds identified by EPA Method 624.

Date Received 10/25/84 Date Reported 11/1/84

e Extracted _____ Date Analyzed _____

Reported By John R. Neal Lab Number 406031

DHS 3191 (Revised 2/84)
Solid and Hazardous Waste

environmental testing inc.

Mr. Kelly Patton
City of Salisbury
PO Box 479
Salisbury, NC 2814_

PLES 4 COLLECTION DATE Rcd. 12/21/83

1. GC 1 3. TC 1
2. GC 2 4. TC 2

SOILS METALS ANALYSES * DEC. 19_
*NOTE: GC-2 AND TC-1 AREAS NO LONGER IN USE

Storet Number	PARAMETERS Results in MG/L unless otherwise noted	GC 1.	GC 2.	TC 3.	TC 4.
	GC/1 = South CR Upgradient				
	GC/2 = South CR Downgradient				
	TC/1 = Tower CR Upgradient				
	TC/2 = Tower CR Downgradient				

Storet Number	METALS Results in uG/G as received				
	Lead (Pb)	8.28	21.73	65.74	40.90
	Zinc (Zn)	47.62	118.80	194.46	60.13
	Copper (Cu)	23.50	49.54	43.79	32.64
	Nickel (Ni)	3.01	5.35	13.46	9.71
	Cadmium (Cd)	0.14	0.41	0.67	0.36
	Mercury (Hg)	0.42	1.07	0.14	0.08

J. M. McCormick

Salisbury, NC 28144

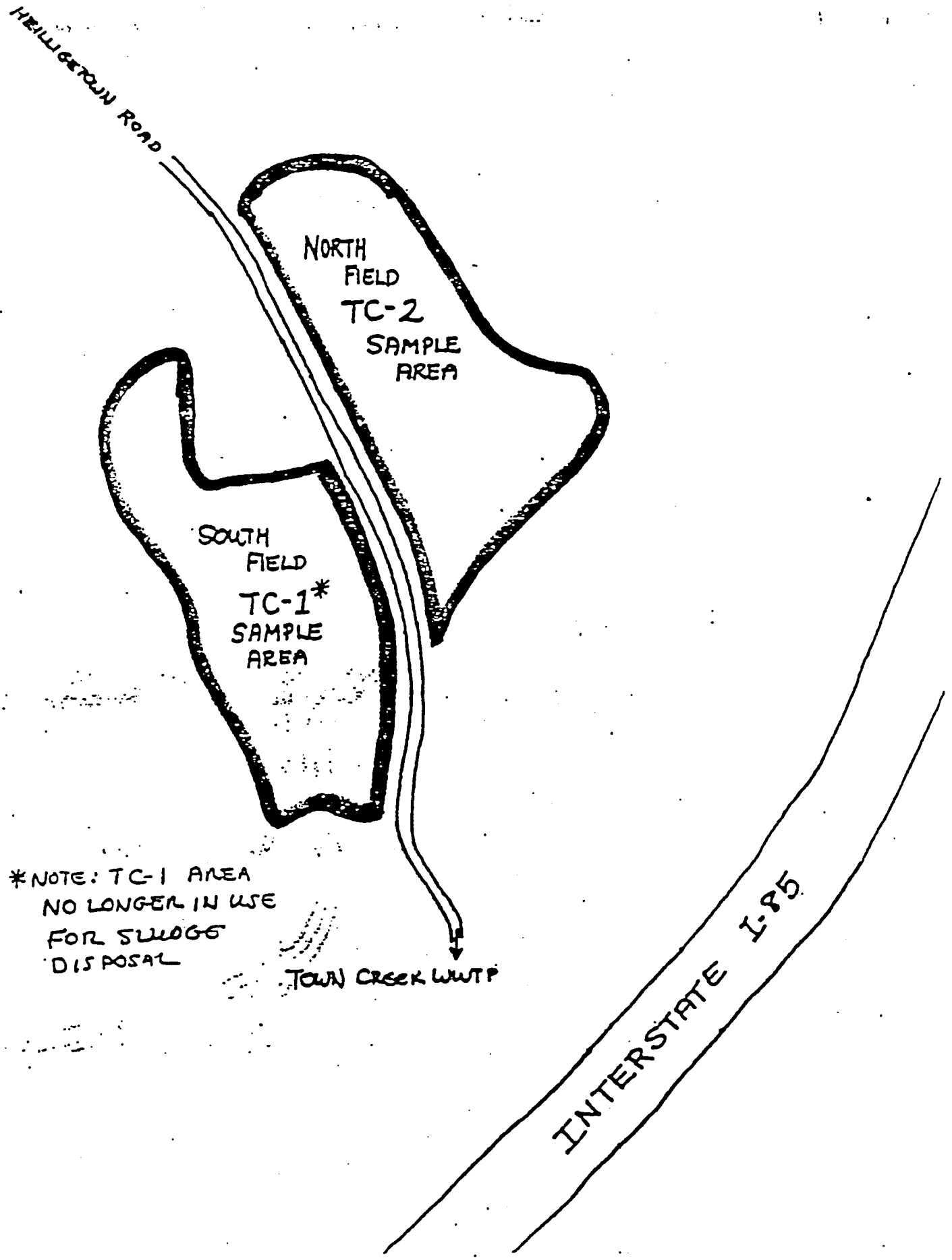
PLES 4 COLLECTION DATE Rcd 6-25-84

GU
GD
TU
TD

GROUNDWATER MONITORING RESULTS JUNE 1984
GU = GRANT CREEK UPGRADIENT TU = TOWN CREEK UPGRADIENT
GD = GRANT CREEK DOWNGRADIENT TD = TOWN CREEK DOWNGRADIENT

Storet Number	PARAMETERS Results in MG/L unless otherwise noted	GU 1.	GD 2.	TU 3.	TD 4.		
00620	Nitrate	1.57	17.2	15.4	5.35		
00615	Nitrite	<0.01	< 0.01	< 0.01	0.25		

Storet Number	METALS Results in µG/L						
				Shawna B. Jenkins			
01027	Cadmium, Total (Cd)	< 5	< 5	< 5	< 5		
01034	Chromium, Total (Cr)	< 5	< 5	13.2	< 5		
01042	Copper, Total (Cu)	< 10	< 10	17	< 10		
01051	Lead, Total (Pb)	< 10	< 10	< 10	< 10		
01092	Zinc, Total (Zn)	< 10	34	59	< 10		


HELLIGETOWN ROAD
NORTH FIELD
TC-2
SAMPLE AREA
SOUTH FIELD
TC-1*
SAMPLE AREA
*NOTE: TC-1 AREA NO LONGER IN USE FOR SLUDGE DISPOSAL
TOWN CREEK WWTP
INTERSTATE I-85

APPENDIX C

WELL DATA

LAW ENGINEERING TESTING COMPANY
geotechnical, environmental & construction materials consultants
501 MINUET LANE
P.O. BOX 11297 • CHARLOTTE, NORTH CAROLINA 28220
(704) 523-2022

April 27, 1984

City of Salisbury
P. O. Box 479
Salisbury, North Carolina 28144

Attention: Mr. Kelly Patton
Superintendent of Treatment Plants

Subject: Report of Water Quality Monitoring Well Installation
Town Creek Waste-Water Treatment Plant
Grant Creek Waste-Water Treatment Plant
Salisbury, North Carolina
LETCo. Job No. CH 5019

Gentlemen:

As authorized by your Purchase Order No. 22778 accepting our Proposal No. 092S4 dated April 4, 1984, Law Engineering Testing Company has completed the installation of four water quality monitoring wells at the two subject sites. This report describes the installation procedures and presents logs of the well installations.

Two monitoring wells were installed at the Town Creek Treatment Plant and two at the Grant Creek Treatment Plant. The well locations were staked in the field by others and observed by Mr. Kelly Patton of the City of Salisbury and Mr. William Babcock of Law Engineering. No site plans were furnished to us.

The monitoring wells were installed using rotary wash-drilling techniques until refusal to the drilling equipment was encountered. (Rock coring, which was not done, would be necessary to determine the nature and vertical continuity of the refusal material.) The actual construction details are shown on the attached Ground Water Monitoring Well Installation Records. The well casing and screens are 2-inch diameter Schedule 40 PVC pipe with flush-threaded fittings. The screens are 10 ft in length and have manufactured 0.010 inch slots. The annular space between the casing and the borehole wall was filled with concrete sand to a depth above the screened section. A bentonite seal was installed over the sand pack and cement grout

was pumped in the remaining annular space to the surface. A vented cap was placed on the PVC casing and a lockable steel protective cover was installed over the well casing and set into the grout.

The wells were developed initially by over-pumping, and later by bailing. Surveyed locations and elevations of the wells were not available for this report. (We recommend that this information be acquired.)

Law Engineering Testing Company appreciates the opportunity to provide our professional drilling services for this project. Please contact us if we can be of further service or if you have any questions concerning the results reported herein.

Very truly yours,

LAW ENGINEERING TESTING COMPANY

William E. Babcock Jr.

William E. Babcock, Jr.
Drilling Department Manager

Neil J. Gilbert, P. E., P. G.
Senior Engineering Geologist

Attachments

WEB/NJG:tmc

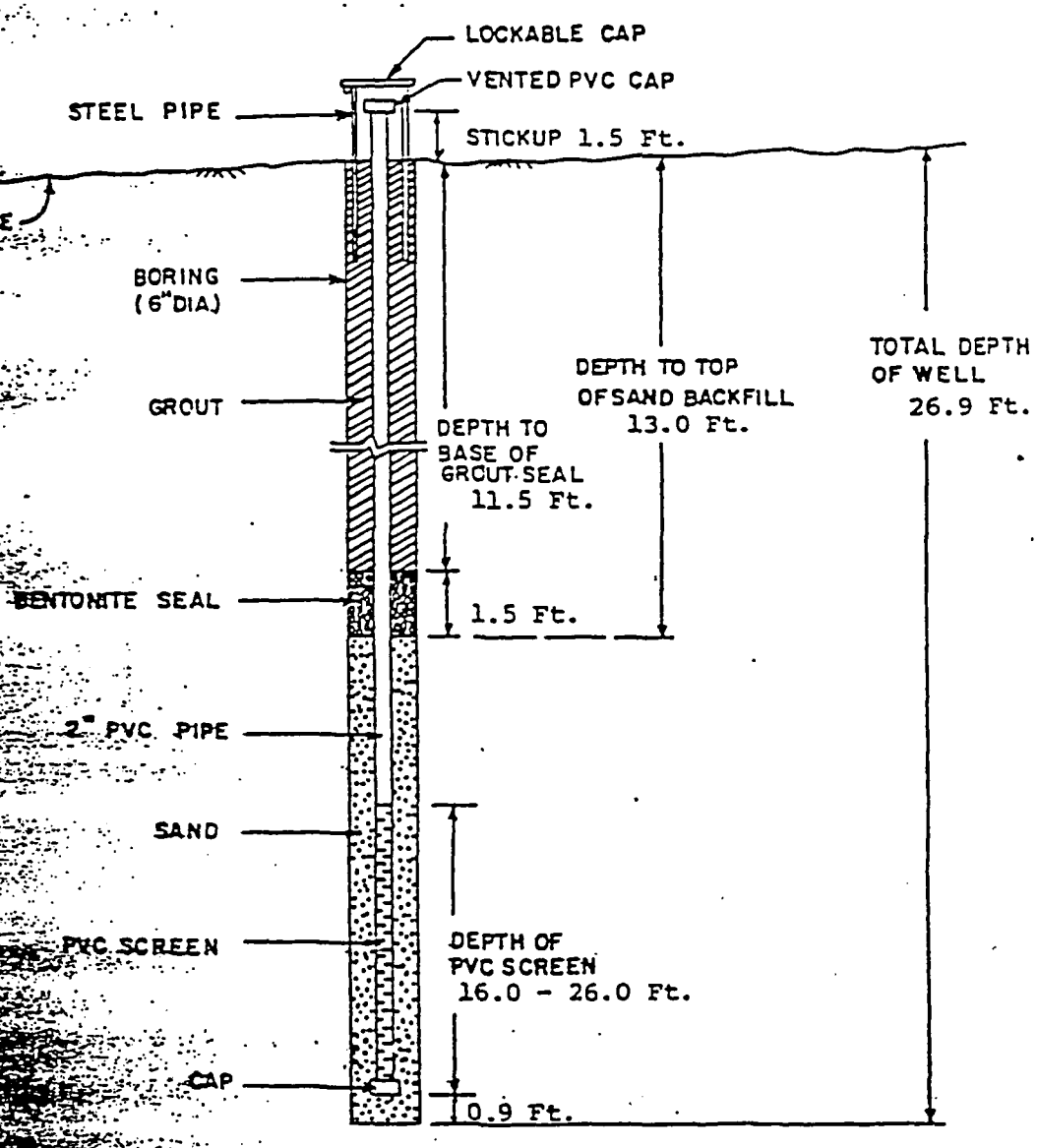
GROUND-WATER MONITO IN ELL INST I RECORD

JOB NAME City of Salisbury JOB NUMBER CH 5019

ELL NUMBER W-1 TU GROUND SURFACE ELEVATION

OCATION Town Creek Waste Water Treatment Plant (Apparent Upgradient Location)

STALLATION DATE 4-12-84



Ground Water at 20.5 Ft.
Measured on 4-13-84

OTE: ALL PVC PIPE JOINTS
TUBE SCREW CONNECTORS

City of Salisbury Waste Water Treatment Plants Salisbury, North Carolina	LAW ENGINEERING TESTING COMPANY CHARLOTTE, NORTH CAROLINA	GROUND-WATER MONITORING WELL INSTALLATION RECORD

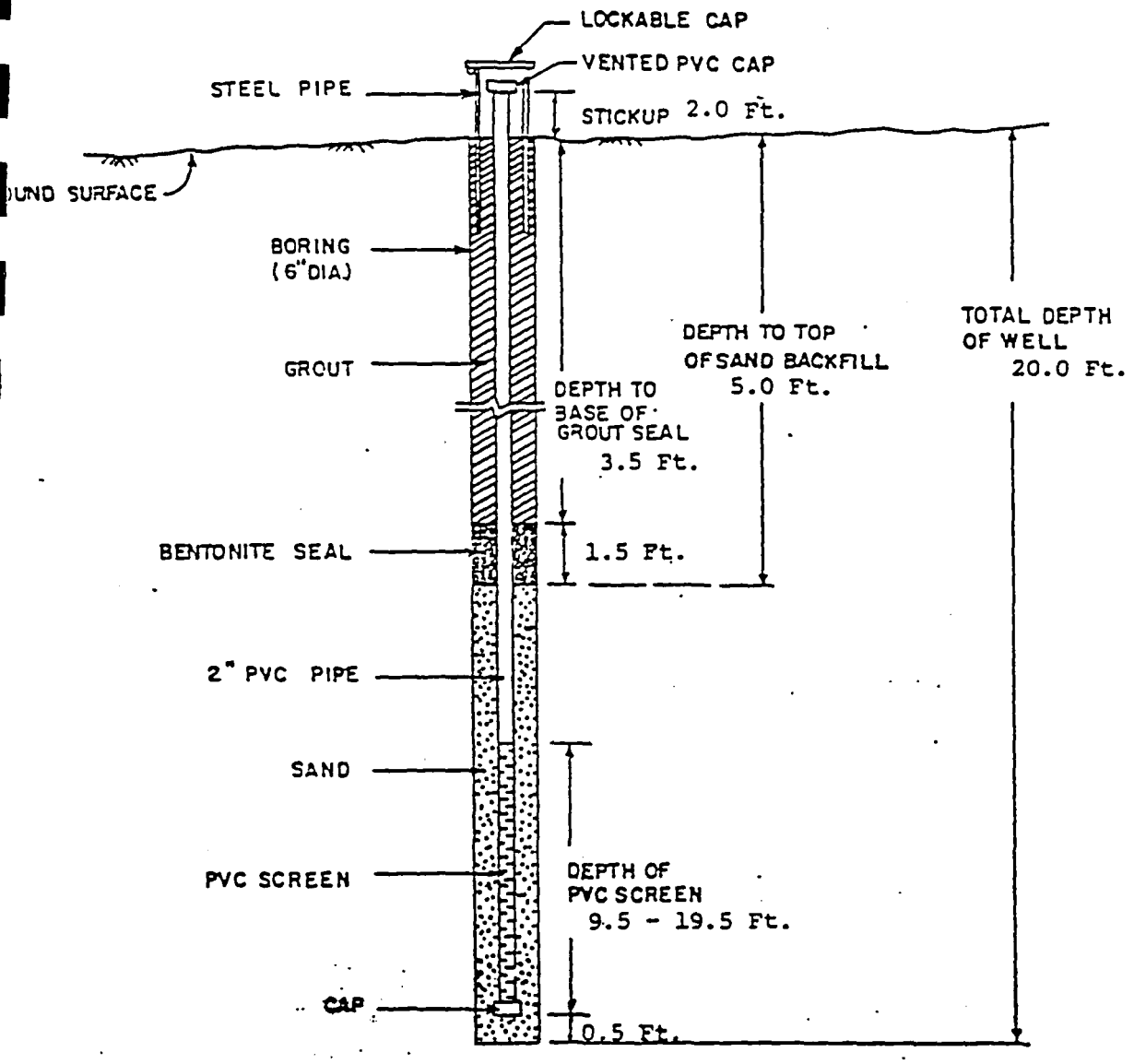
GROUND-WATER MONITORIN VE T L ATIO RE OR

NA City of Salisbury JOB NUMBER CH 5019

NUMBER W-2 TD GROUND SURFACE ELEVATION

TION Town Creek Waste Water Treatment Plant (Apparent Downgradient Location)

ALLATION DATE 4-12-84



E: ALL PVC PIPE JOINTS HAVE SCREW CONNECTORS

Ground Water at 3.6 Ft.
Measured on 4-13-84

i f Salisbury s Water Treatment Plants lisbury, North Carolina	LAW ENGINEERING TESTING COMPANY CHARLOTTE, NORTH CAROLINA	GROUND-WATER MONITORING WELL INSTALLATION RECORD

APPENDIX D

REFERENCES

1) Kelly Patton, Superintendent of Water and Waste Water Treatment Plants, P.O. Box 479, Salisbury, NC 28144.

2) National Starch and Chemical Co., Salisbury, NC, Permit Application (NC D991278953)

3) USGS 7.5' Quad, Salisbury, NC, 1962.

4) Aerial photo, Town Creek WWTP, 1977

5) N.C. Division of Health Services, State Laboratory of Public Health, Raleigh, N.C.

6) Law Engineering Testing Co., Charlotte, NC, groundwater monitoring well installation record for Town Creek WWTP.

7) Environmental Testing, Inc., Charlotte, NC, soil and monitoring wells chemical analysis, provided by Kelly Patton.

APPENDIX E

SITE INSPECTION FORM

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 1 - SITE LOCATION AND INSPECTION INFORMATION

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
NC	D 980843528

II. SITE NAME AND LOCATION

01 SITE NAME (Legal, common, or descriptive name of site)	02 STREET, ROUTE NO., OR SPECIFIC LOCATION IDENTIFIER				
Town Creek Regional Waste Water Treatment	Hant Heiligtown Road				
03 CITY	04 STATE	05 ZIP CODE	06 COUNTY	07 COUNTY CODE	08 CONG DIST
Salisbury	NC	28144	Rowan	80	08

09 COORDINATES — LATITUDE 35° 41' 00" — LONGITUDE 080° 24' 40" W

10 TYPE OF OWNERSHIP (Check one): ☐ A. PRIVATE ☐ B. FEDERAL ☐ C. STATE ☐ D. COUNTY ☒ E. MUNICIPAL ☐ F. OTHER ☐ G. UNKNOWN

III. INSPECTION INFORMATION

01 DATE OF INSPECTION: 10 9 , 84 (MONTH DAY YEAR)

02 SITE STATUS: ☐ ACTIVE ☐ INACTIVE

03 YEARS OF OPERATION: Late 1960's (BEGINNING YEAR / ENDING YEAR) ___ UNKNOWN

04 AGENCY PERFORMING INSPECTION (Check all that apply): ☐ A. EPA ☐ B. EPA CONTRACTOR (Name of firm) ☐ C. MUNICIPAL ☐ D. MUNICIPAL CONTRACTOR (Name of firm) ☒ E. STATE ☐ F. STATE CONTRACTOR (Name of firm) ☐ G. OTHER (Specify)

05 CHIEF INSPECTOR	06 TITLE	07 ORGANIZATION	08 TELEPHONE NO.
William Meyer	Environmental Engineer	DHR/SHW	(919) 733-2178

09 OTHER INSPECTORS	10 TITLE	11 ORGANIZATION	12 TELEPHONE NO.
Gary Babb	Geologist	DHR/SHW	(919) 733-2178
Mark Durway	Geologist	DHR/SHW	(919) 733-2178
			( )
			( )
			( )

13 SITE REPRESENTATIVES INTERVIEWED	14 TITLE	15 ADDRESS	16 TELEPHONE NO.
Kelly Patton	Superintendent	P.O. Box 479 Salisbury, NC 28144	(704) 637-2200
			( )
			( )
			( )
			( )
			( )

17 ACCESS GAINED BY (Check one)	18 TIME OF INSPECTION	19 WEATHER CONDITIONS
☒ PERMISSION ☐ WARRANT	1400-1700 hrs.	Sunny, 80 F

IV. INFORMATION AVAILABLE FROM

01 CONTACT	02 OF (Agency/Organization)	03 TELEPHONE NO.
Harvey Mathias	City Manager, City of Salisbury	(919) 637-2200

04 PERSON RESPONSIBLE FOR SITE INSPECTION FORM	05 AGENCY	06 ORGANIZATION	07 TELEPHONE NO.	08 DATE
O. W. Strickland	DHR	S&HW	919/733-2178	11 / 2 / 84 (MONTH DAY YEAR)

EPA FORM 2070-13 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 2 - WASTE INFORMATION

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
NC	D

II. WASTE STATES, QUANTITIES, AND CHARACTERISTICS

01 PHYSICAL STATES (Check all that apply)

- ☐ A. SOLID
- ☐ B. POWDER, FINES
- ☐ C. SLUDGE
- ☐ D. OTHER Contam. soil (Specify)
- ☐ E. SLURRY
- ☒ F. LIQUID
- ☐ G. GAS

02 WASTE QUANTITY AT SITE (Measures of waste quantities must be independent)

TONS _____
CUBIC YARDS Unknown
NO. OF DRUMS _____

03 WASTE CHARACTERISTICS (Check all that apply)

- ☒ A. TOXIC
- ☐ B. CORROSIVE
- ☐ C. RADIOACTIVE
- ☒ D. PERSISTENT
- ☐ E. SOLUBLE
- ☐ F. INFECTIOUS
- ☒ G. FLAMMABLE
- ☐ H. IGNITABLE
- ☐ I. HIGHLY VOLATILE
- ☐ J. EXPLOSIVE
- ☐ K. REACTIVE
- ☐ L. INCOMPATIBLE
- ☐ M. NOT APPLICABLE

III. WASTE TYPE

CATEGORY	SUBSTANCE NAME	01 GROSS AMOUNT	02 UNIT OF MEASURE	03 COMMENTS
SLU	SLUDGE			
OLW	OILY WASTE			
SOL	SOLVENTS	Unknown		
PSD	PESTICIDES			
OCC	OTHER ORGANIC CHEMICALS			
IOC	INORGANIC CHEMICALS			
ACD	ACIDS			
BAS	BASES			
MES	HEAVY METALS			

IV. HAZARDOUS SUBSTANCES (See Appendix for most frequently cited CAS Numbers)

01 CATEGORY	02 SUBSTANCE NAME	03 CAS NUMBER	04 STORAGE/DISPOSAL METHOD	05 CONCENTRATION	06 MEASURE OF CONCENTRATION
U239	Xylene	1330207	Burial	Unknown	
?0	Toluene	108883	Burial	Unknown	
U154	Methanol	67561	Burial	Unknown	
U159	Methyl Ethyl Ketone	78933	Burial	Unknown	
U161	Methyl Isobutyl Ketone	108101	Burial	Unknown	
U002	Acetone	67641	Burial	Unknown	
U007	1,2 Dichloroethane	107062	Burial	Unknown	

V. FEEDSTOCKS (See Appendix for CAS Numbers)

CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER	CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER
FDS			FDS		
FDS			FDS		
FDS			FDS		
FDS			FDS		

VI. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

Harvey Mathias, City Manager, Salisbury, NC
Kelly Patton, Superintendent of Water and WWTPs, Salisbury, NC
National Starch and Chemical Company, Permit Applications (NC D991278953)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
NC	D

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 ☐ A. GROUNDWATER CONTAMINATION — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: Unknown — 04 NARRATIVE DESCRIPTION

01 ☐ B. SURFACE WATER CONTAMINATION — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: Unknown — 04 NARRATIVE DESCRIPTION

Contaminated groundwater, if present, could potentially discharge into local creeks

01 ☐ C. CONTAMINATION OF AIR — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ — 04 NARRATIVE DESCRIPTION

Unlikely

01 ☐ D. FIRE/EXPLOSIVE CONDITIONS — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: 10 — 04 NARRATIVE DESCRIPTION

Alleged wastes are flammable

01 ☐ E. DIRECT CONTACT — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: 10 — 04 NARRATIVE DESCRIPTION

Accidental excavation by plant employees, etc., would be possible

01 ☐ F. CONTAMINATION OF SOIL — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
03 AREA POTENTIALLY AFFECTED: < 2 (Acres) — 04 NARRATIVE DESCRIPTION

01 ☐ G. DRINKING WATER CONTAMINATION — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: 50 — 04 NARRATIVE DESCRIPTION

01 ☐ H. WORKER EXPOSURE/INJURY — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
03 WORKERS POTENTIALLY AFFECTED: 10 — 04 NARRATIVE DESCRIPTION

01 ☐ I. POPULATION EXPOSURE/INJURY — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: unknown — 04 NARRATIVE DESCRIPTION

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
NC	D

II. HAZARDOUS CONDITIONS AND INCIDENTS (Continued)

01 ☐ J. DAMAGE TO FLORA — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

Possible stunted growth of weeds at one of the alleged site locations

01 ☐ K. DAMAGE TO FAUNA — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION (Include name(s) of species)

None observed

01 ☐ L. CONTAMINATION OF FOOD CHAIN — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

Not observed

01 ☐ M. UNSTABLE CONTAINMENT OF WASTES (Spills/Runoff/Standing liquids, Leaking drums) — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: Unknown
04 NARRATIVE DESCRIPTION

Uncertain as to whether waste was poured directly into trenches, buried in drums, or both.

01 ☐ N. DAMAGE TO OFFSITE PROPERTY — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
NARRATIVE DESCRIPTION

None observed

01 ☐ O. CONTAMINATION OF SEWERS, STORM DRAINS, WWTPs — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

Possible as sites lie on WWTP property

01 ☐ P. ILLEGAL/UNAUTHORIZED DUMPING — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

Uncertain as to who authorized waste disposal

05 DESCRIPTION OF ANY OTHER KNOWN, POTENTIAL, OR ALLEGED HAZARDS

Unknown

III. TOTAL POPULATION POTENTIALLY AFFECTED: _____

IV. COMMENTS

Lack of information as to types and amounts of waste buried, and whether or not material is containerized. Site locations not precisely known.

SOURCES OF INFORMATION (Cite specific references, e.g., State files, sample analysis, reports)

Site inspection, 10-9-84

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION
PART 4 - PERMIT AND DESCRIPTIVE INFORMATION

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
NC	D

II. PERMIT INFORMATION

01 TYPE OF PERMIT ISSUED (Check all that apply)	02 PERMIT NUMBER	03 DATE ISSUED	04 EXPIRATION DATE	05 COMMENTS
☐ A. NPDES				
☐ B. UIC				
☐ C. AIR				
☐ D. RCRA				
☐ E. RCRA INTERIM STATUS				
☐ F. SPCC PLAN				
☐ G. STATE (Specify)				
☐ H. LOCAL (Specify)				
☐ I. OTHER (Specify)				
☒ J. NONE				

III. SITE DESCRIPTION

01 STORAGE/DISPOSAL (Check all that apply)	02 AMOUNT	03 UNIT OF MEASURE	04 TREATMENT (Check all that apply)	05 OTHER
☐ A. SURFACE IMPOUNDMENT			☐ A. INCENERATION	☒ A. BUILDINGS ON SITE WWTP
☐ B. PILES			☐ B. UNDERGROUND INJECTION	
☐ C. DRUMS, ABOVE GROUND			☐ C. CHEMICAL/PHYSICAL	
☐ D. TANK, ABOVE GROUND			☐ D. BIOLOGICAL	
☐ E. TANK, BELOW GROUND			☐ E. WASTE OIL PROCESSING	06 AREA OF SITE
☐ F. LANDFILL			☐ F. SOLVENT RECOVERY	<2 (Acres)
☐ G. LANDFARM			☐ G. OTHER RECYCLING/RECOVERY	
☐ H. OPEN DUMP			☒ H. OTHER None (Specify)	
☒ I. OTHER Burial (Specify)	Unknown			

07 COMMENTS

IV. CONTAINMENT

01 CONTAINMENT OF WASTES (Check one)

☐ A. ADEQUATE, SECURE ☐ B. MODERATE ☐ C. INADEQUATE, POOR ☒ D. INSECURE, UNSOUND, DANGEROUS

02 DESCRIPTION OF DRUMS, DIKING, LINERS, BARRIERS, ETC.

Chemical wastes are thought to have been in liquid state, and were either buried in drums or poured directly into trenches.

V. ACCESSIBILITY

01 WASTE EASILY ACCESSIBLE: ☒ YES ☐ NO

02 COMMENTS

Easy access but unable to confirm exact site locations

VI. SOURCES OF INFORMATION (Cite specific references, e.g. state files, sample analysis, reports)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 5 - WATER, DEMOGRAPHIC, AND ENVIRONMENTAL DATA

I. IDENTIFICATION
01 STATE: NC
02 SITE NUMBER: D

II. DRINKING WATER SUPPLY

01 TYPE OF DRINKING SUPPLY (Check as appropriate)

	SURFACE	WELL
COMMUNITY	A. ☐	B. ☐
NON-COMMUNITY	C. ☐	D. ☒

02 STATUS

	ENDANGERED	AFFECTED	MONITORED
COMMUNITY	A. ☐	B. ☐	C. ☐
NON-COMMUNITY	D. ☒	E. ☐	F. ☐

03 DISTANCE TO SITE
A. _____ (mi)
B. 0.4 (mi)

III. GROUNDWATER

01 GROUNDWATER USE IN VICINITY (Check one)

☐ A. ONLY SOURCE FOR DRINKING
☒ B. DRINKING (Other sources available)
COMMERCIAL, INDUSTRIAL, IRRIGATION (No other water sources available)
☐ C. COMMERCIAL, INDUSTRIAL, IRRIGATION (Limited other sources available)
☐ D. NOT USED, UNUSEABLE

02 POPULATION SERVED BY GROUND WATER: unknown

03 DISTANCE TO NEAREST DRINKING WATER WELL: 0.3 (mi)

04 DEPTH TO GROUNDWATER: ≥ 9 (ft)

05 DIRECTION OF GROUNDWATER FLOW: Unknown

06 DEPTH TO AQUIFER OF CONCERN: Unknown (ft)

07 POTENTIAL YIELD OF AQUIFER: Unknown (gpd)

08 SOLE SOURCE AQUIFER: ☐ YES ☒ NO

09 DESCRIPTION OF WELLS (Including usage, depth, and location relative to population and buildings)

Two monitoring wells @ WWTP:
Upgradient water table @16.0'
Downgradient water table @ 9.5'

10 RECHARGE AREA: ☐ YES ☐ NO
COMMENTS: Possibly at nearby creeks

11 DISCHARGE AREA: ☒ YES ☐ NO
COMMENTS: Possibly at nearby creeks

IV. SURFACE WATER

01 SURFACE WATER USE (Check one)

☐ A. RESERVOIR, RECREATION DRINKING WATER SOURCE
☐ B. IRRIGATION, ECONOMICALLY IMPORTANT RESOURCES
☐ C. COMMERCIAL, INDUSTRIAL
☒ D. NOT CURRENTLY USED

Town Creek

02 AFFECTED/POTENTIALLY AFFECTED BODIES OF WATER

NAME:	AFFECTED	DISTANCE TO SITE
Town Creek and Local streams	☐	0.2 (mi)
	☐	(mi)
	☐	(mi)

V. DEMOGRAPHIC AND PROPERTY INFORMATION

01 TOTAL POPULATION WITHIN

ONE (1) MILE OF SITE: A. 500 NO. OF PERSONS
TWO (2) MILES OF SITE: B. 3000+ NO. OF PERSONS
THREE (3) MILES OF SITE: C. 5000+ NO. OF PERSONS

02 DISTANCE TO NEAREST POPULATION: 0.3 (mi)

03 NUMBER OF BUILDINGS WITHIN TWO (2) MILES OF SITE: 200+

04 DISTANCE TO NEAREST OFF-SITE BUILDING: 0.3 (mi)

05 POPULATION WITHIN VICINITY OF SITE (Provide narrative description of nature of population within vicinity of site, e.g., rural, village, densely populated urban area)

Town Creek WWTP lies on the outskirts of town. An estimated 500 or more people live within a one-mile radius of the site.

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 5 - WATER, DEMOGRAPHIC, AND ENVIRONMENTAL DATA

I. IDENTIFICATION
01 STATE: NC | 02 SITE NUMBER: D

VI. ENVIRONMENTAL INFORMATION

01 PERMEABILITY OF UNSATURATED ZONE (Check one)

Red Clay - Low

☐ A. $10^{-6} - 10^{-8}$ cm/sec ☐ B. $10^{-4} - 10^{-6}$ cm/sec ☐ C. $10^{-4} - 10^{-3}$ cm/sec ☐ D. GREATER THAN 10^{-3} cm/sec

02 PERMEABILITY OF BEDROCK (Check one)

Permeability through joints and fractures

☒ A. IMPERMEABLE (Less than 10^{-6} cm/sec) ☐ B. RELATIVELY IMPERMEABLE ($10^{-4} - 10^{-6}$ cm/sec) ☐ C. RELATIVELY PERMEABLE ($10^{-2} - 10^{-4}$ cm/sec) ☐ D. VERY PERMEABLE (Greater than 10^{-2} cm/sec)

03 DEPTH TO BEDROCK	04 DEPTH OF CONTAMINATED SOIL ZONE	05 SOIL pH
unknown (ft)	unknown (ft)	unknown

06 NET PRECIPITATION	07 ONE YEAR 24 HOUR RAINFALL	08 SLOPE: SITE SLOPE	DIRECTION OF SITE SLOPE	TERRAIN AVERAGE SLOPE
approx 45''/yr (in)	unknown (in)	1-2 %	SSE	5 %

09 FLOOD POTENTIAL

SITE IS IN unknown YEAR FLOODPLAIN

10 ☐ SITE IS ON BARRIER ISLAND, COASTAL HIGH HAZARD AREA, RIVERINE FLOODWAY

N/A

11 DISTANCE TO WETLANDS (5 acre minimum) N/A

ESTUARINE: A. ____ (mi)

OTHER: B. ____ (mi)

12 DISTANCE TO CRITICAL HABITAT (of endangered species) N/A

____ (mi)

ENDANGERED SPECIES: ____

13 LAND USE IN VICINITY

DISTANCE TO:

COMMERCIAL/INDUSTRIAL	RESIDENTIAL AREAS; NATIONAL/STATE PARKS, FORESTS, OR WILDLIFE RESERVES	AGRICULTURAL LANDS: PRIME AG LAND	AGRICULTURAL LANDS: AG LAND
A. 0.8 (mi)	B. 0.4 (mi)	C. ____ (mi)	D. 0.2 (mi)

14 DESCRIPTION OF SITE IN RELATION TO SURROUNDING TOPOGRAPHY

Slope ranges from slight to extreme. Several creeks in area including Town Creek.

VII. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

USGS 7.5' Quad, Salisbury, NC, 1962

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 6 - SAMPLE AND FIELD INFORMATION

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
NC	D

II. SAMPLES TAKEN

SAMPLE TYPE	01 NUMBER OF SAMPLES TAKEN	02 SAMPLES SENT TO	03 ESTIMATED DATE RESULTS AVAILABLE
GROUNDWATER	1	State chem lab, NC	Presently
SURFACE WATER	1	State chem lab, NC	Presently
WASTE			
AIR			
RUNOFF			
SPILL			
SOIL	1	State chem lab, NC	Presently
VEGETATION			
OTHER Stream Sediment	1	State chem lab, NC	Presently

III. FIELD MEASUREMENTS TAKEN

01 TYPE	02 COMMENTS
	No field measurements, as precise site locations could
	not be confirmed

IV. PHOTOGRAPHS AND MAPS

01 TYPE ☒ GROUND ☒ AERIAL

02 IN CUSTODY OF DHR/Solid & Hazardous Waste Mgmt (Name of organization or individual)

03 MAPS ☒ YES ☐ NO

04 LOCATION OF MAPS

V. OTHER FIELD DATA COLLECTED (Provide narrative description)

Soil sample, provided by Kelly Patton, and supposedly contaminated with chemicals which were buried on site were tested for organics by EPA method 624; no compounds were identified.

VI. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

Kelly Patton, Superintendent Water & WWTPs, Salisbury, NC

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 7 - OWNER INFORMATION

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
NC	D

I. CURRENT OWNER(S)				PARENT COMPANY (If applicable)			
01 NAME		02 D+B NUMBER		08 NAME		09 D+B NUMBER	
City of Salisbury							
03 STREET ADDRESS (P.O. Box, RFD #, etc.)		04 SIC CODE		10 STREET ADDRESS (P.O. Box, RFD #, etc.)		11 SIC CODE	
P.O. Box 479							
05 CITY	06 STATE	07 ZIP CODE		12 CITY	13 STATE	14 ZIP CODE	
Salisbury	NC	28144					
01 NAME		02 D+B NUMBER		08 NAME		09 D+B NUMBER	
03 STREET ADDRESS (P.O. Box, RFD #, etc.)		04 SIC CODE		10 STREET ADDRESS (P.O. Box, RFD #, etc.)		11 SIC CODE	
05 CITY	06 STATE	07 ZIP CODE		12 CITY	13 STATE	14 ZIP CODE	
01 NAME		02 D+B NUMBER		08 NAME		09 D+B NUMBER	
03 STREET ADDRESS (P.O. Box, RFD #, etc.)		04 SIC CODE		10 STREET ADDRESS (P.O. Box, RFD #, etc.)		11 SIC CODE	
05 CITY	06 STATE	07 ZIP CODE		12 CITY	13 STATE	14 ZIP CODE	
01 NAME		02 D+B NUMBER		08 NAME		09 D+B NUMBER	
03 STREET ADDRESS (P.O. Box, RFD #, etc.)		04 SIC CODE		10 STREET ADDRESS (P.O. Box, RFD #, etc.)		11 SIC CODE	
05 CITY	06 STATE	07 ZIP CODE		12 CITY	13 STATE	14 ZIP CODE	

III. PREVIOUS OWNER(S) (List most recent first)			IV. REALTY OWNER(S) (If applicable; list most recent first)		
01 NAME		02 D+B NUMBER	01 NAME		02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)		04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)		04 SIC CODE
05 CITY	06 STATE	07 ZIP CODE	05 CITY	06 STATE	07 ZIP CODE
01 NAME		02 D+B NUMBER	01 NAME		02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)		04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)		04 SIC CODE
05 CITY	06 STATE	07 ZIP CODE	05 CITY	06 STATE	07 ZIP CODE
01 NAME		02 D+B NUMBER	01 NAME		02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)		04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)		04 SIC CODE
05 CITY	06 STATE	07 ZIP CODE	05 CITY	06 STATE	07 ZIP CODE

V. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

EPA FORM 2070-13 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 8 - OPERATOR INFORMATION

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
NC	D

II. CURRENT OPERATOR (Provide if different from owner)			OPERATOR'S PARENT COMPANY (If applicable)		
01 NAME		02 D+B NUMBER	10 NAME		11 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)		04 SIC CODE	12 STREET ADDRESS (P.O. Box, RFD #, etc.)		13 SIC CODE
05 CITY	06 STATE	07 ZIP CODE	14 CITY	15 STATE	16 ZIP CODE
08 YEARS OF OPERATION	09 NAME OF OWNER				

III. PREVIOUS OPERATOR(S) (List most recent first; provide only if different from owner)			PREVIOUS OPERATORS' PARENT COMPANIES (If applicable)		
01 NAME		02 D+B NUMBER	10 NAME		11 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)		04 SIC CODE	12 STREET ADDRESS (P.O. Box, RFD #, etc.)		13 SIC CODE
05 CITY	06 STATE	07 ZIP CODE	14 CITY	15 STATE	16 ZIP CODE
08 YEARS OF OPERATION	09 NAME OF OWNER DURING THIS PERIOD				
01 NAME		02 D+B NUMBER	10 NAME		11 D+B NUMBER
ET ADDRESS (P.O. Box, RFD #, etc.)		04 SIC CODE	12 STREET ADDRESS (P.O. Box, RFD #, etc.)		13 SIC CODE
05 CITY	06 STATE	07 ZIP CODE	14 CITY	15 STATE	16 ZIP CODE
08 YEARS OF OPERATION	09 NAME OF OWNER DURING THIS PERIOD				
01 NAME		02 D+B NUMBER	10 NAME		11 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)		04 SIC CODE	12 STREET ADDRESS (P.O. Box, RFD #, etc.)		13 SIC CODE
05 CITY	06 STATE	07 ZIP CODE	14 CITY	15 STATE	16 ZIP CODE
08 YEARS OF OPERATION	09 NAME OF OWNER DURING THIS PERIOD				

IV. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 9 - GENERATOR/TRANSPORTER INFORMATION

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
NC	D

II. ON-SITE GENERATOR

01 NAME	02 D+B NUMBER

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE

05 CITY	06 STATE	07 ZIP CODE

Note: Proctor Chemical Co. was established in 1938. At a later point in time, National Starch and Chemical Co. bought Proctor. On 1-3-83, Proctor Chemical was liquidated.

III. OFF-SITE GENERATOR(S)

01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER
National Starch & Chemical Co.	NC D991278953		

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
P.O. Box 399/Lumber St.			

05 CITY	06 STATE	07 ZIP CODE	05 CITY	06 STATE	07 ZIP CODE
Salisbury	NC	28144			

01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE

05 CITY	06 STATE	07 ZIP CODE	05 CITY	06 STATE	07 ZIP CODE

IV. TRANSPORTER(S)

01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER
As above (presumed)			

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE

05 CITY	06 STATE	07 ZIP CODE	05 CITY	06 STATE	07 ZIP CODE

01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE

05 CITY	06 STATE	07 ZIP CODE	05 CITY	06 STATE	07 ZIP CODE

V. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 10 - PAST RESPONSE ACTIVITIES

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
NC	D

I. PAST RESPONSE ACTIVITIES

01 ☐ A. WATER SUPPLY CLOSED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
No

01 ☐ B. TEMPORARY WATER SUPPLY PROVIDED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
No

01 ☐ C. PERMANENT WATER SUPPLY PROVIDED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
No

01 ☐ D. SPILLED MATERIAL REMOVED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
No

01 ☐ E. CONTAMINATED SOIL REMOVED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
No

01 ☐ F. WASTE REPACKAGED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
No

01 ☐ G. WASTE DISPOSED ELSEWHERE — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
No

☐ H. ON SITE BURIAL — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
Alleged in several locations, but details are incomplete.

01 ☐ I. IN SITU CHEMICAL TREATMENT — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
No

01 ☐ J. IN SITU BIOLOGICAL TREATMENT — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
No

01 ☐ K. IN SITU PHYSICAL TREATMENT — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
No

01 ☐ L. ENCAPSULATION — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
No

01 ☐ M. EMERGENCY WASTE TREATMENT — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
No

01 ☐ N. CUTOFF WALLS — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
No

01 ☐ O. EMERGENCY DIKING/SURFACE WATER DIVERSION — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
No

☐ P. CUTOFF TRENCHES/SUMP — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
Material allegedly buried in trenches

01 ☐ Q. SUBSURFACE CUTOFF WALL — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
No

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 10 - PAST RESPONSE ACTIVITIES

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
NC	D

I PAST RESPONSE ACTIVITIES (Continued)

01 ☐ R. BARRIER WALLS CONSTRUCTED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
No

01 ☐ S. CAPPING/COVERING — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
No

01 ☐ T. BULK TANKAGE REPAIRED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
No

01 ☐ U. GROUT CURTAIN CONSTRUCTED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
No

01 ☐ V. BOTTOM SEALED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
No

01 ☐ W. GAS CONTROL — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
No

01 ☐ X. FIRE CONTROL — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
No

☐ Y. LEACHATE TREATMENT — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
No

01 ☐ Z. AREA EVACUATED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
No

01 ☐ 1. ACCESS TO SITE RESTRICTED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
Easy access to sites

01 ☐ 2. POPULATION RELOCATED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
No

01 ☐ 3. OTHER REMEDIAL ACTIVITIES — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
No

III. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 11 - ENFORCEMENT INFORMATION

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
NC	D

II. ENFORCEMENT INFORMATION

01 PAST REGULATORY/ENFORCEMENT ACTION ☐ YES ☒ NO

02 DESCRIPTION OF FEDERAL, STATE, LOCAL REGULATORY/ENFORCEMENT ACTION

None

SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

EPA

POTENTIAL HAZARDOUS WASTE SITE PRELIMINARY ASSESSMENT
PART 2 - WASTE INFORMATION

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
NC	D 9808/3528

II. WASTE STATES, QUANTITIES, AND CHARACTERISTICS

01 PHYSICAL STATES (Check all that apply)

- [ ] A. SOLID
- [ ] B. POWDER, FINES
- [ ] C. SLUDGE
- [ ] D. OTHER _____ (Specify)
- [ ] E. SLURRY
- [x] F. LIQUID
- [ ] G. GAS

02 WASTE QUANTITY AT SITE (Measures of waste quantities must be independent)

TONS _____
CUBIC YARDS _____
NO. OF DRUMS _____

03 WASTE CHARACTERISTICS (Check all that apply)

- [x] A. TOXIC
- [ ] B. CORROSIVE
- [ ] C. RADIOACTIVE
- [x] D. PERSISTENT
- [ ] E. SOLUBLE
- [ ] F. INFECTIOUS
- [ ] G. FLAMMABLE
- [ ] H. IGNITABLE
- [ ] I. HIGHLY VOLATILE
- [ ] J. EXPLOSIVE
- [ ] K. REACTIVE
- [ ] L. INCOMPATIBLE
- [ ] M. NOT APPLICABLE

III. WASTE TYPE

CATEGORY	SUBSTANCE NAME	01 GROSS AMOUNT	02 UNIT OF MEASURE	03 COMMENTS
SLU	SLUDGE			
OLW	OILY WASTE			
SOL	SOLVENTS	unknown		
PSD	PESTICIDES			
OCC	OTHER ORGANIC CHEMICALS			
IOC	INORGANIC CHEMICALS			
ACD	ACIDS			
BAS	BASES			
MES	HEAVY METALS			

IV. HAZARDOUS SUBSTANCES (See Appendix for most frequently cited CAS Numbers)

01 CATEGORY	02 SUBSTANCE NAME	03 CAS NUMBER	04 STORAGE/DISPOSAL METHOD	05 CONCENTRATION	06 MEASURE OF CONCENTRATION
U239	xylene	1330-20-7			
	Toluene	108-88-3			
	methanol	67-56-1			
	methyl ethyl ketone	78-93-3			
	Methyl isobutyl ketone	108-10-1			
U002	Acetone	67-64-1			
U077	1,2-Dichloroethane	107-06-2			

V. FEEDSTOCKS (See Appendix for CAS Numbers)

CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER	CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER
FDS			FDS		
FDS			FDS		
FDS			FDS		
FDS			FDS		

VI. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

Harvy Mathias City Manager/City of Salisbury
Kelly Patton Superintendent of Water and Waste Water Treatment/City of Salisbury
National Starch and Chemical Company Permit-applications (NC T00623116)

TENTATIVE DISPOSITION

File this form in the regional Hazardous Waste Log File and submit a copy to: U.S. Environmental Protection Agency, Site Tracking System, Hazardous Waste Enforcement Task Force (EN-335), 401 M St., SW, Washington, DC 20460.

I. SITE IDENTIFICATION

A. SITE NAME	B. STREET	
Town Creek Regional WWTP	Heilightown Rd.	
C. CITY	D. STATE	E. ZIP CODE
Salisbury	NC.	28144

II. TENTATIVE DISPOSITION

Indicate the recommended action(s) and agency(ies) that should be involved by marking 'X' in the appropriate boxes.

RECOMMENDATION	MARK 'X'	ACTION AGENCY: EPA	STATE	LOCAL	PRIVATE
A. NO ACTION NEEDED -- NO HAZARD					
B. INVESTIGATIVE ACTION(S) NEEDED (If yes, complete Section III.)			X		
C. REMEDIAL ACTION NEEDED (If yes, complete Section IV.)					
D. ENFORCEMENT ACTION NEEDED (If yes, specify in Part E whether the case will be primarily managed by the EPA or the State and what type of enforcement action is anticipated.)					

E. RATIONALE FOR DISPOSITION

Tentatively It was reported that Dall Stack & Chem Co. was allowed to dump waste solvents into the WWTP and then bury the drums on site at the WWTP.

F. INDICATE THE ESTIMATED DATE OF FINAL DISPOSITION (mo., day, & yr.)

G. IF A CASE DEVELOPMENT PLAN IS NECESSARY, INDICATE THE ESTIMATED DATE ON WHICH THE PLAN WILL BE DEVELOPED (mo., day, & yr.)

H. PREPARER INFORMATION

1. NAME	2. TELEPHONE NUMBER	3. DATE (mo., day, & yr.)
Grace Oland	881-2234	2/8/85

III. INVESTIGATIVE ACTIVITY NEEDED

A. IDENTIFY ADDITIONAL INFORMATION NEEDED TO ACHIEVE A FINAL DISPOSITION.

The state is planning a site inspection to locate the burial site and to sample the two monitoring wells for volatile organics.

B. PROPOSED INVESTIGATIVE ACTIVITY (Detailed Information)

1. METHOD FOR OBTAINING NEEDED ADDITIONAL INFO.	2. SCHEDULED DATE OF ACTION (mo, day, & yr)	3. TO BE PERFORMED BY (EPA, Contractor, State, etc.)	4. ESTIMATED MANHOURS	5. REMARKS
a. TYPE OF SITE INSPECTION				
(1)				
(2)				
(3)				
b. TYPE OF MONITORING				
(1)				
(2)				
c. TYPE OF SAMPLING				
(1)				
(2)				

EPA Form T2070-4 (10-79)

Continue On Reverse

EPA

POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 1 - SITE INFORMATION AND ASSESSMENT

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
NC	D980843528

II. SITE NAME AND LOCATION

01 SITE NAME (Legal, common, or descriptive name of site)	02 STREET, ROUTE NO., OR SPECIFIC LOCATION IDENTIFIER
Town Creek Regional Waste Water Treatment Plant	Heiligtown Road

03 CITY	04 STATE	05 ZIP CODE	06 COUNTY	07 COUNTY CODE	08 CONG DIST
Salisbury	NC	28144	Rowan	80	08

09 COORDINATES LATITUDE	LONGITUDE
35 41 00.N	080 24 40.W

10 DIRECTIONS TO SITE (Starting from nearest public road)

Travel south on I-85 from Greensboro. Take the Spencer exit. Travel into Spencer on Hwy. 29. At the first traffic light, turn onto Heiligtown Road. The Town Creek plant is located approximately one mile from the intersection.

III. RESPONSIBLE PARTIES

01 OWNER (if known)	02 STREET (Business, mailing, residential)
City of Salisbury	Post Office Box 479

03 CITY	04 STATE	05 ZIP CODE	06 TELEPHONE NUMBER
Salisbury	NC	28144	(704 637-2200

07 OPERATOR (if known and different from owner)	08 STREET (Business, mailing, residential)

09 CITY	10 STATE	11 ZIP CODE	12 TELEPHONE NUMBER
			( )

13 TYPE OF OWNERSHIP (Check one)

☐ A. PRIVATE ☐ B. FEDERAL: _____ (Agency name) ☐ C. STATE ☐ D. COUNTY ☒ E. MUNICIPAL

☐ F. OTHER: _____ (Specify) ☐ G. UNKNOWN

14 OWNER/OPERATOR NOTIFICATION ON FILE (Check all that apply)

☐ A. RCRA 3001 DATE RECEIVED: ___/___/___ (MONTH DAY YEAR) ☐ B. UNCONTROLLED WASTE SITE (CERCLA 103 c) DATE RECEIVED: ___/___/___ (MONTH DAY YEAR) ☐ C. NONE

IV. CHARACTERIZATION OF POTENTIAL HAZARD

01 ON SITE INSPECTION

☐ YES DATE ___/___/___ (MONTH DAY YEAR)
☒ NO

BY (Check all that apply)

☐ A. EPA ☐ B. EPA CONTRACTOR ☐ C. STATE ☐ D. OTHER CONTRACTOR
☐ E. LOCAL HEALTH OFFICIAL ☐ F. OTHER: _____ (Specify)

CONTRACTOR NAME(S): _____

02 SITE STATUS (Check one)	03 YEARS OF OPERATION
☐ A. ACTIVE ☒ B. INACTIVE ☐ C. UNKNOWN	late 1960's (BEGINNING YEAR) | early 1970's (ENDING YEAR) ☐ UNKNOWN

04 DESCRIPTION OF SUBSTANCES POSSIBLY PRESENT, KNOWN, OR ALLEGED

The City of Salisbury has received reports that National Starch and Chemical Company (NC D991278953)was allowed to dump waste solvents into the WWTP and then bury the drums on site at the WWTP.

05 DESCRIPTION OF POTENTIAL HAZARD TO ENVIRONMENT AND/OR POPULATION

Waste streams from National Starch include xylene, toluene, methanol, methyl ethyl ketone and isobutyl ketone. A site inspection is recommended to locate the burial site and to sample the two monitoring wells for volatile organics.

V. PRIORITY ASSESSMENT

01 PRIORITY FOR INSPECTION (Check one. If high or medium is checked, complete Part 2 - Waste Information and Part 3 - Description of Hazardous Conditions and Incidents)

☐ A. HIGH (Inspection required promptly) B. MEDIUM (Inspection required) ☒ C. LOW (Inspect on time available basis) ☐ D. NONE (No further action needed, complete current disposition form)

VI. INFORMATION AVAILABLE FROM

01 CONTACT	02 OF (Agency/Organization)	03 TELEPHONE NUMBER
Kelly Patton	Superintendent of Water and Waste Water Treatment - City of Salisbury	(704) 637-2200

04 PERSON RESPONSIBLE FOR ASSESSMENT	05 AGENCY	06 ORGANIZATION	07 TELEPHONE NUMBER	08 DATE
O.W. Strickland	NC DHR/DHS	Solid & Haz. Waste	(919) 733-2178	10 5 84 (MONTH DAY YEAR)

EPA FORM 2070-12 (7-81)

DATE: 8 October 1984

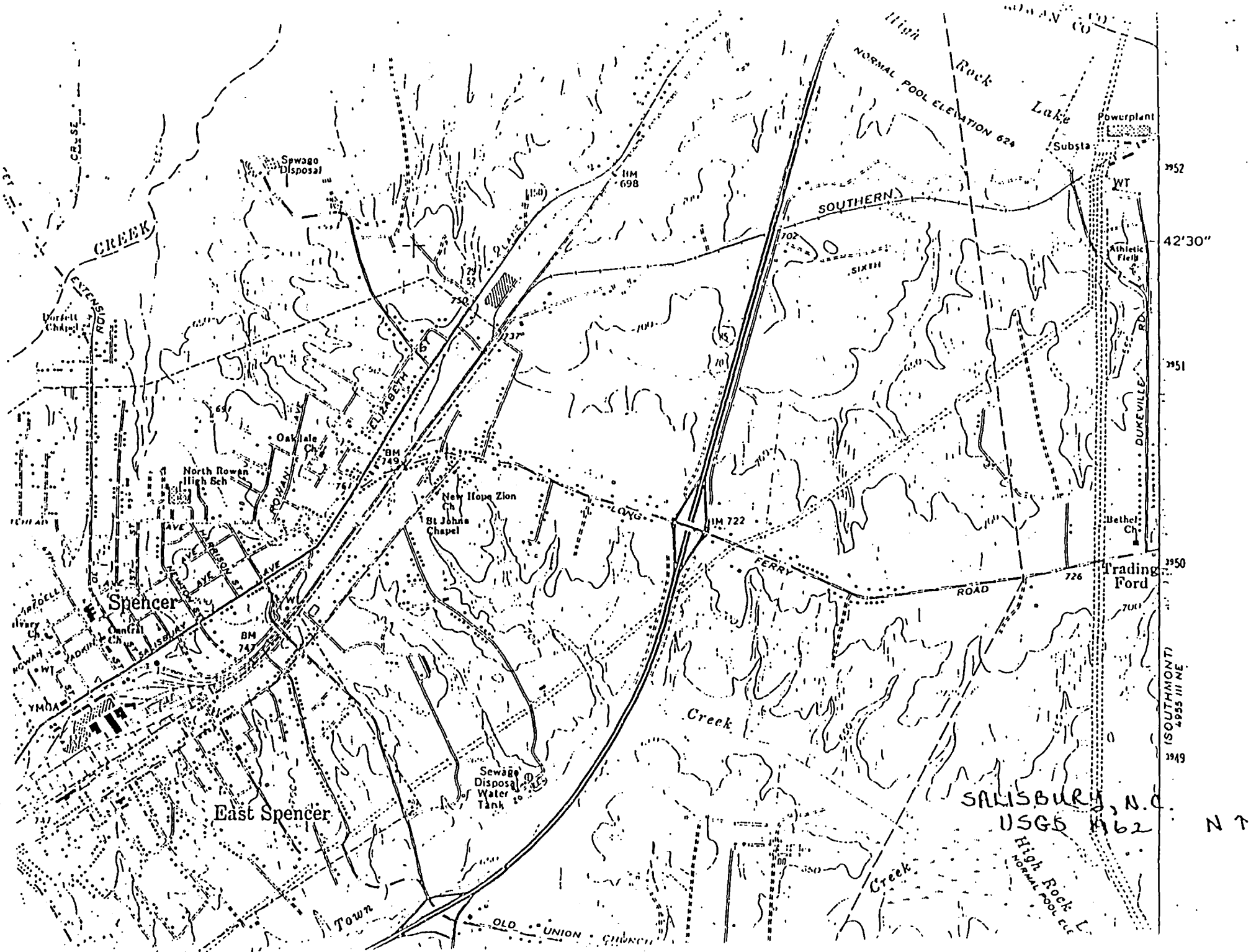
TO: File

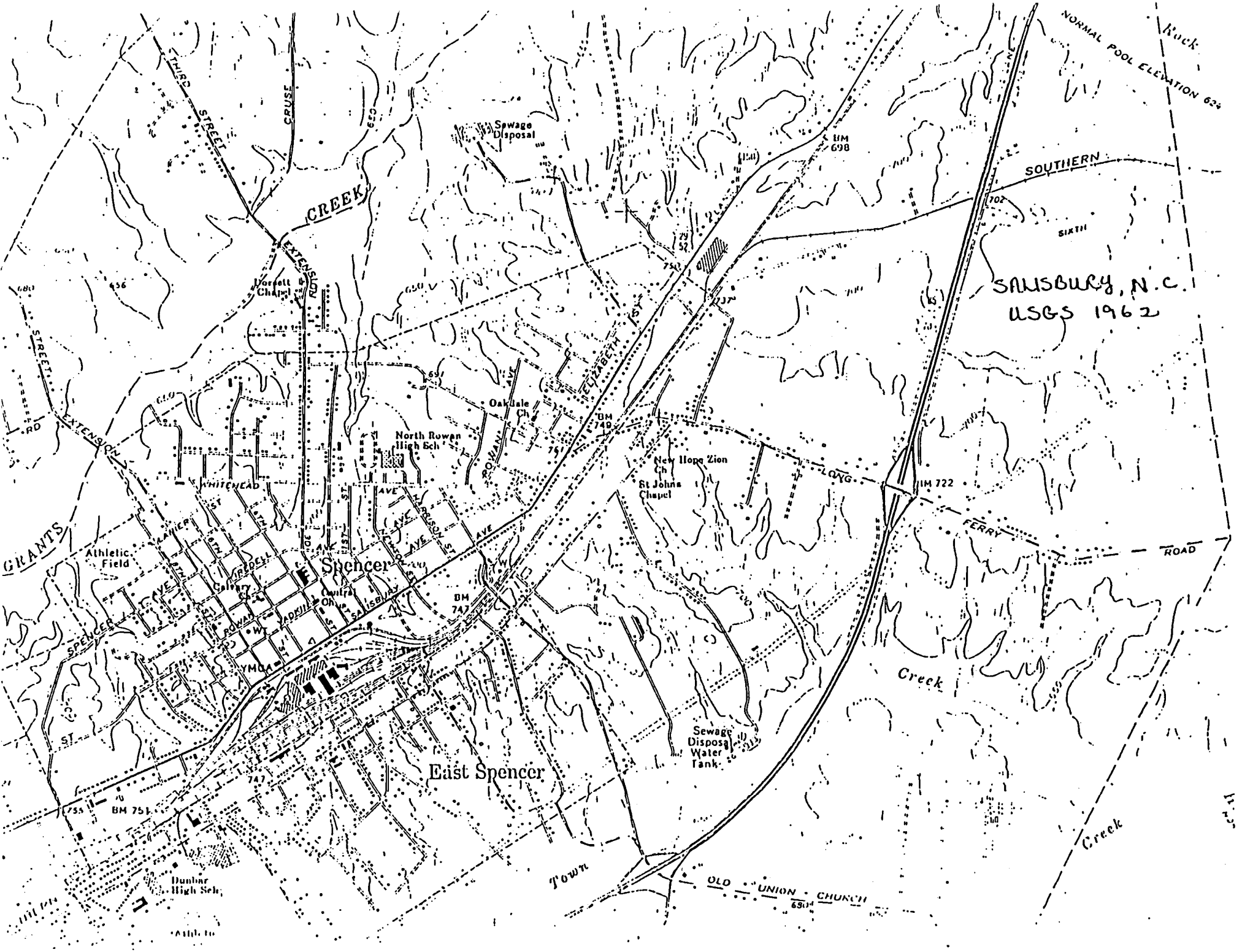
FROM: Lee Crosby

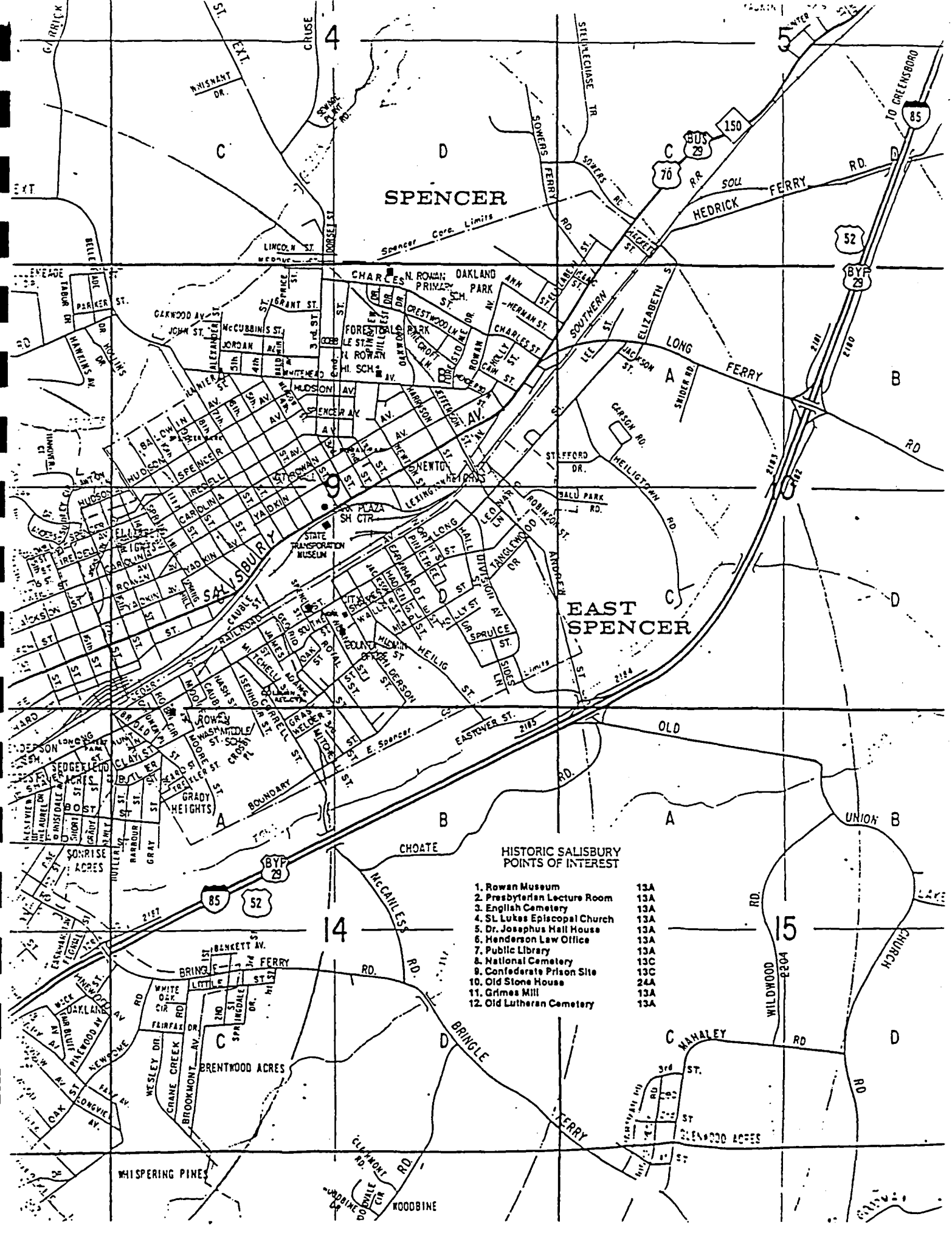
RE: Site Inspection
Town Creek Regional Waste Water Treatment Plant

A site inspection has been scheduled for Tuesday, 9 October 1984 by the N.C. Solid and Hazardous Waste Management Branch. Environmental Engineer, Bill Meyer, and Geologist, Gary Babb, plan to locate the buried drums by auger borings and magnetometer readings. The two monitoring wells at the treatment plant will be sampled for volatile organics as well as other parameters. Additional sampling points will be determined on site. RCRA 3012 Geologist, Mark Durway, will assist.

LC/lw


High Rock Lake
NORMAL POOL ELEVATION 624
Powerplant
Substa
Sewage Disposal
BM 698
SOUTHERN
SIXTH
Athletic Field
42'30"
3952
3951
3950
3949
(SOUTHMONT) 4955 III NE
CREEK
EXTENSION RD
Dorsett Chapel
ELIZABETH ST
Oakdale Ch
BM 749
North Rowan High Sch
ROWAN
New Hope Zion Ch
St Johns Chapel
LONG
BM 722
FERRY
ROAD
726
Bethel Ch
DUKEVILLE RD
Trading Ford
Spencer
PRISON ST
AVE
Central Ch
SALISBURY
BM 741
YMCA
Creek
Sewage Disposal Water Tank
East Spencer
Town
OLD UNION CHURCH
High Rock Lake
NORMAL POOL ELE
SALISBURY, N.C.
USGS 1962
N


SALISBURY, N.C.
USGS 1962
NORMAL POOL ELEVATION 625
Sewage Disposal
BM 698
SOUTHERN
SIXTH
THIRD STREET
CRUSE
CREEK
EXTENSION
Forrett Chapel
STREET
EXTENSION
RD
ELIZABETH
Oakdale Ch
BM 749
North Rowan High Sch
ROWAN
New Hope Zion Ch
St Johns Chapel
LONG
BM 722
FERRY
ROAD
GRANTS
WHITEHEAD
Athletic Field
Spencer
Calvary Ch
Central Chapel
BM 747
SPENCER
YMCA
Creek
Sewage Disposal Water Tank
East Spencer
BM 751
Dunbar High Sch
Town
OLD UNION CHURCH
Creek


SPENCER
EAST SPENCER
SALISBURY
HISTORIC SALISBURY
POINTS OF INTEREST
1. Rowan Museum 13A
2. Presbyterian Lecture Room 13A
3. English Cemetery 13A
4. St. Lukes Episcopal Church 13A
5. Dr. Josephus Hall House 13A
6. Henderson Law Office 13A
7. Public Library 13A
8. National Cemetery 13C
9. Confederate Prison Site 13C
10. Old Stone House 24A
11. Grimes Mill 13A
12. Old Lutheran Cemetery 13A
BRENTWOOD ACRES
WHISPERING PINES
WOODBINE
GLENWOOD ACRES
GRADY HEIGHTS
SUNRISE ACRES
SEDGEFIELD
OAKLAND PARK
N. ROWAN PRIMARY SCH.
ROWAN MIDDLE SCH.
STATE TRANSPORTATION MUSEUM
PLAZA SH CTR
Spencer Corp. Limits
TO GREENSBORO
HEDRICK FERRY RD.
LONG FERRY RD
OLD UNION CHURCH RD.
BRINGLE FERRY RD.
MAHALEY RD
CHOATE
McCANLESS RD.
BOUNDARY
EASTOVER ST.
WILDWOOD RD.
CLEMMONS RD.
BYP 29
85
52
70
150
BUS 29
14
15

DRAFT

EPA

POTENTIAL HAZARDOUS WASTE SITE PRELIMINARY ASSESSMENT
PART 1 - SITE INFORMATION AND ASSESSMENT

I. IDENTIFICATION

01 STATE: NC
02 SITE NUMBER: D To be assigned NCD980843528

II. SITE NAME AND LOCATION

01 SITE NAME (Legal, common, or descriptive name of site): Town Creek Regional Waste Water Treatment Plant

02 STREET, ROUTE NO., OR SPECIFIC LOCATION IDENTIFIER: Heiligtown Road

03 CITY: Salisbury

04 STATE: NC | 05 ZIP CODE: 28144 | 06 COUNTY: Rowan | 07 COUNTY CODE: 80 | 08 CONG DIST: 08

09 COORDINATES LATITUDE: 35 41 00 N | LONGITUDE: 080 24 40 W

10 DIRECTIONS TO SITE (Starting from nearest public road)

Travel south on I-85 from Greensboro. Take the Spencer exit. Travel into Spencer on Hwy. 29. At the first traffic light, turn onto Heiligtown Road. The Town Creek plant is located approximately one mile from the intersection.

III. RESPONSIBLE PARTIES

01 OWNER (If known): City of Salisbury

02 STREET (Business, mailing, residential): Post Office Box 479

03 CITY: Salisbury

04 STATE: NC | 05 ZIP CODE: 28144 | 06 TELEPHONE NUMBER: (704 637-2200

07 OPERATOR (If known and different from owner):

08 STREET (Business, mailing, residential):

09 CITY:

10 STATE: | 11 ZIP CODE: | 12 TELEPHONE NUMBER: ( )

13 TYPE OF OWNERSHIP (Check one)

☐ A. PRIVATE ☐ B. FEDERAL: _____ (Agency name) ☐ C. STATE ☐ D. COUNTY ☒ E. MUNICIPAL

☐ F. OTHER: _____ (Specify) ☐ G. UNKNOWN

14 OWNER/OPERATOR NOTIFICATION ON FILE (Check all that apply)

☐ A. RCRA 3001 DATE RECEIVED: ___/___/___ (MONTH DAY YEAR) ☐ B. UNCONTROLLED WASTE SITE (CERCLA 103 c) DATE RECEIVED: ___/___/___ (MONTH DAY YEAR) ☐ C. NONE

IV. CHARACTERIZATION OF POTENTIAL HAZARD

01 ON SITE INSPECTION

☐ YES DATE ___/___/___ (MONTH DAY YEAR)
☒ NO

BY (Check all that apply)

☐ A. EPA ☐ B. EPA CONTRACTOR ☐ C. STATE ☐ D. OTHER CONTRACTOR
☐ E. LOCAL HEALTH OFFICIAL ☐ F. OTHER: _____ (Specify)

CONTRACTOR NAME(S): _____

02 SITE STATUS (Check one)

☐ A. ACTIVE ☒ B. INACTIVE ☐ C. UNKNOWN

03 YEARS OF OPERATION

late 1960's (BEGINNING YEAR) | early 1970's (ENDING YEAR) ☐ UNKNOWN

04 DESCRIPTION OF SUBSTANCES POSSIBLY PRESENT, KNOWN, OR ALLEGED

The City of Salisbury has received reports that National Starch and Chemical Company (NC D991278953)was allowed to dump waste solvents into the WWTP and then bury the drums on site at the WWTP.

05 DESCRIPTION OF POTENTIAL HAZARD TO ENVIRONMENT AND/OR POPULATION

Waste streams from National Starch include xylene, toluene, methanol, methyl ethyl ketone and isobutyl ketone. A site inspection is recommended to locate the burial site and to sample the two monitoring wells for volatile organics.

V. PRIORITY ASSESSMENT

01 PRIORITY FOR INSPECTION (Check one. If high or medium is checked, complete Part 2 - Waste Information and Part 3 - Description of Hazardous Conditions and Incidents)

A. HIGH (Inspection required promptly) B. MEDIUM (Inspection required) C. LOW (Inspect on time available basis) D. NONE (No further action needed, complete current disposition form)

VI. INFORMATION AVAILABLE FROM

01 CONTACT: Kelly Patton

02 OF (Agency/Organization): Superintendent of Water and Waste Water Treatment - City of Salisbury

03 TELEPHONE NUMBER: (704) 637-2200

04 PERSON RESPONSIBLE FOR ASSESSMENT: O.W. Strickland

05 AGENCY: NC DHR/DHS

06 ORGANIZATION: Solid & Haz. Waste

07 TELEPHONE NUMBER: (919) 733-2178

08 DATE: 10 / 5 / 84 (MONTH DAY YEAR)

EPA FORM 2070-12 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE PRELIMINARY ASSESSMENT
PART 2 - WASTE INFORMATION

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
NC	D

II. WASTE STATES, QUANTITIES, AND CHARACTERISTICS

01 PHYSICAL STATES (Check all that apply)

- ☐ A. SOLID
- ☐ B. POWDER, FINES
- ☐ C. SLUDGE
- ☐ D. OTHER _____ (Specify)
- ☐ E. SLURRY
- ☒ F. LIQUID
- ☐ G. GAS

02 WASTE QUANTITY AT SITE (Measures of waste quantities must be independent)

TONS _____
CUBIC YARDS _____
NO. OF DRUMS _____

03 WASTE CHARACTERISTICS (Check all that apply)

- ☒ A. TOXIC
- ☐ B. CORROSIVE
- ☐ C. RADIOACTIVE
- ☒ D. PERSISTENT
- ☐ E. SOLUBLE
- ☐ F. INFECTIOUS
- ☐ G. FLAMMABLE
- ☐ H. IGNITABLE
- ☐ I. HIGHLY VOLATILE
- ☐ J. EXPLOSIVE
- ☐ K. REACTIVE
- ☐ L. INCOMPATIBLE
- ☐ M. NOT APPLICABLE

III. WASTE TYPE

CATEGORY	SUBSTANCE NAME	01 GROSS AMOUNT	02 UNIT OF MEASURE	03 COMMENTS
SLU	SLUDGE			
OLW	OILY WASTE			
SOL	SOLVENTS	unknown		
PSD	PESTICIDES			
OCC	OTHER ORGANIC CHEMICALS			
IOC	INORGANIC CHEMICALS			
ACD	ACIDS			
BAS	BASES			
MES	HEAVY METALS			

IV. HAZARDOUS SUBSTANCES (See Appendix for most frequently cited CAS Numbers)

01 CATEGORY	02 SUBSTANCE NAME	03 CAS NUMBER	04 STORAGE/DISPOSAL METHOD	05 CONCENTRATION	06 MEASURE OF CONCENTRATION
U239	xylene	1330-20-7			
	Toluene	108-88-3			
	methanol	67-56-1			
	methyl ethyl ketone	78-93-3			
	Methyl isobutyl ketone	108-10-1			
U002	Acetone	67-64-1			
U077	1,2-Dichloroethane	107-06-2			

V. FEEDSTOCKS (See Appendix for CAS Numbers)

CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER	CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER
FDS			FDS		
FDS			FDS		
FDS			FDS		
FDS			FDS		

VI. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

Harvy Mathias City Manager/City of Salisbury
Kelly Patton Superintendent of Water and Waste Water Treatment/City of Salisbury
National Starch and Chemical Company Permit-applications (NC T00623116)

DATE: 8 October 1984

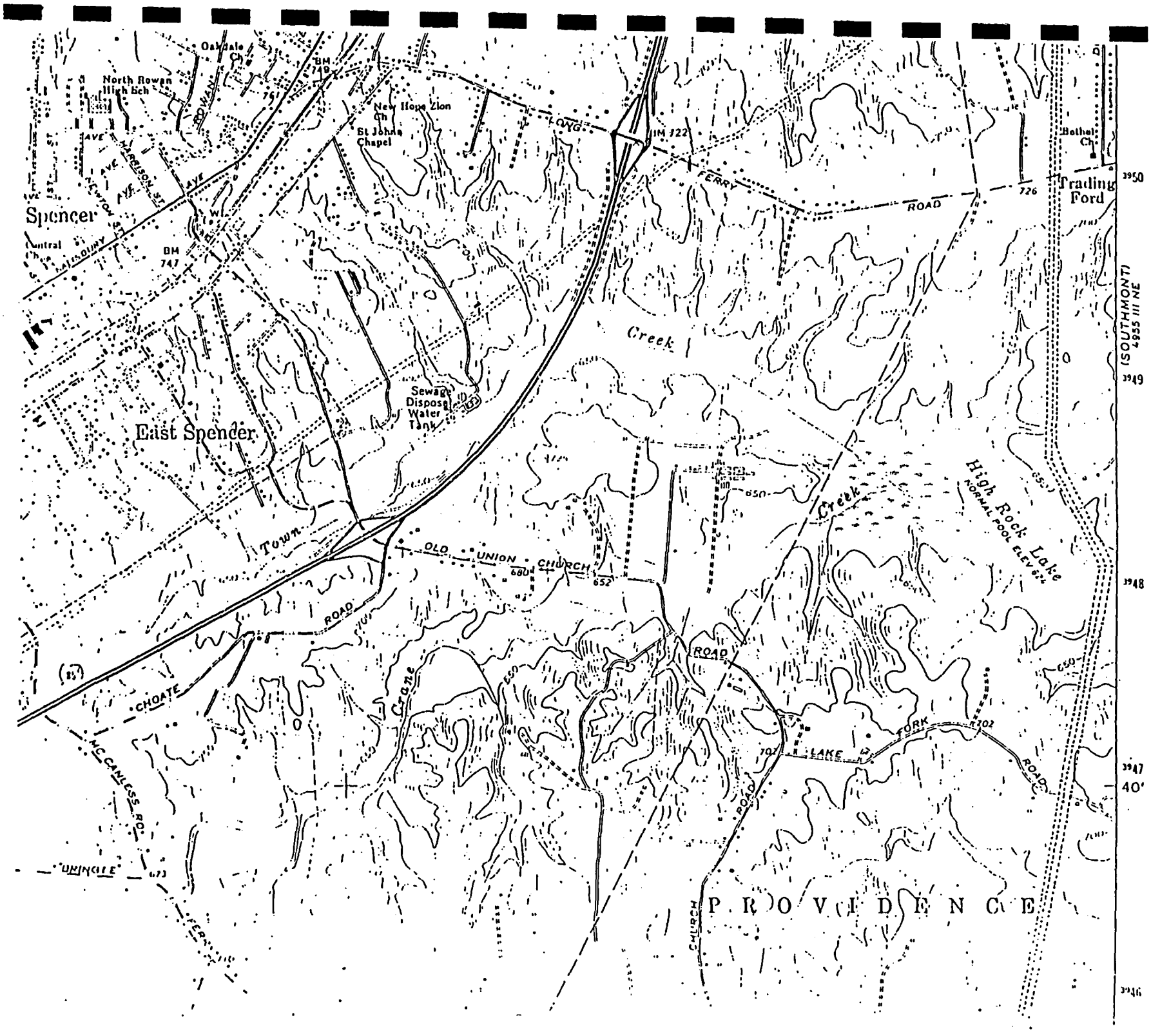
TO: File

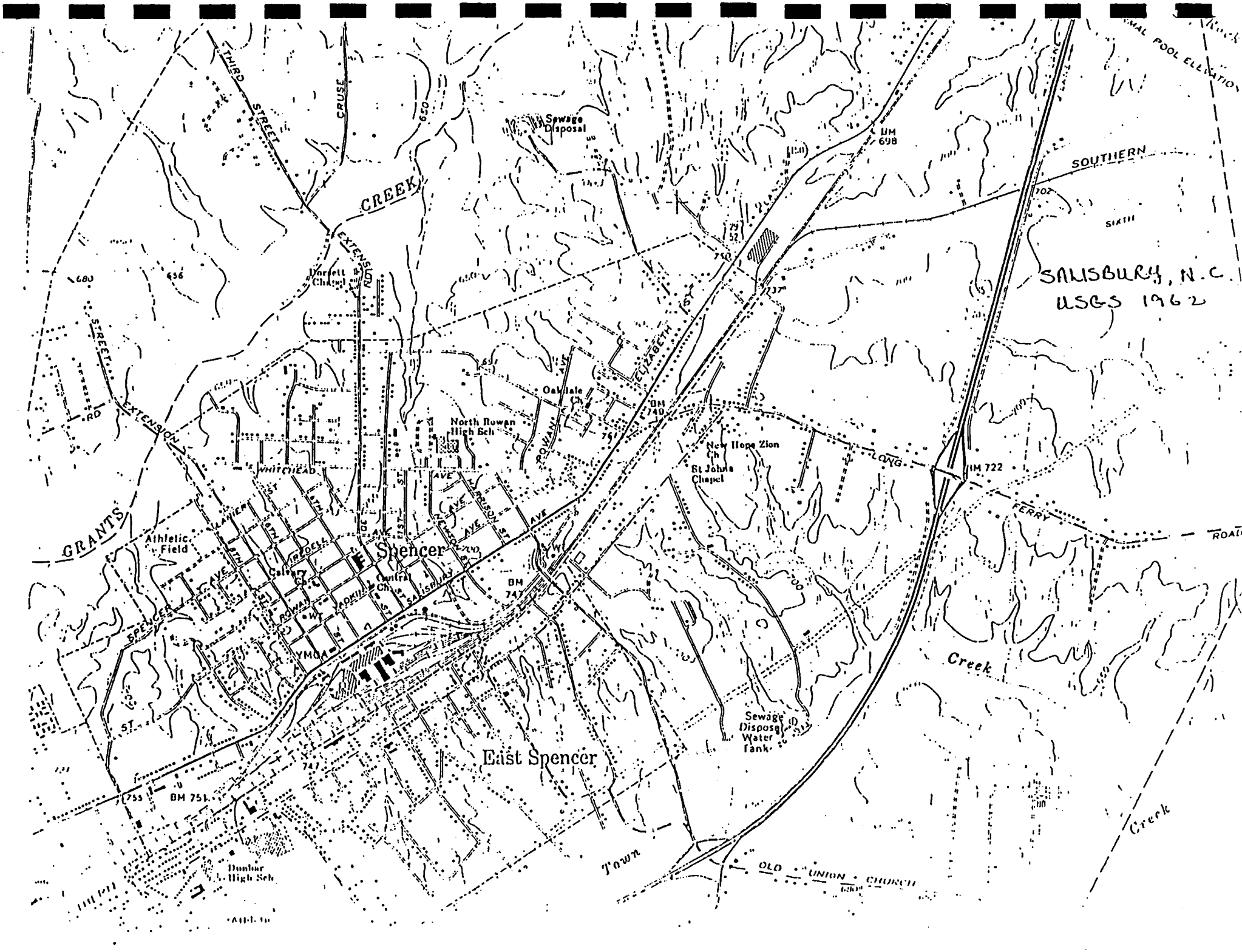
FROM: Lee Crosby

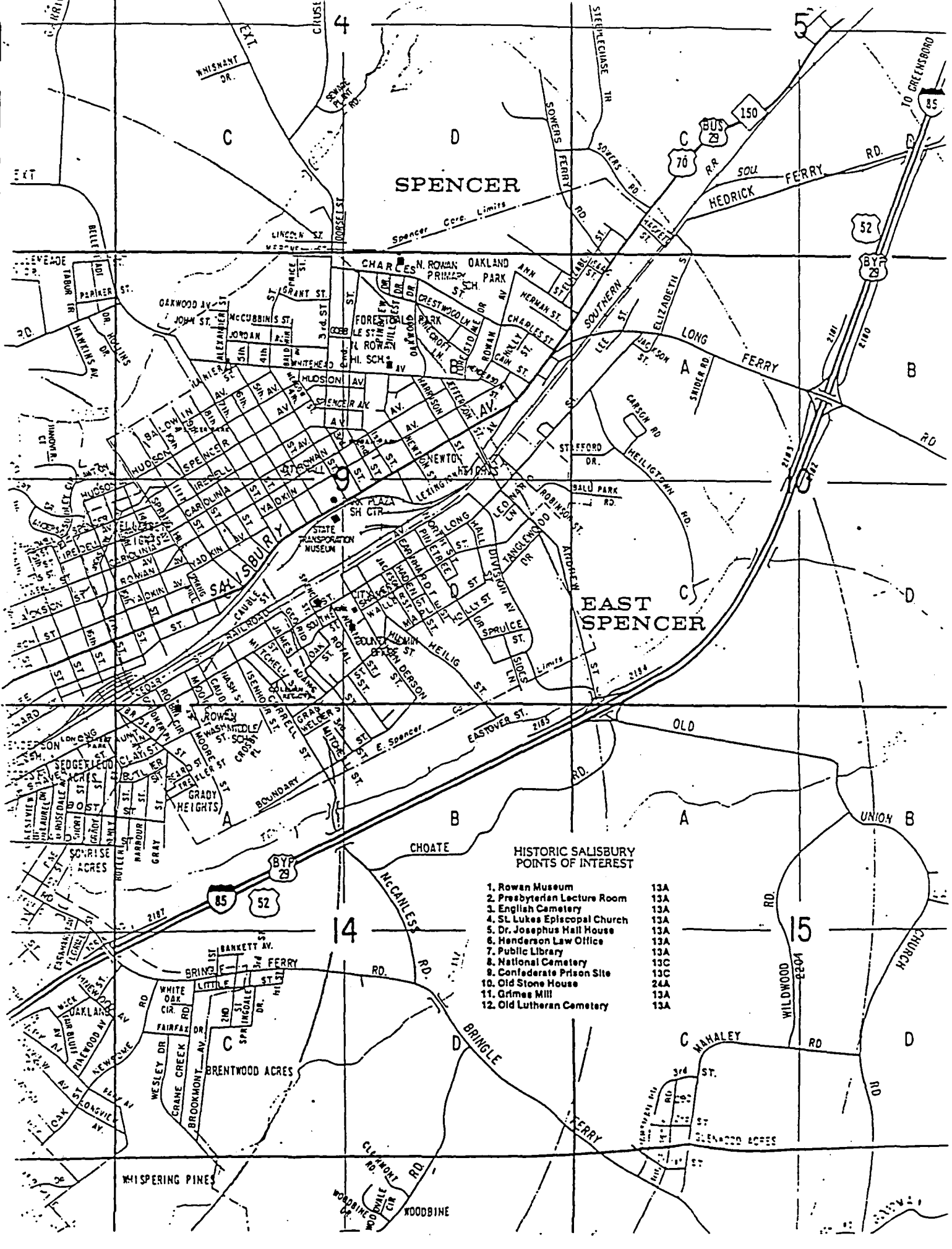
RE: Site Inspection
Town Creek Regional Waste Water Treatment Plant

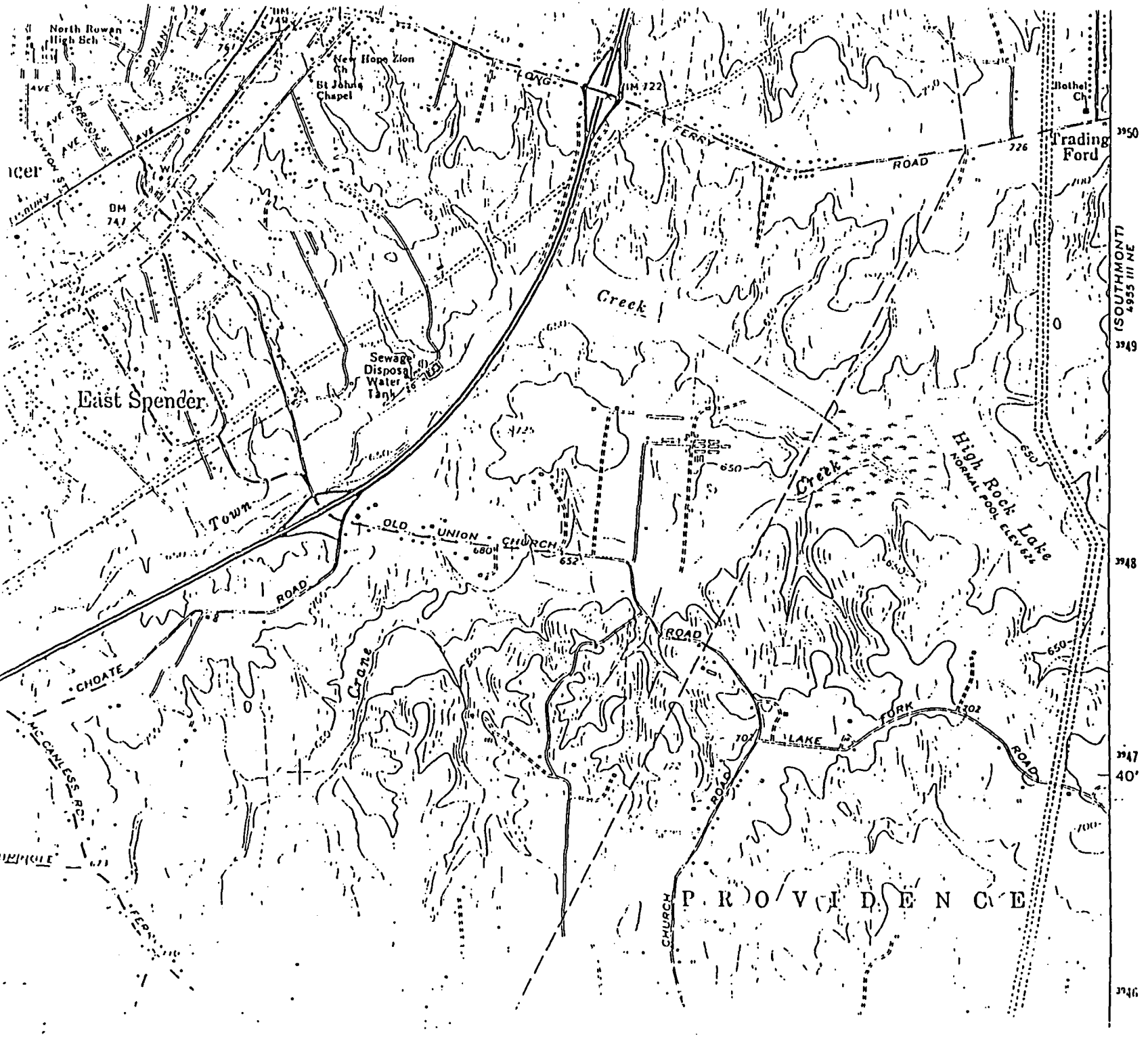
A site inspection has been scheduled for Tuesday, 9 October 1984 by the N.C. Solid and Hazardous Waste Management Branch. Environmental Engineer, Bill Meyer, and Geologist, Gary Babb, plan to locate the buried drums by auger borings and magnetometer readings. The two monitoring wells at the treatment plant will be sampled for volatile organics as well as other parameters. Additional sampling points will be determined on site. RCRA 3012 Geologist, Mark Durway, will assist.

LC/lw


Spencer
East Spencer
North Rowan High Sch
Oakdale Ch
New Hope Zion Ch
St Johns Chapel
Sewage Disposal Water Tank
Trading Ford
Bethel Ch
Creek
High Rock Lake
NORMAL POOL ELEVATION
OLD UNION CHURCH
TOWN ROAD
CHOATE
MC CANLESS RD
UNNICLE
FERRY ROAD
LONG
LAKE FORK ROAD
CHURCH ROAD
PROVIDENCE
(SOUTHMONT) 4955 III NE
3950
3949
3948
3947
40'
3946


SALISBURY, N.C.
USGS 1962
THIRD STREET
CRUSE
CREEK
EXTENSION
Sewage Disposal
BM 698
SOUTHERN
SIXTH
Worrett Chapel
STREET
EXTENSION
ELIZABETH
Oakdale Ch
North Rowan High Sch
ROWAN
BM 749
New Hope Zion Ch
St Johns Chapel
LONG
BM 722
FERRY
ROAD
GRANTS
WHITEHEAD
Athletic Field
Spencer
Calvary Ch
Central Ch
SALISBURY
BM 747
SPENCER
YMCA
East Spencer
Sewage Disposal Water Tank
Creek
BM 751
Dunbar High Sch
Town
OLD UNION CHURCH


SPENCER
EAST SPENCER
SALISBURY
HISTORIC SALISBURY
POINTS OF INTEREST
1. Rowan Museum 13A
2. Presbyterian Lecture Room 13A
3. English Cemetery 13A
4. St. Lukes Episcopal Church 13A
5. Dr. Josephus Hall House 13A
6. Henderson Law Office 13A
7. Public Library 13A
8. National Cemetery 13C
9. Confederate Prison Site 13C
10. Old Stone House 24A
11. Grimes Mill 13A
12. Old Lutheran Cemetery 13A
BRENTWOOD ACRES
WHISPERING PINES
WOODBINE
GLENWOOD ACRES
GRADY HEIGHTS
SUNRISE ACRES
STATE TRANSPORTATION MUSEUM
PLAZA SH CTR
N. ROWAN PRIMARY SCH.
OAKLAND PARK
FORESTDALE PARK
Spencer Corp. Limits
TO GREENSBORO


North Rowan High Sch
New Hope Zion Ch
St John's Chapel
FORD
FERRY
ROAD
Bethel Ch
Trading Ford
East Spencer
Sewage Disposal Water Tank
Town
OLD UNION CHURCH
ROAD
CHOATE
Creek
High Rock Lake
NORMAL POOL ELEV 624
LAKE
FORK
ROAD
CHURCH
ROAD
McCANLESS RD
PROVIDENCE
(SOUTHMONT) 4955 III NE
3950
3949
3948
3947
40'
3946

Ronald H. Levine, M.D., M.P.H.
STATE HEALTH DIRECTOR

DIVISION OF HEALTH SERVICES
P.O. Box 2091
Raleigh, N.C. 27602-2091

23 October 1984

Mr. Greg Fraley
EPA NC/SC Project Officer
Investigation Compliance Section
345 Courtland St., NE
Atlanta, Georgia 30365

Dear Greg:

Enclosed please find copies of the preliminary assessments for the Town Creek and Grant Creek Regional Waste Water Treatment Plants. At this time the assessments have not been approved by our State RCRA 3012 Review Committee.

The City of Salisbury is in the process of submitting a 103(c) CERCLA notification for both waste water treatment plants. It is my understanding that the EPA site inspection numbers will be assigned at that time.

If you have any questions, please contact me at (919) 733-2178.

Sincerely,

Lee Crosby

Lee Crosby, Chemist

Solid & Hazardous Waste Management Branch
Environmental Health Section

LC/lw

Enclosures

City of Salisbury

North Carolina

November 21, 1984

Mr. Walton Jones
US EPA Region IV
Sites Notification
Atlanta, Ga. 30308

Subject: US EPA Notification of Hazardous Waste Site Form (8900-1)
Grant Creek and Town Creek Wastewater Treatment Plants

Dear Mr. Walton:

Enclosed are two copies of EPA form 8900-1 which have been filled out to the best of our knowledge. The N.C. Division of Health Services, Solids and Hazardous Waste Management Branch, Environmental Health Section requested that we complete the forms.

The City of Salisbury has,since becoming aware of potential hazardous waste burial sites located at our wastewater treatment plants, contacted the Solids and Hazardous Waste Management Branch of the State Division of Health Services which conducted a site survey along with some limited sampling and testing of wells. No evidence of hazardous wastes or contamination was uncovered.

Recently on November 14 thru 16, EPA's monitoring/response team visited both sites and conducted a much more extensive survey of potential burial and disposal sites. No samples were taken and we await further word on whether or not additional information needs to be collected or actual exploration and sampling will be conducted under EPA or State supervision.

The City of Salisbury wants to determine if any actual dump or potential health hazard exists. We will continue to cooperate in every way.

If any additional information is required please contact us.

Sincerely,

John C. Vest, P.E.
Director of Public Works

JCV/pbr

Enclosures

P. O. Box 479 Salisbury, North Carolina 28145-0479

REGION: 04
STATE : NC

U.S. ENVIRONMENTAL PROTECTION AGENCY
OFFICE OF EMERGENCY AND REMEDIAL RESPONSE
C E R C L A

RUN DATE: 85/09/23
RUN TIME: 09:49:26

M.2 - SITE MAINTENANCE FORM

* ACTION: _

EPA ID: NCD980843528

SITE NAME: TOWN CREEK REGIONAL WWTP SOURCE: R

STREET: HEILIGTOWN RD CONG DIST: 08

CITY: SALISBURY ZIP: 28144

CNTY NAME: ROWAN CNTY CODE: 159

LATITUDE: 35/40/00.0 LONGITUDE: 080/28/48.0

SMSA: 7140 HYDRO UNIT: 03040102

INVENTORY IND: Y REMEDIAL IND: Y REMOVAL IND: N FED FAC IND: N

NPL IND: N NPL LISTING DATE: NPL DELISTING DATE:

APPROACH: SITE CLASS:

SITE/SPILL IDS:

RPM NAME: RPM PHONE: - -

DIOXIN TIER: REG FLD1: REG FLD2:

RESP TERM: PENDING ( ) NO FURTHER ACTION ( )

* PENDING (_) NO FURTHER ACTION (_)

DISP: NO VIABLE RESP PARTY ( ) VOLUNTARY RESPONSE ( )

ENFORCED RESPONSE ( ) COST RECOVERY ( )

SITE DESCRIPTION:

REGION: 04
STATE : NC

U.S. ENVIRONMENTAL PROTECTION AGENCY
OFFICE OF EMERGENCY AND REMEDIAL RESPONSE
C E R C L A

RUN DATE: 85/09/23
RUN TIME: 09:49:26

M.2 - PROGRAM MAINTENANCE FORM

* ACTION: _

SITE: TOWN CREEK REGIONAL WWTP

EPA ID: NCD980843528 PROGRAM CODE: H01 PROGRAM TYPE: * _ *

PROGRAM QUALIFIER: ALIAS LINK : * ___ __ *

PROGRAM NAME: SITE EVALUATION * _____ *

DESCRIPTION:

* _____ *
* _____ *
* _____ *
* _____ *

REGION: 04
STATE : NC

U.S. ENVIRONMENTAL PROTECTION AGENCY
OFFICE OF EMERGENCY AND REMEDIAL RESPONSE
C E R C L A

M 2 - EVENT MAINTENANCE FORM

* ACTION: _

SITE: TOWN CREEK REGIONAL WWTP
PROGRAM: SITE EVALUATION

EPA ID: NCD980843528 PROGRAM CODE: H01 EVENT TYPE: DS1

3 CODE: EVENT QUALIFIER: EVENT LEAD: E

EVENT NAME: DISCOVERY STATUS:

DESCRIPTION:

ORIGINAL	CURRENT	ACTUAL
START:	START:	START:
COMP :	COMP :	COMP : 84/10/01

COMMENT:

RG COMMENT:

COOP AGR #	AMENDMENT #	STATUS	STATE %

REGION: 04
STATE : NC

U.S. ENVIRONMENTAL PROTECTION AGENCY
OFFICE OF EMERGENCY AND REMEDIAL RESPONSE
C E R C L A

M.2 - EVENT MAINTENANCE FORM

* ACTION: _

SITE: TOWN CREEK REGIONAL WWTP
PROGRAM: SITE EVALUATION

EPA ID: NCD980843528 PROGRAM CODE: H01 EVENT TYPE: PA1

.S CODE: EVENT QUALIFIER: EVENT LEAD: S

EVENT NAME: PRELIMINARY ASSESSMENT STATUS:

DESCRIPTION:

ORIGINAL	CURRENT	ACTUAL
START:	START:	START: 85/01/01
COMP :	COMP :	COMP : 85/02/01

COMMENT:

RG COMMENT:

COOP AGR #	AMENDMENT #	STATUS	STATE %

REGION: 04
STATE : NC

U.S. ENVIRONMENTAL PROTECTION AGENCY
OFFICE OF EMERGENCY AND REMEDIAL RESPONSE
C E R C L A

M.2 - EVENT MAINTENANCE FORM

* ACTION: _

SITE: TOWN CREEK REGIONAL WWTP
PROGRAM: SITE EVALUATION

EPA ID: NCD980843528 PROGRAM CODE: H01 EVENT TYPE: SI1

J CODE: EVENT QUALIFIER: EVENT LEAD: S

EVENT NAME: SITE INSPECTION STATUS:

DESCRIPTION:

ORIGINAL	CURRENT	ACTUAL
START:	START:	START: 84/11/07
COMP :	COMP :	COMP : 85/01/05

COMMENT:

RG COMMENT:

COOP AGR #	AMENDMENT #	STATUS	STATE %

Table 6. Household, Family, and Group Quarters Characteristics: 1990

[For definitions of terms and meanings of symbols, see text]

State / County / Place and [In Selected States] County Subdivision	Persons in households	All households	Family households: Total	Family households: Married-couple family	Family households: Female householder, no husband present	Nonfamily households: Total	Householder living alone: Total	Householder living alone, 65 years and over: Total	Householder living alone, 65 years and over: Female	Persons per—: Household	Persons per—: Family	Persons in group quarters: Total	Persons in group quarters: Institutionalized persons	Persons in group quarters: Other persons in group quarters
The State	6 404 187	2 517 026	[illegible]	1 424 206	308 476	[illegible]	[illegible]	228 344	182 329	2.54	3.03	[illegible]	[illegible]	[illegible]
COUNTY														
Alamance County	105 327	42 852	[illegible]	24 295	5 130	[illegible]	10 467	4 558	3 748	2.47	2.94	2 856	1 173	1 712
Alexander County	27 245	10 331	[illegible]	6 715	952	[illegible]	2 022	839	651	2.64	3.02	259	259	-
Alleghany County	9 381	3 854	[illegible]	2 421	303	[illegible]	950	539	433	2.41	2.88	209	193	[illegible]
Anson County	23 117	8 531	[illegible]	4 552	1 475	[illegible]	2 042	1 075	860	2.71	3.23	357	344	[illegible]
Ashe County	21 965	8 848	[illegible]	5 643	816	[illegible]	1 935	1 014	809	2.48	2.90	244	220	[illegible]
Avery County	13 918	5 520	[illegible]	3 500	480	[illegible]	1 229	549	420	2.52	2.95	949	320	[illegible]
Beaufort County	41 704	16 157	[illegible]	9 140	2 186	[illegible]	3 915	1 974	1 605	2.58	3.07	579	441	[illegible]
Bertie County	20 321	7 412	[illegible]	3 831	1 419	[illegible]	1 797	957	755	2.74	3.29	67	67	-
Bladen County	28 150	10 760	[illegible]	5 854	1 762	[illegible]	2 579	1 243	1 000	2.62	3.11	513	[illegible]	[illegible]
Brunswick County	50 497	20 060	15 251	12 636	2 031	[illegible]	4 227	1 640	1 194	2.52	2.91	488	307	[illegible]
Buncombe County	169 713	70 802	[illegible]	30 637	7 684	[illegible]	18 868	8 174	6 642	2.40	2.90	5 108	2 966	[illegible]
Burke County	73 251	28 184	[illegible]	17 462	3 148	[illegible]	6 589	2 706	2 228	2.51	2.93	2 461	2 410	[illegible]
Cabarrus County	97 255	37 515	[illegible]	23 279	3 972	[illegible]	8 038	3 509	2 971	2.50	3.02	1 680	1 223	[illegible]
Caldwell County	69 917	27 172	[illegible]	16 653	2 944	6 516	5 660	2 297	1 846	2.57	2.97	772	725	[illegible]
Camden County	5 875	2 180	[illegible]	1 385	225	488	437	234	169	2.69	3.11	29	-	[illegible]
Carteret County	51 554	21 238	[illegible]	12 641	2 021	[illegible]	5 081	1 901	1 431	2.43	2.88	1 022	750	[illegible]
Caswell County	20 053	7 468	[illegible]	4 454	1 024	[illegible]	1 583	727	573	2.59	3.13	640	624	[illegible]
Catawba County	116 387	45 700	[illegible]	27 418	4 841	[illegible]	10 270	3 844	3 115	2.55	2.90	2 025	1 634	[illegible]
Chatham County	38 315	15 253	[illegible]	9 115	1 605	[illegible]	3 445	1 412	1 141	2.51	2.95	444	377	[illegible]
Cherokee County	19 809	7 966	[illegible]	5 065	765	[illegible]	1 764	975	759	2.50	2.91	271	196	[illegible]
Chowan County	13 233	5 113	[illegible]	2 842	787	[illegible]	1 238	641	499	2.59	3.07	273	273	-
Clay County	7 153	2 923	[illegible]	1 824	203	[illegible]	669	418	314	2.44	2.90	5	4	[illegible]
Cleveland County	83 012	32 037	[illegible]	19 011	4 168	[illegible]	7 011	3 202	2 624	2.59	3.02	1 702	915	[illegible]
Columbus County	48 953	18 459	[illegible]	10 381	2 757	[illegible]	4 351	2 152	1 666	2.65	3.15	634	624	[illegible]
Craven County	78 014	29 542	[illegible]	18 189	3 511	[illegible]	6 121	2 436	1 900	2.64	3.07	3 599	811	[illegible]
Cumberland County	253 362	91 500	[illegible]	54 433	12 883	[illegible]	17 718	4 724	3 752	2.77	3.19	21 224	[illegible]	[illegible]
Currituck County	13 486	5 038	[illegible]	3 272	407	[illegible]	964	419	312	2.68	3.08	250	[illegible]	[illegible]
Dare County	22 542	9 349	[illegible]	5 458	682	[illegible]	2 264	714	522	2.41	2.88	224	[illegible]	[illegible]
Davidson County	125 358	48 944	[illegible]	30 410	5 123	[illegible]	10 252	4 189	3 319	2.56	2.96	1 319	[illegible]	[illegible]
Davie County	27 541	10 785	[illegible]	6 909	953	[illegible]	2 246	1 025	817	2.55	2.95	318	[illegible]	[illegible]
Duplin County	39 364	14 925	[illegible]	8 378	2 099	[illegible]	3 553	1 779	1 430	2.64	3.12	627	[illegible]	[illegible]
Durham County	173 310	72 257	[illegible]	33 614	10 321	[illegible]	21 860	5 553	4 471	2.40	2.90	8 525	[illegible]	[illegible]
Edgecombe County	55 854	20 319	[illegible]	10 000	4 293	[illegible]	4 703	2 124	1 717	2.75	3.25	772	[illegible]	[illegible]
Forsyth County	257 464	107 419	[illegible]	55 715	14 052	[illegible]	29 870	9 779	7 975	2.40	2.94	8 412	[illegible]	[illegible]
Franklin County	35 237	13 503	[illegible]	7 640	1 865	[illegible]	3 120	1 384	1 125	2.61	3.07	1 177	563	[illegible]
Gaston County	172 791	66 347	[illegible]	36 926	8 430	[illegible]	13 580	5 720	4 720	2.54	3.07	[illegible]	1 458	[illegible]
Gates County	[illegible]	[illegible]	[illegible]	2 040	404	[illegible]	735	364	284	2.75	3.19	103	102	[illegible]
Graham County	7 176	2 772	[illegible]	1 808	244	[illegible]	542	284	225	2.59	2.94	20	18	2
Granville County	35 181	13 134	[illegible]	7 501	1 857	[illegible]	2 880	1 236	978	2.58	3.13	3 154	[illegible]	[illegible]
Greene County	14 664	5 306	[illegible]	3 003	773	[illegible]	1 180	574	481	2.72	3.14	719	704	15
Guilford County	326 346	137 708	[illegible]	71 186	17 570	[illegible]	[illegible]	12 180	9 951	2.44	2.87	[illegible]	[illegible]	[illegible]
Halifax County	[illegible]	[illegible]	[illegible]	[illegible]	4 014	[illegible]	5 008	2 304	1 807	2.64	3.18	1 354	1 354	[illegible]
Harnett County	[illegible]	[illegible]	[illegible]	14 486	3 154	[illegible]	5 773	2 436	1 982	2.80	3.08	2 482	1 240	[illegible]
Haywood County	[illegible]	19 211	[illegible]	11 801	1 774	[illegible]	4 801	2 337	1 866	2.40	2.83	780	751	[illegible]
Henderson County	[illegible]	28 708	[illegible]	18 113	2 344	[illegible]	6 828	3 531	2 859	2.38	2.80	1 073	967	[illegible]
Hertford County	[illegible]	[illegible]	[illegible]	4 964	1 473	[illegible]	2 083	977	764	2.65	3.19	911	273	[illegible]
Hoke County	21 612	7 408	[illegible]	3 867	1 805	[illegible]	1 419	523	420	2.92	3.34	1 244	1 244	[illegible]
Hyde County	[illegible]	[illegible]	[illegible]	1 151	321	[illegible]	516	259	191	2.57	3.07	23	19	[illegible]
Iredell County	92 082	35 573	[illegible]	21 728	4 023	[illegible]	7 646	3 271	2 682	2.59	3.02	849	814	[illegible]
Jackson County	23 804	9 683	[illegible]	5 740	981	[illegible]	2 242	968	745	2.46	2.91	3 012	220	[illegible]
Johnston County	80 341	31 586	[illegible]	18 544	3 624	[illegible]	7 441	3 380	2 750	2.55	3.01	565	383	[illegible]
Jones County	9 412	3 482	[illegible]	2 034	482	[illegible]	774	406	311	2.70	3.17	2	2	-
Lee County	40 661	15 688	[illegible]	9 007	2 135	[illegible]	3 482	1 369	1 107	2.59	3.03	723	672	[illegible]
Lenoir County	56 862	21 928	[illegible]	11 131	3 798	[illegible]	5 706	2 580	2 073	2.54	3.06	1 622	1 559	[illegible]
Lincoln County	49 302	18 764	[illegible]	12 207	1 827	[illegible]	3 580	1 467	1 173	2.65	3.03	517	517	-
McDowell County	35 064	13 680	[illegible]	8 578	1 363	[illegible]	2 986	1 399	1 135	2.56	2.99	617	416	[illegible]
Macon County	[illegible]	[illegible]	[illegible]	6 226	773	[illegible]	2 348	1 307	1 021	2.34	2.76	507	223	[illegible]
Madison County	16 304	6 498	[illegible]	4 058	516	[illegible]	1 510	789	581	2.43	2.82	849	104	[illegible]
Martin County	24 813	9 317	[illegible]	5 087	1 518	[illegible]	2 213	1 100	906	2.66	3.17	[illegible]	257	[illegible]
Mecklenburg County	[illegible]	[illegible]	[illegible]	103 211	25 013	[illegible]	[illegible]	12 990	10 610	2.50	3.05	11 547	3 573	[illegible]
Mitchell County	14 283	5 779	[illegible]	3 777	479	[illegible]	1 285	669	539	2.47	2.88	145	130	[illegible]
Montgomery County	22 279	8 280	[illegible]	4 823	1 119	[illegible]	1 838	876	690	2.69	3.14	1 087	997	[illegible]
Moore County	58 010	23 827	[illegible]	14 312	2 473	[illegible]	5 662	2 744	2 201	2.43	2.87	1 003	973	[illegible]
Nash County	75 460	29 041	[illegible]	16 322	3 964	[illegible]	6 925	2 880	2 316	2.60	3.09	1 227	807	[illegible]
New Hanover County	[illegible]	[illegible]	[illegible]	24 723	6 363	[illegible]	13 434	4 372	3 512	2.43	2.95	3 285	1 221	[illegible]
Northampton County	[illegible]	[illegible]	[illegible]	3 954	1 436	[illegible]	1 816	968	704	2.64	3.13	743	742	[illegible]
Onslow County	115 274	40 868	[illegible]	28 037	3 843	[illegible]	6 271	1 752	1 384	2.84	3.16	34 564	954	[illegible]
Orange County	84 827	36 104	[illegible]	16 854	3 380	[illegible]	10 110	2 257	1 830	2.34	2.93	9 224	773	[illegible]
Pamlico County	11 347	4 520	[illegible]	2 717	547	[illegible]	1 055	525	410	2.43	2.93	125	112	[illegible]
Pasquotank County	29 864	11 384	[illegible]	6 356	1 641	[illegible]	2 725	1 342	1 065	2.63	3.13	1 414	383	[illegible]
Pender County	28 497	11 112	[illegible]	6 707	1 371	[illegible]	2 368	1 055	796	2.56	2.99	358	348	[illegible]
Perquimans County	10 303	3 986	[illegible]	2 444	448	[illegible]	862	443	342	2.58	3.02	144	144	-
Person County	[illegible]	[illegible]	[illegible]	4 607	1 547	[illegible]	2 808	1 209	994	2.61	3.07	350	304	[illegible]
Pitt County	[illegible]	40 401	[illegible]	[illegible]	5 857	[illegible]	10 412	3 104	2 511	2.53	3.10	5 524	946	[illegible]
Polk County	14 187	6 110	[illegible]	3 803	511	[illegible]	1 509	952	768	2.32	2.79	229	227	[illegible]
Randolph County	105 440	41 006	[illegible]	25 135	3 957	[illegible]	8 520	3 435	2 780	2.57	2.97	1 106	1 050	[illegible]
Richmond County	43 534	[illegible]	[illegible]	9 125	2 561	[illegible]	4 174	2 011	1 800	2.59	3.11	984	875	[illegible]
Robeson County	103 186	36 154	[illegible]	18 451	7 353	[illegible]	7 891	3 355	2 651	2.85	3.34	1 993	1 280	[illegible]
Rockingham County	85 242	33 446	[illegible]	19 351	4 193	[illegible]	7 959	3 669	2 982	2.55	3.02	822	731	[illegible]
Rowan County	107 079	42 512	[illegible]	25 100	4 618	[illegible]	10 236	4 748	3 815	2.52	2.90	3 525	[illegible]	[illegible]
Rutherford County	56 107	22 198	[illegible]	13 191	2 551	[illegible]	5 255	2 556	2 050	2.53	2.99	721	721	-
Sampson County	46 754	17 526	[illegible]	10 054	2 525	[illegible]	3 975	2 022	1 610	2.67	3.14	543	490	53
Scotland County	32 679	11 837	[illegible]	6 225	2 308	[illegible]	2 618	1 173	935	2.76	3.25	1 075	401	674
Stanly County	50 734	19 707	[illegible]	12 451	1 975	4 780	4 306	2 164	1 785	2.57	3.01	1 031	470	561
Stokes County	36 862	14 123	[illegible]	9 341	1 273	[illegible]	2 825	1 248	1 016	2.61	3.00	361	361	-
Surry County	60 850	24 252	[illegible]	15 253	2 341	[illegible]	5 474	2 732	2 256	2.51	2.94	754	650	104
Swain County	10 653	4 173	[illegible]	2 382	550	[illegible]	965	467	369	2.55	3.01	815	215	[illegible]
Transylvania County	24 253	9 924	[illegible]	6 442	707	[illegible]	2 224	1 131	912	2.45	2.86	1 237	178	[illegible]
Tyrrell County	3 852	1 471	[illegible]	810	213	[illegible]	359	208	148	2.62	3.13	4	4	-
Union County	82 633	29 307	[illegible]	19 607	3 063	[illegible]	5 018	2 148	1 755	2.82	3.18	1 578	455	[illegible]

TPS# [POSTSCRIPT] CPH137 CENSUS90 [illegible] 04/23/91 [illegible] PM MACHINE: [illegible] DATA:CENSUS90°PHITPSDAT37.[illegible] 165104 OUTPUT:ONSITE-PS196 PAGE: 106
TSF:CENSUS90°82 04/23/91 165123 UTF:CENSUS90°92 04/23/91 [illegible] MCA:CENSUS90°PHITABLES37. [illegible]

NOTE: The population counts set forth herein are subject to possible correction for undercount or overcount. The United States Department of Commerce is considering whether to correct these counts and will publish corrected counts, if any, not later than July 15, 1991.

B&V Waste Science, Inc.

TELEPHONE MEMORANDUM

U.S. EPA
Town Creek Treatment Plant
Private wells in and near
Salisbury, N.C.

B&V Project 52012.460

July 13, 1994
10:45 AM

To: Randy Trillaman
Company: Health Department, Water Resources Division, Groundwater Section
Phone No.: (919) 733-3221

Recorded by: Sue Martin

Mr. Trillaman informed me that there are 915 groundwater wells in the City of Salisbury and surrounding communities registered with the Health Department. The average water level in the wells is approximately 30 feet below ground surface. Mr. Trillaman does not have any information on screen depths. Coordinates are not available for the wells. Mr. Trillaman informs me that the wells are only databased according to city. Mr. Trillaman also stated that the number of wells he quoted me includes both drinking water wells, industrial wells, and any other type of well. His database does not distinguish the type of well.

i

TOWNE CREEK WASTE WATER PLANT
LATITUDE 35:41: 0 LONGITUDE 80:24:40 1983 POPULATION

KM	0.00-.400	.400-.810	.810-1.60	1.60-3.20	3.20-4.80	4.80-6.40	SECTOR TOTALS
S 1	0	0	197	69	200	0	466
S 2	0	0	0	202	1	0	203
S 3	0	68	0	93	0	822	983
S 4	0	0	0	53	0	0	53
S 5	0	0	0	438	384	324	1146
S 6	0	0	204	89	268	3214	3775
S 7	0	28	1318	1910	3221	4164	10641
S 8	0	0	69	1870	585	799	3323
RING TOTALS	0	96	1788	4724	4659	9323	20590

press RETURN to continue
MENU: Geodata Handling Data List procedures
[illegible] in parentheses) ([illegible])
or a command: HELP, HELP option, BACK, CLEAR, EXIT, TUTOR
GEMS> exit

Type YES to confirm the EXIT comma[illegible] ype NO to restart GEMS
GEMS> yes
$ logout
HTW logged out at [illegible] :41:42.74
Itemized resource charge[illegible] n, follow:

NODE: VAXTM1
ACCT: 9040
PROJ: GEMS0001
USER: HTW
UIC: [000710,[illegible]
BAUD:

TME: 13-JUL-1994 12:40:54.12
TME: 13-JUL-1994 12:41:42.74
[illegible]RIOD:940701
WEDNESDAY
[illegible]: VTA2403

Lat. 35° 41' 00"
Long. 80° 24' 40"
5008.460
Towne Creek ~~[illegible]~~ waste water plant
Guil Hwy
Tacoma

DESCRIPTION OF [illegible] EXPENDITURE

ALL CHARGE LEVEL[illegible]
300 baud [illegible]9 0.0000
CPU TIME [illegible]3 0.6983

TOTAL FOR THIS SESSI[illegible] $ 0.6983

** Note: This total reflec[illegible]ges for this process only, subprocesses creat[illegible]g this session are accounted for separately

CLR PAD

NO CARRIER

B&V Waste Science, Inc.

TELEPHONE MEMORANDUM

U.S. EPA
Town Creek Wastewater Plant
Municiple Water System

B&V Project 52012.460

July 13, 1994
7:30 AM

To: Barret Laciter
Company: Salisbury Water Utility
Phone No.: (704) 638-5300

Recorded by: Sue Martin

Barret informs me that the municiple water supply is from surface water from the Yadkin River. There is only one surface water intake that is at the confluence of the S. Yadkin and the Yadkin River. It is right on the border of Davey and Rowan Counties, and sits on the Rowan side on Hannifer Road.

Barret estimates that the municiple system serves a population of approximately 30,000 people. It serves people within Salisbury, Granite Quarry, Spencer, and East Spencer city limits. Barret believes a few people within these areas may be served by private wells. He does not know much about the subsurface stratigraphy.

Barret does not know the average flow rate of the Yadkin or South Yadkin rivers.

REFERENCE # 10

DEPARTMENT OF COMMERCE
[illegible] Francis, Secretary

WEATHER BUR.
F. W. Reichelderfer, Chief

TECHNICAL PAPER NO. 40

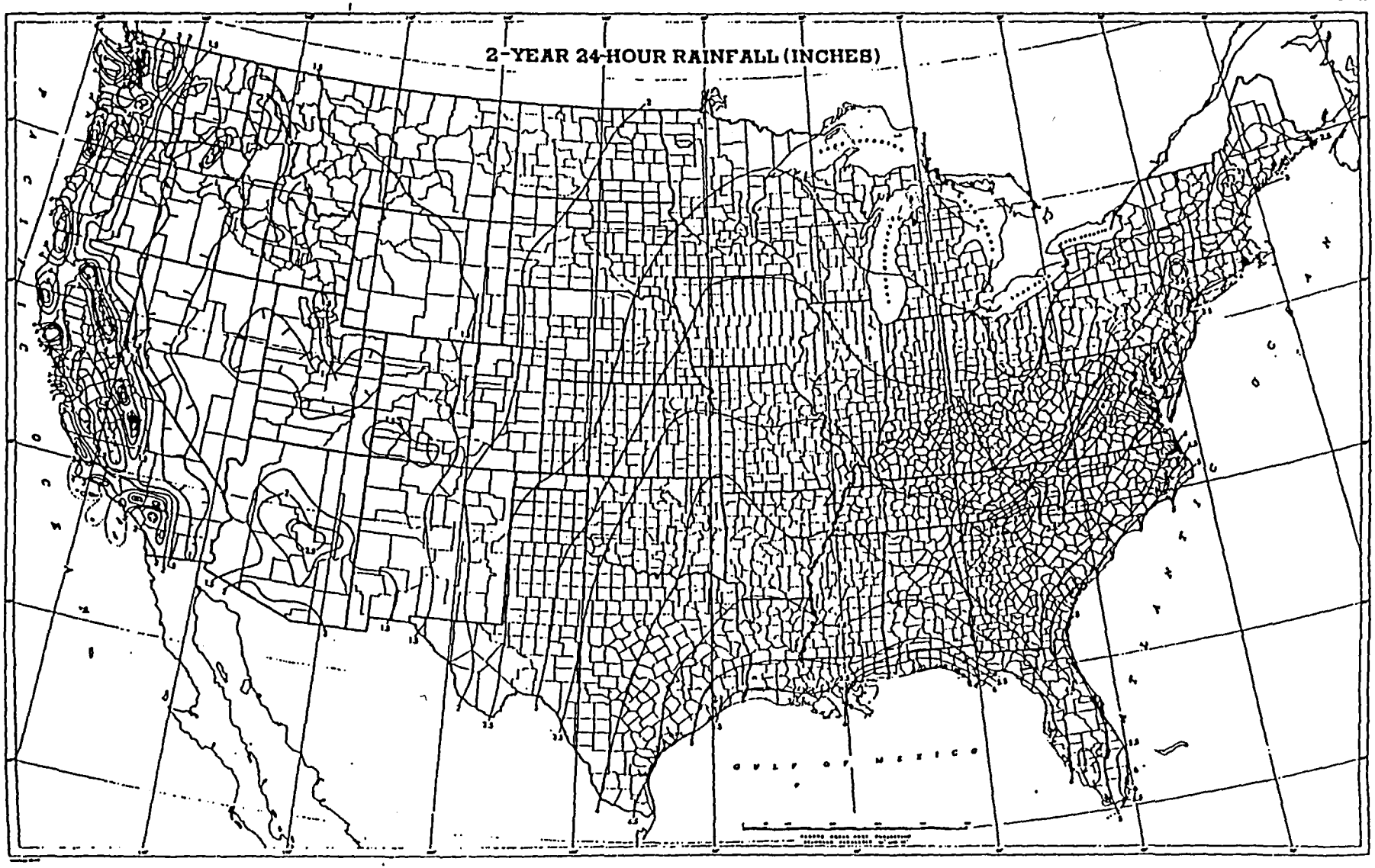
RAINFALL FREQUENCY ATLAS OF THE UNITED STATES

for Durations from 30 Minutes to 24 Hours and Return Periods from 1 to 100 Years

Prepared by
DAVID M. HERSHFIELD
Cooperative Studies Section, Hydrologic Services Division
for
Engineering Division, Soil Conservation Service
U.S. Department of Agriculture

LIBRARY OF EPA
EPA IV

Reference 7


2-YEAR 24-HOUR RAINFALL (INCHES)
GULF OF MEXICO

Reference 10

NORTH CAROLINA
DEPARTMENT OF CONSERVATION AND DEVELOPMENT
BEN E. DOUGLAS, *Director*

CATAWBA

DIVISION OF MINERAL RESOURCES
JASPER L. STUCKEY, *State Geologist*

BULLETIN NUMBER 68

GEOLOGY AND GROUND WATER IN THE Statesville Area, North Carolina

By

HARRY E. LEGRAND
Geologist, U. S. Geological Survey

PREPARED COOPERATIVELY BY THE GEOLOGICAL SURVEY
UNITED STATES DEPARTMENT OF THE INTERIOR

1954

GEOLOGY AND GROUND WATER IN THE STATESVILLE AREA, NORTH CAROLINA

By HARRY E. LEGRAND

ABSTRACT

The Statesville area is slightly west of the center of North Carolina and consists of Alexander, Catawba, Davidson, Davie, Iredell, and Rowan Counties. It includes 2,556 square miles and in 1950 had a population of 285,723. The people are engaged in both agriculture and manufacturing. In addition to the farmers, many industrial workers live in the rural areas; an outstanding feature is the great rural population and its relatively high standard of living.

The area lies in the Piedmont province. Topographically, it consists mostly of low, rounded hills and gentle slopes, although a few scattered mountains rise above the upland level. The numerous streams flow in valleys as much as 100 feet below the level of the upland. The major streams have moderately high gradients to the southeast.

Except for a small area of sedimentary rocks of Triassic age in Davie County, the area is underlain by igneous and metamorphic rocks consisting largely of schist, gneiss, granite, diorite, and a series of volcanic rocks. The volcanic rocks occur only in the southeastern parts of Davidson and Rowan Counties. Mica schists and mica and hornblende gneisses are the chief country rocks; they have been intimately intruded by granite in most of the area. Local changes in types of rocks are common, and large homogeneous masses of a single type of rock are rare. Crustal movements have tilted the rocks, many of which crop out in relatively thin bands. The most common trend of the outcrop belt is northeastward. Hiding the bedrock in most places is a thick layer of residual soil and weathered rock which supports much vegetation.

More than 35,000 individual wells furnish the domestic water supply for about two-thirds of the population. Drilled wells get water from fractures in the bedrock whereas the shallower dug and bored wells get water from the weathered material above bedrock.

Wells drilled in the basic rocks, such as hornblende gneiss, gabbro, and diorite, have a slightly higher average yield than wells in other rock units. The average yield of municipal and industrial wells in hornblende gneiss is about 60 gallons a minute; in all the rocks it is about 41 gallons a minute.

The amount of water yielded by wells is related to topographic location. The average yield of wells on hills is about half that of wells in other topographic locations and several times less than that of wells in draws. More than 80 percent of all existing wells are drilled on upland areas where conditions are unfavorable for large supplies of water. Thus the average yield of wells listed in this report is less than it would be if the wells were distributed evenly over all types of topography.

The amount of water that any specified well will yield is decided largely by chance and cannot be predetermined. However, if we consider a large number of wells, chance does not decide the yields. If we may use past wells as an index, the probabilities of future municipal and industrial wells are as follows: at least 60 percent will yield more than 18 gallons a minute, at least 40 percent will yield more than 33 gallons a minute, and at least 20 percent will yield more than 54 gallons a minute.

The amount of water contained in the rocks decreases with depth. The depth at which water is found cannot be predicted and is seldom known for existing wells. By analyzing the yields of wells of different depths, it is evident that the yield per foot of well generally decreases with depth. The chance of appreciably increasing the yield of a well by drilling deeper than 250 or 300 feet may be so slight that a new well might be more economical.

The withdrawal of water from wells is only a fraction of that available for recharging the underground reservoir. Recharge, coming from about 47 inches of rainfall annually, occurs in the interstream areas and discharge occurs chiefly in adjacent lowlands. The annual recharge and discharge are in natural balance, resulting in no perennial trend in the fluctuation of the water table. Its relatively quick circulation prevents the water from collecting much mineral matter in solution; with the exception of a high iron content in some places, the water is almost everywhere of good chemical quality.

that borders it on the south and west and the gabbro-diorite that bodders it on the north. Its contacts both the granite and the gabbro-diorite are indefinite and gradational.

Quartzite.—The only conspicuous outcrop of quartzite in the Statesville area is in eastern Cata County. The quartzite forms a prominent northeast-trending ridge, the highest part of which is Ande: Mountain. The quartzite occurs as steeply dipping beds ranging in thickness from a few feet to sev hundred feet, although the belt in which it is interbedded with schists is less than a mile wide. The be. only about 5 miles long in Catawba County but it extends southwestward into Lincoln County.

Limestone and dolomite.—Crystalline limestone and dolomite occur in a small belt approximately para with the quartzite in Catawba County. In contrast with the quartzite, the rock weathers readily, and co: quently outcrops are scarce. The areal extent of these rocks in Catawba County is not definitely known probably is less than a square mile in the aggregate. The rocks are interbedded with schist. They are de and are not known to contain solution channels.

Triassic rocks (Newark group).—Rocks including shale, sandstone, and conglomerate, cut by diac dikes, occur in a downfaulted block in northwestern Davie County. These rocks, unlike other rocks of area in appearance, composition, and degree of metamorphism, as similar to and undoubtedly equiva. to rocks in two other belts in North Carolina which are known to be of Triassic age. These rocks in Da County were described in 1932 (Brown, pp. 525-528).

GROUND WATER

OCCURRENCE AND MOVEMENT

The portion of the outer crust of the earth that contains ground water may be regarded as an unc ground reservoir. The underground reservoir in the Statesville area consists of two contrasting types, the clayey and sandy soil and weathered material which underlies the surface to depths generally rang from several feet to several tens of feet and (2) the underlying bedrock. In the soil and weathered m water occurs between the individual mineral grains, but in the underlying bedrock it occurs only in fr tures. These fractures generally are not evenly distributed, so that they may be an inch or two or seve feet apart. Many are interconnected sufficiently to allow ground water to circulate through them. In m places fracture openings are only a fraction of an inch wide, although there is a great variation in size openings. The size and number of fractures appear to decrease with depth. As a result, most ground wa occurs at a depth of less than 150 feet—much of it in the upper 30 feet of bedrock. Therefore, the lo limit of the reservoir is a thick, indefinite zone; the top, however, is a definite though fluctuating surf known as the water table.

Ground water moves slowly through the soil and fractures in the rock, always under the influence gravity. After percolating downward en masse through the soil and mantle rock, ground water is restric in circulation to fractures in the bedrock. The water does not generally move to great depths but instea shunted almost laterally by "tight" or impermeable rocks to discharge points near the level of the perenn streams. Thus, in the Statesville area the movement of ground water from the recharge, or interstres areas to the discharge, or stream, areas follows, in general, a short, sinuous path, the water flowing loc through interconnecting fractures.

THE WATER TABLE

The water table, or upper surface of the underground reservoir, continuously changes its position, flecting changes in underground storage. There is a constant discharge of ground water by seepage i streams and by evaporation and transpiration by vegetation, generally along the streams. The discha causes a gradual lowering of the water table except during and immediately after periods of significant p cipitation, when recharge to the underground reservoir exceeds the discharge from it; as a result of th periods of precipitation the water table rises. Figue 5 shows the trends of water-level fluctuations in a w at Mocksville, Davie County. The water level in this well is controlled only by natural conditions, and

fluctuations are typical of those in the crystalline rocks of North Carolina. In the Statesville area the decline of the water table covers a longer aggregate period during a year and is more gradual than the rise of the water table. With a year of normal rainfall the recharge to the underground reservoir is approximately equal to the discharge from it, so that the water table at the end of the year is at about the same level as at the beginning of the year.

The withdrawal by pumping of wells is not great in the Statesville area, and the lowering of the water table around individual wells does not affect the regional water table. There appears to be no evidence to support the general belief that the water table has been declining during recent years. Both the logical deductions from an understanding of the principles of ground-water occurrence and movement and the actual measurements of water levels during the past 20 years refute this belief and show, instead, that the water table in unpumped or lightly pumped areas has no trend except that associated with climate.

In the Statesville area there is a noticeable change in the water table with the seasons. It generally begins to decline in April or May, owing to the increasing amount of evaporation and transpiration by plants which not only consume ground water but reduce the amount of precipitation that can reach the water table. Although interrupted by minor rises due to exceptionally heavy rainfall, this decline generally continues through summer and autumn, in spite of the abundant rainfall of July and August. By November or December, when much of the vegetation is dormant and evaporation is low, the precipitation again becomes effective in producing recharge and the water table begins to rise until it reaches another high stage about April or May of the next year.

Aside from the above considerations of climate the depth to the water table in the Statesville area depends chiefly on topography and on the transmitting characteristics of fractures in the rocks. In valleys the water table generally is at or near the ground surface, whereas on hills the water table may be 70 feet or more below the surface. Beneath those hills where fractures are large and abundant enough to discharge water rapidly into the adjacent valleys the water table will be lower than where the rocks contain few fractures.

The water table lies in the residuum or mantle rock in most places, especially beneath the broad upland areas where the residuum is thick. Although there is a great variation in the depth to the water table and in the thickness of the residuum, the water table generally lies several feet above the base of the residuum. During droughts, when it may be several feet lower than during wet seasons, the water table is in the bedrock in some places.

SPRINGS

Leakage from the underground reservoir in the form of springs is extremely common in the Statesville area. The slopes are steep enough in many places to be transected by the water table, allowing water to leak from the underground reservoir. In some places the leakage of water is so small and so scattered that evaporation and transpiration use it all, leaving none for runoff in streams; in other places the leakage is concentrated enough to form a small spring. Almost all springs yield less than 10 gallons a minute and most yield 1 to 3 gallons a minute. Most of the springs show little fluctuation in yield, although some springs emerging from the upper slopes of hills show a decline in yield during dry seasons.

A major factor controlling the yield of springs is the residual soil that covers the bedrock almost everywhere. If the soil zone is extremely thin or absent at the junction of the water table and surface slope, the flow of water from the fractures or from the upper surface of the bedrock will be concentrated sufficiently for a spring to form. However, a moderately thin layer of soil allows water coming from the fractures to spread through it to be quickly lost by evaporation. Most springs occur in the heads of steep valleys where emerging ground water will have a good chance of being concentrated. Springs would be larger and more abundant if it were not for the fact that the soil tends to creep down the slopes toward the valleys and thus tends to cover the openings through which water might otherwise issue.

Their low yield and unfavorable locations in valleys prevent springs from being extensively used, although they are a source of water for some rural dwellings. The available analyses indicate that spring water contains much less mineral matter in solution than does well water, chiefly because spring waters generally circulate more rapidly and at shallower depths through the rocks. The water of spring D, Davidson

These deposits have not been utilized as a source of ground water. Mundorff (1950) made a pre nary survey of the flood-plain deposits of the streams in the Piedmont and mountain provinces of N Carolina to determine their significance as water-bearing deposits. He made shallow test borings a place in Catawba County, three places in Davidson County, and three places in Rowan County (1950, and reached the general conclusions (p. 20) that:

> "The flood-plain deposits along many of the streams in the Piedmont and mountain sections of North Carolina at many places appear to contain deposits of permeable sands and gravels of sufficient thickness and extent to furnish large quantities of water to lines of wells or to galleries parallel to the streams where their perennial flow is adequate. Recharge from the stream would be induced by pumping the wells or galleries and lowering the water table below stream level. At many places one to several million gallons of water a day could be obtained by this method, and at some places, particularly in the western part of the State, where the flood-plain deposits appear to be thicker, substantially larger supplies might possibly be obtained."

The present study confirms the conclusions that Mundorff reached. Until a real effort is made to velop water supplies from these deposits it can be said that the ground-water resources of the Statesville have not been fully explored.

YIELD OF WELLS

Data on 821 wells are tabulated and given with the county descriptions in this report. Tables prepared showing the average depth, average yield, and other pertinent data for all drilled wells 3 inches diameter or larger for which there were sufficient data.

Unless otherwise noted, the term "yield" as used in this report represents the quantity of water th well is known to be capable of yielding. Because the yield of a well increases almost directly with a crease in drawdown of the water level, it would be desirable to know the drawdown at which a certain was measured. Unfortunately, most of the records are incomplete, in that the drawdown for the repo yield is seldom known. Therefore, the yield recorded for a well may be the maximum or only a fractio the supply available.

It has long been known that the yields of individual wells show a great range in the area, even tho they are in the same type of rock and are similar in depth and topographic location. One well may b excellent producer, whereas another a short distance away may be a poor producer. Because the yie generally the most important consideration, a large part of the study was devoted to a determination of factors controlling the yield of individual wells. Unfortunately, it is not possible to determine with degree of accuracy the yield of a well until water is pumped from it. However, the present study shows if proper consideration is given to the factors affecting the yield it is generally possible to get an adeq water supply. Moreover, frequent curves have been drawn from the data (p. 20) from which it is poss to determine the chances of a well producing a given amount of water.

The entrance and movement of water into the ground are governed by certain geologic factors w need consideration. These factors, which furnish the criteria for selecting favorable well sites, are thick of residuum, structure, rock type, and topography.

THICKNESS OF RESIDUUM

The land surface in most of the Statesville area is underlain by a layer of soil and weathered mat called mantle rock or residuum. This residuum may be absent or a few feet thick in some places and than 100 feet thick in other places. It averages about 35 feet thick. Although the contact between the duum and underlying bedrock may be sharp, there is generally a gradational zone between them. The duum is generally thick on broad, gently rolling uplands and thin on steep slopes.

The residuum is the result of chemical weathering of the underlying rock. A thick residuum may cate that water could move with ease down through it and into some of the fractures in the und ing bedrock. Also, the thick layer of residuum, which generally is highly porous although not necess very permeable, serves as a reservoir to feed water into the fractures. This reservoir in thick resid causes wells that penetrate the underlying bedrock to have a steady yield through the year, almost unaff by droughts.

CATAWBA COUNTY

(Area: 406 square miles. Population: 61,794)

Geography.—Catawba County is the most densely populated county in the area. Hickory, with a popu tion of 14,755, is the largest community. Other towns are Newton, the county seat, Conover, Claremo Catawba, and Maiden. Manufacturing of textiles, including hosiery, is the leading industry; furniture ma ing also is an important industry. The fertile soils of most of the county are suitable for farming. Cataw County has an excellent system of paved roads and is served by two railroad systems.

Catawba County has a variety of topographic forms. The interstream areas represent a peneplain wh has been dissected by moderately swift streams, most of which flow eastward or southeastward. A fe mountains rise several hundred feet above the upland plain. The most prominent are Anderson Mounta composed of quartzite, and Baker Mountain, composed of sillimanite schist. Many streams are as much 150 feet below the general surface of the upland. The upland surfaces, in most places, are broad and smoo and are underlain by a thick layer of soil and decayed rock. With the exception of the quartzite and sil manite schist, all the rocks weather readily, the hornblende gneiss in, and south of, the vicinity of Newt being especially susceptible to weathering.

The Catawba River forms the north and east boundaries and drains the entire county. Some of the sma tributaries flow eastward toward the Catawba River, but two of the largest tributaries, the South Fork of th Catawba River and Clark Creek, flow more nearly southward to join the Catawba at the South Carolina Sta line. All the streams have meandering courses; in part the meanders are incised and are not bordered by floo plains. The flood plains range in width from a few feet to several hundred feet.

Geology.—A great variety of rocks, most of which show a strong foliation or schistosity, occur Catawba County. In general, the rocks trend northeastward and are tipped on edge, but local variations structural features are common.

The composite gneiss is widespread, being especially prominent in the area around Hickory. In th area it is a light-colored rock, largely granitic, with a pronounced foliation. Where schistosity is great, mic and sillimanite are common. Beds of hornblende gneiss are scarce in the Hickory area but are common in th composite gneiss in other parts of the county.

Quartz-mica schist occurs in the southwestern part of the county and also in a belt trending southwes ward from the town of Catawba. With the exception of a higher degree of schistosity, the schist is simila to the composite gneiss, and the contact between them is arbitrary. Sillimanite and kyanite are commo minerals in the schist, and where concentrated they appear to be the cause of the presence of some hills an mountains. Garnet, another common mineral in the schist, is the probable source of the high iron conten of some of the ground water and the cause of the deep red soil in many places. Areas where lenses of gran ite and hornblende gneiss are common are shown on the geologic map.

A broad belt of hornblende gneiss and similar rocks trends northeastward through the county, passin through Newton and Conover. Exposures of fresh rock are rare; instead, the rock is covered by a layer o soft yellow saprolite (decayed rock) which shows the general rock structure and which is covered by thick layer of red soil. Lenses of granite are common in the area north of Newton.

The largest area of granite shown on the map occurs in the southeast corner of the county. Because th composite gneiss north of this area is largely granitic there is no definite contact between the gneiss an granite. Outcrops are so scarce that it is not possible to describe the granite accurately. It forms a light colored sandy soil. In the area east of Maiden the granite has intruded the mica schist to such an exten that much of the schist has recrystallized into a coarse quartz-mica rock.

Beds of quartzite and crystalline limestone occur in a northeast-trending belt in the southeastern par of the county. The quartzite is largely confined to the ridge composing Anderson Mountain and extendin northeast of it for about 3 miles. It is a light-colored dense rock made up of quartz with subordinate amount of muscovite and various dark minerals. In contrast to the quartzite, the limestone has no conspicuou natural outcrops. It weathers so easily that a thick layer of soil covers it everywhere except in the beds o

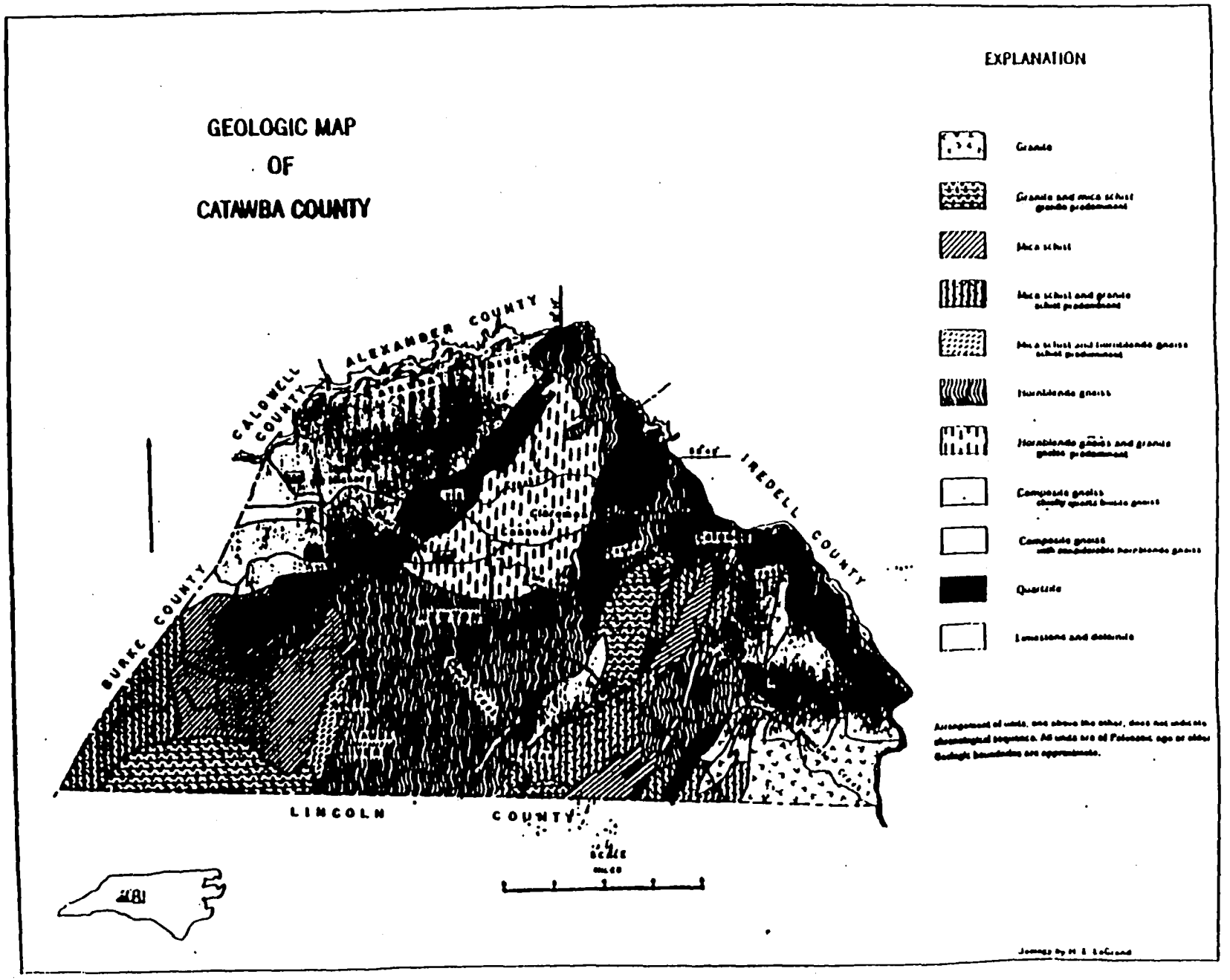


FIGURE 11.—*Geologic map of Catawba County.*

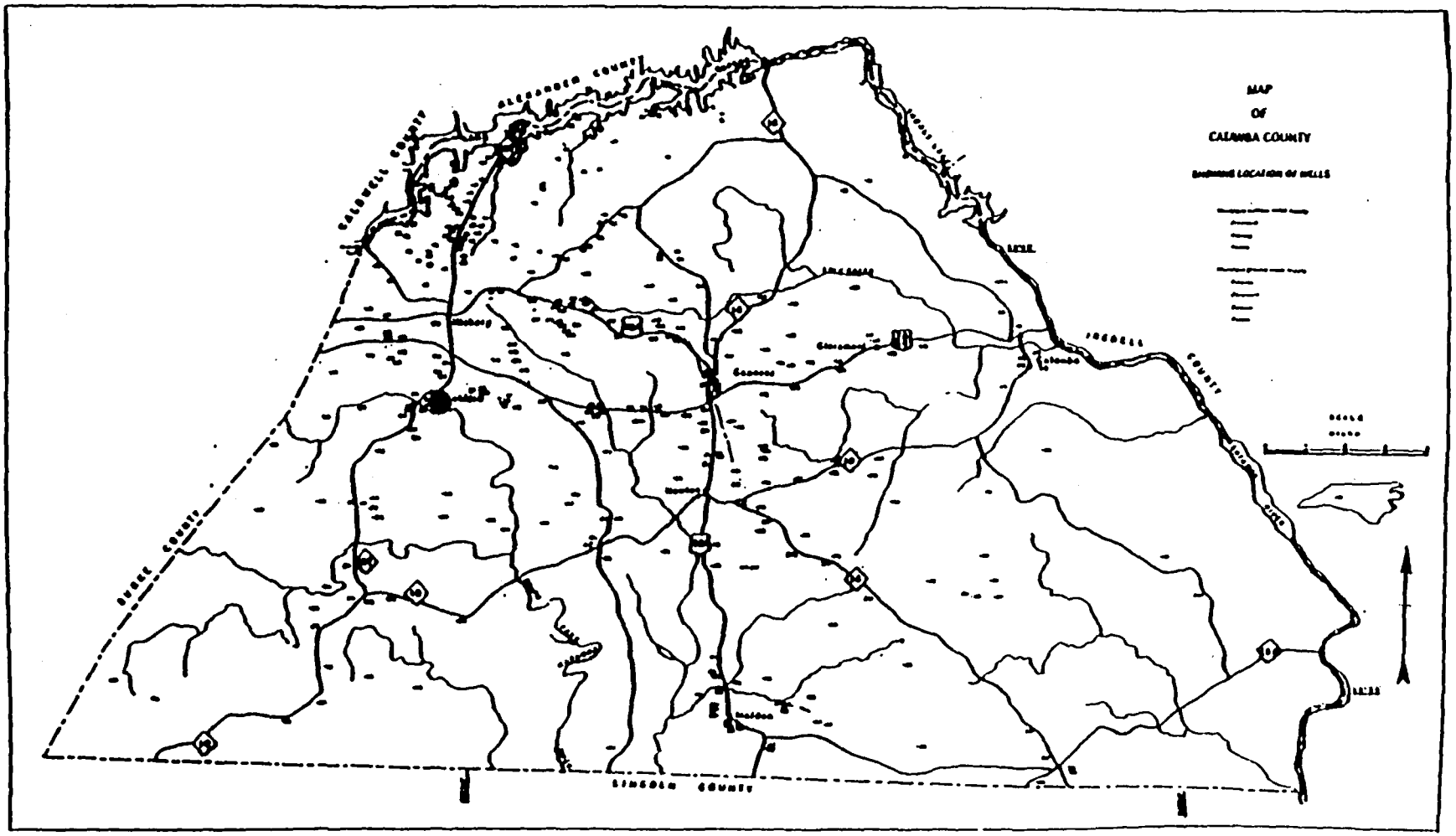


FIGURE 12.—*Map of Catawba County showing location of wells.*

streams in which the only exposures are found. It occurs in at least two thin belts west of the quartzite, but its true areal extent has not been determined. In some places it is represented at the surface by graphite schist. According to Bulletin 28 (Loughlin and others, 1921, pp. 76-78) two quarries have been worked intermittently for limestone. The rock ranges in color from light to dark. It is generally dolomitic and massive.

Ground water.—With the exception of the municipal supplies of Hickory and Newton, all domestic water supplies come from wells and springs, but principally from wells. Four towns, many industries, and most of the rural people use water from wells. Several hundred wells 6 inches or more in diameter have been drilled, of which 326 are listed in the well tables.

The rocks at most places in Catawba County are strongly foliated and fractured. The percolation of water downward through the fractures has resulted in the formation of a layer of residual weathered material and soil at the land surface and the enlargement of the fractures in the bedrock by solution as water moves downward and laterally through fractures to discharge points in the valleys. The more soluble rocks, such as hornblende gneiss and limestone, have larger fractures and a thicker cover of soil and weathered material than the less soluble rocks, such as granite, granite gneiss, and quartzite. Generally speaking, the belt of hornblende gneiss extending northeastward through the center of the county has the best wells. However, no extensive area seems especially poor.

The characteristics of individual wells are similar to those of other counties in the area covered by this report. Topography, as well as geology, affects the yields. Wells on hills have a large range in yield, although generally they are poor. The broad upland areas underlain by hornblende gneiss yield more water to wells than upland areas underlain by other rocks; in fact, yields of 35 gallons a minute are not uncommon from wells penetrating hornblende gneiss on hills.

The yields of many of the wells in Catawba County were measured by means of bailer tests. These bailer tests, seldom exceeding 2 hours, give an indication of the relative yields, especially for low-yielding wells, but they do not give nearly as accurate results as do pumping tests of greater duration. Correspondingly, many of the pumping levels listed are not absolutely accurate.

Complete chemical analyses were made of 17 samples of well water in the county. The analyses indicate that the ground water is of good chemical quality. The concentration of dissolved solids in all samples was less than 177 parts per million and in nine samples less than 100 parts per million. Only three samples contained as much as 0.4 part per million in iron. Other mineral matter is correspondingly low.

The average temperature of the ground water is about 60°F.

RECORDS OF WELLS IN CATAWBA COUNTY—*Continued*

Well No.	Location	Owner	Date completed	Topography	Depth (ft.)	Diameter (in.)	Depth of casing (ft.)	Water-bearing material	Water level (ft.)	Yield (gpm)	Remarks
251	do	Paul Rink		Slope	120		70	do	37	33	Pumping level 53 feet.
252	4 miles E of Newton	Frank Witherspoon	1946	Flat	117	6	55	Granite gneiss	14	18	Pumping level 112 feet.
253	do	Bethany Church	1947	Slope	90	6	70	do	10	6	Pumping level 80 feet.
254	5 miles E of Newton	Paul A. Bretton	1940	Hill	110	6	50	Granite	50	6	Pumping level 110 feet.
255	7 Miles E of Newton	Shiloh Church	1946	Slope	100	6	28	Mica schist	30	12	Pumping level 65 feet.
256	2 miles S of Catawba	Miss Anthon Drum	1946	Hill	100	6	57	do	40	5	Pumping level 100 feet.
257	3 miles SW of Bunkerhill	L. T. Weaver	1941	Slope	116	6	70	do	39	10	Pumping level 44 feet.
258	6 miles SW of Bunkerhill	W. L. Whisnant	1943		100	6		do			
269	do	E. M. Shuford	1946	Hill	125		57	do	48	4	Pumping level 125 feet.
270	7 miles SW of Bunkerhill	Ray Stallings	1946	do	131		57	do	45	12	Do
271	6 miles SW of Bunkerhill	Eugene Clay	1948	Slope	50	6	22	do	20	30	Pumping level 30 feet.
272	do	Sam Workman	1946	Flat	48	6	40	do	22	36	Pumping level 35 feet.
273	5 miles S of Bunkerhill	J. J. Hilton	1946		90	6	100	do			
274	6 miles S of Bunkerhill	Blackmon's School		Flat	40	60		Hornblende gneiss	25	10	
275	2 miles S of Newton	D. R. Young	1946	Slope	135		34	do	15	36	Pumping level 65 feet.
276	do	Mrs. Ed Deal	1946		124	6	53	do		15	
277	do	J. F. Pressley	1946	Hill	150		122	do	35	8	Pumping level 100 feet.
278	4 miles SE of Newton	D. C. Bumgardner		do	160	6	100	do	40	20	Pumping level 80 feet.
279	do	Fred Mullen	1940	Slope	100		67	do	15	25	Pumping level 55 feet.
280	5 miles SE of Newton	J. T. Rendric	1946	Hill	150	6	122	Granite gneiss	35	9	Pumping level 150 feet.
281	do	Willard Lee	1946	Slope	110		122	do	20	12	Pumping level 100 feet.
282	6 miles SE of Newton	Balls Creek School		Hill	105	4		Granite	15	16	Pumping level 80 feet.
283	7 miles E of Newton	Fay T. Gaston	1946		230	6	18	Mica schist	18	1	
284	7 miles SE of Newton	Carolina Glove Co.	1946	Hill	221	6	68	do	22	2	Pumping level 125 feet.
285	do	J. Mauldin	1940	do	100	6	84	Hornblende gneiss	46	24	Pumping level 75 feet.
286	do	Jay Mauldin	1951	Flat	71	6	27	do	50	20	Pumping level 60 feet.
287	8 miles SE of Newton	Paul Mauldin	1940	Hill	125	6	77	do	35	12	Pumping level 75 feet.
288	8 miles SE of Catawba	Carlo Gabriel	1947	do	140	6	134	Granite gneiss	30	20	Pumping level 140 feet.
289	8 miles SE of Catawba	Sherrill Ford School		Flat	230	6		do		12	Pumping level 100 feet.
290	11 miles SW of Bunkerhill	Guy Rose		Hill	120	6	21	Granite	35	30	Pumping level 70 feet.
291	do	Veyt Redfield		do	100	6	70	Mica schist	35	15	Pumping level 105 feet.
292	11 miles W of Maiden	Marlow Stallings	1940	Slope	134		75	do	20	15	Pumping level 120 feet.
293	9 miles W of Maiden	Hayes Wilson	1944		125	6	67	do		10	
294	11 miles W of Maiden	Ralph Stallings	1940	Slope	134	6	90	Granite	35	8	Pumping level 175 feet.
295	12 miles W of Maiden	Bess Oak School	1951	Hill	245	6	44	do	90	40	Pumping level 150 feet.
296	6 miles W of Maiden	Bain Sherman	1944		145	6	100	Mica schist			Good well.
297	3 miles SW of Maiden	Ed Reinhardt	1940	Hill	105		90	Hornblende gneiss	20	12	Pumping level 100 feet.
298	2 miles N of Maiden	Catawba Nursery	1955	do	121	2	37	do			Good well.
299	1 mile N. of Maiden	Zeb Hayman		do	371	6	73	do	50	15	
300	do	do	1951	do	140	6	112	do	40	22	Pumping level 100 feet.
301	do	Howard Young	1940		115	6	71	do		10	
302	1 mile NE of Maiden	E. A. Harman		Slope	250	6		do		50	
303	1 mile N. of Maiden	Carolina Mills	1947		335	6	124	do	34	9	Pumping level 82 feet.
304	1 mile NW of Maiden	Clayton Whisnant		Flat	320	6	43	do	20	12	Pumping level 30 feet.
305	Maiden	Town of Maiden		Valley	300	6		do	18	30	Pumping level 110 feet.
306	do	do		Slope	100	6		do	18	30	Pumping level 120 feet. Analysis.
307	do	do	1951	Hill	200	6	77	do	50	37	Pumping level 140 feet.
308	do	do	1940	Slope	245	6	73	do		6	Pumping level 182 feet.
309	do	do	1946	do	320	6	84	do	20	30	Analysis. Pumping level 140 feet.
310	do	do		Valley	82	6	73	do	15	80	Analysis. Pumping level 64 feet.
311	do	do		do	100	6		do	15	40	Analysis. Pumping level 70 feet.
312	2 miles E of Maiden	J. W. Cooke	1940	Hill	100		40	Mica schist		1	Pumping level 50 feet.
313	1 mile E of Maiden	J & J Spinning Co.	1944	Flat	102	6	84	do		30	
314	do	do	1940	Slope	130		73	do	20	12	Pumping level 100 feet.
315	do	do	1940	do	215	6	53	do	25	15	Pumping level 115 feet.
316	2 miles E of Maiden	Lee Bost	1946	Flat	100		122	do	12	20	Pumping level 100 feet.
317	do	Thomas W. McCombs	1940	Hill	110	6	35	do	35	12	Pumping level 80 feet.
318	1 mile SE of Maiden	J & J Spinning Co.	1947	Slope	200	6	40	do	20	10	Pumping level 100 feet.
319	do	do	1946	do	200	6	28	do	22	7	Pumping level 180 feet.
320	3 miles E of Maiden	Mt. Ephraim Baptist Church	1955	Flat	200	6	100	do	15	22	Pumping level 75 feet.
321	do	Crosby Lanny	1940	Hill	102	6	54	do	40	1	Pumping level 100 feet.
322	6 miles E of Maiden	Roy O. Smith	1946		125	6	77	Granite	73	2	Pumping level 180 feet.
323	do	Rosvette Caldwell	1951	Hill	100	6	66	do	45	5	Pumping level 100 feet.
324	9 miles SE of Maiden	James Gilliland	1951	Flat	170	6	60	do	38	15	Pumping level 80 feet.
325	do	F. R. Fisher	1940	Hill	131	6	30	do	40	22	Pumping level 85 feet.
326	8 miles SE of Maiden	Jesse Carpenter	1946		50		35	do	27	4	Pumping level 35 feet.

Reference 8

B&V Waste Science, Inc.

TELEPHONE MEMORANDUM

U.S. EPA
Town Creek Treatment Plant
Floodplain Information

B&V Project 52012.460

July 13, 1994
11:30 AM

To: Ed Muire
Company: Rowan County Environmental Div.
Phone No.: (704) 638-3078

Recorded by: Sue Martin

Mr. Muire informed me that the area of the Town Creek Wastewater Treatment Plant site is in Zone C, which means it is not in a designated floodplain area. He says the community # for the map is 370351 and the panel # is 0100B.

B&V Waste Science, Inc.

TELEPHONE MEMORANDUM

U.S. EPA
Town Creek Treatment Plant
Flow rates in the Yadkin.
Geology in the site area.

B&V Project 52012.460

July 13, 1994
1:30 PM

To: Robert Mason
Company: USGS
Phone No.: (919) 571-4000

Recorded by: Sue Martin

Robert Mason informed me that the average annual flow rate measured at Yadkin College was 2999 cfs. Yadkin College is the closest station to the site. He said the maximum flow ever recorded was 75,270 cfs. Mr. Mason also stated that the Yadkin is a recreational area and is also used for recreational fishing.

Mr. Mason informs me that the bedrock is very close to surface in the site area. It is overlain by a thin layer of heavy clay. Private wells are screened within the bedrock at depths of 100 feet or deeper. Mr. Mason states that the rock is often exposed in the sidewalls of streams or rivers, indicating very shallow bedrock in this area.

Reference 11

EPA-600/2-87-035
April 1987

DRASTIC: A Standardized System for Evaluating Ground Water Pollution Potential Using Hydrogeologic Settings

by

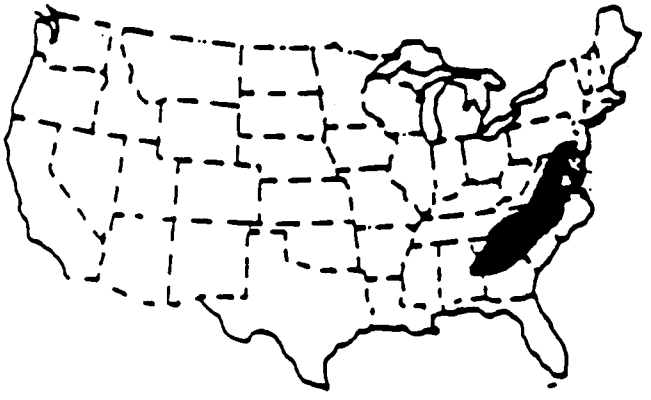
Linda Aller
Truman Bennett
Jay H. Lehr
Rebecca J. Petty
and
Glen Hackett
National Water Well Association
Dublin, Ohio 43017

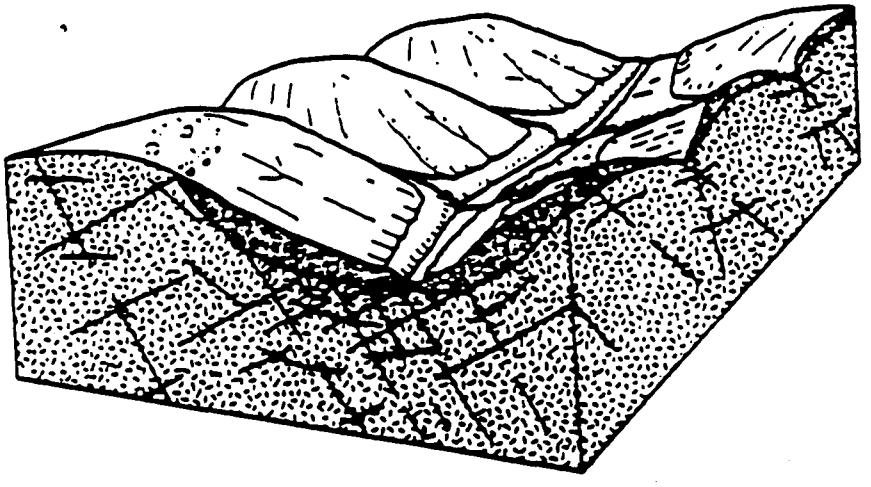
Cooperative Agreement CX-810715-01

Project Officer
Jerry Thornhill
Applications and Assistance Branch
Robert S. Kerr Environmental Research Laboratory
Ada, Oklahoma 74820

ROBERT S. KERR ENVIRONMENTAL RESEARCH LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
U.S. ENVIRONMENTAL PROTECTION AGENCY
ADA, OKLAHOMA 74820

8. PIEDMONT BLUE RIDGE GROUND-WATER REGION





8A	Mountain Slopes
8B	Alluvial Mountain Valleys
8C	Mountain Flanks
8D	Regolith
8E	River Alluvium
8F	Mountain Crests
8G	Swamp/Marsh

8. PIEDMONT BLUE RIDGE REGION

(Thick regolith over fractured crystalline and metamorphosed sedimentary rocks)

The Piedmont and Blue Ridge region is an area of about 247,000 km2 extending from Alabama on the south to Pennsylvania on the north. The Piedmont part of the region consists of low, rounded hills and long, rolling, northeast-southwest trending ridges whose summits range from about a hundred meters above sea level along its eastern boundary with the Coastal Plain to 500 to 600 m along its boundary with the Blue Ridge area to the west. The Blue Ridge is mountainous and includes the highest peaks east of the Mississippi. The mountains, some of which reach altitudes of more than 2,000 m, have smooth-rounded outlines and are bordered by well-graded streams flowing in relatively narrow valleys.

The Piedmont and Blue Ridge region is underlain by bedrock of Precambrian and Paleozoic age consisting of igneous and metamorphosed igneous and sedimentary rocks. These include granite, gneiss, schist, quartzite, slate, marble, and phyllite. The land surface in the Piedmont and Blue Ridge is underlain by clay-rich, unconsolidated material derived from in situ weathering of the underlying bedrock. This material, which averages about 10 to 20 m in thickness and may be as much as 100 m thick on some ridges, is referred to as saprolite. In many valleys, especially those of larger streams, flood plains are underlain by thin, moderately well-sorted alluvium deposited by the streams. When the distinction between saprolite and alluvium is not important, the term regolith is used to refer to the layer of unconsolidated deposits.

The regolith contains water in pore spaces between rock particles. The bedrock, on the other hand, does not have any significant intergranular porosity. It contains water, instead, in sheetlike openings formed along fractures (that is, breaks in the otherwise "solid" rock). The hydraulic conductivities of the regolith and the bedrock are similar and range from about 0.001 to 1 m day^{-1}. The major difference in their water-bearing characteristics is their porosities, that of regolith being about 20 to 30 percent and that of the bedrock about 0.01 to 2 percent. Small supplies of water adequate for domestic needs can be obtained from the regolith through large-diameter bored or dug wells. However, most wells, especially those where moderate supplies of water are needed, are relatively small in diameter and are cased through the regolith and finished with open holes in the bedrock. Although, as noted, the hydraulic conductivity of the bedrock is similar to that of the regolith, bedrock wells generally have much larger yields than regolith wells because, being deeper, they have a much larger availble drawdown.

All ground-water systems function both as reservoirs that store water and as pipelines (or conduits) that transmit water from recharge areas to discharge areas. The yield of bedrock wells in the Piedmont and Blue Ridge region depends on the number and size of fractures penetrated by the open hole and on the replenishment of the fractures by seepage into them from the overlying regolith. Thus, the ground-water system in this region can be viewed, from the standpoint of ground-water development, as a terrane in which the reservoir and pipeline functions are effectively separated. Because of its larger porosity, the regolith functions as a reservoir which slowly feeds water downward into the fractures in the bedrock. The fractures serve as an intricate interconnected network of pipelines that transmit water either to springs or streams or to wells.

Recharge of the ground-water system occurs on the areas above the flood plains of streams, and natural discharge occurs as seepage springs that are common near the bases of slopes and as seepage into streams. With respect to recharge conditions, it is important to note that forested areas, which include most of the Blue Ridge and much of the Piedmont, have thick and very permeable soils overlain by a thick layer of forest litter. In these areas, even on steep slopes, most of the precipitation seeps into the soil zone, and most of this moves laterally through the soil in a thin, temporary, saturated zone to surface depressions or streams to discharge. The remainder seeps into the regolith below the soil zone, and much of this ultimately seeps into the underlying bedrock.

Because the yield of bedrock wells depends on the number of fractures penetrated by the well, the key element in selecting well sites is recognizing the relation between the present surface topography and the location of fractures in the bedrock. Most of the valleys, draws, and other surface depressions indicate the presence of more intensely fractured zones in the bedrock which are more susceptible to weathering and erosion than are the intervening areas. Because fractures in the bedrock are the principal avenues along which ground water moves, the best well sites appear to be in draws on the sides of the valleys of perennial streams where the bordering ridges are underlain by substantial thicknesses of regolith. Wells located at such sites seem to be most effective in penetrating open water-bearing fractures and in intercepting ground water draining from the regolith. Chances of success seem to be somewhat less for wells on the flood plains of perennial streams, possibly because the alluvium obscures the topographic expression of bedrock fractures. The poorest sites for wells are on the tops of ridges and mountains where the regolith cover is thin or absent and the bedrock is sparsely fractured.

As a general rule, fractures near the bedrock surface are most numerous and have the largest openings, so that the yield of most wells is not increased by drilling to depths greater than about 100 m. Exceptions to this occur in Georgia, South Carolina and North Carolina and some other areas where water-bearing, low-angle faults or fractured zones are present at depths as great as 200 to 300 m.

The Piedmont and Blue Ridge region has long been known as an area generally unfavorable for ground water development. This reputation seems to have resulted both from the small reported yields of the numerous domestic wells in use in the region that were, generally, sited as a matter of convenience and from a failure to apply existing technology to the careful selection of well sites where moderate yields are needed. As water needs in the region increase and as reservoir sites on streams become increasingly more difficult to obtain, it will be necessary to make more intensive use of ground water.

B&V Waste Science, Inc.

TELEPHONE MEMORANDUM

U.S. EPA
Town Creek Wastewater Plant
Surface Water Intakes Downstream of
High Point Lake and Crane Creek

B&V Project 52012.460

July 19, 1994
8:00 AM

To: Alridge Renn
Company: Health Department
Phone No.: (919) 733-3221

Recorded by: Sue Martin

Mr. Wren informed me that Crane Creek is in a protective area of a surface water intake. Crane Creek is downstream of the site. Mr. Wren said he will check the maps to locate the surface water intake and call me back.

B&V Waste Science, Inc.

TELEPHONE MEMORANDUM

U.S. EPA
Town Creek Wastewater Plant
Surface Water Intake Downstream of Site

B&V Project 52012.460

July 19, 1994
10:00 PM

From: Alridge Renn
Company: Health Department
Phone No.: (919) 733-3221

Recorded by: Sue Martin

Mr. Renn returned my earlier phone call to inform me that the closest surface water intake downstream of Crane Creek is for the town of Denton in Davidson County. Mr. Renn stated that the intake is located on the High Rock quadrangle at the High Rock Dam.

B&V Waste Science, Inc.

TELEPHONE MEMORANDUM

U.S. EPA
Town Creek Wastewater Plant
Number of Connections for City of Denton
Water Utility

B&V Project 52012.460

July 19, 1994
11:00 AM

To: Jeff Dennard
Company: Denton Water Department
Phone No.: (704) 869-3139

Recorded by: Sue Martin

Mr. Dennard informed me that Denton receives its water from a surface water intake. He stated that there are approximately 9000 connections to the city water.

B&V Waste Science, Inc.

TELEPHONE MEMORANDUM

U.S. EPA
Town Creek Wastewater Plant
Flow Rate of the Yadkin River
Downstream of the Site

B&V Project 52012.460

July 19, 1994
11:30 AM

To: Robert Mason
Company: U.S. Geological Survey
Phone No.: (919) 571-4000

Recorded by: Sue Martin

Mr. Mason informs me that the average discharge flow rate of the Yadkin River downstream of Crane Creek is approximately 4880 cfs.

TELEPHONE MEMORANDUM

U.S. Environmental Protection Agency
Town Creek WWTP
Fisheries Downstream of the Site

B&V Project 52012.460

September 15, 1994
1:00 P.M.

To: Wayne Chapmin
Company: Rowan County District Biologist
Phone No.: (704) 982-9255

Recorded by: Sue Martin

Mr. Chapmin stated that High Rock Lake, approximately 1.5 miles downstream of the WWTP is fished extensively. Town Creek is not considered a fishery because it is very small. Mr. Chapmin states that Town Creek may be fished by a few locals, particularly near the mouth of High Rock Lake.

High Rock Lake is fished recreationally for bass, sunfish, crappy, white bass, white perch, and striped bass. High Rock Lake is also fished commercially for catfish. The lake is 16,000 acres in size and is used recreationally. Mr. Chapmin estimates a probable harvest rate of 60,000 lb/year commercially, and 600,000 lb/year for sport at High Rock Lake.

Mr. Chapmin states that the Yadkin River is also fished for sport and commercially, but most of the pressure is in High Rock Lake.

There are no endangered or threatened species of fish in Town Creek or High Rock Lake. Mr. Chapmin states that there may be threatened or endangered species of mussels in High Rock Lake or the Yadkin.

BLACK & VEATCH Waste Science, Inc. Reference 17

TELEPHONE MEMORANDUM

U.S. Environmental Protection Agency
Town Creek WWTP
Federally-listed Endangered
or Threatened Species

BVWS Project 52012.460

September 19, 1994
9:00 A.M.

To: Dick Biggins
Company: U.S. Fish and Wildlife Service
Phone No.: (704) 664-1195

Recorded by: Sue Martin

Mr. Biggins stated that there are no federally listed threatened or endangered species in High Rock Lake or Yadkin River. Mr. Biggins suggests that I contact the State Wildlife Resouces Commission to find out if there are any state-listed endangered or threatened species.

B&V Waste Science, Inc.

TELEPHONE MEMORANDUM

Reference 18

U.S. Environmental Protection Agency
Town Creek WWTP
State Endangered or
Threatened Species

B&V Project 52012.460

September 26, 1994
10:00 A.M.

To: John Alderman
Company: Wildlife Resources Commission
Phone No.: (919) 542-5331

Recorded by: Sue Martin

Mr. Alderman stated that there are no state-listed aquatic endangered or threatened species in the Yadkin, High Rock Lake, or Town Creek.

State of North Carolina
Department of Environment, Health and Natural Resources
Division of Parks & Recreation

RECEIVED
OCT 11 1994

Reference #19

DEHNR

James B. Hunt, Jr., Governor
Jonathan B. Howes, Secretary
Dr. Philip K. McKnelly, Director

October 4, 1994

Ms. Sue Martin
Black & Veatch Waste Science, Inc.
1201 Pacific Avenue, Suite 1100
Tacoma, Washington 98402

SUBJECT: Rare Species, High Quality Natural Communities, and Significant Natural Areas Within a 4-mile Radius of the Proposed Project Site in Davidson and Rowan Counties, North Carolina

Dear Ms. Martin:

The North Carolina Natural Heritage Program does not have records of known rare species, high quality natural communities, or significant natural areas occurring at the project site or within a 0.25 mile radius of the site. To our knowledge, this project area has not been systematically inventoried and we cannot definitively state that rare species or significant natural areas do not occur there.

We do, however, have several records of rare species, high quality natural communities, and significant natural areas occurring within a 4-mile radius of the site. Located on the Southmont quadrangle are one Identified Priority Area, referred to as Leonard Road Slopes, and three natural community types. These natural communities are: Basic Mesic Forest (Piedmont Subtype), Basic Oak--Hickory Forest, and Mesic Mixed Hardwood Forest (Piedmont Subtype).

Located on the Salisbury quadrangle are four Identified Priority Areas, two natural community types, and populations of six rare plants. The four Identified Priority Areas are: Dunn Mountain, Honeycutt Road Woods, Salisbury Nature Study Area, and Yadkin River/Grants Creek Bottomland Forest. The rare plant species present are: Amorpha schwerinii (Piedmont Indigo-bush), state Candidate; Aster georgianus (Georgia Aster), federal Candidate (C2) and state Candidate; Carex bushii (Bush's Sedge), significantly rare in North Carolina; Isoetes piedmontana (Piedmont quillwort), state Threatened; Lotus helleri (Carolina birdfoot-trefoil), state Candidate; and Minuartia uniflora (Single-flowered Sandwort), federal Candidate (3C) and state Endangered species. The natural community types present are: Dry-Mesic Oak--Hickory Forest and Piedmont/Mountain Swamp Forest.

Enclosed are lists of rare species that are known to occur in Davidson and Rowan Counties. If suitable habitat for any of these species occurs in the project area, then those species may

be present at the project site. If it is necessary to be certain that this site does not contain rare species, a field survey would need to be conducted.

Please contact me at the address below or call me at (919) 733-7701 if you have any questions or need further information.

Sincerely,

Inge Smith

Inge Smith
Information Specialist
Natural Heritage Program

/iks

Enclosures

NATURAL HERITAGE ELEMENTS AND SPECIES STATUS CODES

The attached output from the N.C. Natural Heritage Program database is a listing of the elements (rare species, geologic features, natural communities, and special animal habitats) known to occur in your geographic area of interest. The information on this printout is compiled from a variety of sources, including field surveys, museums and herbaria, literature, and personal communications. The database is dynamic, with new records being added and old records being revised as we receive new information. The enclosed list cannot be considered a definitive record of natural heritage elements, and it should not be considered a substitute for field surveys. When this information is used in any document, we request that the printout date be given and that the Natural Heritage Program be credited.

This cover sheet explains the four columns of status codes that are given on the right-hand side of the printout.

STATE PROTECTION

CODE	STATUS	CODE	STATUS
E	Endangered	SR	Significantly Rare
T	Threatened	V	Vulnerable
SC	Special Concern	UNK	Undetermined
C	Candidate	EX	Extirpated
P_	Proposed (E, T, or C)		

Plant statuses are determined by the Plant Conservation Program (N.C. Dept. of Agriculture) and the Natural Heritage Program (N.C. Dept. of Environment, Health, and Natural Resources). E, T, and SC species are protected by state law (the Plant Protection and Conservation Act, 1979); C and SR designations indicate rarity and the need for population monitoring and conservation action, as determined by the Plant Conservation and Natural Heritage Programs.

Animal statuses that indicate state protection (E, T, and SC) are published in "Endangered Wildlife of North Carolina", March 16, 1992, N.C. Nongame and Endangered Wildlife Program. The Significantly Rare, Undetermined, Vulnerable and Extirpated statuses are (for the most part) Natural Heritage Program designations. They indicate rarity and the need for population monitoring and conservation action.

FEDERAL PROTECTION

The current federal status is listed in "Endangered and Threatened Wildlife and Plants, July 15, 1991 (50 CFR 17.11 & 17.12, Department of the Interior). Definitions are taken from the Endangered Species Act of 1973, as amended through the 100th Congress (1988), and the Federal Register, Part VIII, November 21, 1991 (50 CFR 17, Department of the Interior).

CODE	STATUS	DEFINITION
E	Endangered	A taxon which "is in danger of extinction throughout all or a significant portion of its range"
T	Threatened	A taxon "which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range"
P_	Proposed	A taxon which has been proposed for official listing as endangered or threatened
L_	Listed	A taxon which has been officially listed as endangered or threatened
C1	Category 1 ("Candidate 1")	A taxon which is under consideration, and for which there is sufficient information to support listing

SCIENTIFIC AND COMMON NAME	STATE PROT.	FED. PROT.	STATE RANK	GLOBAL RANK
***** Rowan**				
**** Vertebrates**				
LANIUS LUDOVICIANUS LOGGERHEAD SHRIKE	SC	C2	S2B,S3	G4G5
**** Vascular plants**				
AMORPHA SCHWERINII PIEDMONT INDIGO-BUSH	C		S3	G2G3
ANEMONE BERLANDIERI SOUTHERN ANEMONE	C		S1	G3G4
ASTER GEORGIANUS GEORGIA ASTER	C	C2	S2	G2G3
BAPTISIA ALBESCENS THIN-POD WHITE WILD INDIGO	SR		S2	G4
CARDAMINE DISSECTA DISSECTED TOOTHWORT	C		S1	G4?
CAREX BUSHII BUSH'S SEDGE	SR		S1	G4
CIRSIUM CAROLINIANUM CAROLINA THISTLE	C		S1	G5
GNAPHALIUM HELLERI VAR HELLERI HELLER'S RABBIT TOBACCO	SR		S2?	G4T3
HELENIUM BREVIFOLIUM LITTLELEAF SNEEZEWEED	C		S1	G3G4
HELENIUM PINNATIFIDUM DISSECTED SNEEZEWEED	SR		S2	G4
HELIANTHUS LAEVIGATUS SMOOTH SUNFLOWER	SR		S2	G4
HELIANTHUS SCHWEINITZII SCHWEINITZ'S SUNFLOWER	E	LE	S2	G2
ISOETES PIEDMONTANA PIEDMONT QUILLWORT	T		S1	G4
ISOETES VIRGINICA VIRGINIA QUILLWORT	C	C2	S1	G1G2Q
LOTUS HELLERI CAROLINA BIRDFOOT-TREFOIL	C		S2	G?
MINUARTIA UNIFLORA SINGLE-FLOWERED SANDWORT	E	3C	S1	G3G4
NESTRONIA UMBELLULA NESTRONIA	SR	3C	S3	G3G4
PLATANTHERA INTEGRA YELLOW FRINGELESS ORCHID	T	3C	S1	G5
PORTULACA SMALLII SMALL'S PORTULACA	T	3C	S2	G3
SOLIDAGO PTARMICOIDES PRAIRIE GOLDENROD	E		S1	G5
**** Nonvascular plants**				
SCOPELOPHILA CATARACTAE AGOYAN CATARACT MOSS	C		S1	G3G4
**** Natural communities**				
BASIC MESIC FOREST (PIEDMONT SUBTYPE)			S2	G5T3
BASIC OAK--HICKORY FOREST			S3	G4

SCIENTIFIC AND COMMON NAME	STATE PROT.	FED. PROT.	STATE RANK	GLOBAL RANK
***** Davidson**				
**** Vertebrates**				
ETHEOSTOMA COLLIS CAROLINA DARTER	SC		S3	G3
**** Vascular plants**				
AMORPHA SCHWERINII PIEDMONT INDIGO-BUSH	C		S3	G2G3
CARDAMINE DISSECTA DISSECTED TOOTHWORT	C		S1	G4?
DODECATHEON MEADIA VAR MEADIA EASTERN SHOOTING STAR	SR		S2	G5T5
GNAPHALIUM HELLERI VAR HELLERI HELLER'S RABBIT TOBACCO	SR		S2?	G4T3
HELIANTHUS SCHWEINITZII SCHWEINITZ'S SUNFLOWER	E	LE	S2	G2
HEXALECTRIS SPICATA CRESTED CORALROOT	SR		S2	G4?
LOTUS HELLERI CAROLINA BIRDFOOT-TREFOIL	C		S2	G?
MATELEA DECIPIENS GLADE MILKVINE	SR		S2	G5
PLANTAGO CORDATA HEART-LEAF PLANTAIN	E	3C	S1	G3
PORTERANTHUS STIPULATUS INDIAN PHYSIC	SR		S2	G5
**** Natural communities**				
BASIC MESIC FOREST (PIEDMONT SUBTYPE)			S2	G5T3
BASIC OAK--HICKORY FOREST			S3	G4
DRY OAK--HICKORY FOREST			S4	G5
MESIC MIXED HARDWOOD FOREST (PIEDMONT SUBTYPE			S4	G5T5
PIEDMONT MONADNOCK FOREST			S4	G5
XERIC HARDPAN FOREST			S3	G3G4

SCIENTIFIC AND COMMON NAME	STATE PROT.	FED. PROT.	STATE RANK	GLOBAL RANK
DRY OAK--HICKORY FOREST			S4	G5
DRY-MESIC OAK--HICKORY FOREST			S5	G5
FLOODPLAIN POOL			S2	G3?
MESIC MIXED HARDWOOD FOREST (PIEDMONT SUBTYPE			S4	G5T5
PIEDMONT MONADNOCK FOREST			S4	G5
PIEDMONT/COASTAL PLAIN HEATH BLUFF			S3	G4?
PIEDMONT/LOW MOUNTAIN ALLUVIAL FOREST			S5	G5
PIEDMONT/MOUNTAIN LEVEE FOREST			S3?	G5
PIEDMONT/MOUNTAIN SWAMP FOREST			S1	G2
UPLAND DEPRESSION SWAMP FOREST			S2	G3
XERIC HARDPAN FOREST			S3	G3G4