673SERBSF10,638

673SERBSF10,638

Site Name (Subject):	SPRAGUE ELECTRIC COMPANY
Site ID (Document ID):	NCD003167780
Document Name (DocType):	Contractor Report (CONTR)
Report Segment:	
Description:	FIT Report: Screening Site Inspection, Phase I
Date of Document:	4/19/1990
Date Received:	
Box: *Enter SF and # with no spaces*	SF10,638
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**

FIT REPORT
NCD 003 167 780 ASHE
SPRAGUE ELECTRIC COMPANY
LANSING, NC

June 20, 1990

State Copy

NUS CORPORATION

1927 LAKESIDE PARKWAY
SUITE 614
TUCKER, GEORGIA 30084
404-938-7710

CERCLA

C-586-4-0-88

April 19, 1990

Mr. A. R. Hanke
Site Investigation and Support Branch
Waste Management Division
Environmental Protection Agency
345 Courtland Street, N. E.
Atlanta, Georgia 30365

Date: 6-20-90
Site Disposition: SSI Phase 2
EPA Project Manager: D. Vaughn-Wright

Subject: Screening Site Inspection, Phase I
Sprague Electric Company
Lansing, Ashe County, North Carolina
EPA ID No. NCD003167780
TDD No. F4-9001-132

Dear Mr. Hanke:

FIT 4 was tasked to conduct a Screening Site Inspection of Sprague Electric Company in Lansing, Ashe County, North Carolina. Phase I of this inspection included a review of file material on the facility obtained from EPA and the state of North Carolina, a target survey, and an offsite reconnaissance of the facility and the surrounding area.

The Sprague Electric Company facility is situated on a 60-acre tract of land located off of Highway 194 approximately 1.25 miles south of Lansing, North Carolina (Refs. 1, 2). The facility has been actively engaged in the manufacturing of aluminum electrolytic capacitors since 1953 and is the only known industry that has ever occupied the facility area (Refs. 1, 3). Raw materials utilized in the production process include aluminum foil, nitric acid, tartaric acid, sodium hydroxide, calcium hydroxide, sodium chloride, and dimethylformamide (DMF) (Refs. 1, 3). Sulfuric acid was used in the past (Ref. 3). The manufacturing process involves the etching of aluminum foil in an electrochemical bath. Aluminum oxides formed in the process are recovered from the wastewater by filtering and settling in a lagoon, mined and sold (Refs. 1, 3). Waste dimethylformamide (DMF) used in the process is stored in drums and shipped off site (Refs. 1, 3). Available information indicates that wastes were handled in essentially the same manner since operations commenced (Ref. 3).

On November 17, 1980, Sprague Electric Company filed a RCRA Part A hazardous waste permit application for treatment. They reported that their facility conducted operations that resulted in a discharge to U.S. waters and treats 250,000,000 pounds of corrosive waste (D002) were treated per year (Ref. 4). At the time of filing, Sprague Electric Company officials advised the U.S. Environmental Protection Agency that they were in doubt as to whether or not the Lansing plant was a waste treatment, storage, or disposal facility under the Resource Conservation and Recovery Act, and that the application was submitted as a precaution in case this location was such a facility (Ref. 5). On December 16, 1981, the U.S. EPA advised Sprague Electric Company that they acknowledged receipt of Sprague's request for withdrawal of their permit application under RCRA (Ref. 6). On March 4, 1982, the North Carolina Solid and Hazardous Waste Management Branch (NCHWMB) granted

Sprague's request for deletion as a treater, storer, or disposer of hazardous waste under RCRA (Ref. 7). On July 1, 1983, Sprague was also deleted as a large quantity generator of hazardous waste under RCRA (Ref. 8). On November 14, 1983, Sprague advised the NCHWMB that a Part B application for the facility would not be filed. On March 13, 1984, the NCHWMB advised Sprague that their interim status was formally terminated (Ref. 9). The facility is currently listed as a small quantity generator (Ref. 10).

The Sprague Electric Company is located in the Piedmont - Blue Ridge Physiographic province. This regime is characterized by a thick layer of residual soil and weathered rock overlying fractured crystalline and metamorphosed sedimentary rocks (Ref. 11). The immediate area around the facility consists of high hills and steep sloped, narrow valleys (Ref. 2). Ashe County has a moist, temperate climate with a net annual rainfall of 18 inches, and a 1-year, 24-hour rainfall of 2.5 inches (Refs. 12, 13).

Geologically, the area of the electric company is underlain by residual soils ranging from 25 to 36 feet thick. The residuum is underlain by blue and white granite (Ref. 14). The aquifer used in the area is the crystalline rock aquifer system (Ref. 15). Two wells drilled in the city of Warrensville, 1.5 miles south of the facility, were 80 and 130 feet deep. The 80-foot deep well reached water at 70 and 75 feet below land surface (bls). The 130-foot deep well reached water at 50 feet bls (Ref. 14). Water levels in the immediate area of the facility would be less than 25 feet bls because of its close proximity to the New River (Ref. 2).

Groundwater flows along the fractures in the bedrock and in the intergranular pore spaces of the residual soils. The porosity and thus conductivity of the soil decreases as depth increases (Ref. 16, pp. 12-14). Some igneous dikes are found in the Piedmont regime, but these have few fractures and contain little water (Ref. 16, p. 10). The residual soils and bedrock are hydrologically interconnected. The unsaturated zone of the residuum represents the layer of lowest hydraulic conductivity. Soils of this type have been shown to have hydraulic conductivities that range between 1×10^{-3} and 1×10^{-5} cm/sec (Ref. 17).

Two municipal water systems exist within a 4-mile radius of the facility. The nearby town of Lansing obtains its water from two wells located approximately 1.5 miles north of the facility and within the Lansing corporate boundary (Refs. 2, 18). This system currently provides service to 65 customers within the corporate boundary (Ref. 18). The Jefferson Water Department provides service to a very small segment of the study area located approximately 3.8 miles southeast of the facility (Ref. 2). This system obtains its water from seven wells located in and near Jefferson, North Carolina (Refs. 2, 18). Only one of these wells, however, is situated within the 4-mile radius and is located approximately 3.9 miles southeast of the facility. The water from these wells is mixed prior to distribution (Refs. 2, 18). This system currently provides service to 535 customers (Ref. 18). Residences not served by these municipal systems rely on wells and springs to supply their potable water needs. Information derived from a house count on U.S.G.S. 7.5 minute series topographic quadrangle maps was used to approximate the number of private wells and springs being utilized. Within a 3-mile radius of the facility approximately 380 residences are estimated to use groundwater from private wells and springs to supply their potable water needs. When the 3- to 4-mile radius is considered, an additional 420 residences utilize groundwater for potable purposes. The nearest well is located approximately 500 feet west of the facility (Ref. 2).

Surface water runoff from the facility has the potential to migrate north, south, and west into the North Fork of the New River located adjacent to the facility. The North Fork of the New River follows a meandering path northeast beyond 15 miles downstream from the facility (Ref. 2). There are no known surface water intakes located along the drainage pathway; however, fishing, boating, and swimming are recreational uses of the river (Ref. 19).

No schools or day-care centers have been identified within a 1-mile radius of the facility (Refs. 2, 18). Direct access to the facility is limited due to a chain-link fence which restricts unauthorized entry (Ref. 18). Phoenix Mountain, located approximately 1 mile southeast of the facility, is a sensitive environment which supports 11 peripherally rare plant species plus several endangered species (Ref. 20). The bog rose (Arethusa bulbosa), robin runway (Dalibarda repens), fringed gentian (Gentianopsis crinita), spreading avens (Geum radiatum), and the roseroot (Sedum rosea) are state endangered species in Ashe County. In addition, several threatened species exist in Ashe County (Ref. 21). The total population within 1 mile of the facility is approximately 258, and the total population within 4 miles of the facility is approximately 3697 (Refs. 2, 22). Demographically, the land within a 1-mile radius of the facility is predominantly rural (Ref. 2). The distance from the facility to the nearest residence is approximately 600 feet (Ref. 2).

Based upon the enclosures and the results of this assessment, it is recommended that Phase II of the Screening Site Inspection be conducted on a high-priority basis at the Sprague Electric Company. If you have any questions regarding this assessment, please feel free to contact me at NUS Corporation.

Very truly yours,

Eric Corbin

Eric Corbin
Project Manager

Approved:

EC/gwn

Enclosures

cc: Denise Bland

REFERENCES

1. Stan Atwood, North Carolina Solid and Hazardous Waste Management Branch, letter to Denise Bland, EPA NC CERCLA Project Officer, November 27, 1985. Subject: Preliminary Assessment Report.

2. U.S. Geological Survey, 7.5 minute series Topographic Quadrangle Maps of North Carolina: Warrensville 1966, Jefferson 1968, Grassy Creek 1966, Park, 1978, scale 1:24,000.

3. Stan Atwood, North Carolina Solid and Hazardous Waste Management Branch, letter to file, November 19, 1985. Subject: Sprague Electric Company.

4. EPA Notification of Hazardous Waste Site (EPA Form 3510-1) for Sprague Electric Company. Completed by Robert D. Smith, V.P., Materials and Manpower, Sprague Electric Company, November 17, 1980.

5. Fred A. Windover, Sprague Electric Company, letter to EPA Region IV, November 17, 1980. Subject: Hazardous Waste Permit Application for Sprague Electric Company.

6. James H. Scarbrough, Chief, Residuals Management Branch, letter to Fred A. Windover, Sprague Electric Company, December 16, 1981. Subject: Acknowledgment of request for withdrawal of RCRA permit application.

7. O.W. Strickland, Head, North Carolina Solid and Hazardous Waste Management Branch, letter to Fred A. Windover, Sprague Electric Company, March 4, 1982. Subject: Notification of facility status change.

8. O.W. Strickland, Head, North Carolina Solid and Hazardous Waste Management Branch, letter to Edward A. Stone, Sprague Electric Company, July 1, 1983. Subject: Notification of facility status change.

9. O.W. Strickland, Head, Solid and Hazardous Waste Management Branch, letter to Edward A. Stone, Sprague Electric Company, March 13, 1984. Subject: Sprague Electric Company.

10. North Carolina Department of Human Resources, Solid and Hazardous Waste Management, Alphabetical List of Hazardous Waste Facilities, August 10, 1989. Subject: Sprague Electric Company.

11. Linda Aller, et al., DRASTIC: A Standardized System for Evaluating Ground-Water Pollution Using Hydrogeologic Settings, EPA-600/2-87-035 (Ada, Oklahoma: EPA, April 1987), pp. 251, 252.

12. U.S. Department of Commerce, Climatic Atlas of the United States (Washington, D.C.: GPO, June 1968) Reprint: 1983, National Oceanic and Atmospheric Administration, pp. 43, 63.

13. U.S. Department of Commerce, Rainfall Frequency Atlas of the United States, Technical Paper No. 40 (Washington, D.C.: GPO, 1961), p. 93.

14. Mrs. Ray Taylor, Taylor Well Drilling, telephone conversation with Brant McCanless, NUS Corporation, March 12, 1990. Subject: Geology and groundwater levels in the Warrensville, North Carolina area.

15. U.S. Geological Survey, National Water Summary 1984: Hydrologic Events, Selected Water Quality Trends, and Ground-Water Resources, Water Supply Paper 2275 (1984), pp. 329-334.

16. Charles C. Daniel, III and N. Bonar Sharpless, Ground-Water Supply Potential and Procedures for Well-Site Selection Upper Cape Fear River Basin (North Carolina Department of Natural Resources and Community Development, Raleigh, North Carolina, October 1983), pp. 10, 12-15.

17. R. Allan Freeze and John A. Cherry, Groundwater (Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1979), p. 29.

18. NUS Corporation Field Logbook No. F4-9998 for Sprague Electric Company, TDD No. F4-9001-132. Documentation of facility reconnaissance, February 12, 1990.

19. Sonny Williams, Game Warden, Ashe County, North Carolina, telephone conversation with Eric Corbin, NUS Corporation, March 14, 1990. Subject: Recreational uses of the North Fork of the New River.

20. North Carolina Natural Heritage Program Natural Areas Database for Ashe County, July 5, 1989, p. 9.

21. North Carolina Natural Heritage Program Element List for Ashe County, June 30, 1989, p. 2.

22. United States Environmental Protection Agency, Graphical Exposure Modeling System (GEMS) Data Base, compiled from the U.S. Bureau of the Census data (1980).

REFERENCE # 1

North Carolina Department of Human Resources
Division of Health Services
P.O. Box 2091 • Raleigh, North Carolina 27602-2091

James G. Martin, Governor
Phillip J. Kirk, Jr., Secretary

Ronald H. Levine, M.D., M.P.H.
State Health Director

27 November 1985

Ms. Denise Bland
EPA NC CERCLA Project Officer
Air and Hazardous Material Division
345 Courtland Street, N.E.
Atlanta, GA 30365

SUBJECT: Preliminary Assessment Report
Sprague Electric Co. NC D003167780
Highway 194
Lansing, NC 28643

Dear Ms. Bland:

Enclosed please find the Preliminary Assessment report for the subject site. This priority is based on review of available data.

Sprague Electric Company is about a 60 acre site located off NC 194 south of Lansing, NC. The plant has manufactured aluminum electrolytic capacitors since 1953. No other business has ever occupied the site.

The company uses aluminum foil, nitric acid, tartaric acid, sodium hydroxide, calcium hydroxide, sodium chloride, and dimethylformamide (DMF) in the production process. Aluminum oxides are formed when the aluminum foil is etched in an electrochemical bath. Aluminum oxides are recovered from the waste water, by filtering and settling in a lagoon, and sold. Effluent pH was reported between 3 and 4. Waste DMF is shipped off site in drums.

Several wells were reported to be on the site; however, only one is presently in use. The well water is tested periodically for bacteria and iron content. Soil, well, and impoundment sampling is recommended to confirm that no hazardous constituents are present. Based on the available information, a low priority is recommended for inspection of this site.

On 27 November 1985, this Preliminary Assessment was reviewed by CERCLA Unit personnel and by the following representatives from the North Carolina Department of Natural Resources and Community Development, Division of Environmental Management: Doug Dixon, Groundwater Section; Glen Ross, Air Quality Section; and Howard Bryant, Water Quality Section.

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

Sincerely,

Stan Atwood

Stan Atwood, Toxicologist
Solid and Hazardous Waste Management Branch
Environmental Health Section

SA/tb/0221b

EPA

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

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
NC	D003167780

II. SITE NAME AND LOCATION

01 SITE NAME (Legal, common, or descriptive name of site)	02 STREET, ROUTE NO., OR SPECIFIC LOCATION IDENTIFIER
Sprague Electric Co.	Highway 194

03 CITY	04 STATE	05 ZIP CODE	06 COUNTY	07 COUNTY CODE	08 CONG DIST
Lansing	NC	28643	Ashe	005	5

09 COORDINATES LATITUDE	LONGITUDE
36 28 48 .N	08 1 30 10 .W

10 DIRECTIONS TO SITE (Starting from nearest public road)

Take highway 194 South of Lansing about 1½ to 2 miles. Plant is located on the left across the river.

III. RESPONSIBLE PARTIES

01 OWNER (If known)	02 STREET (Business, mailing, residential)
General Cable Corp.	

03 CITY	04 STATE	05 ZIP CODE	06 TELEPHONE NUMBER
Greenwich	CT		( )

07 OPERATOR (If known and different from owner)	08 STREET (Business, mailing, residential)
Sprague Electric Co.	87 Marshall Street

09 CITY	10 STATE	11 ZIP CODE	12 TELEPHONE NUMBER
North Adams	MA	01247	(413) 664-4411

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

1953 (BEGINNING YEAR) _____ (ENDING YEAR) ☐ UNKNOWN

04 DESCRIPTION OF SUBSTANCES POSSIBLY PRESENT, KNOWN, OR ALLEGED

Sprague Electric manufactures Aluminum electrolytic capacitors. Nitric acid and sodium hydroxide are used and consumed in the process. Waste water (pH 3 to 4) containing aluminum oxides is held in a surface impoundment. The aluminum oxides settle and are mined and sold. Nitric acid is stored in above ground tanks. Dimethylformamide (DMF)

05 DESCRIPTION OF POTENTIAL HAZARD TO ENVIRONMENT AND/OR POPULATION

is also used. DMF wastes are stored in drums and transported off site. Several wells were reported on site; only one is currently used. Potential hazards exist for spills of nitric acid. No hazardous constituents were reported for their waste stream.

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
Ron Watson, Plant Engineer	Sprague Electric Co.	(919) 384-2551

04 PERSON RESPONSIBLE FOR ASSESSMENT	05 AGENCY	06 ORGANIZATION	07 TELEPHONE NUMBER	08 DATE
Stan Atwood/Pat DeRosa	NC DHR/DHS	SHW Mgmt. Br.	(919) 733-2178	11 / 20 / 85 (MONTH DAY YEAR)

EPA FORM 2070-12 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
NC	D003167780

II. HAZARDOUS CONDITIONS AND INCIDENTS

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

Large surface impoundment.

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

North Fork of the New River traverses the site.

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

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

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

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

Surface impoundment or spills.

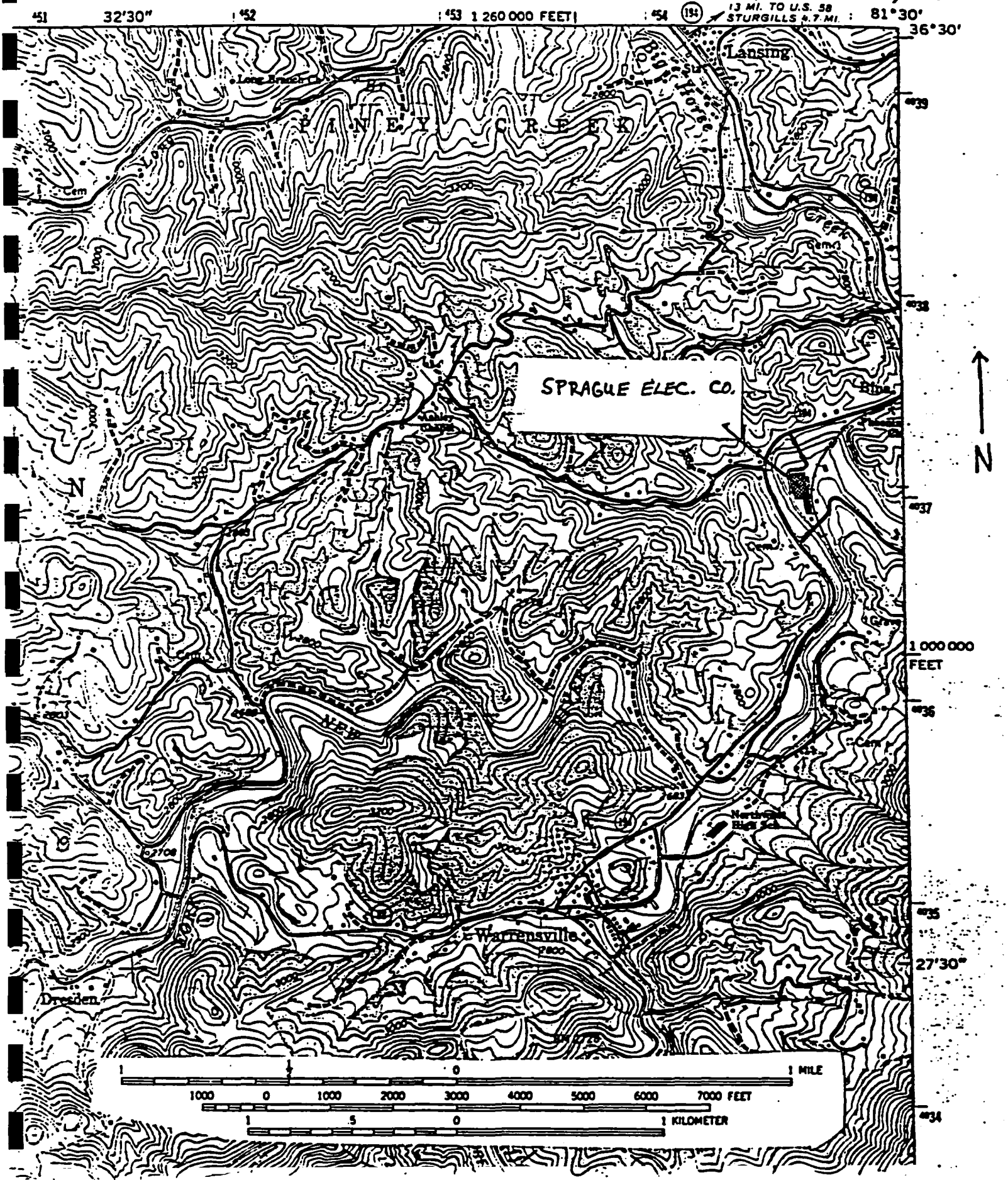
01 ☐ G. DRINKING WATER CONTAMINATION — 02 ☐ OBSERVED (DATE: _____) — ☐ POTENTIAL — ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ — 04 NARRATIVE DESCRIPTION

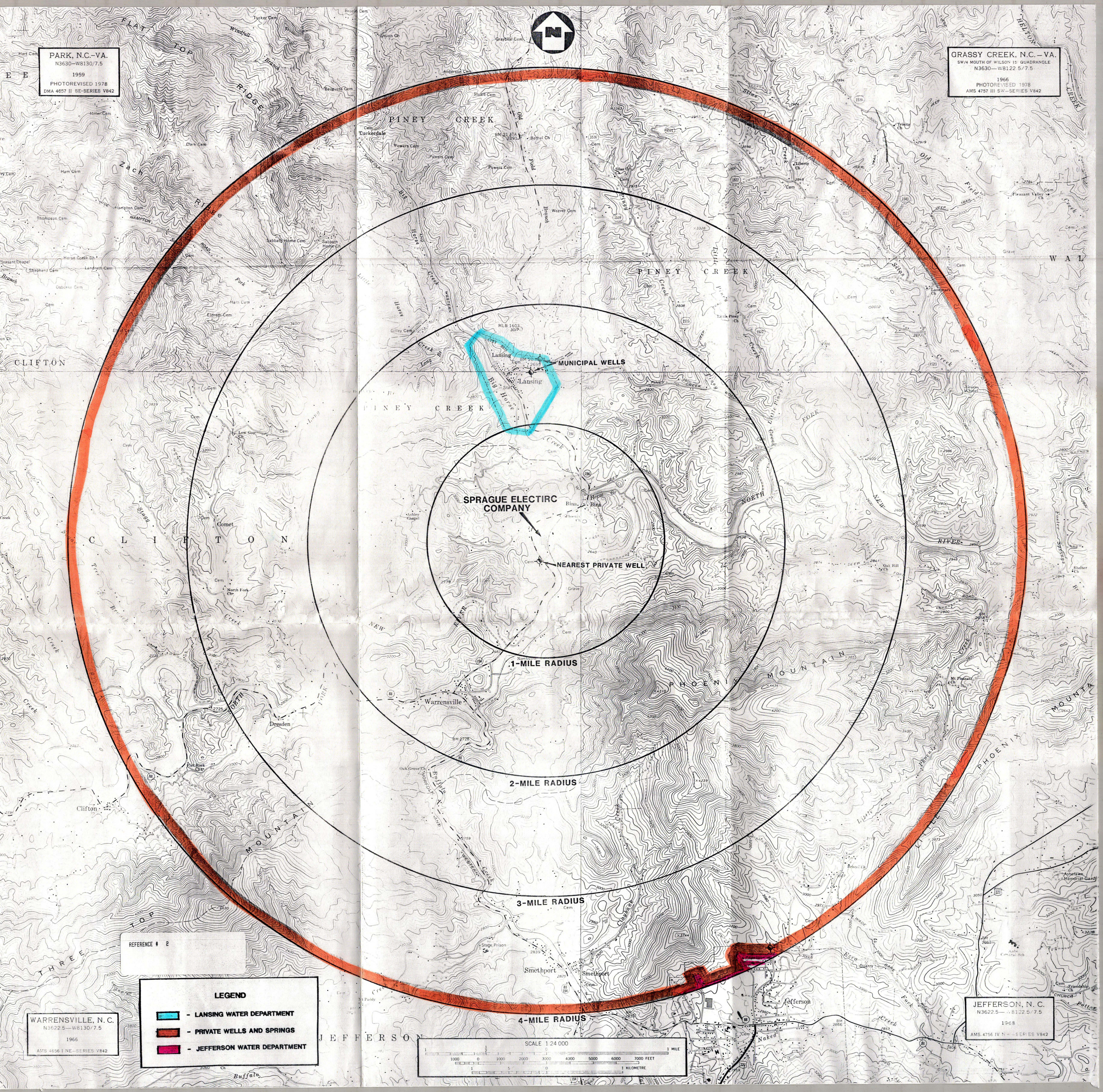
01 [X] H. WORKER EXPOSURE/INJURY — 02 ☐ OBSERVED (DATE: _____) — [X] POTENTIAL — ☐ ALLEGED
03 WORKERS POTENTIALLY AFFECTED: _____ — 04 NARRATIVE DESCRIPTION

Handling and use of nitric acid.

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

WARREN_ /ILLE QUADRANGLE
NORTH CAROLINA—ASHE CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)




PARK, N.C.–VA.
N3630—W8130/7.5
1959
PHOTOREVISED 1978
DMA 4657 II SE-SERIES V842
GRASSY CREEK, N.C.–VA.
SW/4 MOUTH OF WILSON 15' QUADRANGLE
N3630—W8122.5/7.5
1966
PHOTOREVISED 1978
AMS 4757 III SW-SERIES V842
MUNICIPAL WELLS
SPRAGUE ELECTIRC COMPANY
NEAREST PRIVATE WELL
1-MILE RADIUS
2-MILE RADIUS
3-MILE RADIUS
4-MILE RADIUS
REFERENCE # 2
LEGEND
- LANSING WATER DEPARTMENT
- PRIVATE WELLS AND SPRINGS
- JEFFERSON WATER DEPARTMENT
WARRENSVILLE, N.C.
N3622.5—W8130/7.5
1966
AMS 4656 I NE-SERIES V842
JEFFERSON, N.C.
N3622.5—W8122.5/7.5
1968
AMS 4756 IV NW-SERIES V842
SCALE 1:24 000
1 MILE
7000 FEET
1 KILOMETRE
Lansing
Warrensville
Dresden
Clifton
Smethport
Jefferson
Comet
PINEY CREEK
PHOENIX MOUNTAIN
CLIFTON
FLAT TOP RIDGE
THREE TOP MOUNTAIN
JEFFERSON

REFERENCE # 3

DATE: 19 November 1985

TO: File

FROM: Stan Atwood SA

SUBJECT: Sprague Electric Co. NC D003167780

I called Sprague Electric Co., (919) 384-2551, and talked to Arlie Keith, Manager Manufacturing Eng., Ron Watson, Plant Eng., and Gene Hunsucker, Manager Foil Processing.

Sprague Electric has manufactured aluminum electrolytic capacitors since 1953 and is the only industry that has ever occupied the site. Raw materials include aluminum foil, nitric acid, tartaric acid, sodium hydroxide, calcium hydroxide, sodium chloride and dimethylformamide. Sulfuric acid was used in the past. Nitric acid is stored in tanks outside the building.

The manufacturing process involves etching of aluminum foil in an electrochemical bath. Aluminum oxides are formed in the process which are filtered and settled in a lagoon. The aluminum oxides are mined and sold. Effluent to the lagoon has a pH of 3 to 4. Dimethylformamide (DMF) is also used in the process. Spent DMF is stored in drums and shipped off site. Waste were reported to have been handled in essentially the same manner since operations began.

There are several wells on site - only one is presently being used. The wells are sampled periodically and tested by Burlington Labs for bacteria, BOD, and iron. I requested a copy of lab results and they said they would mail me a copy.

SA/tb/0221b

Please print or type in the unshaded areas only
(fill-in areas are spaced for elite type, i.e., characters/in

REFERENCE # 4

Form Approved OMB No. 158-R0175

FORM 1 GENERAL

EPA U.S. ENVI GE

(Read the

I. EPA I.D. NUMBER: F N C D 0 0 3 1 6 7 7 8 0

LABEL ITEMS

I. EPA I.D. NUMBER

III. FACILITY NAME

V. FACILITY MAILING ADDRESS

VI. FACILITY LOCATION

RECEIVED ENVIRONMENTAL PROTECTION

PLEASE PLACE LABEL IN THIS SPACE

GENERAL INSTRUCTIONS: If a preprinted label has been provided it in the designated space. Review the ation carefully; if any of it is incorre through it and enter the correct data appropriate fill-in area below. Also, if the preprinted data is absent (the area left of the label space lists the info that should appear), please provide it proper fill-in area(s) below. If the la complete and correct, you need not co Items I, III, V, and VI (except VI-B must be completed regardless). Compl Items if no label has been provided. Re the instructions for detailed item d tions and for the legal authorizations which this data is collected.

II. POLLUTANT CHARACTERISTICS

INSTRUCTIONS: Complete A through J to determine whether you need to submit any permit application forms to the EPA. If you answer "yes" to questions, you must submit this form and the supplemental form listed in the parenthesis following the question. Mark "X" in the box in the third col if the supplemental form is attached. If you answer "no" to each question, you need not submit any of these forms. You may answer "no" if your acti is excluded from permit requirements; see Section C of the instructions. See also, Section D of the instructions for definitions of bold-faced terms.

SPECIFIC QUESTIONS	MARK "X" YES	NO	FORM ATTACHED	SPECIFIC QUESTIONS	MARK "X" YES	NO	FORM ATTACHED
A. Is this facility a publicly owned treatment works which results in a discharge to waters of the U.S.? (FORM 2A)		X		B. Does or will this facility (either existing or proposed) include a concentrated animal feeding operation or aquatic animal production facility which results in a discharge to waters of the U.S.? (FORM 2B)			X
C. Is this a facility which currently results in discharges to waters of the U.S., other than those described in A or B above? (FORM 2C)	X		*	D. Is this a proposed facility (other than those described in A or B above) which will result in a discharge to waters of the U.S.? (FORM 2D)			X
E. Does or will this facility treat, store, or dispose of hazardous wastes? (FORM 3)	X		X	F. Do you or will you inject at this facility industrial or municipal effluent below the lowermost stratum containing within one quarter mile of the well bore, underground sources of drinking water? (FORM 4)			X
G. Do you or will you inject at this facility any produced water or other fluids which are brought to the surface in connection with conventional oil or natural gas production, inject fluids used for enhanced recovery of oil or natural gas, or inject fluids for storage of liquid hydrocarbons? (FORM 4)		X		H. Do you or will you inject at this facility fluids for special processes such as mining of sulfur by the Frasch process, solution mining of minerals, in situ combustion of fossil fuel, or recovery of geothermal energy? (FORM 4)			X
I. Is this facility a proposed stationary source which is one of the 28 industrial categories listed in the instructions and which will potentially emit 100 tons per year of any air pollutant regulated under the Clean Air Act and may affect or be located in an attainment area? (FORM 5)		X		J. Is this facility a proposed stationary source which is NOT one of the 28 industrial categories listed in the instructions and which will potentially emit 250 tons per year of any air pollutant regulated under the Clean Air Act and may affect or be located in an attainment area? (FORM 5)			X

III. NAME OF FACILITY

1 SPRAGUE ELECTRIC COMPANY

IV. FACILITY CONTACT

A. NAME & TITLE (last, first, & title)	B. PHONE (area code & no.)
2 ORTMAN JOHN FACILITIES ENG MGR	413 664 4411

V. FACILITY MAILING ADDRESS

A. STREET OR P.O. BOX

3 87 MARSHALL STREET

B. CITY OR TOWN	C. STATE	D. ZIP CODE
4 NORTH ADAMS	MA	01247

VI. FACILITY LOCATION

A. STREET, ROUTE NO. OR OTHER SPECIFIC IDENTIFIER

5 HIGHWAY 194

B. COUNTY NAME

ASHE

C. CITY OR TOWN	D. STATE	E. ZIP CODE	F. COUNTY CODE (if known)

CONTINUED FROM THE FRONT

VII. SIC CODES (4-digit, in order of priority)

A. FIRST	B. SECOND
3675 (specify) CAPACITORS - ELECTRONIC	(specify)
C. THIRD	**D. FOURTH**
(specify)	(specify)

VIII. OPERATOR INFORMATION

A. NAME: SPRAGUE ELECTRIC COMPANY

B. Is the name listed in Item VIII-A also the owner? ☒ YES ☐ NO

C. STATUS OF OPERATOR (Enter the appropriate letter into the answer box; if "Other", specify.): F = FEDERAL, S = STATE, P = PRIVATE, M = PUBLIC (other than federal or state), O = OTHER (specify): P (specify)

D. PHONE (area code & no.): A 413 664 4411

E. STREET OR P.O. BOX: 87 MARSHALL STREET

F. CITY OR TOWN: NORTH ADAMS

G. STATE: MA

H. ZIP CODE: 01247

IX. INDIAN LAND

Is the facility located on Indian lands? ☐ YES ☐ NO

X. EXISTING ENVIRONMENTAL PERMITS

A. NPDES (Discharges to Surface Water)	D. PSD (Air Emissions from Proposed Sources)
N NC00000019	P
B. UIC (Underground Injection of Fluids)	**E. OTHER (specify)**
U	4519 (specify) FILTER BACKWASH
C. RCRA (Hazardous Wastes)	**F. OTHER (specify)**
R	(specify)

XI. MAP

Attach to this application a topographic map of the area extending to at least one mile beyond property boundaries. The map must show the outline of the facility, the location of each of its existing and proposed intake and discharge structures, each of its hazardous waste treatment, storage, or disposal facilities, and each well where it injects fluids underground. Include all springs, rivers and other surface water bodies in the map area. See instructions for precise requirements.

XII. NATURE OF BUSINESS (provide a brief description)

Manufacture aluminum electrolytic capacitors. Raw aluminum foil is etched formed, rolled, inserted in appropriate container, assembled, tested, packaged and shipped.

XIII. CERTIFICATION (see instructions)

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this application and all attachments and that, based on my inquiry of those persons immediately responsible for obtaining the information contained in the application, I believe that the information is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

A. NAME & OFFICIAL TITLE (type or print)	B. SIGNATURE	C. DATE SIGNED
Robert D. Smith V. P., Materials & Manpower	Robert D. Smith	11/17/80

COMMENTS FOR OFFICIAL USE ONLY

Please print or type in the unshaded areas only
(fill-in areas are spaced for elite type, i.e., 1[illegible] characters/inch).

Form Approved OMB No. 158-S80004

FORM 3 RCRA

EPA

ENVIRONMENTAL PROTECTION AGENCY

HAZARDOUS WASTE PERMIT APPLICATION

Consolidated Permits Program

(This information is required under Section 3005 of RCRA.)

I. EPA I.D. NUMBER

1	2	3	4	5	6	7	8	9	10	11	12	13
F	N	C	D	0	0	3	1	6	7	7	8	0

FOR OFFICIAL USE ONLY

APPLICATION APPROVED	DATE RECEIVED (yr., mo., & day)	COMMENTS
23	24 - 29	

II. FIRST OR REVISED APPLICATION

Place an "X" in the appropriate box in A or B below *(mark one box only)* to indicate whether this is the first application you are submitting for your facility, or a revised application. If this is your first application and you already know your facility's EPA I.D. Number, or if this is a revised application, enter your facility's EPA I.D. Number in Item I above.

A. FIRST APPLICATION *(place an "X" below and provide the appropriate date)*

[X] 1. EXISTING FACILITY *(See instructions for definition of "existing" facility. Complete item below.)*

[ ] 2. NEW FACILITY *(Complete item below.)*

C	YR.	MO.	DAY
8	5 3	0 3	1 5

FOR EXISTING FACILITIES, PROVIDE THE DATE (yr., mo., & day) OPERATION BEGAN OR THE DATE CONSTRUCTION COMMENCED *(use the boxes to the left)*

FOR NEW FACILITIES, PROVIDE THE DATE (yr., mo., & day) OPERATION BEGAN OR IS EXPECTED TO BEGIN

B. REVISED APPLICATION *(place an "X" below and complete Item I above)*

[ ] 1. FACILITY HAS INTERIM STATUS

[ ] 2. FACILITY HAS A RCRA PERMIT

III. PROCESSES — CODES AND DESIGN CAPACITIES

A. PROCESS CODE — Enter the code from the list of process codes below that best describes each process to be used at the facility. Ten lines are provided for entering codes. If more lines are needed, enter the code(s) in the space provided. If a process will be used that is not included in the list of codes below, then describe the process *(including its design capacity)* in the space provided on the form *(Item III-C)*.

B. PROCESS DESIGN CAPACITY — For each code entered in column A enter the capacity of the process.

1. AMOUNT — Enter the amount.
2. UNIT OF MEASURE — For each amount entered in column B(1), enter the code from the list of unit measure codes below that describes the unit of measure used. Only the units of measure that are listed below should be used.

PROCESS	PROCESS CODE	APPROPRIATE UNITS OF MEASURE FOR PROCESS DESIGN CAPACITY
Storage:		
CONTAINER *(barrel, drum, etc.)*	S01	GALLONS OR LITERS
TANK	S02	GALLONS OR LITERS
WASTE PILE	S03	CUBIC YARDS OR CUBIC METERS
SURFACE IMPOUNDMENT	S04	GALLONS OR LITERS
Disposal:		
INJECTION WELL	D79	GALLONS OR LITERS
LANDFILL	D80	ACRE-FEET *(the volume that would cover one acre to a depth of one foot)* OR HECTARE-METER
LAND APPLICATION	D81	ACRES OR HECTARES
OCEAN DISPOSAL	D82	GALLONS PER DAY OR LITERS PER DAY
SURFACE IMPOUNDMENT	D83	GALLONS OR LITERS

PROCESS	PROCESS CODE	APPROPRIATE UNITS OF MEASURE FOR PROCESS DESIGN CAPACITY
Treatment:		
TANK	T01	GALLONS PER DAY OR LITERS PER DAY
SURFACE IMPOUNDMENT	T02	GALLONS PER DAY OR LITERS PER DAY
INCINERATOR	T03	TONS PER HOUR OR METRIC TONS PER HOUR OR GALLONS PER HOUR OR LITERS PER HOUR
OTHER *(Use for physical, chemical, thermal or biological treatment processes not occurring in tanks, surface impoundments or incinerators. Describe the processes in the space provided; Item III-C.)*	T04	GALLONS PER DAY OR LITERS PER DAY

UNIT OF MEASURE	UNIT OF MEASURE CODE	UNIT OF MEASURE	UNIT OF MEASURE CODE	UNIT OF MEASURE	UNIT OF MEASURE CODE
GALLONS	G	LITERS PER DAY	V	ACRE-FEET	A
LITERS	L	TONS PER HOUR	D	HECTARE-METER	F
CUBIC YARDS	Y	METRIC TONS PER HOUR	W	ACRES	B
CUBIC METERS	C	GALLONS PER HOUR	E	HECTARES	Q
GALLONS PER DAY	U	LITERS PER HOUR	H		

EXAMPLE FOR COMPLETING ITEM III *(shown in line numbers X-1 and X-2 below)*: A facility has two storage tanks, one tank can hold 200 gallons and the other can hold 400 gallons. The facility also has an incinerator that can burn up to 20 gallons per hour.

1	2	13	14	15
C	D-U P		T/A	C 1

LINE NUMBER	A. PROCESS CODE (from list above)	B. PROCESS DESIGN CAPACITY 1. AMOUNT (specify)	B. PROCESS DESIGN CAPACITY 2. UNIT OF MEASURE (enter code)	FOR OFFICIAL USE ONLY	LINE NUMBER	A. PROCESS CODE (from list above)	B. PROCESS DESIGN CAPACITY 1. AMOUNT	B. PROCESS DESIGN CAPACITY 2. UNIT OF MEASURE (enter code)	FOR OFFICIAL USE ONLY
X-1	S 0 2	600	G		5				
X-2	T 0 3	20	E		6				
1	T 0 2	6000	E		7				
2					8				
3					9				

Continued from the front.

II. PROCESSES *(continued)*

C. SPACE FOR ADDITIONAL PROCESS CODES OR F[illegible] DESCRIBING OTHER PROCESSES *(code "T04")*. [illegible]R EACH PROCESS ENTERED HERE INCLUDE DESIGN CAPACITY.

IV. DESCRIPTION OF HAZARDOUS WASTES

A. EPA HAZARDOUS WASTE NUMBER — Enter the four—digit number from 40 CFR, Subpart D for each listed hazardous waste you will handle. If you handle hazardous wastes which are not listed in 40 CFR, Subpart D, enter the four—digit number*(s)* from 40 CFR, Subpart C that describes the characteristics and/or the toxic contaminants of those hazardous wastes.

B. ESTIMATED ANNUAL QUANTITY — For each listed waste entered in column A estimate the quantity of that waste that will be handled on an annual basis. For each characteristic or toxic contaminant entered in column A estimate the total annual quantity of all the non—listed waste*(s)* that will be handled which possess that characteristic or contaminant.

C. UNIT OF MEASURE — For each quantity entered in column B enter the unit of measure code. Units of measure which must be used and the appropriate codes are:

ENGLISH UNIT OF MEASURE	CODE	METRIC UNIT OF MEASURE	CODE
POUNDS	P	KILOGRAMS	K
TONS	T	METRIC TONS	M

If facility records use any other unit of measure for quantity, the units of measure must be converted into one of the required units of measure taking into account the appropriate density or specific gravity of the waste.

D. PROCESSES

1. PROCESS CODES:
   For listed hazardous wastes: For each listed hazardous waste entered in column A, select the code*(s)* from the list of process codes contained in Item III to indicate how the waste will be stored, treated, and/or disposed of at the facility.
   For non—listed hazardous wastes: For each characteristic or toxic contaminant entered in column A, select the code*(s)* from the list of process codes contained in Item III to indicate all the processes that will be used to store, treat, and/or dispose of all the non—listed hazardous wastes that possess that characteristic or toxic contaminant.
   Note: Four spaces are provided for entering process codes. If more are needed: (1) Enter the first three as described above; (2) Enter "000" in the extreme right box of Item IV-D(1); and (3) Enter in the space provided on page 4, the line number and the additional code*(s)*.

2. PROCESS DESCRIPTION: If a code is not listed for a process that will be used, describe the process in the space provided on the form.

NOTE: HAZARDOUS WASTES DESCRIBED BY MORE THAN ONE EPA HAZARDOUS WASTE NUMBER — Hazardous wastes that can be described by more than one EPA Hazardous Waste Number shall be described on the form as follows:

1. Select one of the EPA Hazardous Waste Numbers and enter it in column A. On the same line complete columns B, C, and D by estimating the total annual quantity of the waste and describing all the processes to be used to treat, store, and/or dispose of the waste.
2. In column A of the next line enter the other EPA Hazardous Waste Number that can be used to describe the waste. In column D(2) on that line enter "included with above" and make no other entries on that line.
3. Repeat step 2 for each other EPA Hazardous Waste Number that can be used to describe the hazardous waste.

EXAMPLE FOR COMPLETING ITEM IV *(shown in line numbers X-1, X-2, X-3, and X-4 below)* — A facility will treat and dispose of an estimated 900 pounds per year of chrome shavings from leather tanning and finishing operation. In addition, the facility will treat and dispose of three non—listed wastes. Two wastes are corrosive only and there will be an estimated 200 pounds per year of each waste. The other waste is corrosive and ignitable and there will be an estimated 100 pounds per year of that waste. Treatment will be in an incinerator and disposal will be in a landfill.

LINE NO.	A. EPA HAZARD. WASTE NO. (enter code)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (enter code)	D. PROCESSES 1. PROCESS CODES (enter)	D. PROCESSES 2. PROCESS DESCRIPTION (If a code is not entered in D(1))
X-1	K054	900	P	T03 D80	
X-2	D002	400	P	T03 D80	
X-3	D001	100	P	T03 D80	
X-4	D002				included with above

Continued from page 2.

NOTE: Photocopy this page before completing if you have more than 26 wastes to list.

Form Approved OMB No. 158-S80004

EPA I.D. NUMBER (enter from page 1)															FOR OFFICIAL USE ONLY					
S											T/A	C	S			T/A	C			
W	N	C	D	0	0	3	1	6	7	7	8	0	1	W	DUP	2	DUP			
1	2										13	14	15	1	2	13	14	15	23	30

IV. DESCRIPTION OF HAZARDOUS WASTES (continued)

LINE NO.	A. EPA HAZARD WASTE NO. (enter code)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (enter code)	D. PROCESSES 1. PROCESS CODES (enter)				2. PROCESS DESCRIPTION (If a code is not entered in D(1))
	22 – 25	27 – 34	35	27 – 29	30 – 32	33 – 35	36 – 38	
1	D 0 0 2	250,000,000	P	T 0 2				
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								

Continued from the front.

IV. DESCRIPTION OF HAZARDOUS WASTES (continued)

E. USE THIS SPACE TO LIST ADDITIONAL PROCESS CODES FROM ITEM D(1) ON PAGE

EPA I.D. NO. (enter from page 1)

F	N	C	D	0	0	3	1	6	7	7	8	0	T/A	C 6

V. FACILITY DRAWING

All existing facilities must include in the space provided on page 5 a scale drawing of the facility *(see instructions for more detail)*.

VI. PHOTOGRAPHS

All existing facilities must include photographs *(aerial or ground—level)* that clearly delineate all existing structures; existing storage, treatment and disposal areas; and sites of future storage, treatment or disposal areas *(see instructions for more detail)*.

VII. FACILITY GEOGRAPHIC LOCATION

LATITUDE (degrees, minutes, & seconds)	LONGITUDE (degrees, minutes, & seconds)
36 28 048	081 30 010

VIII. FACILITY OWNER

☐ A. If the facility owner is also the facility operator as listed in Section VIII on Form 1, "General Information", place an "X" in the box to the left and skip to Section IX below.

B. If the facility owner is not the facility operator as listed in Section VIII on Form 1, complete the following items:

1. NAME OF FACILITY'S LEGAL OWNER	2. PHONE NO. (area code &
E	

3. STREET OR P.O. BOX	4. CITY OR TOWN	5. ST.	6. ZIP CODE
F	G		

IX. OWNER CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

A. NAME (print or type)	B. SIGNATURE	C. DATE SIGNED
Robert D. Smith V. P., Materials & Manpower	Robert D. Smith	11/17/80

X. OPERATOR CERTIFICATION

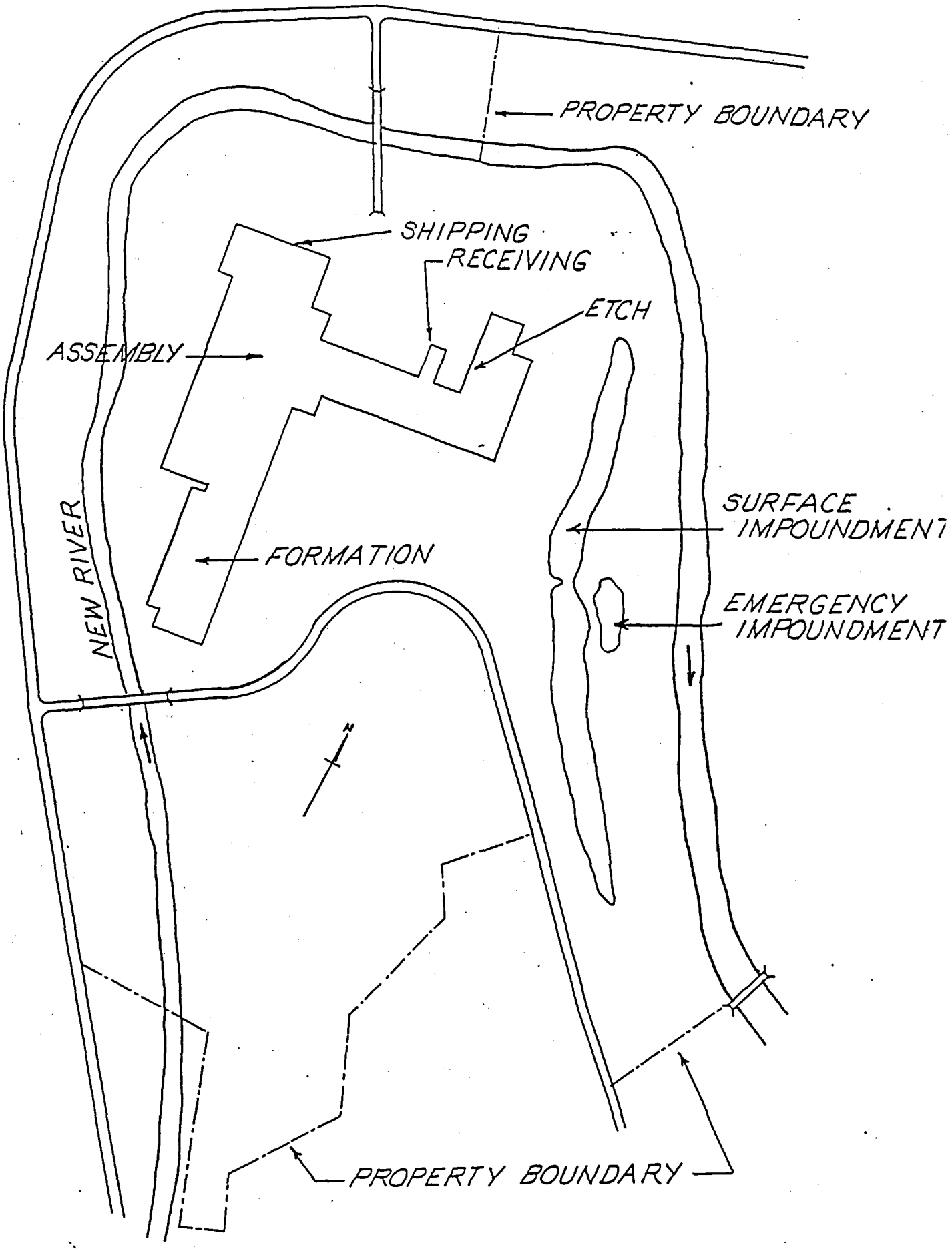
I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

A. NAME (print or type)	B. SIGNATURE	C. DATE SIGNED

Continued from page 4.

Form Approved OMB No. 158-S80004

V. FACILITY DRAWING *(see page 4)*



REFERENCE # 5

SPRAGUE ELECTRIC COMPANY

NORTH ADAMS, MASSACHUSETTS

01247

FRED A. WINDOVER
ASSOCIATE GENERAL COUNSEL
AND ASSISTANT SECRETARY

November 17, 1980

NOV 19 1980

EPA Region IV.
RCRA Activities
345 Courtland, N.E.
Atlanta, Georgia 30308

Gentlemen:

Enclosed please find a Hazardous Waste Permit Application for the Sprague Electric Company manufacturing plant in Lansing, North Carolina.

Please be advised that we are in doubt as to whether or not the Lansing plant is indeed a waste treatment, storage, or disposal facility under the Resource Conservation & Recovery Act Regulations, and this Application is submitted as a caution so that in case this location is such a facility, we will be in interim status. We are in doubt regarding some of the definitions of the RCRA Regulations as well as some of the facts regarding this manufacturing location.

Please be advised that on November 19, 1980, we will begin compliance with the Interim Status Standards set forth in Part 265 of the Regulations.

However, in the event that further clarification of the Regulations, and/or further investigations by us of the facts regarding the facility, determine that this facility is not a waste treatment, storage, or disposal facility under RCRA, we will notify you of such determination and naturally, cease compliance with the interim standards.

Please be assured that until we are confident that this facility is not a waste treatment, storage, or disposal facility under RCRA, we will abide by all regulations applicable to such a facility.

Very truly yours,

Fred A. Windover

Fred A. Windover

FAW:gej

Enclosure

REFERENCE # 6

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

345 COURTLAND STREET
ATLANTA, GEORGIA 30365

DEC 16 1981

REF: 4AW-RM

Fred A. Windover
Sprague Electric Company
North Adams, MA 01247

Re: EPA ID No. NCD003167780/Lansing NC

Gentlemen:

This letter is to acknowledge receipt of your request for withdrawal of your application for a permit under the Resource Conservation and Recovery Act (RCRA), as amended. Your letter indicated that you no longer treat, store, or dispose of hazardous waste.

It has been our general experience that the RCRA regulations and the amendments which have been published since May 19, 1980, have caused confusion, and have been subjected to misinterpretation. This confusion on the part of the regulated community has been compounded, due to EPA's and the State's overlapping responsibilities for implementation of the hazardous waste regulatory program during the period of interim authorization.

Withdrawal of your permit application constitutes revokation of interim status, as defined by Section 3005(e) of the Act. Consequently, under the Federal program, you would no longer be allowed to treat, store, or dispose of hazardous waste. However, as you are probably aware, the State has been authorized to implement certain requirements of the program in lieu of the Federal regulatory requirements. Therefore, withdrawal of your applications also directly affect the State program.

In light of the foregoing, EPA plans to proceed as follows. EPA will place your file in our "suspense" file. This action, in essence, revokes you interim status under the Federal program. However, we will forward the request to the State for formal action. The State will contact you if further information relating to your request is required. If the State agrees that your waste is not hazardous, and that you do not need a RCRA permit, the State will notify you of this determination, and by carbon copy of this notification sent to EPA, your application will be formally withdrawn, and your file will be inactivated.

In conclusion, this letter should <u>not</u> be construed as EPA's concurrence with your determination that RCRA regulatory requirements are not applicable to your facility. Furthermore, this letter does not relieve you of your responsibility to comply with State and Local hazardous waste regulatory requirements.

Finally, your request to withdraw interim status means that you may not treat, store, or dispose of hazardous waste without a permit issued under the authority of §3005 of the Act and 40 CFR 264.

If for any reason you wish to reconsider this withdrawal request, please advise this office and the State within the next ten days. You should be receiving a formal response to your request from the State in the near future. If you require further clarification, please contact John Herrmann of my staff (404) 881-3433 or a representative of the State hazardous waste program.

Sincerely yours,

James H Scarbrough

James H. Scarbrough, Chief
Residuals Management Branch

REFERENCE # 7

STATE HEALTH DIRECTOR

Leith

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

Date: March 4, 1982

Mr. Fred A. Windover
Sprague Electric Company
87 Marshall Street
North Adams, Massachusetts 01247

Re: Facility ID NO. NCD003167780

Dear Mr. Windover:

Based on information supplied by you we have processed and accepted at the State level your request for the facility identified with the above ID number to receive the indicated change in classification under RCRA:

Add as	Delete as	
☐	☐	generator
☐	☐	transporter
☐	☒	treater
☐	☒	storer
☐	☒	disposer
☐	☐	small generator

We are advising EPA of the change in your status. Please notify us if there is any further change in your operations which would again affect your status. Your EPA ID NO. is ☐ is not ☒ being cancelled.

Cordially,

O. W. Strickland, Head
Solid & Hazardous Waste Management Branch
Environmental Health Section

OWS

cc: John Herrmann
EPA Region IV
Emil Breckling

REFERENCE # B

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

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

Date: July 1, 1983

Mr. Edward A. Stone
Sprague Electric Co.
87 Marshall St.
North Adams, Massachusetts

Re: Facility ID No. NCD003167780

Dear Mr. Stone:

Based on information supplied by you we have processed and accepted at the State level your request for the facility identified with the above ID number to receive the indicated change in classification under RCRA:

Add As	Delete As	
☐	☒	generator
☐	☐	transporter
☐	☐	treater
☐	☐	storer
☐	☐	disposer
☐	☐	small generator

We are advising EPA of the change in your status. Please notify us if there is any further change in your operations which would again affect your status. Your EPA ID NO. is ☐ is not ☒ being cancelled.

Cordially,

O. W. Strickland, Head
Solid & Hazardous Waste Management Branch
Environmental Health Section

OWS

cc: Doug McCurry
EPA Region IV
Emil Breckling
Bob Apple
Jackie Blackburn

DHS Form 3048 3/82
Solid & Haz. Waste Mgt. Branch

REFERENCE # 9

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

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

March 13, 1984

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Mr. Edward A. Stone
Sprague Electric Co.
87 Marshall St.
North Adams, Massachusetts 01247

Re: NCD003167780

Dear Mr. Stone:

On November 14, 1983, in response to a formal call for part B of a permit application, an officer of your company advised this Branch that a part B application would not be filed. Following this, on January 29, 1984 and February 1, 1984, the Solid and Hazardous Waste Management Waste Management Branch of the Department of Human Resources published a legal notice in the Raleigh papers, announcing its intention to deny a permit and terminate interim status for a number of plants, including yours.

You are now advised that this plant has been denied a permit as a hazardous waste treatment, storage, or disposal facility and its interim status has been formally terminated. As of March 30, 1984, the operators of it may not treat or dispose of hazardous waste, nor store it for more than 90 days from the of accumulation.

If you have any questions about this matter, please call or write to Mr. Keith Lawson at this office.

Very sincerely,

O. W. Strickland, Head
Solid and Hazardous Waste Management Branch
Environmental Health Section

OWS/KL: tl

SOLID AND HAZARDOUS WASTE MANAGEMENT
ALPHABETIC LIST OF HAZARDOUS WASTE FACILITIES

FACILITY ID	FACILITY NAME / CONTACT	FACILITY ADDRESS		MAILING ADDRESS			SG	G	TRN	TR	ST	DS	TELEPHONE AREA	NUMBER
[redacted]	SPECIALTY LIGHTING INC. PORTER, RICK E.	WASHBURN SWITCH RD. SHELBY	28150	P.O. BOX 1680 SHELBY	NC	28150	X						704	482-3416
NCD986166627	SPECILIZED TECHNOLOGICAL SERVI WRIGHT, TIM	ROUTE 7 BOX 152-D MORGANTON	28655	PO BOX 3187 MORGANTON	NC	28655	X		X				704	754-7481
[redacted]	SPECTRUM FURNITURE COMPANY, IN BRYANT, DARRELL	ROUTE 9 COLTRANE MILL RD. HIGH POINT	27261	PO BOX 1682 HIGH POINT	NC	27261	E						919	[redacted]
NCD040027898	SPECTRUM GLASS PRODUCTS THORNTON, ANGELA V.	EAST RAILROAD STREET CLINTON	28328	PO BOX 408 CLINTON	NC	28328	X						919	592-7101
[redacted]	SPEIZMAN INDUSTRIES, INC. REYNOLDS, GARY	500 W. FIFTH STREET CHARLOTTE	28202	P.O. BOX 31215 CHARLOTTE	NC	28231	X						704	[redacted]
NCD986166536	SPEVCO INC. THARPE, MARTY	7620 PHOENIX ROAD WINSTON SALEM	27106	7620 PHOENIX ROAD WINSTON SALEM	NC	27106	X						919	721-04[illegible]
[redacted]	SPINDALE LAUNDRY & CLEANERS AVANT, W.M.	11 EAST MAIN SPINDALE	28160	11 EAST MAIN SPINDALE	NC	28160	X						704	286-34[illegible]
NCD003147485	SPINDALLE MILLS INC. YELTON, CHARLES	100 SPINDALE STREET SPINDALE	28160	BOX 217 SPINDALE	NC	28160	X						704	286-34[illegible]
[redacted]	SPORTSMAN BOATWORKS, INC. DAUGHTRY, R.E.	BEVERLY DRIVE WANCHESE	27981	PO BOX 340 WANCHESE	NC	27981	X						919	473-11[illegible]
NCD003167780	SPRAGUE ELECTRIC COMPANY MICKEY MILLER	OFF HWY 88 NEAR HWY 194 LANSING	28643	BOX ONE SPRAGUE RD. LANSING	NC	28643	X						919	384-25[illegible]
[redacted]	SPRING FRESH CLNRS INC. KUREK, KEN	9800 MONROE RD. MATTHEWS	28105	P.O. BOX 25610 SUIT CHARLOTTE	NC	28229	X						704	847-78[illegible]
NCD003158078	SPRING SVC & ALIGNMENT CO. MILLS, TED R.	6613 STATESVILLE ROAD CHARLOTTE	28213	PO BOX 217067 CHARLOTTE	NC	28221	X						704	597-03[illegible]
[redacted]	SPRINGS MILLS INC AILEEN PLANT ODOM RALPH MGR WTRENSTWTR	HIGHWAY 220 SOUTH BISCOE	27209	PO BOX 39 BISCOE	NC	27209	E						803	547-2901
NCD042891689	SPRINGS MILLS INC SPRINGFIELD ODOM RALPH MGR WTR & WSTW	HIGHWAY 79 LAUREL HILL	28351	GENERAL DELIVERY LAUREL HILL	NC	28351	X						803	547-2901
[redacted]	SPRUANCE SOUTHERN INC PLYLER, MIKE	HWY 52 SOUTH WINSTON-SALEM	27102	RT. 9 BOX 305-D WINSTON-SALEM	NC	27107	X		X				919	764-8940
NCD003951878	SQUARE D COMPANY PHILLIPS, DAVID W.	128 BINGHAM ROAD ASHEVILLE	28806	PO BOX 3107 ASHEVILLE	NC	28802	X						704	252-0300
[redacted]	SQUARE D COMPANY YOUNGINER, HOWARD	HWY 64 KNIGHTDALE	27545	PO BOX 27446 RALEIGH	NC	27611	X					X	919	266-3671

REFERENCE # 10

REFERENCE # 11

EPA-600/2-87-035
April 1987

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

by

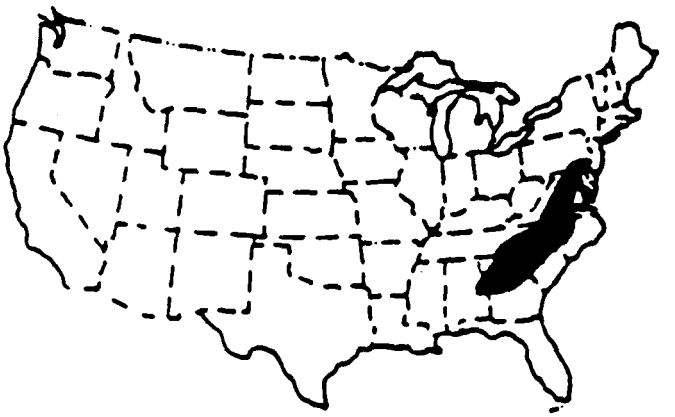
Linda Aller
Truman Bennett
Jay H. Lehr
Rebecca J. Petty
and
Glen Hackett
National Water Well Association
Dublin, Ohio 43017

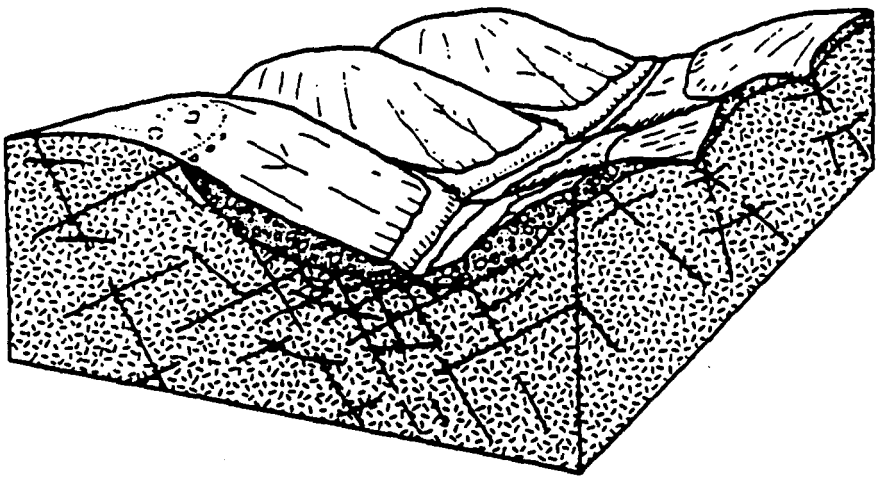
Cooperative Agreement CX-810715-01

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 km^2 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.

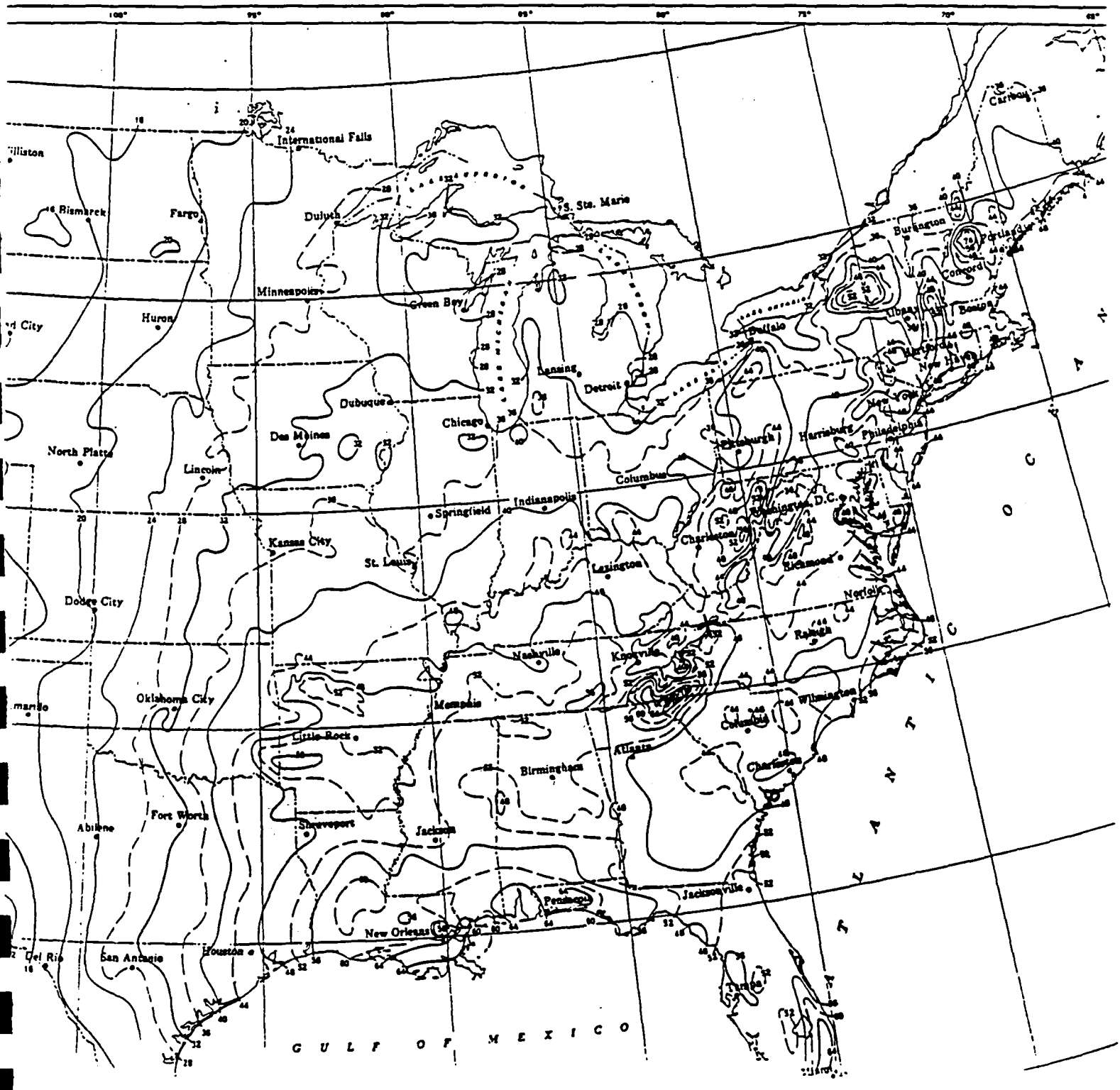
The regolith contains water in pore spaces between rock particles. The bedrock, on the other hand, does not have any significant intergranular porosity. It contains water, instead, in sheetlike openings formed along fractures (that is, breaks in the otherwise "solid" rock). The hydraulic conductivities 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.

REFERENCE # 12

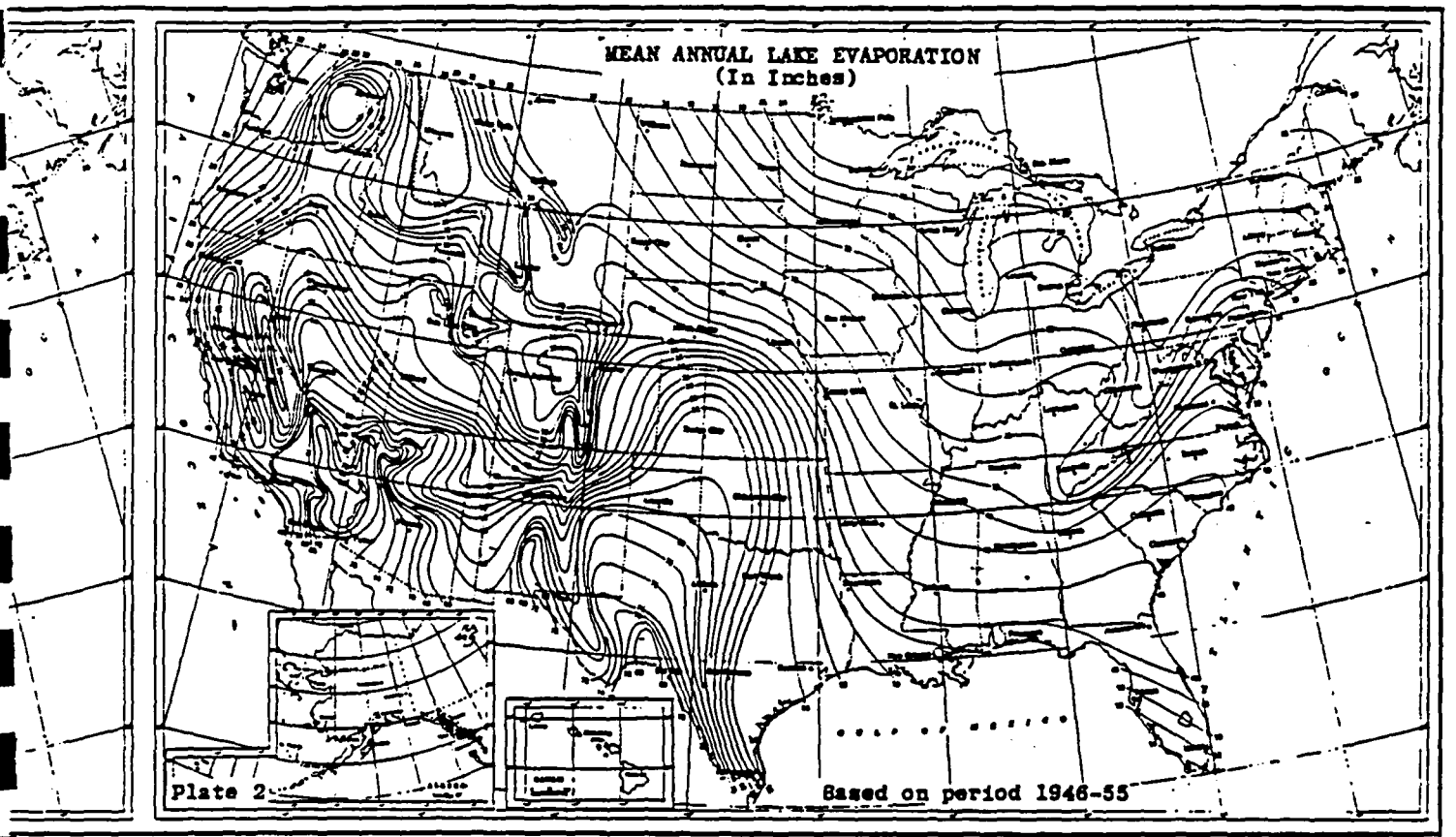
CLIMATIC ATLAS OF THE UNITED STATES

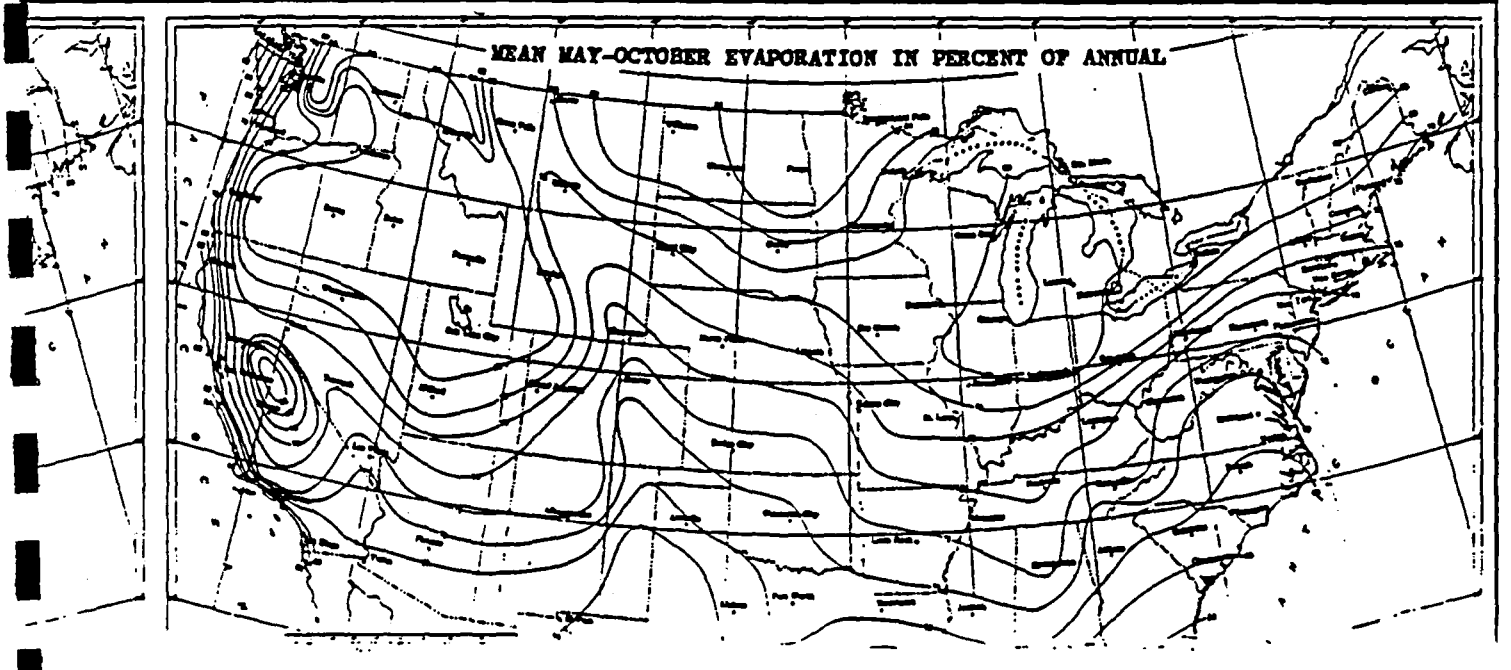
ronmental Science Services Administration . Environmental

.L ANNUAL TOTAL PRECIPITATION (Inches)



N AND LAKE EVAPORATION





U.S. DEPARTMENT OF COMMERCE
Frank C. Hodges, Secretary

WEATHER BUREAU
F. W. Reichelderfer, Chief

TECHNICAL PAPER NO. 40

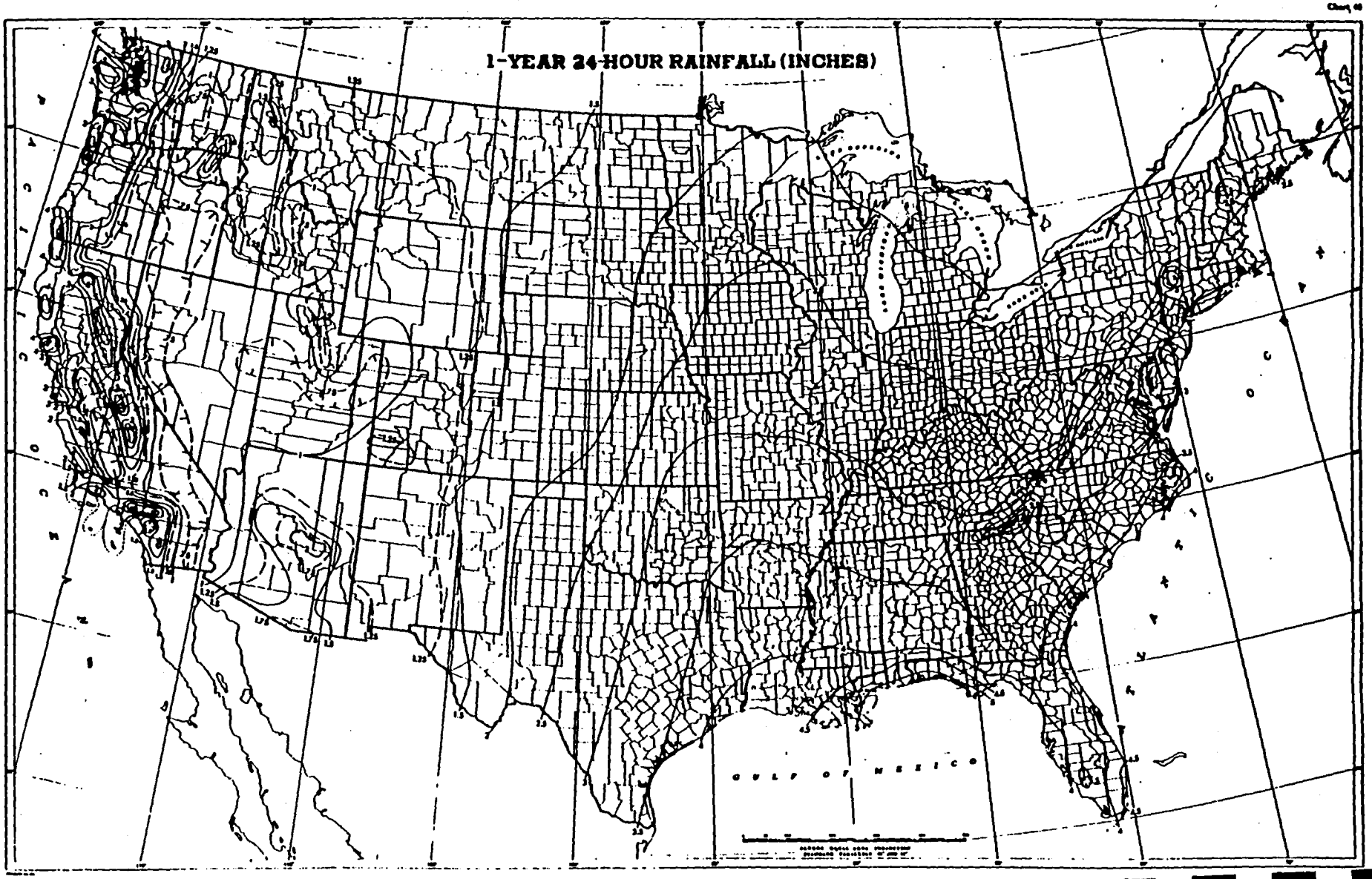
RAINFALL FREQUENCY ATLAS OF THE UNITED STATES

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

REFERENCE # 13

PROPERTY OF EPA
FIT IV


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

REFERENCE # 14

NUS CORPORATION AND SUBSIDIARIES **TELECON NOTE**

CONTROL NO.	DATE: March 12, 1990	TIME: 1530

DISTRIBUTION: Warrensville, Ashe County, North Carolina

BETWEEN: Mrs. Ray Taylor	OF: Taylor Well Drilling	PHONE: (919) 246-6431

AND: Brant McCanless, NUS Corporation

Brant McCanless

DISCUSSION:

Mrs. Taylor told me the well logs of two wells:

1st well: 130 feet deep, casing to rock at 27 feet
10gpm, water at 50 feet below land surface
0-3 feet topsoil
3-27 feet residual soil, gravel
27-130 feet blue and white grantie

2nd well: 80 feet deep, casing to rock at 36 feet
75gpm, water at 70 and 75 feet below land surface
0-3 feet topsoil
3-36 feet residual soil, gravel
36-80 feet blue and white granite

REFERENCE # 15

Dooling

National Water Summary 1984

Hydrologic Events, Selected Water-Quality Trends, and Ground-Water Resources

By United States Geological Survey

United States Geological Survey
Water-Supply Paper 2275

NORTH CAROLINA
Ground-Water Resources

Ground water is a vital natural resource in North Carolina. Ground water supplies more than 3.2 million people, or about 55 percent of the State's total population. Its economic significance is substantial, particularly in the Coastal Plain province (fig. 1), where high-yielding aquifers supply most municipalities, industries, rural areas, and livestock. In the Piedmont and Blue Ridge provinces, ground water serves slightly more than one-half of the 4 million residents (Mann, 1978). Besides withdrawals for public supply, the largest ground-water withdrawals in the State are for mining and quarrying operations and process water for a number of textile and chemical industries. Withdrawals for irrigation represent a small, but increasing, percentage of total ground-water use, particularly in the Coastal Plain. Ground-water withdrawals for various uses and other related statistics are given in table 1.

GENERAL SETTING

North Carolina is located in three physiographic provinces—the Coastal Plain, Piedmont, and Blue Ridge (fig. 1). The Coastal Plain aquifers generally are unconsolidated and consist of beds of sand, gravel, and limestone separated by clay or clayey layers and lenses. These strata dip and thicken southeastward and together comprise a wedge lying on crystalline bedrock (fig. 1). The Piedmont and Blue Ridge provinces are, for the most part, underlain by massive crystalline and metamorphic rocks that are covered nearly everywhere by a clayey or sandy regolith consisting of weathered parent rock material and alluvium.

Recharge to the ground-water system in North Carolina is derived from precipitation that ranges from about 44 to 54 inches (in.) in the Piedmont and Coastal Plain provinces and from about 40 to 80 in. in the Blue Ridge province (Eder and others, 1983). The amount of precipitation that recharges the ground-water system averages about 20 percent of annual precipitation (Winner and Simmons, 1977; Daniel and Sharpless, 1983). Most ground-water recharge moves through shallow aquifers and discharges to streams; only a small part (less than 1 in. in the Coastal Plain) recharges deeper aquifers.

PRINCIPAL AQUIFERS

The principal aquifers in North Carolina are the surficial, the Yorktown, the Castle Hayne, and the Cretaceous located in the Coastal Plain and the crystalline rock aquifer located in the Piedmont and Blue Ridge provinces. These aquifers are described below and in table 2; their areal distribution is shown in figure 1.

SURFICIAL AQUIFER

The surficial aquifer is a near-surface deposit of either marine-terrace sand and clay, or sand dunes. It is a principal aquifer in three areas where it is commonly more than 50 feet (ft) thick—the Sand Hills in the southwestern Coastal Plain, the narrow coastal strip of barrier islands called the Outer Banks, and the eastern one-half of the mainland north of Pamlico Sound (fig. 1). In the Sand Hills, where the aquifer may be more than 250 ft thick, it serves as a source for public supplies and irrigation for numerous golf courses (North Carolina Department of Natural Resources and Community Development, 1979). Water from this aquifer in the Sand Hills area has dissolved-solids concentrations less than 25 milligrams per liter (mg/L) and hardness less than 10 mg/L as calcium carbonate; the pH commonly is below 6, making it corrosive. Sands that form the Outer Banks are the only source of freshwater along much of the northeastern coast. The freshwater in these sands often has a dissolved-solids concentration of 500 mg/L and hardness of about 200 mg/L as calcium carbonate. On the mainland north of Pamlico Sound, the surficial aquifer ranges from 50 to 200 ft thick and may yield as much as 1 million gallons per day (Mgal/d) to single wells or small well fields. Here, water from the aquifer usually has dissolved-solids concentrations of less than 200 mg/L and hardness of less than 100 mg/L as calcium carbonate; the pH, however, may be as low as 5, which renders the

Table 1. Ground-water facts for North Carolina

[Withdrawal data rounded to two significant figures and may not add to totals because of independent rounding. Mgal/d = million gallons per day; gal/d = gallons per day. Source: Solley, Chase, and Mann, 1983]

Population served by ground water, 1980	
Number (thousands)	3,234
Percentage of total population	55
From public water-supply systems:	
Number (thousands)	474
Percentage of total population	8
From rural self-supplied systems:	
Number (thousands)	2,760
Percentage of total population	47
Freshwater withdrawals, 1980	
Surface water and ground water, total (Mgal/d)	8,100
Ground water only (Mgal/d)	770
Percentage of total	10
Percentage of total excluding withdrawals for thermoelectric power	20
Category of use	
Public-supply withdrawals:	
Ground water (Mgal/d)	70
Percentage of total ground water	9
Percentage of total public supply	12
Per capita (gal/d)	148
Rural-supply withdrawals:	
Domestic:	
Ground water (Mgal/d)	140
Percentage of total ground water	18
Percentage of total rural domestic	100
Per capita (gal/d)	51
Livestock:	
Ground water (Mgal/d)	33
Percentage of total ground water	4
Percentage of total livestock	85
Industrial self-supplied withdrawals:	
Ground water (Mgal/d)	490
Percentage of total ground water	64
Percentage of total industrial self-supplied:	
Including withdrawals for thermoelectric power	6
Excluding withdrawals for thermoelectric power	17
Irrigation withdrawals:	
Ground water (Mgal/d)	39
Percentage of total ground water	5
Percentage of total irrigation	30

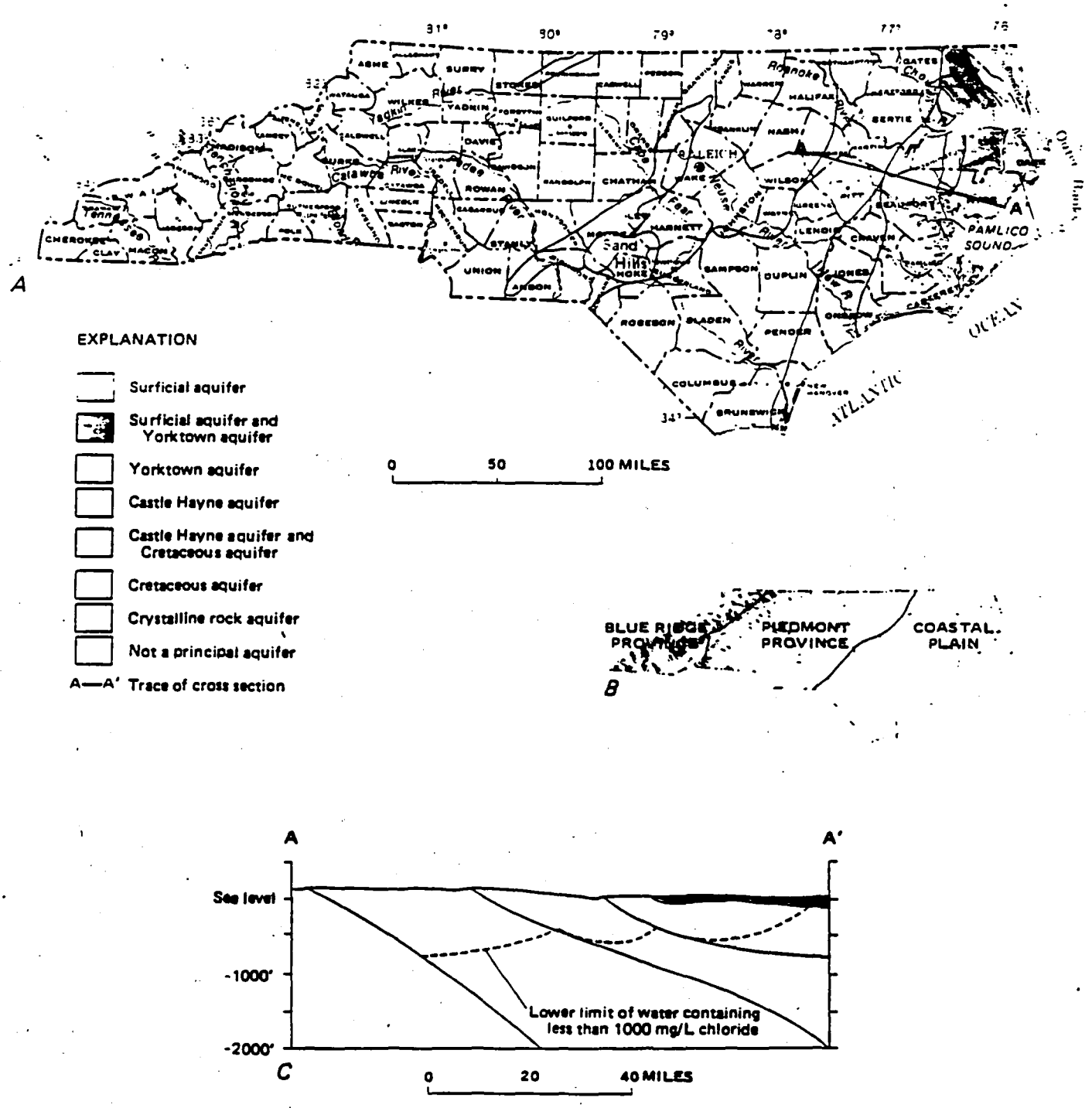


Figure 1. Principal aquifers of North Carolina. *A*, Geographic distribution. *B*, Physiographic diagram and divisions. *C*, Generalized cross section (A-A'), Coastal Plain. (See table 2 for more detailed description of aquifers. Sources: *A*, *C*, compiled by R. W. Coble from U.S. Geological Survey and North Carolina Department of Natural Resources and Community Development files. *B*, Fenneman, 1938; Raisz, 1954.)

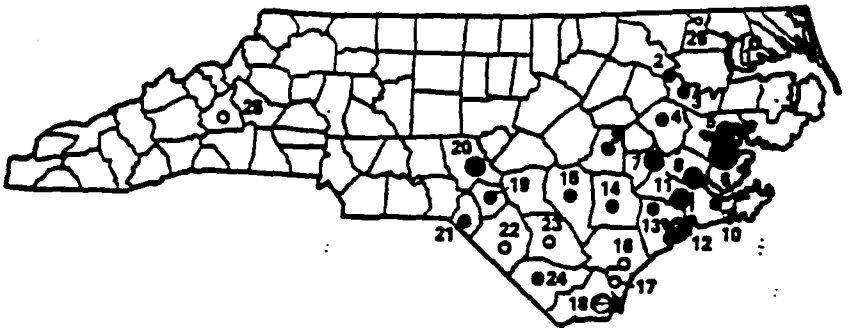
EXPLANATION

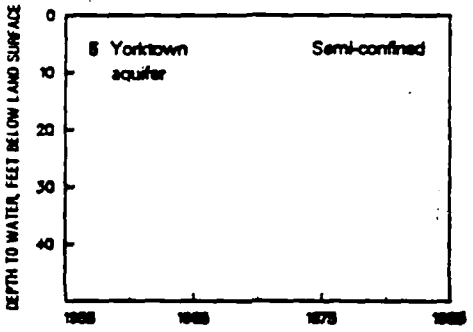
Ground-water withdrawals, 1980 (million gallons per day)

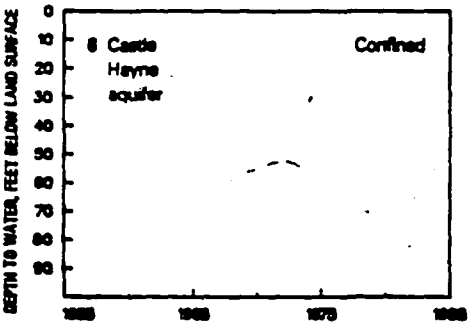
- 1 – 5
- 6 – 10
- Greater than 60

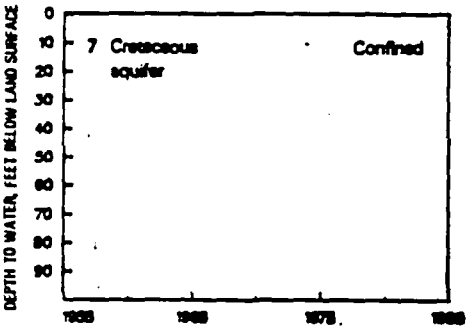
Location number

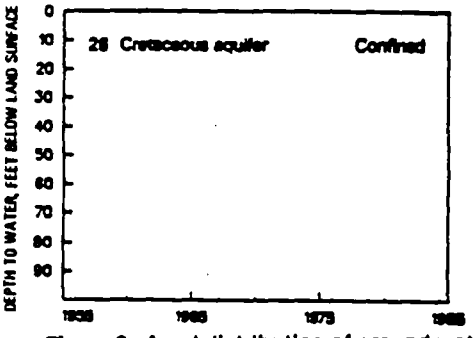
- Withdrawal site
- Hydrograph only











WITHDRAWAL SITES

No. on map	Geographic area	Aquifer	Principal uses
1	Elizabeth City area . . .	Yorktown	Public supply.
2	Hobgood area	Cretaceous.	Industrial.
3	Robersonville-Williamston area.	. . . .do.	Public supply.
4	Greenville-Farmville area.	. . . .do	Do.
5	Belhaven area	Yorktown	Public supply, industrial.
6	Aurora area	Castle Hayne. . . .	Mining.
7	Kinston-Graingers-Cove City area.	Cretaceous.	Public supply, industrial.
8	New Bern area.	Castle Hayne. . . .	Quarrying.
9	Seymour Johnson AFB.	Cretaceous.	Other.
10	Havelock-Cherry Point area.	Castle Hayne. . . .	Public supply and other.
11	Belgrade area	. . . .do	Quarrying.
12	Camp Lejeune.	. . . .do	Other.
13	Jacksonville area	Cretaceous.	Public supply.
14	Rose Hill-Wallace area.	. . . .do	Public supply, industrial.
15	Clinton area	. . . .do	Public supply.
16	Castle Hayne area. . . .	Castle Hayne. . . .	Quarrying.
17	Wilmington area.	. . . .do	Industrial.
18	New Hanover-Brunswick beaches.	. . . .do	Public supply.
19	Raeford area.	Cretaceous.	Do.
20	Sand Hills area.	Surficial	Public supply, irrigation.
21	Laurinburg area	Cretaceous.	Public supply.
22	Lumberton area.	. . . .do	Industrial.
23	Elizabethtown area . . .	. . . .do	Public supply, industrial.
24	Whiteville area.	. . . .do	Do.
25	Marion area	Crystalline rock . .	Industrial.

Figure 2. Areal distribution of ground-water withdrawals and graphs of annual greatest depth to water in selected wells in North Carolina. (Sources: Withdrawal and water-level data from U.S Geological Survey and North Carolina Department of Natural Resources and Community Development files.)

REFERENCE # 16

GROUND-WATER SUPPLY POTENTIAL
AND
PROCEDURES FOR WELL-SITE SELECTION
UPPER CAPE FEAR RIVER BASIN

CAPE FEAR RIVER BASIN STUDY

Sponsored by

North Carolina Department of Natural
Resources and Community Development
and
U. S. Water Resources Council

1155 Archdale Building
P. O. Box 27687
Raleigh, NC 27611

(919) 733-4064

October, 1983

PREFACE

This report was prepared by Charles C. Daniel, III and N. Bonar Sharpless of the U.S. Geological Survey, North Carolina District Office, Raleigh, N.C., for the Cape Fear River Basin Study.

noted southeast of the Greensboro-High Point Regional Airport, and spacings of 3 to 6 inches are common. On the other hand, schists and gneisses containing an abundance of flexible sheetlike minerals such as mica and chlorite, which deform by gliding and bending, are subject to plastic deformation and may exhibit little fracturing.

An example of the influence of plastic deformation on well yields is found in the numerous metamorphosed basaltic dikes that occur throughout the upper Cape Fear River basin. The younger basaltic dikes in the area have not been metamorphosed to any great extent, are brittle, and many exhibit open fractures. The older metamorphosed dikes, however, contain the minerals chlorite and serpentine, which are soft and flexible, and although the dikes show evidence of intense deformation they usually contain very few open fractures, and wells drilled into these dikes produce little water.

Differences in fracturing can also be related to tectonic history. The granitic rocks in the upper Cape Fear River basin provide an excellent example of rocks having similar compositions that are apparently of different ages and tectonic histories. Mundorff (1948) subdivided the granitic rocks (fig. 2) into porphyritic granite and sheared granite. The porphyritic granite is massive and contains few fractures. The sheared granite locally shows evidence of having been subjected to great tectonic stresses and exhibits varying degrees of gneissic foliation and fracturing. The porphyritic granite is apparently younger than the sheared granite and was emplaced after the last major episode of deformation that caused the fracturing of the sheared granite.

The influence of rock type and tectonic history on fracture formation and its relation to well yields will be discussed in a later section of this report.

GEOHYDROLOGY

The principal components of the ground-water system in the study area are illustrated schematically in figure 3. The regolith consists of an unconsolidated or semiconsolidated mixture of clay and fragmental material ranging in size from silt and sand to boulders. The porosity of the regolith is on the order of 35 to 55 percent near land surface but decreases with depth as the degree of weathering decreases. Because of its high porosity, the regolith acts as a reservoir which slowly feeds water downward into the bedrock. The consolidated bedrock contains very little intergranular pore space. Rather, the water within the bedrock is contained primarily in planar secondary openings developed as a result of fracturing. Secondary porosity ranges from 1 to 10 percent in fractured crystalline rock (Freeze and Cherry, 1979, table 2.4). Porosities of 10 percent are atypical, whereas values of 1 to 3 percent are much more representative of the North Carolina Piedmont.

As a general rule, very few open fractures occur in bedrock of the Piedmont at depths greater than 400 feet (LeGrand, 1967). At greater depths, the pressure of the overlying material, or lithostatic pressure, holds these fractures closed and the porosity can be less than 1 percent. Fractures are most numerous and have the largest openings near the top of the bedrock. These fractures are the openings along which water can move.

The implications for the drilling of wells is obvious. The chances of penetrating open fractures and obtaining water (or additional water) at depths below 400 feet is low. In fact, 85 percent of the total possible yield from the average well is already obtained at a depth of 200 feet; the average yield increases only 5 percent by drilling to 300 feet (LeGrand, 1967). From the standpoint of ground-water production, two 200-foot deep wells are more effective, on

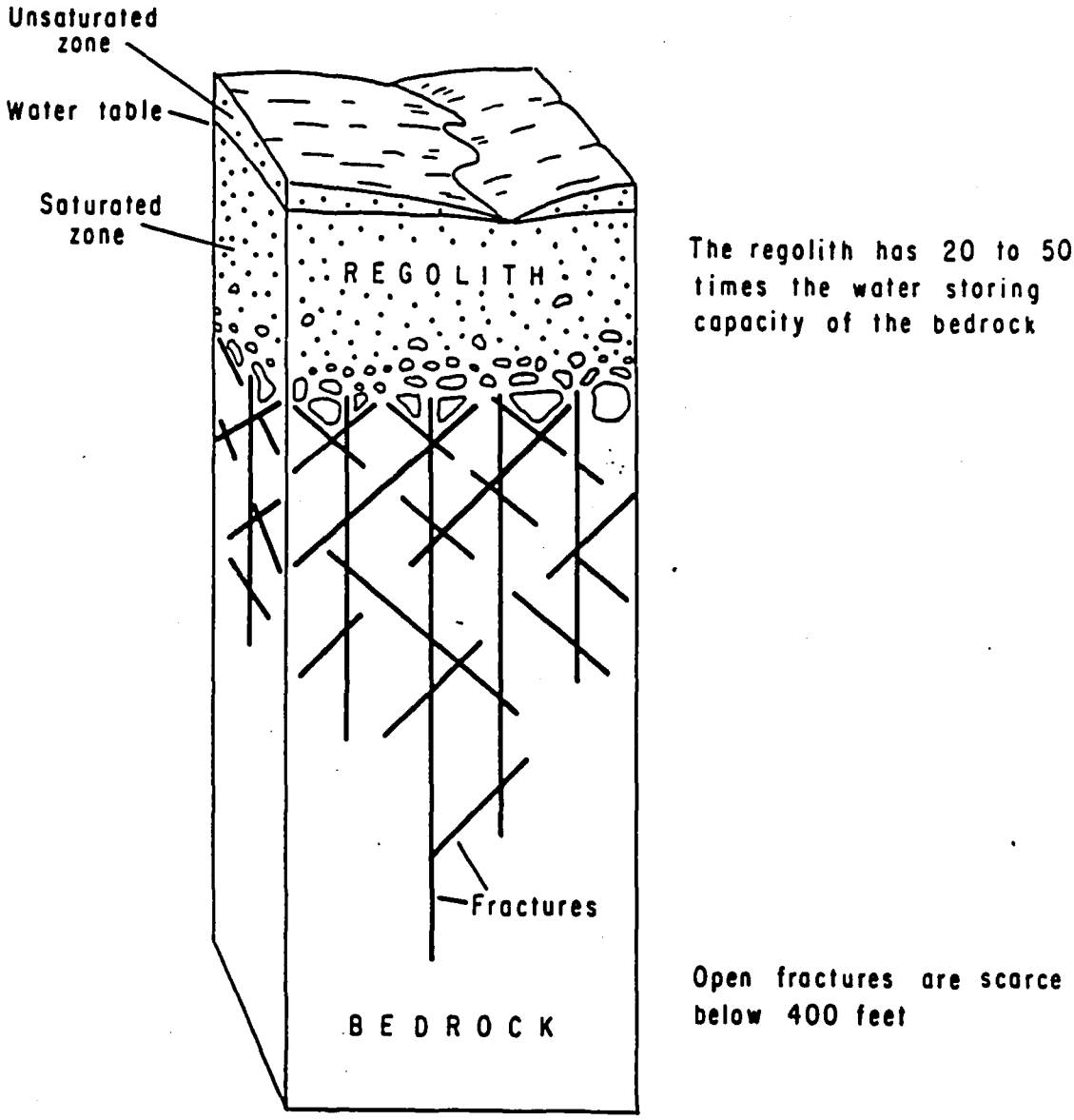


Figure 3.--Principal components of the ground-water system in the Piedmont and Blue Ridge provinces in North Carolina (modified from Heath, 1978).

average, than one 400-foot well. In addition, bedrock wells in areas mantled by thick regolith will generally have greater sustained yields than wells where the regolith is thin or absent.

A conceptual view of the saturated zone, the water table, and directions of ground-water flow for a typical area in the Piedmont and Blue Ridge provinces of North Carolina is shown in figure 4. Under natural conditions, ground water in the bedrock fractures and intergranular pore spaces of the regolith is derived from infiltration of precipitation. As shown, water enters the ground-water system in the recharge areas, which generally include all the land surface above the lower parts of stream valleys. Following infiltration, the water slowly moves downward through the unsaturated zone to the water table, which is the top of the saturated zone. Water moves laterally through the saturated zone, discharging as seepage springs on steep slopes and as bank and channel seepage into streams, lakes, or swamps.

The depth to the water table varies from place to place and from time to time depending on the topography, climate, and properties of the water-bearing materials. However, the climate throughout the upper Cape Fear River basin is relatively uniform and the water-bearing properties of the different bedrock lithologies and regoliths are similar. Therefore, topography probably has the greatest influence on the depth to the water table in a specific area.

In stream valleys and areas adjacent to ponds and lakes, the water table may be at or very near land surface. On the upland flats and broad interstream divides, the water table generally ranges from a few feet to a few tens of feet beneath the surface, but on hills and rugged ridge lines, the water table may be at considerably greater depths. The depth to the water table and its relation to the saturated thickness of the regolith is an important consideration in selecting sites for wells. The significance of this consideration will be discussed later in the section on site selection criteria.

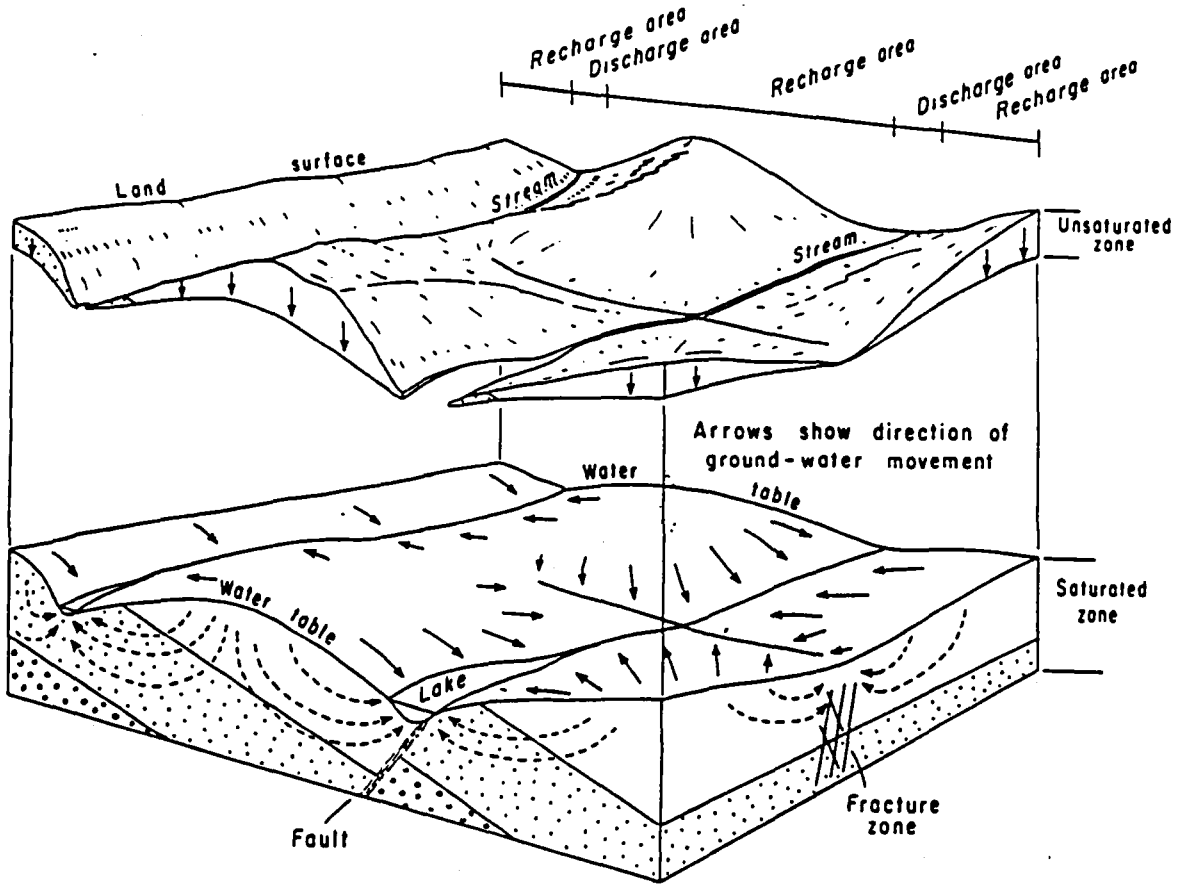


Figure 4.--Conceptual view of the unsaturated zone (lifted up), the water-table surface, and the direction of ground-water flow for a typical area in the Piedmont and Blue Ridge provinces of North Carolina.

REFERENCE # 17

R. Allan Freeze

Department of Geological Sciences
University of British Columbia
Vancouver, British Columbia

John A. Cherry

Department of Earth Sciences
University of Waterloo
Waterloo, Ontario

GROUNDWATER

Prentice-Hall, Inc.
Englewood Cliffs, New Jersey 07632

Table 2.2 Range of Values of Hydraulic Conductivity and Permeability

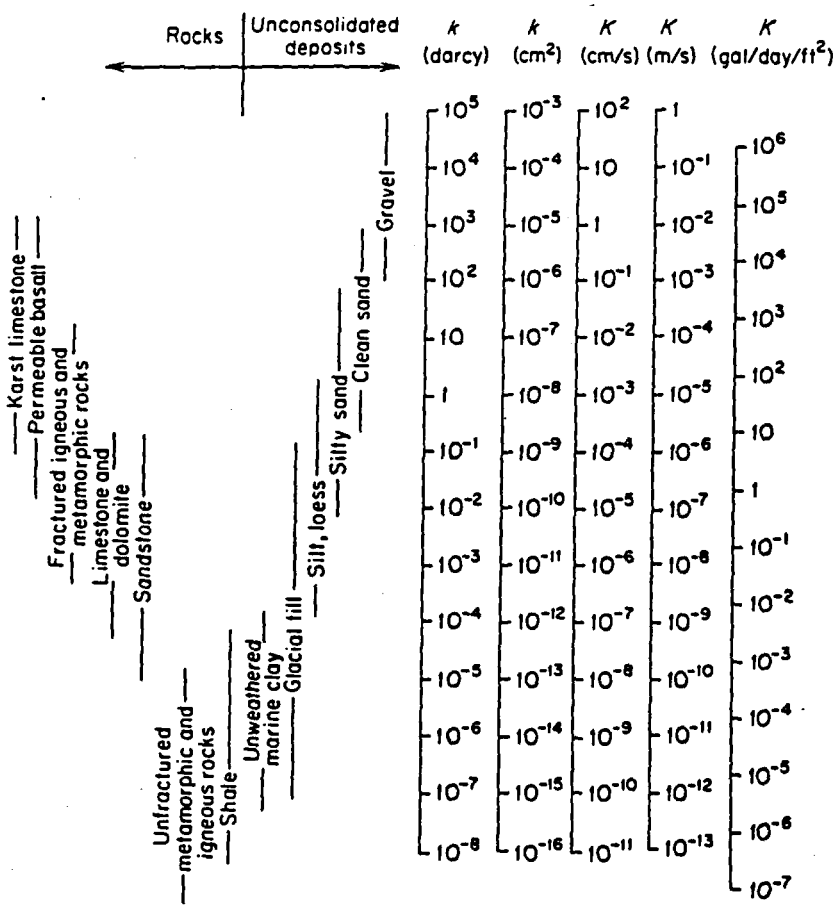


Table 2.3 Conversion Factors for Permeability and Hydraulic Conductivity Units

	Permeability, k*			Hydraulic conductivity, K		
	cm²	ft²	darcy	m/s	ft/s	U.S. gal/day/ft²
cm²	1	1.08×10^{-3}	1.01×10^{8}	9.80×10^{2}	3.22×10^{3}	1.85×10^{9}
ft²	9.29×10^{2}	1	9.42×10^{10}	9.11×10^{5}	2.99×10^{6}	1.71×10^{12}
darcy	9.87×10^{-9}	1.06×10^{-11}	1	9.66×10^{-6}	3.17×10^{-5}	1.82×10^{1}
m/s	1.02×10^{-3}	1.10×10^{-6}	1.04×10^{5}	1	3.28	2.12×10^{6}
ft/s	3.11×10^{-4}	3.35×10^{-7}	3.15×10^{4}	3.05×10^{-1}	1	6.46×10^{5}
U.S. gal/day/ft²	5.42×10^{-10}	5.83×10^{-13}	5.49×10^{-2}	4.72×10^{-7}	1.55×10^{-6}	1

*To obtain k in ft², multiply k in cm² by 1.08×10^{-3}.

REFERENCE # 18

"Rite in the Rain"®

ALL-WEATHER

LEVEL

Notebook No. 311

F4-1998

Sprague Electric Company
9001-132
TDD# F4-~~8907-34~~ESC
Jansing, Ashe County, North Carolina
Eric Corbin - Project Manager
EPA ID No. NCD003167780

LOGBOOK REQUIREMENTS
REVISED - NOVEMBER 29, 1988

NOTE: ALL LANGUAGE SHOULD BE FACTUAL AND OBJECTIVE

1. Record on front cover of the Logbook: TDD No., Site Name, Site Location, Project Manager.
2. All entries are made using ink. Draw a single line through errors. Initial and date corrections.
3. Statement of Work Plan, Study Plan, and Safety Plan discussion and distribution to field team with team members' signatures
4. Record weather conditions and general site information
5. Sign and date each page Project Manager is to review and sign off on each logbook daily.
6. Document all calibration and pre-operational checks of equipment. Provide serial numbers of equipment used onsite
7. Provide reference to Sampling Field Sheets for detailed sampling information.
8. Describe sampling locations in detail and document all changes from project planning documents.
9. Provide a site sketch with sample locations and photo locations.
10. Maintain photo log by completing the stamped information at the end of the logbook.
11. If no site representative is on hand to accept the receipt for samples, an entry to that effect must be placed in the logbook.
12. Record I.D. numbers of COC and receipt for sample forms used. Also record numbers of destroyed documents.
13. Complete SMO information in the space provided.

All entries in this logbook will be made by myself, Eric Corbin - Project Manager. Each page will be signed and dated. Any and all corrections will be properly initialed (EAC)

Signature: Eric A. Corbin

All notes and observations made during this Phase I, SSI Inspection will be documented in this logbook.

This logbook is an extension of work plan T.O.D.# F4-9001-152

02/12/90 E. A. Corbin

The following NUS personnel herein listed have read and understand the following NUS/EPA document listed.

Work Plan - TDD# F4-9001-132

As our conformation of having read and having understood the above listed document, we the undersigned place our signatures.

Eric Corbin - Eric A. Corbin
Brant McCanless - Brant McCanless

02/12/90 E.A. Corbin

0800 - Left Franklin, N.C. for the Asheville Regional Airport to pick up Brant McCanless.

0930 - Meet Brant McCanless at Asheville Regional Airport

1000 - Leave Asheville, N.C. for Lansing, N.C. Weather forecast for today's weather calls for clear and cool weather with highs in the mid- to upper 50's

1200 Broke for lunch

1400 Arrive at Sprague Electric Company facility in Lansing, N.C. The facility is situated adjacent to the North Fork of the New River approximately two 2.0 miles south of Lansing, N.C. on highway 194. The

02/12/90 E.A. Corbin

facility is located in a rural, somewhat unpopulated portion of Ashe County. The facility is currently active and still known as Sprague Electric Company. The facility is fenced with a chain link fence which appeared to circumvent the facility. Entrance gates exist which can allow or restrict access to the facility by the use of gates. There is one main facility and a few small buildings adjacent to the large building. Due east of the main building there exist several large aeration ponds, purpose unknown. Drainage from the property would most likely enter the New River adjacent to the facility. The nearest identified homes to the facility are located across the New River and

02/12/90 E. L. Cobb

highway 194 west of the facility. No schools or day-care centers could be identified within a one mile radius of the facility. Pictures were taken of the facility area. No evidence of spills or waste disposal could be seen on-site from our view-point, however the entire facility could not be well ~~[illegible]~~ viewed from our vantage point.

14:50 Arrive at the Jonesville, N.C. Town Hall. Met with Jane Powers (Mayor of Jonesville N.C.) I told Mrs. Powers that we were conducting a survey

02/12/90 E. L. Cobb

of private wells and that we were needing information on the Lansing Water System. She stated that they only serve the area within the Lansing City Boundary with potable water. She stated that they have 65 customers and obtain all their water from two wells located within the Lansing City Boundary. She located the wells on our topographic map one" traced the boundary on our topographic map as well. She stated that everyone outside the city bound are utilize either wells or springs for their potable water needs.

155- Arrive at the Jefferson Town Hall in Jefferson, N.C. and speak with Meredith Balleau, Town Manager of Jefferson. Mr. Balleau

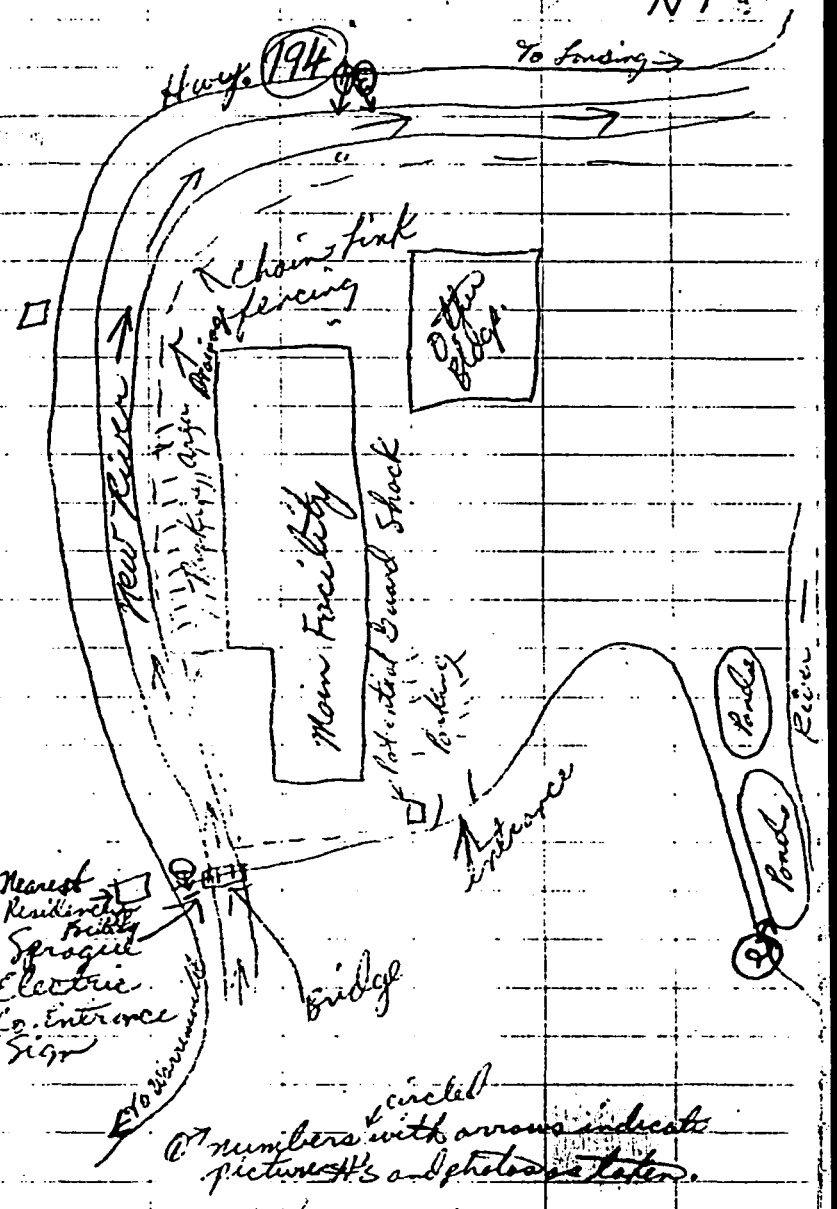
02/12/90 E.A. Corbin

is over the towns water system. I explained to Mr. Balleau that we were conducting a private well survey and that we needed information on the towns water system in order to isolate areas served by wells or springs. He stated that they basically provide service to most all areas within the Jefferson City boundary. He stated that they serve about approximately 535 bills/month and obtain all of their water from seven (7) wells which he located for us on our topographical map. Only one of these wells fell within the four (4) mile radius, however, the water from all seven wells is mixed prior to distribution. He then traced their line location on our

02/12/90 E.A. Corbin

topographical map. He stated that people not served by their municipal system rely on wells or springs to supply their ~~municipal~~ potable water needs.

02/12/90 E. S. Carbin



numbers circled with arrows indicate pictures #'s and photos later.

02/12/90 E. S. Carbin

NUS CORPORATION AND SUBSIDIARIES **TELECON NOTE**

CONTROL NO.	DATE: 03-14-90	TIME: 0945

DISTRIBUTION:

BETWEEN: Sonny Williams	OF: Game Warden, Ashe County	PHONE: (919) 384-2547

AND: Eric Corbin, NUS Corporation

DISCUSSION:

I contacted Sonny Williams to determine surface water use on the North Fork of the New River. He stated that the stretch near Lansing, North Carolina was used for canoeing, swimming, and fishing primarily in the summer months. Species of fish caught include smallmouth bass and muskie. He knew of no permanent surface water intakes withdrawing water from the river except for some irrigational uses of the river water.

Eric Corbin
03-14-90

Eric Corbin 04-18-90

EXPLANATION OF NC NATURAL REFERENCE # 20 OUTPUT

Probably the most in the N.C. Natural Heritage Program is the one that tracks occurrences of elements of natural diversity (rare animals, rare plants, geologic features, special animal habitats). The output (printout) you have received is a subset of this very large database. Each record (an occurrence) is printed out in a particular format, the structure of which is explained below.

EOCODE: Internal coding for the element occurrence. The first letter indicates the kind of element:

A=vertebrate animal	N=nonvascular plant
G=geologic feature	P=vascular plant
I=invertebrate animal	S=special animal habitat

For vertebrates, the second letter indicates the order (taxonomic), with A=amphibians, B=birds, F=fish, etc. For vascular plants, the second letter indicates whether the plant is a monocot (M), dicot (D), pteridophyte (P), or gymnosperm (G). For nonvascular plants, the second letter indicates whether the plant is a bryophyte (B) or lichen (L).

The last 3 digits, following the decimal point, are the number of that occurrence of the species in the database. For plants, numbers with an H are occurrences reported from before 1935 which have not been found since. In some cases, H has also been used to indicate very vague records, or populations known to have been extirpated.

NAME: Scientific name of the element.

COMNAME: Common name of the element.

FEDSTAT: Federal status of the species, from Endangered & Threatened Wildlife and Plants, April 10, 1987. 50 CFR 17.11 & 17.12. Department of Interior. Established by the Endangered Species Act of 1973, as amended.

LE = Taxa currently listed as Endangered
LT = Taxa currently listed as Threatened
PE = Taxa currently proposed for listing as Endangered
PT = Taxa currently proposed for listing as Threatened
Taxa under review for possible listing ("candidate species"):
C1 = Taxa with sufficient information to support listing
C2 = Taxa without sufficient information to support listing

STATESTAT: Status of the species in North Carolina. For plants, from Sutter, R.D., L. Mansberg, and J.H. Moore. 1983. Endangered, threatened, and rare plant species of North Carolina: a revised

list. ASB Bulletin 30:153-163, and updated lists of the Natural Heritage and Plant Conservation Programs.

E = Endangered
T = Threatened
SC = Special Concern
PP = Primary Proposed
SR = Significantly Rare

E,T,and SC species are protected by state law (the Plant Protection an Conservation Act, 1979); the other two categories indicate rarity and the need for population monitoring, as determined by the Plant Conserv tion and Natural Heritage Programs.

For animals, from Cooper, J.E., S.S. Robinson, and J.B. Funderbu (Eds.). 1977. Endangered and Threatened Plants and Animals of North Carolina. N.C. Museum of Natural History, Raleigh, NC. 444 pages + i-xvi.

E = Endangered
T = Threatened
SR = Sifnificantly Rare
SC = Special Concern
UNK = Undetermined
EX = Extirpated

GRANK: Nature Conservancy "global rank."

G1 = Critically imperiled globally because of extreme rarity or otherwise very vulnerable to exinction throughout its range
G2 = Imperiled globally because of rarity or otherwise vulnerabl to extinction throughout its range.
G3 = Either very rare and local throughout its range, or found locally in a restricted area.
G4 = Apparently secure globally, though it may be quite rare in parts of its range (especially at the periphery).
G5 = Demonstrably secure globally, though it may be quite rare parts of its range (especially at the periphery).
GU = Possibly in peril but status uncertain; need more informat
GX = Believed to be extinct throughout range.
Q = a suffix attached to the Global Rank indicating questionab taxonomic status.
T_ = an additional status for the subspecies or variety; the G then refers only to the species as a whole.

SRANK: Nature Conservancy state rank. Coding similar to global ranks.

COUNTYNAME: Acronym for the county. In general, this is the first four letters of the county name.

QUADNAME: USGS quad map name, at 7.5 minute scale when available.

PRECISION: The precision with which the location can be mapped from the available information: S=seconds (hundreds of feet), M=minutes (up to 1.5 mile radius), G=general (to a place name only, or up to 5 mile radius).

LAT, LONG: Latitude and Longitude coordinates for the center of the occurrence.

LASTOBS: Year, month, and day the element was last observed.

DIRECTIONS: How to find the site.

GENDESC: General description. A word picture of the site, describing the habitat.

ELEV, SIZE: Elevation and size of the occurrence.

EODATA: Information on number, size, condition, and other relevant information on the element occurrence.

COMMENTS: Additional information on the occurrence, the site, or sources of information.

SITENAME: Name of the site as standardized by the Natural Heritage Program for internal use. Many sites do not have a name.

OWNER: Name of owner of the site (some abbreviations used).

SPECSTAT: Codes indicating special status of the site.

AEC=Area of Environmental Concern
DED=Dedicated State Nature Preserve
ESN=National Estuarine Sanctuary
EWA=Established Wilderness Area
EAN=Conservation Easement
NNL=National Natural Landmark
NPK=National Park
NPY=National Parkway
NSH=National Seashore
RHA=Registered Natural Heritage Area
RNA=Research Natural Area (USFS)
SPK=State Park (incl. State Natural Areas)
ORW=Outstanding Resource Water
WSR=Wild and Scenic River
...and a few others, infrequently used

OWNERCOM: Comments on ownership.

PROTCOMM: Comments on need for additional protection for the element.

MGMTCOMM: Comments on need for management of the site for the element.

SOURCE: Best source of information on the element occurrence.

PHOENIX MOUNTAIN

COUNTYNAME: NCASHE
QUADNAME: JEFFERSON
DIRECTIONS: PEAK NORTH OF JEFFERSON AND SOUTH OF NEW RIVER NORTH FORK

OWNER: JOHN R. TAYLOR AND OTHER PRIVATE
SITEDESC:
SIX MAJOR FOREST TYPES. ROCKY SUMMIT SUPPORTS WHITE OAK-RHODODENDRON. RED OA
PROMINENT ON SLOPES. COVE HARDWOODS. BEECH AND ALLUVIAL MIXED HARDWOODS ON LOWE
SLOPES: CONCENTRATIONS OF RARE PLANTS ON SUMMIT ROCK OUTCROPS AND SEEPAGE BOGS.
11 PERIPHERALLY RARE PLANT SPECIES PLUS SEVERAL ENDANGERED SPECIES
SIZE: O PRIORITY: B
RANKCOMM: RARE PLANT SPECIES, REPRESENTATIVE NATURAL COMMUNITIES

PROTSTAT: UNPROTECTED

SOUTH FORK NEW RIVER

COUNTYNAME: NCASHE NCALLE
QUADNAME: MANY
DIRECTIONS: 26.5 MILE SEGMENT OF NATIONAL AND STATE NATURAL AND SCENIC
RIVER NORTH FROM JEFFERSON TO NC/VA STATE LINE.
OWNER: STATE OF NC AND ADJACENT PRIVATE OWNERS
SITEDESC:
HEADWATERS OF OLDEST EXISTING RIVER IN NORTH AMERICA. DEEPLY INCISED MEANDERS
INDICATE GEOLOGIC UPLIFT. RAPIDS FORMED OVER RESISTENT ROCKS. RIVER CUTS
SEVERAL FAULTS AND EXPOSES ROCK 1.1 BILLION YEARS OLD. NUMEROUS FISH SPECIES
FOUND NOWHERE ELSE IN NC. SCENIC LANDSCAPE OF LOW MOUNTAINS, FARMS, WOODLANDS.
SIZE: O PRIORITY: A
RANKCOMM: EXEMPLARY GEOMORPHIC LANDFORMS, RARE ANIMAL SPECIES.

PROTSTAT: DESIGNATED STATE AND NATIONAL SCENIC RIVER.

THREE TOP MOUNTAIN

COUNTYNAME: NCASHE
QUADNAME: WARRENSVILLE
DIRECTIONS: NORTH OF BLUFF MOUNTAIN

OWNER: PRIVATE
SITEDESC:
VISIBLE FROM BLUFF MTN. PRELIMINARY OBSERVATIONS OF NUMEROUS RARE PLANTS --
SPREADING AVENS, BUSH HONEYSUCKLE, WRETCHED SEDGE, WINDLEAF CINQUEFOIL, ETC.

SIZE: O PRIORITY: C
RANKCOMM: RARE PLANT SPECIES

PROTSTAT: UNPROTECTED

Ashe REFERENCE # 21

NORTH CAROLINA NATURAL HERITA

scientific and common name	state stat	fed stat	state rank	glob rank
ACCIPITER COOPERII	E		S2	G4
COOPER'S HAWK				
CLEMMYS MUHLENBERGII	T	C2	S3	G4
BOG TURTLE				
COCCYZUS ERYTHROPTHALMUS			S2	G5
BLACK-BILLED CUCKOO				
CORVUS CORAX	SC		S3	G5
COMMON RAVEN				
EXOGLOSSUM LAURAE	SC		S3	G4
TONGUETIED MINNOW				
PERCINA MACULATA	SC		S3	G5
BLACKSIDE DARTER				
PERCINA OXYRHYNCHA	SC		S1	G4
SHARPNOSE DARTER				
PIMEPHALES NOTATUS	SC		S3	G5
BLUNTNOSE MINNOW				
THRYOMANES BEWICKII	T	C1	SH	G5
BEWICK'S WREN				
VIREO GILVUS	T		S2	G5
WARBLING VIREO				
BOLORIA BELLONA	SR		S2	G5
MEADOW FRITILLARY				
DIXIORIA DACTYLIFERA	SC			G?
MILLIPED				
ERORA LAETA	SR		S1	G4
EARLY HAIRSTREAK				
HESPERIA LEONARDUS	UNK		S2?	G4
LEONARD'S SKIPPER				
SPEYERIA DIANA	SC		S3	G3
DIANA				
SPEYERIA IDALIA	SR	C2	S1	G3
REGAL FRITILLARY				
STENELMIS GAMMONI	T	C2		G1G3
RIFFLE BEETLE				
CAMPYLIUM STELLATUM	SR		S1	G5
YELLOW STARRY FEN MOSS				
CAMPYLOPUS ATROVIRENS	SR		S1	G3?
CLIFF CAMPYLOPUS				
CLADONIA PSOROMICA	C		S1	G1
BLUFF MOUNTAIN REINDEER LICHEN				
DICHODONTIUM PELLUCIDUM	SR		S2	G4G5
A MOSS				
GYMNODERMA LINEARE	T		S1	G1
ROCK GNOME LICHEN				
LEPTODONTIUM FLEXIFOLIUM	SR		S1	G5
PALE-MARGINED LEPTODONTIUM				
LINDBERGIA BRACHYPTERA	SR		S1	G5
LINDBERG'S MAPLE-MOSS				
ORTHOTRICHUM OBTUSIFOLIUM	SR		S1	G5
BLUNT BRISTLE-MOSS				
RHYTIDIUM RUGOSUM	SR		S2	G5
GOLDEN GLADE-MOSS				
SPHAGNUM SUBSECUNDUM VAR SUBSECUNDUM	C		S1	G5T4
ORANGE PEATMOSS				
ACONITUM RECLINATUM	C		S2	G2G3
TRAILING WOLFSBANE				

(Ashe)

NORTH CAROLINA NATURAL HERITAGE PROGRAM ELEMENT LIST

scientific and common name	state stat	fed stat	state rank	glob rank
ARETHUSA BULBOSA	E		S1	G4
BOG ROSE				
CARDAMINE ROTUNDIFOLIA	SR		SH	G4
MOUNTAIN WATERCRESS				
CAREX BUXBAUMII	C		S1	G5
BUXBAUM'S SEDGE				
CAREX CONOIDEA	T		S1	G4
CUNE-SHAPED SEDGE				
CAREX MANHARTII	C		S1	G2?
MANHART'S SEDGE				
CAREX MISERA	T	3C	S3	G3
WRETCHED SEDGE				
CAREX WOODII	SR		S2	G4Q
WOOD'S SEDGE				
CHENOPODIUM SIMPLEX	SR		S1	G4G5
GIANT-SEED GOOSEFOOT				
CLADIUM MARISCOIDES	SR		S1	G5
TWIG-RUSH				
CLEMATIS OCCIDENTALIS	SR		S1	G5
ROCK CLEMATIS				
DALIBARDA REPENS	E		S1	G5
ROBIN RUNAWAY				
EPILOBIUM LEPTOPHYLLUM	C		S2	G5
NARROWLEAF WILLOWHERB				
EUPHORBIA PURPUREA	C	C2	S2	G2
GLADE SPURGE				
GENTIANOPSIS CRINITA	E		S1	G4
FRINGED GENTIAN				
GEUM RADIATUM	E	PE	S1	G1
SPREADING AVENS				
GYMNOCARPIUM DRYOPTERIS			SRF	G5
OAK FERN				
HELIANTHEMUM BICKNELLII	C		S1	G5
PLAINS FROSTWEED				
HELIANTHEMUM PROPINQUUM	C		S1	G4
CREEPING SUNROSE				
HOUSTONIA PURPUREA VAR MONTANA	C	PE	S1	G5T1
MOUNTAIN BLUET				
HUPERZIA SELAGO	SR		S2	G5
FIR CLUBMOSS				
LIATRIS ASPERA	SR		S1	G4G5
ROUGH GAYFEATHER				
LIATRIS HELLERI	T	LT	S1	G1
HELLER'S BLAZING STAR				
LILIUM GRAYI	T	C2	S2	G2
GRAY'S LILY				
LILIUM PHILADELPHICUM	SR		S1	G5
WOOD LILY				
LIPARIS LOESELII	SR		S1	G5
LOESEL'S TWAYBLADE				
MEEHANIA CORDATA	SR		S2	G5?
MEEHANIA				
MINUARTIA GROENLANDICA	C		S2	G5
GREENLAND SANDWORT				
MUHLENBERGIA GLOMERATA	C		S1	G5
BRISTLY MUHLY				

(Ashe)

NORTH CAROLINA NATURAL HERITAGE PROGRAM ELEMENT LIST

scientific and common name	state stat	fed stat	state rank	glob rank
PANAX QUINQUEFOLIUS GINSENG	SC	3C	S4	G4
PANAX TRIFOLIUS DWARF GINSENG	SR		S2	G5
PARNASSIA GRANDIFOLIA LARGE-LEAVED GRASS-OF-PARNASSUS	C		S2	G2G3
PHLOX SUBULATA MOSS PINK	SR		S1	G5
PRENANTHES ROANENSIS ROAN RATTLESNAKEROOT	SR	3C	S3	G3
PYROLA ELLIPTICA A SHINLEAF	C		S1	G5
RHODODENDRON PRINOPHYLLUM ELECTION PINK	SR		S1	G5
RHYNCHOSPORA ALBA WHITE BEAKRUSH	C		S2	G5
SAXIFRAGA CAROLINIANA CAROLINA SAXIFRAGE	C	C2	S2	G2G3
SCIRPUS CESPITOSUS DEERHAIR BULRUSH	C		S2	G5
SCUTELLARIA SAXATILIS ROCK SKULLCAP	C		S1	G4
SEDUM ROSEA ROSEROOT	E		S1	G5
SENECIO PLATTENSIS A GROUNDSEL	C		S1	G5
SOLIDAGO ULIGINOSA BOG GOLDENROD	SR		SU	G4G5
SPIRAEA VIRGINIANA VIRGINIA SPIRAEA	E	PT	S1	G1
TAXUS CANADENSIS CANADA YEW	SR		S1	G5
TOFIELDIA GLUTINOSA STICKY BOG ASPHODEL	C		S1	G5
VACCINIUM MACROCARPON CRANBERRY	C		S2	G4
VERONICA AMERICANA AMERICAN SPEEDWELL	SR		S2	G5
WOODSIA ILVENSIS RUSTY WOODSIA	SR		S1	G5
WOODSIA SCOPULINA ALLEGHANY CLIFF FERN	SR		S1	G5

Ref. 21

EXPLANATION OF 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, special animal habitats) known to occur in your geographic area of interest. Following is an explanation of the four columns of status codes on the righthand side of the printout.

STATE STATUS

Plants:

From Sutter, R.D., L. Mansberg, and J.H. Moore. 1983. Endangered, threatened, and rare plant species of North Carolina: a revised list. ASB Bulletin 30:153-163, and updated lists of the Natural Heritage and Plant Conservation Programs.

E = Endangered
T = Threatened
SC = Special Concern
~~PP = Primary Proposed~~ C = Candidate
SR = Significantly Rare

E,T,and SC species are protected by state law (the Plant Protection and Conservation Act, 1979); the other two categories indicate rarity and the need for population monitoring, as determined by the Plant Conservation and Natural Heritage Programs.

Animals:

From Cooper, J.E., S.S. Robinson, and J.B. Funderburg (Eds.). 1977. Endangered and Threatened Plants and Animals of North Carolina. N.C. Museum of Natural History, Raleigh, NC. 444 pages + i-xvi, and updated lists of the Natural Heritage Program.

E = Endangered
T = Threatened
SR = Significantly Rare
SC = Special Concern
UNK= Undetermined
EX = Extirpated

FEDERAL STATUS

From Endangered & Threatened Wildlife and Plants, April 10, 1987. 50 CFR 17.11 & 17.12. Department of Interior. Established by the Endangered Species Act of 1973, as amended.

E = Taxa currently listed as Endangered
T = Taxa currently listed as Threatened
PE = Taxa currently proposed for listing as Endangered
PT = Taxa currently proposed for listing as Threatened
Taxa under review for possible listing ("candidate species"):
C1 = Taxa with sufficient information to support listing
C2 = Taxa without sufficient information to support listing

GLOBAL RANK (STATE RANK)

The Nature Conservancy's system of measuring rarity and threat status. "Global" refers to worldwide, "State" to statewide.

G1 = Critically imperiled globally because of extreme rarity or otherwise very vulnerable to exinction throughout its range.
G2 = Imperiled globally because of rarity or otherwise vulnerable to extinction throughout its range.
G3 = Either very rare and local throughout its range, or found locally in a restricted area.
G4 = Apparently secure globally, though it may be quite rare in parts of its range (especially at the periphery).
G5 = Demonstrably secure globally, though it may be quite rare in parts of its range (especially at the periphery).
GU = Possibly in peril but status uncertain; need more information.
GX = Believed to be extinct throughout range.
Q = a suffix attached to the Global Rank indicating questionable taxonomic status.
T_ = an additional status for the subspecies or variety; the G rank then refers only to the species as a whole.

State rank codes follow the same definitions, except substitute the words, "in the state," for "globally" or "throughout its range."

COVERAGE
========

STATE	COUNTY	STATE NAME	COUNTY NAME
37	9	North Carolina	Ashe Co
37	193	North Carolina	Wilkes Co

CENTER POINT AT STATE : 37 North Carolina
COUNTY : 9 Ashe Co

Press RETURN key to continue...

REGION OF THE COUNTRY
==========

Zipcode found: 28693 at a distance of 2.5 Km

STATE	CITY NAME	FIPSCODE	LATITUDE	LONGITUDE