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326SERBSF10,617

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Site ID (Document ID):	NCD042269134
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Southern Fastener Systems
NCD042269134
Site Investigation

December 1990

By: Hanna Assefa
Environmental Chemist
Superfund Section
Division of Solid Waste Management

State of North Carolina
Department of Environment, Health, and Natural Resources
Division of Solid Waste Management
P.O. Box 27687 · Raleigh, North Carolina 27611-7687

James G. Martin, Governor
William W. Cobey, Jr., Secretary

William L. Meyer
Director

December 29, 1990

Ms. Kelly Cain
EPA NC CERCLA Project Officer
Air and Hazardous Material Division
345 Courtland Street, N.E.
Atlanta, Georgia 30365

Subject : Screening Site Investigation
Southern Fastening systems. NCD042269134
1211 N. Barkley Road.
Statesville, Irdell County, NC 28677-1360

Dear Ms. Cain:

Please find attached the site investigation report for the subject site. Based on data collection and evaluation on a visit to the site, and on analyses of samples taken from the site, we have concluded the following.

Southern Fastening system is located on a 69.5 acre tract of land at 1211 North Barkley road in the city of Statesville in Irdell county, North Carolina. The site coordinates are 35° 45 57" latitude and 80° 51′ 20" longitude. The area surrounding the site is both residential and commercial. The facility has been in continuous operation since 1945. Prior to 1945 the site was farmland. The original name of the plant on the site was Southern Screw Company. However after undergoing a few ownership changes it is currently operating as Southern Fastening Systems.

The production process has always been the manufacturing and electroplating of various sizes and types of metal screws for various types of industry. All of the electroplating sludge about 40,000 pounds monthly, was sent through the city of Statesville, NC sewage system to the sewage treatment plant between 1945 and November 1980, when changes were mandated by the EPA. After that the sludge was separated, and the hazardous waste was sent to SCA in Pinewood, South Carolina. Two on-site lagoons

have been used in the past to neutralize spent plating bath solutions from electroplating operations. One of these lagoons was capped with soil in 1975 and the other in 1982, however there is only record of sludge and contaminated soil removal prior to capping, from the lagoon filled with soil in 1982.

The site drains into an unnamed tributary of third creek originating on-site. However Third Creek is a class C stream and is not used for drinking purposes, but is recommended for fish propogation, recreational and other activities that require water of a lower quality. There are no drinking water intakes on Third Creek.

The population within the Statesville city limit obtains its drinking water from Statesville Utility Department. The water supply for the Statesville utility department is from a surface water intake located on the Yadkin River. There are approximately 3,202 people within the 3 mile radius utilizing groundwater. The nearest well is on-site.

Sampling done on the site investigation trip included samples from on site well, both upstream and downstream water and sediment samples of the tributary to third creek, subsurface soil from several different depths both near the lagoons, and areas around the plant.

Inorganic and organic analysis by State laboratories shows only the presence of Chloroform at 30 ppb (6x detection limit).

The present manufacturing operation closed on 30 June, 1990. Shipping will continue until the facility is sold or until December. Based on the fact that the two on-site lagoons have been capped with soil, and that analysis results on samples taken on site investigation trip do not indicate the presense of residual contamination, we recommend that no further remedial action be performed on the site at this time.

If you have any questions , please feel free to call me at (919) 733-2801.

Sincerely,

Hanna Assefa
Environmental Chemist
N.C Superfund Section

soscrew.doc
Attachment

SCREENING SITE INVESTIGATION

Southern Fastening Systems
NCD 042269134
Statesville, Irdell County NC

December 1990

Superfund Section
Solid Waste Management Division
NC Department of Environment, Health, and Natural Resources

Prepared by:

Hanna Assefa
Environmental Chemist

Reviewed by:

Jack Butler
Environmetal Engineer

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EXECUTIVE SUMMARY

Southern Fastening system is located on a 69.5 acre tract of land at 1211 North Barkley road in the city of Statesville in Irdell county, North Carolina. The site coordinates are 35° 45 57 latitude and 80° 51 20 The area surrounding the site is both residential and commercial. The facility has been in continuous operation since 1945. Prior to 1945 the site was farmland. The original name of the plant on the site was Southern Screw Company. However after undergoing a few ownership changes it is currently operating as Southern Fastening Systems.

The production process has always been the manufacturing and electroplating of various sizes and types of metal screws for various types of industry. All of the electroplating sludge about 40,000 pounds monthly, was sent through the city of Statesville, NC sewage system to the sewage treatment plant between 1945 and November 1980, when changes were mandated by the EPA. After that the sludge was separated, and the hazardous waste was sent to SCA in Pinewood, South Carolina. Two on-site lagoons have been used in the past to neutralize spent plating bath solutions from electroplating operations. One of these lagoons was capped with soil in 1975 and the other in 1982, however there is only record of sludge and contaminated soil removal prior to capping, from the lagoon filled with soil in 1982.

The site drains into an unnamed tributary of third creek originating on-site. However Third Creek is a class C stream and is not used for drinking purposes, but is recommended for fish propogation, recreational and other activities that require water of a lower quality. There are no drinking water intakes on Third Creek.

The population within the Statesville city limit obtains its drinking water from Statesville Utility Department. The water supply for the Statesville utility department is from a surface water intake located on the Yadkin River. there are approximately 3,202 people within the 3 mile radius utilizing groundwater. The nearest well is on-site.

Sampling done on the site investigation trip included samples from on site well, both upstream and downstream water and sediment samples of the tributary to third creek, subsurface soil from several different depths both near the lagoons, and areas around the plant.

Inorganic and organic analysis by State laboratories shows only the presence of Chloroform at 30 ppb (6x detection limit).

The present manufacturing operation has closed on 30 June, 1990. Shipping will continue until the facility is sold or until December. Based on the fact that the lagoons have already been capped with soil and , analysis results indicate no contamination by residual compounds at all the sampling points, we reccomend no further remedial action be performed on the site at this time.

1.0 Background

1.1 Location

Southern Fastening systems is located on a 69.5 acre tract of land at 1211 North Barkley road in the city of Statesville in Irdell county, North Carolina. The site coordinates are 35° 45' 57" latitude and 80° 51 20 longitude. The area surrounding the site is both residential and commercial (ref. 6)

1.2 Site Layout

The plant consists of a 12 acre main manufacturing building, on a 69.5 acre tract of land. A waste treatment building is located near the NW wing of this building. Surrounding this waste treatment building are three above ground 30,000 gallon capacity gas tanks, and one underground 30,000 gallon capacity gas tank. An above ground acid tank is also located in the same area. (See site map appendix A).

1.3 Ownership (ref. 6)

This facility has been in continuous operation since 1945. Prior to 1945 the site was farmland. The original name of the plant on the site was Southern Screw Company. In the late 1950's the company was purchased by N.L. Industries Inc., of 1230 Avenue of the Americas, New York , N.Y 10020, telephone (212) 621-9400. On September 10, 1982, N.L. Industries sold the plant and site to Farley Metals, Inc., a Delaware Corporation having its place of business in the Sears tower at 233, S. Wacker Drive, Chicago Illinois 60606, telephone (312) 876-1724. The official name for the facility since March, 1988 is Southern Fastening Systems (ref. 5).

1.4 Site Use History (ref. 6)

The production process has always been the manufacturing and electroplating of various sizes and types of metal screws for various types of industry. Between 1945 and 1980 all of the electroplating sludge, about 40,000 pounds per month, was sent through the city of Statesville, NC sewage treatment plant In 1980 changes were mandated by the EPA therefore the sludge was separated, and the hazardous waste was sent to SCA in Pinewood, South Carolina. In the past, two unlined onsite lagoons have been used to neutralize spent plating bath solutions from electroplating operations. These lagoons however have been filled with soil and have not been used in recent years. The present manufacturing operation closed on June 30, 1990. Shipping will continue until the facility is sold or until December 1990 (ref. 3).

1.5 Permit and Regulatory History

The Interim status of Southern Fastening System under RCRA was terminated in July 1982, because the facility no longer functioned as a treatment , storage or disposal facility (ref. 4) In October 1987 the company was granted a permit to transport hazardous waste through the state of South Carolina (ref. 5). The facility has been in found in compliance under RECRA inspection, between the years 1982 to 1989.

1.6 Remedial Actions to Date (ref. 3).

In 1982 680 tons of sludge and contaminated soil from the lagoon used for neutralizing wastes from spent plating bath solutions was removed, and disposed of offsite, and the lagoon was refilled with soil. This lagoon was located south of the east wing of the main manufacturing building. The second lagoon that used to be located just south of the present wastewater treatment building was also filled with soil in 1975 but, there are no records to indicate that any sludge or contaminated soil was removed prior to capping.

1.7 Site Summery Trip Report

On June 27, 1990 Jack Butler, Ed Wallingford, and David Lilley, of the North Carolina Superfund Section , performed a Site Inspection at the facility. The following individuals were also present during a portion of the visit:

Rick Thompson	- Southern Fastening Devices
Allen F. Johnson	- Southern Fastening Devices
Steve Petrovich	- Southern Fastening Devices
Allen L. Crouch	- Southern Fastening Devices
Paul Galluzzi	- Memphis Environmental Centre Inc.
Steve Rettig	- Memphis Environmental Centre, Inc.
Richard Cooper	- Statesville Water department
Eddie Mitchell	- Statesville Water department

After touring the facility the following environmental samples were collected:

1. Background soil from a depth of 18 inches, 375 feet. east of the eastern edge of the plant building and 43 feet. north of the access road.

2. Subsurface soil from 5 feet. depth in of lagoon south of east wing of plant building.

3. Subsurface soil from 7 feet. depth in area of lagoon south of east wing of plant building.

4. Subsurface soil from 7.2 feet. depth in area of lagoon south

of wastewater treatment building.

5. Water sample from on-site production well.

6. Water and sediment from headwaters of stream south of wastewater treatment building.

7. Water and Sediment from creek north of the bridge at SR 2352 (south and downstream of site).

All samples were split with Southern Fastening Systems representatives.

2.0 Environmental Setting

2.1 Topography

Southern Screw is located in the Piedmont physiographic province at an elevation of approximately 850 feet (see map appendix A). The site slope is approximately 7%.

2.2 Surface Waters

The nearest surface water body to Southern Fastener Systems is an intermittent stream that flows into Third Creek. This stream originates right on the western edge of the Site. Third creek is classified as a class C stream by the North Carolina Department of Environmental, Health, and Natural Resources (ref. 8). Approximately one mile North East from site there is an intermittent tributary that flows into Fourth Creek. Fourth Creek is classified as WS III stream from its source to the Statesville water supply intake (located upstream from site), and as a class C Stream from the Statesville water supply intake to South Yadkin river. Third Creek eventually flows into Fourth Creek. Third and Fourth Creek can only be recommended for fish and wildlife propagation, secondary recreation and other uses requiring water of lower quality (ref.8). The Statesville water supply intake is located at the Yadkin River (ref. 2)

2.3 Geology, soils and Groundwater (ref. 11).

Underlying the Piedmont are two main groups of rocks; bedrock, and saprolite. Under the land surface is saprolite, and its thickness varies from a few feet to more than 100 feet. Bedrock underlies the saprolite. Saprolite is derived from weathered bedrock, and water is contained within the pore spaces between rock particles. The bedrock is composed of different types of igneous and metamorphosed igneous and sedimentary rocks, and

has very little granular character. Instead, water is contained in sheet like openings formed along fractures. The hydraulic conductivity of the saprolite is approximately 3.5×10^{-4} cm/sec and for the bedrock 7×10^{-3} cm/sec.

Rocks underlying the site are the composite gneiss with considerable hornblende gneiss. All water supplies in Irdell county with the exception of the municipal supplies of Statesville and Moorsville, are obtained from wells and springs. Springs are not commonly used because they are less easily accessible and their individual yields are less than 3 gallons a minute. The average yield of drilled well 6 inches or larger in diameter is 19 gallons a minute. Several geologic factors suggest that adequate well supplies are available for most needs. The prominent gneissoid structure possess fractures capable of transmitting water. The soil in the area consists of the Loyd Cecil association. These soils are deep, gently sloping to strongly sloping, well drained soils with a subsoil of yellowish red to a dark red clay. The hydraulic conductivity of this soil is approximately $1 \times 10^{-5} - 1 \times 10^{-7}$ (ref. 19).

2.4 Climate and Meteorology (ref. 13,14,17)

Seasonal Temperatures	(F)	January	July
	Mean Max	50	79
	Mean Min	31	70
	Mean	43	79

Precipitation	(inches)	
	Mean annual precipitation:	46
	Mean annual evaporation:	40
	Net annual precipitation:	8 (6)
	Mean annual snowfall:	5
	One year 24- hour rainfall:	3.0
Storm Events	Mean days/year with thunderstorms:	50
	Prevailing winds and wind speeds:	sw at 9 mph

Emissions Inventory Summary for Irdell County (Tons/year)

Type	Area Sources	Point Sources
Particulates	10,157	2,169
Sulfer Dioxide	729	916
Nitrogen Oxides	4,958	665
Volatile Organics & Hydrocarbons	9,541	1,025
Carbon Monoxide	37,946	114

2.5 Land Use

Southern Screw/ Farley Metals is located within the city limits of Statesville, NC. land within a one mile radius of the site is used for commercial residential, and industrial purposes.

2.6 Population Distribution and Water Supply

According to the 1980 census center report (ref. 16) , the population of Statesville is 18,622 . The greater part of the four mile radius surrounding the site however lies outside the Statesville city limit. The population within the Statesville city limit obtains its drinking water from Statesville Utility Department. The water supply for the Statesville Utility Department is the Yadkin River.The population outside the city limit primarily obtains its water from groundwater. Irdell Water Company, and Piedmont Water and Construction company (ref. 7) provide ground water to some of the residents in the four mile radius around the site.
The population density of Irdell county in 1980 was 144 people per square mile (ref. 16). Assuming a constant and symmetrical population density, the population distribution was estimated for the area around the site not including the population of Statesville.

DISTANCE (MILES)	AREA (SQ MILES)	POPULATION
1	3.14	452
2	12.66	1823
3	28.26	4069
4	50.24	7235

A house count performed on a 1980 USGS Topographic map (Appendix A) assuming 3.8 People per house indicates that there are approximately 3,202 people within the 3 mile radius utilizing groundwater. The nearest well is on-site. However this well is only used for production and not as a drinking water source.
The nearest documented community well is approximately 4,000 feet away and serves 244 people (ref.). It would be safe to assume that 85% of the people that live within the 3 mile radius of the site are dependant on ground water as a sole source for drinking and other purposes.

2.7 Critical Environments (ref. 15)

There are no critical habitats of an endangered species, or wetlands within four miles of the site. There are four critical habitats in North Carolina. The nearest is approximately 60 miles west and is for the mountain golden heather. Approximately 80 miles east is the habitat for Cape Fear Shiner in Randolf County.

3.0 Waste Types

3.1 Waste Types and Methods of Disposal (ref. 4)

The waste generated at this facility includes plating wastes from zinc, nickel, copper, cadmium, brass plating, and a copper strip line. The copper strip process involves stripping copper from washers that are copper coated prior to heat treatment. Zinc chloride is used in the zinc platings. Cyanides have been used in the cadmium plating and the copper stripping process. Screws and washers were also heat treated for hardening. The carbon source for this heat treating was natural gas.
A caustic detergent was also used for degreasing, and a waste oil was generated from quenching and cutting oils. The caustic detergent was treated as wastewater and discharged to the municipal sewer. Two on site lagoons have been used in the past to neutralize wastes from spent plating bath solutions from electroplating operations.

3.2 Waste Quantities (ref. 6)

Approximately 40,000 pounds monthly, of electroplating sludge was sent to the city of Statesville, NC sewage system, to the sewage treatment plant between 1945 and November 1980. After that changes were mandated by the EPA and the sludge was separated and, the hazardous waste was sent to SCA In Pinewood South Carolina. Two on-site lagoons were used in the past to neutralize wastes from spent plating bath solutions from electroplating operations. These lagoons have been capped with soil as explained earlier.

4.0 Laboratory Data

Data from State sampling is tabulated. However analysis results from Southern Fastening systems sampling in 1982 and 1985 as well as analysis performed on split samples is included in the appendix B.

Table 1.0 Samples From State Site Investigation (PPM).

	1	2	3	4
	SOIL 18"	SOIL 5 FT	SOIL 7 FT	SOIL 7.2 FT
	EX/TOT	EX/TOT	EX/TOT	EX/TOT
ARSENIC	<.01/2	<.01/4	<.01/<2	<.01/<2
BARIUM	.04/54	<.08/60	<.04/32	<.04/250
CADMIUM	<.08/<16	<.08/<16	<.08/<16	<.08/20
CHROMIUM	<.10/40	<.10/56	<.10/36	<.10/38
LEAD	<.50/22	<.50/56	<.50/36	<.50/38
MERCURY	<.02/≤.11	<.02/<.09	<.02/<.09	<.02/≤.09
SELENIUM	<.005/<1	<.005/<1	<.005/<1	<.005/<1
SILVER	<.10/<20	<.10/20	<.10/<20	<.10/<20

TABLE 1 CONTINUED

	6	7	5	6	7
	SEDIMENT UPSTREAM	SEDIMENT DOWNSTREAM	ONSITE WELL	UPSTREAM	DOWNSTREAM
	EX/TOT	EX/TOT	TOT	TOT	TOT
ARSENIC	<.01/<2	<.01/<2	<.01	<.01	<.01
BARIUM	<.04/28	<.04/15	<.1	<.1	<.1
CADMIUM	<.08/<16	<.08/15	<.005	<.005	<.005
CHROMIUM	<.10/68	<.10/23	<.01	<.01	<.01
LEAD	<.50/20	<.50/19	<.005	<.005	<.005
MERCURY	<.02/≤.09	<.02/≤.08	<.0002	<.0002	<.0002
SELINIUM	<.005/<1	<.005/<1	<.005	<.005	<.005
SILVER	<.10/<20	<.10<19	<.05	<.05	<.05

Sample Identification:

1. Background soil from a depth of 18 inches, 375 feet. east of the eastern edge of the plant building and 43 feet. north of the access road.

2. Subsurface soil from 5 feet. depth in of lagoon south of east wing of plant building.

3. Subsurface soil from 7 feet. depth in area of lagoon south of east wing of plant building.

4. Subsurface soil from 7.2 feet. depth in area of lagoon south wastewater treatment building.

5. Water sample from on-site production well.

6. Water and sediment from headwaters of stream south of wastewater treatment building.

7. Water and Sediment from creek north of the bridge at SR 2352 (south and downstream of site).

ORGANIC ANALYSIS

The only sample that had reportable amounts of organic compounds was sample 2. Chloroform at 32 ppb (6 x detection limit) was detected. Sample 2 is soil from 5 feet. No compounds were identified from air samples taken .

5.0 Toxicological and Chemical Characteristics (ref 20).

SYNS:
6-(3-(2-CHLORO-6-FLUOROPHENYL)-5-METHYL-4-ISOXAZOLECARBOXAMIDO)PENICILLANIC ACID SODIUM SALT
CULPEN
FLOXACILLIN SODIUM MONOHYDRATE
FLOXAPEN
FLUCLOXACILLIN SODIUM MONOHYDRATE
STAPHYLEX

TOXICITY DATA:	CODEN:
orl-mus LD50:3800 mg/kg	MEIEDD 10,589,83
scu-mus LD50:2200 mg/kg	MEIEDD 10,589,83

THR: Moderately toxic by ingestion and subcutaneous routes. When heated to decomposition it emits very toxic fumes of Cl^-, F^-, NO_x, Na_2O and SO_x. See other penilillin entries.

CHJ250 *HR: 3*

3-CHLORO-2-FLUOROPROPENE

CAS: 6186-91-0 NIOSH: UC 7700000
mf: C_3H_4ClF mw: 94.52

SYN: 3-CHLORO-2-FLUORO-1-PROPENE

TOXICITY DATA:	CODEN:
orl-rat LD50:280 mg/kg	AIHAAP 23,95,62
ihl-rat LCLo:1000 ppm/4H	AIHAAP 23,95,62
skn-rbt LD50:200 mg/kg	AIHAAP 23,95,62

THR: Poison by ingestion and skin contact. Mildly toxic by inhalation. When heated to decomposition it emits very toxic fumes of F^- and Cl^-. See also CHLORINATED HYDROCARBONS, ALIPHATIC; and FLUORIDES.

CHJ500 *HR: 3*

CHLOROFORM

CAS: 67-66-3 NIOSH: FS 9100000
DOT: 1888
mf: $CHCl_3$ mw: 119.37

PROP: Colorless liquid; heavy, ethereal odor. Mp: −63.5°, bp: 61.26°, fp: −63.5°, flash p: none, d: 1.49845 @ 15°, vap press: 100 mm @ 10.4°, vap d: 4.12.

SYNS:
CHLOROFORME (FRENCH)
CLOROFORMIO (ITALIAN)
FORMYL TRICHLORIDE
METHANE TRICHLORIDE
METHENYL TRICHLORIDE
METHYL TRICHLORIDE
NCI-CO2686
R 20 (REFRIGERANT)
RCRA WASTE NUMBER U044
TCM
TRICHLOORMETHAAN (DUTCH)
TRICHLORMETHAN (CZECH)
TRICHLOROFORM
TRICHLOROMETHANE
TRICLOROMETANO (ITALIAN)

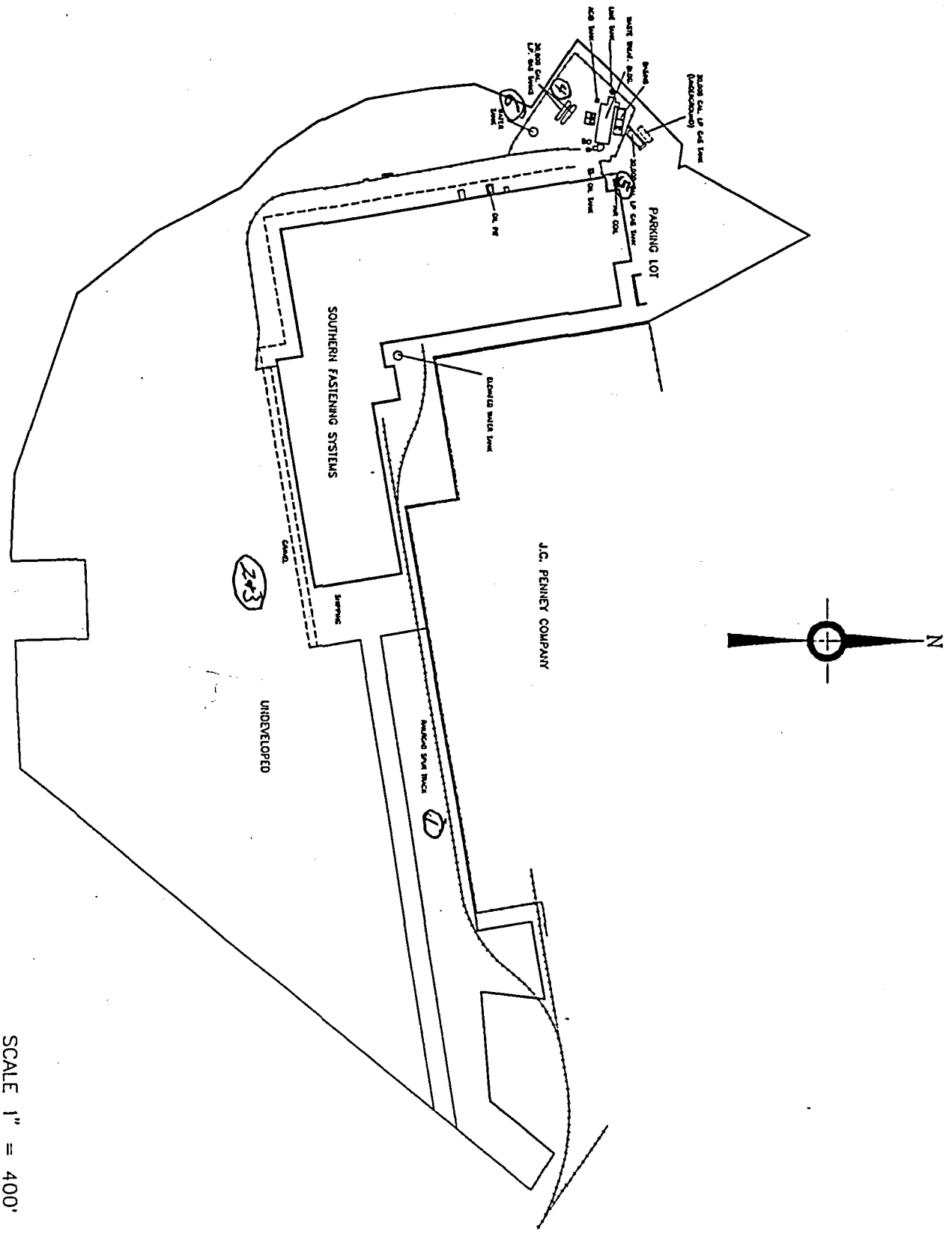
TOXICITY DATA:	CODEN:
skn-rbt 10 mg/24H open MLD	AIHAAP 23,95,62
skn-rbt 500 mg/24H MLD	28ZPAK -,27,72
eye-rbt 148 mg	AIHAAP 37,697,76
eye-rbt 20 mg/24H MOD	28ZPAK -,27,72
oms-grh-ihl 562 mg/L	MUREAV 113,467,83
sce-hmn:lym 10 mmol/L	ENVRAL 32,72,83
dnd-rat-orl 1 μmol/kg	CBINA8 33,301,81
dns-mus-ipr 50 mg/kg	TOLED5 21,357,84
sce-mus-orl 200 mg/kg/4D-I	ENVRAL 32,72,83
dnd-mam:lym 1 mmol/L	TOLED5 11,243,82
orl-rat TDLo:1260 mg/kg (6-15D preg):TER	TXAPA9 29,348,74
ihl-rat TCLo:30 ppm/7H (6-15D preg):TER	TXAPA9 28,442,74
orl-mus TDLo:2115 mg/kg (3W male/3W pre-5D post):REP	EVHPAZ 46,127,82
orl-rat TDLo:13832 mg/kg/2Y-C:CAR	FAATDF 5,760,85
orl-mus TDLo:127 gm/kg/92W-I:CAR	NCITR* NCI-CG-TR 0,76
orl-rat TD :98 gm/kg/78W-I: NEO	NCITR* NCI-CG-TR 0,76
orl-mus TD :18 gm/kg/17W-I: NEO	JNCIAM 5,251,45
orl-rat TD :7020 mg/kg/78W-I: CAR	EVHPAZ 31,171,79
orl-rat TD :70 gm/kg/78W-I: NEO	NCITR* NCI-CG-TR 0,76
orl-mus TD :24752 mg/kg/2Y-C:ETA	FAATDF 5,760,85
orl-rat TD :58968 mg/kg/2Y-C: NEO	FAATDF 5,760,85
ihl-hmn TCLo:10 mg/m³/1Y: CNS,GIT	IRGGAJ 24,127,67
ihl-hmn TCLo:5000 mg/m³/7M: CNS	AHBAAM 116,131,8
ihl-hmn LCLo:25000 ppm/5M	TABIA2 3,231,33
orl-hmn LDLo:140 mg/kg	32ZWAA 8,275,74
unr-man LDLo:546 mg/kg	85DCAI 2,73,70
orl-rat LD50:908 mg/kg	JPFCD2 17,205,82
ihl-rat LCLo:8000 ppm/4H	AIHAAP 23,95,62
orl-mus LD50:36 mg/kg	ATSUDG 2,371,79
ihl-mus LC50:28 g/m³	PCOC** -,230,66
ipr-mus LD50:1484 mg/kg	TXAPA9 45,861,78
scu-mus LD50:704 mg/kg	JPETAB 123,224,58
orl-dog LDLo:1000 mg/kg	QJPPAL 7,205,34
ihl-dog LC50:100 g/m³	PCOC** -,230,66
ipr-dog LD50:1000 mg/kg	TXAPA9 10,119,67
ivn-dog LDLo:75 mg/kg	QJPPAL 7,205,34
ihl-cat LCLo:35000 mg/m³/4H	AHBAAM 116,131,8
orl-rbt LDLo:500 mg/kg	AEXPBL 97,86,23
ihl-rbt LC50:59 gm/m³	PCOC** -,230,66
scu-rbt LDLo:800 mg/kg	QJPPAL 7,205,34
orl-gpg LD50:820 mg/kg	GISAAA 48(3),10,83
ihl-gpg LCLo:20000 ppm/2H	FLCRAP 1,197,67
ihl-frg LCLo:6000 mg/m³	AEXPBL 97,86,23
ihl-mam LCLo:25000 ppm/5M	AEPPAE 138,65,28

IARC Cancer Review: Animal Limited Evidence IMEM 1,61,72; Human Limited Evidence IMEMDT 20,40 Animal Sufficient Evidence IMEMDT 20,401,79; NCI cinogenesis Bioassay (gavage); Clear Evidence: mous NCITR* NCI-CG-TR,1976. Reported in EPA TSCA Inv tory. EPA Genetic Toxicology Program. EPA Extr Hazardous Substances List. Community Right To List.

OSHA PEL: CL 50 ppm
ACGIH TLV: TWA 10 ppm; Suspected Carcinogen
DFG MAK: 10 ppm (50 mg/m³)
NIOSH REL: (Waste Anesthetic Gases and Vapors) ppm/1H; (Chloroform) CL 2 ppm/60M

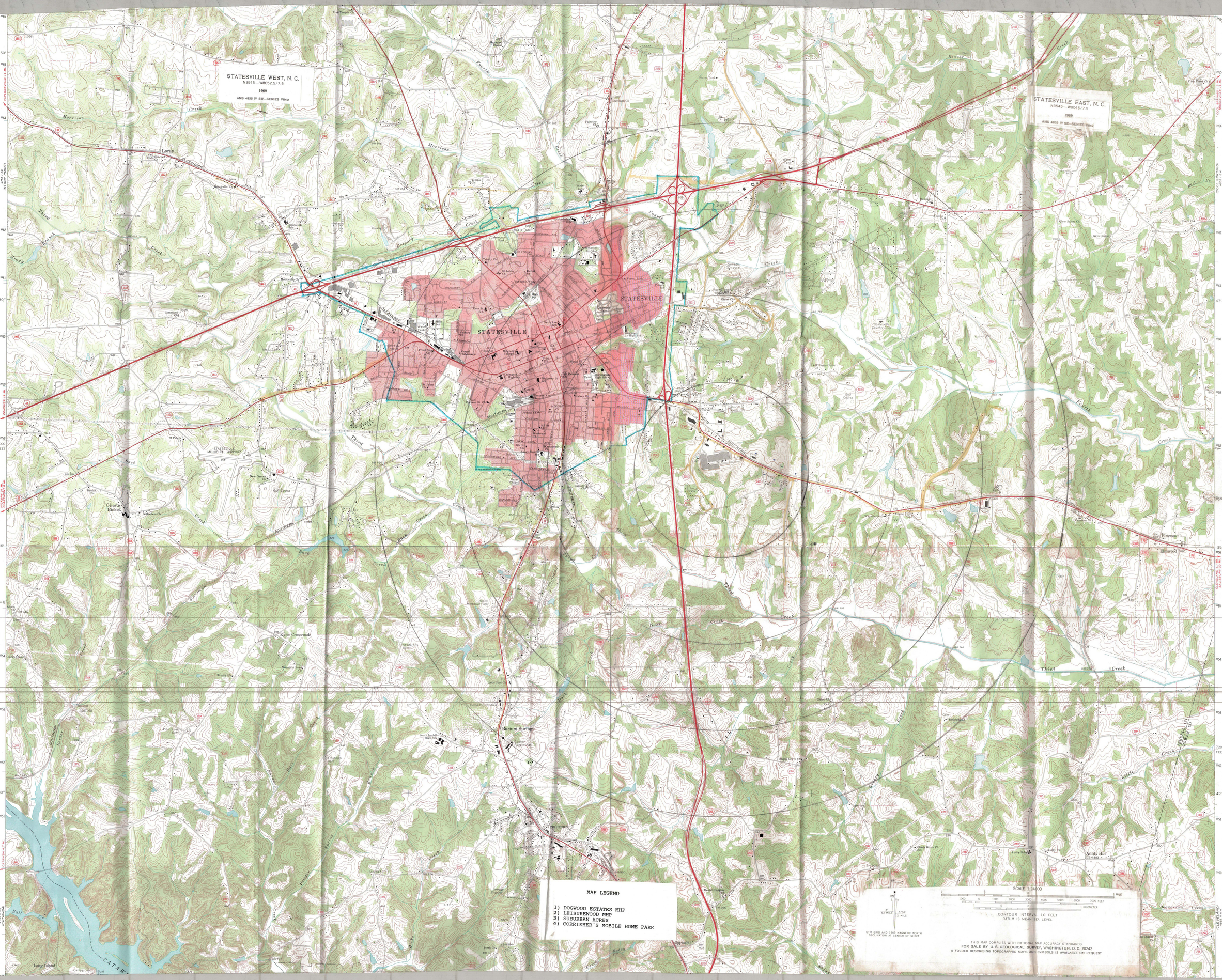
Appendix A

Maps and Photographs



SCALE 1" = 400'

MEMPHIS ENVIRONMENTAL CENTER, INC.			FIGURE 2. FARLEY METALS, INC. SOUTHERN FASTENING SYSTEMS STATESVILLE, N.C.
DATE: JUN 30, 1988	DRAWN: A.E.H.	DWG. NO. STAT0002	


STATESVILLE WEST, N. C.
N3545—W8052.5/7.5
1969
AMS 4855 IV SW—SERIES V842
STATESVILLE EAST, N. C.
N3545—W8045/7.5
1969
AMS 4855 IV SE—SERIES V842
STATESVILLE
Barium Springs
Troutman
Amity Hill
Elmwood
Eufola
Long Island
Celeste Hinkel
Kiles Crossroads
STATESVILLE MUNICIPAL AIRPORT
Loray
Morrison Creek
Third Creek
Fourth Creek
Hunter Creek
Little Creek
Beck Creek
Bull Cr.
CATAWBA
MAP LEGEND
1) DOGWOOD ESTATES MHP
2) LEISUREWOOD MHP
3) SUBURBAN ACRES
4) CORRIEHER'S MOBILE HOME PARK
SCALE 1:24 000
CONTOUR INTERVAL 10 FEET
DATUM IS MEAN SEA LEVEL
UTM GRID AND 1969 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET
THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U. S. GEOLOGICAL SURVEY, WASHINGTON, D. C. 20242
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

Appendix B

Laboratory Data

N. C. Department of Human Resources
Division of Health Services

SAMPLE ANALYSES REQUEST

RECEIVED
JUL 19 1990
SUPERFUND SECTION

State Laboratory of Public Healt
P. O. Box 2804
306 N. Wilmington Stree
Raleigh, 2761

Site Number 49D042269134 Field Sample Number 15814

Name of Site Southern Screw/Farley Metals Site Location Statesville, N.C.

Collected By Jack Butler ID# 44 Date Collected 27 June 1990 Time 1:15

Type of Sample:

Environmental	Concentrate	Comments
___ Groundwater (1)	___ Solid (5)	#1 - Bkgr. Soil - 18 in. deep
___ Surface Water (2)	___ Liquid (6)	
✓ Soil (3)	___ Sludge (7)	
___ Other (4)	___ Other (8)	

INORGANIC CHEMISTRY

Extractables		Total			
Parameter	Results mg/1	Parameter	Results mg/1	Parameter	Results mg/1
✓ Arsenic	<0.01	✓ Arsenic	2	✓ Silver	<20
✓ Barium	0.04	✓ Barium	54	___ Sulfates	
✓ Cadmium	<0.08	✓ Cadmium	<16	___ Zinc	
✓ Chromium	<0.10	___ Chloride		✓ Ph	6.10
✓ Lead	<0.50	✓ Chromium	40	___ Conductivity	
✓ Mercury	<0.02	___ Copper		___ TDS	
✓ Selenium	<0.005	___ Fluoride		___ TOC	
___ Silver	<0.10	___ Iron		✓ Cyanide	<8
		✓ Lead	22		
		___ Manganese			
		✓ Mercury	≤ 0.11		
		___ Nitrate			
		✓ Selenium	<1		

ORGANIC CHEMISTRY

Parameter	Results mg/1	Parameter	Results mg/1	Parameter	Results mg/1
___ P&T:GC/MS		___ EDB		___ Methoxychlor	
___ Acid:B/N Ext.		___ PCB's		___ Toxaphene	
___ TOX		___ Petroleum		___ 2,4-D	
		___ Endrin		___ 2,4,5-TP (silvex)	
		___ Lindane			

MICROBIOLOGY

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

RADIOCHEMISTRY

Parameter	Results PCi/l
___ Gross Alpha	
___ Gross Beta	

Date Received ___ Date Reported ___

Date Extracted ___ Date Analyzed ___

Reported By ___ Lab Number ___ 013647 JUN 28 90

DHS 3191 (Revised 7/85)
Solid and Hazardous Waste (Review 7/87)

N. C. Department of Human Resources
Division of Health Services

SAMPLE ANALYSES REQUEST

State Laboratory of Public Health
P. O. Box 28047
306 N. Wilmington Street
Raleigh, 27611

Site Number 4900422691 34 Field Sample Number 15815

Name of Site Southern Screw/Farley Metals Site Location Statesville, N.C.

Collected By Jack Butler ID# 44 Date Collected 27 June 1990 Time 2:00

Type of Sample:

Environmental	Concentrate	Comments
___ Groundwater (1)	___ Solid (5)	#2-Soil-5 ft. deep
___ Surface Water (2)	___ Liquid (6)	
✓ Soil (3)	___ Sludge (7)	
___ Other (4)	___ Other (8)	

INORGANIC CHEMISTRY

Extractables		Total			
Parameter	Results mg/1	Parameter	Results mg/1	Parameter	Results mg/1
✓ Arsenic	<0.01	✓ Arsenic	4	✓ Silver	<20
✓ Barium	<0.04	✓ Barium	60	___ Sulfates	
✓ Cadmium	<0.08	✓ Cadmium	<16	___ Zinc	
✓ Chromium	<0.10	___ Chloride		✓ Ph	6.70
✓ Lead	<0.50	✓ Chromium	56	___ Conductivity	
✓ Mercury	<0.02	___ Copper		___ TDS	
✓ Selenium	<0.005	___ Fluoride		___ TOC	
✓ Silver	<0.10	___ Iron		✓ Cyanide	<8
		✓ Lead	20		
		___ Manganese			
		✓ Mercury	<0.09		
		___ Nitrate			
		✓ Selenium	<1		

ORGANIC CHEMISTRY

Parameter	Results mg/1	Parameter	Results mg/1	Parameter	Results mg/1
___ P&T:GC/MS		___ EDB		___ Methoxychlor	
___ Acid:B/N Ext.		___ PCB's		___ Toxaphene	
___ TOX		___ Petroleum		___ 2,4-D	
		___ Endrin		___ 2,4,5-TP (silvex)	
		___ Lindane			

MICROBIOLOGY

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

RADIOCHEMISTRY

Parameter	Results PCi/1
___ Gross Alpha	
___ Gross Beta	

Date Received ___ Date Reported ___

Date Extracted ___ Date Analyzed ___

Reported By ___ Lab Number ___

613643 JUN 28 90

DHS 3191 (Revised 7/85)

N. C. Department of Human Resources
Division of Health Services

SAMPLE ANALYSES REQUEST

State Laboratory of Public Healt
P. O. Box 2804
306 N. Wilmington Stre
Raleigh, 2761

Site Number 49D042269134 Field Sample Number 15816

Name of Site Southern Screw/Farley Metals Site Location Statesville, N.C.

Collected By Jack Butler ID# 44 Date Collected 27 June 1990 Time 2:15

Type of Sample:

Environmental	Concentrate	Comments
___ Groundwater (1)	___ Solid (5)	#3-Soil-7 ft. deep
___ Surface Water (2)	___ Liquid (6)	
✓ Soil (3)	___ Sludge (7)	
___ Other (4)	___ Other (8)	

INORGANIC CHEMISTRY

Extractables		Total			
Parameter	Results mg/1	Parameter	Results mg/1	Parameter	Results mg/1
✓ Arsenic	<0.01	✓ Arsenic	<2	✓ Silver	<20
✓ Barium	<0.04	✓ Barium	32	___ Sulfates	
✓ Cadmium	<0.08	✓ Cadmium	<16	___ Zinc	
✓ Chromium	<0.10	___ Chloride		✓ Ph	6.70
✓ Lead	<0.50	✓ Chromium	36	___ Conductivity	
✓ Mercury	<0.02	___ Copper		___ TDS	
✓ Selenium	<0.005	___ Fluoride		___ TOC	
✓ Silver	<0.10	___ Iron		✓ Cyanide	<8
		✓ Lead	24		
		___ Manganese			
		✓ Mercury	<0.09		
		___ Nitrate			
		✓ Selenium	<1		

ORGANIC CHEMISTRY

Parameter	Results mg/1	Parameter	Results mg/1	Parameter	Results mg/1
___ P&T:GC/MS		___ EDB		___ Methoxychlor	
___ Acid:B/N Ext.		___ PCB's		___ Toxaphene	
___ TOX		___ Petroleum		___ 2,4-D	
		___ Endrin		___ 2,4,5-TP (silvex)	
		___ Lindane			

MICROBIOLOGY

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

RADIOCHEMISTRY

Parameter	Results PCi/1
___ Gross Alpha	
___ Gross Beta	

Date Received ___ Date Reported ___

Date Extracted ___ Date Analyzed 813649 JUN 28 90

Reported By ___ Lab Number ___

DHS 3191 (Revised 7/85)

N. C. Department of Human Resources
Division of Health Services

SAMPLE ANALYSES REQUEST

State Laboratory of Public Health
P. O. Box 28047
306 N. Wilmington Street
Raleigh, 27611

Site Number 49D042269134 Field Sample Number 15817

Name of Site Southern Screw/Farley Metals Site Location Statesville, N.C.

Collected By Jack Butler ID# 44 Date Collected 27 June 1990 Time 3:00

Type of Sample:

Environmental	Concentrate	Comments
___ Groundwater (1)	___ Solid (5)	#4-Soil-7.2 ft. deep
___ Surface Water (2)	___ Liquid (6)	
✓ Soil (3)	___ Sludge (7)	
___ Other (4)	___ Other (8)	

INORGANIC CHEMISTRY

Extractables		Total			
Parameter	Results mg/1	Parameter	Results mg/1	Parameter	Results mg/1
✓ Arsenic	<0.01	✓ Arsenic	<2	✓ Silver	<20
✓ Barium	<0.04	✓ Barium	250	Sulfates	
✓ Cadmium	<0.08	✓ Cadmium	20	Zinc	
✓ Chromium	<0.10	Chloride		✓ Ph	5.0
✓ Lead	<0.50	✓ Chromium	38	Conductivity	
Mercury	<0.02	Copper		TDS	
✓ Selenium	<0.005	Fluoride		TOC	
✓ Silver	<0.10	Iron		✓ Cyanide	INTERFERENCE
		✓ Lead	22		
		Manganese			
		✓ Mercury	≤ 0.09		
		Nitrate			
		✓ Selenium	<1		

ORGANIC CHEMISTRY

Parameter	Results mg/1	Parameter	Results mg/1	Parameter	Results mg/1
P&T:GC/MS		EDB		Methoxychlor	
Acid:B/N Ext.		PCB's		Toxaphene	
TOX		Petroleum		2,4-D	
		Endrin		2,4,5-TP (silvex)	
		Lindane			

MICROBIOLOGY

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

RADIOCHEMISTRY

Parameter	Results PCi/1
Gross Alpha	
Gross Beta	

Date Received ___ Date Reported ___

Date Extracted ___ Date Analyzed ~~313659 JUN 28 90~~

Reported By ___ Lab Number ___

DHS 3191 (Revised 7/85)

RECEIVED
JUL 2 1990
SUPERFUND SECTION

N. C. Department of Human Resources
Division of Health Services

SAMPLE ANALYSES REQUEST

State Laboratory of Public Healt
P. O. Box 2804
306 N. Wilmington Stre
Raleigh, 2761

Site Number 49D042269137 Field Sample Number 15818

Name of Site Southern Screw/Farley Metals Site Location Statesville, N.C.

Collected By Jack Butler ID# 44 Date Collected 27 June 1990 Time 12:20

Type of Sample:

Environmental	Concentrate	Comments
✓ Groundwater (1)	Solid (5)	#5-On Site well
Surface Water (2)	Liquid (6)	
Soil (3)	Sludge (7)	
Other (4)	Other (8)	

INORGANIC CHEMISTRY

Extractables		Total			
Parameter	Results mg/1	Parameter	Results mg/1	Parameter	Results mg/1
Arsenic		✓ Arsenic	<0.01	✓ Silver	<0.05
Barium		✓ Barium	<0.1	Sulfates	
Cadmium		✓ Cadmium	<0.005	Zinc	
Chromium		Chloride		✓ Ph	7.4
Lead		✓ Chromium	<0.01	Conductivity	
Mercury		Copper		TDS	
Selenium		Fluoride		TOC	
Silver		Iron		✓ Cyanide	Interference
		✓ Lead	<0.005		
		Manganese			
		✓ Mercury	<0.0002		
		Nitrate			
		✓ Selenium	<0.005		

ORGANIC CHEMISTRY

Parameter	Results mg/1	Parameter	Results mg/1	Parameter	Results mg/1
P&T:GC/MS		EDB		Methoxychlor	
Acid:B/N Ext.		PCB's		Toxaphene	
TOX		Petroleum		2,4-D	
		Endrin		2,4,5-TP (silvex)	
		Lindane			

MICROBIOLOGY

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

RADIOCHEMISTRY

Parameter	Results PCi/1
Gross Alpha	
Gross Beta	

RECEIVED
JUL 20 1990
HAZARDOUS WASTE SECTION

Date Received

Date Reported 013690 JUN 29 90

Date Extracted

Date Analyzed 7/18/90

Reported By

Lab Number

DHS 3191 (Revised 7/85)

N. C. Department of Human Resources
Division of Health Services

SAMPLE ANALYSES REQUEST

State Laboratory of Public Heal
P. O. Box 2804
306 N. Wilmington Stre
Raleigh, 2761

Site Number 4900422 69134 Field Sample Number 15819

Name of Site Southern Screw/Farley Metals Site Location Statesville, N.C.

Collected By Jack Butler ID# 44 Date Collected 27 June 1990 Time 3:10

Type of Sample:

Environmental	Concentrate
___ Groundwater (1)	___ Solid (5)
___ Surface Water (2)	___ Liquid (6)
___ Soil (3)	___ Sludge (7)
✓ Other (4) (Sed.)	___ Other (8)

Comments
#6 - Sediment - Upstream
*Reported by Bill Walker by phone 8-1-90.

INORGANIC CHEMISTRY

Extractables		Total			
Parameter	Results mg/1	Parameter	Results mg/1	Parameter	Results mg/1
✓ Arsenic	<0.01	✓ Arsenic	<2	✓ Silver	<20
✓ Barium	<0.04*	✓ Barium	28	___ Sulfates	
✓ Cadmium	<0.08*	✓ Cadmium	<16	___ Zinc	
✓ Chromium	<0.10*	___ Chloride		✓ Ph	6.40
✓ Lead	<0.50*	✓ Chromium	68	___ Conductivity	
✓ Mercury	<0.02	___ Copper		___ TDS	
✓ Selenium	<0.005	___ Fluoride		___ TOC	
✓ Silver	<0.10*	___ Iron		✓ Cyanide	<8
		✓ Lead	20		
		___ Manganese			
		✓ Mercury	≤0.09		
		___ Nitrate			
		✓ Selenium	<1		

ORGANIC CHEMISTRY

Parameter	Results mg/1	Parameter	Results mg/1	Parameter	Results mg/1
___ P&T:GC/MS		___ EDB		___ Methoxychlor	
___ Acid:B/N Ext.		___ PCB's		___ Toxaphene	
___ TOX		___ Petroleum		___ 2,4-D	
		___ Endrin		___ 2,4,5-TP (silvex)	
		___ Lindane			

MICROBIOLOGY

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

RADIOCHEMISTRY

Parameter	Results PCi/1
___ Gross Alpha	
___ Gross Beta	

Date Received ___ Date Reported ___

Date Extracted ___ Date Analyzed 813651 JUN 28 90

Reported By ___ Lab Number ___

DHS 3191 (Revised 7/85)

N. C. Department of Human Resources
Division of Health Services

SAMPLE ANALYSES REQUEST

State Laboratory of Public Hea
P. O. Box 280
306 N. Wilmington Str
Raleigh, 276

Site Number 49D042269134 Field Sample Number 15820

Name of Site Southern Screw/Farley Metals Site Location Statesville, N.C.

Collected By Jack Butler ID# 44 Date Collected 27 June 1990 Time 3:10

Type of Sample:

Environmental	Concentrate	Comments
___ Groundwater (1)	___ Solid (5)	#6-Upstream
✓ Surface Water (2)	___ Liquid (6)	
___ Soil (3)	___ Sludge (7)	
___ Other (4)	___ Other (8)	

INORGANIC CHEMISTRY

Extractables		Total			
Parameter	Results mg/1	Parameter	Results mg/1	Parameter	Results mg/1
___ Arsenic		✓ Arsenic	<0.01	✓ Silver	<0.05
___ Barium		✓ Barium	<0.1	___ Sulfates	
___ Cadmium		✓ Cadmium	0.005	___ Zinc	
___ Chromium		___ Chloride		✓ Ph	6.4
___ Lead		✓ Chromium	0.01	___ Conductivity	
___ Mercury		___ Copper		___ TDS	
___ Selenium		___ Fluoride		___ TOC	
___ Silver		___ Iron		✓ Cyanide	<0.4
		✓ Lead	<0.005		
		___ Manganese			
		✓ Mercury	<0.0002		
		___ Nitrate			
		✓ Selenium	<0.005		

ORGANIC CHEMISTRY

Parameter	Results mg/1	Parameter	Results mg/1	Parameter	Results mg/
___ P&T:GC/MS		___ EDB		___ Methoxychlor	
___ Acid:B/N Ext.		___ PCB's		___ Toxaphene	
___ TOX		___ Petroleum		___ 2,4-D	
		___ Endrin		___ 2,4,5-TP (silvex)	
		___ Lindane			

MICROBIOLOGY

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

RADIOCHEMISTRY

Parameter	Results PCi/1
___ Gross Alpha	
___ Gross Beta	

RECEIVED
JUL 20 1990
HAZARDOUS WASTE SECTION

Date Received ___ Date Reported 013691 JUN 29 90

Date Extracted ___ Date Analyzed 7/18/90

Reported By ___ Lab Number ___

DHS 3191 (Revised 7/85)

N. C. Department of Human Resources
Division of Health Services

SAMPLE ANALYSES REQUEST

State Laboratory of Public Healt
P. O. Box 2804
306 N. Wilmington Stree
Raleigh, 2761

Site Number 49D042269134 Field Sample Number 15821

Name of Site Southern Screw/Farley Metals Site Location Statesville, N.C.

Collected By Jack Butler ID# 44 Date Collected 27 June 1990 Time 3:45

Type of Sample:

Environmental	Concentrate
____ Groundwater (1)	____ Solid (5)
____ Surface Water (2)	____ Liquid (6)
____ Soil (3)	____ Sludge (7)
✓ Other (4) (Sed.)	____ Other (8)

Comments
#7- Sediment-Downstream
* Reported by Bill Walker by phone 8-1-90.

INORGANIC CHEMISTRY

Extractables		Total			
Parameter	Results mg/1	Parameter	Results mg/1	Parameter	Results mg/1
✓ Arsenic	<0.01	✓ Arsenic	<2	✓ Silver	<19
✓ Barium	<0.04*	✓ Barium	15	Sulfates	
✓ Cadmium	<0.08*	✓ Cadmium	<15	Zinc	
✓ Chromium	<0.10*	Chloride		✓ Ph	6.70
✓ Lead	<0.50*	✓ Chromium	23	Conductivity	
✓ Mercury	<0.02	Copper		TDS	
✓ Selenium	<0.005	Fluoride		TOC	
✓ Silver	<0.10*	Iron		✓ Cyanide	<8
		✓ Lead	19		
		Manganese			
		✓ Mercury	<0.08		
		Nitrate			
		✓ Selenium	<1		

ORGANIC CHEMISTRY

Parameter	Results mg/1	Parameter	Results mg/1	Parameter	Results mg/1
P&T:GC/MS		EDB		Methoxychlor	
Acid:B/N Ext.		PCB's		Toxaphene	
TOX		Petroleum		2,4-D	
		Endrin		2,4,5-TP (silvex)	
		Lindane			

MICROBIOLOGY

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

RADIOCHEMISTRY

Parameter	Results PCi/1
Gross Alpha	
Gross Beta	

Date Received ____ Date Reported ____

Date Extracted ____ Date Analyzed ____

Reported By ____ Lab Number ____ 813652 JUN 28 90

DHS 3191 (Revised 7/85)

N. C. Department of Human Resources
Division of Health Services

SAMPLE ANALYSES REQUEST

RECEIVED
AUG 3 1990
SUPERFUND SECTION

State Laboratory of Public Health
P. O. Box 28047
306 N. Wilmington Street
Raleigh, 27611

Site Number 49D042269134 Field Sample Number 12151

Name of Site Southern Screw/Farley Metals Site Location Statesville, N.C.

Collected By Jack Butler ID# 44 Date Collected 27 June 1990 Time 1:15

Type of Sample:

Environmental	Concentrate	Comments
___ Groundwater (1)	___ Solid (5)	#1-Bkgr. Soil -18 in. deep
___ Surface Water (2)	___ Liquid (6)	
✓ Soil (3)	___ Sludge (7)	
___ Other (4)	___ Other (8)	

INORGANIC CHEMISTRY

Extractables		Total			
Parameter	Results mg/1	Parameter	Results mg/1	Parameter	Results mg/1
___ Arsenic		___ Arsenic		___ Silver	
___ Barium		___ Barium		___ Sulfates	
___ Cadmium		___ Cadmium		___ Zinc	
___ Chromium		___ Chloride		___ Ph	
___ Lead		___ Chromium		___ Conductivity	
___ Mercury		___ Copper		___ TDS	
___ Selenium		___ Fluoride		___ TOC	
___ Silver		___ Iron		___	
___		___ Lead		___	
___		___ Manganese		___	
___		___ Mercury		___	
___		___ Nitrate		___	
___		___ Selenium		___	

ORGANIC CHEMISTRY

Parameter	Results mg/1	Parameter	Results mg/1	Parameter	Results mg/1
✓ P&T:GC/MS		___ EDB		___ Methoxychlor	
✓ Acid:B/N Ext.		___ PCB's		___ Toxaphene	
___ TOX		___ Petroleum		___ 2,4-D	
___		___ Endrin		___ 2,4,5-TP (silvex)	
___		___ Lindane		___	

MICROBIOLOGY

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

RADIOCHEMISTRY

Parameter	Results PCi/1
___ Gross Alpha	
___ Gross Beta	
___	
___	

Date Received 6-28-90 nw Date Reported 8-1-90

Date Extracted 7-5-90 AA Date Analyzed BNA 7-9-90 BD PT 7-20-90 nw

Reported By John L. Neal Lab Number 905763

DHS 3191 (Revised 7/85)

#905763 - 905773

N. C. Department of Human Resources
Division of Health Services

SAMPLE ANALYSES REQUEST

State Laboratory of Public Health
P. O. Box 28047
306 N. Wilmington Street
Raleigh, 27611

Site Number 49D042269134 Field Sample Number 15814

Name of Site Southern Screw/Farley Metals Site Location Statesville, N.C.

Collected By Jack Butler ID# 44 Date Collected 27 June 1990 Time 1:15

Type of Sample:

Environmental	Concentrate	Comments
___ Groundwater (1)	___ Solid (5)	#1-Bkgr. Soil -18 in. deep
___ Surface Water (2)	___ Liquid (6)	
✓ Soil (3)	___ Sludge (7)	
___ Other (4)	___ Other (8)	

INORGANIC CHEMISTRY

Extractables		Total			
Parameter	Results mg/1	Parameter	Results mg/1	Parameter	Results mg/1
✓ Arsenic		✓ Arsenic		✓ Silver	
✓ Barium		✓ Barium		___ Sulfates	
✓ Cadmium		✓ Cadmium		___ Zinc	
✓ Chromium		___ Chloride		✓ Ph	
✓ Lead		✓ Chromium		___ Conductivity	
✓ Mercury		___ Copper		___ TDS	
✓ Selenium		___ Fluoride		___ TOC	
✓ Silver		___ Iron		✓ Cyanide	
		✓ Lead			
		___ Manganese			
		✓ Mercury			
		___ Nitrate			
		✓ Selenium			

ORGANIC CHEMISTRY

Parameter	Results mg/1	Parameter	Results mg/1	Parameter	Results mg/1
___ P&T:GC/MS		___ EDB		___ Methoxychlor	
___ Acid:B/N Ext.		___ PCB's		___ Toxaphene	
___ TOX		___ Petroleum		___ 2,4-D	
		___ Endrin		___ 2,4,5-TP (silvex)	
		___ Lindane			

MICROBIOLOGY

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

RADIOCHEMISTRY

Parameter	Results PCi/1
___ Gross Alpha	
___ Gross Beta	

Date Received ___ Date Reported ___

Date Extracted ___ Date Analyzed ___

Reported By ___ Lab Number ___

DHS 3191 (Revised 7/85)
Solid and Hazardous Waste (Review 7/87)

N. C. Department of Human Resources
Division of Health Services

SAMPLE ANALYSES REQUEST

State Laboratory of Public Healt
P. O. Box 2804
306 N. Wilmington Stree
Raleigh, 2761

Site Number 49D042269134 Field Sample Number 15815

Name of Site Southern Screw/Farley Metals Site Location Statesville, N.C.

Collected By Jack Butler ID# 44 Date Collected 27 June 1990 Time 2:00

Type of Sample:

Environmental	Concentrate	Comments
___ Groundwater (1)	___ Solid (5)	#2-Soil-5 ft. deep
___ Surface Water (2)	___ Liquid (6)	
✓ Soil (3)	___ Sludge (7)	
___ Other (4)	___ Other (8)	

INORGANIC CHEMISTRY

Extractables		Total			
Parameter	Results mg/1	Parameter	Results mg/1	Parameter	Results mg/1
✓ Arsenic		✓ Arsenic		✓ Silver	
✓ Barium		✓ Barium		___ Sulfates	
✓ Cadmium		✓ Cadmium		___ Zinc	
✓ Chromium		___ Chloride		✓ Ph	
✓ Lead		✓ Chromium		___ Conductivity	
✓ Mercury		___ Copper		___ TDS	
✓ Selenium		___ Fluoride		___ TOC	
✓ Silver		___ Iron		✓ Cyanide	
		✓ Lead			
		___ Manganese			
		✓ Mercury			
		___ Nitrate			
		✓ Selenium			

ORGANIC CHEMISTRY

Parameter	Results mg/1	Parameter	Results mg/1	Parameter	Results mg/1
___ P&T:GC/MS		___ EDB		___ Methoxychlor	
___ Acid:B/N Ext.		___ PCB's		___ Toxaphene	
___ TOX		___ Petroleum		___ 2,4-D	
		___ Endrin		___ 2,4,5-TP (silvex)	
		___ Lindane			

MICROBIOLOGY

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

RADIOCHEMISTRY

Parameter	Results PCi/1
___ Gross Alpha	
___ Gross Beta	

Date Received ___ Date Reported ___

Date Extracted ___ Date Analyzed ___

Reported By ___ Lab Number ___

DHS 3191 (Revised 7/85)

N. C. Department of Human Resources
Division of Health Services

SAMPLE ANALYSES REQUEST

State Laboratory of Public Heal
P. O. Box 2804
306 N. Wilmington Stre
Raleigh, 2761

Site Number 49004226 9134 Field Sample Number 15816

Name of Site Southern Screw/Farley Metals Site Location Statesville, N.C.

Collected By Jack Butler ID# 44 Date Collected 27 June 1990 Time 2:15

Type of Sample:

Environmental	Concentrate	Comments
___ Groundwater (1)	___ Solid (5)	#3-Soil - 7 ft. deep
___ Surface Water (2)	___ Liquid (6)	
✓ Soil (3)	___ Sludge (7)	
___ Other (4)	___ Other (8)	

INORGANIC CHEMISTRY

Extractables		Total			
Parameter	Results mg/1	Parameter	Results mg/1	Parameter	Results mg/1
✓ Arsenic		✓ Arsenic		✓ Silver	
✓ Barium		✓ Barium		___ Sulfates	
✓ Cadmium		✓ Cadmium		___ Zinc	
✓ Chromium		___ Chloride		✓ Ph	
✓ Lead		✓ Chromium		___ Conductivity	
✓ Mercury		___ Copper		___ TDS	
✓ Selenium		___ Fluoride		___ TOC	
✓ Silver		___ Iron		✓ Cyanide	
		✓ Lead			
		___ Manganese			
		✓ Mercury			
		___ Nitrate			
		✓ Selenium			

ORGANIC CHEMISTRY

Parameter	Results mg/1	Parameter	Results mg/1	Parameter	Results mg/1
___ P&T:GC/MS		___ EDB		___ Methoxychlor	
___ Acid:B/N Ext.		___ PCB's		___ Toxaphene	
___ TOX		___ Petroleum		___ 2,4-D	
		___ Endrin		___ 2,4,5-TP (silvex)	
		___ Lindane			

MICROBIOLOGY

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

RADIOCHEMISTRY

Parameter	Results PCi/1
___ Gross Alpha	
___ Gross Beta	

Date Received ___ Date Reported ___

Date Extracted ___ Date Analyzed ___

Reported By ___ Lab Number ___

HS 3191 Revised 7/85)

N. C. Department of Human Resources
Division of Health Services

SAMPLE ANALYSES REQUEST

State Laboratory of Public Heal
P. O. Box 2804
306 N. Wilmington Stre
Raleigh, 2761

Site Number 4900422691 34 Field Sample Number 15817

Name of Site Southern Screw/Farley Metals Site Location Statesville, N.C.

Collected By Jack Butler ID# 44 Date Collected 27 June 1990 Time 3:00

Type of Sample:

Environmental	Concentrate	Comments
___ Groundwater (1)	___ Solid (5)	#4-Soil-7.2 ft. deep
___ Surface Water (2)	___ Liquid (6)	
✓ Soil (3)	___ Sludge (7)	
___ Other (4)	___ Other (8)	

INORGANIC CHEMISTRY

Extractables		Total			
Parameter	Results mg/1	Parameter	Results mg/1	Parameter	Results mg/1
✓ Arsenic		✓ Arsenic		✓ Silver	
✓ Barium		✓ Barium		___ Sulfates	
✓ Cadmium		✓ Cadmium		___ Zinc	
✓ Chromium		___ Chloride		✓ Ph	
✓ Lead		✓ Chromium		___ Conductivity	
✓ Mercury		___ Copper		___ TDS	
✓ Selenium		___ Fluoride		___ TOC	
✓ Silver		___ Iron		✓ Cyanide	
		✓ Lead			
		___ Manganese			
		✓ Mercury			
		___ Nitrate			
		✓ Selenium			

ORGANIC CHEMISTRY

Parameter	Results mg/1	Parameter	Results mg/1	Parameter	Results mg/1
___ P&T:GC/MS		___ EDB		___ Methoxychlor	
___ Acid:B/N Ext.		___ PCB's		___ Toxaphene	
___ TOX		___ Petroleum		___ 2,4-D	
		___ Endrin		___ 2,4,5-TP (silvex)	
		___ Lindane			

MICROBIOLOGY

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

RADIOCHEMISTRY

Parameter	Results PCi/1
___ Gross Alpha	
___ Gross Beta	

Date Received ___ Date Reported ___

Date Extracted ___ Date Analyzed ___

Reported By ___ Lab Number ___

DHS 3191 (Revised 7/85)

N. C. Department of Human Resources
Division of Health Services

SAMPLE ANALYSES REQUEST

State Laboratory of Public Heal
P. O. Box 2804
306 N. Wilmington Stre
Raleigh, 2761

Site Number 49D042269134 Field Sample Number 15818

Name of Site Southern Screw/Farley Metals Site Location Statesville, N.C.

Collected By Jack Butler ID# 44 Date Collected 27 June 1990 Time 12:20

Type of Sample:

Environmental	Concentrate	Comments
✓ Groundwater (1)	___ Solid (5)	#5-On Site well
___ Surface Water (2)	___ Liquid (6)	
___ Soil (3)	___ Sludge (7)	
___ Other (4)	___ Other (8)	

INORGANIC CHEMISTRY

Extractables		Total			
Parameter	Results mg/1	Parameter	Results mg/1	Parameter	Results mg/1
___ Arsenic		✓ Arsenic		✓ Silver	
___ Barium		✓ Barium		___ Sulfates	
___ Cadmium		✓ Cadmium		___ Zinc	
___ Chromium		___ Chloride		✓ Ph	
___ Lead		✓ Chromium		___ Conductivity	
___ Mercury		___ Copper		___ TDS	
___ Selenium		___ Fluoride		___ TOC	
___ Silver		___ Iron		✓ Cyanide	
		✓ Lead			
		___ Manganese			
		✓ Mercury			
		___ Nitrate			
		✓ Selenium			

ORGANIC CHEMISTRY

Parameter	Results mg/1	Parameter	Results mg/1	Parameter	Results mg/1
___ P&T:GC/MS		___ EDB		___ Methoxychlor	
___ Acid:B/N Ext.		___ PCB's		___ Toxaphene	
___ TOX		___ Petroleum		___ 2,4-D	
		___ Endrin		___ 2,4,5-TP (silvex)	
		___ Lindane			

MICROBIOLOGY

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

RADIOCHEMISTRY

Parameter	Results PCi/1
___ Gross Alpha	
___ Gross Beta	

Date Received ___ Date Reported ___

Date Extracted ___ Date Analyzed ___

Reported By ___ Lab Number ___

vi d 7/85

N. C. Department of Human Resources
Division of Health Services

SAMPLE ANALYSES REQUEST

State Laboratory of Public Healt
P. O. Box 2804
306 N. Wilmington Stre
Raleigh, 2761

Site Number 49D04ZZ69134 Field Sample Number 15819

Name of Site Southern Screw/Farley Metals Site Location Statesville, N.C.

Collected By Jack Butler ID# 44 Date Collected 27 June 1990 Time 3:10

Type of Sample:

Environmental	Concentrate	Comments
___ Groundwater (1)	___ Solid (5)	#6 - Sediment - Upstream
___ Surface Water (2)	___ Liquid (6)	
___ Soil (3)	___ Sludge (7)	
✓ Other (4) (Sed.)	___ Other (8)	

INORGANIC CHEMISTRY

Extractables		Total			
Parameter	Results mg/1	Parameter	Results mg/1	Parameter	Results mg/1
✓ Arsenic		✓ Arsenic		✓ Silver	
✓ Barium		✓ Barium		___ Sulfates	
✓ Cadmium		✓ Cadmium		___ Zinc	
✓ Chromium		___ Chloride		✓ Ph	
✓ Lead		✓ Chromium		___ Conductivity	
✓ Mercury		___ Copper		___ TDS	
✓ Selenium		___ Fluoride		___ TOC	
✓ Silver		___ Iron		✓ Cyanide	
		✓ Lead			
		___ Manganese			
		✓ Mercury			
		___ Nitrate			
		✓ Selenium			

ORGANIC CHEMISTRY

Parameter	Results mg/1	Parameter	Results mg/1	Parameter	Results mg/1
___ P&T:GC/MS		___ EDB		___ Methoxychlor	
___ Acid:B/N Ext.		___ PCB's		___ Toxaphene	
___ TOX		___ Petroleum		___ 2,4-D	
		___ Endrin		___ 2,4,5-TP (silvex)	
		___ Lindane			

MICROBIOLOGY

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

RADIOCHEMISTRY

Parameter	Results PCi/1
___ Gross Alpha	
___ Gross Beta	

Date Received ___ Date Reported ___

Date Extracted ___ Date Analyzed ___

Reported By ___ Lab Number ___

DHS 3191 (Revised 7/85)

N. C. Department of Human Resources
Division of Health Services

SAMPLE ANALYSES REQUEST

State Laboratory of Public Heal
P. O. Box 2804
306 N. Wilmington Stre
Raleigh, 2761

Sample Number 49D04226913 4 Field Sample Number 15820

Name of Site Southern Screw/Farley Metals Site Location Statesville, N.C.

Collected By Jack Butler ID# 44 Date Collected 27 June 1990 Time 3:10

Type of Sample:

Environmental	Concentrate	Comments
___ Groundwater (1)	___ Solid (5)	#6-Upstream
✓ Surface Water (2)	___ Liquid (6)	
___ Soil (3)	___ Sludge (7)	
___ Other (4)	___ Other (8)	

INORGANIC CHEMISTRY

Extractables		Total			
Parameter	Results mg/1	Parameter	Results mg/1	Parameter	Results mg/1
___ Arsenic		✓ Arsenic		✓ Silver	
___ Barium		✓ Barium		___ Sulfates	
___ Cadmium		✓ Cadmium		___ Zinc	
___ Chromium		___ Chloride		✓ Ph	
___ Lead		✓ Chromium		___ Conductivity	
___ Mercury		___ Copper		___ TDS	
___ Selenium		___ Fluoride		___ TOC	
___ Silver		___ Iron		✓ Cyanide	
		✓ Lead			
		___ Manganese			
		✓ Mercury			
		___ Nitrate			
		✓ Selenium			

ORGANIC CHEMISTRY

Parameter	Results mg/1	Parameter	Results mg/1	Parameter	Results mg/1
___ P&T:GC/MS		___ EDB		___ Methoxychlor	
___ Acid:B/N Ext.		___ PCB's		___ Toxaphene	
___ TOX		___ Petroleum		___ 2,4-D	
		___ Endrin		___ 2,4,5-TP (silvex)	
		___ Lindane			

MICROBIOLOGY

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

RADIOCHEMISTRY

Parameter	Results PCi/1
___ Gross Alpha	
___ Gross Beta	

Date Received ___ Date Reported ___

Date Extracted ___ Date Analyzed ___

Reported By ___ Lab Number ___

DHS 3191 (Revised 7/85)

N. C. Department of Human Resources
Division of Health Services

SAMPLE ANALYSES REQUEST

State Laboratory of Public Heal
P. O. Box 2804
306 N. Wilmington Stre
Raleigh, 2761

Site Number 4900422 69134 Field Sample Number 15821

Name of Site Southern Screw/Farley Metals Site Location Statesville, N.C.

Collected By Jack Butler ID# 44 Date Collected 27 June 1990 Time 3:45

Type of Sample:

Environmental	Concentrate	Comments
___ Groundwater (1)	___ Solid (5)	#7- Sediment-Downstream
___ Surface Water (2)	___ Liquid (6)	
___ Soil (3)	___ Sludge (7)	
✓ Other (4) (Sed.)	___ Other (8)	

INORGANIC CHEMISTRY

Extractables		Total			
Parameter	Results mg/1	Parameter	Results mg/1	Parameter	Results mg/1
✓ Arsenic		✓ Arsenic		✓ Silver	
✓ Barium		✓ Barium		___ Sulfates	
✓ Cadmium		✓ Cadmium		___ Zinc	
✓ Chromium		___ Chloride		✓ Ph	
✓ Lead		✓ Chromium		___ Conductivity	
✓ Mercury		___ Copper		___ TDS	
✓ Selenium		___ Fluoride		___ TOC	
✓ Silver		___ Iron		✓ Cyanide	
		✓ Lead			
		___ Manganese			
		✓ Mercury			
		___ Nitrate			
		✓ Selenium			

ORGANIC CHEMISTRY

Parameter	Results mg/1	Parameter	Results mg/1	Parameter	Results mg/1
___ P&T:GC/MS		___ EDB		___ Methoxychlor	
___ Acid:B/N Ext.		___ PCB's		___ Toxaphene	
___ TOX		___ Petroleum		___ 2,4-D	
		___ Endrin		___ 2,4,5-TP (silvex)	
		___ Lindane			

MICROBIOLOGY

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

RADIOCHEMISTRY

Parameter	Results PCi/1
___ Gross Alpha	
___ Gross Beta	

Date Received ___ Date Reported ___

Date Extracted ___ Date Analyzed ___

Reported By ___ Lab Number ___

DHS 3191 (Revised 7/85)

N. C. Department of Human Resources
Division of Health Services

SAMPLE ANALYSES REQUEST

State Laboratory of Public Healt
P. O. Box 2804
306 N. Wilmington Stre
Raleigh, 2761

Site Number 49D042269134 Field Sample Number 15822

Name of Site Southern Screw/Farley Metals Site Location Statesville, N.C.

Collected By Jack Butler ID# 44 Date Collected 27 June 1990 Time 3:45

Type of Sample:

Environmental	Concentrate	Comments
___ Groundwater (1)	___ Solid (5)	#7- Downstream
✓ Surface Water (2)	___ Liquid (6)	
___ Soil (3)	___ Sludge (7)	
___ Other (4)	___ Other (8)	

INORGANIC CHEMISTRY

Extractables		Total			
Parameter	Results mg/1	Parameter	Results mg/1	Parameter	Results mg/1
___ Arsenic		✓ Arsenic		✓ Silver	
___ Barium		✓ Barium		___ Sulfates	
___ Cadmium		✓ Cadmium		___ Zinc	
___ Chromium		___ Chloride		✓ Ph	
___ Lead		✓ Chromium		___ Conductivity	
___ Mercury		___ Copper		___ TDS	
___ Selenium		___ Fluoride		___ TOC	
___ Silver		___ Iron		✓ Cyanide	
		✓ Lead			
		___ Manganese			
		✓ Mercury			
		___ Nitrate			
		✓ Selenium			

ORGANIC CHEMISTRY

Parameter	Results mg/1	Parameter	Results mg/1	Parameter	Results mg/1
___ P&T:GC/MS		___ EDB		___ Methoxychlor	
___ Acid:B/N Ext.		___ PCB's		___ Toxaphene	
___ TOX		___ Petroleum		___ 2,4-D	
		___ Endrin		___ 2,4,5-TP (silvex)	
		___ Lindane			

MICROBIOLOGY

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

RADIOCHEMISTRY

Parameter	Results PCi/1
___ Gross Alpha	
___ Gross Beta	

Date Received ___ Date Reported ___

Date Extracted ___ Date Analyzed ___

Reported By ___ Lab Number ___

N. C. Department of Human Resources
Division of Health Services

SAMPLE ANALYSES REQUEST

State Laboratory of Public Healt
P. O. Box 2804
306 N. Wilmington Stre
Raleigh, 2761

Site Number 4900422691 34 Field Sample Number 12152

Name of Site Southern Screw/Farley Metals Site Location Statesville, N.C.

Collected By Jack Butler ID# 44 Date Collected 27 June 1990 Time 2:00

Type of Sample:

Environmental	Concentrate	Comments
___ Groundwater (1)	___ Solid (5)	#2 - Soil - 5 ft. deep
___ Surface Water (2)	___ Liquid (6)	
✓ Soil (3)	___ Sludge (7)	
___ Other (4)	___ Other (8)	

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SUPERFUND SECTION

INORGANIC CHEMISTRY

Extractables		Total			
Parameter	Results mg/1	Parameter	Results mg/1	Parameter	Results mg/1
___ Arsenic		___ Arsenic		___ Silver	
___ Barium		___ Barium		___ Sulfates	
___ Cadmium		___ Cadmium		___ Zinc	
___ Chromium		___ Chloride		___ Ph	
___ Lead		___ Chromium		___ Conductivity	
___ Mercury		___ Copper		___ TDS	
___ Selenium		___ Fluoride		___ TOC	
___ Silver		___ Iron			
		___ Lead			
		___ Manganese			
		___ Mercury			
		___ Nitrate			
		___ Selenium			

ORGANIC CHEMISTRY

Parameter	Results mg/1	Parameter	Results mg/1	Parameter	Results mg/1
✓ P&T:GC/MS		___ EDB		___ Methoxychlor	
✓ Acid:B/N Ext.		___ PCB's		___ Toxaphene	
___ TOX		___ Petroleum		___ 2,4-D	
		___ Endrin		___ 2,4,5-TP (silvex)	
		___ Lindane			

MICROBIOLOGY

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

RADIOCHEMISTRY

Parameter	Results PCi/1
___ Gross Alpha	
___ Gross Beta	

Date Received 6-28-90 mw Date Reported

Date Extracted 7-5-90 AA Date Analyzed BNA 7-9-90 BD PT 7-20-90 mw

Reported By Lab Number 905764

DHS 2101 (Revised 7/85)

N. C. Department of Human Resources
Division of Health Services

SAMPLE ANALYSES REQUEST

State Laboratory of Public Healt
P. O. Box 2804
306 N. Wilmington Stree
Raleigh, 2761

Site Number 49D042269134 Field Sample Number 12153

Name of Site Southern Screw/Farley Metals Site Location Statesville, N.C.

Collected By Jack Butler ID# 44 Date Collected 27 June 1990 Time 2:15

Type of Sample:

Environmental	Concentrate	Comments
___ Groundwater (1)	___ Solid (5)	#3-Soil-7ft. deep
___ Surface Water (2)	___ Liquid (6)	
✓ Soil (3)	___ Sludge (7)	
___ Other (4)	___ Other (8)	

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SUPERFUND SECTION

INORGANIC CHEMISTRY

Extractables		Total			
Parameter	Results mg/1	Parameter	Results mg/1	Parameter	Results mg/1
___ Arsenic		___ Arsenic		___ Silver	
___ Barium		___ Barium		___ Sulfates	
___ Cadmium		___ Cadmium		___ Zinc	
___ Chromium		___ Chloride		___ Ph	
___ Lead		___ Chromium		___ Conductivity	
___ Mercury		___ Copper		___ TDS	
___ Selenium		___ Fluoride		___ TOC	
___ Silver		___ Iron			
		___ Lead			
		___ Manganese			
		___ Mercury			
		___ Nitrate			
		___ Selenium			

ORGANIC CHEMISTRY

Parameter	Results mg/1	Parameter	Results mg/1	Parameter	Results mg/1
✓ P&T:GC/MS		___ EDB		___ Methoxychlor	
✓ Acid:B/N Ext.		___ PCB's		___ Toxaphene	
___ TOX		___ Petroleum		___ 2,4-D	
		___ Endrin		___ 2,4,5-TP (silvex)	
		___ Lindane			

MICROBIOLOGY

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

RADIOCHEMISTRY

Parameter	Results PCi/1
___ Gross Alpha	
___ Gross Beta	

Date Received 6-28-90 nw Date Reported

Date Extracted 7-5-90 AA Date Analyzed BNA 7-9-90 BD PT 7-13-90 nw

Reported By Lab Number 905765

DHS 3191 (Revised 7/85)

N. C. Department of Human Resources
Division of Health Services

SAMPLE ANALYSES REQUEST

State Laboratory of Public Healt
P. O. Box 2804
306 N. Wilmington Stre
Raleigh, 2761

Site Number 49D042269134 Field Sample Number 12154

Name of Site Southern Screw/Farley Metals Site Location Statesville, N.C.

Collected By Jack Butler ID# 44 Date Collected 27 June 1990 Time 3:00

Type of Sample:

Environmental	Concentrate	Comments
___ Groundwater (1)	___ Solid (5)	#4-Soil-7.2 ft. deep
___ Surface Water (2)	___ Liquid (6)	
✓ Soil (3)	___ Sludge (7)	
___ Other (4)	___ Other (8)	

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SUPERFUND SECTION

INORGANIC CHEMISTRY

Extractables		Total			
Parameter	Results mg/1	Parameter	Results mg/1	Parameter	Results mg/1
___ Arsenic		___ Arsenic		___ Silver	
___ Barium		___ Barium		___ Sulfates	
___ Cadmium		___ Cadmium		___ Zinc	
___ Chromium		___ Chloride		___ Ph	
___ Lead		___ Chromium		___ Conductivity	
___ Mercury		___ Copper		___ TDS	
___ Selenium		___ Fluoride		___ TOC	
___ Silver		___ Iron			
		___ Lead			
		___ Manganese			
		___ Mercury			
		___ Nitrate			
		___ Selenium			

ORGANIC CHEMISTRY

Parameter	Results mg/1	Parameter	Results mg/1	Parameter	Results mg/1
✓ P&T:GC/MS		___ EDB		___ Methoxychlor	
✓ Acid:B/N Ext.		___ PCB's		___ Toxaphene	
___ TOX		___ Petroleum		___ 2,4-D	
		___ Endrin		___ 2,4,5-TP (silvex)	
		___ Lindane			

MICROBIOLOGY

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

RADIOCHEMISTRY

Parameter	Results PCi/1
___ Gross Alpha	
___ Gross Beta	

Date Received 6-28-90 mw Date Reported

Date Extracted 7-5-90 AA Date Analyzed BNA 7-9-90 BD PT 7-20-90 mw

905766

Reported By Lab Number

DHS 3101 (Revised 7/85)

N. C. Department of Human Resources
Division of Health Services

SAMPLE ANALYSES REQUEST

State Laboratory of Public Health
P. O. Box 28047
306 N. Wilmington Street
Raleigh, 27611

Site Number 4900422691 34 Field Sample Number 12155

Name of Site Southern Screw/Farley Metals Site Location Statesville, N.C.

Collected By Jack Butler ID# 44 Date Collected 27 June 1990 Time 12:20

Type of Sample:

Environmental	Concentrate	Comments
✓ Groundwater (1)	___ Solid (5)	#5- On site well
___ Surface Water (2)	___ Liquid (6)	
___ Soil (3)	___ Sludge (7)	
___ Other (4)	___ Other (8)	

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SUPERFUND SECTION

INORGANIC CHEMISTRY

Extractables		Total			
Parameter	Results mg/1	Parameter	Results mg/1	Parameter	Results mg/1
___ Arsenic		___ Arsenic		___ Silver	
___ Barium		___ Barium		___ Sulfates	
___ Cadmium		___ Cadmium		___ Zinc	
___ Chromium		___ Chloride		___ Ph	
___ Lead		___ Chromium		___ Conductivity	
___ Mercury		___ Copper		___ TDS	
___ Selenium		___ Fluoride		___ TOC	
___ Silver		___ Iron		___	
___		___ Lead		___	
___		___ Manganese		___	
___		___ Mercury		___	
___		___ Nitrate		___	
___		___ Selenium		___	

ORGANIC CHEMISTRY

Parameter	Results mg/1	Parameter	Results mg/1	Parameter	Results mg/1
___ P&T:GC/MS		___ EDB		___ Methoxychlor	
✓ Acid:B/N Ext.		___ PCB's		___ Toxaphene	
___ TOX		___ Petroleum		___ 2,4-D	
___		___ Endrin		___ 2,4,5-TP (silvex)	
___		___ Lindane		___	

MICROBIOLOGY

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

RADIOCHEMISTRY

Parameter	Results PCi/1
___ Gross Alpha	
___ Gross Beta	
___	
___	

Date Received 6-28-90 mw Date Reported

Date Extracted 7-9-90 AA, JM Date Analyzed 7-10-90 BR

Reported By Lab Number 905767

DHS 3191 (Revised 7/85)
Solid and Hazardous Waste (Revised 7/87)

N. C. Department of Human Resources
Division of Health Services

SAMPLE ANALYSES REQUEST

State Laboratory of Public Health
P. O. Box 28047
306 N. Wilmington Street
Raleigh, 27611

Site Number 49D042269134 Field Sample Number 12156

Name of Site Southern Screw/Farley Metals Site Location Statesville, N.C.

Collected By Jack Butler ID# 44 Date Collected 27 June 1990 Time 12:20

Type of Sample:

Environmental	Concentrate	Comments
✓ Groundwater (1)	___ Solid (5)	#5-On Site well
___ Surface Water (2)	___ Liquid (6)	
___ Soil (3)	___ Sludge (7)	
___ Other (4)	___ Other (8)	

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AUG 3 1990
SUPERFUND SECTION

INORGANIC CHEMISTRY

Extractables		Total			
Parameter	Results mg/1	Parameter	Results mg/1	Parameter	Results mg/1
___ Arsenic		___ Arsenic		___ Silver	
___ Barium		___ Barium		___ Sulfates	
___ Cadmium		___ Cadmium		___ Zinc	
___ Chromium		___ Chloride		___ Ph	
___ Lead		___ Chromium		___ Conductivity	
___ Mercury		___ Copper		___ TDS	
___ Selenium		___ Fluoride		___ TOC	
___ Silver		___ Iron			
		___ Lead			
		___ Manganese			
		___ Mercury			
		___ Nitrate			
		___ Selenium			

ORGANIC CHEMISTRY

Parameter	Results mg/1	Parameter	Results mg/1	Parameter	Results mg/1
✓ P&T:GC/MS		___ EDB		___ Methoxychlor	
___ Acid:B/N Ext.		___ PCB's		___ Toxaphene	
___ TOX		___ Petroleum		___ 2,4-D	
		___ Endrin		___ 2,4,5-TP (silvex)	
		___ Lindane			

MICROBIOLOGY

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

RADIOCHEMISTRY

Parameter	Results PCi/1
___ Gross Alpha	
___ Gross Beta	

Date Received 6-28-90 mw Date Reported

Date Extracted Date Analyzed PT 7-19-90 mw

Reported By Lab Number 905768

DHS 3191 (Revised 7/85)
Solid and Hazardous Waste (Review 7/87)

N. C. Department of Human Resources
Division of Health Services

SAMPLE ANALYSES REQUEST

State Laboratory of Public Healt
P. O. Box 2804
306 N. Wilmington Stre
Raleigh, 2761

Site Number 49D042269134 Field Sample Number 12157

Name of Site Southern Screw/Farley Metals Site Location Statesville, N.C.

Collected By Jack Butler ID# 44 Date Collected 27 June 1990 Time 3:10

Type of Sample:

Environmental	Concentrate	Comments
___ Groundwater (1)	___ Solid (5)	#6 - Sediment - Upstream
___ Surface Water (2)	___ Liquid (6)	
___ Soil (3)	___ Sludge (7)	
✓ Other (4) (sed.)	___ Other (8)	

RECEIVED
AUG 6 1990
SUPERFUND SECTION

INORGANIC CHEMISTRY

Extractables		Total			
Parameter	Results mg/1	Parameter	Results mg/1	Parameter	Results mg/1
___ Arsenic		___ Arsenic		___ Silver	
___ Barium		___ Barium		___ Sulfates	
___ Cadmium		___ Cadmium		___ Zinc	
___ Chromium		___ Chloride		___ Ph	
___ Lead		___ Chromium		___ Conductivity	
___ Mercury		___ Copper		___ TDS	
___ Selenium		___ Fluoride		___ TOC	
___ Silver		___ Iron		___	
___		___ Lead		___	
___		___ Manganese		___	
___		___ Mercury		___	
___		___ Nitrate		___	
___		___ Selenium		___	

ORGANIC CHEMISTRY

Parameter	Results mg/1	Parameter	Results mg/1	Parameter	Results mg/1
✓ P&T:GC/MS		___ EDB		___ Methoxychlor	
✓ Acid:B/N Ext.		___ PCB's		___ Toxaphene	
___ TOX		___ Petroleum		___ 2,4-D	
___		___ Endrin		___ 2,4,5-TP (silvex)	
___		___ Lindane		___	

MICROBIOLOGY

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

RADIOCHEMISTRY

Parameter	Results PCi/1
___ Gross Alpha	
___ Gross Beta	
___	
___	

Date Received 6-28-90 MW Date Reported

Date Extracted 7-5-90 AA Date Analyzed BNA 7-9-90 BD PT 7-20-90 MW

Reported By Lab Number 905769

DHS 3191 (Revised 7/85)

N. C. Department of Human Resources
Division of Health Services

SAMPLE ANALYSES REQUEST

State Laboratory of Public Healt
P. O. Box 2804
306 N. Wilmington Stree
Raleigh, 2761

Site Number 4900422 69134 Field Sample Number 12158

Name of Site Southern Screw/Farley Metals Site Location Statesville, N.C.

Collected By Jack Butler ID# 44 Date Collected 27 June 1990 Time 3:10

Type of Sample:

Environmental	Concentrate	Comments
___ Groundwater (1)	___ Solid (5)	#6 - Upstream
✓ Surface Water (2)	___ Liquid (6)	
___ Soil (3)	___ Sludge (7)	
___ Other (4)	___ Other (8)	

RECEIVED
AUG 0 3 1990
SUPERFUND SECTION

INORGANIC CHEMISTRY

Extractables		Total			
Parameter	Results mg/1	Parameter	Results mg/1	Parameter	Results mg/1
___ Arsenic		___ Arsenic		___ Silver	
___ Barium		___ Barium		___ Sulfates	
___ Cadmium		___ Cadmium		___ Zinc	
___ Chromium		___ Chloride		___ Ph	
___ Lead		___ Chromium		___ Conductivity	
___ Mercury		___ Copper		___ TDS	
___ Selenium		___ Fluoride		___ TOC	
___ Silver		___ Iron			
		___ Lead			
		___ Manganese			
		___ Mercury			
		___ Nitrate			
		___ Selenium			

ORGANIC CHEMISTRY

Parameter	Results mg/1	Parameter	Results mg/1	Parameter	Results mg/1
✓ P&T:GC/MS		___ EDB		___ Methoxychlor	
___ Acid:B/N Ext.		___ PCB's		___ Toxaphene	
___ TOX		___ Petroleum		___ 2,4-D	
		___ Endrin		___ 2,4,5-TP (silvex)	
		___ Lindane			

MICROBIOLOGY

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

RADIOCHEMISTRY

Parameter	Results PCi/1
___ Gross Alpha	
___ Gross Beta	

Date Received 6-28-90 MW Date Reported

Date Extracted Date Analyzed PT 7-19-90 MW

Reported By Lab Number 905770

N. C. Department of Human Resources
Division of Health Services

SAMPLE ANALYSES REQUEST

State Laboratory of Public Healt
P. O. Box 2804
306 N. Wilmington Stre
Raleigh, 2761

Site Number 49D042269134 Field Sample Number 12159

Name of Site Southern Screw/Farley Metals Site Location Statesville, N.C.

Collected By Jack Butler ID# 44 Date Collected 27 June 1990 Time 3:10

Type of Sample:

Environmental	Concentrate	Comments
___ Groundwater (1)	___ Solid (5)	#6 - Upstream
✓ Surface Water (2)	___ Liquid (6)	
___ Soil (3)	___ Sludge (7)	
___ Other (4)	___ Other (8)	

RECEIVED
AUG 03 1990
SUPERFUND SECTION

INORGANIC CHEMISTRY

Extractables		Total			
Parameter	Results mg/1	Parameter	Results mg/1	Parameter	Results mg/1
___ Arsenic		___ Arsenic		___ Silver	
___ Barium		___ Barium		___ Sulfates	
___ Cadmium		___ Cadmium		___ Zinc	
___ Chromium		___ Chloride		___ Ph	
___ Lead		___ Chromium		___ Conductivity	
___ Mercury		___ Copper		___ TDS	
___ Selenium		___ Fluoride		___ TOC	
___ Silver		___ Iron		___	
___		___ Lead		___	
___		___ Manganese		___	
___		___ Mercury		___	
___		___ Nitrate		___	
___		___ Selenium		___	

ORGANIC CHEMISTRY

Parameter	Results mg/1	Parameter	Results mg/1	Parameter	Results mg/1
___ P&T:GC/MS		___ EDB		___ Methoxychlor	
✓ Acid:B/N Ext.		___ PCB's		___ Toxaphene	
___ TOX		___ Petroleum		___ 2,4-D	
___		___ Endrin		___ 2,4,5-TP (silvex)	
___		___ Lindane		___	

MICROBIOLOGY

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

RADIOCHEMISTRY

Parameter	Results PCi/1
___ Gross Alpha	
___ Gross Beta	
___	
___	

Date Received 6-28-90 NW Date Reported

Date Extracted 7-9-90 AA, JM Date Analyzed 7-10-90 BD

Reported By Lab Number 905771

DHS 3191 (Revised 7/85)

N. C. Department of Human Resources
Division of Health Services

SAMPLE ANALYSES REQUEST

State Laboratory of Public Healt
P. O. Box 2804
306 N. Wilmington Stre
Raleigh, 2761

Site Number 4900422691 34 Field Sample Number 12160

Name of Site Southern Screw/Farley Metals Site Location Statesville, N.C.

Collected By Jack Butler ID# 44 Date Collected 27 June 1990 Time 3:45

Type of Sample:

Environmental	Concentrate	Comments
___ Groundwater (1)	___ Solid (5)	#7-Sediment-Downstream
___ Surface Water (2)	___ Liquid (6)	
___ Soil (3)	___ Sludge (7)	
✓ Other (4) (Sed.)	___ Other (8)	

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AUG 03 1990
SUPERFUND SECTION

INORGANIC CHEMISTRY

Extractables		Total			
Parameter	Results mg/1	Parameter	Results mg/1	Parameter	Results mg/1
___ Arsenic		___ Arsenic		___ Silver	
___ Barium		___ Barium		___ Sulfates	
___ Cadmium		___ Cadmium		___ Zinc	
___ Chromium		___ Chloride		___ Ph	
___ Lead		___ Chromium		___ Conductivity	
___ Mercury		___ Copper		___ TDS	
___ Selenium		___ Fluoride		___ TOC	
___ Silver		___ Iron			
		___ Lead			
		___ Manganese			
		___ Mercury			
		___ Nitrate			
		___ Selenium			

ORGANIC CHEMISTRY

Parameter	Results mg/1	Parameter	Results mg/1	Parameter	Results mg/1
✓ P&T:GC/MS		___ EDB		___ Methoxychlor	
✓ Acid:B/N Ext.		___ PCB's		___ Toxaphene	
___ TOX		___ Petroleum		___ 2,4-D	
		___ Endrin		___ 2,4,5-TP (silvex)	
		___ Lindane			

MICROBIOLOGY

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

RADIOCHEMISTRY

Parameter	Results PCi/1
___ Gross Alpha	
___ Gross Beta	

Date Received 6-28-90 nw Date Reported

Date Extracted 7-5-90 AA Date Analyzed BNA 7-9-90 BQ PT 7-20-90 nw

Reported By Lab Number 905772

DHS 319 (Revised 2/85)

N. C. Department of Human Resources
Division of Health Services

SAMPLE ANALYSES REQUEST

State Laboratory of Public Healt
P. O. Box 2804
306 N. Wilmington Stre
Raleigh, 2761

Site Number 49D042269134 Field Sample Number ~~12162~~ 12161

N of Site Southern Screw/Farley Metals Site Location Statesville, N.C.

Collected By Jack Butler ID# 44 Date Collected 27 June 1990 Time 3:45

Type of Sample:

Environmental	Concentrate	Comments
___ Groundwater (1)	___ Solid (5)	#7-Downstream
✓ Surface Water (2)	___ Liquid (6)	
___ Soil (3)	___ Sludge (7)	
___ Other (4)	___ Other (8)	

RECEIVED
AUG 03 1990
SUPERFUND SECTION

INORGANIC CHEMISTRY

Extractables		Total			
Parameter	Results mg/1	Parameter	Results mg/1	Parameter	Results mg/1
___ Arsenic		___ Arsenic		___ Silver	
___ Barium		___ Barium		___ Sulfates	
___ Cadmium		___ Cadmium		___ Zinc	
___ Chromium		___ Chloride		___ Ph	
___ Lead		___ Chromium		___ Conductivity	
___ Mercury		___ Copper		___ TDS	
___ Selenium		___ Fluoride		___ TOC	
___ Silver		___ Iron		___	
___		___ Lead		___	
___		___ Manganese		___	
___		___ Mercury		___	
___		___ Nitrate		___	
___		___ Selenium		___	

ORGANIC CHEMISTRY

Parameter	Results mg/1	Parameter	Results mg/1	Parameter	Results mg/1
___ P&T:GC/MS		___ EDB		___ Methoxychlor	
✓ Acid:B/N Ext.		___ PCB's		___ Toxaphene	
___ TOX		___ Petroleum		___ 2,4-D	
___		___ Endrin		___ 2,4,5-TP (silvex)	
___		___ Lindane		___	

MICROBIOLOGY

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

RADIOCHEMISTRY

Parameter	Results PCi/1
___ Gross Alpha	
___ Gross Beta	
___	
___	

Date Received 6-28-90 nw Date Reported

Date Extracted 7-9-90 AA, JM Date Analyzed 7-10-90 BD

Reported By Lab Number 905773

DIVISION OF HEALTH SERVICES
SOLID AND HAZARDOUS WASTE MANAGEMENT BRANCH

Chain of Custody Record

Hazardous Waste Materials

Location of Sampling: ____ Generator ____ Transporter ____ Treatment Facili
____ Storage Facility ____ Disposal Facility ____ Landfill
✓ Other: Superfund

Company's Name Southern Screw/Farley Metals Telephone (704) 873-7211

Address Statesville, N.C.

Collector's Name Jack Butler (signature) Telephone (919) 733-2801

Date Sampled 27 June 1990 Time Sampled 12:20-3:45

Type of Process Generating Waste Metal Plating

Field Information

Field Sample No. 12151 12152 12153 12154 12155 12156 12157
12158 12159 12160 12161 ____ ____ ____

Chain of Possession:

	signature	title	inclusive dates
1.	Jack Butler	Env. Eng.	27-28 June 1990
2.	Nancy Ward	Chemist	6-28-90
3.			

Results reported

signature	title	date
John L. Neal	Chemist	8-1-90

Instructions: Complete all applicable information including signatures, and submit with analysis request forms.

SOLID AND HAZARDOUS WASTE MANAGEMENT BRANCH

Receipt for Samples

The samples described below were collected in connection with the administration, enforcement, and documentation of the:

( ) North Carolina Hazardous Waste Management Rules, 10 NCAC 10F

( ) North Carolina Solid Waste Management Rules, 10 NCAC 10G

(✓) Comprehensive Environmental Response, Compensation and Liability Act (CERCLA)

( ) Toxic Substances Control Act (TSCA). 15 U.S.C. §2601, et seq., specifically Section 11 of TSCA, 15 U.S.C. § 2610.

Jack Butler — Inspector's Name

P.O. Box 27687, Raleigh, N.C. — Inspector's Address

Southern Screw/Farley Metals — Name of Firm

Statesville, N.C. — Firm Address

Steve Petrovich — Firm Owner, Operator, or Agent

VP Operations — Title

SAMPLE NUMBER	COLLECTED DATE	COLLECTED TIME	SAMPLE TYPE WATER	SAMPLE TYPE SOIL	SAMPLE TYPE OTHER	DUPLICATE SAMPLES OFFERED	DUPLICATE SAMPLES ACCEPTED	DUPLICATE SAMPLES REJECTED	SAMPLE LOCATION ON-SITE	SAMPLE LOCATION OFF-SITE
1	6-27	1:15		✓	~~✓~~	✓	✓		✓	
2	6-27	2:00		✓	~~✓~~	✓	✓		✓	
3	6-27	2:15		✓	~~✓~~	✓	✓		✓	
4	6-27	3:00		✓	~~✓~~	✓	✓		✓	
5	6-27	12:20	✓			✓	✓		✓	
6	6-27	3:10	✓		Sed.	✓	✓		✓	
7	6-27	3:45	✓		Sed.	✓	✓			✓

Receipt for the sample(s) described above is hereby acknowledged:

Jack Butler — Signature of Inspector

Env. Eng. — Title

Receipt/rejection of duplicate or split samples is hereby acknowledged:

Steve Petrovich — Signature of Firm Owner, Operator, or Agent

VP OPERATIONS — Title

COMMENTS

(1)

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

ORGANIC CHEMICAL ANALYSIS

BASE/NEUTRAL AND ACID EXTRACTABLES COMPOUND	LAB NO	905763	905764	905765	905766	905767	905769
	FIELD #	12151	12152	12153	12154	12155	12157
	TYPE	(3)	(3)	(3)	(3)	(1)	(4)
	UNITS	~~µg/l~~ µg/kg	~~µg/l~~ µg/kg	~~µg/l~~ µg/kg	~~µg/l~~ µg/kg	µg/l ~~µg/kg~~	~~µg/l~~ µg/kg
N-nitrosodimethylamine	10/330	U	U	U	U	U	U
bis(2-chloroethyl)ether	↓	↓	↓	↓	↓	↓	↓
2-chlorophenol							
phenol							
1,3-dichlorobenzene							
1,4-dichlorobenzene							
1,2-dichlorobenzene							
bis(2-chloroisopropyl)ether							
hexachloroethane							
N-nitroso-di-n-propylamine							
nitrobenzene							
isophorone							
2-nitrophenol							
2,4-dimethylphenol							
bis(2-chloroethoxy)methane							
2,4-dichlorophenol							
1,2,4-trichlorobenzene							
naphthalene							
hexachlorobutadiene							
4-chloro-m-cresol							
hexachlorocyclopentadiene							
2,4,6-trichlorophenol							
2-chloronaphthalene							
acenaphthylene							
dimethyl phthalate							
2,6-dinitrotoluene							
acenaphthene	↓						
2,4-dinitrophenol	50/1650						
2,4-dinitrotoluene	10/330						
4-nitrophenol	50/1650						
fluorene	10/330						
4-chlorophenylphenylether	↓						
diethyl phthalate							
4,6-dinitro-o-cresol	50/1650						
diphenylamine	↓						
azobenzene							
4-bromophenylphenylether	10/330						
hexachlorobenzene	10/330						
pentachlorophenol	50/1650						↓
phenanthrene	10/330						330K
anthracene	↓						330K
dibutyl phthalate							U
fluoranthene	↓	↓	↓	↓	↓	↓	330K

MDL
H_2O/SOIL

J - Estimated value.
K - Actual value is known to be less than value given.
L - Actual value is known to be greater than value given.
U - Material was analyzed for but not detected. The number is the Minimum Detection Limit. MDL
NA - Not analyzed.
I - Tentative identification.
Z - On NRDC List of Priority Pollutants.

N.C. Division of Health Services
DHS 3068-0 (4/86 Laboratory)

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

ORGANIC CHEMICAL ANALYSIS

BASE/NEUTRAL AND ACID EXTRACTABLES	LAB NO	905763	905764	905765	905766	905767	905769
	FIELD #	12151	12152	12153	12154	12155	12157
COMPOUND	TYPE	(3)	(3)	(3)	(3)	(1)	(4)
	UNITS	~~mg/l~~ µg/kg	~~mg/l~~ µg/kg	~~mg/l~~ µg/kg	~~mg/l~~ µg/kg	µg/l ~~µg/kg~~	~~mg/l~~ µg/kg
pyrene	10/330	U	U	U	U	U	330K
benzidine	50/1650						U
butyl benzyl phthalate	10/330						U
benz(a)anthracene							330K
chrysene							330K
3,3-dichlorobenzidine	50/1650						U
bis(2-ethylhexyl)phthalate	10/330						
di-n-octyl phthalate	10/330						
benzo(b)fluoranthene	50/1650						
benzo(k)fluoranthene							1650K
benzo(a)pyrene							U
indeno(1,2,3-cd)pyrene							
dibenzo(a,h)anthracene							
benzo(g,h,i)perylene							
aniline	50/1650	U	U	U	U	U	U
benzoic acid							
benzyl alcohol							
4-chloroaniline							
dibenzofuran	10/330						
2-methylnaphthalene							
2-methylphenol							
4-methylphenol							
2-nitroaniline	50/1650						
3-nitroaniline							
4-nitroaniline							
2,4,5-trichlorophenol							
HYDROCARBONS	+/-	-	-	-	-	-	TRACE(+)

MDL
H2O/SOIL

J - Estimated value.
K - Actual value is known to be less than value given.
L - Actual value is known to be greater than value given.
U - Material was analyzed for but not detected. The number is the Minimum Detection Limit. MDL
NA - Not analyzed.
1/ - Tentative identification.
2/ - On NRDC List of Priority Pollutants.

N.C. Division of Health Services
DHS 3068-0 (4/86 Laboratory)

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

ORGANIC CHEMICAL ANALYSIS

BASE/NEUTRAL AND ACID EXTRACTABLES COMPOUND	LAB NO	905771	905772	905773			
	FIELD #	12159	12160	12161			
	TYPE	(2)	(4)	(2)	( )	( )	( )
	UNITS	µg/l ~~µg/kg~~	~~µg/l~~ µg/kg	µg/l ~~µg/kg~~	µg/l µg/kg	µg/l µg/kg	µg/l µg/kg
N-nitrosodimethylamine	10/330	U	U	U			
bis(2-chloroethyl)ether	↓	↓	↓	↓			
2-chlorophenol							
phenol							
1,3-dichlorobenzene							
1,4-dichlorobenzene							
1,2-dichlorobenzene							
bis(2-chloroisopropyl)ether							
hexachloroethane							
N-nitroso-di-n-propylamine							
nitrobenzene							
isophorone							
2-nitrophenol							
2,4-dimethylphenol							
bis(2-chloroethoxy)methane							
2,4-dichlorophenol							
1,2,4-trichlorobenzene							
naphthalene							
hexachlorobutadiene							
4-chloro-m-cresol							
hexachlorocyclopentadiene							
2,4,6-trichlorophenol							
2-chloronaphthalene							
acenaphthylene							
dimethyl phthalate							
2,6-dinitrotoluene							
acenaphthene	↓						
2,4-dinitrophenol	50/1650						
2,4-dinitrotoluene	10/330						
4-nitrophenol	50/1650						
fluorene	10/330						
4-chlorophenylphenylether	↓						
diethyl phthalate	↓						
4,6-dinitro-o-cresol	50/1650						
diphenylamine	↓						
azobenzene	↓						
4-bromophenylphenylether	10/330						
hexachlorobenzene	10/330						
pentachlorophenol	50/1650		↓				
phenanthrene	10/330		330K				
anthracene	↓		U				
dibutyl phthalate	↓		U				
fluoranthene	↓	↓	330K	↓			

MDL
H_2O/SOIL

J - Estimated value.
L - Actual value is known to be less than value given.
L - Actual value is known to be greater than value given.
U - Material was analyzed for but not detected. The number is the Minimum Detection Limit. MDL
NA - Not analyzed.
1 - Tentative identification.
2 - On NRDC List of Priority Pollutants.

N.C. Division of Health Services
DHS 3068-0 (4/86 Laboratory)

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

ORGANIC CHEMICAL ANALYSIS

BASE/NEUTRAL AND ACID EXTRACTABLES	LAB NO	905771	905772	905773			
	FIELD #	12159	12160	12161			
COMPOUND	TYPE	(2)	(4)	(2)	( )	( )	( )
	UNITS	µg/l ~~µg/kg~~	~~µg/l~~ µg/kg	µg/l ~~µg/kg~~	µg/l µg/kg	µg/l µg/kg	µg/l µg/kg
pyrene	10/330	U	330K	U			
benzidine	50/1650		U				
butyl benzyl phthalate	10/330		U				
benz(a)anthracene			330K				
chrysene			U				
3,3-dichlorobenzidine	50/1650						
bis(2-ethylhexyl)phthalate	10/330						
di-n-octyl phthalate	10/330						
benzo(b)fluoranthene	50/1650						
benzo(k)fluoranthene							
benzo(a)pyrene							
indeno(1,2,3-cd)pyrene							
dibenzo(a,h)anthracene							
benzo(g,h,i)perylene							
aniline	50/1650	U	U	U			
benzoic acid							
benzyl alcohol							
4-chloroaniline							
dibenzofuran	10/330						
2-methylnaphthalene							
2-methylphenol							
4-methylphenol							
2-nitroaniline	50/1650						
3-nitroaniline							
4-nitroaniline							
2,4,5-trichlorophenol							
HYDROCARBONS	+/-	(-)	TRACE (+)	(-)			

MDL
H2O/SOIL

J - Estimated value.
K - Actual value is known to be less than value given.
L - Actual value is known to be greater than value given.
U - Material was analyzed for but not detected. The number is the Minimum Detection Limit. MDL
NA - Not analyzed.
1/ - Tentative identification.
2/ - On NRDC List of Priority Pollutants.

N.C. Division of Health Services
DHS 3068-0 (4/86 Laboratory)

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

ORGANIC CHEMICAL ANALYSIS

PURGEABLE COMPOUNDS	LAB NO	905763	905764	905765	905766	905768	905769
	FIELD #	12151	12152	12153	12154	12156	12157
COMPOUND	TYPE	(3)	(3)	(3)	(3)	(1)	(4)
	UNITS	µg/l µg/kg	µg/l µg/kg	µg/l µg/kg	µg/l µg/kg	µg/l µg/kg	µg/l µg/kg
		bkgd.					
chloromethane	10 ppb	u	u	u	u	u	u
bromomethane	10						
dichlorodifluoromethane	5						
vinyl chloride	10						
chloroethane	10						
methylene chloride	5						
trichlorofluoromethane							
ethene, 1,1-dichloro							
ethane, 1,1-dichloro-							
1,2-trans-dichloroethene							
chloroform							trace
ethane, 1,2-dichloro-							u
ethane, 1,1,1-trichloro-							
carbontetrachloride							
bromodichloromethane							
propane, 1,2-dichloro-							
1,3-trans-dichloropropene							
trichloroethylene							
chlorodibromomethane							
benzene							
ethane, 1,1,2-trichloro-							
1,3-cis-dichloropropene							
2-chloroethyl vinyl ether	10						
bromoform	10						
ethane, 1,1,2,2-tetrachloro-	5						
ethene, tetrachloro-							
toluene							
chlorobenzene							
ethylbenzene							
acetone	10	u	u	u	u	u	u
2-butanone	10						
carbondisulfide	5						
2-hexanone	10						
4-methyl-2-pentanone	10						
styrene	5						
vinyl acetate	10						
xylenes (total)	5						
	↑MDL↑						

J - Estimated value.
K - Actual value is known to be less than value given.
L - Actual value is known to be greater than value given.
U - Material was analyzed for but not detected. The number is the Minimum Detection Limit. = MDL
NA - Not analyzed.
I/ - Tentative identification.
P/ - On NRDC List of Priority Pollutants.

N.C. Division of Health Services
DHS 3068-O (4/86 Laboratory)

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

ORGANIC CHEMICAL ANALYSIS

PURGEABLE COMPOUNDS	LAB NO	905770	905772				
	FIELD #	12158	12159				
COMPOUND	TYPE	(2)	(4)	( )	( )	( )	( )
	UNITS	µg/l µg/kg	µg/l µg/kg	µg/l µg/kg	µg/l µg/kg	µg/l µg/kg	µg/l µg/kg
chloromethane	10ppb	u	u				
bromomethane	10						
dichlorodifluoromethane	5						
vinyl chloride	10						
chloroethane	10						
methylene chloride	5						
trichlorofluoromethane							
ethene, 1,1-dichloro							
ethane, 1,1-dichloro-							
1,2-trans-dichloroethene							
chloroform		32					
ethane, 1,2-dichloro-		u					
ethane, 1,1,1-trichloro-							
carbontetrachloride							
bromodichloromethane							
propane, 1,2-dichloro-							
1,3-trans-dichloropropene							
trichloroethylene							
chlorodibromomethane							
benzene							
ethane, 1,1,2-trichloro-							
1,3-cis-dichloropropene							
2-chloroethyl vinyl ether	10						
bromoform	10						
ethane, 1,1,2,2-tetrachloro-	5						
ethene, tetrachloro-							
toluene							
chlorobenzene							
ethylbenzene							
acetone	10	u	u				
2-butanone	10						
carbondisulfide	5						
2-hexanone	10						
4-methyl-2-pentanone	10						
styrene	5						
vinyl acetate	10						
xylenes (total)	5						
	↑MDL↑						

J - Estimated value.
[illegible] - Actual value is known to be less than value given.
[illegible] - Actual value is known to be greater than value given.
U - Material was analyzed for but not detected. The number is the Minimum Detection Limit. = MDL
NA - Not analyzed.
[illegible] - Tentative identification.
[illegible] - On NRDC List of Priority Pollutants.

N.C. Division of Health Services
DHS 3068-O (4/86 Laboratory)

DIVISION OF HEALTH SERVICES
SOLID AND HAZARDOUS WASTE MANAGEMENT BRANCH

Chain of Custody Record

Hazardous Waste Materials

Location of Sampling: ___ Generator ___ Transporter ___ Treatment Facility
___ Storage Facility ___ Disposal Facility ___ Landfill
✓ Other: Superfund

Company's Name Southern Screw Telephone (704) 873-7211

Address Statesville, N.C.

Collector's Name J.R. Butler (signature) Telephone (919) 733-2801

Date Sampled June 27, 1990 Time Sampled 12:20-3:45

Type of Process Generating Waste Metal Plating

Field Information

Field Sample No.	1	2	3	4	5	6	7

Chain of Possession:

	signature	title	inclusive dates
1.	J.R. Butler	Env. Eng.	6-27-90
2.	Stan Petrovich	VP operations	
3.			

Results reported

signature	title	date

Instructions: Complete all applicable information including signatures, and submit with analysis request forms.

SOLID AND HAZARDOUS WASTE MANAGEMENT BRANCH

Receipt for Samples

The samples described below were collected in connection with the administration, enforcement, and documentation of the:

( ) North Carolina Hazardous Waste Management Rules, 10 NCAC 10F

( ) North Carolina Solid Waste Management Rules, 10 NCAC 10G

(✓) Comprehensive Environmental Response, Compensation and Liability Act (CERCLA)

( ) Toxic Substances Control Act (TSCA). 15 U.S.C. §2601, et seq., specifically Section 11 of TSCA, 15 U.S.C. § 2610.

Jack Butler — Inspector's Name

P.O. Box 27687 Raleigh — Inspector's Address

Southern Screw — Name of Firm

Statesville — Firm Address

Firm Owner, Operator, or Agent

Title

SAMPLE NUMBER	COLLECTED		SAMPLE TYPE			DUPLICATE SAMPLES			SAMPLE LOCATION	
	DATE	TIME	WATER	SOIL	OTHER	OFFERED	ACCEPTED	REJECTED	ON-SITE	OFF-SITE
1	6-27	1:15		✓	~~✓~~	✓	✓		✓	
2	↓	2:00		✓	~~✓~~	✓	✓		✓	
3		2:15		✓	~~✓~~	✓	✓		✓	
4		3:00		✓	~~✓~~	✓	✓		✓	
5		12:20	✓			✓	✓		✓	
6		3:10	✓		Sed.	✓	✓		✓	
7		3:45	✓		Sed.	✓	✓			✓

Receipt for the sample(s) described above is hereby acknowledged:

Jack Butler
Signature of Inspector

Env. Eng.
Title

Receipt/rejection of duplicate or split samples is hereby acknowledged:

Stuart Pittovich
Signature of Firm Owner, Operator, or Agent

VP OPERATIONS
Title

COMMENTS

DIVISION OF HEALTH SERVICES
SOLID AND HAZARDOUS WASTE MANAGEMENT BRANCH

Chain of Custody Record

Hazardous Waste Materials

Location of Sampling: ___ Generator ___ Transporter ___ Treatment Facil
___ Storage Facility ___ Disposal Facility ___ Landfill
✓ Other: Superfund

Company's Name Southern Screw/Farley Metals Telephone (704) 873-7211

Address Statesville, N.C.

Collector's Name Jack Butler (signature) Telephone (919) 733-2801

Date Sampled 27 June 1990 Time Sampled 12:20-3:45

Type of Process Generating Waste Metal Plating

Field Information

Field Sample No. 12151 12152 12153 12154 12155 12156 12157
12158 12159 12160 12161

Chain of Possession:

1. Jack Butler (signature) Env. Engr. (title) 27-28 June 1990 (inclusive dates)

2. Nancy Ward (signature) Chemist (title) 6-28-90 (inclusive dates)

3. ___ (signature) ___ (title) ___ (inclusive dates)

Results reported

___ (signature) ___ (title) ___ (date)

Instructions: Complete all applicable information including signatures, and submit with analysis request forms.

DIVISION OF HEALTH SERVICES
SOLID AND HAZARDOUS WASTE MANAGEMENT BRANCH

Receipt for Samples

The samples described below were collected in connection with the administration, enforcement, and documentation of the:

( ) North Carolina Hazardous Waste Management Rules, 10 NCAC 10F

( ) North Carolina Solid Waste Management Rules, 10 NCAC 10G

(✓) Comprehensive Environmental Response, Compensation and Liability Act (CERCLA)

( ) Toxic Substances Control Act (TSCA). 15 U.S.C. §2601, et seq., specifically Section 11 of TSCA, 15 U.S.C. § 2610.

Jack Butler — Inspector's Name
P.O. Box 27687, Raleigh, N.C. — Inspector's Address

Southern Screw/Farley Metals — Name of Firm
Statesville, N.C. — Firm Address

Steve Petrovich — Firm Owner, Operator, or Agent
VP Operations — Title

SAMPLE NUMBER	COLLECTED DATE	COLLECTED TIME	SAMPLE TYPE WATER	SAMPLE TYPE SOIL	SAMPLE TYPE OTHER	DUPLICATE SAMPLES OFFERED	DUPLICATE SAMPLES ACCEPTED	DUPLICATE SAMPLES REJECTED	SAMPLE LOCATION ON-SITE	SAMPLE LOCATION OFF-SITE
1	6-27	1:15		✓	~~✓~~	✓	✓		✓	
2	6-27	2:00		✓	~~✓~~	✓	✓		✓	
3	6-27	2:15		✓	~~✓~~	✓	✓		✓	
4	6-27	3:00		✓	~~✓~~	✓	✓		✓	
5	6-27	12:20	✓			✓	✓		✓	
6	6-27	3:10	✓		Sed.	✓	✓		✓	
7	6-27	3:45	✓		Sed.	✓	✓			✓

Receipt for the sample(s) described above is hereby acknowledged:

Jack Butler
Signature of Inspector

Env. Eng.
Title

Receipt/rejection of duplicate or split samples is hereby acknowledged:

Steve Petrovich
Signature of Firm Owner, Operator, or Agent

VP OPERATIONS
Title

COMMENTS

N. C. Department of Human Resources
Division of Health Services

SAMPLE ANALYSES REQUEST

State Laboratory of Public Health
P. O. Box 28047
306 N. Wilmington Street
Raleigh, 27611

Site Number 49D042269134 Field Sample Number 12151

Name of Site Southern Screw/Forley Metals Site Location Statesville, N.C.

Collected By Jack Butler ID# 44 Date Collected 27 June 1990 Time 1:15

Type of Sample:

Environmental	Concentrate	Comments
___ Groundwater (1)	___ Solid (5)	#1-Bkgr. Soil -18 in. deep
___ Surface Water (2)	___ Liquid (6)	
✓ Soil (3)	___ Sludge (7)	
___ Other (4)	___ Other (8)	

INORGANIC CHEMISTRY

Extractables		Total			
Parameter	Results mg/1	Parameter	Results mg/1	Parameter	Results mg/1
___ Arsenic		___ Arsenic		___ Silver	
___ Barium		___ Barium		___ Sulfates	
___ Cadmium		___ Cadmium		___ Zinc	
___ Chromium		___ Chloride		___ Ph	
___ Lead		___ Chromium		___ Conductivity	
___ Mercury		___ Copper		___ TDS	
___ Selenium		___ Fluoride		___ TOC	
___ Silver		___ Iron			
		___ Lead			
		___ Manganese			
		___ Mercury			
		___ Nitrate			
		___ Selenium			

ORGANIC CHEMISTRY

Parameter	Results mg/1	Parameter	Results mg/1	Parameter	Results mg/1
✓ P&T:GC/MS		___ EDB		___ Methoxychlor	
✓ Acid:B/N Ext.		___ PCB's		___ Toxaphene	
___ TOX		___ Petroleum		___ 2,4-D	
		___ Endrin		___ 2,4,5-TP (silvex)	
		___ Lindane			

MICROBIOLOGY

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

RADIOCHEMISTRY

Parameter	Results PCi/1
___ Gross Alpha	
___ Gross Beta	

Date Received ___ Date Reported ___

Date Extracted ___ Date Analyzed ___

Reported By ___ Lab Number ___

DHS 3191 (Revised 7/85)

DIVISION OF HEALTH SERVICES
SOLID AND HAZARDOUS WASTE MANAGEMENT BRANCH

Chain of Custody Record

Hazardous Waste Materials

Location of Sampling: ____ Generator ____ Transporter ____ Treatment Facili
____ Storage Facility ____ Disposal Facility ____ Landfill
✓ Other: Superfund

Company's Name Southern Screw/Farley Metals Telephone (704) 873-7211

Address Statesville, N.C.

Collector's Name Jack Butler (signature) Telephone (919) 733-2801

Date Sampled 27 June 1990 Time Sampled 12:20-3:45

Type of Process Generating Waste Metal Plating

Field Information

Field Sample No. 15814 15815 15816 15817 15818 15819 15820
15821 15822

Chain of Possession:

1. Jack Butler (signature) Env. Eng. (title) 27-28 June 1990 (inclusive dates)

2. Joyce Dorin (signature) Chem Analyst (title) 28 June 90 (inclusive dates)

3. ____ (signature) ____ (title) ____ (inclusive dates)

Results reported

____ (signature) ____ (title) ____ (date)

Instructions: Complete all applicable information including signatures, and submit with analysis request forms.

DIVISION OF HEALTH SERVICES
SOLID AND HAZARDOUS WASTE MANAGEMENT BRANCH

Receipt for Samples

The samples described below were collected in connection with the administration, enforcement, and documentation of the:

( ) North Carolina Hazardous Waste Management Rules, 10 NCAC 10F

( ) North Carolina Solid Waste Management Rules, 10 NCAC 10G

(✓) Comprehensive Environmental Response, Compensation and Liability Act (CERCLA)

( ) Toxic Substances Control Act (TSCA). 15 U.S.C. §2601, et seq., specifically Section 11 of TSCA, 15 U.S.C. § 2610.

Jack Butler — Inspector's Name
P.O. Box 27687, Raleigh, N.C. — Inspector's Address

Southern Screw/Farley Metals — Name of Firm
Statesville, N.C. — Firm Address

Steve Petrovich — Firm Owner, Operator, or Agent
VP Operations — Title

SAMPLE NUMBER	COLLECTED DATE	COLLECTED TIME	SAMPLE TYPE WATER	SAMPLE TYPE SOIL	SAMPLE TYPE OTHER	DUPLICATE SAMPLES OFFERED	DUPLICATE SAMPLES ACCEPTED	DUPLICATE SAMPLES REJECTED	SAMPLE LOCATION ON-SITE	SAMPLE LOCATION OFF-SITE
1	6-27	1:15		✓	~~✓~~	✓	✓		✓	
2	6-27	2:00		✓	~~✓~~	✓	✓		✓	
3	6-27	2:15		✓	~~✓~~	✓	✓		✓	
4	6-27	3:00		✓	~~✓~~	✓	✓		✓	
5	6-27	12:20	✓			✓	✓		✓	
6	6-27	3:10	✓		Sed.	✓	✓		✓	
7	6-27	3:45	✓		Sed.	✓	✓			✓

Receipt for the sample(s) described above is hereby acknowledged:

Jack Butler
Signature of Inspector

Env. Eng.
Title

Receipt/rejection of duplicate or split samples is hereby acknowledged:

Steve Petrovich
Signature of Firm Owner, Operator, or Agent

VP OPERATIONS
Title

COMMENTS

DIVISION OF HEALTH SERVICES
SOLID AND HAZARDOUS WASTE MANAGEMENT BRANCH

Chain of Custody Record

Hazardous Waste Materials

Location of Sampling: ____ Generator ____ Transporter ____ Treatment Facili
____ Storage Facility ____ Disposal Facility ____ Landfill
✓ Other: Superfund

Company's Name Southern Screw/Farley Metals Telephone (704) 873-7211

Address Statesville, N.C.

Collector's Name Jack Butler (signature) Telephone (919) 733-2801

Date Sampled 27 June 1990 Time Sampled 12:20-3:45

Type of Process Generating Waste Metal Plating

Field Information

Field Sample No. 15814 15815 ~~15816~~ 15816 ~~15817~~ 15817 ~~15818~~ 15818 ~~15819~~ 15819 15820
15821 15822

Chain of Possession:

1. Jack Butler (signature) Env. Eng. (title) 27-28 June 1990 (inclusive dates)

2. Joyce Davis (signature) Chem Analyst (title) 28 June 90 (inclusive dates)

3. ____ (signature) ____ (title) ____ (inclusive dates)

Results reported [signature] (signature) Chemist (title) 17 Jul 90 (date)

Instructions: Complete all applicable information including signatures, and submit with analysis request forms.

SOLID AND HAZARDOUS WASTE MANAGEMENT BRANCH

Receipt for Samples

The samples described below were collected in connection with the administration, enforcement, and documentation of the:

( ) North Carolina Hazardous Waste Management Rules, 10 NCAC 10F

( ) North Carolina Solid Waste Management Rules, 10 NCAC 10G

(✓) Comprehensive Environmental Response, Compensation and Liability Act (CERCLA)

( ) Toxic Substances Control Act (TSCA). 15 U.S.C. §2601, et seq., specifically Section 11 of TSCA, 15 U.S.C. § 2610.

Jack Butler — Inspector's Name

P.O. Box 27687, Raleigh, N.C. — Inspector's Address

Southern Screw/Farley Metals — Name of Firm

Statesville, N.C. — Firm Address

Steve Petrovich — Firm Owner, Operator, or Agent

VP Operations — Title

SAMPLE NUMBER	COLLECTED DATE	COLLECTED TIME	SAMPLE TYPE WATER	SAMPLE TYPE SOIL	SAMPLE TYPE OTHER	DUPLICATE SAMPLES OFFERED	DUPLICATE SAMPLES ACCEPTED	DUPLICATE SAMPLES REJECTED	SAMPLE LOCATION ON-SITE	SAMPLE LOCATION OFF-SITE
1	6-27	1:15		✓	~~✓~~	✓	✓		✓	
2	6-27	2:00		✓	~~✓~~	✓	✓		✓	
3	6-27	2:15		✓	~~✓~~	✓	✓		✓	
4	6-27	3:00		✓	~~✓~~	✓	✓		✓	
5	6-27	12:20	✓			✓	✓		✓	
6	6-27	3:10	✓		Sed.	✓	✓		✓	
7	6-27	3:45	✓		Sed.	✓	✓			✓

Receipt for the sample(s) described above is hereby acknowledged:

Jack Butler — Signature of Inspector

Env. Eng. — Title

Receipt/rejection of duplicate or split samples is hereby acknowledged:

Steve Petrovich — Signature of Firm Owner, Operator, or Agent

VP OPERATIONS — Title

COMMENTS

N. C. Department of Human Resources
Division of Health Services

SAMPLE ANALYSES REQUEST

State Laboratory of Public Healt
P. O. Box 2804
306 N. Wilmington Stre
Raleigh, 2761

Site Number 49D042269134 Field Sample Number 12152

Name of Site Southern Screw/Farley Metals Site Location Statesville, N.C.

Collected By Jack Butler ID# 44 Date Collected 27 June 1990 Time 2:00

Type of Sample:

Environmental	Concentrate	Comments
___ Groundwater (1)	___ Solid (5)	#2 - Soil - 5 ft. deep
___ Surface Water (2)	___ Liquid (6)	
✓ Soil (3)	___ Sludge (7)	
___ Other (4)	___ Other (8)	

INORGANIC CHEMISTRY

Extractables		Total			
Parameter	Results mg/1	Parameter	Results mg/1	Parameter	Results mg/1
___ Arsenic		___ Arsenic		___ Silver	
___ Barium		___ Barium		___ Sulfates	
___ Cadmium		___ Cadmium		___ Zinc	
___ Chromium		___ Chloride		___ Ph	
___ Lead		___ Chromium		___ Conductivity	
___ Mercury		___ Copper		___ TDS	
___ Selenium		___ Fluoride		___ TOC	
___ Silver		___ Iron			
		___ Lead			
		___ Manganese			
		___ Mercury			
		___ Nitrate			
		___ Selenium			

ORGANIC CHEMISTRY

Parameter	Results mg/1	Parameter	Results mg/1	Parameter	Results mg/1
✓ P&T:GC/MS		___ EDB		___ Methoxychlor	
✓ Acid:B/N Ext.		___ PCB's		___ Toxaphene	
___ TOX		___ Petroleum		___ 2,4-D	
		___ Endrin		___ 2,4,5-TP (silvex)	
		___ Lindane			

MICROBIOLOGY

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

RADIOCHEMISTRY

Parameter	Results PCi/1
___ Gross Alpha	
___ Gross Beta	

Date Received ___ Date Reported ___

Date Extracted ___ Date Analyzed ___

Reported By ___ Lab Number ___

1 Revised 7/85)

N. C. Department of Human Resources
Division of Health Services

SAMPLE ANALYSES REQUEST

State Laboratory of Public Healt
P. O. Box 2804
306 N. Wilmington Stree
Raleigh, 2761

Site Number 49D042269134 Field Sample Number 12153

Name of Site Southern Screw/Farley Metals Site Location Statesville, N.C.

Collected By Jack Butler ID# 44 Date Collected 27 June 1990 Time 2:15

Type of Sample:

Environmental	Concentrate	Comments
___ Groundwater (1)	___ Solid (5)	#3-Soil-7ft. deep
___ Surface Water (2)	___ Liquid (6)	
✓ Soil (3)	___ Sludge (7)	
___ Other (4)	___ Other (8)	

INORGANIC CHEMISTRY

Extractables		Total			
Parameter	Results mg/1	Parameter	Results mg/1	Parameter	Results mg/1
___ Arsenic		___ Arsenic		___ Silver	
___ Barium		___ Barium		___ Sulfates	
___ Cadmium		___ Cadmium		___ Zinc	
___ Chromium		___ Chloride		___ Ph	
___ Lead		___ Chromium		___ Conductivity	
___ Mercury		___ Copper		___ TDS	
___ Selenium		___ Fluoride		___ TOC	
___ Silver		___ Iron			
		___ Lead			
		___ Manganese			
		___ Mercury			
		___ Nitrate			
		___ Selenium			

ORGANIC CHEMISTRY

Parameter	Results mg/1	Parameter	Results mg/1	Parameter	Results mg/1
✓ P&T:GC/MS		___ EDB		___ Methoxychlor	
✓ Acid:B/N Ext.		___ PCB's		___ Toxaphene	
___ TOX		___ Petroleum		___ 2,4-D	
		___ Endrin		___ 2,4,5-TP (silvex)	
		___ Lindane			

MICROBIOLOGY

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

RADIOCHEMISTRY

Parameter	Results PCi/1
___ Gross Alpha	
___ Gross Beta	

Date Received ___ Date Reported ___

Date Extracted ___ Date Analyzed ___

Reported By ___ Lab Number ___

191 Revised 7/85)

N. C. Department of Human Resources
Division of Health Services

SAMPLE ANALYSES REQUEST

State Laboratory of Public Healt
P. O. Box 2804
306 N. Wilmington Stre
Raleigh, 2761

Site Number 49D042269134 Field Sample Number 12154

Name of Site Southern Screw/Farley Metals Site Location Statesville, N.C.

Collected By Jack Butler ID# 44 Date Collected 27 June 1990 Time 3:00

Type of Sample:

Environmental	Concentrate	Comments
___ Groundwater (1)	___ Solid (5)	#4-Soil-7.2 ft. deep
___ Surface Water (2)	___ Liquid (6)	
✓ Soil (3)	___ Sludge (7)	
___ Other (4)	___ Other (8)	

INORGANIC CHEMISTRY

Extractables		Total			
Parameter	Results mg/1	Parameter	Results mg/1	Parameter	Results mg/1
___ Arsenic		___ Arsenic		___ Silver	
___ Barium		___ Barium		___ Sulfates	
___ Cadmium		___ Cadmium		___ Zinc	
___ Chromium		___ Chloride		___ Ph	
___ Lead		___ Chromium		___ Conductivity	
___ Mercury		___ Copper		___ TDS	
___ Selenium		___ Fluoride		___ TOC	
___ Silver		___ Iron			
		___ Lead			
		___ Manganese			
		___ Mercury			
		___ Nitrate			
		___ Selenium			

ORGANIC CHEMISTRY

Parameter	Results mg/1	Parameter	Results mg/1	Parameter	Results mg/1
✓ P&T:GC/MS		___ EDB		___ Methoxychlor	
✓ Acid:B/N Ext.		___ PCB's		___ Toxaphene	
___ TOX		___ Petroleum		___ 2,4-D	
		___ Endrin		___ 2,4,5-TP (silvex)	
		___ Lindane			

MICROBIOLOGY

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

RADIOCHEMISTRY

Parameter	Results PCi/1
___ Gross Alpha	
___ Gross Beta	

Date Received ___ Date Reported ___

Date Extracted ___ Date Analyzed ___

Reported By ___ Lab Number ___

Revised 7/85

N. C. Department of Human Resources
Division of Health Services

SAMPLE ANALYSES REQUEST

State Laboratory of Public Health
P. O. Box 28047
306 N. Wilmington Street
Raleigh, 27611

Site Number 4900422691 34 Field Sample Number 12155

Name of Site Southern Screw/Farley Metals Site Location Statesville, N.C.

Collected By Jack Butler ID# 44 Date Collected 27 June 1990 Time 12:20

Type of Sample:

Environmental	Concentrate	Comments
✓ Groundwater (1)	___ Solid (5)	#5- On site well
___ Surface Water (2)	___ Liquid (6)	
___ Soil (3)	___ Sludge (7)	
___ Other (4)	___ Other (8)	

INORGANIC CHEMISTRY

Extractables		Total			
Parameter	Results mg/1	Parameter	Results mg/1	Parameter	Results mg/1
___ Arsenic		___ Arsenic		___ Silver	
___ Barium		___ Barium		___ Sulfates	
___ Cadmium		___ Cadmium		___ Zinc	
___ Chromium		___ Chloride		___ Ph	
___ Lead		___ Chromium		___ Conductivity	
___ Mercury		___ Copper		___ TDS	
___ Selenium		___ Fluoride		___ TOC	
___ Silver		___ Iron		___	
___		___ Lead		___	
___		___ Manganese		___	
___		___ Mercury		___	
___		___ Nitrate		___	
___		___ Selenium		___	

ORGANIC CHEMISTRY

Parameter	Results mg/1	Parameter	Results mg/1	Parameter	Results mg/1
___ P&T:GC/MS		___ EDB		___ Methoxychlor	
✓ Acid:B/N Ext.		___ PCB's		___ Toxaphene	
___ TOX		___ Petroleum		___ 2,4-D	
___		___ Endrin		___ 2,4,5-TP (silvex)	
___		___ Lindane		___	

MICROBIOLOGY

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

RADIOCHEMISTRY

Parameter	Results PCi/1
___ Gross Alpha	
___ Gross Beta	
___	
___	

Date Received _____ Date Reported _____

Date Extracted _____ Date Analyzed _____

Reported By _____ Lab Number _____

DHS 3191 (Revised 7/85)

N. C. Department of Human Resources
Division of Health Services

SAMPLE ANALYSES REQUEST

State Laboratory of Public Health
P. O. Box 28047
306 N. Wilmington Street
Raleigh, 27611

Site Number 4900422691 34 Field Sample Number 12156

Name of Site Southern Screw/Farley Metals Site Location Statesville, N.C.

Collected By Jack Butler ID# 44 Date Collected 27 June 1990 Time 12:20

Type of Sample:

Environmental	Concentrate	Comments
✓ Groundwater (1)	___ Solid (5)	#5-On Site well (Acidified)
___ Surface Water (2)	___ Liquid (6)	
___ Soil (3)	___ Sludge (7)	
___ Other (4)	___ Other (8)	

INORGANIC CHEMISTRY

Extractables		Total			
Parameter	Results mg/1	Parameter	Results mg/1	Parameter	Results mg/1
___ Arsenic		___ Arsenic		___ Silver	
___ Barium		___ Barium		___ Sulfates	
___ Cadmium		___ Cadmium		___ Zinc	
___ Chromium		___ Chloride		___ Ph	
___ Lead		___ Chromium		___ Conductivity	
___ Mercury		___ Copper		___ TDS	
___ Selenium		___ Fluoride		___ TOC	
___ Silver		___ Iron			
		___ Lead			
		___ Manganese			
		___ Mercury			
		___ Nitrate			
		___ Selenium			

ORGANIC CHEMISTRY

Parameter	Results mg/1	Parameter	Results mg/1	Parameter	Results mg/1
✓ P&T:GC/MS		___ EDB		___ Methoxychlor	
___ Acid:B/N Ext.		___ PCB's		___ Toxaphene	
___ TOX		___ Petroleum		___ 2,4-D	
		___ Endrin		___ 2,4,5-TP (silvex)	
		___ Lindane			

MICROBIOLOGY

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

RADIOCHEMISTRY

Parameter	Results PCi/1
___ Gross Alpha	
___ Gross Beta	

Date Received ___ Date Reported ___

Date Extracted ___ Date Analyzed ___

Reported By ___ Lab Number ___

DHS 3191 (Revised 7/85)

N. C. Department of Human Resources
Division of Health Services

SAMPLE ANALYSES REQUEST

State Laboratory of Public Healt
P. O. Box 2804
306 N. Wilmington Stre
Raleigh, 2761

Site Number 49D042269134 Field Sample Number 12157

Name of Site Southern Screw/Farley Metals Site Location Statesville, N.C.

Collected By Jack Butler ID# 44 Date Collected 27 June 1990 Time 3:10

Type of Sample:

Environmental	Concentrate	Comments
___ Groundwater (1)	___ Solid (5)	#6 - Sediment - Upstream
___ Surface Water (2)	___ Liquid (6)	
___ Soil (3)	___ Sludge (7)	
✓ Other (4) (sed.)	___ Other (8)	

INORGANIC CHEMISTRY

Extractables		Total			
Parameter	Results mg/1	Parameter	Results mg/1	Parameter	Results mg/1
___ Arsenic		___ Arsenic		___ Silver	
___ Barium		___ Barium		___ Sulfates	
___ Cadmium		___ Cadmium		___ Zinc	
___ Chromium		___ Chloride		___ Ph	
___ Lead		___ Chromium		___ Conductivity	
___ Mercury		___ Copper		___ TDS	
___ Selenium		___ Fluoride		___ TOC	
___ Silver		___ Iron			
		___ Lead			
		___ Manganese			
		___ Mercury			
		___ Nitrate			
		___ Selenium			

ORGANIC CHEMISTRY

Parameter	Results mg/1	Parameter	Results mg/1	Parameter	Results mg/1
✓ P&T:GC/MS		___ EDB		___ Methoxychlor	
✓ Acid:B/N Ext.		___ PCB's		___ Toxaphene	
___ TOX		___ Petroleum		___ 2,4-D	
		___ Endrin		___ 2,4,5-TP (silvex)	
		___ Lindane			

MICROBIOLOGY

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

RADIOCHEMISTRY

Parameter	Results PCi/1
___ Gross Alpha	
___ Gross Beta	

Date Received ___ Date Reported ___

Date Extracted ___ Date Analyzed ___

Reported By ___ Lab Number ___

191 Revised 7/85)

N. C. Department of Human Resources
Division of Health Services

SAMPLE ANALYSES REQUEST

State Laboratory of Public Healt
P. O. Box 2804
306 N. Wilmington Stree
Raleigh, 2761

Site Number 49D042269134 Field Sample Number 12158

Name of Site Southern Screw/Farley Metals Site Location Statesville, N.C.

Collected By Jack Butler ID# 44 Date Collected 27 June 1990 Time 3:10

Type of Sample:

Environmental	Concentrate	Comments
___ Groundwater (1)	___ Solid (5)	#6 - Upstream (Acidified)
✓ Surface Water (2)	___ Liquid (6)	
___ Soil (3)	___ Sludge (7)	
___ Other (4)	___ Other (8)	

INORGANIC CHEMISTRY

Extractables		Total			
Parameter	Results mg/1	Parameter	Results mg/1	Parameter	Results mg/1
___ Arsenic		___ Arsenic		___ Silver	
___ Barium		___ Barium		___ Sulfates	
___ Cadmium		___ Cadmium		___ Zinc	
___ Chromium		___ Chloride		___ Ph	
___ Lead		___ Chromium		___ Conductivity	
___ Mercury		___ Copper		___ TDS	
___ Selenium		___ Fluoride		___ TOC	
___ Silver		___ Iron			
		___ Lead			
		___ Manganese			
		___ Mercury			
		___ Nitrate			
		___ Selenium			

ORGANIC CHEMISTRY

Parameter	Results mg/1	Parameter	Results mg/1	Parameter	Results mg/1
✓ P&T:GC/MS		___ EDB		___ Methoxychlor	
___ Acid:B/N Ext.		___ PCB's		___ Toxaphene	
___ TOX		___ Petroleum		___ 2,4-D	
		___ Endrin		___ 2,4,5-TP (silvex)	
		___ Lindane			

MICROBIOLOGY

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

RADIOCHEMISTRY

Parameter	Results PCi/1
___ Gross Alpha	
___ Gross Beta	

Date Received ___ Date Reported ___

Date Extracted ___ Date Analyzed ___

Reported By ___ Lab Number ___

N. C. Department of Human Resources
Division of Health Services

SAMPLE ANALYSES REQUEST

State Laboratory of Public Healt
P. O. Box 2804
306 N. Wilmington Stre
Raleigh, 2761

Site Number 4900422691 34 Field Sample Number 12159

Name of Site Southern Screw/Farley Metals Site Location Statesville, N.C.

Collected By Jack Butler ID# 44 Date Collected 27 June 1990 Time 3:10

Type of Sample:

Environmental	Concentrate	Comments
____ Groundwater (1)	____ Solid (5)	#6 - Upstream
✓ Surface Water (2)	____ Liquid (6)	
____ Soil (3)	____ Sludge (7)	
____ Other (4)	____ Other (8)	

INORGANIC CHEMISTRY

Extractables		Total			
Parameter	Results mg/1	Parameter	Results mg/1	Parameter	Results mg/1
____ Arsenic		____ Arsenic		____ Silver	
____ Barium		____ Barium		____ Sulfates	
____ Cadmium		____ Cadmium		____ Zinc	
____ Chromium		____ Chloride		____ Ph	
____ Lead		____ Chromium		____ Conductivity	
____ Mercury		____ Copper		____ TDS	
____ Selenium		____ Fluoride		____ TOC	
____ Silver		____ Iron			
		____ Lead			
		____ Manganese			
		____ Mercury			
		____ Nitrate			
		____ Selenium			

ORGANIC CHEMISTRY

Parameter	Results mg/1	Parameter	Results mg/1	Parameter	Results mg/1
____ P&T:GC/MS		____ EDB		____ Methoxychlor	
✓ Acid:B/N Ext.		____ PCB's		____ Toxaphene	
____ TOX		____ Petroleum		____ 2,4-D	
		____ Endrin		____ 2,4,5-TP (silvex)	
		____ Lindane			

MICROBIOLOGY

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

RADIOCHEMISTRY

Parameter	Results PCi/1
____ Gross Alpha	
____ Gross Beta	

Date Received ____ Date Reported ____

Date Extracted ____ Date Analyzed ____

Reported By ____ Lab Number ____

vised 7/85

N. C. Department of Human Resources
Division of Health Services

SAMPLE ANALYSES REQUEST

State Laboratory of Public Healt
P. O. Box 2804
306 N. Wilmington Stre
Raleigh, 2761

Site Number 4900422691 34 Field Sample Number 121 60

Name of Site Southern Screw/Farley Metals Site Location Statesville, N.C.

Collected By Jack Butler ID# 44 Date Collected 27 June 1990 Time 3:45

Type of Sample:

Environmental	Concentrate	Comments
___ Groundwater (1)	___ Solid (5)	#7-Sediment-Downstream
___ Surface Water (2)	___ Liquid (6)	
___ Soil (3)	___ Sludge (7)	
✓ Other (4) (Sed.)	___ Other (8)	

INORGANIC CHEMISTRY

Extractables		Total			
Parameter	Results mg/1	Parameter	Results mg/1	Parameter	Results mg/1
___ Arsenic		___ Arsenic		___ Silver	
___ Barium		___ Barium		___ Sulfates	
___ Cadmium		___ Cadmium		___ Zinc	
___ Chromium		___ Chloride		___ Ph	
___ Lead		___ Chromium		___ Conductivity	
___ Mercury		___ Copper		___ TDS	
___ Selenium		___ Fluoride		___ TOC	
___ Silver		___ Iron			
		___ Lead			
		___ Manganese			
		___ Mercury			
		___ Nitrate			
		___ Selenium			

ORGANIC CHEMISTRY

Parameter	Results mg/1	Parameter	Results mg/1	Parameter	Results mg/1
✓ P&T:GC/MS		___ EDB		___ Methoxychlor	
✓ Acid:B/N Ext.		___ PCB's		___ Toxaphene	
___ TOX		___ Petroleum		___ 2,4-D	
		___ Endrin		___ 2,4,5-TP (silvex)	
		___ Lindane			

MICROBIOLOGY

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

RADIOCHEMISTRY

Parameter	Results PCi/1
___ Gross Alpha	
___ Gross Beta	

Date Received ___ Date Reported ___

Date Extracted ___ Date Analyzed ___

Reported By ___ Lab Number ___

1 Revised 7/85

N. C. Department of Human Resources
Division of Health Services

SAMPLE ANALYSES REQUEST

State Laboratory of Public Healt
P. O. Box 2804
306 N. Wilmington Stree
Raleigh, 2761

Site Number 4900422691 34 Field Sample Number ~~12162~~ 12161

Name of Site Southern Screw/Farley Metals Site Location Statesville, N.C.

Collected By Jack Butler ID# 44 Date Collected 27 June 1990 Time 3:45

Type of Sample:

Environmental	Concentrate	Comments
___ Groundwater (1)	___ Solid (5)	#7-Downstream
✓ Surface Water (2)	___ Liquid (6)	
___ Soil (3)	___ Sludge (7)	
___ Other (4)	___ Other (8)	

INORGANIC CHEMISTRY

Extractables		Total			
Parameter	Results mg/1	Parameter	Results mg/1	Parameter	Results mg/1
___ Arsenic		___ Arsenic		___ Silver	
___ Barium		___ Barium		___ Sulfates	
___ Cadmium		___ Cadmium		___ Zinc	
___ Chromium		___ Chloride		___ Ph	
___ Lead		___ Chromium		___ Conductivity	
___ Mercury		___ Copper		___ TDS	
___ Selenium		___ Fluoride		___ TOC	
___ Silver		___ Iron		___	
___		___ Lead		___	
___		___ Manganese		___	
___		___ Mercury		___	
___		___ Nitrate		___	
___		___ Selenium		___	

ORGANIC CHEMISTRY

Parameter	Results mg/1	Parameter	Results mg/1	Parameter	Results mg/1
___ P&T:GC/MS		___ EDB		___ Methoxychlor	
✓ Acid:B/N Ext.		___ PCB's		___ Toxaphene	
___ TOX		___ Petroleum		___ 2,4-D	
___		___ Endrin		___ 2,4,5-TP (silvex)	
___		___ Lindane		___	

MICROBIOLOGY

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

RADIOCHEMISTRY

Parameter	Results PCi/1
___ Gross Alpha	
___ Gross Beta	
___	
___	

Date Received ___ Date Reported ___

Date Extracted ___ Date Analyzed ___

Reported By ___ Lab Number ___

N.C. Dept. of Environment, Health and Natural Resources
Division of Laboratory Services
State Laboratory of Public Health
P.O. Box 28047, Raleigh, N.C. 27611

RECEIVED
JUL 19 1990
SUPERFUND SECTION

Environmental Sciences Analysis Report

Name of Owner, Patient or Supply: Southern Screw

Address: Statesville, NC

County:

Report To: David Lilley

Address: P.O. Box 27687 (CERCLA)

Date Collected: 6-27-90

Collected By: David Lilley

Analysis Desired: Organic Solvents on charcoal

Laboratory Number	Sample Number	Sample Description or Remarks	Results In mgs/tube
905774	#1	1:10-3:27	No compounds identified.
905775	#2	Blank	No compounds identified.
		NISOH Analytical Method: P&CAM 127 ORGANIC SOLVENTS IN AIR. Absorption on charcoal desoption with carbon disulfide, GLC. 1977	

Date Received 6-28-90 NW Date Reported 7-12-90

Date Extracted Date Analyzed 7/6/90 GPM; GC/MS 7/9/90 NW

Reported By: John L. Neal

DEHNR Form 2364 Revised (9-89)

Laboratory

AIR VOLUME = 137 Liters

DIVISION OF HEALTH SERVICES
SOLID AND HAZARDOUS WASTE MANAGEMENT BRANCH

Receipt for Samples

The samples described below were collected in connection with the administration, enforcement, and documentation of the:

( ) North Carolina Hazardous Waste Management Rules, 10 NCAC 10F

( ) North Carolina Solid Waste Management Rules, 10 NCAC 10G

(✓) Comprehensive Environmental Response, Compensation and Liability Act (CERCLA)

( ) Toxic Substances Control Act (TSCA). 15 U.S.C. §2601, et seq., specifically Section 11 of TSCA, 15 U.S.C. § 2610.

David Lillen — Inspector's Name
P.O. Box 27687 Raleigh — Inspector's Address

Southern Screw — Name of Firm
Statesville, NC — Firm Address

Firm Owner, Operator, or Agent
Title

SAMPLE NUMBER	COLLECTED DATE	COLLECTED TIME	SAMPLE TYPE WATER	SAMPLE TYPE SOIL	SAMPLE TYPE OTHER	DUPLICATE SAMPLES OFFERED	DUPLICATE SAMPLES ACCEPTED	DUPLICATE SAMPLES REJECTED	SAMPLE LOCATION ON-SITE	SAMPLE LOCATION OFF-SITE
DL90001	6-27	1:10-3:27			✓ (air)					
DL90002	6-27	Blank			✓ (air blank)					

Receipt for the sample(s) described above is hereby acknowledged:

David Lillen
Signature of Inspector

Industrial Hygienist
Title

Receipt/rejection of duplicate or split samples is hereby acknowledged:

Signature of Firm Owner, Operator, or Agent

Title

COMMENTS

DIVISION OF HEALTH SERVICES
SOLID AND HAZARDOUS WASTE MANAGEMENT BRANCH

Chain of Custody Record

Hazardous Waste Materials

Location of Sampling: ___ Generator ___ Transporter ___ Treatment Facilit
___ Storage Facility ___ Disposal Facility ___ Landfill
✓ Other: Superfund

Company's Name Southern Screw Telephone (704) 873-7211

Address Statesville, NC

Collector's Name David Lilly (signature) Telephone (919) 733-2801

Date Sampled 6-27-90 Time Sampled 1:10-3:27pm

Type of Process Generating Waste Metal Plating

Field Information

Field Sample No. DL90001 DL90002 Blank

Chain of Possession:

	signature	title	inclusive dates
1.	David Lilly	Industrial Hygienist	6-27-90
2.	Angela D. Amtte	Chem. Tech	6-28-90
3.			

Results reported

signature	title	date
John R. Neal	Chemist	7-12-90

Instructions: Complete all applicable information including signatures, and submit with analysis request forms.

MEMPHIS ENVIRONMENTAL CENTER, INC.

2603 Corporate Avenue, Suite 100
Memphis, Tennessee 38132
Phone: (901) 345-1788 Fax: (901) 398-4719

October 3, 1990

Mr. Jack Butler
North Carolina Department of Human Resources
Division of Health Services - Superfund Group
P.O. Box 27687
Raleigh, North Carolina 27611

RECEIVED
OCT 05 1990
SUPERFUND SECTION

Re: Split Samples - Southern Fasteners

Dear Mr. Butler:

Enclosed are the laboratory analytical data for the Southern Fastener's facility in Statesville, North Carolina. Please note that there is no result for Volatile Organics, Sample #7. This sample was omitted from the shipment.

If you have any questions, do not hesitate to call me.

Sincerely,

Stephen A. Rettig

Stephen A. Rettig
Environmental Project Manager

SAR/ns

Enclosure

MEMPHIS ENVIRONMENTAL CENTER, INC.

ENVIRONMENTAL ANALYTICAL LABORATORY
2603 Corporate Avenue, East Suite 100
Memphis, Tennessee 38132
(901)-345-1788

Client Contact: Steve Rettig
Project: Southern Fasteners
Sample(s) Type: Water Samples

Report No: R-900477
Report Date: 09-10-90

Quality Assurance Summary:

Type of Analysis	Method	Holding Time	Surrogate Recovery	Matrix Spike Recoveries	Blanks	Overall Summary
VOA	SW846-8240	A	A	N-1	A	A(See N-1)
BNA	SW846-8270	A	A	A	A	A
METALS	SW846-6010/7000	A	NA	A	N-2	A(See N-2)
CYANIDE	Standard Method 16th Ed. 412	A	NA	A	A	A
pH	SW846-9040	A	NA	NA	NA	A

A = Requirements set by method were met
NA = Not applicable
N-1 = See NOTE 1 on page 2
N-2 = See NOTE 2 on page 2
N-3 =

Terri Gray
QA Officer

Laboratory Manager

NOTE 1: No matrix spikes were reported with these samples.

NOTE 2: Zinc was detected in the blank and the appropriate data was qualified as estimated (U).

Report Number: R-900477
Project Number: 161-11-01-04
Description: SOUTHERN FASTENERS - WATERS

Memphis Environmental Center
Analytical Report
Volatile Organics By SW846-8240
Results given in: ug/L

Report Date: 08-14-90 11:52
Prepared By AMC
QA/QC Check
Lab Manager

Sample Number	H2O #5	H2O #6	H2O #7
Lab ID Number	9002341	9002342	9002343
Matrix	WATER	WATER	WATER
Type	SAMPLE**	SAMPLE	SAMPLE**
Date of Collection	06-27-90	06-27-90	06-27-90
Date of Receipt	06-28-90	06-28-90	06-28-90
Date of Extraction	07-04-90	07-04-90	-
Date of Analysis	07-04-90	07-04-90	-
Acetone	ND	ND	-
Benzene	[2.5]	ND	-
Bromodichloromethane	ND	ND	-
Bromoform	ND	ND	-
Bromomethane	ND	ND	-
Butanone, 2-	ND	ND	-
Carbon disulfide	ND	ND	-
Carbon tetrachloride	ND	ND	-
Chlorobenzene	ND	ND	-
Chloroethane	ND	ND	-
Chloroform	ND	25.7	-
Chloromethane	ND	ND	-
Dibromochloromethane	ND	ND	-
Dibromoethane	ND	ND	-
Dichloro-2-butene, trans-1,4	ND	ND	-
Dichlorodifluoromethane	ND	ND	-
Dichloroethane, 1,1-	ND	ND	-
Dichloroethane, 1,2-	ND	ND	-
Dichloroethene, 1,1-	ND	ND	-
Dichloroethene, trans-1,2-	ND	ND	-
Dichloropropane, 1,2-	ND	ND	-
Dichloropropene, cis-1,3-	ND	ND	-
Dichloropropene, trans-1,3-	ND	ND	-
Ethyl benzene	ND	ND	-
Hexanone, 2-	ND	ND	-
Iodomethane	ND	ND	-
Methyl-2-pentanone, 4-	ND	ND	-
Methylene chloride	ND	ND	-
SURR.(Bromofluorobenzene, 4-)	102	103	-
SURR.(Toluene-d8)	116	107	-
SURR.(d-4,1,2-Dichloroethane)	101	104	-
Styrene	ND	ND	-
Tetrachloroethane, 1,1,2,2-	ND	ND	-
Tetrachloroethene	ND	[3.1]	-
Toluene	6.0	ND	-
Trichloroethane, 1,1,1-	ND	ND	-
Trichloroethane, 1,1,2-	ND	ND	-
Trichloroethene	ND	ND	-

\- Not Applicable
ND Non detected at stated limit of detection
NA Not analyzed

[ ] - Below LOQ, Above LOD

Report Number: R-900477
Project Number: 161-11-01-04
Description: SOUTHERN FASTENERS - WATERS

Memphis Environmental Center
Analytical Report
Volatile Organics By SW846-8240
Results given in: ug/L

Report Date: 08-14-90 11:53
Prepared By
QA/QC Check
Lab Manager

Sample Number	H2O #5	H2O #6	H2O #7
Lab ID Number	9002341	9002342	9002343
Matrix	WATER	WATER	WATER
Type	SAMPLE**	SAMPLE	SAMPLE**
Trichloropropane, 1,2,3-	ND	ND	-
Vinyl acetate	ND	ND	-
Vinyl chloride	ND	ND	-
Xylenes	[4.1]	ND	-

** NOTES :

9002341*SAMPLE - SURROGATE VALUES ARE REPORTED IN (%) FOR ALL SAMPLES IN THIS SET. RECOVERY FOR SURR.(Toluene-d8) ABOVE CONTROL LIMIT OF 110%.

9002343*SAMPLE - VOA ANALYSIS NOT REQUESTED FOR THIS SAMPLE.

- Not Applicable
ND Non detected at stated limit of detection
NA Not analyzed

[ ] - Below LOQ, Above LOD

Report Number: R-900477
Project Number: 161-11-01-04
Description: SOUTHERN FASTENERS - WATERS

Memphis Environmental Center
QA/QC Report
Volatile Organics By SW846-8240
Results given in: ug/L

Report Date: 08-14-90 11:53
Prepared By R.M.
QA/QC Check
Lab Manager

Sample Number	BLANK	LIMIT	LIMIT	SURROGATE
Lab ID Number	07-04-90	OF	OF	SPIKE
Matrix	SYSTEM	DETECTION	QUANTITATION	LEVELS
Type	SAMPLE			
Date of Collection				
Date of Receipt				
Date of Extraction	07-04-90			
Date of Analysis	07-04-90			
Acetone	ND	33	100	-
Benzene	ND	1.5	5	-
Bromodichloromethane	ND	1.5	5	-
Bromoform	ND	1.5	5	-
Bromomethane	ND	3.3	10	-
Butanone, 2-	ND	33	100	-
Carbon disulfide	ND	33	100	-
Carbon tetrachloride	ND	1.5	5	-
Chlorobenzene	ND	1.5	5	-
Chloroethane	ND	3.3	10	-
Chloroform	ND	1.5	5	-
Chloromethane	ND	3.3	10	-
Dibromochloromethane	ND	1.5	5	-
Dibromoethane	ND	1.5	5	-
Dichloro-2-butene, trans-1,4	ND	1.5	5	-
Dichlorodifluoromethane	ND	1.5	5	-
Dichloroethane, 1,1-	ND	1.5	5	-
Dichloroethane, 1,2-	ND	1.5	5	-
Dichloroethene, 1,1-	ND	1.5	5	-
Dichloroethene, trans-1,2-	ND	1.5	5	-
Dichloropropane, 1,2-	ND	1.5	5	-
Dichloropropene, cis-1,3-	ND	1.5	5	-
Dichloropropene, trans-1,3-	ND	1.5	5	-
Ethyl benzene	ND	1.5	5	-
Hexanone, 2-	ND	15	50	-
Iodomethane	ND	1.5	5	-
Methyl-2-pentanone, 4-	ND	15	50	-
Methylene chloride	[2.8]	1.5	5	-
SURR.(Bromofluorobenzene, 4-)	89		-	42.6
SURR.(Toluene-d8)	104		-	41.9
SURR.(d-4,1,2-Dichloroethane)	91		-	44.8
Styrene	ND	1.5	5	-
Tetrachloroethane, 1,1,2,2-	ND	1.5	5	-
Tetrachloroethene	ND	1.5	5	-
Toluene	ND	1.5	5	-
Trichloroethane, 1,1,1-	ND	1.5	5	-
Trichloroethane, 1,1,2-	ND	1.5	5	-
Trichloroethene	ND	1.5	5	-

\- Not Applicable
ND Non detected at stated limit of detection
NA Not analyzed

[ ] - Below LOQ, Above LOD

Report Number: R-900477
Project Number: 161-11-01-04
Description: SOUTHERN FASTENERS - WATERS

Memphis Environmental Center
QA/QC Report
Volatile Organics By SW846-8240
Results given in: ug/L

Report Date: 08-14-90 11:53
Prepared By K.M.
QA/QC Check
Lab Manager

Sample Number Lab ID Number Matrix Type	BLANK 07-04-90 SYSTEM SAMPLE	LIMIT OF DETECTION	LIMIT OF QUANTITATION	SURROGATE SPIKE LEVELS
Trichloropropane, 1,2,3-	ND	1.5	5	-
Vinyl acetate	ND	15	50	-
Vinyl chloride	ND	3.3	10	-
Xylenes	ND	1.5	5	-

** NOTES :

- Not Applicable
Non detected at stated limit of detection
NA Not analyzed

[ ] - Below LOQ, Above LOD

Report Number : R-900477
Project Number : 161-11-01-04
Description : SOUTHERN FASTENERS - WATERS

Memphis Environmental Center Laboratory

GC/MS Library Search Identification
Volatile organics

Report Date : 10 SEP 1990 16:57:
Prepared By : RMC
QA/QC Check
Lab Manager :

LAB ID: 9002341 SAMPLE #: H20 #5 UNITS: ug/L

Peak No	Ret. Time (Minutes)	Cas #	Compound	Chemical Formula	Estimated Conc.	% Highes Probabili
1	28.64	95476	Benzene, 1,2-dimethyl-	C_8H_{10}	3	87
2	33.37	95636	Benzene, 1,2,4-trimethyl-	C_9H_{12}	3	89

LAB ID: 9002342 SAMPLE #: H20 #6 UNITS: ug/L

Peak No	Ret. Time (Minutes)	Cas #	Compound	Chemical Formula	Estimated Conc.	% Highes Probabili
1	0.01	-	NO PEAKS FOUND	-	-	-

Report Number: R-900477
Project Number: 161-11-01-04
Description: SOUTHERN FASTENERS - WATERS

Memphis Environmental Center
Analytical Report
Base/Neutral/Acid Extractables By Method: SW846-8270
Results given in: ug/L

Report Date: 09-06-90 11:50
Prepared By
QA/QC Check
Lab Manager

Sample Number	H20 #5	H20 #6	H20 #7
Lab ID Number	9002341	9002342	9002343
Matrix	WATER	WATER	WATER
Type	SAMPLE**	SAMPLE	SAMPLE
Date of Collection	06-27-90	06-27-90	06-27-90
Date of Receipt	06-28-90	06-28-90	06-28-90
Date of Extraction	07-01-90	07-01-90	07-01-90
Date of Analysis	07-28-90	07-28-90	07-28-90
Acenaphthene	ND	ND	ND
Acenaphthylene	ND	ND	ND
Aniline	ND	ND	ND
Anthracene	ND	ND	ND
Benzidine	ND	ND	ND
Benzo(a)anthracene	ND	ND	ND
Benzo(a)pyrene	ND	ND	ND
Benzo(b and/or k)fluoranthene	ND	ND	ND
Benzo(g,h,i)perylene	ND	ND	ND
Benzoic acid	ND	ND	ND
Benzyl alcohol	ND	ND	ND
Bis(2-chloroethoxy)methane	ND	ND	ND
Bis(2-chloroethyl)ether	ND	ND	ND
Bis(2-chloroisopropyl)ether	ND	ND	ND
Bis(2-ethylhexyl)phthalate	ND	ND	ND
Bromophenyl phenyl ether, 4-	ND	ND	ND
Butyl benzyl phthalate	ND	ND	ND
Chloro-3-methylphenol, 4-	ND	ND	ND
Chloroaniline, 4-	ND	ND	ND
Chloronaphthalene, 1-	ND	ND	ND
Chloronaphthalene, 2-	ND	ND	ND
Chlorophenol, 2-	ND	ND	ND
Chlorophenyl phenyl ether, 4-	ND	ND	ND
Chrysene	ND	ND	ND
Di-n-butyl phthalate	ND	ND	ND
Di-n-octyl phthalate	ND	ND	ND
Dibenzo(a,h)anthracene	ND	ND	ND
Dibenzofuran	ND	ND	ND
Dichlorobenzene, 1,2-	ND	ND	ND
Dichlorobenzene, 1,3-	ND	ND	ND
Dichlorobenzene, 1,4-	ND	ND	ND
Dichlorobenzidine, 3,3'-	ND	ND	ND
Dichlorophenol, 2,4-	ND	ND	ND
Dichlorophenol, 2,6-	ND	ND	ND
Diethyl phthalate	ND	ND	ND
Dimethyl phthalate	ND	ND	ND
Dimethylphenol, 2,4-	ND	ND	ND
Dinitrophenol, 2,4-	ND	ND	ND

\- Not Applicable
ND Non detected at stated limit of detection
NA Not analyzed

[ ] - Below LOQ, Above LOD

Report Number: R-900477
Project Number: 161-11-01-04
Description: SOUTHERN FASTENERS - WATERS

Memphis Environmental Center
Analytical Report
Base/Neutral/Acid Extractables By Method: SW846-8270
Results given in: ug/L

Report Date: 09-06-90 11:51
Prepared By
QA/QC Check
Lab Manager

Sample Number	H2O #5	H2O #6	H2O #7
Lab ID Number	9002341	9002342	9002343
Matrix	WATER	WATER	WATER
Type	SAMPLE**	SAMPLE	SAMPLE
Dinitrotoluene, 2,4-	ND	ND	ND
Dinitrotoluene, 2,6-	ND	ND	ND
Diphenyl hydrazine, 1,2-	ND	ND	ND
Fluoranthene	ND	ND	ND
Fluorene	ND	ND	ND
Hexachlorobenzene	ND	ND	ND
Hexachlorobutadiene	ND	ND	ND
Hexachlorocyclopentadiene	ND	ND	ND
Hexachloroethane	ND	ND	ND
Indeno(1,2,3-c,d)pyrene	ND	ND	ND
Isophorone	ND	ND	ND
Methyl-4,6-dinitrophenol, 2-	ND	ND	ND
Methylphenol, 2-	ND	ND	ND
Methylphenol, 4-	ND	ND	ND
N-Nitrosodi-n-propylamine	ND	ND	ND
N-Nitrosodimethylamine	ND	ND	ND
N-Nitrosodiphenylamine	ND	ND	ND
Naphthalene	ND	ND	ND
Nitroaniline, 2-	ND	ND	ND
Nitroaniline, 3-	ND	ND	ND
Nitroaniline, 4-	ND	ND	ND
Nitrobenzene	ND	ND	ND
Nitrophenol, 2-	ND	ND	ND
Nitrophenol, 4-	ND	ND	ND
Pentachlorophenol	ND	ND	ND
Phenanthrene	ND	ND	ND
Phenol	ND	ND	ND
Pyrene	ND	ND	ND
SURR.(Fluorobiphenyl, 2-)	62.1	80.1	82.0
SURR.(Fluorophenol, 2-)	59.9	60.5	36.5
SURR.(Nitrobenzene, d-5)	81.8	77.7	82.9
SURR.(Phenol, d-6)	43.1	43.5	36.4
SURR.(Terphenyl, d-14-p-)	75.5	85.2	91.3
SURR.(Tribromophenol, 2,4,6-)	85.6	92.4	40.2
Trichlorobenzene, 1,2,4-	ND	ND	ND
Trichlorophenol, 2,4,5-	ND	ND	ND
Trichlorophenol, 2,4,6-	ND	ND	ND

** NOTES :
9002341*SAMPLE - SURROGATE VALUES ARE REPORTED IN (%) FOR ALL SAMPLES IN THIS SET.

- Not Applicable
Non detected at stated limit of detection
NA Not analyzed

[ ] - Below LOQ, Above LOD

Report Number: R-900477
Project Number: 161-11-01-04
Description: SOUTHERN FASTENERS - WATERS

Memphis Environmental Center
QA/QC Report - Spikes
Base/Neutral/Acid Extractables By Method: SW846-8270
Results given in: ug/L

Report Date: 09-06-90 11:51
Prepared By
QA/QC Check
Lab Manager

Sample Number	H2O #6	H2O #6
Lab ID Number	9002342-SPIKE-1	9002342-SPIKE-1
Matrix	WATER	WATER
Type	ADDED LEVEL	% RECOVERED 1
Date of Collection	06-27-90	06-27-90
Date of Receipt	06-28-90	06-28-90
Date of Extraction	07-01-90	07-01-90
Date of Analysis	07-28-90	07-28-90
Acenaphthene	100	88.6
Acenaphthylene	-	-
Aniline	-	-
Anthracene	-	-
Benzidine	-	-
Benzo(a)anthracene	-	-
Benzo(a)pyrene	-	-
Benzo(b and/or k)fluoranthene	-	-
Benzo(g,h,i)perylene	-	-
Benzoic acid	-	-
Benzyl alcohol	-	-
Bis(2-chloroethoxy)methane	-	-
Bis(2-chloroethyl)ether	-	-
Bis(2-chloroisopropyl)ether	-	-
Bis(2-ethylhexyl)phthalate	-	-
Bromophenyl phenyl ether, 4-	-	-
Butyl benzyl phthalate	-	-
Chloro-3-methylphenol, 4-	200	81.0
Chloroaniline, 4-	-	-
Chloronaphthalene, 1-	-	-
Chloronaphthalene, 2-	-	-
Chlorophenol, 2-	200	81.0
Chlorophenyl phenyl ether, 4-	-	-
Chrysene	-	-
Di-n-butyl phthalate	-	-
Di-n-octyl phthalate	-	-
Dibenzo(a,h)anthracene	-	-
Dibenzofuran	-	-
Dichlorobenzene, 1,2-	-	-
Dichlorobenzene, 1,3-	-	-
Dichlorobenzene, 1,4-	100	87.9
Dichlorobenzidine, 3,3'-	-	-
Dichlorophenol, 2,4-	-	-
Dichlorophenol, 2,6-	-	-
Diethyl phthalate	-	-
Dimethyl phthalate	-	-
Dimethylphenol, 2,4-	-	-
Dinitrophenol, 2,4-	-	-

\- Not Applicable
Non detected at stated limit of detection
NA Not analyzed

[ ] - Below LOQ, Above LOD

Report Number: R-900477
Project Number: 161-11-01-04
Description: SOUTHERN FASTENERS - WATERS

Memphis Environmental Center
QA/QC Report - Spikes
Base/Neutral/Acid Extractables By Method: SW846-8270
Results given in: ug/L

Report Date: 09-06-90 11:52
Prepared By
QA/QC Check
Lab Manager

Sample Number	H2O #6	H2O #6
Lab ID Number	9002342-SPIKE-1	9002342-SPIKE-1
Matrix	WATER	WATER
Type	ADDED LEVEL	% RECOVERED 1
Dinitrotoluene, 2,4-	100	106
Dinitrotoluene, 2,6-	-	-
Diphenyl hydrazine, 1,2-	-	-
Fluoranthene	-	-
Fluorene	-	-
Hexachlorobenzene	-	-
Hexachlorobutadiene	-	-
Hexachlorocyclopentadiene	-	-
Hexachloroethane	-	-
Indeno(1,2,3-c,d)pyrene	-	-
Isophorone	-	-
Methyl-4,6-dinitrophenol, 2-	-	-
Methylphenol, 2-	-	-
Methylphenol, 4-	-	-
N-Nitrosodi-n-propylamine	100	94.4
N-Nitrosodimethylamine	-	-
N-Nitrosodiphenylamine	-	-
Naphthalene	-	-
Nitroaniline, 2-	-	-
Nitroaniline, 3-	-	-
Nitroaniline, 4-	-	-
Nitrobenzene	-	-
Nitrophenol, 2-	-	-
Nitrophenol, 4-	200	54.8
Pentachlorophenol	200	114
Phenanthrene	-	-
Phenol	200	54.0
Pyrene	100	90.3
SURR.(Fluorobiphenyl, 2-)	40	85.4
SURR.(Fluorophenol, 2-)	80	60.3
SURR.(Nitrobenzene, d-5)	40	85.8
SURR.(Phenol, d-6)	80	43.5
SURR.(Terphenyl, d-14-p-)	40	91.7
SURR.(Tribromophenol, 2,4,6-)	80	77.5
Trichlorobenzene, 1,2,4-	100	90.7
Trichlorophenol, 2,4,5-	-	-
Trichlorophenol, 2,4,6-	-	-

** NOTES :

- Not Applicable
Non detected at stated limit of detection
NA Not analyzed

[ ] - Below LOQ, Above LOD

Report Number: R-900477
Project Number: 161-11-01-04
Description: SOUTHERN FASTENERS - WATERS

Memphis Environmental Center
QA/QC Report - Blanks
Base/Neutral/Acid Extractables By Method: SW846-8270
Results given in: ug/L

Report Date: 09-06-90 11:52
Prepared By
QA/QC Check
Lab Manager

Sample Number	BLANK	BLANK	BLANK	METHOD	PRACTICAL
Lab ID Number	07-01 SPK ADD	07-01 SPK RCV%	07-01-90	DETECTION	QUANTITATION
Matrix	SYSTEM	SYSTEM	SYSTEM	LIMIT	LIMIT
Type	SAMPLE	SAMPLE	SAMPLE		
Date of Collection					
Date of Receipt					
Date of Extraction	07-01-90	07-01-90	07-01-90		
Date of Analysis	07-28-90	07-28-90	07-28-90		
Acenaphthene	100	85.4	ND		10
Acenaphthylene	-	-	ND		10
Aniline	-	-	ND		10
Anthracene	-	-	ND		10
Benzidine	-	-	ND		50
Benzo(a)anthracene	-	-	ND		10
Benzo(a)pyrene	-	-	ND		10
Benzo(b and/or k)fluoranthene	-	-	ND		10
Benzo(g,h,i)perylene	-	-	ND		10
Benzoic acid	-	-	ND		50
Benzyl alcohol	-	-	ND		10
Bis(2-chloroethoxy)methane	-	-	ND		10
Bis(2-chloroethyl)ether	-	-	ND		10
Bis(2-chloroisopropyl)ether	-	-	ND		10
Bis(2-ethylhexyl)phthalate	-	-	ND		10
Bromophenyl phenyl ether, 4-	-	-	ND		10
Butyl benzyl phthalate	-	-	ND		10
Chloro-3-methylphenol, 4-	200	72.9	ND		50
Chloroaniline, 4-	-	-	ND		10
Chloronaphthalene, 1-	-	-	ND		10
Chloronaphthalene, 2-	-	-	ND		10
Chlorophenol, 2-	200	89.8	ND		50
Chlorophenyl phenyl ether, 4-	-	-	ND		10
Chrysene	-	-	ND		10
Di-n-butyl phthalate	-	-	ND		10
Di-n-octyl phthalate	-	-	ND		10
Dibenzo(a,h)anthracene	-	-	ND		10
Dibenzofuran	-	-	ND		10
Dichlorobenzene, 1,2-	-	-	ND		10
Dichlorobenzene, 1,3-	-	-	ND		10
Dichlorobenzene, 1,4-	100	83.4	ND		10
Dichlorobenzidine, 3,3'-	-	-	ND		50
Dichlorophenol, 2,4-	-	-	ND		50
Dichlorophenol, 2,6-	-	-	ND		50
Diethyl phthalate	-	-	ND		10
Dimethyl phthalate	-	-	ND		10
Dimethylphenol, 2,4-	-	-	ND		50
Dinitrophenol, 2,4-	-	-	ND		50

\- Not Applicable
ND Non detected at stated limit of detection
NA Not analyzed

[ ] - Below LOQ, Above LOD

Report Number: R-900477
Project Number: 161-11-01-04
Description: SOUTHERN FASTENERS - WATERS

Memphis Environmental Center
QA/QC Report - Blanks
Base/Neutral/Acid Extractables By Method: SW846-8270
Results given in: ug/L

Report Date: 09-06-90 11:52
Prepared By
QA/QC Check
Lab Manager

Sample Number Lab ID Number Matrix Type	BLANK 07-01 SPK ADD SYSTEM SAMPLE	BLANK 07-01 SPK RCV% SYSTEM SAMPLE	BLANK 07-01-90 SYSTEM SAMPLE	METHOD DETECTION LIMIT	PRACTICAL QUANTITATION LIMIT
Dinitrotoluene, 2,4-	200	106	ND		10
Dinitrotoluene, 2,6-	-	-	ND		10
Diphenyl hydrazine, 1,2-	-	-	ND		10
Fluoranthene	-	-	ND		10
Fluorene	-	-	ND		10
Hexachlorobenzene	-	-	ND		10
Hexachlorobutadiene	-	-	ND		10
Hexachlorocyclopentadiene	-	-	ND		10
Hexachloroethane	-	-	ND		10
Indeno(1,2,3-c,d)pyrene	-	-	ND		10
Isophorone	-	-	ND		10
Methyl-4,6-dinitrophenol, 2-	-	-	ND		50
Methylphenol, 2-	-	-	ND		50
Methylphenol, 4-	-	-	ND		50
N-Nitrosodi-n-propylamine	100	81.6	ND		10
N-Nitrosodimethylamine	-	-	ND		10
N-Nitrosodiphenylamine	-	-	ND		10
Naphthalene	-	-	ND		10
Nitroaniline, 2-	-	-	ND		10
Nitroaniline, 3-	-	-	ND		10
Nitroaniline, 4-	-	-	ND		10
Nitrobenzene	-	-	ND		10
Nitrophenol, 2-	-	-	ND		50
Nitrophenol, 4-	200	67.6	ND		50
Pentachlorophenol	200	-	ND		50
Phenanthrene	-	-	ND		10
Phenol	200	48.1	ND		50
Pyrene	100	84.8	ND		10
SURR.(Fluorobiphenyl, 2-)	40	85.6	92.1		-
SURR.(Fluorophenol, 2-)	80	70.2	64.8		-
SURR.(Nitrobenzene, d-5)	40	102	86.9		-
SURR.(Phenol, d-6)	80	48.9	48.8		-
SURR.(Terphenyl, d-14-p-)	40	87.3	82.8		-
SURR.(Tribromophenol, 2,4,6-)	80	107	99.8		-
Trichlorobenzene, 1,2,4-	100	86.6	ND		10
Trichlorophenol, 2,4,5-	-	-	ND		50
Trichlorophenol, 2,4,6-	-	-	ND		50

** NOTES :

- Not Applicable
Non detected at stated limit of detection
NA Not analyzed

[ ] - Below LOQ, Above LOD

Report Number: R-900477
Project Number: 161-11-01-04
Description: SOUTHERN FASTENERS - WATERS

Memphis Environmental Center
QA/QC Report - Blanks
Base/Neutral/Acid Extractables By Method: SW846-8270
Results given in: ug/L

Report Date: 09-06-90 11:53
Prepared By
QA/QC Check
Lab Manager

Sample Number	SURROGATE
LAB ID Number	SPIKE
Matrix	LEVELS
Type	
Date of Collection	
Date of Receipt	
Date of Extraction	
Date of Analysis	
Acenaphthene	-
Acenaphthylene	-
Aniline	-
Anthracene	-
Benzidine	-
Benzo(a)anthracene	-
Benzo(a)pyrene	-
Benzo(b and/or k)fluoranthene	-
Benzo(g,h,i)perylene	-
Benzoic acid	-
Benzyl alcohol	-
Bis(2-chloroethoxy)methane	-
Bis(2-chloroethyl)ether	-
Bis(2-chloroisopropyl)ether	-
Bis(2-ethylhexyl)phthalate	-
Bromophenyl phenyl ether, 4-	-
Butyl benzyl phthalate	-
Chloro-3-methylphenol, 4-	-
Chloroaniline, 4-	-
Chloronaphthalene, 1-	-
Chloronaphthalene, 2-	-
Chlorophenol, 2-	-
Chlorophenyl phenyl ether, 4-	-
Chrysene	-
Di-n-butyl phthalate	-
Di-n-octyl phthalate	-
Dibenzo(a,h)anthracene	-
Dibenzofuran	-
Dichlorobenzene, 1,2-	-
Dichlorobenzene, 1,3-	-
Dichlorobenzene, 1,4-	-
Dichlorobenzidine, 3,3'-	-
Dichlorophenol, 2,4-	-
Dichlorophenol, 2,6-	-
Diethyl phthalate	-
Dimethyl phthalate	-
Dimethylphenol, 2,4-	-
Dinitrophenol, 2,4-	-

\- Not Applicable
Non detected at stated limit of detection
NA Not analyzed

[ ] - Below LOQ, Above LOD

Report Number: R-900477
Project Number: 161-11-01-04
Description: SOUTHERN FASTENERS - WATERS

Memphis Environmental Center
QA/QC Report - Blanks
Base/Neutral/Acid Extractables By Method: SW846-8270
Results given in: ug/L

Report Date: 09-06-90 11:53
Prepared By
QA/QC Check
Lab Manager

Sample Number	SURROGATE
Lab ID Number	SPIKE
Matrix	LEVELS
Type	
Dinitrotoluene, 2,4-	-
Dinitrotoluene, 2,6-	-
Diphenyl hydrazine, 1,2-	-
Fluoranthene	-
Fluorene	-
Hexachlorobenzene	-
Hexachlorobutadiene	-
Hexachlorocyclopentadiene	-
Hexachloroethane	-
Indeno(1,2,3-c,d)pyrene	-
Isophorone	-
Methyl-4,6-dinitrophenol, 2-	-
Methylphenol, 2-	-
Methylphenol, 4-	-
N-Nitrosodi-n-propylamine	-
N-Nitrosodimethylamine	-
N-Nitrosodiphenylamine	-
Naphthalene	-
Nitroaniline, 2-	-
Nitroaniline, 3-	-
Nitroaniline, 4-	-
Nitrobenzene	-
Nitrophenol, 2-	-
Nitrophenol, 4-	-
Pentachlorophenol	-
Phenanthrene	-
Phenol	-
Pyrene	-
SURR.(Fluorobiphenyl, 2-)	40
SURR.(Fluorophenol, 2-)	80
SURR.(Nitrobenzene, d-5)	40
SURR.(Phenol, d-6)	80
SURR.(Terphenyl, d-14-p-)	40
SURR.(Tribromophenol, 2,4,6-)	80
Trichlorobenzene, 1,2,4-	-
Trichlorophenol, 2,4,5-	-
Trichlorophenol, 2,4,6-	-

** NOTES :

- Not Applicable
Non detected at stated limit of detection
NA Not analyzed

[ ] - Below LOQ, Above LOD

Report Number : R-900477
Project Number : 161-11-01-04
Description : SOUTHERN FASTENERS - WATERS

Memphis Environmental Center Laboratory

GC/MS Library Search Identification
Base neutral and acid extractables

Report Date : 10 SEP 1990 16:51:5
Prepared By : BFJ
QA/QC Check :
Lab Manager :

LAB ID: 9002341 SAMPLE #: H20 #5 UNITS: ug/L

Peak No	Ret. Time (Minutes)	Cas #	Compound	Chemical Formula	Estimated Conc.	% Highes Probabili
1	0.01	-	NO PEAKS FOUND	-	-	-

LAB ID: 9002342 SAMPLE #: H20 #6 UNITS: ug/L

Peak No	Ret. Time (Minutes)	Cas #	Compound	Chemical Formula	Estimated Conc.	% Highes Probabili
1	21.55	96764	Phenol, 2,4-bis(1,1-dimethylethyl)-	$C_{14}H_{22}O$	6	81
2	29.11	143282	9-Octadecen-1-ol, (Z)-	$C_{18}H_{36}O$	12	83
3	30.51	111068	Hexadecanoic acid, butyl ester	$C_{20}H_{40}O_2$	23	61
4	31.79	638675	Tricosane	$C_{23}H_{48}$	10	89
5	32.73	646139	Octadecanoic acid, 2-methylpropyl ester	$C_{22}H_{44}O_2$	15	79
6	32.87	593453	Octadecane	$C_{18}H_{38}$	13	76
7	34.91	593453	Octadecane	$C_{18}H_{38}$	11	83
8	35.88	593497	Heptacosane	$C_{27}H_{56}$	10	93
9	36.83	55401553	Docosane, 11-decyl-	$C_{32}H_{66}$	7	78

LAB ID: 9002343 SAMPLE #: H20 #7 UNITS: ug/L

Peak No	Ret. Time (Minutes)	Cas #	Compound	Chemical Formula	Estimated Conc.	% Highes Probabili
1	4.90	17257817	Ethanone, 1-(3-ethyloxiranyl)-	$C_6H_{10}O_2$	6	70
2	7.46	123422	2-Pentanone, 4-hydroxy-4-methyl-	$C_6H_{12}O_2$	14	70
3	31.80	638675	Tricosane	$C_{23}H_{48}$	7	89
4	32.74	123955	Octadecanoic acid, butyl ester	$C_{22}H_{44}O_2$	6	46
5	32.87	7225641	Heptadecane, 9-octyl-	$C_{25}H_{52}$	9	81
6	34.91	55282138	Octadecane, 5,14-dibutyl-	$C_{26}H_{54}$	7	81
7	35.89	629970	Docosane	$C_{22}H_{46}$	6	86

Report Number: R-900477
Project Number: 161-11-01-04
Description: SOUTHERN FASTENERS - WATERS

Memphis Environmental Center
Analytical Report
Metals By SW846-6010/7000
Results given in: ug/L

Report Date: 08-13-90 15:28
Prepared By
QA/QC Check
Lab Manager

Sample Number	H2O #5	H2O #6	H2O #7
Lab ID Number	9002341	9002342	9002343
Matrix	WATER	WATER	WATER
Type	SAMPLE**	SAMPLE	SAMPLE
Date of Collection	06-27-90	06-27-90	06-27-90
Date of Receipt	06-28-90	06-28-90	06-28-90
Date of Digestion	07-90	07-90	07-90
Date of Analysis	07-90	07-90	07-90
Arsenic	ND	ND	ND
Barium	ND	ND	ND
Cadmium	ND	ND	ND
Chromium	ND	ND	ND
Copper	30	ND	ND
Lead	ND	ND	ND
Mercury	ND	ND	ND
Nickel	ND	ND	ND
Selenium	ND	ND	ND
Silver	28	99	83
Zinc	234 U	156 U	86 U

** NOTES :
9002341*SAMPLE - Hg DIGESTION AND ANALYSIS PERFORMED 07/06/90.

- Not Applicable
ND Non detected at stated limit of detection
NA Not analyzed

[ ] - Below LOQ, Above LOD

Report Number: R-900477
Project Number: 161-11-01-04
Description: SOUTHERN FASTENERS - WATERS

Memphis Environmental Center
QA/QC Report - Spikes
Metals By SW846-6010/7000
Results given in: ug/L

Report Date: 08-13-90 15:29
Prepared By
QA/QC Check
Lab Manager

Sample Number	H2O #5	H2O #5	H2O #5
Lab ID Number	9002341-SPIKE-1	9002341-SPIKE-1	9002341-SPIKE-1
Matrix	WATER	WATER	WATER
Type	ADDED LEVEL	% RECOVERED 1	% RECOVERED 2
Date of Collection	06-27-90	06-27-90	06-27-90
Date of Receipt	06-28-90	06-28-90	06-28-90
Date of Digestion	07-90	07-90	07-90
Date of Analysis	07-90	07-90	07-90
Arsenic	200	93.1	94.2
Barium	5000	93.4	97.0
Cadmium	1000	105	105
Chromium	1000	108	108
Copper	1000	96.0	96.0
Lead	1000	106	108
Mercury	4.76	102	103
Nickel	500	108	110
Selenium	200	130	128
Silver	500	106	106
Zinc	500	87.2	81.6

** NOTES :

- Not Applicable
Non detected at stated limit of detection
NA Not analyzed

[ ] - Below LOQ, Above LOD

Report Number: R-900477
Project Number: 161-11-01-04
Description: SOUTHERN FASTENERS - WATERS

Memphis Environmental Center
QA/QC Report - Blanks
Metals By SW846-6010/7000
Results given in: ug/L

Report Date: 08-13-90 15:29
Prepared By
QA/QC Check
Lab Manager

Sample Number	BLANK	BLANK	BLANK	LIMIT	LIMIT
Lab ID Number	07-90	07-90 SPK ADD	07-90 SPK RCV%	OF	OF
Matrix	SYSTEM	SYSTEM	SYSTEM	DETECTION	QUANTITATION
Type	SAMPLE	SAMPLE	SAMPLE		
Date of Collection					
Date of Receipt					
Date of Digestion	07-90	07-90	07-90		
Date of Analysis	07-90	07-90	07-90		
Arsenic	ND	200	93.2	10	-
Barium	ND	5000	99.1	200	-
Cadmium	ND	1000	107	8	-
Chromium	ND	1000	108	10	-
Copper	ND	1000	96.0	20	-
Lead	ND	1000	108	50	-
Mercury	ND	4.76	93.7	0.2	-
Nickel	ND	500	110	40	-
Selenium	ND	200	96.0	5	-
Silver	ND	500	108	10	-
Zinc	53	500	128	20	-

** NOTES :

- Not Applicable
Non detected at stated limit of detection
NA Not analyzed

[ ] - Below LOQ, Above LOD

Report Number: R-900477
Project Number: 161-11-01-04
Description: SOUTHERN FASTENERS - WATERS

Memphis Environmental Center
Analytical Report
General Chemistry
Results given in: mg/L

Report Date: 07-30-90 10:12
Prepared By
QA/QC Check
Lab Manager

Sample Number	H2O #5	H2O #6	H2O #7
Lab ID Number	9002341	9002342	9002343
Matrix	WATER	WATER	WATER
Type	SAMPLE	SAMPLE	SAMPLE
Date of Collection	06-27-90	06-27-90	06-27-90
Date of Receipt	06-28-90	06-28-90	06-28-90
Date of Extraction	-	-	-
Date of Analysis	07-90	07-90	07-90
Cyanide (total)	ND	0.118	ND
pH (ph units)	7.67	7.01	7.71

** NOTES :

- Not Applicable
Non detected at stated limit of detection
NA Not analyzed

[ ] - Below LOQ, Above LOD

Report Number: R-900477
Project Number: 161-11-01-04
Description: SOUTHERN FASTENERS - WATERS

Memphis Environmental Center
QA/QC Report - Blanks
General Chemistry
Results given in: mg/L

Report Date: 07-30-90 10:13
Prepared By
QA/QC Check
Lab Manager

Sample Number	BLANK	LIMIT OF DETECTION	LIMIT OF QUANTITATION
Lab ID Number	07-90		
Matrix	SYSTEM		
Type	SAMPLE		
Date of Collection			
Date of Receipt			
Date of Extraction	-		
Date of Analysis	07-90		
Cyanide (total)	ND	0.001	-
pH (ph units)	-	-	-

** NOTES :

- Not Applicable
Non detected at stated limit of detection
NA Not analyzed

[ ] - Below LOQ, Above LOD

Report Number: R-900476
Project Number: 161-11-01-04
Description: SOUTHERN FASTENERS-SOIL SAMPLE

Memphis Environmental Center
Analytical Report
Base/Neutral/Acid Extractables By Method: SW846-8270
Results given in: ug/Kg

Report Date: 09-06-90 11:12
Prepared By
QA/QC Check
Lab Manager

Sample Number	SOIL #1	SOIL #2	SOIL #3	SOIL #4	SOIL #6
LEB ID Number	9002335	9002336	9002337	9002338	9002339
Matrix	SOIL	SOIL	SOIL	SOIL	SOIL
Type	SAMPLE**	SAMPLE	SAMPLE	SAMPLE	SAMPLE
Dinitrotoluene, 2,4-	ND	ND	ND	ND	ND
Dinitrotoluene, 2,6-	ND	ND	ND	ND	ND
Diphenyl hydrazine, 1,2-	ND	ND	ND	ND	ND
Fluoranthene	ND	ND	ND	ND	ND
Fluorene	ND	ND	ND	ND	ND
Hexachlorobenzene	ND	ND	ND	ND	ND
Hexachlorobutadiene	ND	ND	ND	ND	ND
Hexachlorocyclopentadiene	ND	ND	ND	ND	ND
Hexachloroethane	ND	ND	ND	ND	ND
Indeno(1,2,3-c,d)pyrene	ND	ND	ND	ND	ND
Isophorone	ND	ND	ND	ND	ND
Methyl-4,6-dinitrophenol, 2-	ND	ND	ND	ND	ND
Methylphenol, 2-	ND	ND	ND	ND	ND
Methylphenol, 4-	ND	ND	ND	ND	ND
N-Nitrosodi-n-propylamine	ND	ND	ND	ND	ND
N-Nitrosodimethylamine	ND	ND	ND	ND	ND
N-Nitrosodiphenylamine	ND	ND	ND	ND	ND
Naphthalene	ND	ND	ND	ND	ND
Nitroaniline, 2-	ND	ND	ND	ND	ND
Nitroaniline, 3-	ND	ND	ND	ND	ND
Nitroaniline, 4-	ND	ND	ND	ND	ND
Nitrobenzene	ND	ND	ND	ND	ND
Nitrophenol, 2-	ND	ND	ND	ND	ND
Nitrophenol, 4-	ND	ND	ND	ND	ND
Pentachlorophenol	ND	ND	ND	ND	ND
Phenanthrene	ND	ND	ND	ND	ND
Phenol	ND	ND	ND	ND	ND
Pyrene	ND	ND	ND	ND	ND
SURR.(Fluorobiphenyl, 2-)	57.1	46.3	47.4	55.3	57.3
SURR.(Fluorophenol, 2-)	61.7	59.5	58.0	65.9	60.2
SURR.(Nitrobenzene, d-5)	62.4	49.7	49.9	61.2	50.8
SURR.(Phenol, d-6)	60.3	54.6	52.9	59.6	66.4
SURR.(Terphenyl, d-14-p-)	46.9	43.7	47.9	52.9	52.4
SURR.(Tribromophenol, 2,4,6-)	58.4	57.5	61.3	58.7	64.0
Trichlorobenzene, 1,2,4-	ND	ND	ND	ND	ND
Trichlorophenol, 2,4,5-	ND	ND	ND	ND	ND
Trichlorophenol, 2,4,6-	ND	ND	ND	ND	ND

** NOTES :
9002335*SAMPLE - SURROGATE VALUES ARE REPORTED IN (%) FOR ALL SAMPLES IN THIS SET.

- Not Applicable
Non detected at stated limit of detection
NA Not analyzed

[ ] - Below LOQ, Above LOD

Report Number: R-900476
Project Number: 161-11-01-04
Description: SOUTHERN FASTENERS-SOIL SAMPLE

Memphis Environmental Center
QA/QC Report - Blanks
Base/Neutral/Acid Extractables By Method: SW846-8270
Results given in: ug/Kg

Report Date: 09-06-90 11:14
Prepared By
QA/QC Check
Lab Manager

Sample Number	BLANK	BLANK	BLANK	METHOD	PRACTICAL
Lab ID Number	07-08 SPK ADD	07-08 SPK RCV%	07-08-90	DETECTION	QUANTITATION
Matrix	SYSTEM	SYSTEM	SYSTEM	LIMIT	LIMIT
Type	SAMPLE	SAMPLE	SAMPLE		
Dinitrotoluene, 2,4-	666	88.7	ND		33
Dinitrotoluene, 2,6-	-	-	ND		33
Diphenyl hydrazine, 1,2-	-	-	ND		33
Fluoranthene	-	-	ND		33
Fluorene	-	-	ND		33
Hexachlorobenzene	-	-	ND		33
Hexachlorobutadiene	-	-	ND		33
Hexachlorocyclopentadiene	-	-	ND		33
Hexachloroethane	-	-	ND		33
Indeno(1,2,3-c,d)pyrene	-	-	ND		33
Isophorone	-	-	ND		33
Methyl-4,6-dinitrophenol, 2-	-	-	ND		150
Methylphenol, 2-	-	-	ND		150
Methylphenol, 4-	-	-	ND		150
N-Nitrosodi-n-propylamine	666	89.9	ND		33
N-Nitrosodimethylamine	-	-	ND		33
N-Nitrosodiphenylamine	-	-	ND		33
Naphthalene	-	-	ND		33
Nitroaniline, 2-	-	-	ND		33
Nitroaniline, 3-	-	-	ND		33
Nitroaniline, 4-	-	-	ND		33
Nitrobenzene	-	-	ND		33
Nitrophenol, 2-	-	-	ND		150
Nitrophenol, 4-	1330	113	ND		150
Pentachlorophenol	1330	113	ND		150
Phenanthrene	-	-	ND		33
Phenol	1330	82.9	ND		150
Pyrene	666	61.4	ND		33
SURR.(Fluorobiphenyl, 2-)	2660	70.6	77.7		-
SURR.(Fluorophenol, 2-)	5330	92.5	89.6		-
SURR.(Nitrobenzene, d-5)	2660	81.5	90.0		-
SURR.(Phenol, d-6)	5330	41.7	77.8		-
SURR.(Terphenyl, d-14-p-)	2660	58.8	83.5		-
SURR.(Tribromophenol, 2,4,6-)	5330	85.2	63.6		-
Trichlorobenzene, 1,2,4-	666	76.5	ND		33
Trichlorophenol, 2,4,5-	-	-	ND		150
Trichlorophenol, 2,4,6-	-	-	ND		150

** NOTES :

- Not Applicable
Non detected at stated limit of detection
NA Not analyzed

[ ] - Below LOQ, Above LOD

Report Number: R-900476
Project Number: 161-11-01-04
Description: SOUTHERN FASTENERS-SOIL SAMPLE

Memphis Environmental Center
Analytical Report
Base/Neutral/Acid Extractables By Method: SW846-8270
Results given in: ug/Kg

Report Date: 09-06-90 11:12
Prepared By
QA/QC Check
Lab Manager

[illegible]le Number	SOIL #7	METHOD DETECTION LIMIT	PRACTICAL QUANTITATION LIMIT	SURROGATE SPIKE LEVELS
Lab ID Number	9002340			
Matrix	SOIL			
Type	SAMPLE			
Date of Collection	06-27-90			
Date of Receipt	06-28-90			
Date of Extraction	07-08-90			
Date of Analysis	07-31-90			
Acenaphthene	ND		330	-
Acenaphthylene	ND		330	-
Aniline	ND		330	-
Anthracene	ND		330	-
Benzidine	ND		1500	-
Benzo(a)anthracene	ND		330	-
Benzo(a)pyrene	ND		330	-
Benzo(b and/or k)fluoranthene	ND		330	-
Benzo(g,h,i)perylene	ND		330	-
Benzoic acid	ND		1500	-
Benzyl alcohol	ND		330	-
Bis(2-chloroethoxy)methane	ND		330	-
Bis(2-chloroethyl)ether	ND		330	-
Bis(2-chloroisopropyl)ether	ND		330	-
Bis(2-ethylhexyl)phthalate	ND		330	-
[illegible]ophenyl phenyl ether, 4-	ND		330	-
Butyl benzyl phthalate	ND		330	-
Chloro-3-methylphenol, 4-	ND		1500	-
Chloroaniline, 4-	ND		330	-
Chloronaphthalene, 1-	ND		330	-
Chloronaphthalene, 2-	ND		330	-
Chlorophenol, 2-	ND		1500	-
Chlorophenyl phenyl ether, 4-	ND		330	-
Chrysene	ND		330	-
Di-n-butyl phthalate	ND		330	-
Di-n-octyl phthalate	ND		330	-
Dibenzo(a,h)anthracene	ND		330	-
Dibenzofuran	ND		330	-
Dichlorobenzene, 1,2-	ND		330	-
Dichlorobenzene, 1,3-	ND		330	-
Dichlorobenzene, 1,4-	ND		330	-
Dichlorobenzidine, 3,3'-	ND		1500	-
Dichlorophenol, 2,4-	ND		1500	-
Dichlorophenol, 2,6-	ND		1500	-
Diethyl phthalate	ND		330	-
Dimethyl phthalate	ND		330	-
Dimethylphenol, 2,4-	ND		1500	-
Dinitrophenol, 2,4-	ND		1500	-

[illegible] Not Applicable
Non detected at stated limit of detection
NA Not analyzed

[ ] - Below LOQ, Above LOD

Report Number: R-900476
Project Number: 161-11-01-04
Description: SOUTHERN FASTENERS-SOIL SAMPLE

Memphis Environmental Center
Analytical Report
Base/Neutral/Acid Extractables By Method: SW846-8270
Results given in: ug/Kg

Report Date: 09-06-90 11:13
Prepared By
QA/QC Check
Lab Manager

Sample Number	SOIL #7	METHOD DETECTION LIMIT	PRACTICAL QUANTITATION LIMIT	SURROGATE SPIKE LEVELS
Lab ID Number	9002340			
Matrix	SOIL			
Type	SAMPLE			
Dinitrotoluene, 2,4-	ND		330	-
Dinitrotoluene, 2,6-	ND		330	-
Diphenyl hydrazine, 1,2-	ND		330	-
Fluoranthene	ND		330	-
Fluorene	ND		330	-
Hexachlorobenzene	ND		330	-
Hexachlorobutadiene	ND		330	-
Hexachlorocyclopentadiene	ND		330	-
Hexachloroethane	ND		330	-
Indeno(1,2,3-c,d)pyrene	ND		330	-
Isophorone	ND		330	-
Methyl-4,6-dinitrophenol, 2-	ND		1500	-
Methylphenol, 2-	ND		1500	-
Methylphenol, 4-	ND		1500	-
N-Nitrosodi-n-propylamine	ND		330	-
N-Nitrosodimethylamine	ND		330	-
N-Nitrosodiphenylamine	ND		330	-
Naphthalene	ND		330	-
Nitroaniline, 2-	ND		330	-
Nitroaniline, 3-	ND		330	-
Nitroaniline, 4-	ND		330	-
Nitrobenzene	ND		330	-
Nitrophenol, 2-	ND		1500	-
Nitrophenol, 4-	ND		1500	-
Pentachlorophenol	ND		1500	-
Phenanthrene	ND		330	-
Phenol	ND		1500	-
Pyrene	ND		330	-
SURR.(Fluorobiphenyl, 2-)	63.2		-	2660
SURR.(Fluorophenol, 2-)	73.1		-	5330
SURR.(Nitrobenzene, d-5)	68.2		-	2660
SURR.(Phenol, d-6)	61.0		-	5330
SURR.(Terphenyl, d-14-p-)	49.6		-	2660
SURR.(Tribromophenol, 2,4,6-)	42.8		-	5330
Trichlorobenzene, 1,2,4-	ND		330	-
Trichlorophenol, 2,4,5-	ND		1500	-
Trichlorophenol, 2,4,6-	ND		1500	-

** NOTES :

- Not Applicable
Non detected at stated limit of detection
NA Not analyzed

[ ] - Below LOQ, Above LOD

Report Number: R-900476
Project Number: 161-11-01-04
Description: SOUTHERN FASTENERS-SOIL SAMPLE

Memphis Environmental Center
QA/QC Report - Blanks
Base/Neutral/Acid Extractables By Method: SW846-8270
Results given in: ug/Kg

Report Date: 09-06-90 11:13
Prepared By
QA/QC Check
Lab Manager

Sample Number	BLANK	BLANK	BLANK	METHOD	PRACTICAL
Lab ID Number	07-08 SPK ADD	07-08 SPK RCV%	07-08-90	DETECTION	QUANTITATION
Matrix	SYSTEM	SYSTEM	SYSTEM	LIMIT	LIMIT
Type	SAMPLE	SAMPLE	SAMPLE		
Date of Collection					
Date of Receipt					
Date of Extraction	07-08-90	07-08-90	07-08-90		
Date of Analysis	07-30-90	07-30-90	07-31-90		
Acenaphthene	666	74.0	ND		33
Acenaphthylene	-	-	ND		33
Aniline	-	-	ND		33
Anthracene	-	-	ND		33
Benzidine	-	-	ND		150
Benzo(a)anthracene	-	-	ND		33
Benzo(a)pyrene	-	-	ND		33
Benzo(b and/or k)fluoranthene	-	-	ND		33
Benzo(g,h,i)perylene	-	-	ND		33
Benzoic acid	-	-	ND		150
Benzyl alcohol	-	-	ND		33
Bis(2-chloroethoxy)methane	-	-	ND		33
Bis(2-chloroethyl)ether	-	-	ND		33
Bis(2-chloroisopropyl)ether	-	-	ND		33
Bis(2-ethylhexyl)phthalate	-	-	ND		33
Bromophenyl phenyl ether, 4-	-	-	ND		33
Butyl benzyl phthalate	-	-	ND		33
Chloro-3-methylphenol, 4-	1330	83.5	ND		150
Chloroaniline, 4-	-	-	ND		33
Chloronaphthalene, 1-	-	-	ND		33
Chloronaphthalene, 2-	-	-	ND		33
Chlorophenol, 2-	1330	73.1	ND		150
Chlorophenyl phenyl ether, 4-	-	-	ND		33
Chrysene	-	-	ND		33
Di-n-butyl phthalate	-	-	ND		33
Di-n-octyl phthalate	-	-	ND		33
Dibenzo(a,h)anthracene	-	-	ND		33
Dibenzofuran	-	-	ND		33
Dichlorobenzene, 1,2-	-	-	ND		33
Dichlorobenzene, 1,3-	-	-	ND		33
Dichlorobenzene, 1,4-	666	74.6	ND		33
Dichlorobenzidine, 3,3'-	-	-	ND		150
Dichlorophenol, 2,4-	-	-	ND		150
Dichlorophenol, 2,6-	-	-	ND		150
Diethyl phthalate	-	-	ND		33
Dimethyl phthalate	-	-	ND		33
Dimethylphenol, 2,4-	-	-	ND		150
Dinitrophenol, 2,4-	-	-	ND		150

\- Not Applicable
Non detected at stated limit of detection
NA Not analyzed

[ ] - Below LOQ, Above LOD

Report Number: R-900476
Project Number: 161-11-01-04
Description: SOUTHERN FASTENERS-SOIL SAMPLE

Memphis Environmental Center
QA/QC Report - Blanks
Base/Neutral/Acid Extractables By Method: SW846-8270
Results given in: ug/Kg

Report Date: 09-06-90 11:14
Prepared By
QA/QC Check
Lab Manager

Sample Number	SURROGATE
Lab ID Number	SPIKE
Matrix	LEVELS
Type	
Date of Collection	
Date of Receipt	
Date of Extraction	
Date of Analysis	
Acenaphthene	-
Acenaphthylene	-
Aniline	-
Anthracene	-
Benzidine	-
Benzo(a)anthracene	-
Benzo(a)pyrene	-
Benzo(b and/or k)fluoranthene	-
Benzo(g,h,i)perylene	-
Benzoic acid	-
Benzyl alcohol	-
Bis(2-chloroethoxy)methane	-
Bis(2-chloroethyl)ether	-
Bis(2-chloroisopropyl)ether	-
Bis(2-ethylhexyl)phthalate	-
Bromophenyl phenyl ether, 4-	-
Butyl benzyl phthalate	-
Chloro-3-methylphenol, 4-	-
Chloroaniline, 4-	-
Chloronaphthalene, 1-	-
Chloronaphthalene, 2-	-
Chlorophenol, 2-	-
Chlorophenyl phenyl ether, 4-	-
Chrysene	-
Di-n-butyl phthalate	-
Di-n-octyl phthalate	-
Dibenzo(a,h)anthracene	-
Dibenzofuran	-
Dichlorobenzene, 1,2-	-
Dichlorobenzene, 1,3-	-
Dichlorobenzene, 1,4-	-
Dichlorobenzidine, 3,3'-	-
Dichlorophenol, 2,4-	-
Dichlorophenol, 2,6-	-
Diethyl phthalate	-
Dimethyl phthalate	-
Dimethylphenol, 2,4-	-
Dinitrophenol, 2,4-	-

\- Not Applicable
Non detected at stated limit of detection
NA Not analyzed

[ ] - Below LOQ, Above LOD

Report Number: R-900476
Project Number: 161-11-01-04
Description: SOUTHERN FASTENERS-SOIL SAMPLE

Memphis Environmental Center
QA/QC Report - Blanks
Base/Neutral/Acid Extractables By Method: SW846-8270
Results given in: ug/Kg

Report Date: 09-06-90 11:14
Prepared By
QA/QC Check
Lab Manager

Sample Number	SURROGATE
Lab ID Number	SPIKE
Matrix	LEVELS
Type	
Dinitrotoluene, 2,4-	-
Dinitrotoluene, 2,6-	-
Diphenyl hydrazine, 1,2-	-
Fluoranthene	-
Fluorene	-
Hexachlorobenzene	-
Hexachlorobutadiene	-
Hexachlorocyclopentadiene	-
Hexachloroethane	-
Indeno(1,2,3-c,d)pyrene	-
Isophorone	-
Methyl-4,6-dinitrophenol, 2-	-
Methylphenol, 2-	-
Methylphenol, 4-	-
N-Nitrosodi-n-propylamine	-
N-Nitrosodimethylamine	-
N-Nitrosodiphenylamine	-
Naphthalene	-
Nitroaniline, 2-	-
Nitroaniline, 3-	-
Nitroaniline, 4-	-
Nitrobenzene	-
Nitrophenol, 2-	-
Nitrophenol, 4-	-
Pentachlorophenol	-
Phenanthrene	-
Phenol	-
Pyrene	-
SURR.(Fluorobiphenyl, 2-)	2660
SURR.(Fluorophenol, 2-)	5330
SURR.(Nitrobenzene, d-5)	2660
SURR.(Phenol, d-6)	5330
SURR.(Terphenyl, d-14-p-)	2660
SURR.(Tribromophenol, 2,4,6-)	5330
Trichlorobenzene, 1,2,4-	-
Trichlorophenol, 2,4,5-	-
Trichlorophenol, 2,4,6-	-

** NOTES :

- Not Applicable
Non detected at stated limit of detection
NA Not analyzed

[ ] - Below LOQ, Above LOD

Report Number : R-900476
Project Number : 161-11-01-04
Description : SOUTHERN FASTENERS-SOIL SAMPLE

Memphis Environmental Center Laboratory

GC/MS Library Search Identification
Base neutral and acid extractables

Report Date : 10 SEP 1990 16:55:3
Prepared By : BFJ
QA/QC Check : tb
Lab Manager :

LAB ID: 9002335 SAMPLE #: SOIL #1 UNITS: ug/Kg

Peak No	Ret. Time (Minutes)	Cas #	Compound	Chemical Formula	Estimated Conc.	% Highes Probabili
1	7.52	123422	2-Pentanone, 4-hydroxy-4-methyl-	$C_6H_{12}O_2$	20000	70
2	31.60	84742	1,2-Benzenedicarboxylic acid, dibutyl ester	$C_{16}H_{22}O_4$	1000	31
3	31.68	117828	1,2-Benzenedicarboxylic acid, bis(2-methoxyethyl) ester	$C_{14}H_{18}O_6$	1000	32
4	31.73	85701	Phthalic acid, butyl ester, ester with butyl glycolate	$C_{18}H_{24}O_6$	2000	60
5	32.38	131180	1,2-Benzenedicarboxylic acid, dipentyl ester	$C_{18}H_{26}O_4$	2000	60
6	34.41	3648213	1,2-Benzenedicarboxylic acid, diheptyl ester	$C_{22}H_{34}O_4$	10000	84
7	35.93	593497	Heptacosane	$C_{27}H_{56}$	1000	95
8	40.18	131157	1,2-Benzenedicarboxylic acid, bis(1-methylheptyl) ester	$C_{24}H_{38}O_4$	1000	52

LAB ID: 9002336 SAMPLE #: SOIL #2 UNITS: ug/Kg

Peak No	Ret. Time (Minutes)	Cas #	Compound	Chemical Formula	Estimated Conc.	% Highes Probabili
1	7.51	123422	2-Pentanone, 4-hydroxy-4-methyl-	$C_6H_{12}O_2$	20000	70
2	32.75	123955	Octadecanoic acid, butyl ester	$C_{22}H_{44}O_2$	500	92
3	34.93	13475768	Docosane, 11-butyl-	$C_{26}H_{54}$	500	89

LAB ID: 9002337 SAMPLE #: SOIL #3 UNITS: ug/Kg

Peak No	Ret. Time (Minutes)	Cas #	Compound	Chemical Formula	Estimated Conc.	% Highes Probabili
1	7.50	123422	2-Pentanone, 4-hydroxy-4-methyl-	$C_6H_{12}O_2$	20000	70
2	31.80	629970	Docosane	$C_{22}H_{46}$	500	88
3	32.88	112958	Decane, 2,3,6-trimethyl-	$C_{20}H_{42}$	500	88
4	34.92	13475768	Docosane, 11-butyl-	$C_{26}H_{54}$	400	84
5	37.76	55429840	Tetracosane, 11-decyl-	$C_{34}H_{70}$	800	35

Report Number : R-900476
Project Number : 161-11-01-04
Description : SOUTHERN FASTENERS-SOIL SAMPLE

Memphis Environmental Center Laboratory

GC/MS Library Search Identification
Base neutral and acid extractables

Report Date : 10 SEP 1990 16:55:
Prepared By : BFJ
QA/QC Check :
Lab Manager :

LAB ID: 9002338 SAMPLE #: SOIL #4 UNITS: ug/Kg

Peak No	Ret. Time (Minutes)	Cas #	Compound	Chemical Formula	Estimated Conc.	% Highes Probabili
1	5.95	15870107	1-Heptene, 2-methyl-	C_8H_{16}	500	94
2	6.31	3726474	Cyclopentane, 1-ethyl-3-methyl-	C_8H_{16}	400	60
3	7.52	123422	2-Pentanone, 4-hydroxy-4-methyl-	$C_6H_{12}O_2$	20000	60
4	32.87	646311	Tetracosane	$C_{24}H_{50}$	400	83

LAB ID: 9002339 SAMPLE #: SOIL #6 UNITS: ug/Kg

Peak No	Ret. Time (Minutes)	Cas #	Compound	Chemical Formula	Estimated Conc.	% Highes Probabili
1	7.53	123422	2-Pentanone, 4-hydroxy-4-methyl-	$C_6H_{12}O_2$	25000	70
2	20.86	112538	1-Dodecanol	$C_{12}H_{26}O$	600	87
3	24.19	294622	Cyclododecane	$C_{12}H_{24}$	2000	95
4	31.81	638675	Tricosane	$C_{23}H_{48}$	2000	82
5	32.76	123955	Octadecanoic acid, butyl ester	$C_{22}H_{44}O_2$	700	99
6	32.91	646311	Tetracosane	$C_{24}H_{50}$	800	99
7	34.96	630079	Pentatriacontane	$C_{35}H_{72}$	1000	81
8	35.94	55401553	Docosane, 11-decyl-	$C_{32}H_{66}$	2000	93

LAB ID: 9002340 SAMPLE #: SOIL #7 UNITS: ug/Kg

Peak No	Ret. Time (Minutes)	Cas #	Compound	Chemical Formula	Estimated Conc.	% Highes Probabili
1	5.94	15870107	1-Heptene, 2-methyl-	C_8H_{16}	800	87
2	7.50	123422	2-Pentanone, 4-hydroxy-4-methyl-	$C_6H_{12}O_2$	30000	70
3	24.19	294622	Cyclododecane	$C_{12}H_{24}$	700	88

MEMPHIS ENVIRONMENTAL CENTER, INC.

ENVIRONMENTAL ANALYTICAL LABORATORY
2603 Corporate Avenue, East Suite 100
Memphis, Tennessee 38132
(901)-345-1788

Client Contact: Steve Rettig
Project: Southern Fasteners
Sample(s) Type: Soil Samples

Report No: R-900476
Report Date: 09-10-90

Quality Assurance Summary:

Type of Analysis	Method	Holding Time	Surrogate Recovery	Matrix Spike Recoveries	Blanks	Overall Summary
VOA	SW846-8240	A(N-1)	A(N-2)	A	A	A(See N-1 and N-2)
BNA	SW846-8270	A	A	A(N-3)	A	A(See N-3)
METALS	SW846-6010/7000	A	NA	A	A(N-4)	A(See N-4)
CYANIDE	Standard Method 16th Ed. 412-B	A	NA	A	A	A
pH	SW846-9040	A	NA	NA	NA	A
EP-TOX	SW846-1310	A				
METALS	SW846-6010/7000	A	NA	NA	N-5	A(See N-5)

A = Requirements set by method were met
NA = Not applicable
N-1 = See NOTE 1 on page 2
N-2 = See NOTE 2 on page 2
N-3 = See NOTE 3 on page 2
N-4 = SEE NOTE 4 on page 2
N-5 = See NOTE 5 on page 2

Terri Gray
QA Officer

Daniel R. Marko
Laboratory Manager

NOTE 1: The samples were held 28 days before they were analyzed. The chemist had consulted the project engineer about the delay and permitted the analysis even though the 14 day holding time was exceeded.

NOTE 2: The recovery of the surrogate toluene,d-8 was above the 110% limit in samples #9002336, #9002340 matrix spike duplicate and in the blank.

NOTE 3: These samples were analyzed as part of a larger set which included matrix spikes that had acceptable recoveries.

NOTE 4: Zinc was detected in the blank. Not any of the zinc data had to be qualified because the amounts detected in the samples were greater than four to five times the amount detected in the blank.

NOTE 5: Zinc was detected in the blank and the data qualified (U) accordingly.

Report Number: R-900476
Project Number: 161-11-01-04
Description: SOUTHERN FASTENERS-SOIL SAMPLE

Memphis Environmental Center
Analytical Report
Volatile Organics By SW846-8240
Results given in: ug/Kg

Report Date: 09-10-90 09:19
Prepared By
QA/QC Check
Lab Manager

Sample Number	SOIL #1	SOIL #2	SOIL #3	SOIL #4	SOIL #6
Lab ID Number	9002335	9002336	9002337	9002338	9002339
Matrix	SOIL	SOIL	SOIL	SOIL	SOIL
Type	SAMPLE**	SAMPLE**	SAMPLE	SAMPLE	SAMPLE
Date of Collection	06-27-90	06-27-90	06-27-90	06-27-90	06-27-90
Date of Receipt	06-28-90	06-28-90	06-28-90	06-28-90	06-28-90
Date of Extraction	07-26-90	07-26-90	07-26-90	07-26-90	07-26-90
Date of Analysis	07-26-90	07-26-90	07-26-90	07-26-90	07-26-90
Acetone	ND	ND	ND	ND	ND
Benzene	ND	ND	[228]	ND	[193]
Bromodichloromethane	ND	ND	ND	ND	ND
Bromoform	ND	ND	ND	ND	ND
Bromomethane	ND	ND	ND	ND	ND
Butanone, 2-	ND	ND	ND	ND	ND
Carbon disulfide	ND	ND	ND	ND	ND
Carbon tetrachloride	ND	ND	[210]	62300	1990
Chlorobenzene	ND	ND	[254]	ND	[274]
Chloroethane	ND	ND	ND	ND	ND
Chloroform	ND	ND	[576]	[310]	ND
Chloromethane	ND	ND	ND	ND	ND
Dibromochloromethane	ND	ND	ND	ND	ND
Dibromoethane	ND	ND	ND	ND	ND
Dichloro-2-butene, trans-1,4	ND	ND	ND	ND	ND
Dichlorodifluoromethane	ND	ND	ND	ND	ND
Dichloroethane, 1,1-	ND	ND	ND	ND	ND
Dichloroethane, 1,2-	ND	ND	ND	ND	ND
Dichloroethene, 1,1-	ND	ND	[351]	[249]	[375]
Dichloroethene, trans-1,2-	ND	ND	ND	ND	ND
Dichloropropane, 1,2-	ND	ND	ND	ND	ND
Dichloropropene, cis-1,3-	ND	ND	ND	ND	ND
Dichloropropene, trans-1,3-	ND	ND	ND	ND	ND
Ethyl benzene	ND	ND	ND	ND	ND
Hexanone, 2-	ND	ND	ND	ND	ND
Iodomethane	ND	ND	ND	ND	ND
Methyl-2-pentanone, 4-	ND	ND	ND	ND	ND
Methylene chloride	ND	[575]	[608]	653	990
SURR.(Bromofluorobenzene, 4-)	106	101	103	99	94
SURR.(Toluene-d8)	107	118	101	99	116
SURR.(d-4,1,2-Dichloroethane)	95	91	91	84	84
Styrene	ND	ND	ND	ND	ND
Tetrachloroethane, 1,1,2,2-	ND	ND	ND	ND	ND
Tetrachloroethene	ND	ND	ND	[203]	[331]
Toluene	ND	ND	[383]	[293]	[594]
Trichloroethane, 1,1,1-	ND	ND	ND	ND	ND
Trichloroethane, 1,1,2-	ND	ND	ND	ND	ND
Trichloroethene	ND	ND	[388]	[305]	[581]

- Not Applicable
ND Non detected at stated limit of detection
NA Not analyzed

[ ] - Below LOQ, Above LOD

Report Number: R-900476
Project Number: 161-11-01-04
Description: SOUTHERN FASTENERS-SOIL SAMPLE

Memphis Environmental Center
Analytical Report
Volatile Organics By SW846-8240
Results given in: ug/Kg

Report Date: 09-10-90 09:20
Prepared By
QA/QC Check
Lab Manager

Sample Number	SOIL #1	SOIL #2	SOIL #3	SOIL #4	SOIL #6
Lab ID Number	9002335	9002336	9002337	9002338	9002339
Matrix	SOIL	SOIL	SOIL	SOIL	SOIL
Type	SAMPLE**	SAMPLE**	SAMPLE	SAMPLE	SAMPLE
Trichloropropane, 1,2,3-	ND	ND	ND	ND	ND
Vinyl acetate	ND	ND	ND	ND	ND
Vinyl chloride	ND	ND	ND	ND	ND
Xylenes	ND	ND	ND	ND	ND

** NOTES :
9002335*SAMPLE - SURROGATE VALUES ARE REPORTED IN (%) FOR ALL SAMPLES IN THIS SET.
9002336*SAMPLE - RECOVERY FOR SURR.(Toluene-d8) ABOVE CONTROL LIMIT OF 110%.

Not Applicable
Non detected at stated limit of detection
NA Not analyzed

[ ] - Below LOQ, Above LOD

Report Number: R-900476
Project Number: 161-11-01-04
Description: SOUTHERN FASTENERS-SOIL SAMPLE

Memphis Environmental Center
Analytical Report
Volatile Organics By SW846-8240
Results given in: ug/Kg

Report Date: 09-10-90 09:20
Prepared By KM
QA/QC Check
Lab Manager

Sample Number	SOIL #7
Lab ID Number	9002340
Matrix	SOIL
Type	SAMPLE
Date of Collection	06-27-90
Date of Receipt	06-28-90
Date of Extraction	07-26-90
Date of Analysis	07-26-90

Acetone	ND
Benzene	ND
Bromodichloromethane	ND
Bromoform	ND
Bromomethane	ND
Butanone, 2-	ND
Carbon disulfide	ND
Carbon tetrachloride	[310]
Chlorobenzene	ND
Chloroethane	ND
Chloroform	[419]
Chloromethane	ND
Dibromochloromethane	ND
Dibromoethane	ND
Dichloro-2-butene, trans-1,4	ND
Dichlorodifluoromethane	ND
Dichloroethane, 1,1-	ND
Dichloroethane, 1,2-	ND
Dichloroethene, 1,1-	ND
Dichloroethene, trans-1,2-	ND
Dichloropropane, 1,2-	ND
Dichloropropene, cis-1,3-	ND
Dichloropropene, trans-1,3-	ND
Ethyl benzene	ND
Hexanone, 2-	ND
Iodomethane	ND
Methyl-2-pentanone, 4-	ND
Methylene chloride	864
SURR.(Bromofluorobenzene, 4-)	94
SURR.(Toluene-d8)	90
SURR.(d-4,1,2-Dichloroethane)	74
Styrene	ND
Tetrachloroethane, 1,1,2,2-	ND
Tetrachloroethene	ND
Toluene	950
Trichloroethane, 1,1,1-	ND
Trichloroethane, 1,1,2-	ND
Trichloroethene	1070

\- Not Applicable
Non detected at stated limit of detection
NA Not analyzed

[ ] - Below LOQ, Above LOD

Report Number: R-900476
Project Number: 161-11-01-04
Description: SOUTHERN FASTENERS-SOIL SAMPLE

Memphis Environmental Center
Analytical Report
Volatile Organics By SW846-8240
Results given in: ug/Kg

Report Date: 09-10-90 09:20
Prepared By
QA/QC Check
Lab Manager

Sample Number	SOIL #7
Lab ID Number	9002340
Matrix	SOIL
Type	SAMPLE
Trichloropropane, 1,2,3-	ND
Vinyl acetate	ND
Vinyl chloride	ND
Xylenes	ND

** NOTES :

- Not Applicable
Non detected at stated limit of detection
NA Not analyzed

[ ] - Below LOQ, Above LOD

Report Number: R-900476
Project Number: 161-11-01-04
Description: SOUTHERN FASTENERS-SOIL SAMPLE

Memphis Environmental Center
QA/QC Report - Spikes
Volatile Organics By SW846-8240
Results given in: ug/Kg

Report Date: 09-10-90 09:20
Prepared By
QA/QC Check
Lab Manager

Sample Number	SOIL #7	SOIL #7	SOIL #7
Lab ID Number	9002340-SPIKE-1	9002340-SPIKE-1	9002340-SPIKE-1
Matrix	LEACHATE	LEACHATE	LEACHATE
Type	ADDED LEVEL	% RECOVERED 1	% RECOVERED 2**
Date of Collection	06-27-90	06-27-90	06-27-90
Date of Receipt	06-28-90	06-28-90	06-28-90
Date of Extraction	07-26-90	07-26-90	07-26-90
Date of Analysis	07-26-90	07-26-90	07-26-90
Acetone	-	-	-
Benzene	7130	60	69
Bromodichloromethane	-	-	-
Bromoform	-	-	-
Bromomethane	-	-	-
Butanone, 2-	-	-	-
Carbon disulfide	-	-	-
Carbon tetrachloride	-	-	-
Chlorobenzene	6600	88	92
Chloroethane	-	-	-
Chloroform	-	-	-
Chloromethane	-	-	-
Dibromochloromethane	-	-	-
Dibromoethane	-	-	-
Dichloro-2-butene, trans-1,4	-	-	-
Dichlorodifluoromethane	-	-	-
Dichloroethane, 1,1-	-	-	-
Dichloroethane, 1,2-	-	-	-
Dichloroethene, 1,1-	7050	63	68
Dichloroethene, trans-1,2-	-	-	-
Dichloropropane, 1,2-	-	-	-
Dichloropropene, cis-1,3-	-	-	-
Dichloropropene, trans-1,3-	-	-	-
Ethyl benzene	-	-	-
Hexanone, 2-	-	-	-
Iodomethane	-	-	-
Methyl-2-pentanone, 4-	-	-	-
Methylene chloride	-	-	-
SURR.(Bromofluorobenzene, 4-)	6650	101	99
SURR.(Toluene-d8)	6550	110	114
SURR.(d-4,1,2-Dichloroethane)	7010	72	76
Styrene	-	-	-
Tetrachloroethane, 1,1,2,2-	-	-	-
Tetrachloroethene	-	-	-
Toluene	6710	71	109
Trichloroethane, 1,1,1-	-	-	-
Trichloroethane, 1,1,2-	-	-	-
Trichloroethene	6560	88	80

\- Not Applicable
Non detected at stated limit of detection
NA Not analyzed

[ ] - Below LOQ, Above LOD

Report Number: R-900476
Project Number: 161-11-01-04
Description: SOUTHERN FASTENERS-SOIL SAMPLE

Memphis Environmental Center
QA/QC Report - Spikes
Volatile Organics By SW846-8240
Results given in: ug/Kg

Report Date: 09-10-90 09:21
Prepared By
QA/QC Check
Lab Manager

Sample Number	SOIL #7	SOIL #7	SOIL #7
Lab ID Number	9002340-SPIKE-1	9002340-SPIKE-1	9002340-SPIKE-1
Matrix	LEACHATE	LEACHATE	LEACHATE
Type	ADDED LEVEL	% RECOVERED 1	% RECOVERED 2**
Trichloropropane, 1,2,3-	-	-	-
Vinyl acetate	-	-	-
Vinyl chloride	-	-	-
Xylenes	-	-	-

** NOTES :
9002340*SPK1RCV2 - RECOVERY FOR SURR.(Toluene-d8) ABOVE CONTROL LIMIT OF 110%.

- Not Applicable
Non detected at stated limit of detection
NA Not analyzed

[ ] - Below LOQ, Above LOD

Report Number: R-900476
Project Number: 161-11-01-04
Description: SOUTHERN FASTENERS-SOIL SAMPLE

Memphis Environmental Center
QA/QC Report - Blanks
Volatile Organics By SW846-8240
Results given in: ug/Kg

Report Date: 09-10-90 09:21
Prepared By KM
QA/QC Check
Lab Manager

Sample Number	BLANK	LIMIT	LIMIT	SURROGATE
Lab ID Number	07-26-90	OF	OF	SPIKE
Matrix	SYSTEM	DETECTION	QUANTITATION	LEVELS
Type	SAMPLE**			
Date of Collection				
Date of Receipt				
Date of Extraction	07-26-90			
Date of Analysis	07-26-90			
Acetone	ND	3300	12500	-
Benzene	ND	150	625	-
Bromodichloromethane	ND	150	625	-
Bromoform	ND	150	625	-
Bromomethane	ND	330	1250	-
Butanone, 2-	ND	3300	12500	-
Carbon disulfide	ND	3300	12500	-
Carbon tetrachloride	ND	150	625	-
Chlorobenzene	ND	150	625	-
Chloroethane	ND	330	1250	-
Chloroform	ND	150	625	-
Chloromethane	ND	330	1250	-
Dibromochloromethane	ND	150	625	-
Dibromoethane	ND	150	625	-
Dichloro-2-butene, trans-1,4	ND	3300	12500	-
Dichlorodifluoromethane	ND	150	625	-
Dichloroethane, 1,1-	ND	150	625	-
Dichloroethane, 1,2-	ND	150	625	-
Dichloroethene, 1,1-	ND	150	625	-
Dichloroethene, trans-1,2-	ND	150	625	-
Dichloropropane, 1,2-	ND	150	625	-
Dichloropropene, cis-1,3-	ND	150	625	-
Dichloropropene, trans-1,3-	ND	150	625	-
Ethyl benzene	ND	150	625	-
Hexanone, 2-	ND	1500	6250	-
Iodomethane	ND	150	625	-
Methyl-2-pentanone, 4-	ND	1500	6250	-
Methylene chloride	[609]	150	625	-
SURR.(Bromofluorobenzene, 4-)	106	-	-	42.6
SURR.(Toluene-d8)	134	-	-	41.9
SURR.(d-4,1,2-Dichloroethane)	110	-	-	44.8
Styrene	ND	150	625	-
Tetrachloroethane, 1,1,2,2-	ND	150	625	-
Tetrachloroethene	ND	150	625	-
Toluene	ND	150	625	-
Trichloroethane, 1,1,1-	ND	150	625	-
Trichloroethane, 1,1,2-	ND	150	625	-
Trichloroethene	ND	150	625	-

\- Not Applicable
Non detected at stated limit of detection
NA Not analyzed

[ ] - Below LOQ, Above LOD

Report Number: R-900476
Project Number: 161-11-01-04
Description: SOUTHERN FASTENERS-SOIL SAMPLE

Memphis Environmental Center
QA/QC Report - Blanks
Volatile Organics By SW846-8240
Results given in: ug/Kg

Report Date: 09-10-90 09:21
Prepared By
QA/QC Check
Lab Manager

Sample Number Lab ID Number Matrix Type	BLANK 07-26-90 SYSTEM SAMPLE**	LIMIT OF DETECTION	LIMIT OF QUANTITATION	SURROGATE SPIKE LEVELS
Trichloropropane, 1,2,3-	ND	150	625	-
Vinyl acetate	ND	1500	6250	-
Vinyl chloride	ND	330	1250	-
Xylenes	ND	150	625	-

** NOTES :
BLANK 07-26-90 - RECOVERY FOR SURR.(Toluene-d8) ABOVE CONTROL LIMIT OF 110%.

- Not Applicable
Non detected at stated limit of detection
NA Not analyzed

[ ] - Below LOQ, Above LOD

Report Number : R-900476
Project Number : 161-11-01-04
Description : SOUTHERN FASTENERS-SOIL SAMPLE

Memphis Environmental Center Laboratory

GC/MS Library Search Identification
Volatile organics

Report Date : 10 SEP 1990 16:59:
Prepared By : RMC
QA/QC Check :
Lab Manager :

LAB ID: 9002335 SAMPLE #: SOIL #1 UNITS: ug/Kg

Peak No	Ret. Time (Minutes)	Cas #	Compound	Chemical Formula	Estimated Conc.	% Highes Probabili
1	8.85	110543	Hexane	C_6H_{14}	400	70
2	31.98	95636	Benzene, 1,2,4-trimethyl-	C_9H_{12}	6000	97

LAB ID: 9002336 SAMPLE #: SOIL #2 UNITS: ug/Kg

Peak No	Ret. Time (Minutes)	Cas #	Compound	Chemical Formula	Estimated Conc.	% Highes Probabili
1	32.00	95636	Benzene, 1,2,4-trimethyl-	C_9H_{12}	3000	97

LAB ID: 9002337 SAMPLE #: SOIL #3 UNITS: ug/Kg

Peak No	Ret. Time (Minutes)	Cas #	Compound	Chemical Formula	Estimated Conc.	% Highes Probabili
1	8.84	110543	Hexane	C_6H_{14}	500	43
2	32.01	95636	Benzene, 1,2,4-trimethyl-	C_9H_{12}	2000	96

LAB ID: 9002338 SAMPLE #: SOIL #4 UNITS: ug/Kg

Peak No	Ret. Time (Minutes)	Cas #	Compound	Chemical Formula	Estimated Conc.	% Highes Probabili
1	32.00	95636	Benzene, 1,2,4-trimethyl-	C_9H_{12}	1800	96

Report Number : R-900476
Project Number : 161-11-01-04
Description : SOUTHERN FASTENERS-SOIL SAMPLE

Memphis Environmental Center Laboratory

GC/MS Library Search Identification
Volatile organics

Report Date : 10 SEP 1990 16:59:
Prepared By : RMC
QA/QC Check :
Lab Manager :

LAB ID: 9002339 SAMPLE #: SOIL #6 UNITS: ug/Kg

Peak No	Ret. Time (Minutes)	Cas #	Compound	Chemical Formula	Estimated Conc.	% Highes Probabili
1	30.72	0	1,1,2,3-TETRAMETHYLCYCLOHEXANE A	$C_{10}H_{20}$	200	79
2	31.99	95636	Benzene, 1,2,4-trimethyl-	C_9H_{12}	2500	94
3	33.70	0	1-METHYL-1-N-HEXYLCYCLOBUTANE	$C_{11}H_{22}$	2500	27
4	34.26	17302328	Nonane, 3,7-dimethyl-	$C_{11}H_{24}$	4000	31
5	34.73	0	1-ETHYL-2,2,6-TRIMETHYLCYCLOHEXANE	$C_{11}H_{22}$	3000	70
6	36.10	61141795	Cyclohexane,1,2-diethyl-1-methyl-	$C_{11}H_{22}$	5000	66
7	36.57	0	3-UNDECENE, 8-METHYL-, CIS=TRANS	$C_{12}H_{24}$	2000	32
8	36.93	16747301	Hexane, 2,4,4-trimethyl-	C_9H_{20}	2000	20
9	37.59	2958761	Naphthalene, decahydro-2-methyl-	$C_{11}H_{20}$	2500	79
10	38.30	0	2-METHYLDECALIN(PROBABLY TRANS)	$C_{11}H_{20}$	4000	89

LAB ID: 9002340 SAMPLE #: SOIL #7 UNITS: ug/Kg

Peak No	Ret. Time (Minutes)	Cas #	Compound	Chemical Formula	Estimated Conc.	% Highes Probabili
1	8.85	110543	Hexane	C_6H_{14}	300	63
2	32.00	108678	Benzene, 1,3,5-trimethyl-	C_9H_{12}	640	89
3	42.46	72347650	Cyclopentene, trichloro-	$C_5H_5Cl_3$	600	86
4	43.37	176	Phenol, 2,4-dichloro-	$C_6H_4Cl_2O$	1500	99
5	43.51	583788	Phenol, 2,5-dichloro-	$C_6H_4Cl_2O$	10000	96

Report Number: R-900476
Project Number: 161-11-01-04
Description: SOUTHERN FASTENERS-SOIL SAMPLE

Memphis Environmental Center
Analytical Report
Base/Neutral/Acid Extractables By Method: SW846-8270
Results given in: ug/Kg

Report Date: 09-06-90 11:11
Prepared By
QA/QC Check
Lab Manager

Sample Number	SOIL #1	SOIL #2	SOIL #3	SOIL #4	SOIL #6
Lab ID Number	9002335	9002336	9002337	9002338	9002339
Matrix	SOIL	SOIL	SOIL	SOIL	SOIL
Type	SAMPLE**	SAMPLE	SAMPLE	SAMPLE	SAMPLE
Date of Collection	06-27-90	06-27-90	06-27-90	06-27-90	06-27-90
Date of Receipt	06-28-90	06-28-90	06-28-90	06-28-90	06-28-90
Date of Extraction	07-08-90	07-08-90	07-08-90	07-08-90	07-08-90
Date of Analysis	07-31-90	07-31-90	07-31-90	07-31-90	07-31-90
Acenaphthene	ND	ND	ND	ND	ND
Acenaphthylene	ND	ND	ND	ND	ND
Aniline	ND	ND	ND	ND	ND
Anthracene	ND	ND	ND	ND	ND
Benzidine	ND	ND	ND	ND	ND
Benzo(a)anthracene	ND	ND	ND	ND	ND
Benzo(a)pyrene	ND	ND	ND	ND	ND
Benzo(b and/or k)fluoranthene	ND	ND	ND	ND	ND
Benzo(g,h,i)perylene	ND	ND	ND	ND	ND
Benzoic acid	ND	ND	ND	ND	ND
Benzyl alcohol	ND	ND	ND	ND	ND
Bis(2-chloroethoxy)methane	ND	ND	ND	ND	ND
Bis(2-chloroethyl)ether	ND	ND	ND	ND	ND
Bis(2-chloroisopropyl)ether	ND	ND	ND	ND	ND
Bis(2-ethylhexyl)phthalate	3790	6890	ND	3130	ND
Bromophenyl phenyl ether, 4-	ND	ND	ND	ND	ND
Butyl benzyl phthalate	1200	ND	ND	ND	ND
Chloro-3-methylphenol, 4-	ND	ND	ND	ND	ND
Chloroaniline, 4-	ND	ND	ND	ND	ND
Chloronaphthalene, 1-	ND	ND	ND	ND	ND
Chloronaphthalene, 2-	ND	ND	ND	ND	ND
Chlorophenol, 2-	ND	ND	ND	ND	ND
Chlorophenyl phenyl ether, 4-	ND	ND	ND	ND	ND
Chrysene	ND	ND	ND	ND	ND
Di-n-butyl phthalate	ND	ND	ND	ND	ND
Di-n-octyl phthalate	3770	ND	ND	331	ND
Dibenzo(a,h)anthracene	ND	ND	ND	ND	ND
Dibenzofuran	ND	ND	ND	ND	ND
Dichlorobenzene, 1,2-	ND	ND	ND	ND	ND
Dichlorobenzene, 1,3-	ND	ND	ND	ND	ND
Dichlorobenzene, 1,4-	ND	ND	ND	ND	ND
Dichlorobenzidine, 3,3'-	ND	ND	ND	ND	ND
Dichlorophenol, 2,4-	ND	ND	ND	ND	ND
Dichlorophenol, 2,6-	ND	ND	ND	ND	ND
Diethyl phthalate	ND	ND	ND	ND	ND
Dimethyl phthalate	ND	ND	ND	ND	ND
Dimethylphenol, 2,4-	ND	ND	ND	ND	ND
Dinitrophenol, 2,4-	ND	ND	ND	ND	ND

\- Not Applicable
ND Non detected at stated limit of detection
NA Not analyzed

[ ] - Below LOQ, Above LOD

Report Number: R-900476
Project Number: 161-11-01-04
Description: SOUTHERN FASTENERS-SOIL SAMPLE

Memphis Environmental Center
Analytical Report
Metals By SW846-6010/7000
Results given in: mg/Kg

Report Date: 08-13-90 16:30
Prepared By
QA/QC Check
Lab Manager

Sample Number	SOIL #1	SOIL #2	SOIL #3	SOIL #4	SOIL #6
Lab ID Number	9002335	9002336	9002337	9002338	9002339
Matrix	SOIL	SOIL	SOIL	SOIL	SOIL
Type	SAMPLE**	SAMPLE	SAMPLE	SAMPLE	SAMPLE
Date of Collection	06-27-90	06-27-90	06-27-90	06-27-90	06-27-90
Date of Receipt	06-28-90	06-28-90	06-28-90	06-28-90	06-28-90
Date of Digestion	07-90	07-90	07-90	07-90	07-90
Date of Analysis	07-90	07-90	07-90	07-90	07-90
% Solids	75.3	67.3	76.0	63.9	70.4
Arsenic	5.6	9.1	5.4	8.1	ND
Barium	65.5	69.5	33.3	315	26.1
Cadmium	ND	ND	ND	20.0	6.3
Chromium	55	81	54	71	70
Copper	15	18	24	8	22
Lead	9	9	20	7	6
Mercury	0.11	0.10	ND	0.14	ND
Nickel	13	13	20	25	13
Selenium	ND	ND	ND	ND	ND
Silver	3.1	ND	ND	ND	ND
Zinc	35.7	33.2	62.9	181	87.6

NOTES :
9002335*SAMPLE - Hg DIGESTION & ANALYSIS PERFORMED 07/06/90.

- Not Applicable
ND Non detected at stated limit of detection
Not analyzed

[ ] - Below LOQ, Above LOD

Report Number: R-900476
Project Number: 161-11-01-04
Description: SOUTHERN FASTENERS-SOIL SAMPLE

Memphis Environmental Center
Analytical Report
Metals By SW846-6010/7000
Results given in: mg/Kg

Report Date: 08-13-90 16:30
Prepared By
QA/QC Check
Lab Manager

Sample Number	SOIL #7
ID Number	9002340
Matrix	SOIL
Type	SAMPLE
Date of Collection	06-27-90
Date of Receipt	06-28-90
Date of Digestion	07-90
Date of Analysis	07-90
% Solids	70.4
Arsenic	ND
Barium	ND
Cadmium	2.0
Chromium	33
Copper	12
Lead	ND
Mercury	ND
Nickel	7
Selenium	ND
Silver	4.7
Zinc	34.5

NOTES :

- Not Applicable
ND Non detected at stated limit of detection
NA Not analyzed

[ ] - Below LOQ, Above LOD

Report Number: R-900476
Project Number: 161-11-01-04
Description: SOUTHERN FASTENERS-SOIL SAMPLE

Memphis Environmental Center
QA/QC Report - Spikes
Metals By SW846-6010/7000
Results given in: mg/Kg

Report Date: 08-13-90 16:30
Prepared By
QA/QC Check
Lab Manager

Sample Number	SOIL #1	SOIL #1	SOIL #1
QID Number	9002335-SPIKE-1	9002335-SPIKE-1	9002335-SPIKE-1
Matrix	SOIL	SOIL	SOIL
Type	ADDED LEVEL	% RECOVERED 1**	% RECOVERED 2**
Date of Collection	06-27-90	06-27-90	06-27-90
Date of Receipt	06-28-90	06-28-90	06-28-90
Date of Digestion	07-90	07-90	07-90
Date of Analysis	07-90	07-90	07-90
% Solids	-	-	-
Arsenic	21.4	-	-
Barium	549	93.2	93.1
Cadmium	110	95.9	94.3
Chromium	110	95.0	100
Copper	110	93.0	93.0
Lead	110	101	100
Mercury	1.25	102	98.8
Nickel	54.9	96.0	98.0
Selenium	21.4	-	-
Silver	52.7	104	98.2
Zinc	54.9	80.4	92.6

** NOTES :

9002335*SPK1RCV1 - POOR SPIKE RECOVERY FOR ARSENIC AND SELENIUM DUE TO MATRIX INTERFERENCE.

9002335*SPK1RCV2 - POOR SPIKE RECOVERY FOR ARSENIC AND SELENIUM DUE TO MATRIX INTERFERENCE.

- Not Applicable

ND Non detected at stated limit of detection

NA Not analyzed

[ ] - Below LOQ, Above LOD

Report Number: R-900476
Project Number: 161-11-01-04
Description: SOUTHERN FASTENERS-SOIL SAMPLE

Memphis Environmental Center
QA/QC Report - Blanks
Metals By SW846-6010/7000
Results given in: mg/Kg

Report Date: 08-13-90 16:30
Prepared By
QA/QC Check
Lab Manager

Sample Number	BLANK	BLANK	BLANK	LIMIT	LIMIT
ID Number	07-90	07-90 SPK ADD	07-90 SPK RCV%	OF	OF
Matrix	SYSTEM	SYSTEM	SYSTEM	DETECTION	QUANTITATION
Type	SAMPLE	SAMPLE	SAMPLE		
Date of Collection					
Date of Receipt					
Date of Digestion	07-90	07-90	07-90		
Date of Analysis	07-90	07-90	07-90		
% Solids	-	-	-	-	-
Arsenic	ND	23.6	89.9	1.0	-
Barium	ND	545	96.4	20.0	-
Cadmium	ND	109	96.8	0.8	-
Chromium	ND	109	102	1	-
Copper	ND	109	96.0	2	-
Lead	ND	109	100	5	-
Mercury	ND	1.29	99.2	0.10	-
Nickel	ND	54.5	100	4	-
Selenium	ND	23.6	95.1	0.5	-
Silver	ND	59.1	104	1.0	-
Zinc	6.7	54.5	101	2.0	-

NOTES :

- Not Applicable
ND Non detected at stated limit of detection
Not analyzed

[ ] - Below LOQ, Above LOD

Report Number: R-900476
Project Number: 161-11-01-04
Description: SOUTHERN FASTENERS - SOILS

Memphis Environmental Center
Analytical Report
General Chemistry
Results given in: mg/Kg

Report Date: 07-30-90 10:04
Prepared By
QA/QC Check
Lab Manager

Sample Number	SOIL #1	SOIL #2	SOIL #3	SOIL #4	SOIL #6
ID Number	9002335	9002336	9002337	9002338	9002339
Matrix	SOIL	SOIL	SOIL	SOIL	SOIL
Type	SAMPLE	SAMPLE	SAMPLE	SAMPLE	SAMPLE
Date of Collection	06-27-90	06-27-90	06-27-90	06-27-90	06-27-90
Date of Receipt	06-28-90	06-28-90	06-28-90	06-28-90	06-28-90
Date of Extraction	-	-	-	-	-
Date of Analysis	07-90	07-90	07-90	07-90	07-90
Cyanide (total)	ND	ND	ND	ND	1.96
pH (ph units)	7.04	7.44	6.85	5.37	6.80

** NOTES :

Sample Number	SOIL #7
ID Number	9002340
Matrix	SOIL
Type	SAMPLE
Date of Collection	06-27-90
Date of Receipt	06-28-90
Date of Extraction	-
Date of Analysis	07-90
Cyanide (total)	ND
pH (ph units)	7.91

** NOTES :

- Not Applicable
ND Non detected at stated limit of detection
NA Not analyzed

[ ] - Below LOQ, Above LOD

Report Number: R-900476
Project Number: 161-11-01-04
Description: SOUTHERN FASTENERS - SOILS

Memphis Environmental Center
QA/QC Report - Spikes
General Chemistry
Results given in: mg/Kg

Report Date: 07-30-90 10:04
Prepared By. KH
QA/QC Check
Lab Manager

Sample Number	SOIL #6	SOIL #6
ID Number	9002339-SPIKE-1	9002339-SPIKE-1
Matrix	SOIL	SOIL
Type	ADDED LEVEL	% RECOVERED 1
Date of Collection	06-27-90	06-27-90
Date of Receipt	06-28-90	06-28-90
Date of Extraction	-	-
Date of Analysis	07-90	07-90
Cyanide (total)	1.00	76
pH (ph units)	-	-

** NOTES :

- Not Applicable
ND Non detected at stated limit of detection
NA Not analyzed

[ ] - Below LOQ, Above LOD

Report Number: R-900476
Project Number: 161-11-01-04
Description: SOUTHERN FASTENERS - SOILS

Memphis Environmental Center
QA/QC Report - Blanks
General Chemistry
Results given in: mg/Kg

Report Date: 07-30-90 10:04
Prepared By
QA/QC Check
Lab Manager

Sample Number	BLANK	LIMIT	LIMIT
LOD Number	07-90	OF	OF
Matrix	SYSTEM	DETECTION	QUANTITATION
Type	SAMPLE		
Date of Collection			
Date of Receipt			
Date of Extraction	-		
Date of Analysis	07-90		
Cyanide (total)	ND	0.10	-
pH (ph units)	-	-	-

** NOTES :

- Not Applicable
ND Non detected at stated limit of detection
Not analyzed

[ ] - Below LOQ, Above LOD

Report Number: R-900476
Project Number: 161-11-01-04
Description: SOUTHERN FASTENERS - LEACHATE

Memphis Environmental Center
Analytical Report
Metals By SW846-1310/6010/7000
Results given in: ug/L

Report Date: 08-13-90 11:17
Prepared By KH
QA/QC Check
Lab Manager

Sample Number	SOIL #1	SOIL #2	SOIL #3	SOIL #4	SOIL #6
ID Number	9002335	9002336	9002337	9002338	9002339
Matrix	LEACHATE	LEACHATE	LEACHATE	LEACHATE	LEACHATE
Type	SAMPLE**	SAMPLE	SAMPLE	SAMPLE	SAMPLE
Date of Collection	06-27-90	06-27-90	06-27-90	06-27-90	06-27-90
Date of Receipt	06-28-90	06-28-90	06-28-90	06-28-90	06-28-90
Date of Digestion	07-90 TO 08-90	07-90 TO 08-90	07-90 TO 08-90	07-90 TO 08-90	07-90 TO 08-90
Date of Analysis	07-90 TO 08-90	07-90 TO 08-90	07-90 TO 08-90	07-90 TO 08-90	07-90 TO 08-90
Arsenic	ND	ND	ND	11	ND
Barium	ND	ND	ND	ND	ND
Cadmium	ND	ND	ND	143	ND
Chromium	ND	ND	ND	ND	ND
Copper	ND	ND	ND	ND	ND
Lead	ND	ND	ND	ND	ND
Mercury	ND	ND	ND	ND	ND
Nickel	ND	ND	ND	ND	ND
Selenium	ND	ND	ND	ND	ND
Silver	ND	ND	ND	ND	ND
Zinc	34 U	ND	ND	301	341

NOTES :
9002335*SAMPLE - Hg DIGESTION & ANALYSIS PERFORMED 07/30/90. METALS ANALYSES PERFORMED USING METHOD OF STANDARD ADDITION. DUE TO POOR RSDs & UNACCEPTABLE REGRESSTION COEFFICIENTS, SAMPLES REANALYZED BY ICP & FLAME AA.

- Not Applicable
ND Non detected at stated limit of detection
NA Not analyzed

[ ] - Below LOQ, Above LOD

Report Number: R-900476
Project Number: 161-11-01-04
Description: SOUTHERN FASTENERS - LEACHATE

Memphis Environmental Center
Analytical Report
Metals By SW846-1310/6010/7000
Results given in: ug/L

Report Date: 08-13-90 11:17
Prepared By
QA/QC Check
Lab Manager

Sample Number	SOIL #7
LIMS ID Number	9002340
Matrix	LEACHATE
Type	SAMPLE
Date of Collection	06-27-90
Date of Receipt	06-28-90
Date of Digestion	07-90 TO 08-90
Date of Analysis	07-90 TO 08-90
Arsenic	ND
Barium	ND
Cadmium	ND
Chromium	ND
Copper	ND
Lead	ND
Mercury	ND
Nickel	ND
Selenium	ND
Silver	ND
Zinc	77 U

*NOTES :

- Not Applicable
ND Non detected at stated limit of detection
NA Not analyzed

[ ] - Below LOQ, Above LOD

Report Number: R-900476
Project Number: 161-11-01-04
Description: SOUTHERN FASTENERS - LEACHATE

Memphis Environmental Center
QA/QC Report
Metals By SW846-1310/6010/7000
Results given in: ug/L

Report Date: 08-13-90 11:17
Prepared By
QA/QC Check
Lab Manager

Sample Number	BLANK	LIMIT	LIMIT
ID Number	07-90	OF	OF
Matrix	SYSTEM	DETECTION	QUANTITATION
Type	SAMPLE**		
Date of Collection			
Date of Receipt			
Date of Digestion	07-90 TO 08-90		
Date of Analysis	07-90 TO 08-90		
Arsenic	ND	10	-
Barium	ND	320	-
Cadmium	ND	13	-
Chromium	ND	16	-
Copper	ND	32	-
Lead	ND	80	-
Mercury	ND	0.4	-
Nickel	ND	64	-
Selenium	ND	5	-
Silver	ND	20	-
Zinc	35	32	-

NOTES :
BLANK 07-90 - U = ESTIMATED VALUE DUE TO BLANK CONTAMINATION.

- Not Applicable
ND Non detected at stated limit of detection
Not analyzed

[ ] - Below LOQ, Above LOD

RECEIVED
JUL 10 1990
SUPERFUND SECTION

SOUTHERN
FASTENING SYSTEMS

July 5, 1990

Mr. Jack R. Butler
Environmental Engineer
N. C. Department of Human Resources
Division of Health Services
P. O. Box 2091
Raleigh, North Carolina 27602-2091

Re: Soil Sample Results

Dear Jack:

Per your telephone request, enclosed are copies of the results of the soil samples taken at the lagoon on the east side of the Southern Screw building on March 11, 1982. These samples were taken prior to the clean up of the lagoon.

Also enclosed is a copy of the results of the samples taken October 22, 1985. These samples were taken after the clean up.

If you have any questions, please give me a call.

Sincerely,

Allen

Allen F. Johnson
Safety Director

SOUTHERN FASTENING SYSTEMS, **Div. Farley, Inc.**
P.O. Box 1360, Statesville, NC 28677-1360
Tel: (704) 873-7211 TWX: 810-625-0793 EasyLink No. 62776748
On the West Coast: 5670 Lindbergh Lane, Bell, Calif. 90201 Tel: (213) 263-1661

RESEARCH & ANALYTICAL LABORATORIES, INC.
P.O. Box 473 106 Short Street
Kernersville, North Carolina 27284
Telephone 919/996-2841

Southern Screw
P.O. Box 1360
Statesville, NC 28677
Attn: Mr. Harold Harmon

JOB NUMBER 00429

DATE SAMPLE COLLECTED 10/22/85
DATE SAMPLE RECEIVED 10/24/85
DATE SAMPLE ANALYZED 10/25-11/6/85
DATE OF REPORT 11/12/85
ANALYSES PERFORMED BY Cobb

PARAMETER	STORET NUMBER	UNITS	LAB SAMPLE NUMBER			
			1853	1854		
Cadmium	01029	mg/kg	1.4	7.4		
Chromium	01035	mg/kg	34	31		
Copper	01043	mg/kg	28	61		
Iron	01046	mg/kg	43,000	51,000		
Lead	01052	mg/kg	30	36		
Nickel	01068	mg/kg	29	31		
Zinc	01093	mg/kg	37	320		
CLIENT'S SAMPLE NUMBER	N/A	N/A	Dump Site East Side	Natural East Side		

#1	Pond Water
#2	Oily Water
#3	Soil North of Pond
#4	Soil Plant Side
#5	Soil South of Pond in Spill Over
#6	Soil from Under Water in Pond
#7	Soil Entry of Oily Ditch
#8	Barrel Beside Pond
#9	End of Oily Ditch

RESEARCH & ANALYTICAL LABORATORIES, INC.
P.O. Box 473 106 Short Street
Kernersville, North Carolina 27284
Telephone 919/996-2841

Southern Screw
P.O. Box 1360
Statesville, NC 28677
ATTN: Mr. Hewitt
JOB NUMBER 420-801-26-8

DATE SAMPLE COLLECTED 3/11/82
DATE SAMPLE RECEIVED 3/11/82
DATE SAMPLE ANALYZED 3/12-16/82
DATE OF REPORT 3/16/82
ANALYSES PERFORMED BY Springs/Champion/Webster

PARAMETER	STORET NUMBER	UNITS	LAB SAMPLE NUMBER			
			9658	9659		
Cyanide	00720	mg/1	0.22	1.8		
Oil & Grease	00556	mg/1	15	77,000		
pH	00400	NONE	1.3	3.2		
Cadmium, Tot.	01027	mg/1	.022	.8		
Chromium, Tot.	01034	mg/1	.024	1.1		
Copper, Tot.	01042	mg/1	.068	36		
Iron, Tot.	01045	mg/1	4.2	240		
Lead, Tot.	01051	mg/1	< .11	11		
Nickel, Tot.	01067	mg/1	.059	1.4		
Zinc, Tot.	01092	mg/1	.2	89		
CLIENT'S SAMPLE NUMBER	N/A	N/A	#1	#2		

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Southern Screw Co.
P.O. Box 1360
Statesville, NC 28677
ATTN: Mr. Hewitt

JOB NUMBER 420-801-26-8

DATE SAMPLE COLLECTED 3/11/82
DATE SAMPLE RECEIVED 3/11/82
DATE SAMPLE ANALYZED 3/12-16/82
DATE OF REPORT 3/16/82
ANALYSES PERFORMED BY Springs/Champion/Webster

PARAMETER	STORET NUMBER	UNITS	LAB SAMPLE NUMBER			
			9660	9661	9662	9663
Cyanide	00720	mg/kg	0.46	6.4	4.1	190
Oil & Grease	00556	mg/kg	240,000	120,000	5,600	55,000
pH	00400	NONE	11.5	9.1	7.1	6.7
Cadmium, Tot.	01027	mg/kg	30	130	0.54	45
Chromium, Tot.	01034	mg/kg	27	31	28	24
Copper, Tot.	01042	mg/kg	3600	1700	11	250
Iron, Tot.	01045	mg/kg	120,000	59,000	28,000	21,000
Lead, Tot.	01051	mg/kg	660	550	16	93
Nickel, Tot.	01067	mg/kg	230	190	7.4	28
Zinc, Tot.	01092	mg/kg	750	500	8.6	110
			* Metals are wet weight			
CLIENT'S SAMPLE NUMBER	N/A	N/A	#3	#4	#5	#6

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Kernersville, North Carolina 27284
Telephone 919/996-2841

Southern Screw Co.
P.O. Box 1360
Statesville, NC 28677
ATTN: Mr. Hewitt
JOB NUMBER 420-801-26-8

DATE SAMPLE COLLECTED 3/11/82
DATE SAMPLE RECEIVED 3/11/82
DATE SAMPLE ANALYZED 3/12-16/82
DATE OF REPORT 3/16/82
ANALYSES PERFORMED BY Springs/Champion/Webster

PARAMETER	STORET NUMBER	UNITS	LAB SAMPLE NUMBER			
			9664	9665		
Cyanide	00720	mg/kg	35	5.6		
Oil & Grease	00556	mg/kg	110,000	17,000		
pH	00400	NONE	6.5	7.1		
Cadmium, Tot.	01027	mg/kg	71	7.8		
Chromium, Tot.	01034	mg/kg	42	13		
Copper, Tot.	01042	mg/kg	110	10		
Iron, Tot.	01045	mg/kg	30,000	3900		
Lead, Tot.	01051	mg/kg	44	16		
Nickel, Tot.	01067	mg/kg	110	15		
Zinc, Tot.	01092	mg/kg	1200	75		
			* Metals are wet weight			
CLIENT'S SAMPLE NUMBER	N/A	N/A	#7	#9		

RESEARCH & ANALYTICAL LABORATORIES, INC.
P.O. Box 473 106 Short Street
Kernersville, North Carolina 27284
Telephone 919/996-2841

N.C. CERT. #34

Southern Screw Co.
P.O. Box 1360
Statesville, NC 28677
ATTN: Mr. Hewitt

JOB NUMBER 420-801-26-8

DATE SAMPLE COLLECTED 3/11/82
DATE SAMPLE RECEIVED 3/11/82
DATE SAMPLE ANALYZED 3/12-16/82
DATE OF REPORT 3/16/82
ANALYSES PERFORMED BY Webster/Champion/Springs

PARAMETER	STORET NUMBER	UNITS	LAB SAMPLE NUMBER			
			9666			
Cyanide	00720	mg/kg	6.4			
Oil & Grease	00556	mg/kg	14,000			
pH	00400	NONE	10.1*			
Cadmium, Tot.	01027	mg/kg	7500			
Chromium, Tot.	01034	mg/kg	230			
Copper, Tot.	01042	mg/kg	530			
Iron, Tot.	01045	mg/kg	45,000			
Lead, Tot.	01051	mg/kg	29			
Nickel, Tot.	01067	mg/kg	100			
Zinc, Tot.	01092	mg/kg	740			
CLIENT'S SAMPLE NUMBER	N/A	N/A	#8 Powder			

Kernersville, North Carolina 27284
Telephone 919/996-2841

Southern Screw Co.
P.O. Box 1360
Statesville, NC 28677
ATTN: Mr. Hewitt

JOB NUMBER 420-801-26-8

DATE SAMPLE COLLECTED 3/11/82
DATE SAMPLE RECEIVED 3/11/82
DATE SAMPLE ANALYZED 3/12-16/82
DATE OF REPORT 3/16/82
ANALYSES PERFORMED BY Springs/Champion/Webster

PARAMETER	STORET NUMBER	UNITS	LAB SAMPLE NUMBER			
			9660	9661	9662	9663
Cyanide	00720	mg/kg	0.46	6.4	4.1	190
Oil & Grease	00556	mg/kg	240,000	120,000	5,600	55,000
pH	00400	NONE	11.5	9.1	7.1	6.7
Cadmium, Tot.	01027	mg/kg	30	130	0.54	45
Chromium, Tot.	01034	mg/kg	27	31	28	24
Copper, Tot.	01042	mg/kg	3600	1700	11	250
Iron, Tot.	01045	mg/kg	120,000	59,000	28,000	21,000
Lead, Tot.	01051	mg/kg	660	550	16	93
Nickel, Tot.	01067	mg/kg	230	190	7.4	28
Zinc, Tot.	01092	mg/kg	750	500	8.6	110
			* Metals are wet weight			
CLIENTS SAMPLE NUMBER	N/A	N/A	#3 Sludge	#4 Sludge	#5 Sludge	#6 Sludge

JSX 2-28-89

RESEARCH & ANALYTICAL LABORATORIES, INC.
P.O. Box 473 106 Short Street
Kernersville, North Carolina 27284
Telephone 919/996-2841

Southern Screw

P.O. Box 1360

Statesville, NC 28677

Attn: Mr. Harold Harmon

JOB NUMBER 00429

DATE SAMPLE COLLECTED 10/22/85

DATE SAMPLE RECEIVED 10/24/85

DATE SAMPLE ANALYZED 10/25-11/6/85

DATE OF REPORT 11/12/85

ANALYSES PERFORMED BY Cobb

PARAMETER	STORET NUMBER	UNITS	LAB SAMPLE NUMBER			
			1853			
Cadmium	01029	mg/kg	1.4			
Chromium	01035	mg/kg	34			
Copper	01043	mg/kg	28			
Iron	01046	mg/kg	43,000			
Lead	01052	mg/kg	30			
Nickel	01068	mg/kg	29			
Zinc	01093	mg/kg	37			
CLIENT'S SAMPLE NUMBER	N/A	N/A	Dump Site			

N. C. Department of Human Resources
Division of Health Services

RECEIVED
AUG 1 1990
SUPERFUND SECTION

SAMPLE ANALYSES REQUEST

State Laboratory of Public Hea
P. O. Box 280
306 N. Wilmington Str
Raleigh, 276

Site Number 49D042769134 Field Sample Number 15822

Name of Site Southern Screw/Farley Metals Site Location Statesville, N.C.

Collected By Jack Butler ID# 44 Date Collected 27 June 1990 Time 3:45

Type of Sample:

Environmental	Concentrate	Comments
___ Groundwater (1)	___ Solid (5)	#7- Downstream
✓ Surface Water (2)	___ Liquid (6)	
___ Soil (3)	___ Sludge (7)	
___ Other (4)	___ Other (8)	

INORGANIC CHEMISTRY

Extractables		Total			
Parameter	Results mg/1	Parameter	Results mg/1	Parameter	Results mg/1
___ Arsenic		✓ Arsenic	<0.01	✓ Silver	<0.05
___ Barium		✓ Barium	<0.1	___ Sulfates	
___ Cadmium		✓ Cadmium	<0.005	___ Zinc	
___ Chromium		___ Chloride		✓ Ph	7.5
___ Lead		✓ Chromium	<0.01	___ Conductivity	
___ Mercury		___ Copper		___ TDS	
___ Selenium		___ Fluoride		___ TOC	
___ Silver		___ Iron		✓ Cyanide	<0.4
		✓ Lead	<0.005		
		___ Manganese			
		✓ Mercury	<0.0002		
		___ Nitrate			
		✓ Selenium	<0.005		

ORGANIC CHEMISTRY

Parameter	Results mg/1	Parameter	Results mg/1	Parameter	Results mg/1
___ P&T:GC/MS		___ EDB		___ Methoxychlor	
___ Acid:B/N Ext.		___ PCB's		___ Toxaphene	
___ TOX		___ Petroleum		___ 2,4-D	
		___ Endrin		___ 2,4,5-TP (silvex)	
		___ Lindane			

MICROBIOLOGY

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

RADIOCHEMISTRY

Parameter	Results PCi/1
___ Gross Alpha	
___ Gross Beta	

Date Received ___ Date Reported 013692 JUN 29 90

Date Extracted ___ Date Analyzed 7/30/90

Reported By ___ Lab Number ___

DHS 3191 (Revised 7/85)

Appendix C

References

REFERENCES

1. US Environmental Protection Agency, RCRA inspection report of Southern Fastening systems.

2. Assefa, H., memo re. telephone conversation with Joe Hudson, 12-15-90.

3. Butler, J., letter to EPA NC CERCLA Project officer Kelly Cain dated 7-3-90., re: Site Investigation of Southern Fastening Systems.

4. Strickland, O.W., letter to Mr. Brad Heath, Southern screw company., dated 7-25-83., re: Interim Status application procedures.

5. Application for name change , DHS 3347 (8/85).

6. NC Superfund, Preliminary Assesment of Southern Screw Co. EPA Form 2070-12(7-81). Prepared by Lawrence O. Lenz and Grover Nickolson 10-15-85.

7. Water system maps for area surounding Southern fastening systems . Service provided by Irdell water corporation and Piedmont Water and Construction company.

8. NC Department of Natural Resources and Community Development, Classifications and Water Quality Standards assigned to the waters of the Catawba River Basin, from 15 NCAC 2B. 0308.

9. Heath, R.C., Basic Elements of Grownd-Water Hydrogeology with referance to conditions in North Carolina. USGS Report 80-44, 1980.

10. Statesville Utility Department, Water and sewer distribution system map.

11. Legrand, H.E. and M.J. Mundorf, Geology and Groundwater in the North Carolina Area. USGS Bulletin No. 68.

12. US Department of Agriculture, Soil Conservation Service, Soil survey of Irdell County, North Carolina, issued series 1960, #14.

13. N.C. Atlas, The University of North Carolina Press; Chapel Hill, NC.

14. Rainfall Frequency Atlas of the United States. Technical Paper No. 40 US Department of Commerce, US government

printing office, Washington D.C.

15. Parker, W.T., US Department of Interior, Fish and Wildlife Service, Letter to Pat DeRosa dated 21 June 1985 with attachments, and DeRosa, Pat, NC Superfund Section, memo dated may 18, 1989 " Critical Habitats of Federally Listed Endangered Species in NC".

16. County and City Data Book 1983. U.S Department of Commerce, Bureau of the Census.

17. Statistical Absract, North Carolina State Government fifth edition, 1984.

18. Uncontrolled Hazardous Waste Site Ranking System. A users manual published in the federal registor, 7-16-82.

19. Sax, N.I., Dangerous Properties of Industrial Chemicals, 6th Edition, Van Nostrand Reinhold Co., Inc., NY 1984.

20. North Carolina Department of Human Resources, 1990, Public Water Supply Database, November 1990 retrieval by Martha Moore, Division of Health Services.

(1) Facility Information
N. L. Industries
Barkley Road
P.O. Box 1360
Statesville, NC 28677
(704) 873-7211
EPA ID #NCD042269134

(2) Responsible Individual
Robert Hewitt, Process Engineer

(3) Survey Participants
Robert Hewitt, Process Engineer
Jerry Rhodes, Environmental Chemist, DHR
Rick Doby, Sr., District Sanitarian, DHR

(4) Date of Inspection
June 24, 1981
9 am - 12:15 pm

(5) Applicable Regulations
40CFR Parts 262, 263 and 265

(6) Purpose of Survey
RCRA compliance inspection was conducted at N.L. Fasteners by Jerry Rhodes and Rick Doby, Sr. DHR, Solid & Hazardous Waste Management Branch. The inspection included record review, site survey, and sampling procedures. Regulatory requirements covered include those contained in 40CFR Part 262 Generator Standards, Part 263 Transporter Standards, and Part 265 under General Facility Standards and Tanks.

(7) Facility Description
N.L. Fasteners occupies 10 acres of a 69.5 acre tract in Statesville, NC and manufactures metal screws for various types of industry. The company generates approximately 40,000 pounds a week of plating sludge that is transported in bulk to SCA Services of SC. All effluent is treated and received by the city under permit #031-821-004. The company also operates under NRCD Permit #5473 a package waste water pre-treatment system designed for metal plating waste. (See attached drawing of system)

(8) Our survey of June 24, 1981 indicates that N. L. Fasteners of Statesville, NC is in complete compliance with 40CFR Parts 262, 263 and 265.

(9) Note:

A telephone conversation with Mr. Robert Hewitt indicates that the company has prepared a new Part A to be resubmitted to EPA with a copy to Raleigh Office. The resubmitted Part A will indicate that the company is not a storer of hazardous waste because the waste is removed from the facility weekly for disposal by SCA, Pinewood, SC.

Please print or type in the unshaded areas only
(fill-in areas are spaced for elite type, i.e., 12 characters/inch).

Form Approved OMB No. 158-R0175

FORM 1 GENERAL

EPA

ENVIRONMENTAL PROTECTION AGENCY

GENERAL INFORMATION

Consolidated Permits Program

(Read the "General Instructions" before starting.)

I. EPA I.D. NUMBER: F NCD042269134 3 D

GENERAL INSTRUCTIONS

If a preprinted label has been provided, affix it in the designated space. Review the information carefully; if any of it is incorrect, cross through it and enter the correct data in the appropriate fill-in area below. Also, if any of the preprinted data is absent *(the area to the left of the label space lists the information that should appear)*, please provide it in the proper fill-in area(s) below. If the label is complete and correct, you need not complete Items I, III, V, and VI *(except VI-B which must be completed regardless)*. Complete all Items if no label has been provided. Refer to the instructions for detailed item descriptions and for the legal authorizations under which this data is collected.

LABEL ITEMS

I. EPA I.D. NUMBER: NCD042269134

0 0 0 7

II. FACILITY NAME: NL INDUSTRIES

V. FACILITY MAILING ADDRESS: PO BOX 1360
STATESVILLE, NC 28677

RECEIVED
EPA/REGION
NOV 13 3 10
ENFORCEMENT

VI. FACILITY LOCATION: BARKLEY RD
STATESVILLE, NC 28677

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 any 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 column 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 activity 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
A. Is this facility a publicly owned treatment works which results in a discharge to waters of the U.S.? (FORM 2A)		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	
E. Does or will this facility treat, store, or dispose of hazardous wastes? (FORM 3)	X		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	
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	

SPECIFIC QUESTIONS	MARK 'X' YES	NO	FORM ATTACHED
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	
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	
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	
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	
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 SKIP

IV. FACILITY CONTACT

A. NAME & TITLE *(last, first, & title)*	B. PHONE *(area code & no.)*	
2 DON LOCOTOSH DIV MFG & ENG	704	873 7211

V. FACILITY MAILING ADDRESS

A. STREET OR P.O. BOX

3

B. CITY OR TOWN	C. STATE	D. ZIP CODE
4		

VI. FACILITY LOCATION

A. STREET, ROUTE NO. OR OTHER SPECIFIC IDENTIFIER

5

B. COUNTY NAME

IREDELL

C. CITY OR TOWN	D. STATE	E. ZIP CODE	F. COUNTY CODE *(if known)*
6			

ease print or type in the unshaded areas only
ill—in areas are spaced for elite type, i.e., 12 characters/inch).

Form Approved OMB No. 158-S80004

FORM 3 CRA

EPA

U.S. ENVIRONMENTAL PROTECTION AGENCY

HAZARDOUS WASTE PERMIT APPLICATION

Consolidated Permits Program

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

I. EPA I.D. NUMBER

F	M	0	0	4	2	2	6	9	1	3	4	T/A	C
												3	1

FOR OFFICIAL USE ONLY

APPLICATION APPROVED	DATE RECEIVED (yr., mo., & day)	COMMENTS

. FIRST OR REVISED APPLICATION

lace 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 vised 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 PA I.D. Number in Item I above.

. **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.)*

YR.	MO.	DAY
4 5	1 0	1 5

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

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

YR.	MO.	DAY

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

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

[ ] 1. FACILITY HAS INTERIM STATUS

[ ] 2. FACILITY HAS A RCRA PERMIT

II. PROCESSES — CODES AND DESIGN CAPACITIES

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)*.

. **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; 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.

C DUP T/A 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	[illegible] 1	216,000	U		7				
2					8				
3					9				
4					10				

CONTINUE ON REVERSE

tinued from page 2.
TE: 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): N C D 0 4 2 2 6 9 1 3 4 — T/A 3, C 1

FOR OFFICIAL USE ONLY: S W — DUP — T/A, C 2 — DUP

. DESCRIPTION OF HAZARDOUS WASTES (continued)

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))
1	P 0 3 0	2,000	P	T 0 1	
	P 1 0 6	2,000	P	T 0 1	
	F 0 0 8	10,000	P	T 0 1	
	F 0 0 9	49,000	P	T 0 1	
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					

CONTINUE ON REVERSE

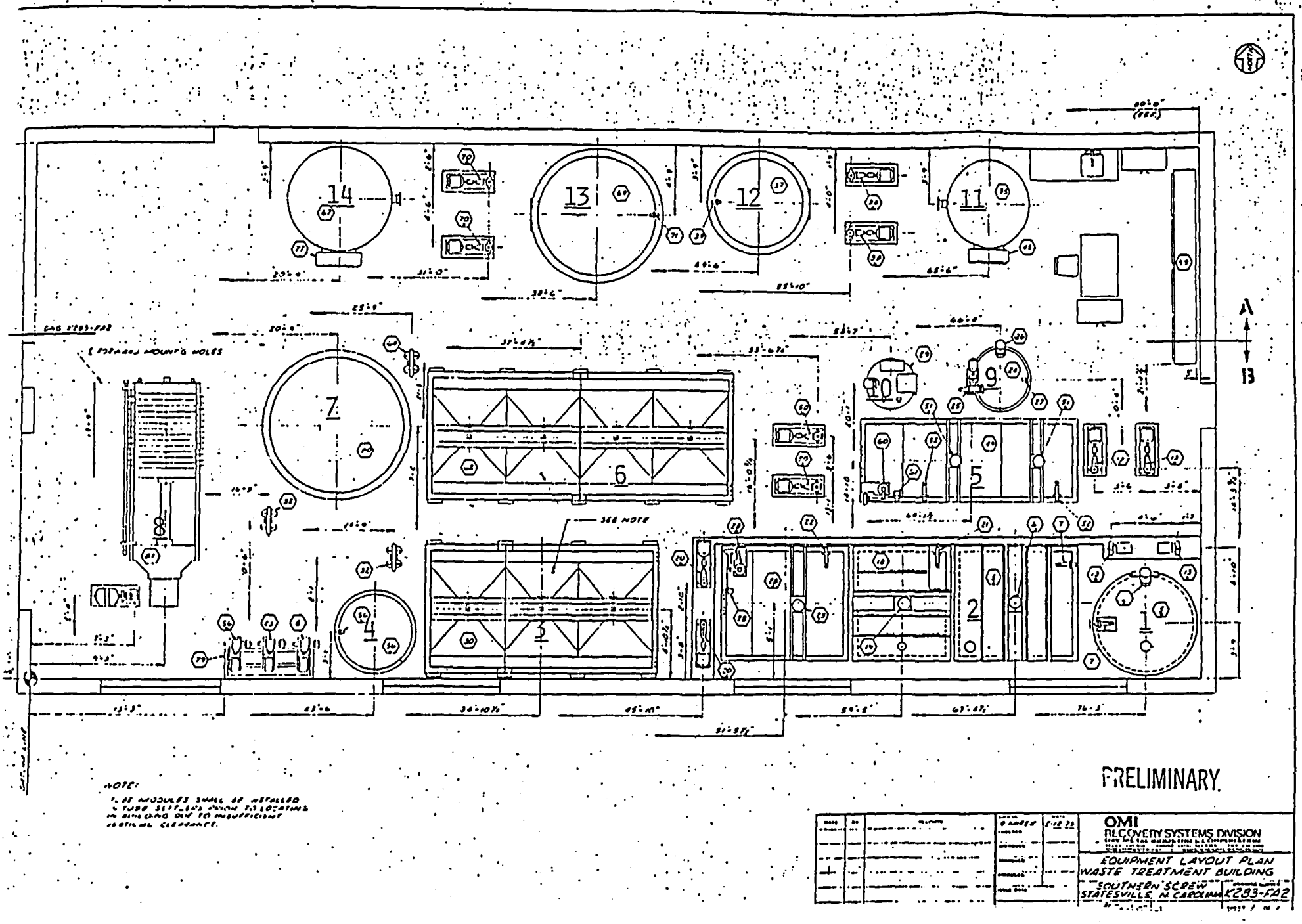
Continued from page 4.

V. FACILITY DRAWING *(see page 4)*

ITEM:

1. CN Destruction Tank
2. CR Reduction and pH adjustment tank
3. CN & CR Tube Settler
4. Sulfuric Acid Supply Tank
5. pH Adjustment Tank
6. Acid - Alkali Tube Settler
7. Sludge Holding Tank
8. Sludge De-Watering Press
9. Sodium Bi-Sulfite Tank
10. Poly electrolyte Tank
11. CN - CR Sand Filter
12. CN - CR Sand Filter Supply Tank
13. Acid - Alkali Sand Filter Supply Tank
14. Acid - Alkali Sand Filter

RESPONSE TO Part A Form 3 ITEM V
October 20, 1980



December 15, 1990

To: File

From: Hanna Assefa

Subject: Source of public water supply for the statesville area

I talked to Joe Hudson of the Statesville utilities company . He told me that the source of water for the statesville area is the Yadkin River . The intake for this was located upstream from where Fourth Creek joined the Yadkin River. Therfore drainage from Southern Fastening Systems could have no effect on the city of Statesville´s water supply.

soscwajh.doc

State of North Carolina
Department of Environment, Health, and Natural Resources
Division of Solid Waste Management
P.O. Box 27687 · Raleigh, North Carolina 27611-7687

James G. Martin, Governor
William W. Cobey, Jr., Secretary

William L. Meyer
Director

3 July 1990

Ms. Kelly Cain
EPA NC CERCLA Project Officer
345 Courtland Street, NE
Atlanta, GA 30365

SUBJECT: Trip Report
Southern Screw/Farley Metals, NCD042269134
Statesville, Iredell County, North Carolina

Dear Ms. Bland:

The Southern Screw/Farley Metals Inc. plant consists of a 12 acre building on a 69.5 acre tract of land at 1211 North Barkley Road in the city of Statesville, NC. This facility has been in continuous operation since 1945. Prior to 1945, the site was farmland. The plant on the site was originally called the Southern Screw Company. In the late 1950's, the company was purchased by N.L. Industries, Inc., 1230 Avenue of the Americas, New York, NY 10020, telephone (212) 621-9400. On 10 September 1982, N.L. Industries, Inc. sold the plant and site to Farley Metals, Inc., a Delaware Corporation having its place of business in the Sears Tower, 233 South Wacker Drive, Chicago, Illinois, 60606, telephone number (312) 876-1724. The production process has always been the manufacturing and electroplating of various sizes and types of metals screws for various types of industry. All of the electroplating sludge, about 40,000 lbs. monthly, was sent through the city of Statesville, NC sewage system to the sewage treatment plant between 1945 and November 1980, when changes were mandated by EPA. After that, the sludge was separated, and the hazardous waste sent to SCA in Pinewood, South Carolina. The present manufacturing operation is scheduled to close on 30 June 1990. Shipping will continue until the facility is sold or until December 1990.

Two on-site lagoons have been used in the past to neutralize wastes from spent plating bath solutions from electroplating operations. One of these lagoons was located on the south side of the east wing of the plant building and the other is just south of the present wastewater treating building west of the plant building. Records indicate that 680 tons of sludge and contaminated soil were removed from the lagoon south of the plant building in 1982. This material was shipped to Pinewood, South Carolina for disposal and

the lagoon was refilled with clean soil. The lagoon near the present wastewater treatment building was also filled in about 1975, however, it is not clear from presently available records whether sludge was removed from this area prior to filling with clean soil.

The waste generated at this facility include plating wastes from zinc, nickel, copper, cadmium, and brass plating and a copper strip line. This copper strip process involves stripping copper from washers that are copper coated prior to heat treatment. Zinc chloride is used in the zinc platings. Cyanides have been used in the cadmium plating and copper striping processes. Screws and washers were also heat treated for hardening. The carbon source in this heat treating was natural gas. No cyanide was used in the heat treating.

A caustic detergent was also used for degreasing and a waste oil was generated from quenching and cutting oils. The caustic detergent was treated as wastewater and discharged to the municipal sewer. The waste oil is removed from the site by a waste oil dealer for heat recovery.

The facility has always used city water and sewer although process water is also obtained from an on-site well. This 12 inch well is approximately 500 to 600 feet deep. The well water is used for a portion of the plating baths and city water is used for separate plating baths. Water from the two sources is not mixed prior to use. Only city water is used for drinking at the facility.

Three underground storage tanks are also present on the site. One was used for kerosene, one for motor oil, and one for cutting oil. The motor oil and cutting oil tanks have been emptied and filled with water to prevent them from floating out of the ground.

On 27 June 1990 Jack Butler, Ed Wallingford, and David Lilley, NC Superfund Section, performed a Site Inspection at the facility. The following individuals were also present during a portion of the visit:

Rick Thompson	-	Southern Fastening Devices
Allen F. Johnson	-	Southern Fastening Devices
Steve Petrovich	-	Southern Fastening Devices
Allen L. Crouch	-	Southern Fastening Devices
Paul Galluzzi	-	Memphis Environmental Center, Inc.
Steve Rettig	-	Memphis Environmental Center, Inc.
Richard Cooper	-	Statesville Water Department
Eddie Mitchell	-	Statesville Water Department

After touring the facility, the following environmental samples were collected:

1. Background soil from a depth of 18 inches, 375 ft. east of the eastern edge of the plant building and 43 ft. north of the access road.

2. Subsurface soil from 5 ft. depth in area of lagoon south of east wing of plant building.

3. Subsurface soil from 7 ft. depth in area of lagoon south of east wing of plant building (same location as previous sample).

4. Subsurface soil from 7.2 ft. depth in area of lagoon south of wastewater treatment building.

5. Water sample from on-site production well.

6. Water and sediment from headwaters of stream south of wastewater treatment building.

7. Water and sediment from creek north of the bridge at SR 2352 (south and downstream of site).

Allen F. Johnson, Southern Fastening Devices, was present during all sampling except the subsurface soil collected from the filled lagoon area south of the wastewater treatment building. All samples were split with Southern Fastening Devices representatives. Laboratory results are pending.

If you have any questions, please contact me at (919) 733-2801.

Sincerely,

Jack Butler

Jack Butler, Environmental Engineer
Superfund Section

JB/ds/ssfarley/1

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

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

July 25, 1983

CERTIFIED MAIL

Brad Heath
Southern Screw Co.
P. O. Box 1360
Statesville, NC 28677

Dear Mr. Heath:

On July 29, 1982 your plant at Statesville, EPA ID No. NCD042269134, received a change in its status under the Resource Conservation and Recovery Act which removed it from our list of treatment, storage, or disposal facilities. This change was granted because your company elected to change its waste-handling procedures rather than complete the process of filing a part B permit application. We assume that your company is aware that this decision carries with it the termination of "interim status" for this plant. This means that it can no longer treat, store, or dispose of hazardous waste without going through the full process of applying for a permit and receiving one.

Our office is now in the process of terminating interim status for all plants which have been asked to supply part B of a permit application and have chosen not to do so.

There is a well-defined procedure for carrying out this particular action, and we are writing you primarily so that you will have advance notice.

Essentially, we plan to publish a public notice like the enclosed example. At the foot of it we will list the affected companies, together with the nature of their hazardous waste activity while under interim status.

As indicated in the public notice, a period will be allowed for comment, and a public hearing will be held if any basis for it is developed.

If you have any objections or comments, please make them to this office in writing within thirty days. Our address is:

Solid and Hazardous Waste Management Branch
Division of Health Services
P. O. Box 2091
Raleigh, NC 27602

Very truly yours,

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

OWS:dwm

Enclosure

PUBLIC NOTICE

The N. C. Department of Human Resources proposes to allow the termination of interim status for specific regulated hazardous waste management activities at facilities identified on the attached list. The termination of interim status in all cases is based upon the facilities' voluntary alteration or modification of waste management practices and voluntary request to withdraw from a regulated status. The justification to terminate interim status is described in 40 CFR 270.10(e) as adopted in 10 NCAC 10F .0034. This consists, administratively, of a formal non-issuance of a final status permit as per procedures outlined in 40 CFR 124 as adopted in 10 NCAC 10F .0035.

All persons who believe that the tentative decision to terminate interim status through the above-described mechanism is inappropriate should raise all ascertainable issues and submit all available arguments and the factual grounds supporting their position by September 1, 1983. Copies of such comments should be submitted to Mr. O. W. Strickland, Head, Solid & Hazardous Waste Management Branch, Division of Health Services, P. O. Box 2091, Raleigh, NC, 27602.

A public hearing will be held if sufficient written notices of opposition are received pertaining to the proposed termination of interim status at specific facilities. Any request for a hearing shall be in writing and state the nature of issues proposed to be raised in the hearing. Requests for a hearing should be submitted to Mr. O. W. Strickland at the above address.

N.C. Department of Human Resources
Division of Health Services
Solid and Hazardous Waste Management Branch

APPROVED 18
BY: RJE
DATE: 3-16-88

NOTIFICATION FOR CHANGE IN COMPANY NAME, OWNERSHIP, FACILITY CONTACT, PHONE NUMBER, OR MAILING ADDRESS

DATE: _____

EPA ID NUMBER: NCD 042269134

Mr. Jim Edwards
Solid and Hazardous Waste Management Branch
Division of Health Services
Post Office Box 2091
Raleigh, NC 27602-2091

Dear Mr. Edwards:

Our company requests the following change under RCRA:

	EXISTING	CHANGE TO
COMPANY NAME	Southern Screw	Southern Fastening System
OWNERSHIP		
FACILITY CONTACT		
FACILITY PHONE NUMBER		
FACILITY MAILING ~~ADDRESS~~	Location	1211 Barkley Rd

I certify that this information is accurate and correct to the best of my knowledge. I am authorized to make this request on behalf of my company at the location given.

Signature _____

Company Title _____

REGISTERED
MAR 22 1988
DATA PROCESSING

DHS 3347 (8/85)
Solid & Hazardous Waste Management Branch (Review 6/90)

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

12 November 1985

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

SUBJECT: Final Preliminary Assessment Report
Southern Screw/NL Industries NCD042269134
Statesville, NC 28677

Dear Ms. Bland:

Enclosed please find the Preliminary Assessment report for the subject site. This priority is based on review of available data and communications with those most knowledgeable about the site. We have concluded that:

The Southern Screw/Farley Metals Inc. plant is located on 10 acres of a 69.5 acre tract at 1211 North Barkley Road in the city of Statesville, NC and has been in continuous operation since 1945. Prior to 1945, the site was farmland. The plant on the site was originally called the Southern Screw Co. In later 1950's, the company was purchased by N.L. Industries, Inc. 1230 Avenue of the Americas, New York, NY 10020, telephone (212) 621-9400. N.L. Industries, Inc. then sold the plant and site to Farley Metals, Inc., a Delaware Corp. having its place of business in the Sears Tower, 233 South Wacker Drive, Chicago, Illinois 60606, telephone number (312) 876-1724, on Sept. 10, 1982. The plant has always been referred to as Southern Screw. When EPA RCRA regulations became effective in November 1980, the site was called Southern Screw/NL Industries, Inc. and is now known as Southern Screw/Farley Metals, Inc. The production process from 1945 - Nov. 1980 and to present, has always been the manufacturing and electroplating of various sizes and types of metals screws for various types of industry. All of the electroplating sludge, about 40,000 lbs. monthly, was sent through the city of Statesville, NC sewage system to the sewage treatment plant between 1945 and November 1980, when changes were mandated by EPA. After that, the sludge was separated, and the hazardous waste sent to SCA in Pinewood, South Carolina. There was a surface impoundment area as well, which was used to neutralize wastes from spent plating bath solutions from electroplating operations from 1945 to November 1980.

The nature of the hazardous wastes was toxicity. The types of hazardous wastes were (F006) wastewater treatment sludges from electroplating operations, (F007) spent plating bath solutions from electroplating operations, (F008) plating bath sludges from the bottom of plating baths from electroplating operations, (P030) cyanides, and (P106) sodium cyanide.

These hazardous wastes were generated in the amount of 40,000 lbs. per month from 1945 to November 1981. This is not an exact figure, as amounts varied according to production orders. Further, the waste itself was not quantified in weight or volume, but allegedly only by the amount of hazardous materials used in the production process. The hazardous waste was then sent through the city of Statesville, NC sewage system to the city sewage treatment plant for disposal, and some neutralized in the unlined surface impoundment.

The hazardous conditions are from the surface impoundment which was used to neutralize waste from spent plating bath solutions from electroplating operations from 1945 to 1980. The hazardous conditions could also exist from toxic fumes emitted in the electroplating production process, and from spilled or splashed plating bath solutions containing heavy metals and/or cyanides.

The possible routes of contamination from 1945 to November 1980 were groundwater contamination from the unlined surface impoundment, surface runoff into steams from an overflow or heavy, protracted rainfall, and improperly treated sewage by the city of Statesville, NC after it was received from the Southern Screw electroplating plant through the sewer system.

The site is in the southeast section of the city of Statesville, NC and is located just south of Hwy. 70 at 1222 North Barkley Road. The area is zoned by the city of Statesville for general industrial use. The plant utilizes both city water and city sewer systems. There are no known wells in the area for a several hundred yard radius, nor are there any wildlife refuges around.

The Southern Screw/NL Industries, Inc. plant, now known as Southern Screw/Farley Metals, Inc. has been manufacturing and electroplating screws of many sizes and varieties since 1945. Because of the large amount of hazardous waste generated, and the utilization of unlined surface impoundment for spent plating bath solutions from electroplating operations from 1945 to 1980, a medium priority for inspection is recommended.

This information comes from a study of U.S. EPA Part "A" application dated October 30, 1980; a RCRA interim status inspection report of June 24, 1981; telephone conversation with Mr. Harold G. Harmon of Southern Screw/Farley Metals, Inc., Statesville, NC; and consultation with Mr. Jerry Rhodes and Mr. William Paige, Environmental Chemists of the NC Solid and Hazardous Waste Management Branch, Raleigh, NC.

On 29 October 1985, this Preliminary Assessment was reviewed by ~~Jerry Rhodes~~, ~~Assistant Branch Head~~, Solid and Hazardous Waste Management Branch, NC Department of Human Resources; by CERCLA Unit personnel; and by the following representatives from the North Carolina Department of Natural Resources and Community Development, Division of Environmental Management: Fay Sweat and 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,

for Lawrence O'Neal Lenz
Waste Management Specialist
Solid and Hazardous Waste Management Branch
Environmental Health Section

LOL/tb/0214b

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* NOTE: Change name of site from NL Industries to Southern Screw*

EPA

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

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
NC	D042269134

II. SITE NAME AND LOCATION

01 SITE NAME (Legal, common, or descriptive name of site)	02 STREET, ROUTE NO., OR SPECIFIC LOCATION IDENTIFIER				
NL Industries	P.O. Box 1360 (1211 Barkley Road)				
03 CITY	04 STATE	05 ZIP CODE	06 COUNTY	07 COUNTY CODE	08 CONG DIST
Statesville	NC	28677	Iredell	49	9
09 COORDINATES LATITUDE	LONGITUDE				
35° 45' 57.0"	080° 51' 20.0"				

10 DIRECTIONS TO SITE (Starting from nearest public road)

From Statesville, take Hwy. 70 East to Barkley Road and turn right onto Barkley Road. Take Barkley Road approx. ¼ mile to 1211 and the Farley Metals/Southern Screw Plant is on the left.

III. RESPONSIBLE PARTIES

01 OWNER (If known)	02 STREET (Business, mailing, residential)		
Farley Metals, Inc.	Sears Tower, 233 South Wacker Drive		
03 CITY	04 STATE	05 ZIP CODE	06 TELEPHONE NUMBER
Chicago	ILL	60606	(312) 876-1724
07 OPERATOR (If known and different from owner)	08 STREET (Business, mailing, residential)		
Southern Screw/Farley Metals, Inc.	P.O. Box 1360 (1211 Barkley Road)		
09 CITY	10 STATE	11 ZIP CODE	12 TELEPHONE NUMBER
Statesville	NC	28677	(704) 873-7211

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: 08 / 13 / 80 (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 06 / 24 / 81 (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

1945 (BEGINNING YEAR) | _____ (ENDING YEAR) ☐ UNKNOWN

04 DESCRIPTION OF SUBSTANCES POSSIBLY PRESENT, KNOWN, OR ALLEGED

(P030) Cyanides; (P106) Sodium cyanide; (F006) Wastewater treatment sludges from electroplating operations; (F008) plating bath sludges from the bottom of plating baths from electroplating operations; (F009) Spent stripping and cleaning bath solutions from

05 DESCRIPTION OF POTENTIAL HAZARD TO ENVIRONMENT AND/OR POPULATION

electroplating operations. Possible chrome, nickel from electroplating. Possible groundwater contamination; potential contamination of small streams from surface runoff. Both of above from unlined surface impoundment, which was cleaned up in 1981. This consisted of SCA scooping up 34 truckloads of dirt from the impoundment area, and disposing of at haz. waste disposal site in S.C.

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
Harold G. Harmon	Southern Screw, P.O. Box 1360, Statesville	704 873-7211

04 PERSON RESPONSIBLE FOR ASSESSMENT	05 AGENCY	06 ORGANIZATION	07 TELEPHONE NUMBER	08 DATE
Lawrence O. Lenz/Grover Nicholson	NC DHR/DHS	SHW Mgmt. Br.	(919) 733-2178	10 / 15 / 85 (MONTH DAY YEAR)

EPA FORM 2070-12 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 2 - WASTE INFORMATION

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
NC	D042269134

II. WASTE STATES, QUANTITIES, AND CHARACTERISTICS

01 PHYSICAL STATES (Check all that apply)

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

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

TONS _____

CUBIC YARDS _____

NO OF DRUMS _____

03 WASTE CHARACTERISTICS (Check all that apply)

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

III. WASTE TYPE

CATEGORY	SUBSTANCE NAME	01 GROSS AMOUNT	02 UNIT OF MEASURE	03 COMMENTS
SLU	SLUDGE	63,000	P	
OLW	OILY WASTE			
SOL	SOLVENTS			
PSD	PESTICIDES			
OCC	OTHER ORGANIC CHEMICALS			
IOC	INORGANIC CHEMICALS			
ACD	ACIDS			
BAS	BASES			
MES	HEAVY METALS			

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

01 CATEGORY	02 SUBSTANCE NAME	03 CAS NUMBER	04 STORAGE/DISPOSAL METHOD	05 CONCENTRATION	06 MEASURE OF CONCENTRATION
SLU	Sodium cyanide	143339			
SLU	Cyanides	57125			

V. FEEDSTOCKS (See Appendix for CAS Numbers)

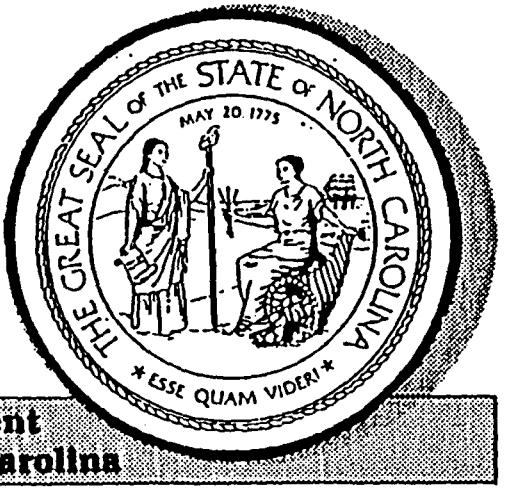
CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER	CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER
FDS			FDS		
FDS			FDS		
FDS			FDS		
FDS			FDS		

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

1. U.S. EPA Part "A" application dated 10/30/80.
2. Letter from NL Industries dated Sept. 15, 1982 notifying Region IV of U.S. EPA of agreement of sale.
3. RCRA Interim Status Inspection report of June 24, 1981.
4. Telephone conversation with Mr. Harold G. Harmon, Farley Metals/Southern Screw October 9, 10, & 11, 1985.

STATE OF NORTH CAROLINA
DEPARTMENT OF
NATURAL RESOURCES AND
COMMUNITY DEVELOPMENT

Classifications and Water Quality Standards Assigned to The Waters of The Yadkin-Pee Dee River Basin



Division of Environmental Management
Raleigh, North Carolina

Reprint from North Carolina Administrative Code: 15 NCAC 2B .0309
Current through: June 30, 1989

SECTION .0300 - ASSIGNMENT OF STREAM CLASSIFICATIONS

.0301 CLASSIFICATIONS: GENERAL

(a) Schedule of Classifications. The classifications assigned to the waters of the State of North Carolina are set forth in the schedules of classifications and water quality standards assigned to the waters of the river basins of North Carolina, 15 NCAC 2B .0302 to .0317 which are on file in the Office of the Attorney General of North Carolina. These classifications are based upon the existing or contemplated best usage of the various streams and segments of streams in the basin, as determined through studies and evaluations and the holding of public hearings for consideration of the classifications proposed.

(b) Stream Names. The names of the streams listed in the schedules of assigned classifications were taken as far as possible from United States Geological Survey topographic maps. Where topographic maps were unavailable, U.S. Corps of Engineers maps, U.S. Department of Agriculture soil maps, and North Carolina highway maps were used for the selection of stream names.

(c) Classifications. The classifications assigned to the waters of North Carolina are denoted by the letters WS-I, WS-II, WS-III, B, C, SA, SB, and SC in the column headed "class." A brief explanation of the "best usage" for which the waters in each class must be protected is given as follows:

Fresh Waters

Class WS-I:	waters protected as water supplies which are in natural and uninhabited or predominantly undeveloped (not urbanized) watersheds; no point source discharges are permitted and local land management programs to control nonpoint source pollution are required; suitable for all Class C uses;
Class WS-II:	waters protected as water supplies which are in low to moderately developed (urbanized) watersheds; discharges are restricted to primarily domestic wastewaters or industrial non-process waters specifically approved by the commission; local land management programs to control nonpoint source pollution are required; suitable for all Class C uses;
Class WS-III:	water supply segment with no categorical restrictions on watershed development or discharges; suitable for all Class C uses;
Class B:	primary recreation and any other usage specified by the "C" classification;
Class C:	fish and wildlife propagation, secondary recreation, agriculture, and other uses requiring waters of lower quality.

Tidal Salt Waters

Class SA:	shellfishing for market purposes and any other usage specified by the "SB" and "SC" classification;
Class SB:	primary recreation and any other usage specified by the "SC" classification;
Class SC:	fish and wildlife propagation, secondary recreation, and other uses requiring waters of lower quality.

Supplemental Classifications

Trout Waters:	Suitable for natural trout propagation and maintenance of stocked trout;
Swamp Waters:	Waters which have low velocities and other natural characteristics which are different from adjacent streams;
NSW:	Nutrient sensitive waters which require limitations on nutrient inputs;
ORW:	outstanding resource waters which are unique and special waters of exceptional state or national recreational or ecological significance which require special protection to maintain existing uses.

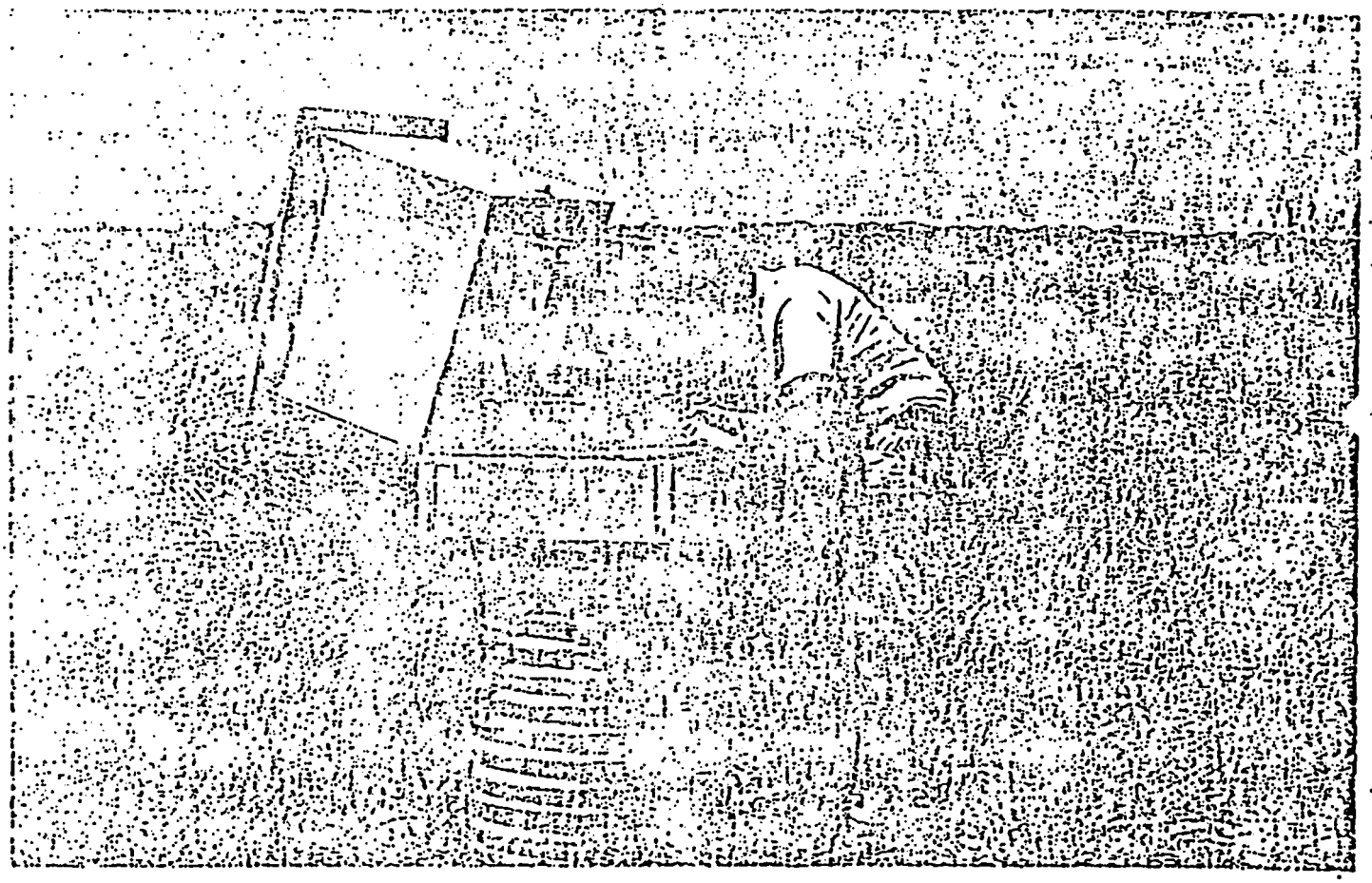
(d) Water Quality Standards. The water quality standards applicable to each classification assigned are those established in 15 NCAC 2B .0200, Classifications and Water Quality Standards Applicable to the Surface Waters of North Carolina, as adopted by the North Carolina Environmental Management Commission.

(e) Index Number

Name of Stream	Description	Class	Classification Date	Classification Index No.
	Creek			
Big Kennedy Creek	From source to Hunting Creek	WS-III	2/1/86	12-108-16-7
Long Branch	From source to Hunting Creek	WS-III	2/1/86	12-108-16-8
Skyview Lake	Entire lake and connecting stream to Hunting Creek	WS-III	2/1/86	12-108-16-9
Beaver Creek	From source to Hunting Creek	WS-III	2/1/86	12-108-16-10
Beaverdam Branch	From source to South Yadkin River	WS-III	2/1/86	12-108-17
Bear Creek	From source to Mocksville Water Supply Intake	WS-III	2/1/86	12-108-18-(1)
Little Bear Creek	From source to Bear Creek	WS-III	2/1/86	12-108-18-2
Blue Branch	From source to Little Bear Creek	WS-III	2/1/86	12-108-18-2-1
Bear Creek	From Mocksville Water Supply Intake to South Yadkin River	C	4/6/55	12-108-18-(3)
Baxter Creek (Beaver Creek)	From source to Bear Creek	C	4/6/55	12-108-18-4
South Yadkin River	From Cooleemee Dam to Yadkin River	C	9/1/74	12-108-(19)
Fourth Creek	From source to Statesville Water Supply Intake	WS-III	2/1/86	12-108-20-(1)
Fourth Creek	From Statesville Water Supply Intake to South Yadkin River	C	9/1/74	12-108-20-(2)
Morrison Creek	From source to Fourth Creek	C	9/1/74	12-108-20-3
Gregory Creek	From source to Morrison Creek	C	9/1/74	12-108-20-3-1
Third Creek (Third Creek WS No. 37)	From source to Fourth Creek	C	9/1/74	12-108-20-4
Brady Branch	From source to Third Creek	C	9/1/74	12-108-20-4-1
Doctors Branch	From source to Brady Branch	C	9/1/74	12-108-20-4-1-1
Back Creek	From source to Third Creek	C	9/1/74	12-108-20-4-2
Duck Creek	From source to Third Creek	C	9/1/74	12-108-20-4-3
I-L Creek	From source to Third Creek	C	9/1/74	12-108-20-4-4
Greasy Creek	From source to Third Creek	C	9/1/74	12-108-20-4-5
Little Creek	From source to Third Creek	C	9/1/74	12-108-20-4-6
Second Creek (North Second Creek)	From source to South Yadkin River	C	4/6/55	12-108-21
Back Creek	From source to Second Creek (North Second Creek)	WS-III	2/1/86	12-108-21-1
Sills Creek	From source to Back Creek	WS-III	2/1/86	12-108-21-1-1
Sloans Creek	From source to Second Creek (North Second Creek)	WS-III	2/1/86	12-108-21-2
Kerr Creek	From source to Sloans Creek	WS-III	2/1/86	12-108-21-2-1
Withrow Creek	From source to Second Creek (North Second Creek)	C	4/6/55	12-108-21-3
Weathers Creek	From source to Withrow Creek	C	4/6/55	12-108-21-3-1
Kerr Branch	From source to Weathers Creek	C	4/6/55	12-108-21-3-1-1
Rocky Branch	From source to Weathers Creek	C	4/6/55	12-108-21-3-1-2
Shinns Creek	From source to Weathers Creek	C	4/6/55	12-108-21-3-1-3
Westmoreland Creek	From source to Weathers Creek	C	4/6/55	12-108-21-3-1-4
Morrison Spring Branch	From source to Weathers Creek	C	4/6/55	12-108-21-3-1-5

Ref. 9

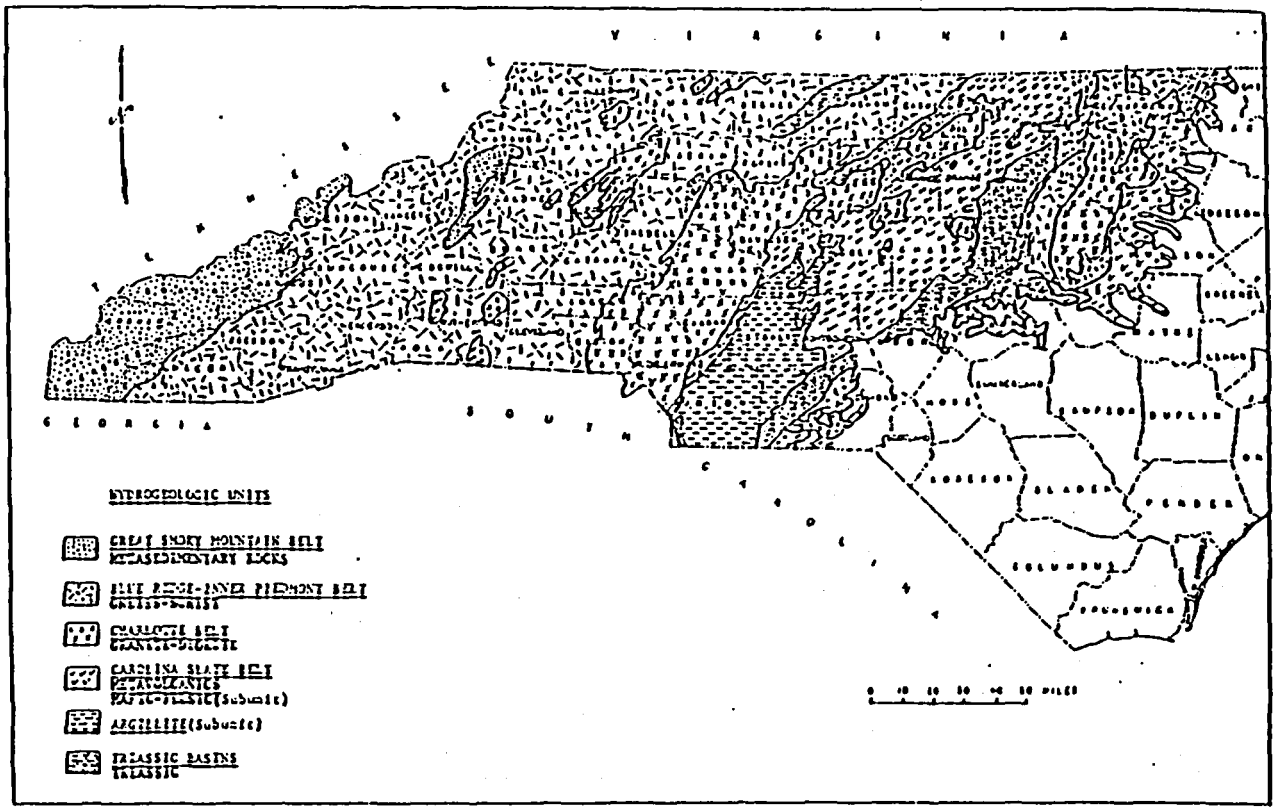
Basic Elements of Ground-Water Hydrology with Reference to Conditions in North Carolina



U.S. GEOLOGICAL SURVEY
WATER RESOURCES INVESTIGATIONS
OPEN-FILE REPORT 80-44

Prepared in cooperation with the
North Carolina Department of Natural
Resources and Community Development

Rock Units and Aquifers in the Piedmont and Mountains



The rocks underlying the Piedmont and mountains can be divided into two groups: (1) bedrock, and (2) saprolite (or residuum). The saprolite underlies the land surface and ranges in thickness from a foot or two near bedrock outcrops to more than 100 ft. Bedrock underlies the saprolite and is the parent rock from which the saprolite was derived in the process referred to as weathering.

Many stream valleys, especially those of larger streams, are underlain by a layer of material similar in composition to saprolite. This material, which has been deposited by the streams during floods, is correctly referred to as *alluvium*. However, to avoid unnecessary complications, we will lump the alluvium in with the saprolite for the purpose of this discussion.

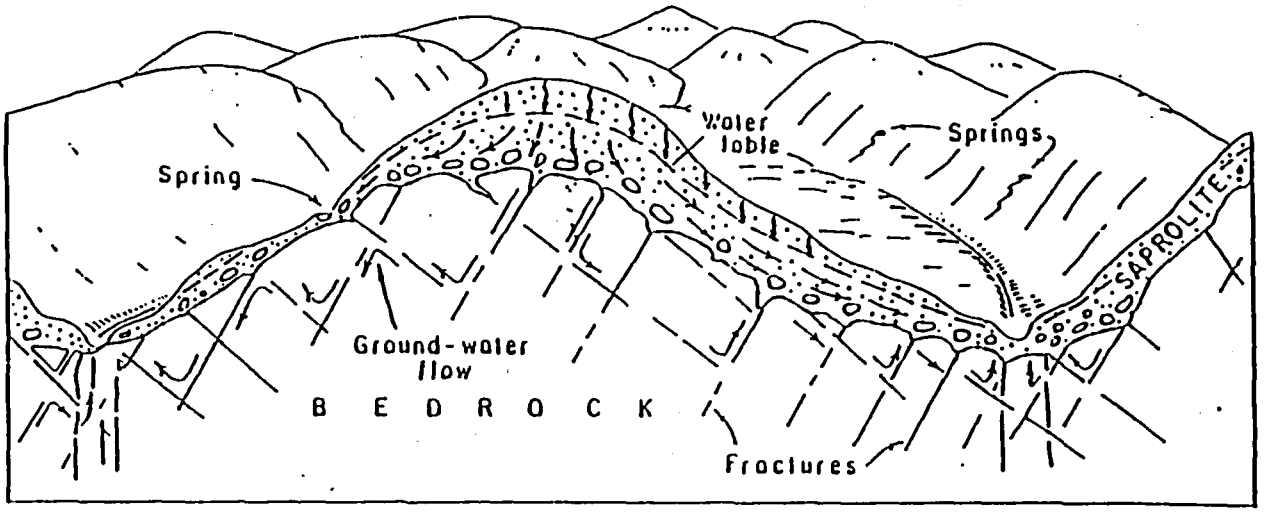
The bedrock underlying the Piedmont and mountains consists of many different types of igneous and metamorphosed igneous and sedimentary rocks. The Generalized Geological Map of North Carolina accompanying the discussion of WATER-BEARING ROCKS divides the bedrock in the Piedmont and mountains into six units. The 1:500,000 scale Geologic Map of North Carolina, published in 1958, divides the bedrock in the same area into 48 different units. But, a much larger number of units have been identified and are shown on large scale geologic maps.

The bedrock units differ from each other in mineral composition and other geologic characteristics. Fortunately, these differences do not result in large differences in hydraulic characteristics so that it is possible to combine the bedrock units into a relatively small number of hydrogeologic units.

The accompanying map shows the hydrogeologic units into which the bedrock in the Piedmont and mountains has been divided by the U.S. Geological Survey and the North Carolina Groundwater Section.

The most productive hydrogeologic units are the Great Smoky Mountain belt and the Blue Ridge-Inner Piedmont belt. The least productive units are the Carolina Slate Belt and the Triassic Basins. The Charlotte Belt is intermediate in productivity.

Ground-Water Situation in the Piedmont and Mountains



The *saprolite* (weathered rock) that forms the land surface in the Piedmont and mountains consists of unconsolidated granular material. It thus contains water in the pore spaces between rock particles.

The *bedrock*, on the other hand, does not have any significant intergranular (primary) porosity. It contains water, instead, in sheet-like openings formed along fractures (that is, breaks in the otherwise "solid" rock). Fractures in bedrock are of two types: (1) *joints*, which are breaks along which there has been no differential movement; and (2) *faults*, which are breaks along which the adjacent rocks have undergone differential movement.

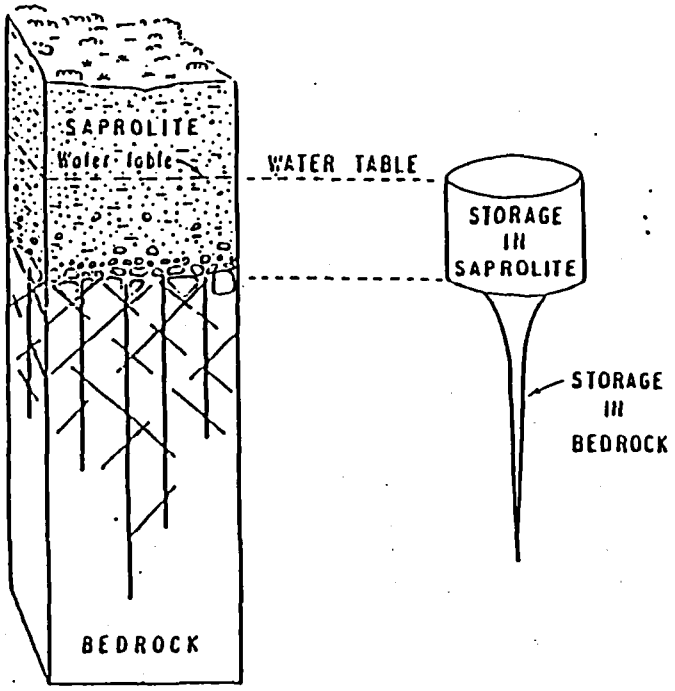
Faults are formed during earthquakes and generally contain larger and more extensive openings than those developed along joints. Joints, however, are far more numerous than faults.

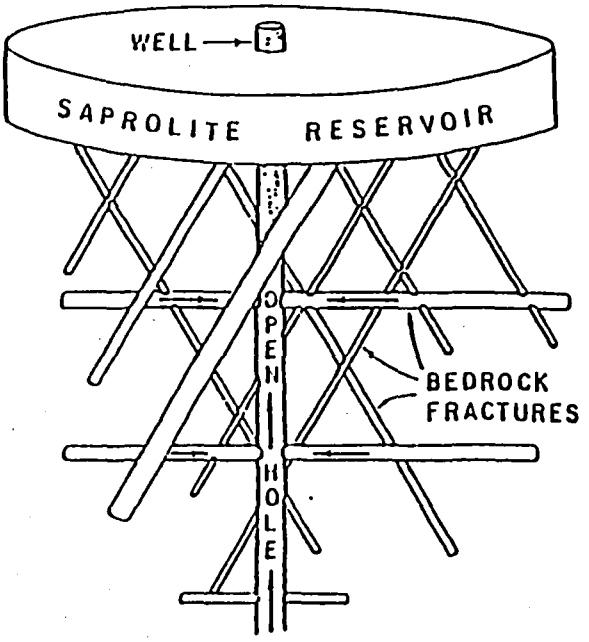
Fractures (joints and faults) are more abundant under valleys, draws, and other surface depressions than under hills. In fact, geologists assume that it is the presence of fractures that determined the position of valleys in the first place. Fractures tend to be more closely-spaced and the openings developed along them tend to be larger near the surface of the bedrock. Most fractures appear to be non water-bearing below a depth of 300 to 400 ft. Large water-bearing openings, penetrated below this depth are probably associated with faults.

The ground-water system in the Piedmont and mountains is recharged by precipitation on the interstream areas. A part of the precipitation infiltrates through the unsaturated zone to the water table, which normally occurs in the saprolite.

Ground water moves laterally and downward through the saprolite to points of ground-water seepage (springs) on the hillsides and to the streams in the adjacent valleys. Some of the water in the saprolite also moves downward into the bedrock and, thereafter, through the fractures to the adjacent valleys.

Hydraulic Characteristics of the Piedmont and Mountain Ground-Water System





One of the most basic concepts of ground-water hydrology is that aquifers function both as reservoirs, in which water is in storage, and as pipelines, which transmit water from one point to another. This is referred to as the *reservoir-pipeline concept*. This concept forms a useful basis on which to discuss the hydraulic characteristics of the Piedmont and mountain ground-water system.

The reservoir (storage) function of aquifers depends on the porosity. The pipeline function depends on the hydraulic conductivity and the thickness of the aquifer. The approximate range in porosity and hydraulic conductivity for the saprolite and bedrock is shown in the following table.

Rock type	Porosity in percent	Hydraulic conductivity in feet per day	
Saprolite	20-30	1-20	3.5×10^{-4} cm/s
Bedrock	0.1-1	1-20	7.0×10^{-3} cm/s

The above values suggest that the principal difference between saprolite and bedrock is in water-storage capacity. In other words, the saprolite has the capacity to store a much larger quantity of water than does the bedrock. This is not the entire story, however.

As we noted above, the capacity of an aquifer to transmit water depends both on hydraulic conductivity and on aquifer thickness. The part of the bedrock containing water-bearing fractures is several times thicker than the saprolite.

We can then, without great error, view the ground-water system in the Piedmont and mountains as consisting of a saprolite reservoir overlying a bedrock pipeline consisting of numerous small, interconnected pipes. In the vicinity of a pumping well the bedrock fractures ("pipes") convey water from the saprolite reservoir to the well.

The yield of a well drawing from fractured bedrock depends on several factors. The most important of these are believed to be:

1. The number, size, areal extent, and degree of interconnection of the fractures penetrated by the well,
2. The thickness of saturated saprolite in the vicinity of the well and the specific yield of the saprolite, and
3. The hydraulic conductivity of the saprolite and the nature of the hydraulic connection between the saprolite and the bedrock.

The number and the size of the fractures control the rate at which water can enter the well. The areal extent and degree of interconnection of the fractures control the size of the area that supplies water to the well.

The thickness and the specific yield of the saprolite determines the volume of water available from storage in the saprolite. The hydraulic conductivity of the saprolite and the nature of the hydraulic connection between the saprolite and the bedrock determines the rate at which water can drain from the saprolite into the bedrock fractures.

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

Ref. 11

DIVISION OF MINERAL RESOURCES
JASPER L. STUCKEY, STATE GEOLOGIST

BULLETIN NUMBER 68

GEOLOGY AND GROUND WATER IN THE Statesville Area, North Carolina

BY
HARRY E. LEGRAND
GEOLOGIST, U. S. GEOLOGICAL SURVEY

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

1954

Records of Springs in Iredell County

No.	Location	Owner or Name	Chief Aquifer	Yield (gpm)	Remarks
A	13 miles N of Statesville	Eupeptic Springs	Hornblende gneiss	1	According to N. C. Economic Paper 15, p. 112 water has total solid content of 122 parts per million.
B	Turnersburg	Town of Turnersburg	do	7	Analysis. Temperature 59½°F. Spring emerges from base of cove about 350 feet south of Rocky Creek.
C	1½ mile W of Presbyterian Orphanage (2 miles N of Troutmans)	Barium Springs	Granite gneiss	1½	A series of 9 springs, Barium Springs being the largest. Described in N. C. Economic Paper 15.
D	2 miles S of Mooresville	Greswell Spring	Granite	½	According to N. C. Economic Paper 15 water has total solid content of 315 parts per million.
E	3 miles S of Mooresville	Mt. Mourne Spring	do	16	Analysis. Flows from top of bedrock at the base of a steep draw.

Chemical Analyses of Ground Water From Iredell County
(Numbers at heads of columns correspond to well numbers in table of well data)

Parts per million

	32	35	36	56	72	86
Silica (SiO_2)	9.9	31	31		31	12
Iron (Fe), total	.50	1.3	.96	.18	8.7	.10
Iron (Fe), in solution	.06	.02	.02		.07	.03
Calcium (Ca)	1.8	6.8	6.5		5.3	1.9
Magnesium (Mg)	.8	2.1	2.0		2.7	1.1
Sodium and potassium (Na + K)	3.5	8.6	7.6		10	1.3
Carbonate (CO_3)	0	0	0		0	0
Bicarbonate (HCO_3)	15	18	50	78	37	12
Sulfate (SO_4)	1.2	3.7	1.6	11	13	2.3
Chloride (Cl)	1.1	1.1	1.2	1	1.1	2.2
Fluoride (F)	.1	.1	.1	.1	.2	.1
Nitrate (NO_3)	.1	.1	.0		.1	3.6
Dissolved solids	25	80	77		80	33
Total hardness as $CaCO_3$	8	27	28	68	21	9
pH	6.1	6.7	6.7		6.5	5.75
Rock type	Granite gneiss	Granite gneiss and hornblende gneiss	Granite gneiss	Hornblende gneiss	Granite gneiss	Granite gneiss
Date of collection	May 24, 1950	May 24, 1950	May 24, 1950	Nov. 30, 1943	May 24, 1950	July 28, 1948

	89	90	91a	99	B	E
Silica (SiO_2)	31	24	26	24	17	15
Iron (Fe), total	1.7	.13	.11	5.7	.99	.01
Iron (Fe), in solution			.02	.07	.02	.02
Calcium (Ca)	7.6	11	1.6	37	7.1	2.2
Magnesium (Mg)	3.1	1.0	2.1	7.6	3.8	.8
Sodium and potassium (Na + K)	10	4.7	6.0	13	5.5	1.0
Carbonate (CO_3)	0	0	0	0	0	0
Bicarbonate (HCO_3)	11	53	38	132	28	15
Sulfate (SO_4)	9.8	1.5	1.5	31	2.7	.7
Chloride (Cl)	5.2	3.0	1.5	2.8	8.5	2.0
Fluoride (F)	.1	.0	.1	1.5	.0	.1
Nitrate (NO_3)	.1	1.0	.2	.1	9.1	1.0
Dissolved solids	93	81	65	187	77	30
Total hardness as $CaCO_3$	32	41	20	121	33	9
pH	6.55	6.5	6.5	7.0	6.0	5.8
Rock type	Granite gneiss	Granite gneiss	Granite gneiss	Granite gneiss	Hornblende gneiss	Granite
Date of collection	Sept. 21, 1948	Sept. 21, 1948	July 28, 1948	May 25, 1950	June 21, 1950	Apr. 10, 1951

Analyzed by the Quality of Water Branch, U. S. Geological Survey.

RECORDS OF WELLS IN IREDELL COUNTY—*Continued*

Well no.	Location	Owner	Date completed	Topography	Depth (ft.)	Diameter (in.)	Depth of casing (ft.)	Water-bearing material	Water level (ft.)	Yield (gpm)	Remarks
	Statesville	Phoenix Mills	1944	Hill	775	10	57	Mica schist		0	
	do	do	1943	do	779	10	56	do		15	
59	do	do	1944	do	802	10	57	do		0	
60	2 miles E of Statesville	Roy Blackwelder			107	2	52	Granite gneiss		5	
61	2 miles W of Statesville	Mr. Freeze		Slope	115	2	59	Hornblende gneiss	35	1	
62	do	Ivy Bridges		Hill	168	2	80	do		5	
63	do	C. A. Sykes	1947	do	93	6	67	do	10	12	Pumping level 90 feet.
64	1 mile W of Statesville	Hines' Grocery		Flat	19	2	11	do		8	
65	Statesville	Stimpson Hosiery Mills		Hill	500	8	61	Mica schist	10	20	Pumping level 110 feet.
66	do	Iredell County Schools		Flat	300	2		Granite gneiss			Good yield.
67	1 mile E of Statesville	Paul Lippord		Hill	170	2	36	do		3	
68	1 mile SE of Statesville	Silver Fine Grill	1944	do	393	6		do	50	1	Pumping level 125 feet
69	8 miles SW of Statesville	W. V. Fox	1949	do	326	6		Mica schist		0	
70	do	do	1950	Flat	85	6	61	do	15	30	Pumping level 60 feet.
71	7 miles SW of Statesville	Beaver Service Station			130	2		Granite gneiss		5	
72	6 miles SW of Statesville	Mr. Ingram		Slope	80	2	63	do	18	1	Analysis. Temperature 59°F.
73	do	N. D. Steele	1930	Hill	175	1½	122	do	30	7	Pumping level 110 feet.
74	5 miles SW of Statesville	Iredell County Schools		do	220	4		do		11	Pumping level 70 feet.
75	do	do		do	92	2	65	do		1	
76	3 miles SW of Statesville	Ralph Cody		do	155		90	Hornblende gneiss		5	
77	do	Levin Gregory	1946	Slope	88	6	50	do	37	20	Pumping level 85 feet.
78	2 miles S of Statesville	Don Shephard		Hill	200	2	75	Mica schist		5	
79	7 miles SE of Statesville	C. L. Reitzel	1948	Flat	220	6	11	Diorite	15	20	Pumping level 100 feet.
80	do	Parks Shell		do	100	2	12	do		6	
81	do	Robertson Chemical Co.	1950	Slope	1100	6	111	Granite gneiss	29	20	Pumping level 150 feet.
82	do	do	1950	do	330	6	127	do	40	20	Pumping level 110 feet.
82a	9 miles NW of Troutmans	W. K. Sigmon		Hill	92	2	69	Granite			
83	3 miles NW of Troutmans	Arthur Little		Slope	55	2	53	Mica schist		5	
84	2 miles N of Troutmans	Presbyterian Orphan Home		do	300	8		Granite gneiss		10	
85	do	do		Hill	350	6		do		18	
86	do	do	1921	Slope	60	6		do		21	Analysis.
87	do	Tom Morse		do	60	2	15	do		5	
88	1 mile N. of Troutmans	Blanton Moore			173	2	63	do		5	
89	Troutmans	Town of Troutman	1921	Hill	500	8	100	do		25	Analysis.
90	do	do	1942	Draw	560	8	111	do	32	60	Analysis. Pumping level 150 feet.
91	do	Troutman Shirt Co.	1942	Slope	330	8	111	do		35	
91a	do	American Thread Co.	1942	do	400	8	101	do	18	27	Analysis. Pumping level 150 feet.
92	do	Town of Troutmans	1950	do	370	6	69	do	35	45	Pumping level 125 feet.
93	do	James Goodman		Hill	95	2	71	do		5	
94	do	Town of Troutmans	1941	Slope	203	6		do	18	45	Pumping level 150 feet.
95	1 mile SW of Troutmans	Albert Winecoff		do	151	2	73	do		5	
96	do	Junior Malcom		do	203	2	110	do	60	3	
97	4 miles W of Troutmans	Frank Elliott		Hill	210	2	110	Mica schist		5	
98	do	Will Outwalt		do	170	2	77	do			Fair yield.
99	4 miles SW of Troutmans	Superior Yarn Mills	1948	Valley	115	10	185	Granite gneiss	15	23	Analysis. Pumping level 205 feet.
100	do	do	1943	Hill	100	8	51	do		6	
101	do	do	1943	do	100	8	102	Mica schist		3	
102	do	do	1943	do	505	8	15	Granite gneiss		3	
102a	2 miles SE of Troutmans	R. L. Privette	1950	Flat	110	6	105	do	70	25	Pumping level 95 feet.
103	5 miles E of Troutmans	Iredell County Schools		do	300	6		do		21	
104	4 miles S of Troutmans	Mr. McDaniels		Hill	70	2	61	do		5	
105	7 miles NW of Mooresville			do	119	2	70	do		3	
106	6 miles NW of Mooresville	Walter Howard		do	101	2	91	Hornblende gneiss	10		
107	do	Troy Roberson		do	80	2		do	35	5	
108	5 miles NW of Mooresville	Forrest Thompson		Slope	202	2	107	do		5	
109	2 miles N of Mooresville	R. C. Millsap	1948		500	6		Granite			
110	2 miles NE of Mooresville	Mr. Carrigan		Flat	117	2½	50	do		1	
111	do	Sam Alexander		do	120	2½	50	do		1	
112	Mooresville	Mrs. C. P. McNeely		Slope	150	6		do		20	
113	do	Johnston Ice Co.	1920	do	118	6		do	25	12	Pumping level 100 feet.
114	do	Mooresville Furniture Co		do	270	2		do	25	7±	
115	do	Town of Mooresville		do	100	6		do	25	80	Drawdown 100 feet. Well abandoned.
116	5 miles W of Mooresville	Iredell County Schools		Hill	100	6		Diorite	35	22	Pumping level 9 feet.
117	3 miles SW of Mooresville	W. H. Keeter		Slope	107	2	133	Granite		5	
118	2 miles S of Mooresville	Gene Miller		do	121	2	42	do		5	
119	do	James Honeycutt		do	70	2	13	do		5	

RECORDS OF WELLS IN IREDELL COUNTY

Well no.	Location	Owner	Date completed	Topography	Depth (ft.)	Diameter (in.)	Depth of casing (ft.)	Water-bearing material	Water level (ft.)	Yield (gpm)	Remarks
1	7 miles NW of Harmony	Iredell County Schools		Flat	330	2		Granite gneiss			Good yield reported.
2	3 miles N of Harmony	R. H. Kennedy			200	2	80	Hornblende gneiss		5	
2a	4 miles NE of Harmony	Wade Smith			120			Granite gneiss		40	
3	3 miles SW of New Hope	D. R. Milsaps		Hill	320	2	60	Mica schist		0	
4	do	do		Slope	77	2		do		4	
5	8 miles SW of New Hope	Fred Clanton		Hill	160	2	10	do		10	
6	do	Ed Clanton		Flat	210	2	60	do	35	5	
7	5 miles W of Harmony	Harfield de Farm	1941	Hill	241	6	100	do	51	10	
8	4 miles SW of Harmony	T. D. Moore		do	210	2	65	do		0	
9	Harmony	Harmony Baptist Church		Slope	135	6		do		0	
10	do	L. S. Williams		Hill	99	6	78	do	32	6	Drawdown 60 feet.
11	do	Iredell County Schools		Flat	240	2					Good yield reported.
12	do	Mr. Deerman		do	160	2	60	Granite gneiss		2	
13	1 mile S of Harmony	Ed Massey		do	150	2	60	do		6	
14	2 miles S of Harmony	W. A. Jones		Hill	74	6	11	Mica schist	35	3	Drawdown 39 feet.
15	6 miles S of New Hope	Mrs. Ruth Shaver		Flat	251	2	57	Granite gneiss	10	3	
16	do	Iredell County Schools		Slope	330	4		do	25	11	Drawdown 35 feet.
17	7 miles W of Turnersburg	Henry Hicks		Hill	140	2	65	do		1	
18	3 miles W of Turnersburg	W. C. Church		Slope	251	2	50	do		6	
19	do	R. C. Church		do	260	2	76	do	50	5	
19a	Turnersburg	Rocky Creek Mills	1931	do	176	6	10	Hornblende gneiss	50	22	18 gallons a minute at 150 foot Pumping level. 22 gallons a minute at 290 foot Pumping level.
19b	do	C. V. Henkle	1951	Hill	152	6	11	do	15	3	Pumping level 150 feet.
19c	do	do	1951	do	162	6	67	do	85	10	Do
19d	do	do	1951	do	150	6	98	do	15	20	Pumping level 105 feet.
20	7 miles NW of Statesville	W. O. Weston		do	210	2	10	Granite gneiss	60	5	
21	6 miles NW of Statesville	Ken Watt		do	115	2	99	do	52	2	
22	5 miles NW of Statesville	Mr. Marlowe		do	221	2		do	65	1	
23	6 miles NE of Statesville	Harry Patterson		do	250	2	10	Hornblende gneiss		0	
24	do	do		Slope	68	2		do		5	
25	do	W. P. Frazier			200	2	10	do		6	
26	5 miles NE of Statesville	Roy Thomas		Hill	112	2	65	do		5	
27	5 miles SE of Turnersburg	Iredell County County		do	300	3		Granite gneiss		11	Pumping level 80 feet.
28	6 miles SE of Turnersburg	R. C. Robertson		Slope	130	2		do		3	
29	10 miles NE of Statesville	Mr. White		Valley	63	2	12	do	18	1	
30	8 miles NW of Statesville	Brights Fiemster		Flat	110	2	120	do	30	5	
31	do	Iredell County Schools		do	190	4		do	25	17	Pumping level 95 feet.
32	7 miles NW of Statesville	R. D. Murdock		Hill	93	2		do	10	8	Analysis. Temperature 59½°F.
33	do	M. W. Brown		do	102	2	83	do	55	5	
34	6 miles NW of Statesville	Mrs. T. W. Vickery		do	233	2	60	do	60	3	
35	5 miles NW of Statesville	M. J. Hutto		Slope	97	2	60	do	22	5	Analysis. Temperature 61½°F.
36	do	L. W. Stevens		Hill	108	2	80	do	60	5	Analysis. Temperature 57½°F.
37	do	P. S. West	1948	do	931	6	67	do	31	3	Pumping level 200 feet.
38	do	Davie Cooke		do	217	2	61	do	70	7	
39	3 miles NW of Statesville	Walter Morrison		do	210	2		do	50	4	
39a	3 miles N of Statesville	Paul Lippord		Slope	89	2	73	Hornblende gneiss		5	
40	do	Lodie Gibson		do	190	2	110	do	12	5	Temperature 62°F.
41	2 miles N of Statesville	Bill Moore		Flat	13	2	12	do		5	
42	do	Gaither's Store		Hill	135	2	11	do	30	8	
43	do	R. F. Gray		Flat	80	2		do		8	
44	1 mile N of Statesville	Jack Wagner	1950	Hill	210	6	34	do	15	15	Pumping level 123 feet.
45	2 miles NE of Statesville	Shelton Miller		do	256	2	61	Granite gneiss		0	
46	4 miles NE of Statesville	C. A. Sykes	1939	do	370	6	28	do	31	11	Pumping level 273 feet.
47	3 miles NE of Statesville	Gurley's Tavern	1948	Slope	101	6	17	do	15	7	Pumping level 93 feet.
47a	4 miles NE of Statesville	J. C. Lackey	1931	Flat	173	6	16	do	25	11	Pumping level 15 feet.
48	do	H. Shelton Miller	1940	Hill	83	6	53	do	35	18	Pumping level 70 feet.
49	6 miles NE of Statesville	Fred Sharpe		do	160	2	31	do	30	0	
50	8 miles W of Statesville	A. E. Gray		Slope	210	2		Hornblende gneiss		2	
51	do	do		do	180	2		do		5	
52	7 miles W of Statesville	Rochelle Brown		Flat	122	2	81	do		5	
53	do	T. E. McNeely		?	102	2	61	do		5	
54	3 miles W of Statesville	Woodrow Lyton		Hill	180	2	12	do	30	0	
55	2 miles W of Statesville	Mr. Coleman		Slope	116	2	51	do	17	10+	Reported to be a good well.
56	do	Carnation Milk Co	1949	do	503	10	150	do	31	500+	Analysis. Temperature 61½°F. Tested for 22 hours, yielding 660 gallons a minute with 91 foot pumping level.

About 5 miles east of Turnersburg is an area of less than 1 square mile where a light-colored sandy soil overlies a subsoil composed of unsorted quartz gravel and arkosic material. This area probably represents an outlying remnant of the Triassic deposits that occur several miles to the northeast in Davie County.

Ground water.—All water supplies, with the exception of the municipal supplies of Statesville and Mooresville, are obtained from wells and springs. Although springs are extremely common, they are not generally used, probably owing to the facts that they are not readily accessible and that their individual yields average less than 3 gallons a minute. Dug and bored wells ending in the weathered mantle rock and drilled wells 2- to 4- inches in diameter penetrating bedrock are the most common sources of rural water supply. Drilled wells 6 inches in diameter and larger furnish water for large rural uses and for some industries.

The yields of wells in Iredell County are similar to those in adjacent counties. Almost all wells are located on hills where, as has been shown earlier, they are prone to be relatively unproductive. With the exception of one well which is capable of yielding 500 gallons a minute, the average yield of drilled wells 6 inches or larger in diameter is less than 19 gallons a minute. As a result of the unfavorable locations of wells this average yield is less than it would be if wells were distributed over all types of topographic locations, particularly if they were located in valleys and draws.

Several geologic factors suggest that adequate well supplies are available for most needs. Most of the rocks have prominent gneissoid and schistose structures along which are fractures capable of transmitting water. A thick layer of mantle rock overlies the bedrock in most places. Although the mantle rock contains much clay it, nevertheless, acts as a reservoir to continuously feed the fractures in the underlying bedrock. The thickness of the mantle rock is indicated by the 70-foot average depth of well casing. The thick mantle rock serves as evidence that precipitation can percolate downward through it and the underlying fractures in the bedrock to surface outlet points, and consequently, that fractures do exist. The extensive occurrence of hornblende gneiss, gabbro, and diorite, whose fractures are especially prone to enlargement by solution, is a favorable consideration for the development of large-yielding wells.

Except locally there is not much difference in the water-bearing characteristics of different parts of the county. However, the area underlain by hornblende gneiss west of Statesville appears to be favorable for large supplies. One well (56) located on a saddle between two draws in this hornblende gneiss was tested at 660 gallons a minute with a drawdown of less than 60 feet. Along parts of most of the streams are deposits of sand and gravel which are believed capable of furnishing large supplies of water to wells.

Analyses of ten samples of water from wells in Iredell County are given in the table of analyses. Nine of the samples are from wells in granite and granite gneiss and one is from a well in hornblende gneiss.

Eight of the samples from granite and granite gneiss had a hardness of less than 45 parts per million and the iron content of five samples was 0.5 part per million or less. Well 99, supposedly in granite, yielded water having a total hardness of 124 parts per million and a dissolved-solids content of 187 parts per million. Because the quality of water in this well is more nearly characteristic of hornblende gneiss than of granite, it is probable that one or more beds of hornblende gneiss were penetrated.

Well 56, in hornblende gneiss, yielded water that had a total hardness of 68 parts per million, or about twice that of the average sample from granite.

The temperature of well waters range from 50° to 61°F.

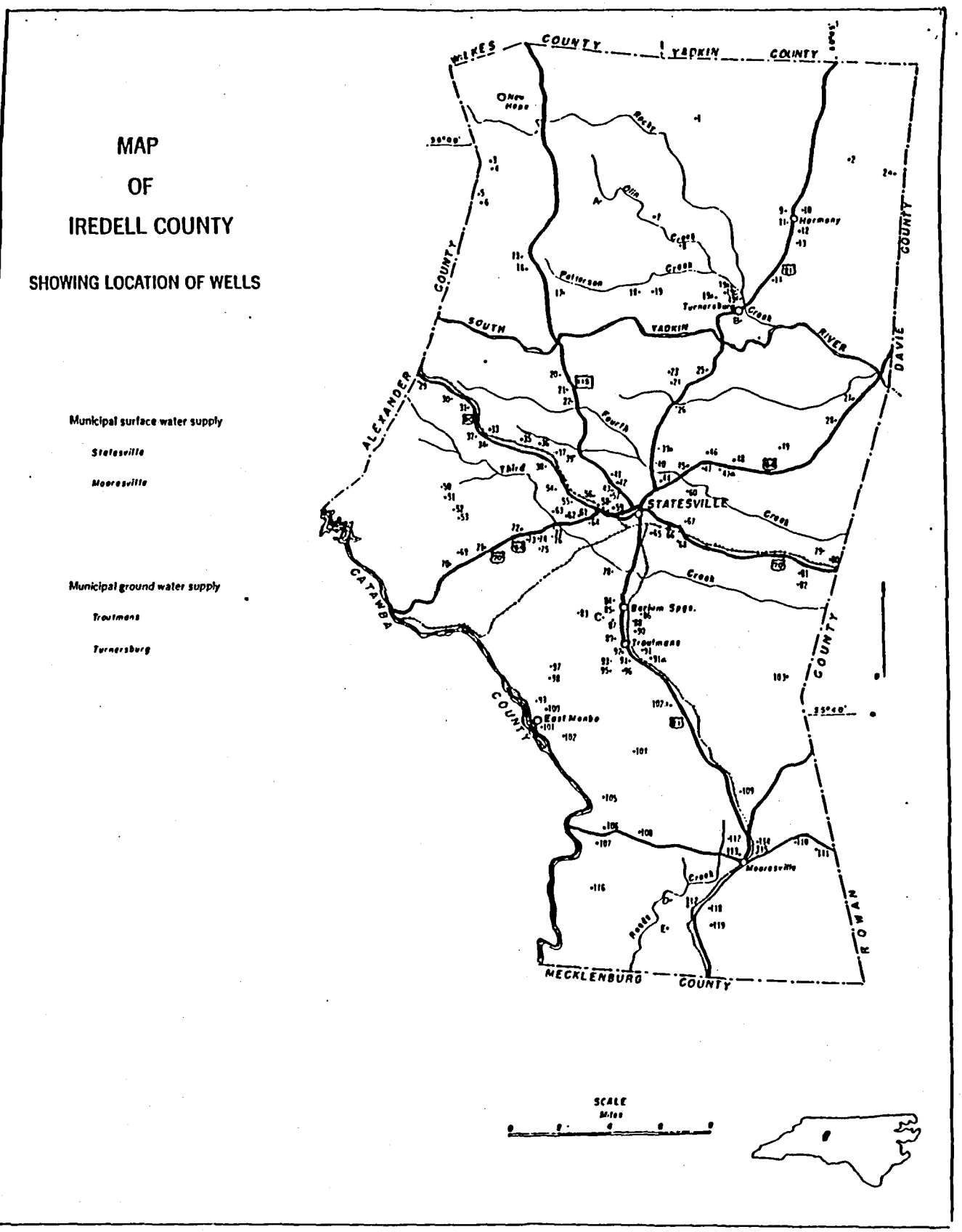
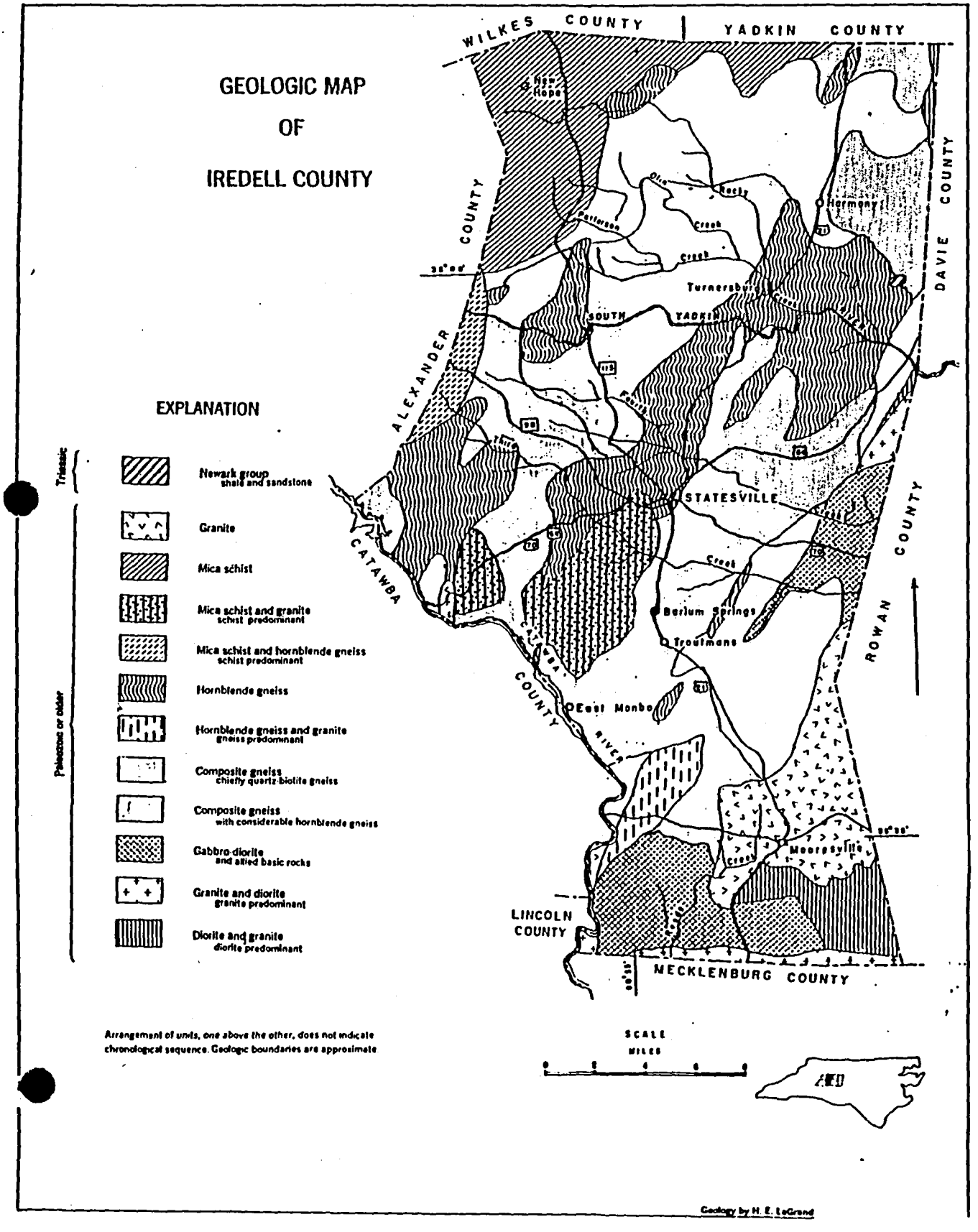


FIGURE 14.—*Map of Iredell County showing location of wells.*


GEOLOGIC MAP
OF
IREDELL COUNTY
EXPLANATION
Triassic
Newark group
shale and sandstone
Paleozoic or older
Granite
Mica schist
Mica schist and granite
schist predominant
Mica schist and hornblende gneiss
schist predominant
Hornblende gneiss
Hornblende gneiss and granite
gneiss predominant
Composite gneiss
chiefly quartz-biotite gneiss
Composite gneiss
with considerable hornblende gneiss
Gabbro-diorite
and allied basic rocks
Granite and diorite
granite predominant
Diorite and granite
diorite predominant
Arrangement of units, one above the other, does not indicate chronological sequence. Geologic boundaries are approximate
WILKES COUNTY
YADKIN COUNTY
DAVIE COUNTY
ALEXANDER COUNTY
CATAWBA COUNTY
ROWAN COUNTY
LINCOLN COUNTY
MECKLENBURG COUNTY
New Hope
Harmony
Turnersburg
SOUTH YADKIN
STATESVILLE
Berlum Springs
Troutmans
East Monbo
Mooresville
Rocky
Creek
Fourth
Third
SCALE
MILES
Geology by H. E. LeGrand

Ref. 12

Series 1960, No. 14

Issued June 1964

SOIL SURVEY

Iredell County North Carolina

OUR SOIL • OUR STRENGTH

UNITED STATES DEPARTMENT OF AGRICULTURE
Soil Conservation Service
In cooperation with
NORTH CAROLINA AGRICULTURAL EXPERIMENT STATION

are not erod[illegible]l are suited to many crops. Corn [illegible]ns are the chief crops, but tobacco is grown in some places north of the South Yadkin River. The soils are not so well suited to alfalfa as the Lloyd, Davidson, and Hiwassee soils of association 2.

2. Lloyd-Cecil Association

Deep, gently sloping to strongly sloping, well-drained soils with a subsoil of yellowish-red to dark-red clay, on gneiss and mixed acidic and basic rocks

This soil association makes up about 27 percent of the county. The areas are on broad ridges and steep slopes adjacent to the major drainageways. They are mainly in the west-central and northern parts of the county, although a small area is in the extreme southern part of the county next to the Mecklenburg County line. The dominant soils in the association are the Lloyd and Cecil. They are deep, well-drained soils of the uplands, and they have a well-developed profile.

The Lloyd and Cecil soils are in similar positions. In many places they lie side by side, but most of the areas next to drainageways are occupied by Cecil soils. The Lloyd soils make up 43 percent of the association. They formed in mixed material weathered from acidic and basic rocks. The Cecil soils make up 35 percent of the associa-[illegible]. They formed in material weathered from fine-[illegible]ned granite, gneiss, schist, and other acidic rocks.

The Lloyd soils have a surface layer of reddish-brown to dark reddish-brown fine sandy loam or loam, and their subsoil is red to dark-red, firm clay. The surface layer of the Cecil soils is reddish-brown to grayish-brown fine sandy loam or sandy loam, and their subsoil is red, friable or firm clay.

The Appling, Davidson, and Madison soils occupy a smaller acreage in the association. The Appling and Davidson soils are well drained. They are in positions similar to those occupied by the Lloyd and Cecil soils, but the Davidson soils are near the Lloyd, and the Appling soils are near the Cecil. In places the Appling and Cecil soils are side by side on the same slope. The Madison soils are in positions similar to those occupied by the Lloyd and Cecil soils.

Strongly sloping to steep areas of this association are occupied by other minor soils—the Louisburg, Louisa, and Wilkes. These soils are well drained and are shallow over bedrock. They have little or no horizon differentiation.

In draws along intermittent drains, on toe slopes at the base of some steep slopes, at the heads of streams, and in other positions where there are deposits of local alluvium and colluvium are the Starr, Colfax, and Worsham soils and Local alluvial land. On the stream terraces are the Hiwassee, Wickham, and Altavista soils and the Warne and Roanoke soils. These minor soils are well drained to poorly drained.

Most of this association is in capability classes II and [illegible] Except for the steep areas, most of the acreage was [illegible]ed at some time, but the areas that have been severely eroded and gullied have mostly reseeded to Virginia pine. About 55 percent of the acreage is now used for crops. The farms are generally less than 100 acres in size, and most of them are operated full time by the owner. Dairy farms and farms on which cotton and small grains are grown are dominant.

The soils in this association are susceptible to erosion, but they respond well to good management. The areas that are not severely eroded are fairly easy to till and are well suited to corn, cotton, small grains, hay, and pasture. The Lloyd, Davidson, and Hiwassee soils are the best soils for alfalfa. Many of the strongly sloping and moderately steep areas in this association are in pasture.

3. Lloyd Association

Deep, well-drained soils with a subsoil of dark-red clay on broad ridges that have short side slopes, on mixed acidic and basic rocks

This soil association makes up about 11 percent of the county. It is next to drainageways on broad, gently sloping ridges that have short side slopes. The areas are mainly north of Statesville, west of Elmwood, and in the southeastern corner of the county next to the Rowan County and Cabarrus County lines.

The Lloyd soils make up 75 percent of the association. They have a well-developed profile and are deep and well drained. These soils formed on uplands in thick beds of material weathered from mixed acidic and basic rocks. In areas that are not severely eroded, their surface layer is dark reddish-brown to reddish-brown loam or fine sandy loam, and their subsoil is dark-red, friable or firm clay. In areas that are severely eroded, the surface layer is dark-red clay loam.

The Cecil, Davidson, and Mecklenburg soils occupy a minor part of this association. They are well drained and are on uplands. These soils are in positions similar to those occupied by the Lloyd soils, and in many places they are adjacent to the Lloyd soils.

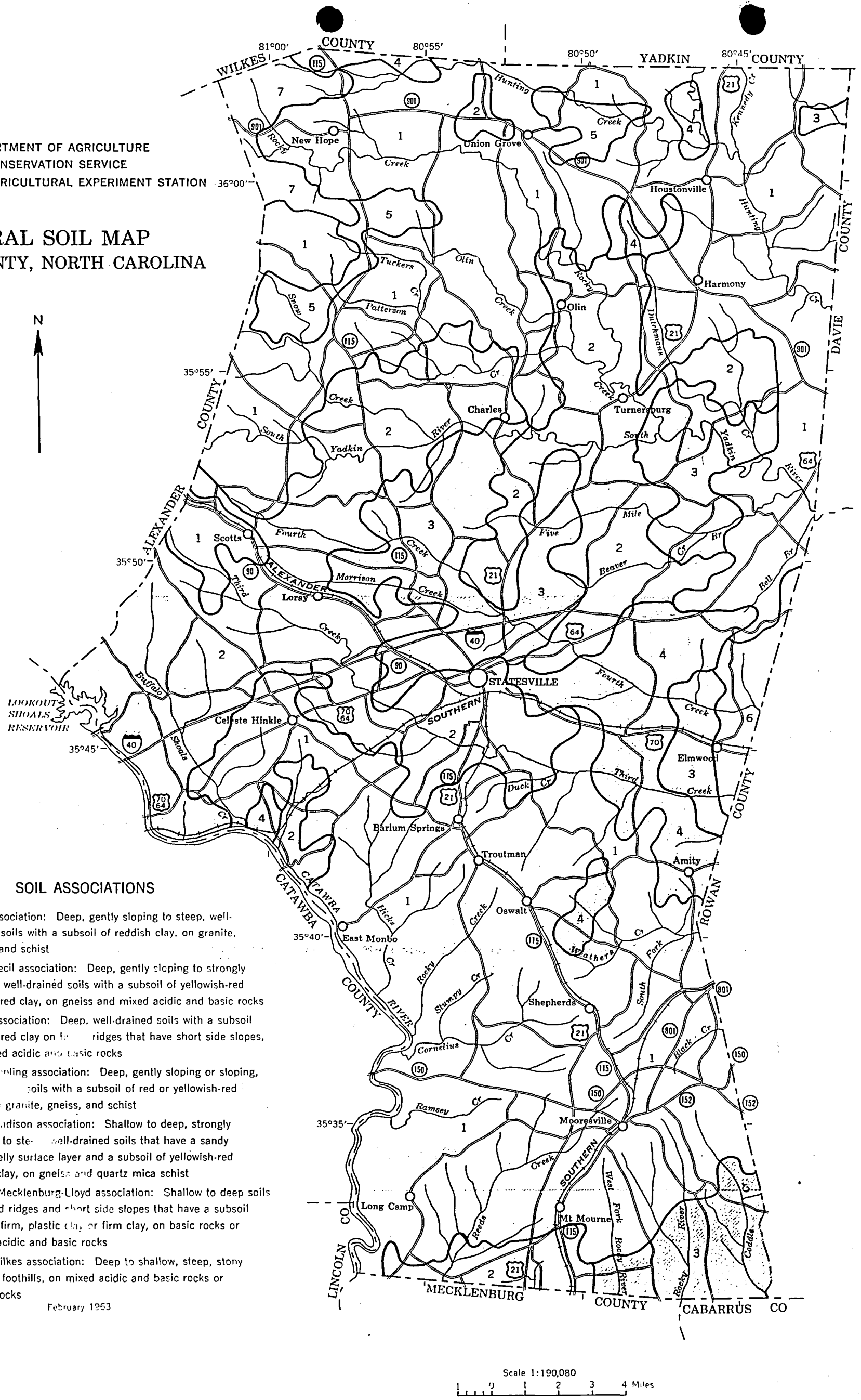
Other minor soils are the Iredell soils, which are on some of the ridgetops. In addition there are sloping to steep areas of Wilkes soils and areas of Louisburg and Louisa soils, which are shallow over bedrock and have little or no horizon differentiation. In draws along intermittent drainageways, at the heads of some permanent streams, and on toe slopes at the base of steep slopes are the Starr, Colfax, and Worsham soils and Local alluvial land. Hiwassee, Altavista, and Warne and Roanoke soils are on stream terraces, and Congaree, Chewacla, and Wehadkee soils and Mixed alluvial land are on first bottoms. These minor soils range from well drained to poorly drained. They occupy only a small acreage in the association.

Most areas of this association are in capability classes II and III. Except for the steep areas, most of the acreage was cleared at some time, but the areas that have been severely eroded have mostly reseeded to Virginia pine. Now, in most places about two-thirds of the acreage is in crops. In the southeastern corner of the county, however, slightly less than half of the acreage is used for crops. The farms are about 100 acres in size, and most of them are operated by the owner. Dairying, the raising of poultry and beef cattle, and the growing of cotton and small grains are the chief farm enterprises.

The soils in this association are susceptible to erosion. In places they are difficult to till, but they respond well to good management. The soils are well suited to corn, small grains, alfalfa, lespedeza, and pasture. Many of the sloping to moderately steep areas are in pasture.

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
NORTH CAROLINA AGRICULTURAL EXPERIMENT STATION

GENERAL SOIL MAP
IREDELL COUNTY, NORTH CAROLINA



SOIL ASSOCIATIONS

1	Cecil association: Deep, gently sloping to steep, well-drained soils with a subsoil of reddish clay, on granite, gneiss, and schist
2	Lloyd-Cecil association: Deep, gently sloping to strongly sloping, well-drained soils with a subsoil of yellowish-red to dark-red clay, on gneiss and mixed acidic and basic rocks
3	Lloyd association: Deep, well-drained soils with a subsoil of dark-red clay on broad ridges that have short side slopes, on mixed acidic and basic rocks
4	Cecil-Appling association: Deep, gently sloping or sloping, well-drained soils with a subsoil of red or yellowish-red clay, on granite, gneiss, and schist
5	Cecil-Madison association: Shallow to deep, strongly sloping to steep, well-drained soils that have a sandy or gravelly surface layer and a subsoil of yellowish-red to red clay, on gneiss and quartz mica schist
6	Iredell-Mecklenburg-Lloyd association: Shallow to deep soils of broad ridges and short side slopes that have a subsoil of very firm, plastic clay, or firm clay, on basic rocks or mixed acidic and basic rocks
7	Cecil-Wilkes association: Deep to shallow, steep, stony soils of foothills, on mixed acidic and basic rocks or acidic rocks

February 1963

Scale 1:190,080
1 0 1 2 3 4 Miles

NORTH CAROLINA ATLAS

PORTRAIT OF A CHANGING SOUTHERN STATE

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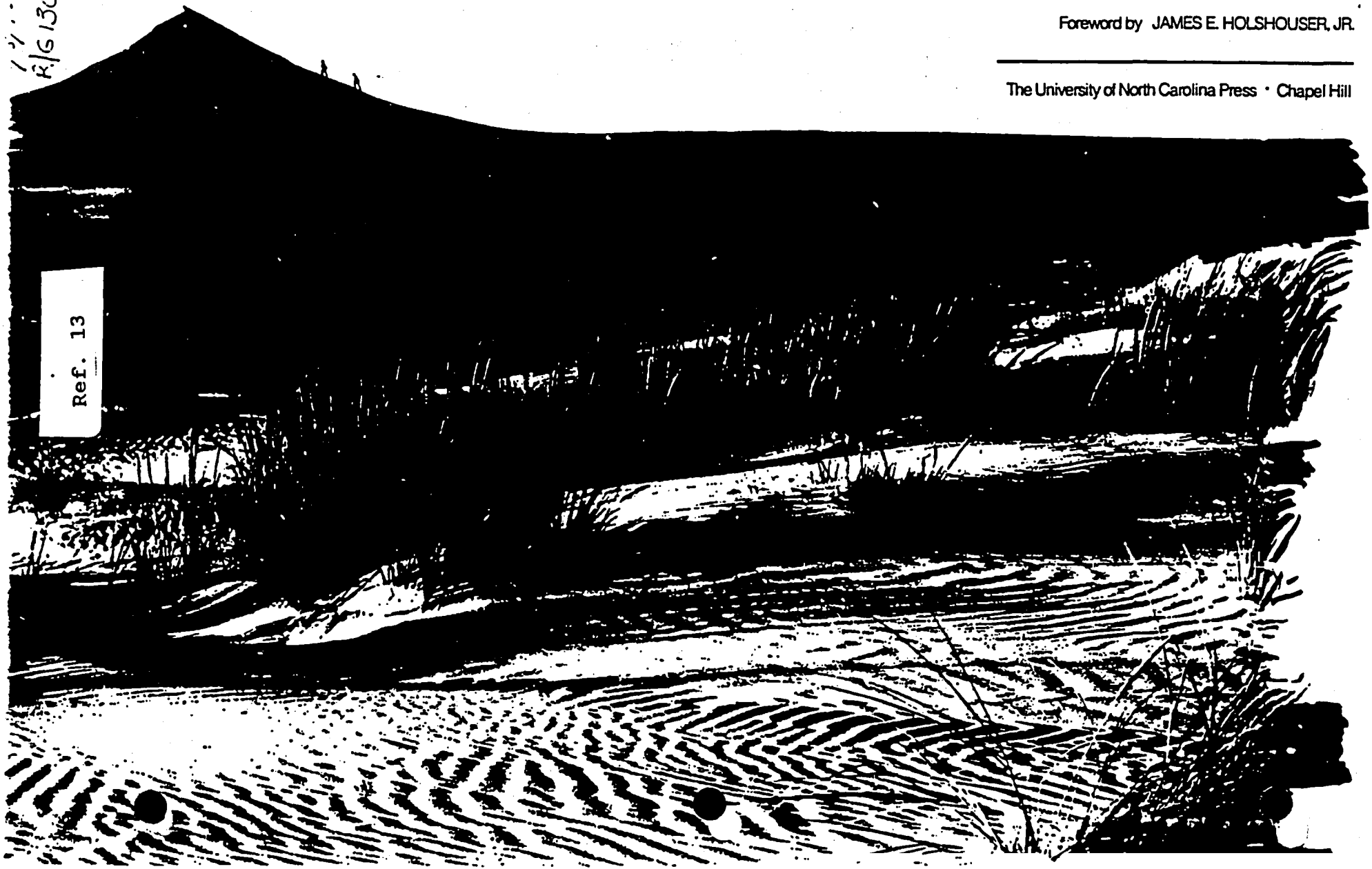
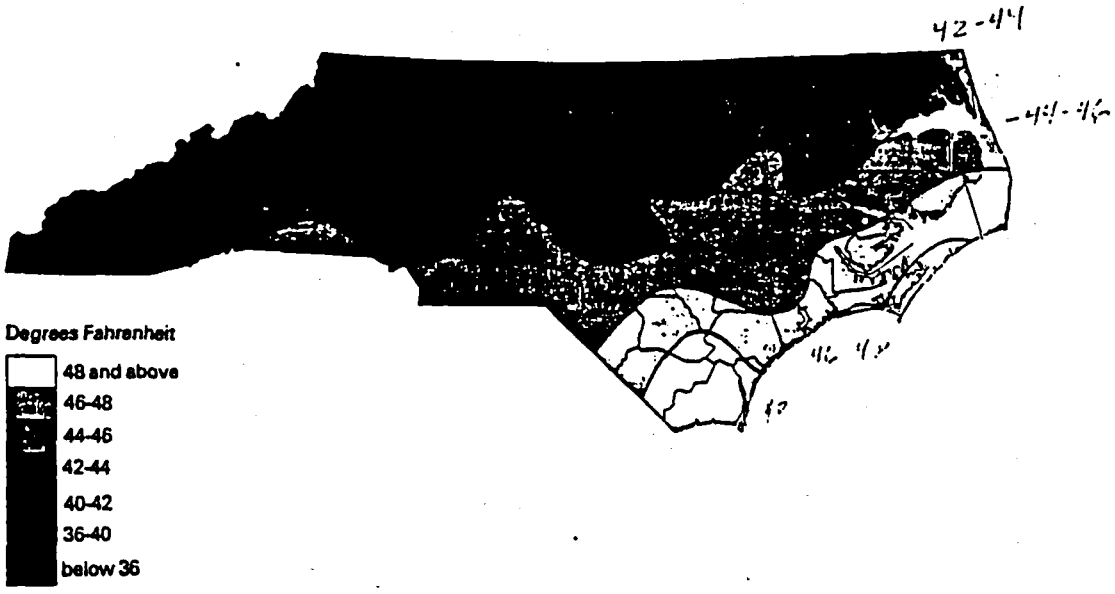
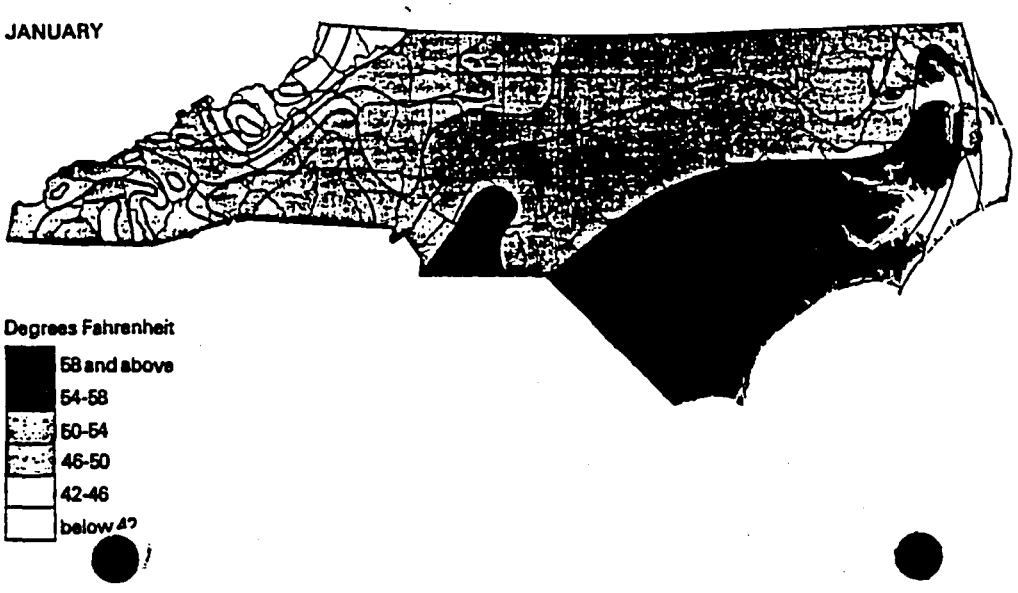


Figure 5.2. Average January Temperatures in N.C.



Source: U.S. Department of Commerce, *Weather and Climate in North Carolina*, 1972.

Figure 5.3. Mean Maximum Temperature in N.C.



Source: U.S. Department of Commerce, *Weather and Climate in North Carolina*, 1972.

Seasonal Changes in Climate

Winter The alternate passage of low- and high-pressure systems over the state during winter months results in changing weather conditions. Moisture and warmer temperatures are characteristically associated with frequently passing low-pressure cells. Lows are followed by polar highs, which bring lower temperatures and clear skies. However, even when under the influence of these polar highs, temperatures seldom fall below 10° F., and midday temperatures reach into the forties, making the winter season very tolerable by northern standards.

January average temperatures shown in Figure 5.2 illustrate the mildness of winters. Only at the highest elevations do temperatures average below freezing. The mean temperature for January at Mount Mitchell is 28.7° F., the lowest in the state. Yet, at Asheville, located on the lee side of the mountains, temperatures for January average 39.4° F.

Nowhere else in North Carolina is the local contrast in temperatures as great as in the western counties. Temperature contrasts are least where the climate is mildest. Hatteras, on the Outer Banks, has a January mean of 48.0° F., and only thirteen days each year when temperatures of 32° F. and below are recorded.

The tendency for January isotherms to parallel the coast shows the influence of the Atlantic Ocean. Wilmington, in southeastern North Carolina, the most subtropical area in the state, exemplifies the maritime effect. This coastal city has a January mean temperature of 47.8° F., and an average of only eight days during January when temperatures dip to 32° F. or less, as compared with eighteen days at Raleigh and nineteen at Asheville.

In the Piedmont, latitude is the primary control on temperature, and the isotherms maintain a zonal pattern. As might be expected, temperature averages lie between those exhibited by the surrounding regions. Charlotte has a mean January temperature of 42.3° F., Greensboro, 39.0° F., and Raleigh, 42.7° F.

However, whereas Asheville averages eighty-three days each year when temperatures drop below freezing, Winston-Salem has freezing temperatures eighty-eight days annually, and Greensboro has eighty-four days with freezing temperatures.

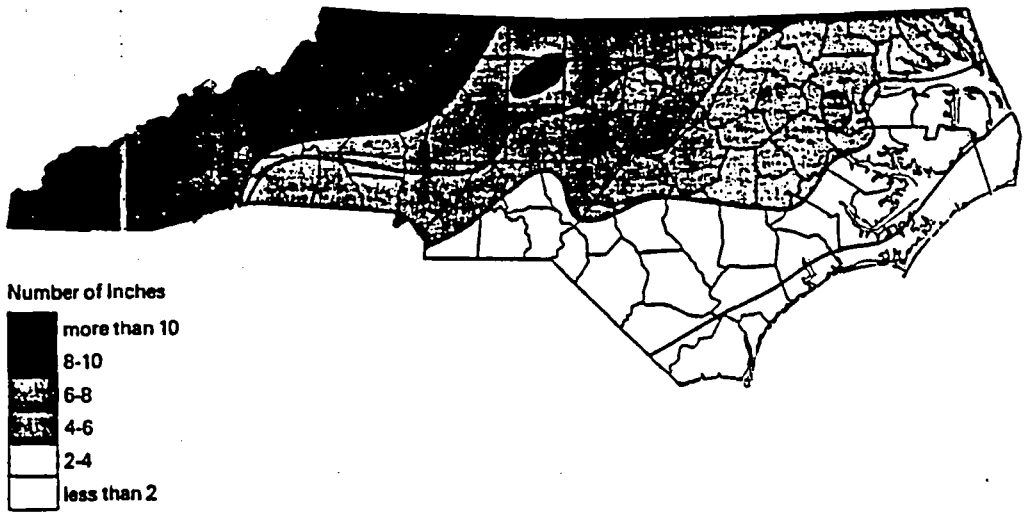
When high-pressure systems (anticyclones) dominate, clear to partly cloudy weather prevails. Receiving, on the average, 50 to 60 percent of total possible sunshine, North Carolina receives more hours of winter sunshine than do states to the north and to the immediate west. Sunshine is more prevalent in the southeast around Wilmington, and diminishes rapidly as the Mountains are approached. The Mountains receive about one-third less sunshine than does the rest of North Carolina.

Spring For many North Carolinians, this season is the most preferable of all. With the northward shifting of the noon sun, the storm track normal to North Carolina during the winter retreats northward and fewer and fewer cyclonic storms occur. Cold spells are less numerous and periods of high temperatures and balmy days become longer and more pronounced. Rainfall diminishes slightly in April, but increases toward the summer as cyclonic activity gives way to thundershowers and their heavy downpours. Although more precipitation is received in the state during May and June, there are fewer hours and days in which rainfall occurs, indicating a higher precipitation intensity.

Mean temperatures range from the fifties in April to the seventies in June for all places save those at high elevations. The days are marked by cool nights and warm afternoons with relative humidities at optimal levels for human comfort. As the daylight period lengthens, sunshine percentages and totals increase to their highest values for the year. For the eastern two-thirds of the state, sunshine during April, May, and June is received approximately 70 percent of the time and in amounts exceeding three hundred hours for the latter part of the season.

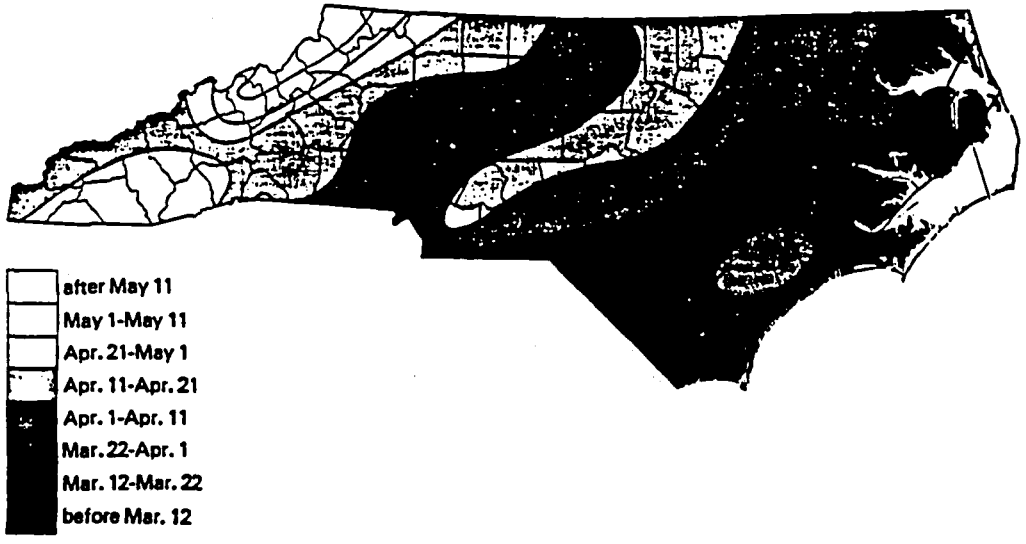
Average Date of the Last Freeze in Spring As illustrated by Figure 5.8, the beginning of the freeze-free season varies across the state from 1 March to 10 May, a difference in time of over two months. As expected, the milder climate along North Carolina's coast engenders early dates, whereas the more severe climate of the Mountains retards the start of the freeze-free period longer than elsewhere. In most areas of the Coastal Plain, the last spring freeze generally occurs by the first of April. The Piedmont has its last freezes between 1 and 10 April, about ten to fifteen days later than the Coastal Plain. In the Mountains, there is greater variation in mean dates for both the beginning and the end of the freeze season. Because air chills more quickly at higher elevations, and because cold air is denser than warm air, the cold air drains into the valleys where it is contained and continues to lose heat by radiation. The result of this process is that in certain Mountain areas some valleys are more often colder than their slopes at intermediate altitudes. Lying between [illegible] low-freezing temperatures of the valleys and the higher elevations are "verdant" or "thermal" belts.

Figure 5.7. Average Annual Snowfall in N.C.



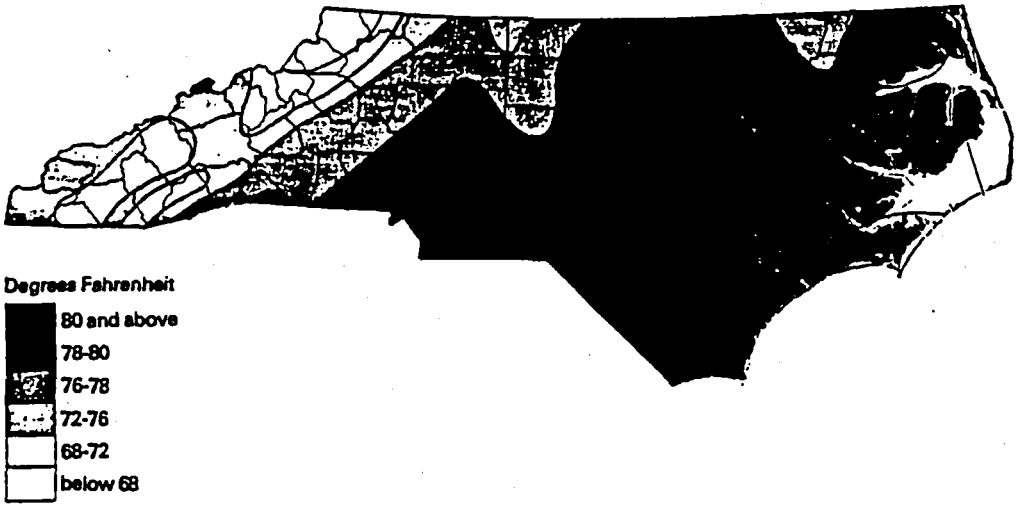
Source: U.S. Department of Commerce, *Climatological Summary*, 1966.

Figure 5.8. Average Date of Last Freezing Temperature in N.C.



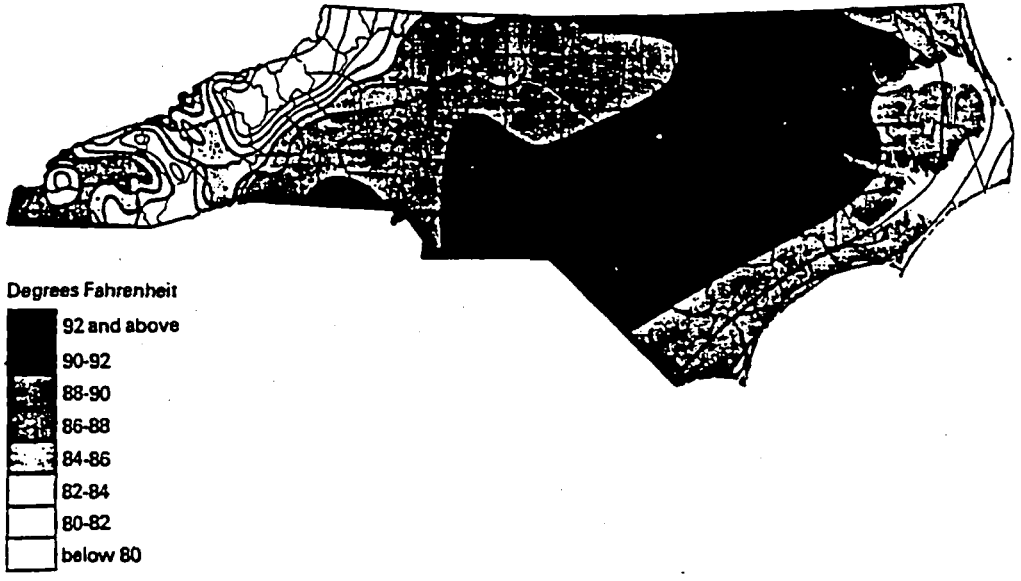
Source: U.S. Department of Commerce, *Weather and Climate in North Carolina*, 1972.

Figure 5.9. Average July Temperature in N.C.



Source: U.S. Department of Commerce, *Weather and Climate in North Carolina*, 1972.

Figure 5.10. Mean Maximum July Temperature in N.C.



Source: U.S. Department of Commerce, *Weather and Climate in North Carolina*, 1972.

These strip-like regions have longer freeze-free seasons and thereby show earlier dates for the end of the freeze period than their surroundings. They support frost-susceptible vegetation long after the greenery has disappeared in nearby areas. Often in early winter or even in midwinter a contrasting belt of green flanked above and below by brown may be seen. These green belts are characteristically located along slopes that face the winter sun, are protected from cold northern winds, and have cold air drainage to lower valleys. The blossoming of dogwood and redbud moves across the state in a pattern similar to that of the end of the freeze season to blanket North Carolina with color and beauty.

Summer Summer is characterized by its high temperatures, high humidities, high amounts of rainfall, and high physiological stress. Except for the amelioration of these climatic elements in the Mountains, and the relief afforded by sea breezes along the coast, elsewhere in the state summer is a season of extremes. Mean monthly minimum temperatures for July and August are in the upper seventies and eighties and mean maximum temperatures reach into the nineties.

However, to quote a popular adage, "it's not the heat but the humidity," and North Carolina's temperatures in combination with the high water vapor amounts prevalent during the summer months are definitely uncomfortable. In addition, high sunshine percentages and a predominance of southerly winds tend to aggravate an already unpleasant climatic condition. Only the periodic passage of cool, dry air masses from the north and sea breezes in the coastal areas alleviate the discomfort of summer weather for North Carolina's low-lying counties.

July Average Temperatures The pattern of mean temperatures in July is similar to the pattern in January (Figure 5.9). However, in the Piedmont and Coastal Plain, isotherms are fewer in number and farther apart. In the Mountains, the reverse is true. The widespread isotherms east of the Mountains indicate that temperature averages across central and eastern North Carolina exhibit little contrast. From the western Piedmont to the coast, the difference in mean temperatures is only 4° F. Although the influence of the ocean is not evident in the arrangement of isotherms, the high temperatures of the Coastal Plain are made less severe by the cooling power of the sea breeze. Hatteras, on the Outer Banks, records a temperature of 90° F. on the average of only one day each year, while Wilmington, a short distance from the coast, has an occurrence of 90° F. temperatures about twenty-four days annually. In contrast with these locations, Raleigh and Winston-Salem mean temperatures for July are slightly lower, but the average number of days on which a temperature of 90° F. or above is experienced increases to more than forty.

Autumn is the driest season of the year and rainfall amounts drop below 3 inches throughout central and eastern North Carolina during October and November. Cyclonic activity increases as thunderstorms become less frequent until by late November they seldom occur.

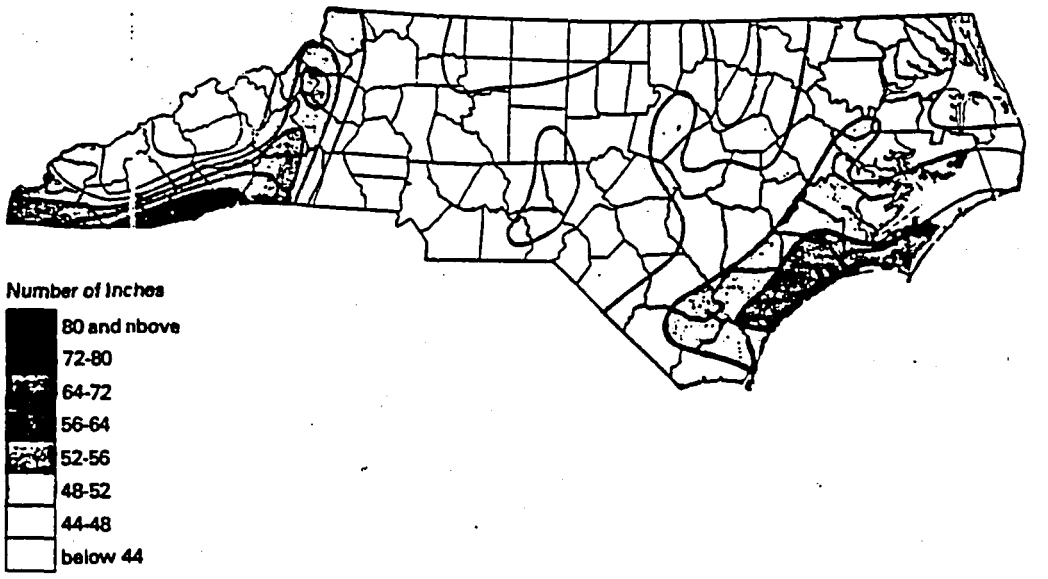
As illustrated in Figure 5.14, freezes begin early in October in the Mountains and slowly move eastward toward the coast. In early December, the freeze-free season reluctantly comes to a close in the Wilmington-Southport area. Deciduous trees begin their dormancy period and the color of the state gradually changes from the quiet greens of summer to the fiery reds and brilliant yellows of fall. By late autumn the highlands, now a mottled brown and green, show an occasional sprinkling of white as temperatures in the Mountains fall below freezing and the possibility of snow increases. However, in the Piedmont and Coastal Plain, tennis, sailing, and picnicking, for example, continue into November and football games played late in the season are often attended by fans dressed in warm-season attire.

Annual Precipitation and Humidity

Although a considerable variation in the distribution of rainfall exists throughout the state, everywhere precipitation is high (Figure 5.15). In the Coastal Plain, rainfall totals average from 44 to 55 inches; the highest amounts were received at the Outer Banks. Across the Piedmont, yearly rainfall averages range from 43 to 48 inches, with the northern and southern sectors having the lower totals. The greatest variability in rainfall distribution is found in the Mountains. Here, south-facing slopes along the North Carolina-South Carolina border receive as much as 80 inches of precipitation each year. Nearby, Asheville, lying in a sheltered valley, records only 37 inches, the lowest rainfall average reported in the state. More commonly, average annual precipitation in the Mountains ranges from 44 to 58 inches. For the state as a whole, an average total of 50 inches is representative.

The distribution of rainfall throughout the year is reasonably uniform. Although there are no pronounced wet and dry seasons, a profile of average annual precipitation indicates a bimodal distribution, i.e., two periods of higher rainfall separated by two periods during the year when rainfall amounts are lower than the norm. Generally, the highest precipitation totals are associated with the summer months. In the fall, the season of the least rainfall, the lowest yearly totals usually occur in October or November. Precipitation increases slightly during the winter season and then decreases to a secondary low in April. This precipitation regime is common to the state and varies only slightly from place to place.

Figure 5.15. Average Annual Precipitation in N.C.



Source: U.S. Department of Commerce, *Weather and Climate in North Carolina*, 1972.

Although rainfall is heaviest in the summer, evaporation and transpiration losses are also great. Consequently, the summer season is deficient in its supply of soil moisture and irrigation may be required to sustain crop needs.

Although it is considered to be a wet state, North Carolina nevertheless has its occasional "bout with drought." Recently, the Piedmont and Inner Coastal Plain suffered through an especially severe drought. In 1968, negative rainfall departures amounting to as much as 26 inches were computed by individual stations within this area. On the other hand, 1972 proved to be an abnormally wet year. During that year, Raleigh, which has an average annual precipitation of 46.35 inches, experienced a total rainfall of 51.74 inches. Raleigh's weather records may be used to illustrate the variations in yearly precipitation amounts. In the capital city, annual totals have varied from a low of 30 inches in 1933 to a high of 64 inches in 1936. On a monthly basis, rainfall variation for July has ranged from 12.36 inches in 1931 to as little as 0.38 inches in 1953. Yet precipitation variability in North Carolina is moderate compared with those states where rainfall totals are significantly less and consequently precipitation patterns and regimes are more unpredictable.

Average Number of Days with 0.01 Inches of Precipitation or More Figure 5.16 shows the pattern of days with measurable precipitation in North Carolina. The Mountains have the greatest number of days with measurable precipitation, averaging 10 to 20 more rainy days per year than the coast and 20 to 30 days more than the southern Piedmont. In the northwest corner of the state precipitation occurs 4 out of every 10 days. By contrast, the sandhills in the Southern Piedmont experiences precipitation on only 30 percent of the days. In fact, a "tongue" of fewer rainy days penetrates the state from south to north, through North Carolina's central counties. For the state as a whole, 125 days with measurable precipitation is a representative figure.

Water Balance

The "wetness" or "dryness" of any region is mirrored by its natural vegetation. Indigenous plant life is an indicator of a region's precipitation effectiveness and its capacity to support plant growth. The minimal moisture requirements of plant communities are quite specific, and in situ vegetation reflects the amounts of water annually and seasonally available for its use. As the size of a bank account depends upon the balance between deposits and withdrawals, so precipitation effectiveness

soil moisture requirement is satisfied, additional precipitation will drain to the underground water table or run off the land as surplus water.

Figure 5.18 provides the water balance deficits for the state and shows that everywhere except for the Asheville area and the northern Piedmont, the annual water deficit is less than one inch. By contrast, Figure 5.19 gives water balance surpluses. Being a wet state, North Carolina's water budget indicates surpluses exceeding deficits by large amounts. While most of the Piedmont and Coastal Plain have surplus water up to 15 inches, the Outer Banks and the Mountains show surpluses above 15 inches. In the southwest corner of the state, water surpluses amount to as much as 30 inches.

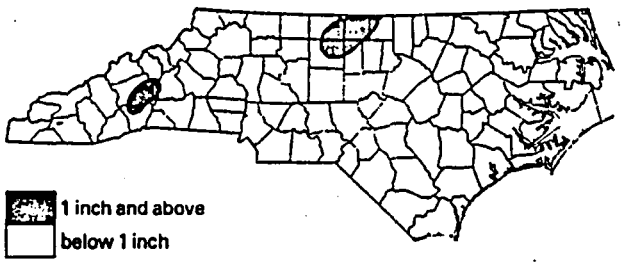
Mean annual evaporation for North Carolina is shown in Figure 5.20. Evaporation rates and totals are related to temperature, wind velocity, and relative humidity. Where temperatures are highest and humidities lowest, evaporation intensities will be greatest. Since temperatures throughout the Coastal Plain and the Piedmont are highest for the state and since humidity percentages are greater in the vicinity of the ocean, evaporation totals are lower in the Mountains and along the coast, and highest in the southern Piedmont and Coastal Plain. A comparison of the maps showing precipitation, evaporation, water surplus, and water deficit will provide the reader with a fairly complete picture of North Carolina's water balance.

Winds and Storms

Three types of storms and their associated winds are common to North Carolina: cyclonic and convectional thunderstorms, hurricanes, and tornadoes. These storms are integral parts of the state's climatic pattern. In analyzing the importance of winds, direction and speed are major considerations.

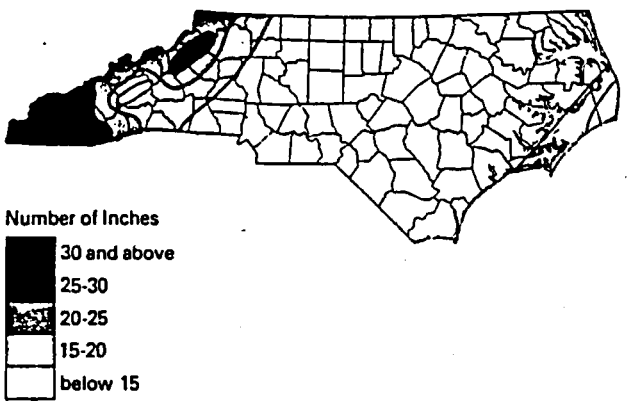
Although prevailing winds (winds that persist in blowing from one direction more so than any other) characterize given geographical areas, wind direction changes frequently. A northwesterly wind (coming from the northwest) will be, relatively speaking, a cooling and drying wind, whereas a southeasterly wind will bring warm, moist air to the state. The passage of cyclones and anticyclones with their characteristic wind patterns will change the wind's direction so that it may come across North Carolina from any point of the compass.

Figure 5.18. Water Balance Deficit in N.C.



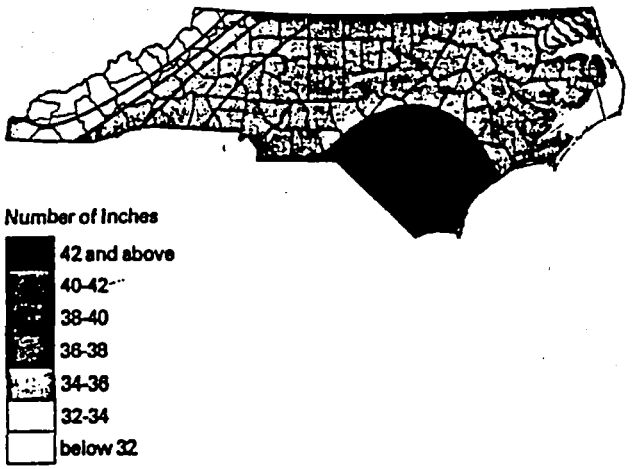
Source: U.S. Department of Commerce, *Climatic Summary of the U.S.*, 1972.

Figure 5.19. Water Balance Surplus in N.C.



Source: U.S. Department of Commerce, *Climatic Summary of the U.S.*, 1972.

Figure 5.20. Mean Annual Evaporation in N.C.

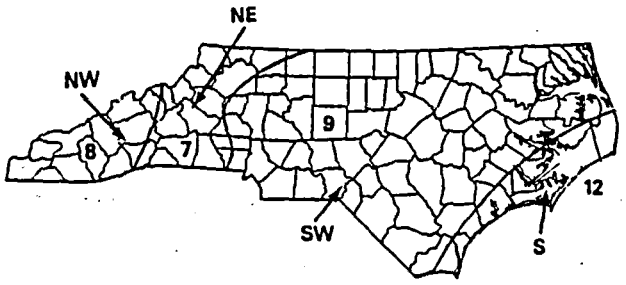


Source: U.S. Department of Commerce, *Climatic Summary of the U.S.*, 1972.

The velocity of the wind is relevant to ventilation of air pollutants, evaporation rates, and thus cooling and chilling indexes. On those occasions when winds reach gale force and higher, their velocities are of singular importance because of their destructive capabilities. Damaging winds are usually associated with infrequent hurricanes and tornadoes and, at times, with severe thunderstorms.

The prevailing winds and mean wind speeds averaged for the year are given in Figure 5.21. For the eastern two-thirds of the state, winds blow most frequently from the southwest and south. Throughout the Mountains and the western Piedmont, winds prevail from northerly directions. This annual pattern of prevailing winds persists for most months of the year except September and October when winds are dominantly from the northeast. During these months, the clockwise flow of air from seasonal anticyclones lying poleward of North Carolina, and the counterclockwise winds associated with an increased number of offshore storms cause northeasterlies to prevail across the state.

Figure 5.21. Prevailing Winds and Mean Annual Wind Speed in N.C.



Source: U.S. Department of Commerce, *Climatic Summary of the U.S.*, 1972.

Note: Wind speeds are noted in miles per hour.

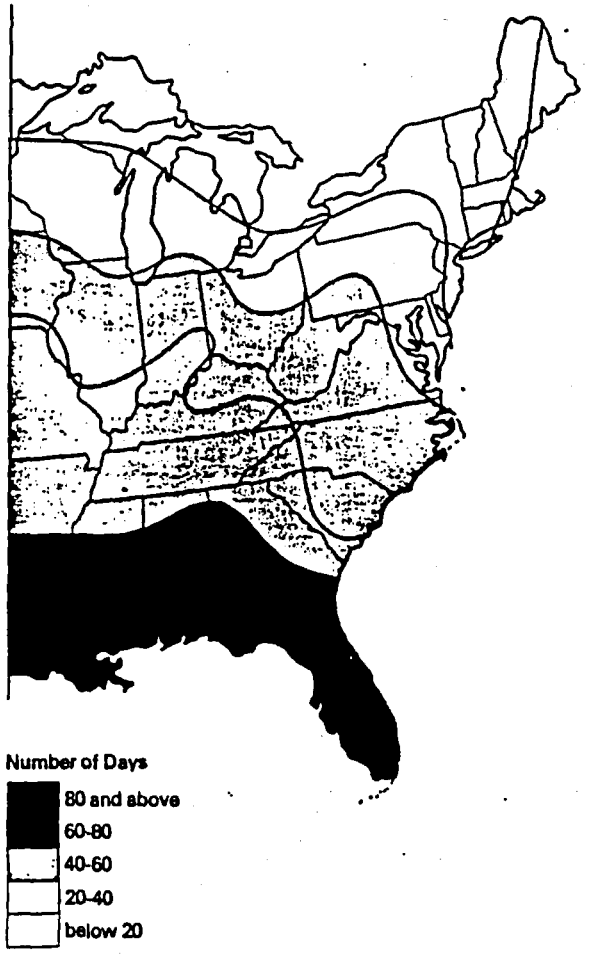
Wind speeds have been averaged for each zone of prevailing winds. Winds tend to diminish in speed westward from the coast where sea breezes and offshore storms contribute to velocities that average twelve miles per hour. Throughout the Inner Coastal Plain and the Piedmont, the mean wind speed is nine miles per hour, and in the western counties, representative wind speeds are seven and eight miles per hour. On a daily basis, wind velocities are lowest before dawn and highest around midafternoon. Seasonally, winter, with greater temperature and pressure contrasts, shows the most rapid air movement and summer is the time of lowest wind speeds.

Thunderstorms Thunderstorms are vertically developed storm systems that involve lightning and thunder. Produced by instability in the atmosphere, these storms are sustained by the conversion of water vapor into rain and hail, which causes the release of enormous amounts of energy. This energy results in vigorous updrafts of rapidly moving air. The intensity and turbulence of an individual thunderstorm is related to the degree of atmospheric instability and the supply of latent energy released by the condensing of water vapor. In structure, the typical thunderstorm is a collection of convective cells each averaging a mile or more in diameter. A cell is comprised of columns of rapidly rising air separated and counterbalanced by downdrafts of slower moving air. Associated with thunderstorms and their bulbous facade are heavy downpours of rain, hail, gusty and squally winds, and of course, lightning and thunder.

Because thunderstorm development and frequency is enhanced by (1) atmospheric instability that is linked to high surface temperatures, (2) atmospheric moisture that supplies the latent energy requirements, and (3) some triggering device to start the convection process, thunderstorms occur more frequently in regions of warm temperatures and high humidities. North Carolina's climate is conducive to thunderstorm development and the state experiences violent local storms forty to fifty days each year. For the United States, Florida and the Gulf Coast lead in the number of days with thunderstorms. Here, seventy to ninety days per year with thunderstorms is normal. In the northern states and along the West Coast, thunderstorm activity drops off because of colder temperatures over land and coastal waters. North Carolina's pattern of thunderstorm activity shows fewest storms off the northeast coast where coastal waters also are cooler. Inland, thunderstorms are more frequent, increasing to fifty days as the Mountains are approached. In the Mountains, the higher frequency of storm activity (all types) and the triggering supplied by mountain and frontal slopes results in the most thunderous area to be found in the state (Figure 5.22).

Hurricanes In the latter half of the year, the United States is visited by hurricanes. Originating over tropical oceans as small cyclones, under favorable conditions hurricanes become large, intense storm systems. Their winds exceed seventy-five miles per hour and spiral counterclockwise around an "eye" of very low pressure. Sustained by the ocean that breeds them, these storms are driven by the heat released from condensing water vapor. Covering tens of thousands of square miles, hurricanes move slowly and deliberately, at speeds between fifteen and fifty miles per hour, delivering prodigious amounts of precipitation to areas over which they pass. Moving out of the tropics, hurricanes of the Atlantic Ocean generally invade the Gulf of Mexico, or veer northward toward the middle latitudes, occasionally penetrating the continent, or skirting the coastline as far north as New England. Hurricanes are sea monsters and diminish in intensity as they move inland and away from their source of energy. Although capable of great destruction, hurricanes nevertheless benefit the southeastern states to a substantial degree. As the eastern states are subject to periodic summer droughts, the vast amounts of water delivered to this region by these giant tropical storms have served more than once to alleviate or terminate the disastrous effects of drought conditions. However, hurricanes are killer storms, and their long-range benefits are obscured by the more obvious death, destruction, and damage accompanying them. On the average, the Atlantic Ocean generates six hurricanes a year, but as many as eleven in one year have been observed. North Carolina has experienced twelve especially disastrous hurricanes since 1900. Cape Hatteras, extending as it does into the ocean, is affected by hurricanes more than any other area of North Carolina (Figure 5.23). Its low-lying sandy surface is especially vulnerable to the combined effects of high winds, high tides, and flooding associated with the storms.

Figure 5.22. Average Number of Days with Thunderstorms



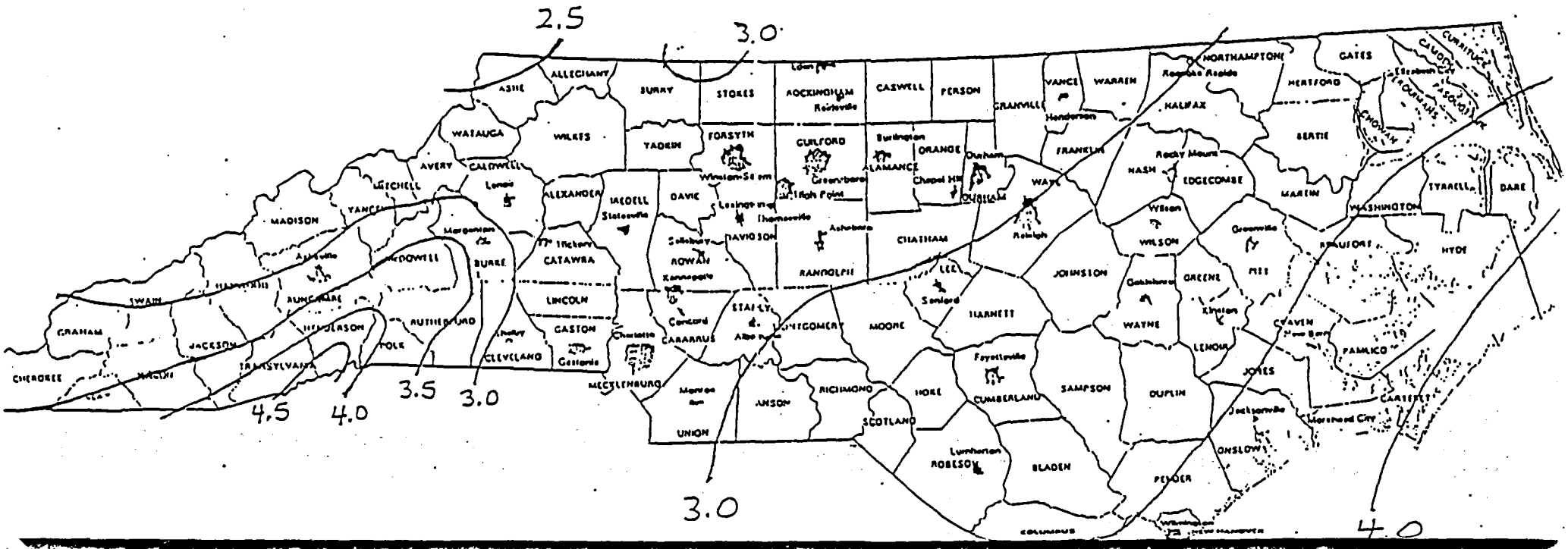
Source: Glenn T. Trewartha, Arthur H. Robinson, and Edwin H. Hammond, eds., *Elements of Geography*, 5th ed. (New York: McGraw-Hill Book Co., 1967).

Ref. 14

ONE-YEAR 24-HOUR RAINFALL IN INCHES

SOURCE: RAINFALL FREQUENCY ATLAS OF THE UNITED STATES, TECH. PAPER NO. 40, U.S. DEPT. OF COMMERCE, U.S. GOV'T PRINTING OFFICE, WASHINGTON DC, 1963.

TAKEN FROM: UNCONTROLLED HAZARDOUS WASTE SITE RANKING SYSTEM A USERS MANUAL (HW-10) PAGE 33 FIG. 8



May 18, 1989

TO: Superfund Branch Staff

FROM: Pat DeRosa PD

RE: Critical Habitats of Federally Listed Endangered Species in North Carolina

On May 18, 1989, I spoke by telephone with John Fridell, US Fish and Wildlife Service, Asheville, NC (704) 259-0321 to request an update on critical habitats in North Carolina. Mr. Fridell said the Fish and Wildlife Service has been reorganized into a western and eastern office in North Carolina. His office now handles only western North Carolina. He said there have been no changes in the designated critical habitats identified in western North Carolina.

I then spoke by telephone with Debby Mignogno, US Fish and Wildlife Service, Raleigh, NC (919) 856-4520 regarding critical habitats in eastern North Carolina. Ms. Mignogno sent the attached maps of the 2 critical habitats designated in eastern North Carolina. Please note that the Waccamaw Silverside is listed as threatened, not endangered.

PD/pb/critical.hab

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6/88
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CAPE FEAR SHINER

Notropis mekistocholas

Order: Cypriniformes

Family: Cyprinidae

Status: Endangered (Federal Register 9/25/87)

Range: The Cape Fear shiner is known from four small populations in the Cape Fear River drainage in Randolph, Moore, Lee, Harnett, and Chatham Counties, North Carolina.

The strongest population is located around the junction of the Rocky River and Deep River in Chatham and Lee Counties where the fish inhabits the Deep River from the upstream limits of the backwaters of Locksville Dam upstream to the Rocky River; then upstream from the Rocky River to Bear Creek, and upstream from Bear Creek to the Chatham County Road 2156 Bridge. A few individuals have been collected just downstream of the Locksville Dam, but because of the limited extent of Cape Fear shiner habitat at this site, it is not believed this is a separate population. Instead, it is thought these fish represent a small number of individuals that periodically drop down from the population above Locksville Dam pool.

The second population is located above the Rocky River Hydroelectric Dam. This population was historically the best, but the area yielded only one specimen after extensive surveys by Pottern and Huish (1985). The third population is found in the Deep River system in Randolph and Moore Counties. This population is believed to be small (Pottern and Huish 1985, 1986). In a 1985 survey, three individuals were found above the Highfalls Hydroelectric Reservoir; one in Fork Creek, Randolph County, and two in the Deep River, Moore County. The species was also found downstream of the Highfalls Dam. However, the extent of suitable habitat in this stream reach is limited, and it is thought that these individuals likely result from downstream movement from above the reservoir where Cape Fear shiner habitat is more extensive. The fourth population is found in Neal Creek, which flows into the Cape Fear River near Lillington in Harnett County.

Three historic populations have apparently been extirpated: one in Robeson Creek, Chatham County, believed lost when Jordan Lake flooded part of the creek; and one each in Parkers Creek and Kenneth Creek in Harnett County, which disappeared for unknown reasons. Other undiscovered populations or population segments have likely been lost due to reservoir construction in the Deep, Haw, and Cape Fear Rivers.

CAPE FEAR SHINER - N. mekistocholas 6/88

Description: The Cape Fear shiner is small, rarely exceeding 2 inches in length. The fish's body is flushed with a pale silvery yellow, and a black band runs along its sides (Snelson 1971). The fins are yellowish and somewhat pointed. The upper lip is black, and the lower lip bears a thin black bar along its margin. The Cape Fear shiner, unlike most other members of the large genus Notropis, feeds extensively on plant material, and its digestive tract is modified for this diet by having an elongated, convoluted intestine.

Reasons for Current Status: The Cape Fear shiner may always have existed in low numbers. However, its recent reduction in range and its small population size (Pottern and Huish 1985, 1986) increases the species' vulnerability to a catastrophic event, such as a toxic chemical spill. Dam construction in the Cape Fear system has probably had the most serious impact on the species by inundating the species' rocky riverine habitat; and changes in flow regulation at existing hydroelectric facilities could further threaten the species.

The deterioration of water quality has likely been another factor in the species' decline. The North Carolina Department of Natural Resources and Community Development (1983) classified water quality in the Deep River, Rocky River, and Bear Creek as good to fair, and referred to the Rocky River below Siler City as an area where their sampling indicates degradation. That report also stated: "Within the Cape Fear Basin, estimated average annual soil losses from cropland ranged from 3 tons per acre in the lower basin to 12 tons in the headwaters." The North Carolina State Division of Soil and Water Conservation considers 5 tons of soil loss per acre as the maximum allowable.

Potential threats to the species and its habitat could come from such activities as road construction, stream channel modification, changes in stream flows for hydroelectric power, impoundments, land use changes, wastewater discharges, and other projects in the watershed if such activities are not planned and implemented with the survival of the species and the protection of its habitat in mind.

Habitat: The species is generally associated with gravel, cobble, and boulder substates and has been observed to inhabit slow pools, riffles, and slow runs (Snelson 1971, Pottern and Huish 1985). In these habitats, the species is typically associated with schools of other related species, but it is never the numerically dominant species. Juveniles are often found in slackwater, among large rock outcrops in midstream, and in flooded side channels and pools (Pottern and Huish 1985).

Critical Habitat: (1) North Carolina, Chatham County. Approximately 4.1 miles of the Rocky River from North Carolina State Highway 902 Bridge downstream to Chatham County Road 1010 Bridge; (2) North Carolina,

Chatham and Lee Counties. Approximately 0.5 river mile of Bear Creek, from Chatham County Road 2156 Bridge downstream to the Rocky River, then downstream in the Rocky River (approximately 4.2 river miles) to the Deep River, then downstream in the Deep River (approximately 2.6 river miles) to a point 0.3 river mile below the Moncure, North Carolina, U.S. Geological Survey Gaging Station; and (3) North Carolina. Randolph and Moore Counties. Approximately 1.5 miles of Fork Creek, from a point 0.1 river mile upstream of Randolph County Road 2873 Bridge downstream to the Deep River then downstream approximately 4.1 river miles of the Deep River in Randolph and Moore Counties, North Carolina, to a point 2.5 river miles below Moore County Road 1456 Bridge.

Constituent elements include clean streams with gravel, cobble, and boulder substrates with pools, riffles, shallow runs and slackwater areas with large rock outcrops and side channels and pools with water of good quality with relatively low silt loads.

Feeding Habits: Plant material forms the primary part of the diet.

Reproduction and Development: No information is presently available on breeding behavior, fecundity, or longevity.

Population Level: Total numbers are unknown, but all populations appear to be small. Surveys conducted in 1984 and 1985 yielded 101 individuals from the population located around the junction of the Rocky River and Deep River in Chatham and Lee Counties, 1 specimen from the Rocky River near State Highway Bridge 902 in Chatham County, and 6 specimens from the Deep River system in Randolph and Moore Counties.

Management and Protection: Assuring survival of the Cape Fear shiner will require, at a minimum, maintaining good water quality and the natural conditions of the remaining habitat. Providing for a higher level of security will necessitate determining limiting factors and reestablishing additional populations into suitable waters within the historic range.

References:

North Carolina Department of Natural Resources and Community Development. 1983. Status of Water Resources in the Cape Fear River Basin. 135 pp.

Pottern, G.B., and M.T. Huish. 1985. Status survey of the Cape Fear shiner (Notropis mekistocholas). U.S. Fish and Wildlife Service Contract No. 14-16-0009-1522. 44 pp.

Pottern, G.B., and M.T. Huish. 1986. Supplement to the status survey of the Cape Fear shiner (Notropis mekistocholas). U.S. Fish and Wildlife Service Contract No. 14-16-0009-1522. 11 pp.

Snelson, F.F. 1971. *Notropis mekistocholas*, a new cyprinid fish endemic to the Cape Fear River basin. North Carolina. Copeia 1971:449-462.

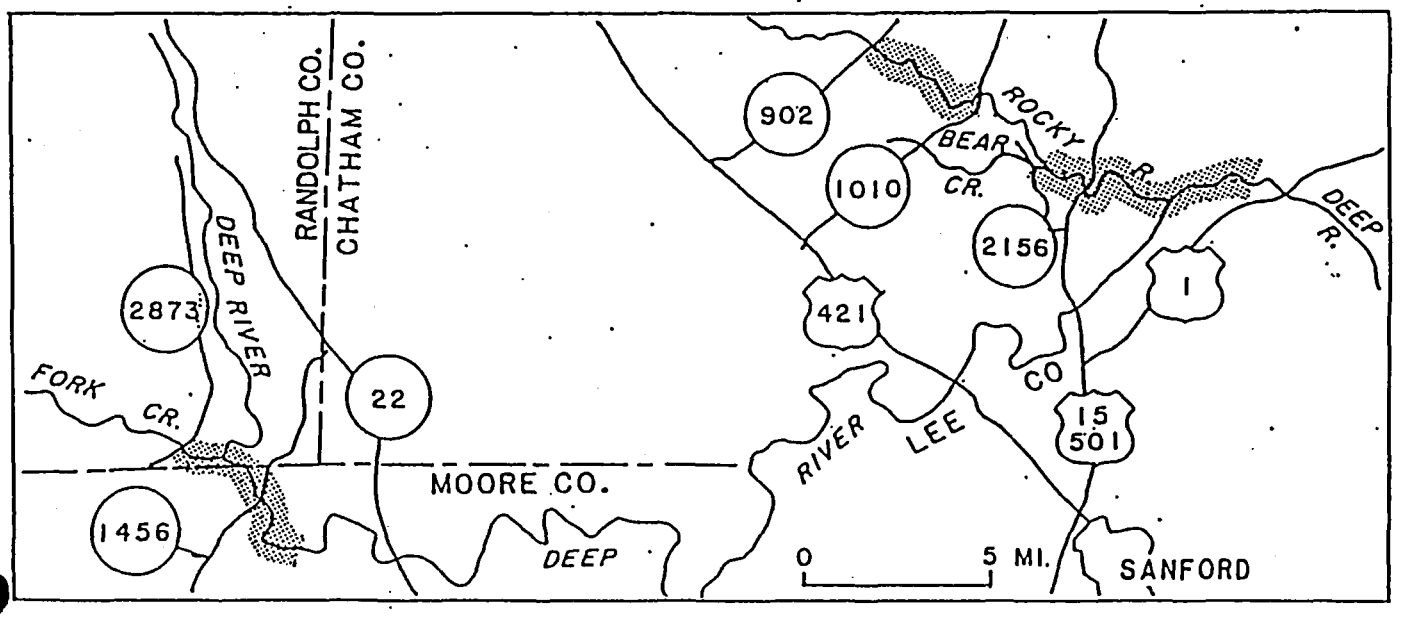
U.S. Fish and Wildlife Service. 1987. Endangered and threatened wildlife and plants; determination of endangered species status and designation of critical habitat for the Cape Fear shiner. Federal Register 52(186):36034-36039.

NORTH CAROLINA - Critical Habitat

Notropis mekistocholas, "Cape Fear shiner"

(1) Chatham County. Approximately 4.1 miles of the Rocky River from North Carolina State Highway 902 Bridge downstream to Chatham County Road 1010 Bridge;
(2) Chatham and Lee Counties. Approximately 0.5 river mile of Bear Creek, from Chatham County Road 2156 Bridge downstream to the Rocky River, then downstream in the Rocky River (approximately 4.2 river miles) to the Deep River, then downstream in the Deep River (approximately 2.6 river miles) to a point 0.3 river mile below the Moncure, North Carolina, U.S. Geological Survey Gaging Station; and
(3) Randolph and Moore Counties. Approximately 1.5 miles of Fork Creek, from a point 0.1 river mile upstream of Randolph County Road 2873 Bridge downstream to the Deep River then downstream approximately 4.1 river miles of the Deep River in Randolph and Moore Counties, North Carolina, to a point 2.5 river miles below Moore County Road 1456 Bridge.

Constituent elements include clean streams with gravel, cobble, and boulder substrates with pools, riffles, shallow runs and slackwater areas with large rock outcrops and side channels and pools with water of good quality with relatively low silt loads.



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WACCAMAW SILVERSIDE

Menidia extensa

Order: Mugiliformes

Family: Atherinidae

Status: Threatened (Federal Register 4/8/87)

Range: Known only from Lake Waccamaw and the upper Waccamaw River in Columbus County, North Carolina. The silverside is found in the upper Waccamaw River only during periods of high water and is not a permanent resident. Lake Waccamaw (not to be confused with the town of Lake Waccamaw) is the property of the State of North Carolina and is administered by the North Carolina Department of Natural Resources and Community Development's Division of Parks and Recreation.

Description: The Waccamaw silverside, also known as "skipjack" or "glass minnow," is a small (growing to about 2.5 inches), slim, almost transparent fish with a silvery stripe along each side. Its body is laterally compressed, the eyes are large, and the jaw is sharply angled upward.

Reasons for Current Status: The primary threat is the deterioration of water quality in Lake Waccamaw resulting from nutrient buildup. Although specific sources are currently unidentified, runoff and leachate from surrounding development may be contributing to the buildup. Nutrients in the lake increased since 1973, and it now appears that any further increase could tip the scales toward water quality conditions that would threaten the species. The existing data, as interpreted by Casterlin et al. (1986), indicate that phosphate concentrations and loading rates in the lake more than tripled in the years between 1973 and 1981. They further state that "continued high rates of phosphorus input (organic pollution) will likely bring the lake to a hyper-eutrophic state . . . by the end of the century." Water quality could also be affected by habitat alteration from development and other changes in land use, both around the lake and in its watershed (especially Big Creek), if these activities are not planned and implemented with the protection of the Lake Waccamaw ecosystem in mind.

A permit to propagate hybrid bass at several sites in the Lake Waccamaw watershed has been granted by the North Carolina Wildlife Resources Commission. Although the permit stipulates certain precautionary measures, escape of non-native predators from such a project into the system could upset the existing predator-prey relationships in the lake to the detriment of the Waccamaw silverside and other fishes now present in the lake.

A final factor that could threaten the Waccamaw silverside relates to its very short life cycle. The fish spawn when one-year-old and most die shortly thereafter. Failure to spawn in any one year could jeopardize the species. Water quality problems related to nutrient loading, even on a short-term basis, could cause the extinction of this fish.

WACCAMAW SILVERSIDE - M. extensa

Habitat: Lake Waccamaw is a natural lake with an approximate surface area of 8,934 acres and an average depth of 7.5 feet. Although it is fed by acidic swamp streams, the lake has a virtually neutral pH. This neutral condition, unusual among North Carolina's coastal plain lakes, is believed to be caused by the buffering effect of the calcareous Waccamaw Limestone formation, which underlies the lake and is exposed on the north shore. The Waccamaw silverside inhabits open water throughout the lake, where schools are commonly found near the surface over shallow, dark-bottomed areas.

Critical habitat: North Carolina, Columbus County. Lake Waccamaw in its entirety to mean high water level, and Big Creek from its mouth at Lake Waccamaw upstream approximately 0.6 kilometers (0.4 miles) to where the creek is crossed by County Road 1947.

Constituent elements include high quality clear open water, with a neutral pH and clean sand substrate.

Reproduction and Development: Spawning occurs from April through June, but reaches to peak when water temperatures are between 68 and 72F. Fully developed larvae form small isolated schools by early May. No parental care of the young has been noted. The silversides reach sexual maturity by the following spring, spawn, and then shortly thereafter most of the adults die off. A few may survive a second winter.

Population level: Estimated to be in the millions.

Management (Activities, Recommendations, Implications): The taking of silversides for fish bait or for scientific purposes is not considered a threat to the species. These activities may continue in accordance with State regulations. Activities which could affect water and substrate quality by increasing siltation and/or nutrient loading, or by altering temperature or pH, will require monitoring and control as necessary and feasible. Some of the activities that could prove detrimental include indiscriminate logging, land use changes, stream alteration such as channelization or impoundment, bridge and road construction, improper pesticide/herbicide application, and point and nonpoint pollution discharge.

References:

Casterlin, M.E., W.W. Reynolds, D.G. Lindquist, and C.G. Yarbrough. 1986. Algal and Physicochemical Indicators of Eutrophication in a Lake Harboring Endemic Species: Lake Waccamaw, North Carolina. Journal of the Elisha Mitchell Scientific Society 100(3):83-103.

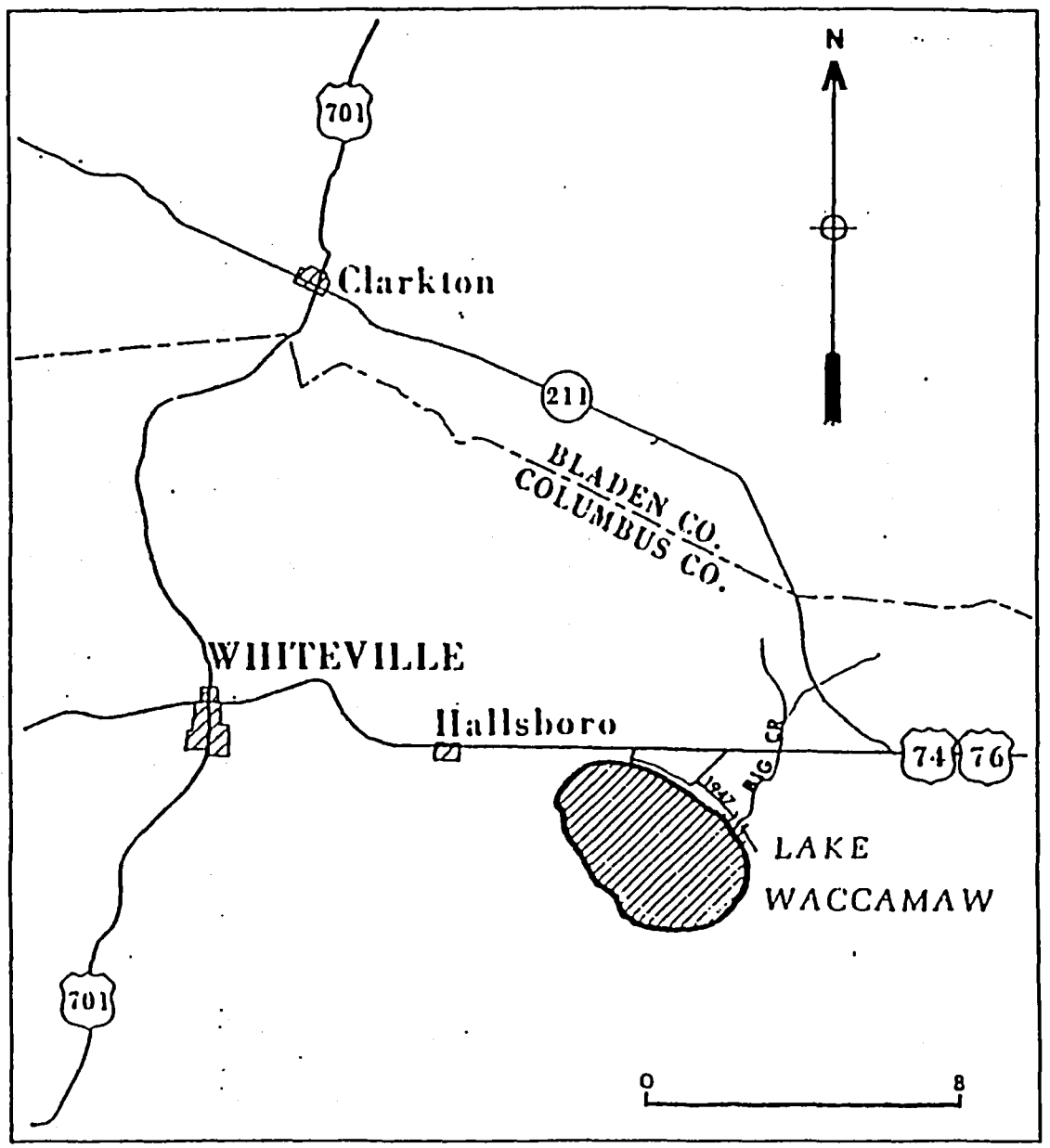
Davis, J.R. and D.E. Louder. 1969. Life History of Menidia extensa. Transactions of the American Fisheries Society 98(3):466-472.

NORTH CAROLINA - Critical Habitat

Menidia extensa, "Waccamaw silverside"

Columbus County. Lake Waccamaw in its entirety to mean high water level, and Big Creek from its mouth at Lake Waccamaw upstream approximately 0.6 kilometer (0.4 mile) to where the creek is crossed by County Road 1947.

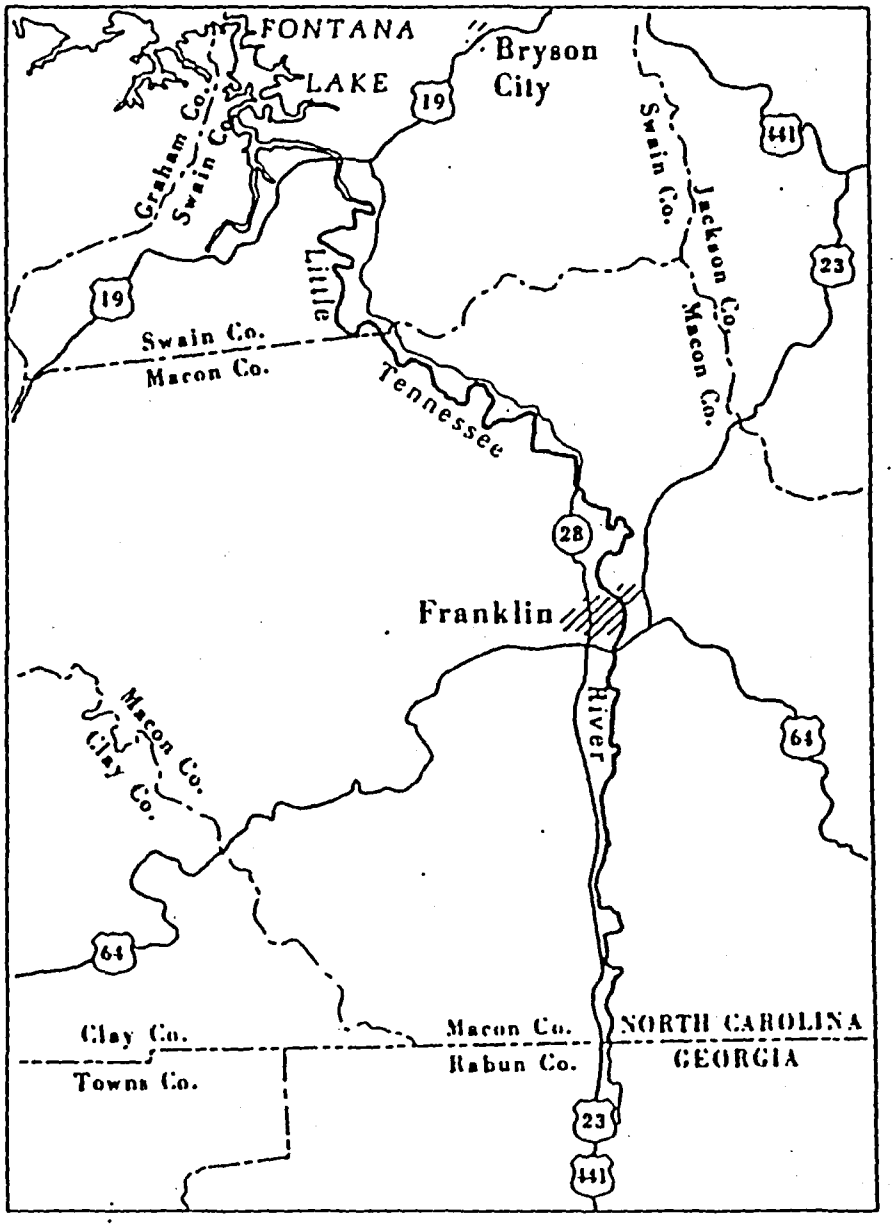
Constituent elements include high quality clear open water, with a neutral pH and clean sand substrate.



NORTH CAROLINA - Critical Habitat

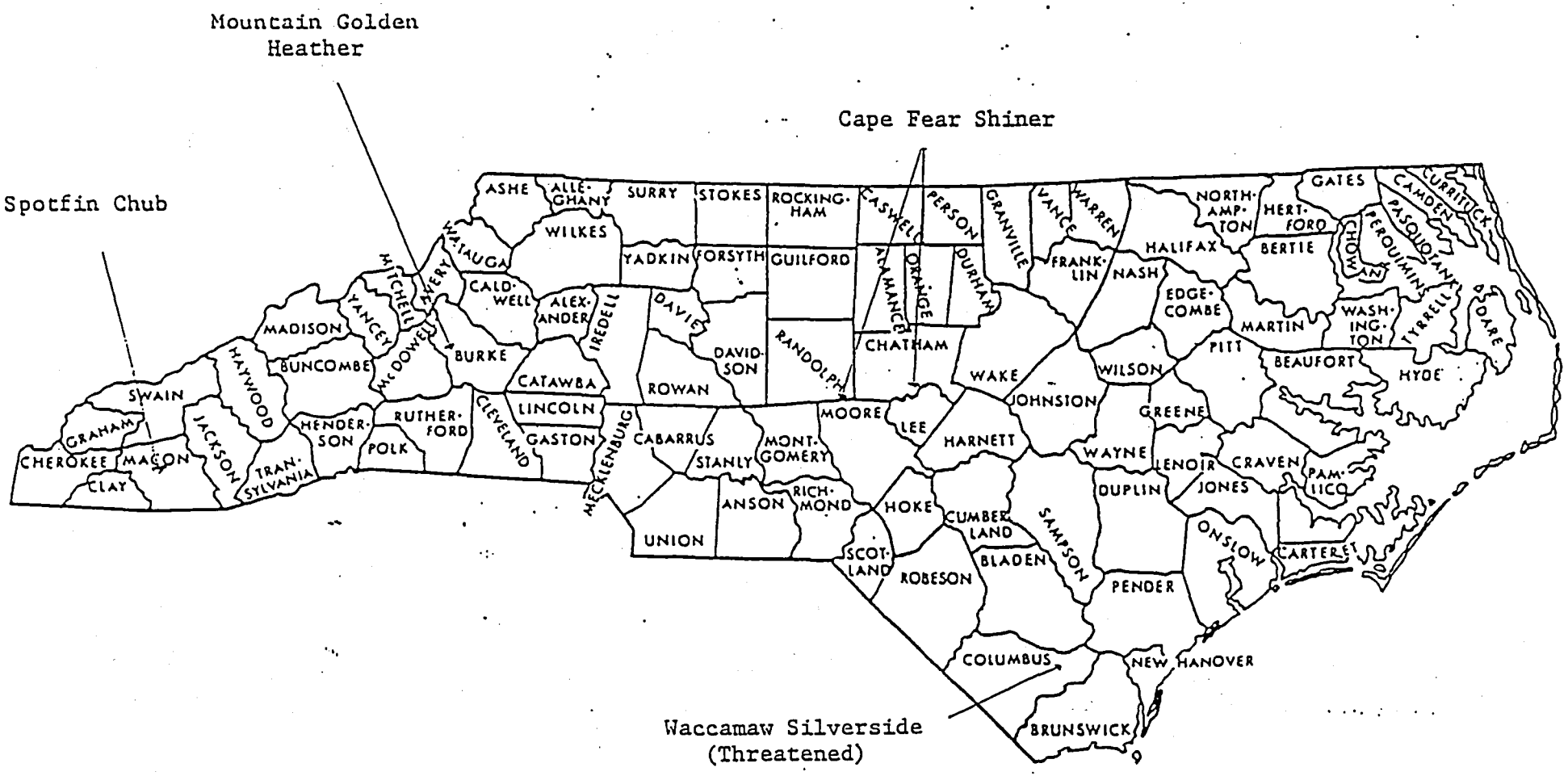
Hybopsis monacha, "spotfin chub"

Macon and Swain Counties. Little Tennessee River, main channel from the backwaters of Fontana Lake upstream to the North Carolina-Georgia state line.



CRITICAL HABITATS OF FEDERALLY LISTED

ENDANGERED SPECIES IN NC



1 inch = approx. 53 miles

NORTH CAROLINA - Critical Habitat

Hudsonia montana, "mountain golden heather"

Burke County. The area bounded by the following: on the west by the 2200' contour; on the east by the Linville Gorge Wilderness Boundary north from the intersection of the 2200' contour and the Shortoff Mountain Trail to where it intersects the 3400' contour at "The Chimneys"--then follow the 3400' contour north until it reintersects the Wilderness Boundary--then follow the Wilderness Boundary again northward until it intersects the 3200' contour extending west from its intersection with the Wilderness Boundary until it begins to turn south--at this point the Boundary extends due east until it intersects the 2200' contour.

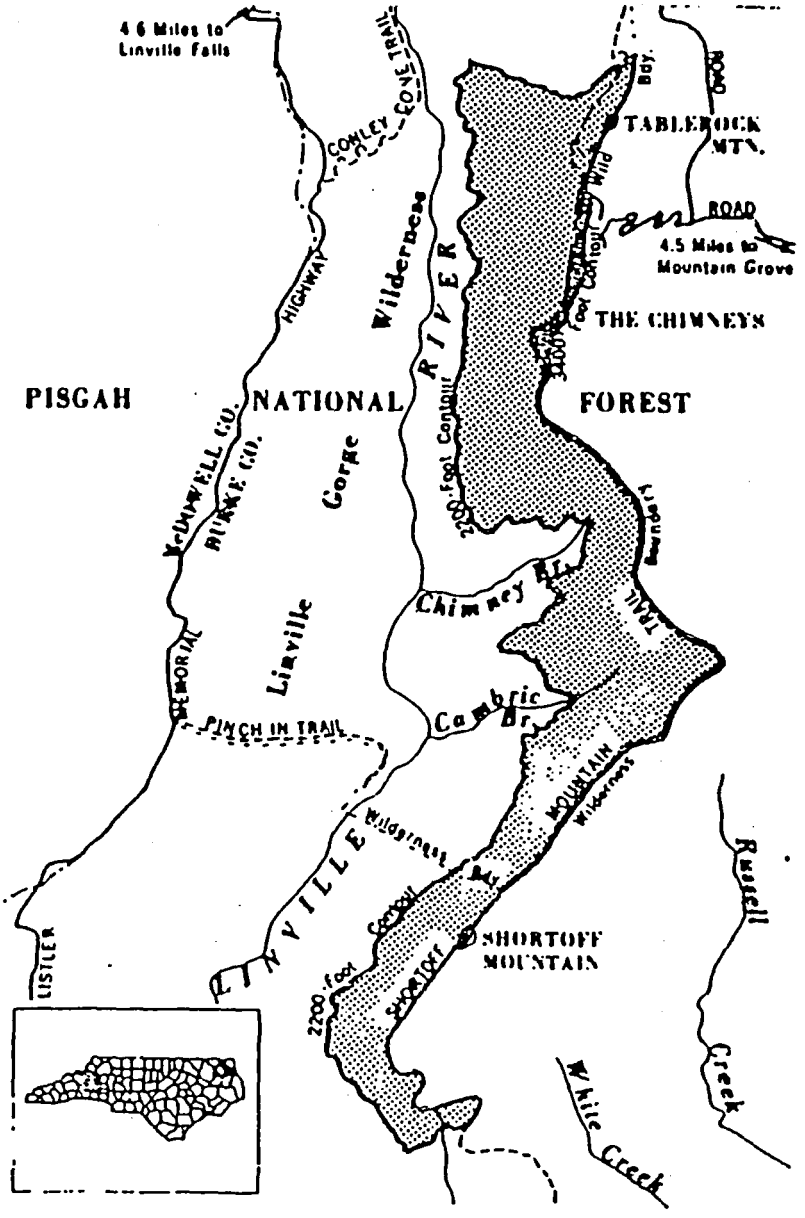


Table 17

NORTH CAROLINA POPULATION OF INCORPORATED PLACES AND THEIR PERCENTAGE GROWTH
1970 TO 1980

City	County Location	1970 Census	1980 Census	Percentage Change
Aberdeen	Moore	1,592	1,945	22.2%
Ahoskie	Hertford	5,105	4,887	-4.3
Alamance	Alamance	NA	320	NA
Albemarle	Stanly	11,126	15,110	35.8
Alexander Mills	Rutherford	988	643	-34.9
Alliance	Pamlico	577	616	6.8
Andrews	Cherokee	1,384	1,621	17.1
Angier	Harnett	1,431	1,709	19.4
Ansonville	Anson	694	794	14.4
Apex	Wake	2,234	2,847	27.4
Arapahoe	Pamlico	212	467	120.3
Archdale	Guilford, Randolph	4,874	5,745	17.9
Arlington	Yadkin	711	872	22.6
Asheboro	Randolph	10,797	15,252	41.3
Asheville	Buncombe	57,929	53,583	-7.5
Askewville	Bertie	247	227	-8.1
Atkinson	Pender	325	298	-8.3
Atlantic	Carteret	NA	NA	NA
Atlantic Beach	Carteret	300	941	213.7
Aulander	Bertie	947	1,214	28.2
Aurora	Beaufort	620	698	12.6
Autryville	Sampson	213	228	35.2
Ayden	Pitt	3,450	4,361	26.4
Bailey	Nash	724	685	-5.4
Bakersville	Mitchell	409	373	-8.8
Banner Elk	Avery	754	1,087	44.2
Bath	Beaufort	231	207	-10.4
Battleboro	Edgecombe, Nash	562	632	12.5
Bayboro	Pamlico	665	759	14.1
Bear Grass	Martin	99	82	-17.2
Beaufort	Carteret	3,368	3,826	13.6
Belhaven	Beaufort	2,259	2,430	7.6
Belmont	Gaston	5,054	4,607	-8.8
Belville	Brunswick	59	102	72.9
Belwood	Cleveland	736	613	-16.7
Benson	Johnson	2,267	2,792	23.2
Bessemer City	Gaston	4,991	4,787	-4.1
Bethel	Pitt	1,514	1,825	20.5
Beulaville	Duplin	1,156	1,060	-8.3
Biltmore Forest	Buncombe	1,298	1,499	15.5
Biscoe	Montgomery	1,244	1,334	7.2
Black Creek	Wilson	449	523	16.5
Black Mountain	Buncombe	3,204	4,083	27.4
Bladenboro	Bladen	783	1,428	82.4
Blowing Rock	Caldwell, Watauga	801	1,337	66.9
Boiling Spring Lakes	Brunswick	245	998	307.8
Boiling Springs	Cleveland	2,284	2,381	4.2
Bolivia	Brunswick	185	252	36.2
Bolton	Columbus	534	563	5.4
Boone	Watauga	8,754	10,191	16.4
Boonville	Yadkin	687	1,028	49.6
Bostic	Rutherford	289	476	64.7
Brevard	Transylvania	5,243	5,323	1.5
Bridgeton	Craven	520	461	-11.3
Broadway	Lee	694	908	30.8
Brookford	Catawba	590	467	-20.8
Brunswick	Columbus	206	223	8.3
Bryson City	Swain	1,290	1,556	20.6
Bu[illegible]	Franklin	284	505	77.8
Bu[illegible]	Pender	1,744	1,586	-9.1
Edenton	Chowan	4,956	5,357	8.1
Elizabeth City	Camden, Pasquotank	14,381	14,004	-2.6
Elizabethtown	Bladen	1,418	3,551	150.4
Elk Park	Avery	503	535	6.4
Elkin	Surry, Wilkes	2,899	2,858	-1.4
Ellenboro	Rutherford	465	560	20.4
Ellerbe	Richmond	913	1,415	55.0
Elm City	Wilson	1,201	1,561	30.0
Elon College	Alamance	2,150	2,873	33.6
Emerald Isle	Carteret	122	865	609.0
Enfield	Halifax	3,272	2,995	-8.5
Erwin	Harnett	2,852	2,828	-0.8
Eureka	Wayne	263	303	15.2
Everetts	Martin	198	213	7.6
Fair Bluff	Columbus	1,039	1,095	5.4
Fairmont	Robeson	2,827	2,658	-6.0
Falson	Duplin	598	636	6.4
Faith	Rowan	506	552	9.1
Falcon	Cumberland, Sampson	357	339	-5.0
Falkland	Pitt	130	118	-9.2
Fallston	Cleveland	301	614	104.0
Farmville	Pitt	4,424	4,707	6.4
Fayetteville	Cumberland	53,510	59,507	11.2
Forest City	Rutherford	7,179	7,688	7.1
Fountain	Pitt	434	424	-2.3
Four Oaks	Johnston	1,057	1,049	-0.8
Foxfire	Moore	9	153	1,600.0
Franklin	Macon	2,336	2,640	13.0
Franklinton	Franklin	1,459	1,394	-4.5
Franklinville	Randolph	794	607	-23.6
Fremont	Wayne	1,596	1,736	8.8
Fuquay-Varina	Wake	3,576	3,110	-13.0
Garland	Sampson	656	885	34.9
Garner	Wake	4,923	10,073	104.6
Garysburg	Northampton	231	1,434	520.8
Gaston	Northampton	1,105	883	-20.1
Gastonia	Gaston	47,322	47,333	0.0
Gatesville	Gates	330	363	7.4
Germanton	Stokes	NA	NA	NA
Gibson	Scotland	502	533	6.2
Gibsonville	Alamance, Guilford	2,019	2,865	41.9
Glen Alpine	Burke	797	645	-19.1
Godwin	Cumberland	129	233	80.6
Gold Point	Martin	108	NA	NA
Goldsboro	Wayne	26,960	31,871	18.2
Goldston	Chatham	364	353	-3.0
Graham	Alamance	8,172	8,674	6.1
Grainger	Lenoir	NA	NA	NA
Granite Falls	Caldwell	2,388	2,580	8.0
Granite Quarry	Rowan	1,344	1,294	-3.7
Greenevers	Duplin	424	477	12.5
Greensboro	Guilford	144,076	155,642	8.0
Greenville	Pitt	29,063	35,740	23.0
Grifton	Lenoir, Pitt	1,860	2,179	17.2
Grimesland	Pitt	394	453	15.0
Grover	Cleveland	555	597	7.6
Halifax	Halifax	335	253	-24.5
Hamilton	Martin	579	638	10.2
Hamlet	Richmond	4,627	4,720	2.0
Harmony	Iredell	377	470	24.7

Burnsville	Yancey	1,348	1,457	7.7
Calabash	Brunswick	154	128	-16.9
Calypso	Duplin	462	689	49.1
Cameron	Moore	204	225	10.3
Candor	Montgomery	561	868	54.7
Canton	Haywood	5,158	4,631	-10.2
Cape Carteret	Carteret	616	914	53.2
Carolina Beach	New Hanover	1,663	2,000	20.3
Carrboro	Orange	5,058	7,336	45.0
Carthage	Moore	1,034	925	-10.5
Cary	Wake	7,686	21,763	183.2
Casar	Cleveland	339	346	2.1
Cashiers	Jackson	230	553	140.4
Castalia	Nash	265	358	35.1
Caswell Beach	Brunswick	28	110	292.9
Catawba	Catawba	565	509	-9.9
Centerville	Franklin	123	135	9.8
Cerro Gordo	Columbus	322	295	-8.4
Chadbourn	Columbus	2,213	1,975	-10.8
Chadwick Acres	Onslow	12	15	25.0
Chapel Hill	Durham, Orange	26,199	32,421	23.7
Charlotte	Mecklenburg	241,420	314,447	30.2
Cherryville	Gaston	5,258	4,844	-7.9
China Grove	Rowan	1,788	2,081	16.4
Chocowinity	Beaufort	566	644	13.8
Claremont	Catawba	788	880	11.7
Clarkton	Bladen	662	664	0.3
Clayton	Johnston	3,103	4,091	31.8
Cleveland	Rowan	614	595	-3.1
Clinton	Sampson	7,157	7,552	5.5
Clyde	Haywood	814	1,008	23.8
Coakley	Edgecombe	NA	NA	NA
Coats	Harnett	1,051	1,385	31.8
Cofield	Hertford	318	465	46.2
Colerain	Bertie	373	284	-23.9
Columbia	Tyrrell	902	758	-16.0
Columbus	Polk	731	727	-0.5
Como	Hertford	211	89	-57.8
Concord	Cabarrus	18,464	16,942	-8.2
Conetoe	Edgecombe	160	215	34.4
Conover	Catawba	3,355	4,245	26.5
Conway	Northampton	694	678	-2.3
Cornelius	Mecklenburg	1,296	1,460	12.7
Cove City	Craven	485	500	3.1
Cramerton	Gaston	2,142	1,869	-12.7
Creedmoor	Granville	1,405	1,641	16.8
Creswell	Washington	633	426	-32.7
Crossnore	Avery	264	297	12.5
Dallas	Gaston	4,059	3,340	-17.7
Danbury	Stokes	152	140	-7.9
Davidson	Iredell, Mecklenburg	2,931	3,241	10.6
Delview	Gaston	11	7	-36.4
Denton	Davidson	1,017	949	-6.7
Dillsboro	Jackson	215	179	-16.7
Dobson	Surry	933	1,222	31.0
Dorches	Nash	686	885	29.0
Dover	Craven	585	600	2.6
Drexel	Burke	1,431	1,392	-2.7
Dublin	Bladen	283	477	68.6
Dudley	Wayne	199	NA	NA
Dundarrach	Hoke	53	NA	NA
Dunn	Harnett	8,302	8,962	7.9%
Durham	Durham	95,438	100,831	5.7
Earl	Cleveland	195	206	5.6
East Arcadia	Bladen	556	461	-17.1
East Bend	Yadkin	485	602	24.1
East Laurinburg	Scotland	487	536	10.1
East Spencer	Rowan	2,217	2,150	-3.0
Edon	Rockingham	15,871	15,672	-1.3

Harrellsville	[illegible]			
Harrisburg	Cabarrus	1,[illegible]	1,[illegible]	[illegible]
Hassell	Martin	160	109	-31.9
Havelock	Craven	3,012	17,718	488.2
Haw River	Alamance	1,944	1,858	-4.4
Hayesville	Clay	428	376	-12.1
Haywood	Chatham	NA	190	NA
Hazelwood	Haywood	2,057	1,811	-12.0
Henderson	Vance	13,896	13,522	-2.7
Hendersonville	Henderson	6,443	6,862	6.5
Hertford	Perquimans	2,023	1,941	-4.1
Hickory	Burke, Catawba	20,569	20,757	0.9
High Point	(a)	63,229	63,380	0.2
High Shoals	Gaston, Lincoln	563	586	4.1
Highlands	Macon	583	653	12.0
Hildebran	Burke	521	628	20.5
Hillsborough	Orange	1,444	3,019	109.1
Hobgood	Halifax	530	483	-8.9
Hoffman	Richmond	434	389	-10.4
Holden Beach	Brunswick	136	232	70.6
Holly Springs	Wake	697	688	-1.3
Holly Ridge	Onslow	415	465	12.0
Hollyville	Pamlico	NA	100	NA
Hookerton	Greene	441	460	4.3
Hope Mills	Cumberland	1,866	5,412	190.0
Hot Springs	Madison	653	678	3.8
Hudson	Caldwell	2,820	2,888	2.4
Huntersville	Mecklenburg	1,538	1,294	-15.9
Indian Beach	Carteret	245	54	-78.0
Indian Trail	Union	405	811	100.2
Jackson	Northampton	762	720	-5.5
Jackson Springs	Moore	NA	NA	NA
Jacksonville	Onslow	16,289	17,056	4.7
Jamestown	Guilford	1,297	2,148	65.6
Jamesville	Martin	533	604	13.3
Jason	Greene	NA	NA	NA
Jefferson	Ashe	943	1,086	15.2
Jonesville	Yadkin	1,659	1,752	5.6
Jupiter	Buncombe	208	NA	NA
Kelford	Bertie	295	254	-13.9
Kenansville	Duplin	762	931	22.2
Kenly	Johnston, Wilson	1,370	1,433	4.6
Kernersville	Forsyth	4,815	6,802	41.3
Kill Devil Hills	Dare	357	1,796	403.1
Kings Mountain	Cleveland, Gaston	8,465	9,080	7.3
Kinston	Lenoir	23,020	25,234	9.6
Kittrell	Vance	427	225	-47.3
Knightdale	Wake	815	985	20.9
Kure Beach	New Hanover	394	611	55.1
LaGrange	Lenoir	2,679	3,147	17.5%
Lake Lure	Rutherford	456	488	7.0
Lake Waccamaw	Columbus	924	1,133	22.6
Landis	Rowan	2,297	2,092	-8.9
Lansing	Ashe	283	194	-31.4
Lasker	Northampton	114	96	-15.8
Lattimore	Cleveland	257	237	-7.8
Laurel Park	Henderson	581	764	31.5
Laurinburg	Scotland	8,859	11,480	29.6
Lawndale	Cleveland	544	469	-13.8
Lawrence	Edgecombe	NA	NA	NA
Leggott	Edgecombe	120	99	-17.5
Lenoir	Caldwell	14,705	13,748	-6.5
Lewiston	Bertie	327	459	40.4
Lexington	Davidson	17,205	15,711	-8.7
Liberty	Randolph	2,167	1,997	-7.8
Liledville	Anson	641	588	-8.3
Lillington	Harnett	1,155	1,948	68.7
Lincolnton	Lincoln	5,293	4,879	-7.8
Lindon	Cumberland	205	365	78.0

City	County Location	1970 Census	1980 Census	Percentage Change
Linville	Avery	NA	244	NA
Littleton	Halifax	903	820	-9.2
Locust	Stanly	1,484	1,590	7.1
Long Beach	Brunswick	493	1,844	274.0
Long View	Burke, Catawba	3,360	3,587	6.8
Louisburg	Franklin	2,941	3,238	10.1
Love Valley	Iredell	40	55	37.5
Lowell	Gaston	3,307	2,917	-11.8
Lucama	Wilson	610	1,070	75.4
Lumber Bridge	Robeson	117	171	46.2
Lumberton	Robeson	16,961	18,241	7.5
McAdenville	Gaston.	950	947	-0.3
McDonald	Robeson	80	117	46.3
McFarlan	Anson	140	133	-5.0
Macclesfield	Edgecombe	536	504	-6.0
Macon	Warren	179	153	-14.5
Madison	Rockingham	2,018	2,806	39.0
Maggie Valley	Haywood	159	202	27.0
Magnolia	Duplin	614	592	-3.6
Maiden	Catawba, Lincoln	2,416	2,574	6.5
Manteo	Dare	547	902	64.9
Marietta	Robeson	70	NA	NA
Marion	McDowell	3,335	3,684	10.5
Mars Hill	Madison	1,623	2,126	31.0
Marshall	Madison	982	809	-17.6
Marshville	Union	1,405	2,011	43.1
Matthews	Mecklenburg	783	1,648	110.5
Maury	Greene	421	NA	NA
Maxton	Robeson, Scotland	1,885	2,711	43.8
Mayodan	Rockingham	2,875	2,627	-8.6
Maysville	Jones	912	877	-3.8
Mebane	Alamance, Orange	2,573	2,782	8.1
Mesic	Pamlico	369	390	5.7
Micro	Johnston	300	438	46.0
Middleburg	Vance	149	185	24.2
Middlesex	Nash	729	837	14.8
Mildred	Edgecombe	NA	NA	NA
Milton	Caswell	235	235	0.0
Minnesott Beach	Pamlico	41	171	317.1
Mint Hill	Mecklenburg	2,262	7,915	249.9
Mocksville	Davie	2,529	2,637	4.3
Monroe	Union	11,282	12,639	12.0
Montreat	Buncombe	581	741	27.5
Mooresboro	Cleveland	453	405	-8.6
Mooresville	Iredell	8,808	8,575	-2.6
Morehead City	Carteret	5,233	4,359	-16.7
Morganton	Burke	13,625	13,763	1.0
Morrisville	Wake	209	251	20.1
Morven	Anson	562	765	36.1
Mount Airy	Surry	7,325	6,862	-6.3
Mount Gilead	Montgomery	1,286	1,423	10.7
Mount Holly	Gaston	5,107	4,530	-11.3
Mount Olive	Duplin, Wayne	4,914	4,876	-0.8
Mount Pleasant	Cabarrus	1,174	1,210	3.1
Murfreesboro	Hertford	4,418	3,007	-31.9
Murphy	Cherokee	2,082	2,070	-0.6
Nags Head	Dare	414	1,020	146.4
Nashville	Nash	1,670	2,678	60.4
Navassa	Brunswick	487	439	-9.9
New Bern	Craven	14,660	14,557	-0.7

City	County Location	1970 Census	1980 Census	Percentage Change
Rockwell	Rowan	999	1,339	34.0
Rocky Mount	Edgecombe, Nash	34,284	41,283	20.4
Rolesville	Wake	533	381	-28.5
Ronda	Wilkes	465	457	-1.7
Roper	Washington	649	795	22.5
Rose Hill	Duplin	1,448	1,508	4.1
Roseboro	Sampson	1,235	1,227	-0.6
Rosman	Transylvania	407	512	25.8
Rowland	Robeson	1,358	1,841	35.6
Roxboro	Person	5,370	7,532	-86.4
Roxobel	Bertie	347	278	-19.9
Rural Hall	Forsyth	1,289	1,336	3.6
Ruth	Rutherford	360	381	5.8
Rutherford College	Burke	821	1,108	35.0
Rutherfordton	Rutherford	3,245	3,434	5.8
Salemburg	Sampson	669	742	10.9
Salisbury	Rowan	22,515	22,677	0.7
Saluda	Polk	546	607	11.2
Sanford	Lee	11,716	14,773	26.1
Saratoga	Wilson	391	381	-2.6
Scotland Neck	Halifax	2,869	2,034	-1.2
Seaboard	Northampton	611	687	12.4
Seagrove	Randolph	354	294	-16.9
Selma	Johnston	4,356	4,762	9.3
Seven Devils	Avery, Watauga	0	54	0
Seven Springs	Wayne	188	166	-11.7
Severn	Northampton	356	309	-13.2
Shady Forest	Brunswick	17	43	152.9
Shallotte	Brunswick	597	680	13.9
Sharpsburg	(b)	789	997	26.4
Shelby	Cleveland	16,328	15,310	-6.2
Siler City	Chatham	4,689	4,446	-5.2
Simpson	Pitt	383	407	6.3
Sims	Wilson	205	192	-6.3
Smithfield	Johnston	6,677	7,288	9.2
Snow Hill	Greene	1,359	1,374	1.1
Southern Pines	Moore	5,937	8,620	45.2
Southern Shores	Dare	75	395	NA
Southport	Brunswick	2,220	2,824	27.2
Sparta	Alleghany	1,304	1,687	29.4
Speed	Edgecombe	142	95	-33.1
Spencer	Rowan	3,075	2,938	-4.5
Spencer Mountain	Gaston	300	169	-43.7
Spindale	Rutherford	3,848	4,246	10.3
Spring Hope	Nash	1,334	1,254	-6.0
Spring Lake	Cumberland	3,968	6,273	58.1
Spruce Pine	Mitchell	2,333	2,282	-2.2
St. Pauls	Robeson	2,011	1,639	-18.5
Staley	Randolph	239	204	-14.6
Stallings	Union	726	1,826	151.5
Stanfield	Stanly	458	463	1.1
Stanley	Gaston	2,336	2,341	0.2
Stantonsburg	Wilson	869	920	5.9
Star	Montgomery	892	816	-8.5
Statesville	Iredell	20,007	18,622	-6.9
Stedman	Cumberland	505	723	43.2
Stem	Granville	242	222	-8.3
Stoneville	Rockingham	1,030	1,054	2.3
Stonewall	Pamlico	335	360	7.5
Stovall	Granville	405	417	3.0

New London	Stanly	285	454	59.3
Newland	Avery	524	722	37.8
Newport	Carteret	1,735	1,883	8.5
Newton	Catawba	7,857	7,624	-3.0
Newton Grove	Sampson	546	564	3.3
Norlina	Warren	969	901	-7.0
Norman	Richmond	157	252	60.5
North Wilkesboro	Wilkes	3,357	3,260	-2.9
Norwood	Stanly	1,896	1,818	-4.1
Oak City	Martin	559	475	-15.0
Oakboro	Stanly	568	587	3.3
Ocean Isle Beach	Brunswick	78	143	83.3
Old Fort	McDowell	676	752	11.2
Old Sparta	Edgecombe	NA	NA	NA
Oriental	Pamlico	445	536	20.4
Orrum	Robeson	162	167	3.1
Oxford	Granville	7,178	7,603	5.9
Pantego	Beaufort	218	185	-15.1
Parkton	Robeson	550	564	2.5
Parmele	Martin	373	484	29.8
Patterson Springs	Cleveland	478	731	52.9
Peachland	Anson	556	506	-9.0
Pembroke	Robeson	1,982	2,698	36.1
Pikeville	Wayne	580	662	14.1
Pilot Mountain	Surry	1,309	1,090	-16.7
Pine Knoll Shores	Carteret	62	646	941.9
Pine Level	Johnston	983	953	-3.1
Pinebluff	Moore	570	935	64.0
Pinehurst	Moore	1,056	NA	NA
Pinetops	Edgecombe	1,379	1,465	6.2
Pineville	Mecklenburg	1,948	1,525	-21.7
Pink Hill	Lenoir	522	644	23.4
Pittsboro	Chatham	1,447	1,332	-7.9
Plymouth	Washington	4,774	4,571	-4.3
Polkton	Anson	845	762	-9.8
Polkville	Cleveland	494	528	6.9
Pollocksville	Jones	456	318	-30.3
Powellsville	Bertie	247	320	29.6
Princeton	Johnston	1,044	1,034	-1.0
Princeville	Edgecombe	654	1,508	130.6
Proctorville	Robeson	157	205	30.6%
Raeford	Hoke	3,180	3,630	14.2
Raleigh	Wake	122,830	150,255	22.3
Ramseur	Randolph	1,328	1,162	-12.5
Randleman	Randolph	2,312	2,156	-6.7
Ranlo	Gaston	2,092	1,774	-15.2
Raynham	Robeson	75	83	10.7
Red Oak	Nash	359	314	-12.5
Red Springs	Robeson	3,383	3,607	6.6
Reidsville	Rockingham	13,636	12,492	-8.4
Rennert	Robeson	175	178	1.7
Rhodhiss	Burke, Caldwell	784	727	-7.3
Rich Square	Northampton	1,254	1,057	-15.7
Richfield	Stanly	306	373	21.9
Richlands	Onslow	935	825	-11.8
Roanoke Rapids	Halifax	13,508	14,702	8.8
Robbins	Moore	1,059	1,256	18.6
Robbinsville	Graham	777	1,370	76.3
Robersonville	Martin	1,910	1,981	3.7
Rockingham	Richmond	5,852	8,300	41.8
Sunset Beach	Brunswick	108	304	181.5
Surf City	Pender	166	391	135.5
Swansboro	Onslow	1,207	976	-19.1
Sylva	Jackson	1,561	1,699	8.8
Tabor City	Columbus	2,400	2,710	12.9
Tar Heel	Bladen	87	118	35.6
Tarboro	Edgecombe	9,425	8,634	-8.4
Taylorville	Alexander	1,231	1,103	-10.4
Teachey	Duplin	219	373	70.3
Thomasville	Davidson	15,230	14,144	-7.1
Topsail Beach	Pender	108	264	144.4
Trent Woods	Craven	719	1,177	63.7
Trenton	Jones	539	407	-24.5
Troutman	Iredell	797	1,360	70.6
Troy	Montgomery	2,429	2,702	11.2
Tryon	Polk	1,951	1,796	-7.9
Turkey	Sampson	329	417	26.7
Unionville	Union	NA	NA	NA
Valdese	Burke	3,102	3,364	5.7
Vanceboro	Craven	758	833	9.9
Vandemere	Pamlico	379	335	-11.6
Vass	Moore	885	828	-6.4
Waco	Cleveland	245	322	31.4
Wade	Cumberland	315	474	50.5
Wadesboro	Anson	3,977	4,206	5.8
Wagram	Scotland	718	617	-14.1
Wake Forest	Wake	3,148	3,780	20.1
Wallace	Duplin, Pender	2,905	2,903	-0.1
Walnut Cove	Stokes	1,213	1,147	-5.4
Walnut Creek	Wayne	81	343	323.5
Walstonburg	Greene	176	181	2.8
Warrenton	Warren	1,035	908	-12.3
Warsaw	Duplin	2,701	2,910	7.7
Washington	Beaufort	8,961	8,418	-6.1
Washington Park	Beaufort	517	514	-0.6
Watha	Pender	181	196	8.3
Waxhaw	Union	1,248	1,208	-3.2
Waynesville	Haywood	6,488	6,765	4.3
Weaverville	Buncombe	1,280	1,495	16.8
Webster	Jackson	181	200	10.5%
Weldon	Halifax	2,304	1,844	-20.0%
Wendell	Wake	1,929	2,222	15.2
West Jefferson	Ashe	889	822	-7.5
Whispering Pines	Moore	362	1,160	220.4
Whitakers	Edgecombe, Nash	926	924	-0.2
White Lake	Bladen	232	968	317.2
Whiteville	Columbus	4,195	5,565	32.7
Wilkesboro	Wilkes	2,038	2,335	14.6
Williamsboro	Vance	NA	59	NA
Williamston	Martin	6,570	6,159	-6.3
Wilmington	New Hanover	46,169	44,000	-4.7
Wilson	Wilson	29,347	34,424	17.3
Windsor	Bertie	2,199	2,126	-3.3
Winfall	Perquimans	581	634	9.1%
Wingate	Union	2,569	2,615	1.8
Winston-Salem	Forsyth	133,683	131,885	-1.3
Winterville	Pitt	1,437	2,052	42.8
Winton	Hertford	917	825	-10.0
Woodfin	Buncombe	2,831	3,260	15.2
Woodland	Northampton	744	861	15.7
Woodville	Bertie	253	212	-16.2
Wrightsville Beach	New Hanover	1,701	2,910	71.1
Yadkinville	Yadkin	2,232	2,216	-0.7
Yaupon Beach	Brunswick	334	569	70.4
Youngsville	Franklin	555	486	-12.4
Zebulon	Wake	1,839	2,055	11.7
North Carolina Municipal Population		2,210,008	2,476,041	15.6

(a) Davidson, Guilford, and Randolph counties.
(b) Edgecombe, Nash, and Wilson counties.
NA - Not Available

SOURCE: U.S. Department of Commerce, Bureau of the Census.
Office of State Budget and Management, *Research and Planning Services.*

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North Carolina State Government

Statistical Abstract

Table 178

EMISSIONS INVENTORY SUMMARY (IN TONS)
FROM POINT AND AREA SOURCES, BY COUNTY
1979

County	Particulates		Sulfur Dioxide		Nitrogen Oxides		Volatile Organic Compounds and Hydrocarbons		Carbon Monoxide	
	Area Sources	Point Sources	Area Sources	Point Sources	Area Sources	Point Sources	Area Sources	Point Sources	Area Sources	Point Sources
State Total	553,662	222,263	43,247	731,157	334,896	290,035	560,734	114,695	2,416,683	130,670
Alamance	7,718	868	818	1,428	5,890	266	11,748	3	45,688	21
Alexander	2,150	633	173	128	1,150	32	1,634	535	6,880	2
Alleghany	2,168	-	63	-	611	-	924	-	3,931	-
Anson	2,537	201	183	2	1,618	16	2,700	92	10,909	4
Ashe	5,022	422	127	9	1,127	74	1,713	231	7,535	12
Avery	1,785	78	89	83	799	50	797	8	4,116	7
Beaufort	5,334	1,079	307	21,236	2,731	1,145	4,277	23	19,654	51
Bertie	2,927	1,688	144	316	1,598	312	2,107	63	11,434	101
Bladen	3,565	135	191	551	1,935	99	2,731	184	12,777	8
Brunswick	3,293	913	284	16,616	2,818	3,418	3,285	29,359	16,967	10,845
Buncombe	15,826	4,523	1,036	101,654	8,073	34,108	17,219	536	66,409	2,245
Burke	5,906	568	485	1,528	4,066	671	6,335	1,486	27,446	109
Cabarrus	6,136	765	581	2,638	4,775	1,126	8,704	998	45,995	94
Caldwell	6,070	3,850	581	383	3,408	435	4,897	5,680	19,740	69
Camden	707	3	47	-	517	-	825	-	4,021	-
Carteret	1,949	8	270	81	2,269	16	5,080	-	20,446	2
Caswell	2,438	899	124	-	1,160	-	1,516	-	8,438	-
Catawba	7,537	19,814	1,345	75,338	7,829	33,880	13,934	3,016	40,662	1,932
Chatham	4,994	9,679	349	12,208	2,464	5,352	3,999	756	15,675	889
Cherokee	3,332	50	104	1	1,050	6	1,750	1	7,010	1
Chowan	747	54	93	326	795	54	1,405	227	6,347	4
Clay	2,096	-	71	-	1,200	-	2,076	-	17,224	-
Cleveland	6,160	365	945	406	4,030	929	6,461	-	15,717	46
Columbus	5,840	1,406	351	7,735	3,216	2,082	4,170	412	20,162	12,427
Craven	6,501	3,358	399	6,706	3,677	2,614	6,682	1,048	32,514	7,085
Cumberland	17,810	586	1,120	2,927	9,493	681	17,624	834	90,631	74
Currituck	1,100	159	700	-	1,200	2	1,400	-	4,900	-
Dare	605	5	104	240	932	71	3,926	2	14,035	12
Davidson	10,207	355	756	998	6,301	629	10,328	2,470	44,355	144
Davie	2,233	428	149	66	1,259	31	5,206	181	8,938	5
Duplin	4,789	105	273	763	2,949	154	3,668	41	18,942	13
Durham	10,624	836	778	880	6,398	194	12,903	703	58,610	15
Edgecombe	3,302	3,041	491	407	4,010	81	4,720	1,367	21,017	17
Forsyth	17,838	528	2,173	5,837	16,754	2,152	24,192	21,488	95,712	186
Franklin	2,850	-	181	-	1,771	-	3,165	83	13,286	-
Gaston	10,171	7,566	1,145	62,730	8,842	29,610	15,598	687	61,159	1,789
Gates	1,298	-	69	-	729	-	740	-	4,277	-
Graham	842	44	35	60	364	19	479	3	2,231	4
Granville	5,457	78	206	720	2,277	1,028	4,013	515	19,515	188
Greene	1,329	11	87	-	998	-	1,330	-	7,063	-
Guilford	33,493	2,702	2,769	3,330	20,142	989	31,063	14,057	139,198	495
Halifax	5,044	1,306	315	9,556	2,903	2,485	5,316	329	25,552	10,410
Harnett	5,575	143	306	765	3,268	169	4,489	5	24,530	14
Haywood	4,414	682	285	9,768	2,528	4,703	5,531	49	17,166	43,964
Henderson	6,842	308	370	2	3,040	28	5,703	3	21,248	7
Hertford	2,085	885	152	276	1,410	2,615	2,278	54	11,197	111
Hoke	897	31	122	193	979	54	1,834	-	6,977	3
	828	148	95	-	814	-	3,074	-	11,064	-
					58	665	9,541	1,025	37,946	114

Johnston	17,755	1,671	1429	139	[illegible]	31	25,726	718	24,989	3
Jones	995	-	70	-	2	-	21,962	-	5,573	-
Lee	1,936	81	329	75	9	25	4,465	274	15,602	314
Lenoir	32,597	451	368	2,979	[illegible]	1,094	4,523	15	22,470	282
Lincoln	2,892	116	275	714	2,126	173	3,292	167	11,732	13
McDowell	2,645	185	179	1,042	1,690	392	2,698	230	12,728	44
Macon	3,282	16	263	-	2,016	-	3,091	-	16,300	-
Madison	3,444	1	160	14	1,165	7	1,442	2	7,027	2
Martin	3,523	3,738	93	18,647	863	7,719	1,039	1,093	5,528	12,789
Mecklenburg	20,607	3,335	3,503	3,631	24,745	813	36,601	5,707	156,662	1,758
Mitchell	1,591	124	106	52	780	13	745	520	4,161	1
Montgomery	1,949	365	190	36	1,465	31	3,339	13	9,172	23
Moore	4,418	97	265	71	2,464	46	4,295	60	18,219	9
Nash	5,322	559	594	1,203	4,373	323	8,567	309	35,371	30
New Hanover	4,042	4,675	1,080	36,483	5,411	13,157	10,379	8,344	40,872	855
Northampton	2,193	232	144	627	1,607	280	1,999	150	10,632	43
Onslow	6,007	39	485	48	4,326	10	7,447	-	35,360	-
Orange	6,169	90	336	1,194	2,929	615	4,846	57	28,470	31
Pamlico	995	-	91	-	773	-	1,635	-	6,356	-
Pasquotank	1,508	432	166	140	1,238	211	2,436	38	11,882	40
Pender	2,248	-	130	-	1,628	-	2,232	-	12,482	-
Perquimans	1,004	21	76	-	755	-	1,065	-	5,249	-
Person	4,221	15,859	195	73,710	1,533	34,504	2,968	593	11,446	1,923
Pitt	8,053	390	423	1,580	3,970	312	6,656	30	37,356	26
Polk	1,917	37	82	34	703	56	970	-	4,441	1
Randolph	11,786	83	627	64	3,543	31	9,203	377	27,791	-
Richmond	2,983	21	485	38	2,663	8	4,786	-	17,374	80
Robeson	9,120	452	621	6,434	5,365	2,634	8,985	631	41,534	154
Rockingham	10,052	34,193	586	7,270	4,726	3,390	8,993	251	36,548	199
Rowan	7,590	3,548	698	10,791	5,126	4,909	9,062	139	39,959	272
Rutherford	6,778	2,994	331	37,872	2,930	14,013	4,912	382	21,356	787
Sampson	5,988	101	345	705	3,321	136	4,839	95	23,036	11
Scotland	1,780	272	171	585	1,663	191	3,385	2,458	12,465	22
Stanly	3,915	1,288	321	2,307	2,745	385	3,764	130	17,428	11,436
Stokes	4,908	38,172	186	146,468	1,627	63,072	2,138	1,052	10,278	3,504
Surry	8,047	1,285	521	1,413	3,908	445	6,333	154	23,729	66
Swain	988	182	53	-	532	-	838	-	3,290	-
Transylvania	2,181	31	116	807	935	201	1,968	3	6,691	12
Tyrrell	674	3	70	-	627	-	1,139	-	4,752	-
Union	6,003	896	534	182	4,126	72	6,294	784	23,997	7
Vance	2,452	267	280	66	2,193	33	3,913	50	16,660	1
Wake	25,540	214	1,839	265	16,875	119	26,854	891	144,690	699
Warren	2,761	-	108	-	1,183	-	1,584	-	8,294	-
Washington	1,494	930	622	26	1,387	173	2,501	36	7,466	35
Watauga	4,143	47	176	585	1,509	140	2,268	33	11,054	9
Wayne	6,682	29,890	564	21,769	5,475	6,828	9,922	144	37,706	1,619
Wilkes	9,765	1,081	415	1,074	3,589	327	3,732	189	17,403	41
Wilson	4,374	202	539	86	4,449	18	8,416	16	30,285	1
Yadkin	3,292	10	189	18	1,718	4	2,171	-	11,255	1
Yancey	1,831	13	95	102	771	19	1,023	-	5,368	2

SOURCE: North Carolina Department of Natural Resources and Community Development, Division of Environmental Management.

Ref. 18

Uncontrolled Hazardous Waste Site Ranking System

A Users Manual

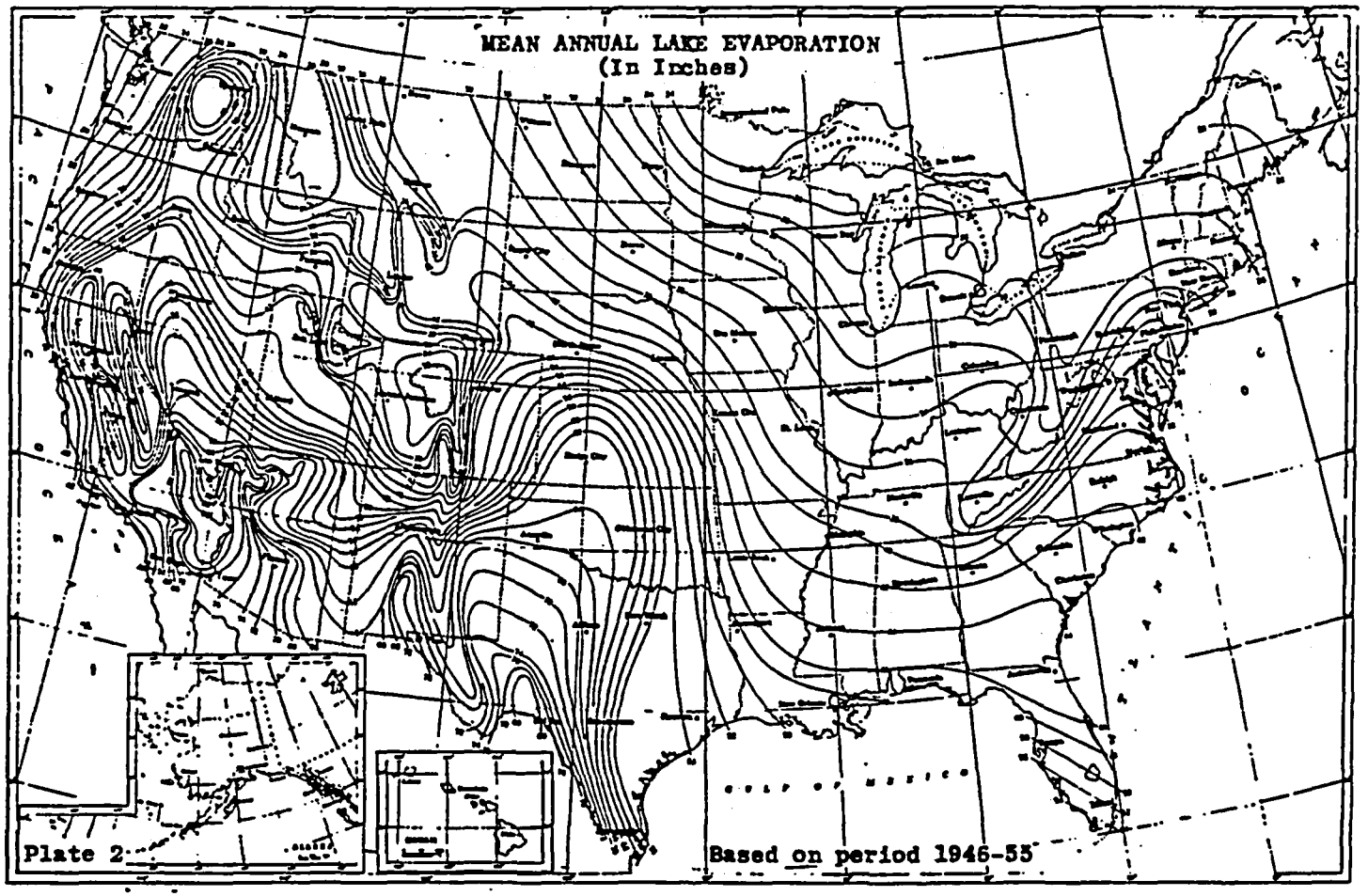
Kris W. Barrett
S. Steven Chang
Stuart A. Haus
Andrew M. Platt

August 1982

MTR-82W111

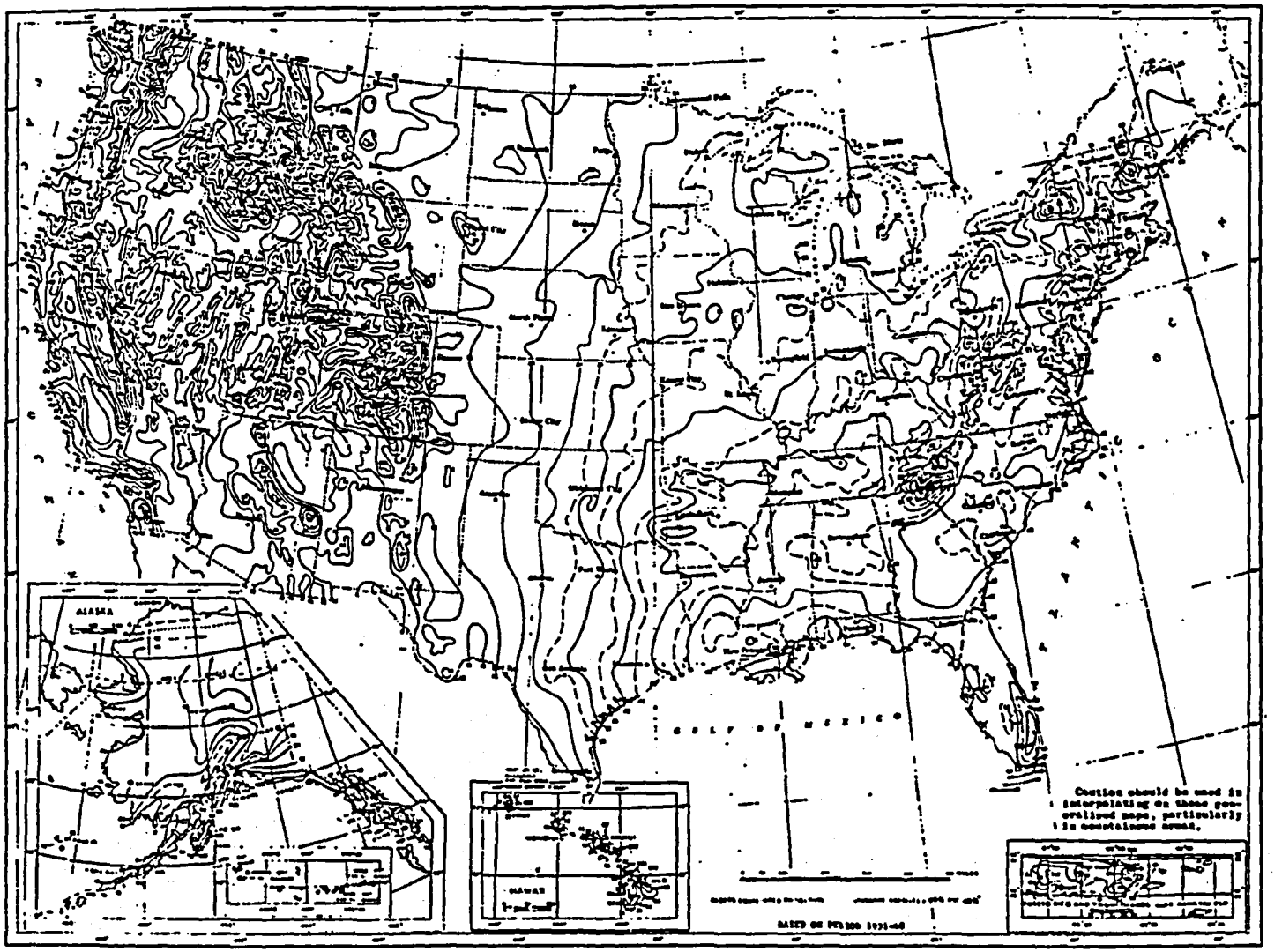
SPONSOR:
U.S. Environmental Protection Agency
CONTRACT NO.:
68-01-6278

The MITRE Corporation
Metrek Division
1820 Dolley Madison Boulevard
McLean, Virginia 22102



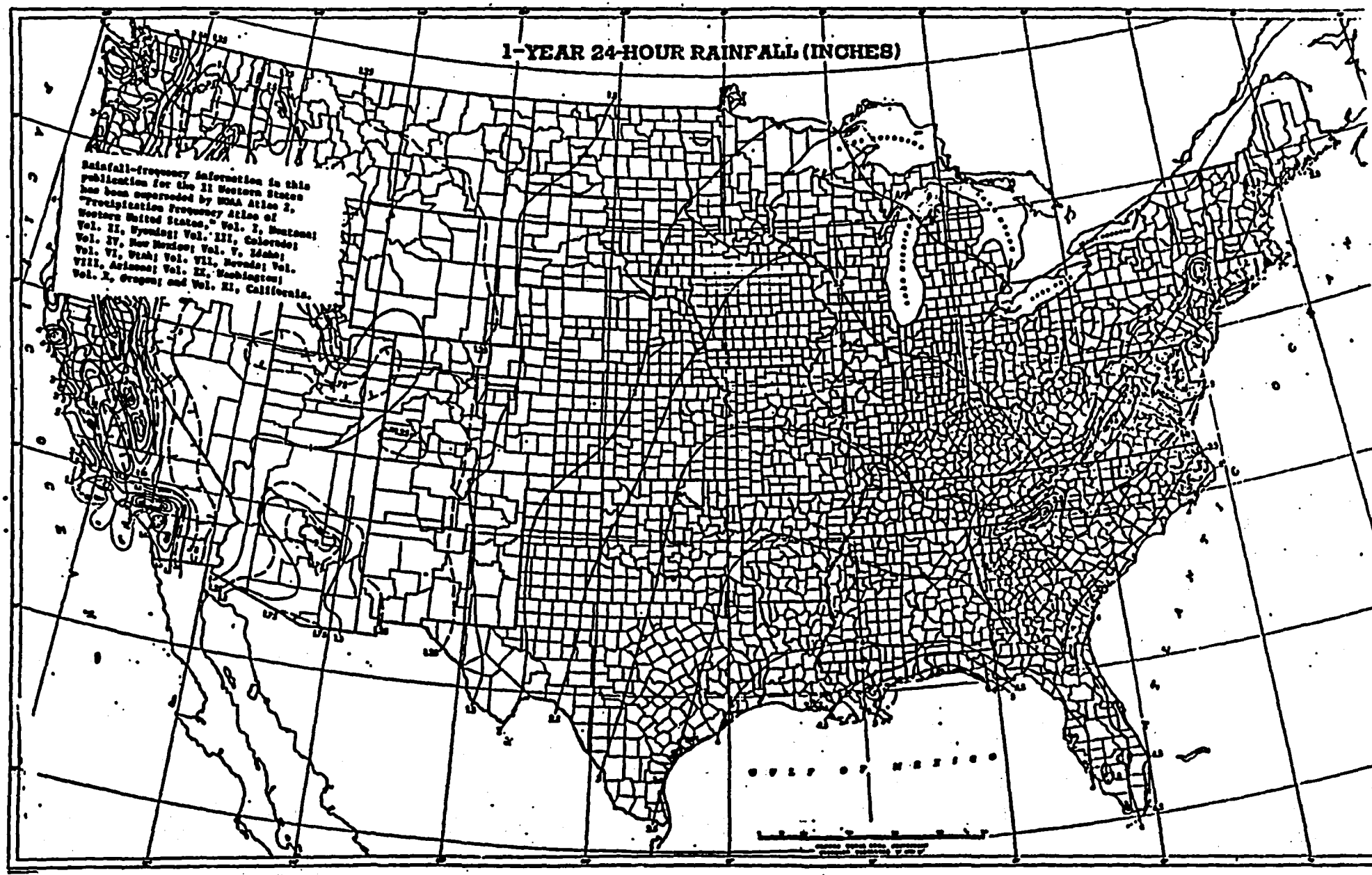
Source: Climatic Atlas of the United States, U.S. Department of Commerce, National Climatic Center, Ashville, N.C., 1979.

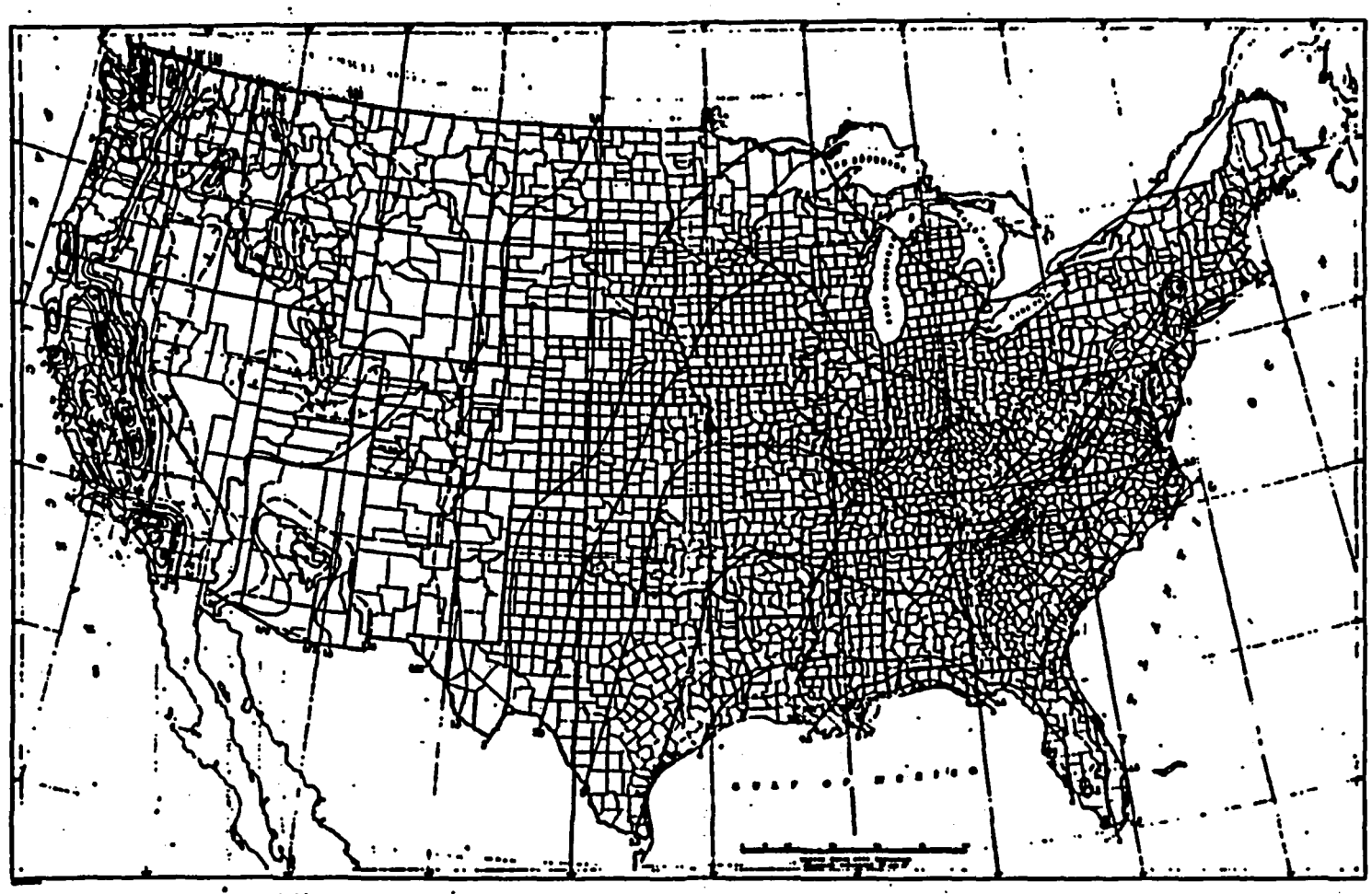
FIGURE 4
MEAN ANNUAL LAKE EVAPORATION
(IN INCHES)



Source: Climatic Atlas of the United States, U.S. Department of Commerce, National Climatic Center, Asheville, N.C., 1979.

FIGURE 5
NORMAL-ANNUAL TOTAL PRECIPITATION (INCHES)


1-YEAR 24-HOUR RAINFALL (INCHES)
Rainfall-frequency information in this publication for the 11 Western States has been superseded by NOAA Atlas 2, "Precipitation Frequency Atlas of Western United States," Vol. I, Montana; Vol. II, Wyoming; Vol. III, Colorado; Vol. IV, New Mexico; Vol. V, Idaho; Vol. VI, Utah; Vol. VII, Nevada; Vol. VIII, Arizona; Vol. IX, Washington; Vol. X, Oregon; and Vol. XI, California.
GULF OF MEXICO



Source: Rainfall Frequency Atlas of the United States, Technical Paper No. 40, U.S. Department of Commerce, U.S. Government Printing Office, Washington, D.C., 1963.

FIGURE 8
1-YEAR 24-HOUR RAINFALL
(INCHES)

Ref. 19

Dangerous Properties of Industrial Materials

Sixth Edition

N. IRVING SAX

Assisted by:

Benjamin Feiner/Joseph J. Fitzgerald/Thomas J. Haley/Elizabeth K. Weisburger

4-9-85 $198.00 SIAM (2.C.)

WA 440 S29dp 1984 c.2

VNR VAN NOSTRAND REINHOLD COMPANY
New York

PWID	PWMANAME	PWMAARCO	PWMAPNUM	PWPLSOC1	PWPLPOPL	PWPLTYPE	PWPLACTV	PWPLLAT1	PWPLLON1
0118503	CONNERS PARK		0000000	G	000000025	N	A	0354325	0810655
0118508	ROY S PRICE		0000000	G	000000036	N	A	0354325	0811905
0118509	BRUCE HUFFMON APTS 1		0000000	G	000000035	N	A	0354450	0811650
0118510	BRUCE HUFFMON APTS 2		0000000	G	000000025	N	A	0354430	0811545
0118511	CLINTON LOWMON		0000000	G	000000032	N	A	0354620	0810640
0118512	EARL PROPST		0000000	G	000000025	N	A	0354302	0811725
0118514	O C RITCHIE		0000000	G	000000035	N	A	0354250	0811610
0118515	BOBBY LITTLE MOBILE		0000000	G	000000025	N	A	0354745	0811130
0118516	BOBBY LITTLE		0000000	G	000000025	N	A	0354710	0811325
0118517	A C YOUNT APTS		0000000	G	000000032	N	A	0354500	0811245
0118518	WILLIAM CRAVEN KERNS		0000000	G	000000025	N	A	0354600	0811530
0118529	SIPE'S ORCHARD HOME INC	704	2565056	G	000000050	N	A	0354505	0811430
0118531	OXFORD GRILL	704	4599374	G	000000075	N	A	0354622	0810852
0118539	CAMP JOY	704	2565813	G	000000038	N	A	0354525	0811605
0118540	ANGUS STEAK HOUSE	704	3279883	G	000000050	N	A	0354400	0812100
0118542	SIGMONS GRILL	704	2568873	G	000000200	N	A	0354750	0811150
0118544	THE KEG	704	4649801	G	000000100	N	A	0354420	0811420
0118547	WHITE PINES RESTR	704	4649908	G	000000100	N	A	0354225	0811137
0118548	DUBS DRIVE-IN	704	4646410	G	000000200	N	A	0354220	0811130
0118554	HICKORY DRIVE-IN THEAT	704	3228446	G	000000025	N	A	0354212	0811805
0118558	HEFNERS BARBECUE	704	2565407	G	000000300	N	A	0354532	0811630
0118559	SHELLS BAR BARB	704	2562275	G	000000300	N	A	0354520	0811704
0118560	CIRCLE S DINER	704	2569685	G	000000400	N	A	0354525	0811645
0118561	GREYSTONE INN		0000000	G	000000025	N	A	0354300	0812005
0118562	COLONIAL LANES	704	3272695	G	000000700	N	A	0354225	0811804
0118569	ST JOHNS LUTHERAN CH	704	4644071	G	000000220	N	A	0354355	0811120
0118572	H C SHOOK GROCERY	704	4645207	G	000000035	N	A	0354350	0811015
0118573	ST PETERS CHURCH		0000000	G	000000416	N	A	0354820	0811230
0118600	CATAWBA FARM SERVICE	704	2412113	G	000000025	N	A	0354307	0810445
0118601	HUFFMANS QUICK SER	704	2413222	G	000000100	N	A	0354310	0810445
0118627	CLYDES HANDY STORE	704	2565544	G	000000025	N	A	0354800	0811500
0118628	OXFORD SUPRETTE		0000000	G	000000025	N	A	0354900	0811130
0118629	LITTLE AUTO HDW CNT	704	2568907	G	000000025	N	A	0354745	0811120
0118630	COMPONENT MFG SERVICE	704	4597302	G	000000060	N	A	0354650	0810825
0118631	HOLLER BROS	704	4597000	G	000000025	N	A	0354600	0811030
0118639	DEALS PROCESSING	704	2568365	G	000000025	N	A	0354600	0811500
0118640	SIGMON MEAT PROCESSING	704	4597332	G	000000025	N	A	0354600	0810903
0118641	CAMP SAIN POOL & REC	704	3248117	G	000000100	N	A	0354230	0812355
0118643	TABER CHRIST DAY SCH	704	3221308	G	000000425	N	A	0354610	0811830
0118645	ACF CARTER-HICKORY	704	3221238	G	000000035	N	A	0354220	0811847
0118652	D & B SUPERETTE	704	4597577	G	000000025	N	A	0354600	0811030
0118661	AUGUSTANA LUTHERAN CH	704	3286706	G	000000220	N	A	0354230	0811845
0118663	OXFORD BAPTIST CH		0000000	G	000000140	N	A	0354735	0811125
0118677	LAKEWOOD SUNOCO SER STA		0000000	G	000000030	N	A	0354218	0811525
0118678	HICKORY LIC RENEW CTR	919	7337270	G	000000120	N	A	0354515	0812018
0149104	CARDINAL ACRES	704	5852223	G	000000140	C	A	0354910	0805020
0149109	DOGWOOD ESTATES MHP	704	8730054	G	000000126	C	A	0354630	0805030 1
0149116	HIDDEN VALLEY MHP	704	8728324	G	000000040	C	A	0354330	0810145
0149117	GRAYSON PARK		0000000	G	000000208	C	A	0354845	0805655
0149139	SUBURBAN ACRES		0000000	G	000000244	C	A	0354530	0805015 3
0149151	PHAM'S MHP	704	5353494	G	000000060	C	A	0354430	0805600
0149152	CORRIHER MOBILE HOME PARK	704	8723367	G	000000129	C	A	0354530	0804722 4
0149155	WESTOVER S/D		0000000	G	000000448	C	A	0354650	0805630
0149159	LEISUREWOOD MHP	704	6633694	G	000000100	C	A	0354500	0805000 2

Appendix D

Site Inspection Form

EPA

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

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
NC	NCD042269134

II. SITE NAME AND LOCATION

01 SITE NAME (Legal, common, or descriptive name of site)	02 STREET, ROUTE NO., OR SPECIFIC LOCATION IDENTIFIER
Southern Fastening Systems	1211 North Barkley Road

03 CITY	04 STATE	05 ZIP CODE	06 COUNTY	07 COUNTY CODE	08 CONG DIST
Statesville	NC	28677	Iredell		

09 COORDINATES — LATITUDE: 35 45 57.__ LONGITUDE: 80 51 20 __.__

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

III. INSPECTION INFORMATION

01 DATE OF INSPECTION	02 SITE STATUS	03 YEARS OF OPERATION
6 27 / 90 (MONTH DAY YEAR)	☐ ACTIVE ☒ INACTIVE	1945 (BEGINNING YEAR) / 1990 (ENDING YEAR) ___ UNKNOWN

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

05 CHIEF INSPECTOR	06 TITLE	07 ORGANIZATION	08 TELEPHONE NO.
Jack Butler	Environmental Engineer	NC Superfund	(919) 733-2801

09 OTHER INSPECTORS	10 TITLE	11 ORGANIZATION	12 TELEPHONE NO.
Ed Wallingford	Environmental Engineer	NC Superfund	(919) 733-2801
David Lilley	Industrial Hygenist	NC Superfund	(919) 733-2801
			( )
			( )
			( )

13 SITE REPRESENTATIVES INTERVIEWED	14 TITLE	15 ADDRESS	16 TELEPHONE NO
Rick Thompson		Southern Fastening Devices	(704) 873-7211
Allen F. Johnson		" " "	( ) "
Steve Petrovich		" " "	( ) "
Allen L.Crouch		" " "	( ) "
			( )
			( )

17 ACCESS GAINED BY (Check one)	18 TIME OF INSPECTION	19 WEATHER CONDITIONS
☒ PERMISSION ☐ WARRANT		

IV. INFORMATION AVAILABLE FROM

01 CONTACT	02 OF (Agency/Organization)	03 TELEPHONE NO.
Allen L. Crouch	Southern Fastening Systems Facilities/Maintenance Mgr	(704) 873-7211

04 PERSON RESPONSIBLE FOR SITE INSPECTION FORM	05 AGENCY	06 ORGANIZATION	07 TELEPHONE NO.	08 DATE
Hanna Assefa	NC DEHNR	Superfund Section	(919)733-2801	12/28/90 (MONTH DAY YEAR)

EPA FORM 2070-13 (7-81)

EPA

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

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
NC	NCD042269134

II. WASTE STATES, QUANTITIES, AND CHARACTERISTICS

01 PHYSICAL STATES (Check all that apply)

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

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

TONS _____

CUBIC YARDS _____

NO. OF DRUMS _____

03 WASTE CHARACTERISTICS (Check all that apply)

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

III. WASTE TYPE

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

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

01 CATEGORY	02 SUBSTANCE NAME	03 CAS NUMBER	04 STORAGE/DISPOSAL METHOD	05 CONCENTRATION	06 MEASURE OF CONCENTRATION

V. FEEDSTOCKS (See Appendix for CAS Numbers)

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

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

Permanent files, NC Solid and Hazardous Waste Mgmt. Branch, CERCLA Unit, Raleigh, NC

EPA

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

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
NC	NCD042269134

II. HAZARDOUS CONDITIONS AND INCIDENTS

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

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

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

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

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

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

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

Several drinking water wells are located around the site - around 3,200 people within 3 miles of the site using groundwater.

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

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

EPA

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

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
NC	NCD042269134

II. HAZARDOUS CONDITIONS AND INCIDENTS *(Continued)*

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

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

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

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

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

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

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

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

III. TOTAL POPULATION POTENTIALLY AFFECTED: _____

IV. COMMENTS

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

As previously cited.

EPA

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

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
NC	NCD042269134

II. PERMIT INFORMATION

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

III. SITE DESCRIPTION

01 STORAGE/DISPOSAL (Check all that apply)	02 AMOUNT	03 UNIT OF MEASURE
☐ A. SURFACE IMPOUNDMENT		
☐ B. PILES		
☐ C. DRUMS, ABOVE GROUND		
☐ D. TANK, ABOVE GROUND		
☐ E. TANK, BELOW GROUND		
☐ F. LANDFILL		
☐ G. LANDFARM		
☐ H. OPEN DUMP		
☐ I. OTHER (Specify)		

04 TREATMENT (Check all that apply)

- ☐ A. INCENERATION
- ☐ B. UNDERGROUND INJECTION
- ☐ C. CHEMICAL/PHYSICAL
- ☐ D. BIOLOGICAL
- ☐ E. WASTE OIL PROCESSING
- ☐ F. SOLVENT RECOVERY
- ☐ G. OTHER RECYCLING/RECOVERY
- ☐ H. OTHER (Specify)

05 OTHER

- ☒ A. BUILDINGS ON SITE

06 AREA OF SITE

62 2

(Acres)

07 COMMENTS

IV. CONTAINMENT

01 CONTAINMENT OF WASTES (Check one)

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

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

V. ACCESSIBILITY

01 WASTE EASILY ACCESSIBLE: ☐ YES ☒ NO

02 COMMENTS

As previously cited.

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

EPA FORM 2070-13 (7-81)

EPA

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

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
NC	NCD042269138

II. DRINKING WATER SUPPLY

01 TYPE OF DRINKING SUPPLY (Check as applicable)

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

02 STATUS

ENDANGERED	AFFECTED	MONITORED
A. ☐	B. ☐	C. ☐
D. ☐	E. ☐	F. ☐

03 DISTANCE TO SITE

A. 10 (mi)
B. 3/4 (mi)

III. GROUNDWATER

01 GROUNDWATER USE IN VICINITY (Check one)

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

02 POPULATION SERVED BY GROUND WATER 3,200

03 DISTANCE TO NEAREST DRINKING WATER WELL 3/4 (mi)

04 DEPTH TO GROUNDWATER	05 DIRECTION OF GROUNDWATER FLOW	06 DEPTH TO AQUIFER OF CONCERN	07 POTENTIAL YIELD OF AQUIFER	08 SOLE SOURCE AQUIFER
(ft)		30 (ft)	27,360 (gpd)	☒ YES ☐ NO

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

10 RECHARGE AREA		11 DISCHARGE AREA	
☐ YES ☐ NO	COMMENTS	☐ YES ☐ NO	COMMENTS

IV. SURFACE WATER

01 SURFACE WATER USE (Check one)

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

02 AFFECTED/POTENTIALLY AFFECTED BODIES OF WATER

NAME:	AFFECTED	DISTANCE TO SITE
Third Creek	☐	1 mile (mi)
Fourth Creek	☐	1 mile (mi)
	☐	(mi)

V. DEMOGRAPHIC AND PROPERTY INFORMATION

01 TOTAL POPULATION WITHIN

ONE (1) MILE OF SITE	TWO (2) MILES OF SITE	THREE (3) MILES OF SITE
A. 452 NO. OF PERSONS	B. 1823 NO. OF PERSONS	C. 4069 NO. OF PERSONS

02 DISTANCE TO NEAREST POPULATION 1/4 (mi)

03 NUMBER OF BUILDINGS WITHIN TWO (2) MILES OF SITE 500+

04 DISTANCE TO NEAREST OFF-SITE BUILDING 1/8 (mi)

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

Population is partially urban because the whole of the city of Statesville is within the 4 mile radius. However, 70% of the 4 mile radius around the site is outside the city limits.

EPA

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

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
NC	NCD042269134

VI. ENVIRONMENTAL INFORMATION

01 PERMEABILITY OF UNSATURATED ZONE (Check one)

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

02 PERMEABILITY OF BEDROCK (Check one)

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

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

06 NET PRECIPITATION	07 ONE YEAR 24 HOUR RAINFALL	08 SLOPE: SITE SLOPE	DIRECTION OF SITE SLOPE	TERRAIN AVERAGE SLOPE
8 (in)	3 (in)	7% %	SW	_____ %

09 FLOOD POTENTIAL	10
SITE IS IN _____ YEAR FLOODPLAIN	☐ SITE IS ON BARRIER ISLAND, COASTAL HIGH HAZARD AREA, RIVERINE FLOODWAY

11 DISTANCE TO WETLANDS (5 acre minimum)		12 DISTANCE TO CRITICAL HABITAT (of endangered species)
ESTUARINE	OTHER	_____ (mi)
A. _____ (mi)	B. _____ (mi)	ENDANGERED SPECIES: none identified

13 LAND USE IN VICINITY.

DISTANCE TO:

COMMERCIAL/INDUSTRIAL	RESIDENTIAL AREAS; NATIONAL/STATE PARKS, FORESTS, OR WILDLIFE RESERVES	AGRICULTURAL LANDS: PRIME AG LAND	AGRICULTURAL LANDS: AG LAND
A. 0 (mi)	B. 0.02 (mi)	C. _____ (mi)	D. _____ (mi)

14 DESCRIPTION OF SITE IN RELATION TO SURROUNDING TOPOGRAPHY

The site is on an elevation of approximately 850 feet.

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

1. Clay et al; 1975. North Carolina Atlas: Portrait of a Changing Southern State
2. USGS & NRCD. 1980 Basic Elements of Groundwater Hydrogeology with Reference to conditions in North Carolina
3. Soil Survey of Mecklenburg County. 1972. Soil Conservation Service.

EPA

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

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
NC	NCD042269134

II. SAMPLES TAKEN

SAMPLE TYPE	01 NUMBER OF SAMPLES TAKEN	02 SAMPLES SENT TO	03 ESTIMATED DATE RESULTS AVAILABLE
GROUNDWATER	2	NC State Laboratories of Public Health	
SURFACE WATER	2	" "	
WASTE			
AIR	2	" "	
RUNOFF			
SPILL			
SOIL			
VEGETATION	4	" "	
OTHER			

III. FIELD MEASUREMENTS TAKEN

01 TYPE	02 COMMENTS

IV. PHOTOGRAPHS AND MAPS

01 TYPE ☒ GROUND ☐ AERIAL

02 IN CUSTODY OF NC CERCLA Unit Solid & Hazardous Waste Mgmt. Branch (Name of organization or individual)

03 MAPS ☒ YES ☐ NO

04 LOCATION OF MAPS included with report

V. OTHER FIELD DATA COLLECTED (Provide narrative description)

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

1. Permanent files, NC SOlid and Hazardous Waste Mgmt. Branch, CERCLA Unit, Raleigh, NC

EPA

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

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
NC	NCD042269134

II. CURRENT OPERATOR (Provide if different from owner)			OPERATOR'S PARENT COMPANY (If applicable)		
01 NAME: Southern Fastening Systems	02 D+B NUMBER		10 NAME	11 D+B NUMBER	
03 STREET ADDRESS (P.O. Box, RFD #, etc.): 1211 N. Barkley Road	04 SIC CODE		12 STREET ADDRESS (P.O. Box, RFD #, etc.)	13 SIC CODE	
05 CITY: Statesville	06 STATE: NC	07 ZIP CODE: 28677	14 CITY	15 STATE	16 ZIP CODE
08 YEARS OF OPERATION	09 NAME OF OWNER				

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

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

EPA

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

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
NC	NCD042269134

II. CURRENT OWNER(S)				PARENT COMPANY (If applicable)			
01 NAME		02 D+B NUMBER		08 NAME		09 D+B NUMBER	
Farley Metals Inc.							
03 STREET ADDRESS (P.O. Box, RFD #, etc.)		04 SIC CODE		10 STREET ADDRESS (P.O. Box, RFD #, etc.)		11 SIC CODE	
Sears Tower, 233 S. Wacker Dr.							
05 CITY	06 STATE	07 ZIP CODE		12 CITY	13 STATE	14 ZIP CODE	
Chicago,	IL	60606					
01 NAME		02 D+B NUMBER		08 NAME		09 D+B NUMBER	
03 STREET ADDRESS (P.O. Box, RFD #, etc.)		04 SIC CODE		10 STREET ADDRESS (P.O. Box, RFD #, etc.)		11 SIC CODE	
05 CITY	06 STATE	07 ZIP CODE		12 CITY	13 STATE	14 ZIP CODE	
01 NAME		02 D+B NUMBER		08 NAME		09 D+B NUMBER	
03 STREET ADDRESS (P.O. Box, RFD #, etc.)		04 SIC CODE		10 STREET ADDRESS (P.O. Box, RFD #, etc.)		11 SIC CODE	
05 CITY	06 STATE	07 ZIP CODE		12 CITY	13 STATE	14 ZIP CODE	
01 NAME		02 D+B NUMBER		08 NAME		09 D+B NUMBER	
03 STREET ADDRESS (P.O. Box, RFD #, etc.)		04 SIC CODE		10 STREET ADDRESS (P.O. Box, RFD #, etc.)		11 SIC CODE	
05 CITY	06 STATE	07 ZIP CODE		12 CITY	13 STATE	14 ZIP CODE	

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

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

EPA

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

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
NC	NCD042269134

II. ON-SITE GENERATOR

01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY	06 STATE / 07 ZIP CODE

III. OFF-SITE GENERATOR(S)

01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY	06 STATE / 07 ZIP CODE	05 CITY	06 STATE / 07 ZIP CODE
01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY	06 STATE / 07 ZIP CODE	05 CITY	06 STATE / 07 ZIP CODE

IV. TRANSPORTER(S)

01 NAME: Southern Screw	02 D+B NUMBER	01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.): 1211 N. Barkley Road	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY: Statesville	06 STATE: NC / 07 ZIP CODE: 28677	05 CITY	06 STATE / 07 ZIP CODE
01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY	06 STATE / 07 ZIP CODE	05 CITY	06 STATE / 07 ZIP CODE

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

As previously cited.

EPA

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

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
NC	NCD042269134

II. PAST RESPONSE ACTIVITIES

01 ☐ A. WATER SUPPLY CLOSED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ B. TEMPORARY WATER SUPPLY PROVIDED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ C. PERMANENT WATER SUPPLY PROVIDED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ D. SPILLED MATERIAL REMOVED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ E. CONTAMINATED SOIL REMOVED — 02 DATE 1982 — 03 AGENCY _____
04 DESCRIPTION
680 pounds of sludge and contaminated soil were removed from the lagoon.

01 ☐ F. WASTE REPACKAGED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ G. WASTE DISPOSED ELSEWHERE — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ H. ON SITE BURIAL — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ I. IN SITU CHEMICAL TREATMENT — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ J. IN SITU BIOLOGICAL TREATMENT — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ K. IN SITU PHYSICAL TREATMENT — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ L. ENCAPSULATION — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ M. EMERGENCY WASTE TREATMENT — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ N. CUTOFF WALLS — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ O. EMERGENCY DIKING/SURFACE WATER DIVERSION — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ P. CUTOFF TRENCHES/SUMP — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ Q. SUBSURFACE CUTOFF WALL — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

EPA

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

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
NC	NCD042269134

II. PAST RESPONSE ACTIVITIES *(Continued)*

01 ☐ R. BARRIER WALLS CONSTRUCTED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ S. CAPPING/COVERING — 02 DATE 1975/1982 — 03 AGENCY _____
04 DESCRIPTION
Two lagoons capped with soil

01 ☐ T. BULK TANKAGE REPAIRED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ U. GROUT CURTAIN CONSTRUCTED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ V. BOTTOM SEALED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ W. GAS CONTROL — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ X. FIRE CONTROL — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ Y. LEACHATE TREATMENT — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ Z. AREA EVACUATED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

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

01 ☐ 2. POPULATION RELOCATED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ 3. OTHER REMEDIAL ACTIVITIES — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

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

As previously cited.

Appendix E

Site Safety Plan

SITE HEALTH AND SAFETY PLAN

A. General Information

Site Name Southern Screw/Farley Metals ID # NCD 042 269 134

Location 1211 Barkley Road, Statesvelle, Iredell County, NC Date June 20, 1990

Proposed Date of Investigation June 27, 1990

Date of Briefing June 26, 1990

Date of Debriefing June 28, 1990

Site Investigation Team: All site personnel have read the Site Health and Safety Plan and are familiar with its provisions.

	Personnel	Responsibilities	Signature
Team 1	Jack Butler	team leader, sampling	Jack Butler
Team 1	Ed Wallingford	sampling	Ed Wallingford
Team 1	David Lilley	air sampling	David Lilley

Plan Preparation:

Prepared By: David Lilley, Industrial Hygienist David Lilley

Reviewed By: Jack Butler, Environmental Engineer Jack Butler

B. SITE/WASTE CHARACTERISTICS

Waste Type(s) X Liquid X Solid X Sludge ___ Gas

Characteristics X Corrosive X Ignitable ___ Radioactive

X Volatile X Toxic ___ Reactive ___ Other

List Known or Suspected Hazards (physical, chemical biological or radioactive) on Site and their toxicological effects. Also, if known, list chemical amounts

HAZARD	WARNING PROPERTIES	TLV
Cyanides	Odor Threshold (OT) = no data as CN	5mg/m^3
Nickel	OT = no data	0.1mg/m^3
Copper	OT = "odorless"	1mg/m^3
Chromium	OT = no data	0.05mg/m^3

HAZARD	WARNING PROPERTIES AND EFFECTS	TLV
Methylene Chloride	OT = 25-30 ppm "can adapt to odor"	50 ppm
Methyl Ethyl Ketone	OT = 0.25 - 50 ppm	200 ppm
1,1,1-Trichloroethane	OT = 20 - 50 ppm	350 ppm
Xylene	OT = 0.05 - 200 ppm	100 ppm
Perchloroethylene	OT = 4.68 - 50 ppm PEL=	25 ppm
Chlorobenzene	OT = 0.21 - 60 ppm	75 ppm
Trichloroethylene	OT = 0.2 - 200 ppm	50 ppm

ID # NCD 042 269 134

Facility Description: Size 10 acres Buildings unknown

Disposal Methods Being Investigated Surface impounds.

Unusual Features on Site (dike integrity, power lines, terrain, etc.):

none known

History of the Site: The production process from 1945 to present has always been the manufacturing and electroplating of metal screws. All the electroplating sludge, about 40,000 lbs. monthly, was sent through the city of Statesville, NC sewage system to the sewage treatment plant between 1945 and November 1980, when changes were mandated by EPA. After that, the sludge was separated, and the hazardous waste sent to SCA in Pinewood, SC. There was a surface impoundment area as well, which was used to neutralize wastes from spent plating bath solutions from electroplating operations from 1945 to November 1980.

C. HAZARD EVALUATION

The site can be toured and sampled in level D protection. PE or PVC gloves will be worn while collecting water and soil samples, nitrile gloves under PE or PVC gloves will be worn if discolored soil or sludge is encountered. The OVA will be used to monitor breathing zone air while auguring. If readings exceed 5 ppm in the breathing zone, fill in that hole and evacuate that area. Tyvek suits (saranex in wet conditions) are recommended to keep clothing clean. Steel toed hiking boots may be worn while conducting tour or sampling on gravel, asphalt, or vegetated soil, steel toed work boots will be worn while conducting tour or sampling barren soil or auguring.

ID # NCD 042 269 134

D. WORK PLAN INSTRUCTION

Map or Sketch Attached? yes

Perimeter Identified? no

Command Post Identified? no

Zones of Contamination Identified? no

Personal Protective Equipment/Level of Protection: ____C X D

Modifications Wear goggles and PVC gloves while preparing and collecting acid preserved samples. Avoid breathing acid vapors. Rinse pipetts with deionized water before disposing of in trash bag.

Surveillance Equipment:

____	HNU	____	Detector Tubes and Pumps
X	OVA	____	02 Meter
____	Explosimeter	____	Radiation Monitor

Decontamination Procedures

____	Level C	Respirator wash, respirator removal, suit wash (if needed), suit removal, boot wash, boot removal and glove removal.
X	Level D	Boot wash and rinse and boot removal, suit removal, glove and goggle removal.

Modifications Dispose of trash properly, on-site if possible.

Work Schedule/Visit Objectives The purpose of this visit is to determine if the site poses a threat to the public health or environment because of releases of contaminants to soil, surface water, groundwater, or air. Sampling may consist of groundwater, surfacewater, surface, and subsurface soil sampling.

EMERGENCY PRECAUTIONS

Route of Exposure	First Aid
Eyes	irrigate immediately
Skin	soap and water wash
Inhalation	fresh air and artificial respiration
Ingestion	get medical attention immediately

ID # NCD 042 269 134

Location of Nearest Phone: on-site: this is an operational facility

Hospital (Address and Phone Number)

Davis Community Hospital, P.O. Box 1800, Old Mocksville Road, Statesville, NC 28677 - can handle chemically contaminated patients

Emergency Transportation Systems (Phone Numbers)

Fire 911

Ambulance 911

Rescue Squad 911

Emergency Route to Hospital Take Route 70 West into Statesville and take a right onto Route 77 North. Exit onto 40 East and take the Old Mocksville Road exit, take a left at the stop sign, the hospital will be on the right.

PREVAILING WEATHER CONDITIONS AND FORECAST Sunny and hot with a chance of thunder showers, highs in the low 90s.

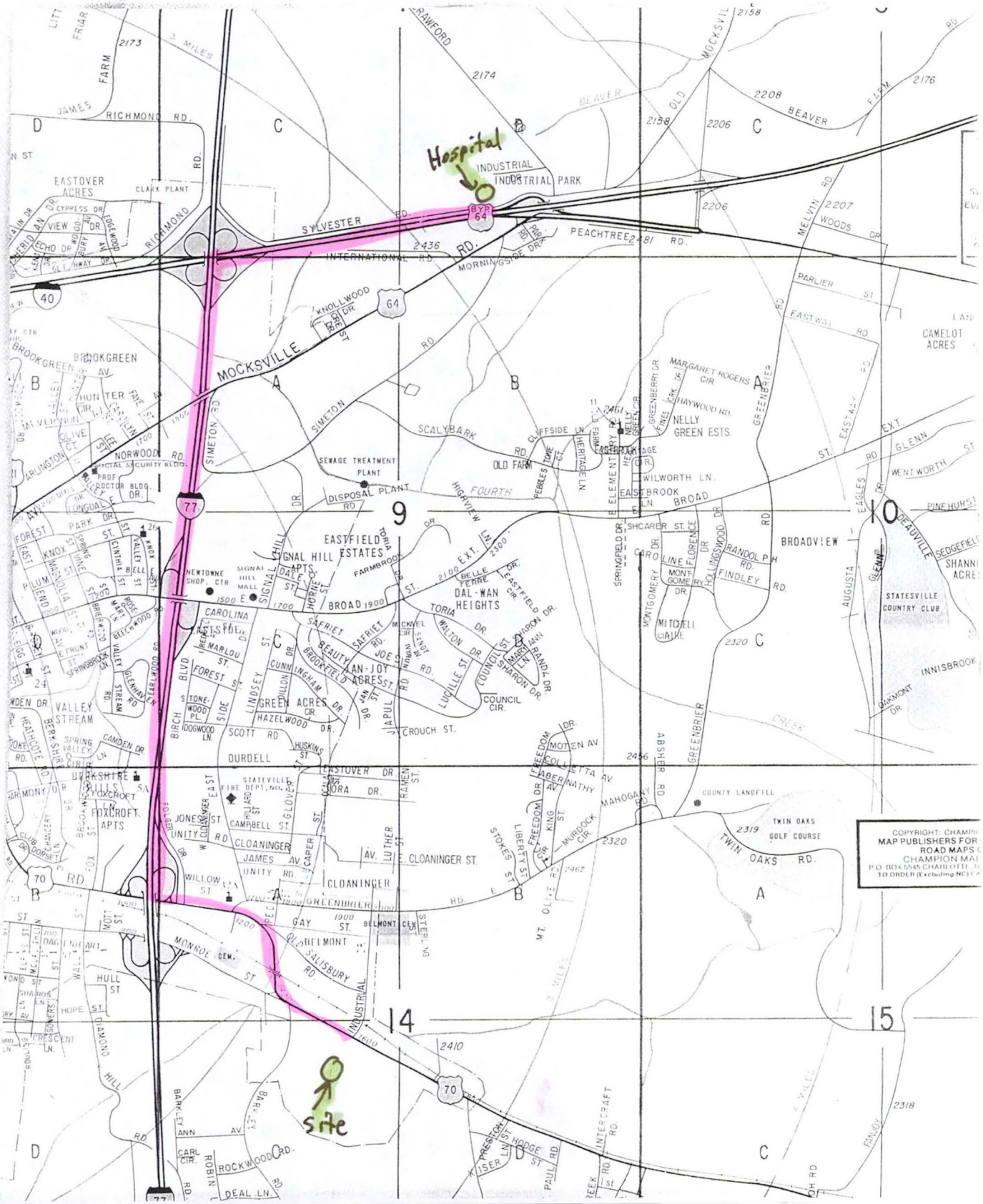
EQUIPMENT CHECKLIST

	Air purifying respirator	X	First Aid Kit
	Cartridges for respirator	X	3 gal. Deionized H20
	Dust Mask	X	Rainsuit
	O_2 Indicator	X	Gloves (PE/PVC/nitrile/cloth)
X	Eye Wash Unit	X	Boots/Boot Covers
	H NU	X	Coveralls (tyvek/saranex)
X	OVA	X	Eye Protection
	Explosimeter	X	Hard Hat
	Radioactive Monitor	X	Decontamination Materials.
	Detector Tubes and Pump		

Poison Control Center - State Coordinator
Duke University Medical Center
Telephone: 1-800-672-1697
Box 3024
Durham, NC 27710

ASHEVILLE 704-255-4490	Western NC Poison Control Center Memorial Mission Hosp. 509 Biltmore Ave. 28801	HENDERSONVILLE 704-693-6522 Ext. 555,556	Margaret R. Pardee Memorial Hospital Fleming St., 28739
CHARLOTTE 704-379-5827	Mercy Hospital 2001 Vail Ave, 28207	HICKORY 704-322-6649	Catawba Mem. Hosp. Fairgrove Chur. Rd 28601
DURHAM 1-800-672-1697	Duke Univ. Med. Center Box 3007, 27710	JACKSONVILLE 919-577-2555	Onslow Mem. Hospital Western Blvd. 28540
GREENSBORO 919-379-4105	Moses Cone Hospital 1200 N. Elm St. 27420	WILMINGTON 919-343-7046	New Hanover Mem. Hospital 2131 S. 17th St. 28401

safeform.046


Hospital
site
MOCKSVILLE
SYLVESTER RD.
PEACHTREE RD.
INTERNATIONAL RD.
MORNINGSIDE DR.
INDUSTRIAL PARK
EASTOVER ACRES
RICHMOND RD.
BEAVER
SIMETON RD.
SCALYBARK
OLD FARM
SEWAGE TREATMENT PLANT
DISPOSAL PLANT
EASTFIELD ESTATES
SIGNAL HILL APTS.
DAL-WAN HEIGHTS
JAN-JOY ACRES
GREEN ACRES
NELLY GREEN ESTS.
BROADVIEW
STATESVILLE COUNTRY CLUB
CAMELOT ACRES
INNISBROOK
VALLEY STREAM
FOXCROFT APTS
COUNTY LANDFILL
TWIN OAKS GOLF COURSE
TWIN OAKS RD.
CLOANINGER
GREENBRIER RD.
BELMONT
MONROE
SALISBURY RD.
INDUSTRIAL
COPYRIGHT: CHAMPI
MAP PUBLISHERS FOR
ROAD MAPS
CHAMPION MA
P.O. BOX 5545 CHARLOTTE, N
TO ORDER (Excluding NC) C

TO BE COMPLETED BY PROJECT MANAGER

PROJECT MANAGER: Jack Butler PROJECT: Southern Screw
INVESTIGATION DATE: June 27, 1990

Materials Used (Please insert a number in the blank)

_____ Air Purifying respirator cartridges
_____ Detector tubes
_____ Eye Wash Units
_____ First Aid Kit
_____ Gloves (polyethylene)
_____ Gloves(PVC)
_____ Gloves (nitrile)
_____ Gloves (cloth)
_____ Boot covers
_____ Coveralls (tyvek)
_____ Coveralls (saranex)
_____ Auger Brushes

Respirator Worn By	Approximate Time in Respirator

Air Monitoring Data (Include Calibration Reading)

HNU: _____

OVA: _____

Explosimter: _____

Radiation Meter: _____

If the maximum personal protective equipment as outlined in the Hazard Evaluation Section was not used, please justify:

_____

Visitors Present	Orginazation Represented

_____
Signature

DL/ds/Revised 11-88

HAZARDOUS SUBSTANCE INFORMATION FORM

Chemical Name: Cyanides (as CN) 1) Potassium Cyanide 2) Sodium Cyanide

I. PHYSICAL/CHEMICAL PROPERTIES

	Reference
Chemical Formula KCN/NaCN	1
Natural Physical State at 25°C solid	1
Vapor Pressure ~0 mm Hg at 20°C	1
Melting Point 1175/1040°F/°C Boiling Point ?/2732 °F/°C	1
Flash Point (open or closed cup) not combustible °C/°F	1
Solubility - H_2O 72%/58%	1
Other	

Physical Features: (odor, color, etc.) white solids with a faint almond odor (1)

II. TOXICOLOGICAL DATA as CN

Standards: 5 mg/m^3(2) skin TLV 5 mg/m^3(3) PEL 50 mg/m^3 IDLH 1

Routes of Exposure: Inhalation, skin absorption, eye contact, ingestion (1)

Acute/Chronic Symptoms: Asphyxia and death can occur, weakness, headache, confusion, nausea, vomiting, incoordination of respiratory rate, slow gasping respiration, eye and skin irritation(1).

First Aid: Eye contact: irrigate immediately; Skin contact: soap wash immediately; Inhalation: artificial respiration; Ingestion: get medical attention immediately(1).

Chemical Name: Cyanides (as CN)

1) Potassium cyanide

2) Sodium cyanide

III. HAZARDOUS CHARACTERISTICS — Reference

A. Combustibility Yes ___ No X ___ — 1

Toxic by-products _____ — _____

_____ — _____

B. Flammability LEL _____ UEL _____ — _____

C. Reactivity Hazard Incompatible with strong oxidizers such as nitrates, chlorates, acids, acid salts — 1

D. Corrosivity Hazard yes/no pH: _____ — _____

Neutralizing agent: _____ — _____

E. Radioactive Hazard — Exposure Rate

Background	yes/no	_____	_____
Alpha particles	yes/no	_____	_____
Beta particles	yes/no	_____	_____
Gamma radiation	yes/no	_____	_____

IV. REFERENCES

1) Pocket Guide to Chemical Hazards, NIOSH, 1987

2) Threshold Limit Value and Biological Exposure Indices for 1988-89, ACGIH

3) 29 CFR 1910.1000, 1989

HAZARDOUS SUBSTANCE INFORMATION FORM

Chemical Name: Nickel - soluble salts (soluble salts of nickel include the chloride, sulfate and nitrate)

I. PHYSICAL/CHEMICAL PROPERTIES

	Reference
Chemical Formula vary depending on compound	
Natural Physical State at 25°C solid	1,2
Vapor Pressure _____ mm Hg at 20°C	
Melting Point 1550 °F/°C Boiling Point 2730 °F/°C	1,2
Flash Point (open or closed cup) _____ °C/°F	
Solubility - H_2O _____	
Other _____	

Physical Features: (odor, color, etc.) vary depending on compound

II. TOXICOLOGICAL DATA

		for soluble compounds			
Standards:	0.1 mg/m^3(3) TLV	0.1 mg/m^3(4) PEL	potential carcinogen	IDLH	5

Routes of Exposure: Inhalation, skin - dermatitis, eye - mild eye irritant

Acute/Chronic Symptoms: Irritation of skin and mucous membrane, chronic symptons: is considered a potential occupational carcinogen.

First Aid: Eyes: irrigate immediately; Skin: soap and water wash immediately; Inhalation: fresh air; Ingestion: medical attention.

Chemical Name: Nickel - soluble salts

III. HAZARDOUS CHARACTERISTICS | Reference

A. Combustibility Yes ___ No X | 1,2

Toxic by-products _____

B. Flammability LEL _____ UEL _____

C. Reactivity Hazard nitric acid readily attacks nickel | 1

D. Corrosivity Hazard yes/no pH: _____

Neutralizing agent: _____

E. Radioactive Hazard

		Exposure Rate	
Background	yes/no		
Alpha particles	yes/no		
Beta particles	yes/no		
Gamma radiation	yes/no		

IV. REFERENCES

(1) Documentation of the TLV, 4th Edition, 1980.

(2) The Merck Index, 10th Edition, 1983.

(3) Threshold Limit Values and Biological Exposure Indices for 1988-89, ACGIH.

(4) Air Contaminants - Permissible Exposure Limits, 29 CFR 1910,1000, 1989.

HAZARDOUS SUBSTANCE INFORMATION FORM

Chemical Name: Copper

I. PHYSICAL/CHEMICAL PROPERTIES

	Reference
Chemical Formula Cu	1
Natural Physical State at 25°C solid	2
Vapor Pressure NA mm Hg at 20°C	2
Melting Point 1083 °F/°C Boiling Point 2595 °F/°C	1
Flash Point (open or closed cup) ? °C/°F	2
Solubility - H_2O	
Other Nitric and hot concentrated sulfuric acid, dissolves in hydrochloric and dilute sulfuric acid slowly when exposed to air.	3

Physical Features: (odor, color, etc.) odorless solid (2)

II. TOXICOLOGICAL DATA

Standards: 1 mg/m^3(4) TLV 1 mg/m^3(5) PEL NA IDLH 2

Routes of Exposure: Inhalation, Ingestion, Skin contact, Eye contact

Acute/Chronic Symptoms: Irritation of mucous membranes and throat, nasal perforation, eye irritation, metal taste, skin problems (2).

First Aid: Eyes: irrigate immediately; Skin: soap and water wash immediately; Inhalation: artificial respiration; Ingestion: get medical attention immed.(2)

Chemical Name: Copper

III. HAZARDOUS CHARACTERISTICS | Reference

in finely divided form

A. Combustibility Yes X No ____ | 3

Toxic by-products _____ | _____

_____ | _____

B. Flammability LEL _____ UEL _____ | _____

C. Reactivity Hazard incompatible with strong oxidizers | 2

D. Corrosivity Hazard yes/no pH: _____ | _____

Neutralizing agent: _____ | _____

E. Radioactive Hazard | Exposure Rate

Background	yes/no	_____	_____
Alpha particles	yes/no	_____	_____
Beta particles	yes/no	_____	_____
Gamma radiation	yes/no	_____	_____

IV. REFERENCES

(1) The Merck Index, 10th Edition, 1985

(2) Pocket Guide to Chemical Hazards, NIOSH, 1987

(3) The Condensed Chemical Dictionary, 10th Edition

(4) Threshold Limit Values and Biological Exposure Indices for 1988-89, ACGIH

(5) Air Contaminants-Permissible Exposure Limits, 29 CFR 1910.1000, 1989

HAZARDOUS SUBSTANCE INFORMATION FORM

Chemical Name: Chromium (VI), insoluble salts

I. PHYSICAL/CHEMICAL PROPERTIES

		Reference
Chemical Formula	varies with compound –	1 –
Natural Physical State at 25°C	solid	1
Vapor Pressure	N/A mm Hg at 20°C	
Melting Point	°F/°C Boiling Point °F/°C	
Flash Point (open or closed cup)	N/A °C/°F	
Solubility - H_2O	not soluble in water	1
Other		

Physical Features: (odor, color, etc.) Properties vary depending upon specific compound. Compounds include: zinc chromate, lead chromate, calcium chromate, etc.

II. TOXICOLOGICAL DATA

Standards: 0.05 mg/m (2) TLV 1 mg/m (4) PEL 500 mg/m IDLH 3

Routes of Exposure: Inhalation and ingestion

Acute/Chronic Symptoms: Chronic: fibrosis of the lung and epidemiological studies have shown increased incidence of lung cancer among workers in the manufacture of chrome pigments

Chemical Name: Chromium (VI), insoluble salts

III. HAZARDOUS CHARACTERISTICS | Reference

A. Combustibility Yes ___ No X ___

Toxic by-products _____

B. Flammability LEL N/A UEL _____

C. Reactivity Hazard strong oxidizers 3

D. Corrosivity Hazard yes/no pH: _____

Neutralizing agent: _____

E. Radioactive Hazard | Exposure Rate

Background	yes/no	
Alpha particles	yes/no	
Beta particles	yes/no	
Gamma radiation	yes/no	

IV. REFERENCES

1. The Merck Index, 10th Edition, 1983.
2. Threshold Limit Values and Biological Exposure Indices for 1988-1989, ACGIH
3. Pocket Giude to Chemical Hazards, NIOSH, 1987
4. 29 CFR 1910.1000, 1989

HAZARDOUS SUBSTANCE INFORMATION FORM

Chemical Name: Methylene Chloride

I. PHYSICAL/CHEMICAL PROPERTIES

	Reference
Chemical Formula CH_2Cl_2	1
Natural Physical State at 25°C liquid	2
Vapor Pressure 350 mm Hg at 20°C	2
Melting Point -141 °F/°C Boiling Point 104 °F/°C	2
Flash Point (open or closed cup) ? °C/°F	2
Solubility - H_2O soluble in 50 parts water	1
Other misible with alcohols, ether, DMF	1

Physical Features: (odor, color, etc.) Colorless liquid with a chloroform-like odor (2) IP = 11.35 eV. Relative response on HNU = 9.4. OVA Relative Response = 100%

II. TOXICOLOGICAL DATA

Standards: 50 ppm(3) TLV 500 ppm(4) PEL suspect human carcinogen IDLH 3

Routes of Exposure: Inhalation, ingestion, eye contact, skin contact

Acute/Chronic Symptoms: Fatigue, weakness, sleepiness, light headedness, numb and tingling limbs, nausea, eye and skin irritation, vertigo, choking (2)

First Aid: Eye contact: Irrigate immediately; Skin contact: water flush; Inhalation: artificial respiration; Ingestion: get medical attention immed.

Chemical Name: Methylene Chloride

III. HAZARDOUS CHARACTERISTICS | Reference

A. Combustibility Yes X No ____ | 2

Toxic by-products ____ | ____

____ | ____

B. Flammability LEL 12% UEL 19% | 2

C. Reactivity Hazard incompatible with strong oxidizers and caustics, chemically active metals such as Al or Mg powders, sodium, potassium. | 2

D. Corrosivity Hazard yes/no pH: ____ | ____

Neutralizing agent: ____ | ____

E. Radioactive Hazard

		Exposure Rate	
Background	yes/no	____	____
Alpha particles	yes/no	____	____
Beta particles	yes/no	____	____
Gamma radiation	yes/no	____	____

IV. REFERENCES

(1) The Merck Index, 10th Edition

(2) Pocket Guide to Chemical Hazards, NIOSH, 1987

(3) Threshold Limit Values and Biological Exposure Indices for 1988-89, ACGIH

(4) 29 CFR 1910 1000, 1989.

HAZARDOUS SUBSTANCE INFORMATION FORM

Chemical Name: Methyl Ethyl Ketone (2 Butanone)

I. PHYSICAL/CHEMICAL PROPERTIES

	Reference
Chemical Formula C4 H8 O	1,2,3
Natural Physical State at 25°C liquid	1,2,3
Vapor Pressure 70.6 mm Hg at 20°C	2,3
Melting Point -123 °F/°C Boiling Point 175 °F/°C	2
Flash Point (open or closed cup) 35 °C/°F	1,2
Solubility - H_2O 27%	1,3
Other common organic solvents	2

Physical Features: (odor, color, etc.) clear, colorless liquid with acetone-like odor, odor detection 10 ppm IP - 9.48 eV Hnu sensitivity with 10.2 eV probe = 5.7

II. TOXICOLOGICAL DATA

Standards: 200 ppm (3) TLV 200 ppm (4) PEL 3000 ppm IDLH 3

Routes of Exposure: Inhalation, Ingestion, Skin Contact, Eye Contact

Acute/Chronic Symptoms: irritation of eyes and nose, headache, dizziness, vomiting (3).

First Aid: Eyes: irrigate immediately; skin: soap and water wash; inhalation: fresh air and artificial respiration; ingestion: medical attention.

Chemical Name: Methyl Ethyl Ketone

III. HAZARDOUS CHARACTERISTICS — Reference

A. Combustibility Yes x No ____ — 2

Toxic by-products _____ — _____

_____ — _____

B. Flammability LEL 12% UEL 20% — 2

C. Reactivity Hazard very strong oxidizers — 3

D. Corrosivity Hazard yes/no pH: _____ — _____

Neutralizing agent: _____ — _____

E. Radioactive Hazard — Exposure Rate

Background	yes/no	_____	_____
Alpha particles	yes/no	_____	_____
Beta particles	yes/no	_____	_____
Gamma radiation	yes/no	_____	_____

IV. REFERENCES

(1) The Merck Index, 10th Edition

(2) Documentation of the TLV's, 1980.

(3) NIOSH Pocket Guide to Chemical Hazards, 1987.

(4) 29 CFR 1910.1000, 1989.

HAZARDOUS SUBSTANCE INFORMATION FORM

Chemical Name: 1,1,1 Trichloroethane (Methyl Chloroform)

I. PHYSICAL/CHEMICAL PROPERTIES

	Reference
Chemical Formula $C_2H_3Cl_3$	1
Natural Physical State at 25°C liquid	1
Vapor Pressure 100 mm Hg at 20°C	2
Melting Point -36 °F/°C Boiling Point 165 °F/°C	2
Flash Point (open or closed cup) autoignition °C/°F	3
Solubility - H_2O 0.07% temperature = 500°C	2
Other Soluble in acetone, benzene, carbon tetrachloride, methanol, ether	1

Physical Features: (odor, color, etc.) Colorless liquid with a mild chloroform-like odor (2) IP = 11.5 eV

II. TOXICOLOGICAL DATA

Standards: 350 ppm (3) TLV 350 ppm (4) PEL 1000 ppm (2) IDLH

Routes of Exposure: Inhalation, Ingestion, and skin and/or eye contact.

Acute/Chronic Symptoms: Headaches, lassitude, central nervous system depression, poor equilibrium, eye irritation, dermatitis, cardiac arrhythmias (irregular heart beat) (2)

First Aid: Eyes: Irrigate immediately; Skin: wash with soap and water wash immediately; Inhalation: artificial respiration; Ingestion: get medical attention immediately (2)

Chemical Name: 1,1,1 Trichlorethane

III. HAZARDOUS CHARACTERISTICS | Reference

A. Combustibility Yes X No ____ | 2

Toxic by-products _____ | _____

_____ | _____

B. Flammability LEL 8% UEL 10.5% | 3

C. Reactivity Hazard Incompatible with strong caustics, strong oxidizers, chemically active metals, such as aluminum, magnesium, powders, sodium, potassium. | 2

D. Corrosivity Hazard yes/no pH: _____ | _____

Neutralizing agent: _____ | _____

E. Radioactive Hazard | Exposure Rate

Background	yes/no	_____	_____
Alpha particles	yes/no	_____	_____
Beta particles	yes/no	_____	_____
Gamma radiation	yes/no	_____	_____

IV. REFERENCES

(1) The Merck Index, 10th Edition, 1983

(2) Pocket Guide to Chemical Hazards, NIOSH, 1987

(3) Chemical and Engineering News, December 12, 1988.

(4) 29 CFR1910.1000, 1989.

HAZARDOUS SUBSTANCE INFORMATION FORM

Chemical Name: Xylene, O, M, & P (Dimethyl benzene)

I. PHYSICAL/CHEMICAL PROPERTIES

	Reference
Chemical Formula C8 H10	1
Natural Physical State at 25°C liquid	1
Vapor Pressure 7-9 mm Hg at 20°C	1
Melting Point 13-14 °F/°C Boiling Point 137-140 °F/°C	1
Flash Point (open or closed cup) 90/84/81 °C/°F	1
Solubility - H_2O insoluble	1
Other soluble in alcohol, ether and most other organic solvents.	1

Physical Features: (odor, color, etc.) colorless liquid with aromatic/ benzene odor. Common solvent for paints and coatings, especially alkyd resin type. IP = 8.5 eV. HNU relative response with 10.2 eV probe = 11.3

II. TOXICOLOGICAL DATA

Standards: 100 ppm (2) TLV 100 ppm (3) PEL 1,000 ppm (4) IDLH 4

Routes of Exposure: inhalation

Acute/Chronic Symptoms: headache, fatigue, dizziness, lassitude, narcotic effects in high concentrations (5,6). Chronic effects not well defined (1).

First Aid: eyes: irrigate immed.; Skin: soap and water wash immed.; Inhalation: fresh air and artificial resp.; Ingestion: medical attention.

Chemical Name: Xylene, O, M, & P

III. HAZARDOUS CHARACTERISTICS — Reference

A. Combustibility Yes X No ____ — 1,2,3,4

Toxic by-products _____

B. Flammability LEL 1.4% UEL 6.7% — 2

C. Reactivity Hazard strong oxidizers — 4

D. Corrosivity Hazard yes/no pH: _____

Neutralizing agent: _____

E. Radioactive Hazard — Exposure Rate

Background	yes/no		
Alpha particles	yes/no		
Beta particles	yes/no		
Gamma radiation	yes/no		

IV. REFERENCES

(1) The Merck Index, 10th Edition, 1983.

(2) Threshold Limit Values and Biological Exposure Indices for 1988-1989.

(3) 29 CFR 1910.1000, 1989

(4) NIOSH Pocket Guide to Chemical Hazards, 1987.

(5) NFPA, Fire Protection Guide on Hazardous Materials, 8th Edition, 1984.

(6) Documentation of the TLV, 4th Edition, 1980

HAZARDOUS SUBSTANCE INFORMATION FORM

Chemical Name: Perchloroethylene

I. PHYSICAL/CHEMICAL PROPERTIES

	Reference
Chemical Formula C_2Cl_4	1
Natural Physical State at 25°C liquid	2
Vapor Pressure 14 mm Hg at 20°C	2
Melting Point -8 °F/°C Boiling Point 250 °F/°C	2
Flash Point (open or closed cup) N/A °C/°F	2
Solubility - H_2O 0.015%	2
Other misc with alcohol, ether, chloroform, benzene	1

Physical Features: (odor, color, etc.) colorless liquid with an odor like ether or chloroform IP=9.32 eV (2) OVA Relative Response = 70%

II. TOXICOLOGICAL DATA

Standards: 50 ppm(3) TLV 25 ppm (4) PEL suspect human carcinogen IDLH 2

Routes of Exposure: Inhalation, Ingestion, Skin and/or Eye Contact (2)

Acute/Chronic Symptoms: Irritation of eyes, nose, and throat, nausea, flushed face and neck, vertigo, dizziness, incoordination, headache, carcinogen (2)

First Aid: Eye contact: irrigate immediately; Skin contact: soap and water wash immediately; Inhalation: Artificial respiration; Ingestion: Get medical attention immediately.

Chemical Name: Perchloroethylene

III. HAZARDOUS CHARACTERISTICS | Reference

A. Combustibility Yes ___ No X | 2

Toxic by-products _____

B. Flammability LEL none UEL none | 2

C. Reactivity Hazard Incompatible with strong oxidizers, chemically active metals, such as barium, lithium, and beryllium | 2

D. Corrosivity Hazard yes/no pH: _____

Neutralizing agent: _____

E. Radioactive Hazard

		Exposure Rate	
Background	yes/no		
Alpha particles	yes/no		
Beta particles	yes/no		
Gamma radiation	yes/no		

IV. REFERENCES

1. The Merck Index, 10th Edition, 1983
2. NIOSH Pocket Guide to Chemical Hazards, 1987
3. Threshold Limit Values and Biological Exposure Indices for 1988-89, ACGIH.
4. CFR 1910.1000, 1989.

HAZARDOUS SUBSTANCE INFORMATION FORM

Chemical Name: Chlorobenzene

I. PHYSICAL/CHEMICAL PROPERTIES

	Reference
Chemical Formula C_6H_5Cl	1
Natural Physical State at 25°C liquid	2
Vapor Pressure 8.8 mm Hg at 20°C	2
Melting Point -47 °F/°C Boiling Point 270 °F/°C	2
Flash Point (open or closed cup) 84 °C/°F	2
Solubility - H_2O 0.1%	2
Other alcohol, chloroform, benzene, ether	1

Physical Features: (odor, color, etc.) colorless liquid with a mild aromatic odor, IP=9.07 eV (2) OVA Relative Response = 200%

II. TOXICOLOGICAL DATA

Standards: 75 ppm(3) TLV 75 ppm (4) PEL 2,400 ppm IDLH 2

Routes of Exposure: Inhalation, Ingestion, Eye contact (2)

Acute/Chronic Symptoms: Irritation of the skin, eyes, and nose; drowsiness; liver damage; incoordination (2).

First Aid: Eye contact: irrigate immediately; skin contact: soap and water wash immediately; Inhalation: artificial respiration; Ingestion: get medical attention immediately (2).

Chemical Name: Chlorobenzene

III. HAZARDOUS CHARACTERISTICS | Reference

A. Combustibility Yes X No ____ | 2

Toxic by-products _____ | _____

_____ | _____

B. Flammability LEL 1.3% UEL 7.1% | 2

C. Reactivity Hazard Strong oxidizers | 2

D. Corrosivity Hazard yes/no pH: _____ | _____

Neutralizing agent: _____ | _____

E. Radioactive Hazard | Exposure Rate

Background	yes/no	_____	_____
Alpha particles	yes/no	_____	_____
Beta particles	yes/no	_____	_____
Gamma radiation	yes/no	_____	_____

IV. REFERENCES

1. The Merck Index, 10th Edition
2. NIOSH Pocket Guide to Chemical Hazards, 1987
3. Threshold Limit Values and Biological Exposure Indices for 1988-1989.
4. 29 CFR 1910.1000, 1989.

HAZARDOUS SUBSTANCE INFORMATION FORM

Chemical Name: Trichloroethylene

I. PHYSICAL/CHEMICAL PROPERTIES

	Reference
Chemical Formula C_2HCl_3	1
Natural Physical State at 25°C liquid	1
Vapor Pressure 58 mm Hg at 20°C	2
Melting Point -123 °F/°C Boiling Point 188 °F/°C	2
Flash Point (open or closed cup) 32 °C/°F	3
Solubility - H_2O 0.1%	2
Other Ether, alcohol, chloroform	1

Physical Features: (odor, color, etc.) Colorless liquid (unless dyed) with a sweet odor like chloroform 1P = 9.47 eV (2) OVA Relative Response = 70%

II. TOXICOLOGICAL DATA

Standards: 50 ppm (4) TLV 50 ppm (5) PEL potential human carcinogen(2) IDLH

Routes of Exposure: Inhalation, ingestion, skin and/or eye contact (2)

Acute/Chronic Symptoms: Acute: Headache, vertigo, visual disturbance, tremors, drowsiness, nausea, vomiting, eye irritation, dermititis, irregular heartbeat, skin irritation; chronic: carcinogenic (2)

First Aid: Eyes: irrigate immediately, Skin: soap wash promptly; Inhalation: artificial respiration, Ingestion: Get medical attention immediately (2).

Chemical Name: trichloreothylene

III. HAZARDOUS CHARACTERISTICS — Reference

A. Combustibility Yes X No ____ — 2

Toxic by-products _____

B. Flammability LEL 12.5% UEL 90% — 3

C. Reactivity Hazard Incompatible with strong caustics: when acidic reacts with aluminum, chemically active metals, barium, lithium, sodium, magnesium, titanium. — 2

D. Corrosivity Hazard yes/no pH: _____

Neutralizing agent: _____

E. Radioactive Hazard — Exposure Rate

Background	yes/no	
Alpha particles	yes/no	
Beta particles	yes/no	
Gamma radiation	yes/no	

IV. REFERENCES

(1) The Merck Index, 10th Edition, 1983

(2) Pocket Guide to Chemical Hazards, NIOSH, 1985

(3) Chemical and Engineering News, December 12, 1988.

(4) Threshold Limit Values and Biological Exposure Indices for 1987-1988, ACGIH

(5) 29 CFR 1910.1000, 1989.