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FINAL REPORT

SCREENING SITE INSPECTION, PHASE II
INTERNATIONAL PAPER COMPANY
MOBILE, MOBILE COUNTY, ALABAMA
EPA ID #: ALD008161861

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FOR THE

WASTE MANAGEMENT DIVISION
U.S. ENVIRONMENTAL PROTECTION AGENCY

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NUS CORPORATION
SUPERFUND DIVISION

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EXECUTIVE SUMMARY

International Paper Company is a large pulp and paper mill that has operated in north Mobile, Alabama, since 1929. The facility has operated two surface impoundments, one of which is currently closed. These impoundments were used to dispose of various wastes of the pulping process, including "green liquor sludge". In addition, the facility operated an onsite landfill from 1929 to 1981. This landfill received paper waste, construction debris, mill wastes, and possibly green liquor sludge.

Groundwater in the Mobile area occurs under both water-table and semi-confined conditions. The principal water-bearing formations in the area are the Quaternary alluvium and the Miocene sediments. These deposits are hydraulically connected and are considered to be one aquifer. The depth to groundwater in the facility area is estimated to be between 10-20 feet below land surface. Groundwater use in the area is extremely limited, however, to only a few private wells in rural areas around Mobile. There are virtually no wells within 4 miles of International Paper Company.

The primary pathway of concern associated with the International Paper Company is the surface water pathway. The facility is surrounded on the northwest, northeast and eastern sides by surface water that flows into the Mobile River and subsequently the Mobile Bay. Although drinking water supplies are not threatened by a potential release from this site, portions of the 4-mile radius encompass part of the highly sensitive Mobile Delta. This area supports numerous recreational activities, major commercial fisheries, and an abundance of wildlife, including endangered plant and animal species. A number of industries along the Mobile River, including International Paper Company, are responsible for some of the pollution load that poses a potential threat to this sensitive area.

Analysis of samples collected during the field investigation revealed elevated levels of several inorganic contaminants in onsite soil samples. Most of these contaminants were also detected in the sediment samples collected from Hog Bayou and Chickasaw Creek. Some of the inorganics detected may be related to the green liquor sludge disposed of in the surface impoundments and possibly the former landfill.

Because International Paper Company is located in a heavily industrial area it is not possible to attribute contamination solely to the facility; however, the analytical results do suggest that the offsite contamination may be linked to the site. In addition, although drinking water supplies in the area are unthreatened by the facility, potential contamination of the Mobile Delta remains a concern.

Therefore, FIT 4 recommends that International Paper Company be evaluated using the HRS (effective March 14, 1991).

1.0 INTRODUCTION

The NUS Corporation Region 4 Field Investigation Team (FIT) was tasked by the U.S. Environmental Protection Agency (EPA), Waste Management Division to conduct a Screening Site Inspection (SSI), Phase II, at the International Paper Company site in Mobile, Mobile County, Alabama. The investigation was performed under the authority of the Comprehensive Environmental Response Compensation and Liability Act of 1980 (CERCLA) and the Superfund Amendments and Reauthorization Act of 1986 (SARA). The task was performed to satisfy the requirements stated in Technical Directive Document (TDD) number F4-9002-66. The field investigation was conducted on May 2, 1990.

1.1 OBJECTIVES

The objectives of this inspection were to determine the nature of contaminants present at the site and to determine if a release of these substances has occurred or may occur. Further, this inspection sought to determine the possible pathways by which contamination could migrate from the site and the populations and environments it would potentially affect. Through these objectives, a recommendation was made regarding future activities at the site.

1.2 SCOPE OF WORK

The objectives were achieved through the completion of a number of specific tasks. These activities were to:

- Obtain and review relevant background materials.
- Obtain information on local water systems.
- Evaluate target population potentially affected via the groundwater, surface water, air, and soil exposure pathways.
- Determine location and distance to nearest potable well.

- Develop a site sketch, to scale.
- Collect environmental samples.

2.0 SITE CHARACTERIZATION

2.1 SITE BACKGROUND AND HISTORY

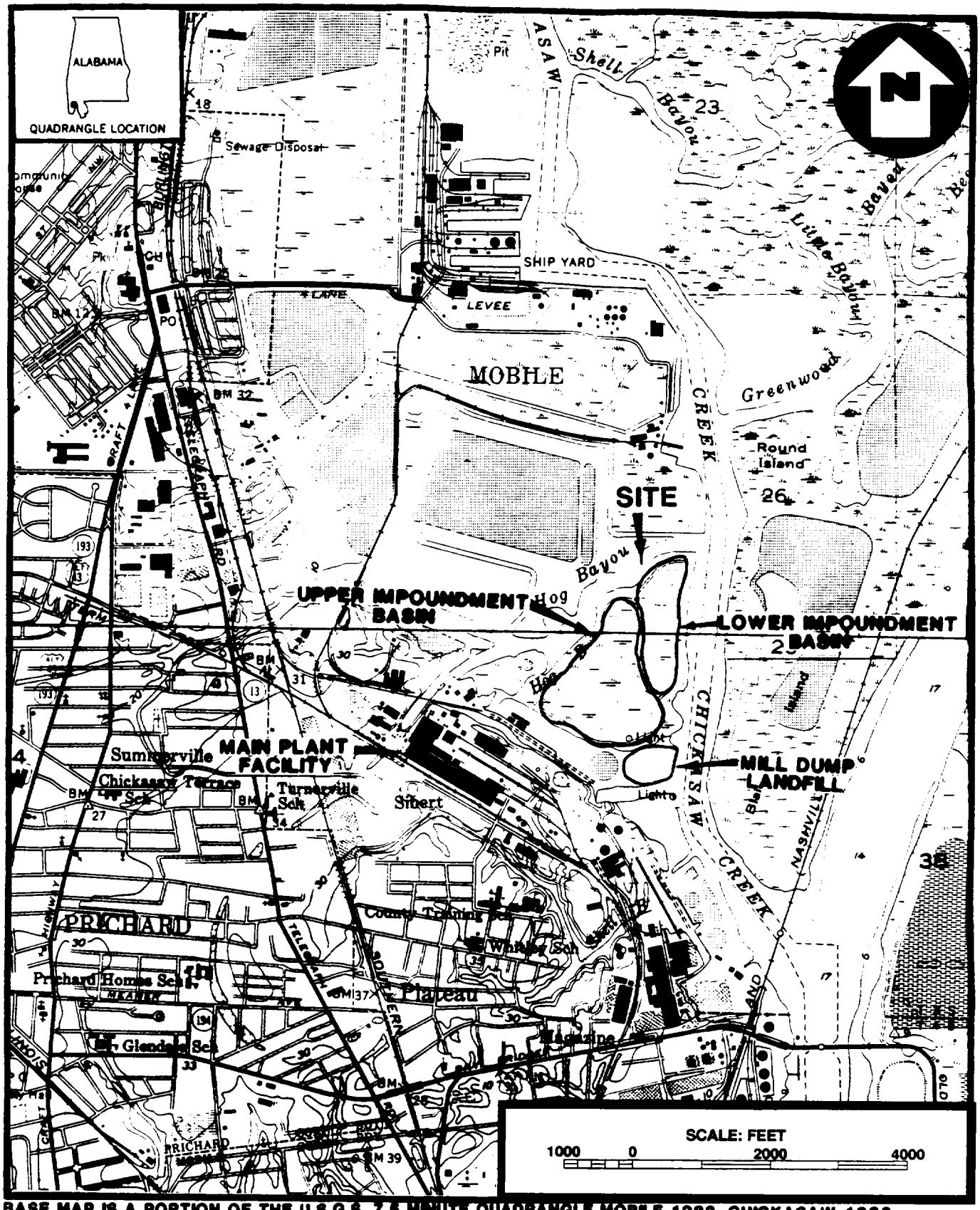
International Paper Company is located in north Mobile, Alabama (Figure 1). The 75-acre facility is a large pulp and paper mill, which has been owned and operated by International Paper Company since 1929 (Ref. 1). The company operated an onsite landfill from 1929 to 1981 (Ref. 2). This landfill, also known as Mill Dump, covered 14.5 acres and received paper waste, construction debris and mill wastes (Ref. 3). The landfill may also have received "green liquor sludge", a by-product of the pulp process (Ref. 2). The landfill was closed around 1984 (Ref. 4).

The facility also operated two surface impoundments. One of these, known as the Lower Impoundment Basin, was closed at about the same time as the landfill (Refs. 3, 4). The lower impoundment covered 32.6 acres and was used for wastewater treatment (Ref. 3). The other impoundment, known as the Upper Impoundment Basin, is still in use, although a facility representative stated that the company plans to close this impoundment in early 1991 (Refs. 2, 4). The upper impoundment covers 50 acres, is 10 to 12 feet deep, and has been in use since 1955 for disposal of fiber, lime mud, and green liquor sludge (Ref. 2). Since 1987, however, the facility's wastewater treatment sludge has been disposed of at International Paper's landfill in Chunchulla, Alabama (Ref. 5).

File material indicates that small amounts of solvents are used in the machine shop on site. They are recycled, however, and are not manifested off site (Ref. 2). International Paper also uses cresylic acid tar as a boiler fuel (Ref. 6).

International Paper Company filed a CERCLA 103(c) Notification in June 1981 for unknown wastes from pulp and paper mill operations (Ref. 1). According to a facility representative, no RCRA Part A Application was ever filed and there are no RCRA facilities in the paper division of the facility (Ref. 4). State records confirm that International Paper Company holds no RCRA status for the Mobile paper mill; however, the company's research and development laboratory, located at the same address, has small-quantity generator status (Ref. 7).

International Paper Company holds a National Pollution Discharge Elimination System (NPDES) permit (no. AL0002780) for this facility. According to state records, the effluent is carried via a pipeline to the Mobile River near downtown Mobile where it is discharged (Ref. 8). The facility also



BASE MAP IS A PORTION OF THE U.S.G.S. 7.5 MINUTE QUADRANGLE MOBILE 1982, CHICKASAW 1982, ALABAMA.

SITE LOCATION MAP
INTERNATIONAL PAPER COMPANY
MOBILE, MOBILE COUNTY, ALABAMA

FIGURE 1

NUS CORPORATION

holds 15 to 20 air permits, but there have been no major violations of either the air permits or the NPDES permit, according to the state (Refs. 8, 9).

2.2 SITE DESCRIPTION

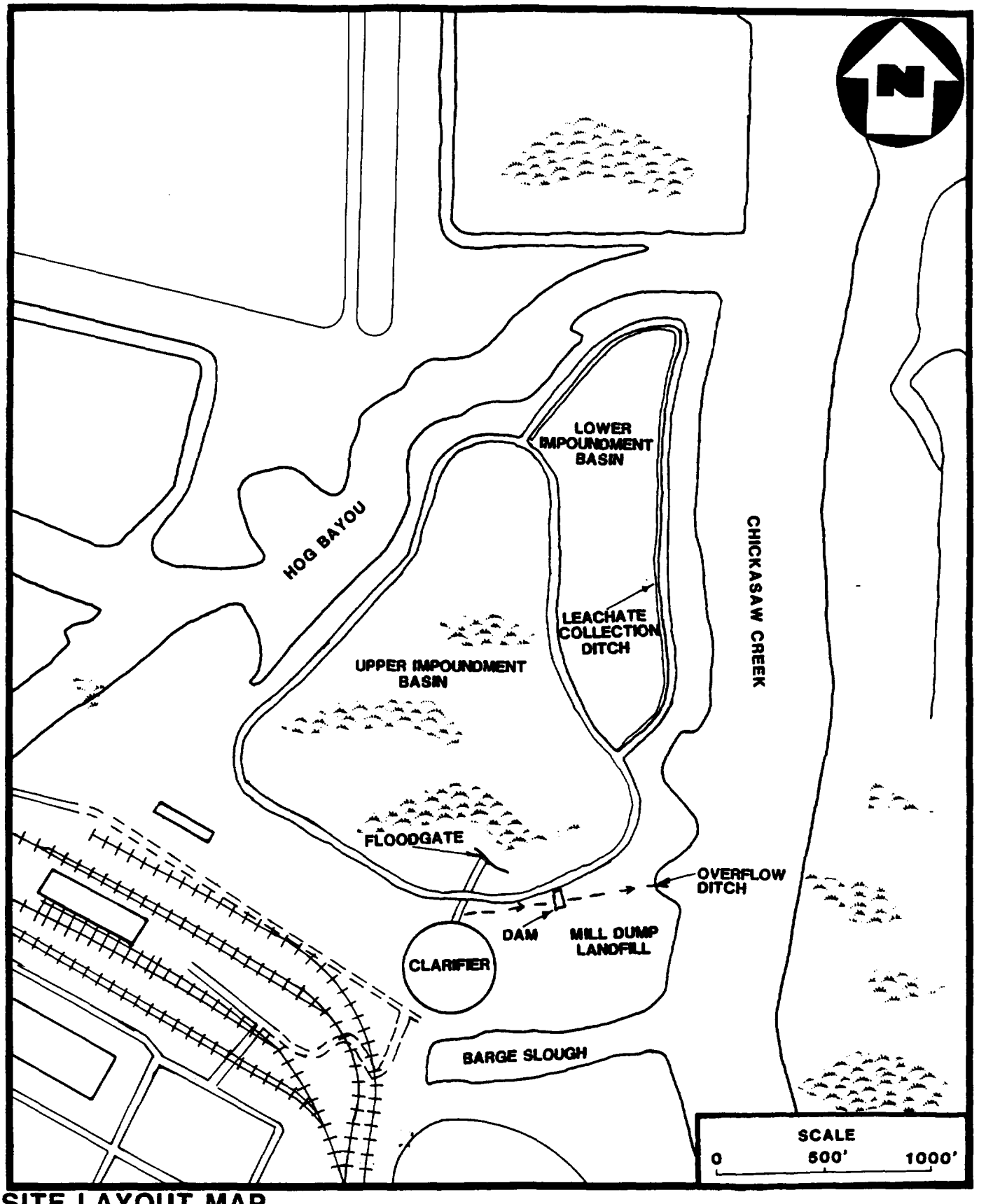
2.2.1 Site Features

The International Paper Company plant is located on Papermill Road in an industrial section of north Mobile, about 1 mile west of the Mobile River (Appendix A). The facility offices and plant area are located directly on Papermill Road. The surface impoundments and closed landfill are located along Chickasaw Creek, directly northeast of the main facility. A barge slough, is located directly south of the landfill where barges carrying timber are unloaded (Figure 2).

The closed Mill Dump landfill is approximately 40 feet high and is well vegetated with grass. According to the closure plan for this disposal area, the landfill was to be graded to a mounded shape with a minimum of 2 percent slopes and maximum side slopes no steeper than 20 percent. The cap was to be composed of a mixture of imported sandy soil (20 to 30 percent), flume grit (35 to 40 percent), and coal-filter cake and bark ash (35 to 40 percent). A grass cover was to be established on top of the cap (Ref. 3). From observations during the field investigation, the closure plan appeared to have been carried out. According to a facility representative, the landfill was probably unlined (Ref. 4).

Most of the waste deposited in the Lower Impoundment Basin was placed in the western, unvegetated portion of the impoundment. The eastern portion was heavily vegetated with undergrowth and large trees. When the impoundment was closed, the heavy vegetation to the east was left in place to reduce leachate formation, and the western portion was regraded, capped and seeded in the same manner as the landfill (Ref. 3). The lower impoundment is bordered on the east by Chickasaw Creek, and on the west by Hog Bayou. A leachate collection ditch was installed between the impoundment and the dam that surrounds the impoundment to prevent contamination from entering these two surface waters. During the field investigation, vegetation was heavy and healthy on both sides of the dam surrounding the impoundment (Ref. 5). According to a facility representative, the lower impoundment may have had a clay liner (Ref. 4).

The Upper Impoundment Basin currently receives the green liquor sludge. A pipe running above ground from the plant carries wastewater to the impoundment. The wastewater circulates around the impoundment, through a clarifier and back into the impoundment. During the field investigation, the contents of the impoundment were noted as having a greenish gray appearance,



SITE LAYOUT MAP
INTERNATIONAL PAPER COMPANY
MOBILE, MOBILE COUNTY, ALABAMA

FIGURE 2

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and much of the vegetation in the impoundment was dead or stressed due to the high pH of the water. A 5-foot gravel berm surrounded the deepest portion of the impoundment where most of the waste is concentrated. A dike surrounds the entire upper impoundment (Refs. 4, 5).

Prior to the installation of a wastewater treatment system, overflow from the upper impoundment was diverted to Chickasaw Creek via a ditch that ran along the western and northern sides of the Mill Dump landfill. A dam was later installed in the ditch to prevent overflow from entering the creek (Figure 2).

2.2.2 Waste Characteristics

Pulp is the raw material for the production of paper, paperboard, fiberboard and other similar products. The Kamyr continuous kraft pulping system is a widely used process of producing wood pulp. Wood chips are steamed, then pressurized and mixed with pulping liquors. The chips are then "digested" by heating and agitating the chips and liquors to achieve fiber separation (Ref. 10, pp. 379, 399-400).

The kraft pulping system depends on an associated recovery process for producing the digestion liquors. "Black liquor" is the used liquor separated from the pulp after processing is completed. The black liquor then undergoes evaporation and combustion for the recovery of inorganic chemicals as a smelt, which is later converted to "white liquor" for the next digestion. "Green liquor" is the solution obtained when the smelt is dissolved, and it contains an insoluble residue called dregs, which gives it a dark green appearance. The dregs contain a small amount of carbon plus a number of inorganic constituents, including iron sulfide, manganese dioxide, calcium carbonate, and magnesium aluminum silicate. These constituents originate in the wood and the process water or result from the corrosion of equipment (Ref. 10, pp. 401, 404-405).

The green liquor is separated from the dregs, and the clarified green liquor undergoes a causticizing reaction with calcium carbonate to form the white liquor for the next pulping process. Lime mud is the by-product of this reaction after the white liquor is removed (Ref. 10, p. 405).

International Paper used their surface impoundments to dispose of green liquor sludges and lime mud. In addition, the landfill may have received some similar wastes. Available file material contains no record of the exact quantity or nature of wastes disposed of.

3.0 REGIONAL POPULATIONS AND ENVIRONMENTS

3.1 POPULATION AND LAND USE

3.1.1 Population

International Paper Company is located in the densely populated urban area of north Mobile, Alabama. The facility is situated in a strip of heavy industry that runs along the Mobile River and down to the Mobile Bay. The western, southwestern and southern areas of the 4-mile radius are heavily populated with residential and commercial areas. There are numerous schools within the study area, four of which are within 1 mile (Appendix A). According to the GEMS Data Base, the population within 1 mile is 4,230 and within 4 miles is 88,849 (Ref. 11).

3.1.2 Land Use

The eastern, northeastern and northern areas of the 4-mile radius are comprised mainly of extensive wetlands and surface water bodies that feed the Mobile Bay (Appendix A). These areas are part of the extensive Mobile Delta, which supports an abundance of wildlife. Over 20 endangered or threatened animal species and over 50 such plant species can be found in this area (Ref. 12, pp. 1, 21-24).

3.2 SURFACE WATER

3.2.1 Climatology

The climate of coastal Alabama is primarily humid subtropical, due to the warming influence of the Gulf of Mexico. The presence of this warm water body is a major contributor to warm, humid summers and mild winters, with a fairly consistent range of temperature extremes (Ref. 12, p. 130). The average annual rainfall in the Mobile area is 64 inches and the average annual lake evaporation is 48 inches. Thus, the net annual precipitation is 16 inches (Ref. 13, pp. 43, 63). The 1-year 24-hour rainfall is 4.7 inches (Ref. 14, p. 93).

3.2.2 Overland Drainage

Run-off from the Mill Dump landfill, the Lower Impoundment Basin and the eastern portion of the Upper Impoundment Basin would flow directly into Chickasaw Creek, which flows into the Mobile River about 1 mile south of the facility. The Mobile River then flows another 6 miles into the Mobile Bay. Run-off from the western portion of the Upper Impoundment Basin would probably enter Hog Bayou, which flows northeast around the northern tip of the Lower Impoundment Basin and enters Chickasaw Creek 1.5 miles upstream of the Mobile River (Appendix A).

3.2.3 Potentially Affected Water Bodies

3.2.3.1 Surface Water Use

No drinking water intakes are located on any of the water bodies downstream of the site (Refs. 15, 16). Recreational and commercial fishing most likely occur somewhere along the 15-stream-mile surface water pathway, although it is unlikely that heavy fishing takes place in the immediate area around the facility due to the heavy industry in the area (Appendix A, Ref. 17).

3.2.3.2 Sensitive Environments

Of primary environmental concern along the coast of Alabama are the sensitive coastal and freshwater wetland areas and surface water bodies, and the abundance of animal and plant life that thrive in them. The Mobile Bay, the Mobile Sound, portions of the Gulf of Mexico, and the thousands of acres comprising the Mobile Delta are both ecologically and economically vital to the state of Alabama (Refs. 10, 17).

The natural importance of the Mobile Delta was recognized in 1974 when the Secretary of the Interior designated 189,000 acres of it as the Mobile-Tensaw River Bottomlands National Natural Landmark. The National Park Service classified this portion of the Delta as threatened in 1977. The Mobile Delta is comprised of a mixture of open water, fresh-mixed marsh, swamp, and mixed bottomland forest. The lower 25 percent of the Delta is a treeless plain, which is a prime waterfowl habitat and a center for sport and commercial fishing (Ref. 17, p. 164). Portions of the 4-mile radius surrounding International Paper Company encompass this critical area of the Delta (Appendix A).

The commercial freshwater fishery in the state is centered in the Mobile Delta, and major estuaries are Mobile Bay and the Mississippi Sound (Ref. 17, p. 53). The commercial fishery in this area is largely sustained by estuarine-dependent species (Ref. 17, p. 64). In 1975, the dockside value of the marine

and freshwater fishery was $33.6 million, and catches included 23 species of finfish and seven species of shellfish (Ref. 17, pp. v-vi).

Recreational activities are common among both residents and tourists along coastal Alabama, due to the warm climate and abundance of surface water. These activities include swimming, fishing, picnicking, hunting, and sightseeing. In 1980, an estimated 4.4 million tourists visited Mobile and Baldwin counties, which comprise coastal Alabama (Ref. 17, p. vii).

In 1978, the National Park Service conducted a survey of the Delta to document its significance and to develop preservation alternatives. Major threats to the Delta identified by this survey included the industrial development along the west bank of the Mobile River and the cumulative effects of water pollution (Ref. 17, p. 165).

Water pollution is a serious problem in and adjacent to the Mobile Bay, due in part to the area's heavy industrial development. Principal point sources of pollution in the area are inadequate municipal sewage treatment facilities and pollution loads from paper mills and chemical plants (Refs. 12, p. 165; 17, p. viii). In 1977, there were 38 industrial process wastewater sources with National Pollution Discharge Elimination System (NPDES) permits. Most of these discharges empty into Chickasaw Creek and the Mobile River. Although the greatest volume of discharge is from the electric generating plants, most of the pollution load comes from the paper mills and chemical plants (Ref. 12, p. 55). In 1979, International Paper Company was listed as one of the 38 permitted dischargers and had the third largest discharge with 33.2 million gallons/day (mgd). Scott Paper Company, which is located adjacent to International Paper, had the largest discharge with 42.43 mgd (Ref. 12, p. 157--Table 44).

3.3 GROUNDWATER

3.3.1 Hydrogeology

Mobile County lies in the East Gulf Coastal Plain physiographic province of Southern Alabama (Ref. 18, pp. 8, 10). The area lies within the Southern Pine Hills region of this province, which is characterized by low, rounded hills developed on Pleistocene to Holocene marine terraces, flood plains, and beach deposits (Ref. 18, p. 14). Immediately underlying the area are Pleistocene marine, estuarine, deltaic, stream, and beach deposits which are collectively termed "alluvium" (Ref. 19, pp. 2, 3). These deposits are made up of beds and lenses of gravel, fine- to coarse-grained sand, silty sand, silt, clay, and carbonaceous material (Ref. 20, p. 8). The alluvium can exceed 150 feet in thickness (Refs. 19, p. 28; 20, p. 8). The bedding of these deposits is often lenticular and

interfingering, which can create hydraulic interconnections to the underlying water-bearing beds (Ref. 20, pp. 8-9). Underlying the alluvium is the Citronelle Formation of Pliocene age. This formation consists of interbedded layers and lenses of sands and clays with occasional beds of gravel. The thickness of the Citronelle can reach over 200 feet (Ref. 20, p. 5). Below the Citronelle are a series of undifferentiated Miocene sediments composed of mainly sands, clays, and sandy clays. The thickness of the Miocene sequence ranges from 200 feet in outcrop to over 3,000 feet in southern Mobile County (Ref. 20, p. 5).

Groundwater in the Mobile area occurs under both water-table and semi-confined conditions (Ref. 19, p. 28; 20, p. 9). The principal water-bearing formations in the area are the Quaternary alluvium and the Miocene sediments. These deposits are hydraulically interconnected and considered to be one aquifer, with yields ranging from 0.5 to 1.0 million gallons per day (Mgal/day) (Ref. 20, p. 9). The depth to groundwater in the facility area is estimated to be between 10 to 20 feet below land surface (bls) (Ref. 20, plate 1, Appendix A). Most high-yield wells are completed in sand and gravel beds of beach and stream deposits. The silty and clayey channel deposits generally do not yield significant amounts of water, but do allow for infiltration of water to underlying sand and gravel beds (Ref. 20, p. 9).

Discontinuous clay lenses within the Miocene deposits may retard the vertical movement of groundwater but do not completely separate the aquifers (Ref. 20, p. 9). At depths below 550 feet, the clay sediments are semi-confining, thus the aquifer acts as a confined aquifer under short-term pumpage (Refs. 19, p. 28; 20, p. 9). Wells constructed in the Miocene aquifer may yield from 0.5 to 2.0 Mgal/day (Ref. 20, p. 9). Producing wells in this aquifer range in depth from 94 to 800 feet bls (Ref. 21, p. 89).

Recharge to the aquifer system is through the infiltration of precipitation and vertical leakage through the semi-confining layers. Most of the recharge to the aquifer occurs within the boundaries of Mobile and Baldwin Counties (Ref. 20, p. 9). The direction of groundwater flow in the area is generally toward the southeast (Ref. 20, p. 10, plate 1). The estimated hydraulic conductivity for the alluvial deposits is between 1.0×10^{-3} and 1.0×10^{-5} cm/sec (Ref. 22, p. 29).

3.3.2 Aquifer Use

Groundwater use within the 4-mile radius is extremely limited. The population within 4 miles of International Paper Company is served by two water companies: the Mobile Water Department and the Prichard Water Department. Both municipalities obtain water from intakes on Eightmile Creek at West Lee Street near the Chickasaw city limits. These intakes are well upstream of International Paper

Company. The Mobile Water Department serves about 95,000 homes in Mobile County (Refs. 15, 16). The Prichard Water Department serves its own municipality as well as the city of Chickasaw, for a total of about 15,700 homes (Refs. 16, 23).

According to the Mobile Water Department, private wells are present in outlying areas. It is unlikely that any private wells are within the 4-mile site radius (Ref. 15).

4.0 FIELD INVESTIGATION

4.1 SAMPLE COLLECTION

During the field investigation, conducted on May 2, 1990, FIT 4 attempted to identify and characterize contaminants which may be present in the environment as a result of activities that were conducted at International Paper Company. To accomplish this, FIT 4 collected 10 environmental soil and sediment samples from a number of strategic locations. These locations were selected based on historical information and direct observation at the site.

4.1.1 Sample Collection Methodology

All sample collection, sample preservation, and chain-of-custody procedures used during this investigation were in accordance with the standard operating procedures as specified in Sections 3 and 4 of the Engineering Support Branch Standard Operating Procedures and Quality Assurance Manual; United States Environmental Protection Agency, Region IV, Environmental Services, Division, April 1, 1986.

4.1.2 Split Samples

Split samples were offered to representatives of the International Paper Company. The samples were accepted by Messrs. David Hitt and Pablo Vasquez. Receipt for sample forms are on file at FIT 4.

4.1.3 Description of Samples and Sample Locations

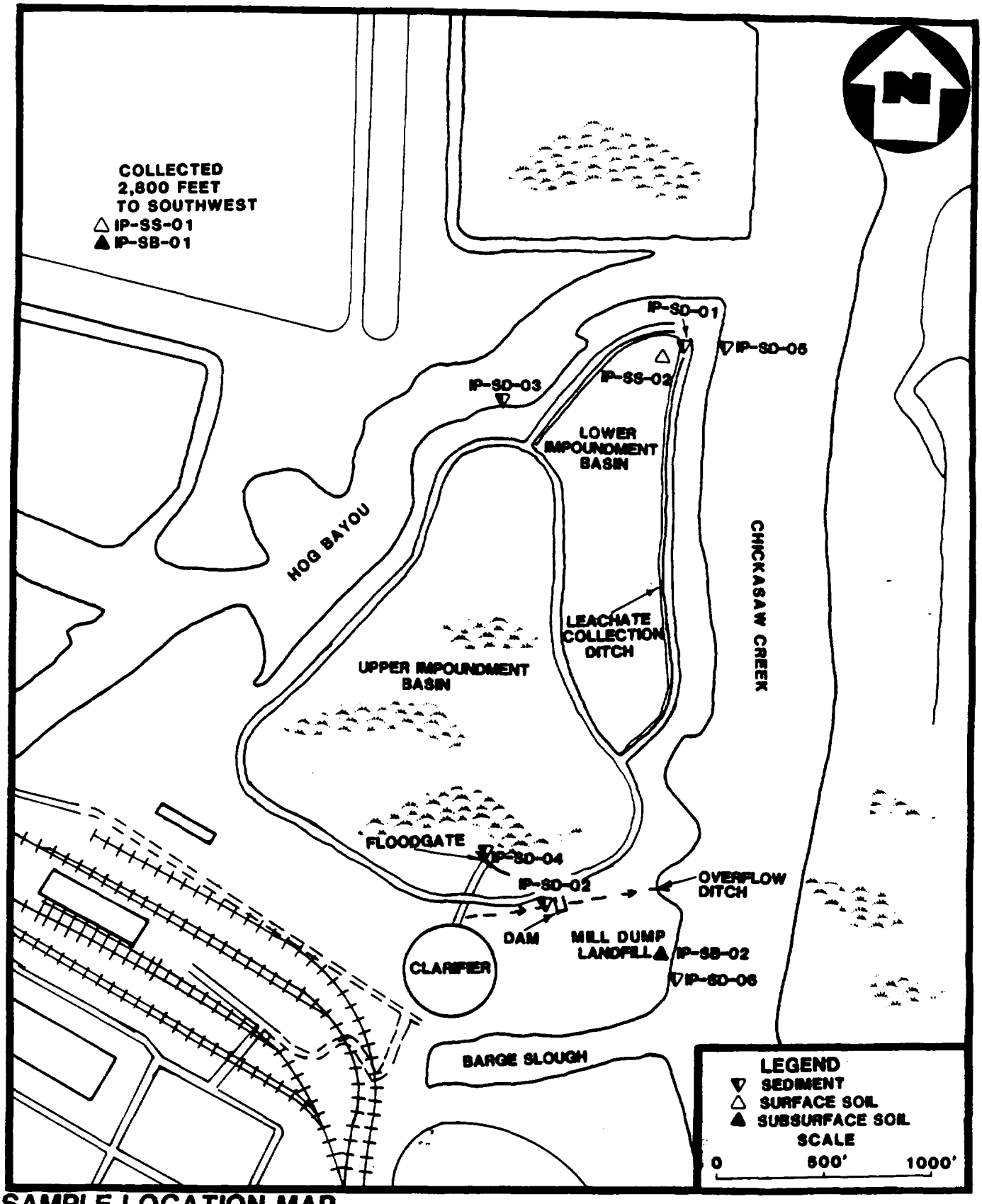
Two surface soil, two subsurface soil, and six sediment samples were collected during the onsite inspection. The samples were collected from background locations, disposal areas, migration pathways, and surface water bodies which could potentially receive contaminants. The study plan prepared for this investigation also called for the installation of temporary wells and the collection of groundwater samples. However, because groundwater use in the area is very limited and surface water was the primary pathway of concern, no groundwater samples were collected. This change in the study plan was requested and approved by EPA. Sample codes and descriptions are presented in Table 1. Sample locations are shown on Figure 3.

TABLE 1

SAMPLE CODES AND DESCRIPTIONS
INTERNATIONAL PAPER COMPANY
MOBILE, MOBILE COUNTY, ALABAMA

Sample Code	Collection Date	Collection Time	Description
IP-SS-01	5/2/90	0945	Background surface soil collected from grassy area west of guard house and north of parking lot. Collected from approximately 1 foot below land surface (bls) and consisted of black, sandy soil mixed with orangish-red clay.
IP-SS-02	5/2/90	1040	Surface soil sample collected from northern edge of closed lower impoundment. Sample collected from 6 inches bls and consisted of brown, sandy, rocky soil.
IP-SB-01	5/2/90	1000	Background subsurface soil collected from same location as IP-SS-01. Sample collected from 3 to 4 feet bls and consisted of mixed clay and sand.
IP-SB-02	5/2/90	1230	Subsurface soil collected from downgradient edge of former landfill. Sample collected from a depth of 2 to 3 feet bls.
IP-SD-01	5/2/90	1115	Sediment sample collected from leachate collection ditch below northern edge of lower surface impoundment.
IP-SD-02	5/2/90	1250	Sediment sample collected from drainage ditch along western edge of former landfill. Ditch formerly used to carry overflow from upper surface impoundment to Chickasaw Creek.
IP-SD-03	5/2/90	1330	Sediment sample collected from east bank of Hog Bayou near mouth. Control sample.
IP-SD-04	5/2/90	1350	Sediment sample collected from upper impoundment basin upstream of floodgate.
IP-SD-05	5/2/90	1335	Sediment sample collected from west bank of Chickasaw Creek near northeast edge of facility.
IP-SD-06	5/2/90	1420	Sediment sample collected from west bank of Chickasaw Creek below former landfill.

IP - International Paper Company
SS - Surface Soil
SB - Subsurface Soil
SD - Sediment



SAMPLE LOCATION MAP
INTERNATIONAL PAPER COMPANY
MOBILE, MOBILE COUNTY, ALABAMA

FIGURE 3

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4.2 SAMPLE ANALYSIS

4.2.1 Analytical Support and Methodology

All samples collected were analyzed under the Contract Laboratory Program (CLP) and analyzed for all parameters listed in the Target Compound List (TCL). Organic analysis of soil samples was performed by Compu Chem Laboratories of Research Triangle Park, North Carolina. Inorganic analysis of soil samples was performed by Silver Valley of Kellogg, Idaho.

All laboratory analyses and laboratory quality assurance procedures used during this investigation were in accordance with standard procedures and protocols as specified in the Laboratory Operations and Quality Control Manual, United States Environmental Protection Agency, Region IV, Environmental Services Division, issued October 24, 1990; or as specified by the existing United States Environmental Protection Agency standard procedures and protocols for the Contract Laboratory Program (CLP) Statement of Work (SOW), as applicable.

4.2.2 Analytical Data Quality and Data Qualifiers

All analytical data were subjected to a quality assurance review as described in the EPA Environmental Services Division laboratory data evaluation guidelines. In the tables, some of the concentrations of the organic and inorganic parameters have been flagged with a "J". This indicates that the qualitative analysis was acceptable, but the quantitative value has been estimated. A few other compounds are flagged with an "N", indicating that they were detected based on the presumptive evidence of their presence. This means that the compound was tentatively identified, and its detection cannot be used as positive identification of its presence. Results for some background samples are reported with a "U" flag. This flag means that the material was analyzed for but not detected. The reported number is the laboratory-derived minimum quantitation limit (MQL) for the compound or element in that sample. At times, miscellaneous organic compounds that do not appear on the target compound list are reported with a data set. These compounds are labeled as "JN", indicating that they are tentatively identified at estimated quantities. Because these compounds are not routinely analyzed for or reported, background levels or MQL values are not generally available for comparison. The complete analytical data sheets are presented in Appendix B.

4.2.3 Presentation of Analytical Results

This section presents a discussion and interpretation of the analytical results from the environmental samples collected during the investigation at International Paper Company. Analytical results of soil and sediment samples are presented in Tables 2, 3, 4, and 5. Values for background sample results are presented as either a measured value or as the minimum quantitation limit (MQL). Samples containing concentrations of contaminants greater than three times the background level or MQL of these contaminants are considered to be elevated. These samples are noted in the text.

4.2.3.1 Soil Samples

Organic analysis of the soil samples, collected from the closed lower impoundment basin (IP-SS-02) and landfill (IP-SB-02) only revealed the presence of unidentified compounds (Table 2). Nevertheless, the number and concentrations of these compounds are considered elevated compared to the background samples.

Inorganic analysis, however, of these soil samples revealed the presence of a variety of metals (Table 3). Sample IP-SS-02 contained elevated levels of chromium, zinc, and barium. This sample also contained an elevated level of magnesium as well as concentrations of aluminum, calcium, and iron that were slightly above background. These latter four metals, though not particularly toxic, are constituents of the dregs contained in green liquor sludge. Thus, their presence may be attributable to sludge disposal in the impoundment.

Sample IP-SB-02 contained elevated levels of copper, lead, mercury, zinc, and barium. This sample also contained elevated levels of calcium (200 times background) and manganese and a slightly elevated level of magnesium, all of which are associated with the dregs in green liquor sludge.

4.2.3.2 Sediment Sampling

No background sediment sample was collected; however, sample IP-SD-03 was the most "upstream" sample collected. This sample contained no organic contamination except 12 unidentified compounds at a total concentration of 30,000J ug/kg (Table 4). Unidentified compounds were detected in all other sediment samples as well in quantities ranging from 9 to 18 compounds and concentrations ranging from 10,000J to 90,000J ug/kg.

In general, no pattern of organic contaminant migration can be seen in the analytical results. Although elevated levels of several organic constituents were detected in the sediment samples

collected from Chickasaw Creek, only one of these constituents (2-methylnaphthalene) was detected on site (in IP-SD-01). In addition, none of the organic constituents detected in IP-SD-06 were detected in the subsurface soil sample collected from the adjacent old Mill Dump Landfill. Thus, the landfill does not seem to be the source of these contaminants. Also, sample IP-SD-04, collected from the upper impoundment basin, contained several organic constituents; however, these contaminants were not found in the Chickasaw Creek or Hog Bayou samples so this impoundment does not appear to be releasing contamination to surrounding surface water at this time.

Inorganic analysis of the sediment samples (Table 5), however, revealed the presence of virtually the same contaminants in roughly the same concentrations found in the soil samples. Also, except for mercury and nickel, all of the inorganic contaminants found in the offsite samples (IP-SD-03, -05, -06) were also detected in the onsite samples (IP-SD-01, -02, -04).

TABLE 2

SUMMARY OF ORGANIC ANALYTICAL RESULTS
SOIL SAMPLES
INTERNATIONAL PAPER COMPANY
MOBILE, MOBILE COUNTY, ALABAMA

PARAMETERS (ug/kg)	Background IP-SS-01	Lower Impoundment Basin IP-SS-02	Background IP-SB-01	Old Mill Landfill IP-SB-02
PURGEABLE COMPOUNDS				
CARBON DISULFIDE	6U	-	6U	-
EXTRACTABLE COMPOUNDS				
2-METHYLNAPHTHALENE	380U	-	380U	-
PHENANTHRENE	380U	-	380U	-
FLUORANTHENE	380U	-	380U	-
PYRENE	380U	-	380U	-
BENZO(A)ANTHRACENE	380U	-	380U	-
CHRYSENE	380U	-	380U	-
UNIDENTIFIED COMPOUNDS	400J/1	10,000J/13	NA	5000J/8

- \- Material analyzed for but not detected above minimum quantitation limit
- J Estimated value
- N Presumptive evidence of material
- U Material was analyzed for but not detected above minimum quantitation limit. Number given is the minimum quantitation limit.
- NA Not analyzed

TABLE 3

SUMMARY OF INORGANIC ANALYTICAL RESULTS
SOIL SAMPLES
INTERNATIONAL PAPER COMPANY
MOBILE, MOBILE COUNTY, ALABAMA

PARAMETERS (mg/kg)	Background IP-SS-01	Lower Impoundment Basin IP-SS-02	Background IP-SB-01	Old Mill Landfill IP-SB-02
ALUMINUM	8300	12,000	24,000	12,000
ARSENIC	2UJ	3.4J	6.7J	3.6J
BARIUM	16	53	28	120
CALCIUM	7000	20,000	440	89,000
CHROMIUM	6.2	24	43	33
COBALT	1.8U	3.7	5.7	5.8
COPPER	2U	-	7U	63
IRON	5400	12,000	40,000	28,000
LEAD	23UR	-	20UJ	180
MAGNESIUM	190	700	590	1300
MANGANESE	160	120	10	280
MERCURY	11U	-	0.12U	1.5
NICKEL	6.2U	7	8U	17
POTASSIUM	130U	390	450	670
SELENIUM	0.46UR	-	1.5J	-
SODIUM	30U	280	60	540
VANADIUM	13	26	65	28
ZINC	7.9	41	21	180

- Material analyzed for but not detected above minimum quantitation limit
J Estimated value
N Presumptive evidence of presence of material
U Material analyzed for but not detected above minimum quantitation limit. Number given is the minimum quantitation limit.
R QC indicates data unusable. Compound may or may not be present. Resampling and reanalysis necessary for verification.

TABLE 4

SUMMARY OF ORGANIC ANALYTICAL RESULTS
SEDIMENT SAMPLES
INTERNATIONAL PAPER COMPANY
MOBILE, MOBILE COUNTY, ALABAMA

PARAMETERS (ug/kg)	Leachate Collection Ditch	Overflow Ditch	Hog Bayou	Upper Impoundment Basin	Chickasaw Creek	
			Control Sample			
	IP-SD-01	IP-SD-02	IP-SD-03	IP-SD-04	IP-SD-05	IP-SD-06
PURGEABLE COMPOUNDS						
CARBON DISULFIDE	-	-	-	2J	-	-
METHYL(METHYLETHYL)BICYCLOHEXENE[1]				60JN		
DIMETHYLMETHYLENEBICYCLOHEPTONE[1]				10JN		
EXTRACTABLE COMPOUNDS						
2-METHYLNAPHTHALENE	730U	-	-	-	-	74J
PHENANTHRENE	-	-	-	-	-	110J
FLUORANTHENE	-	-	-	-	-	260J
PYRENE	-	-	-	-	-	210J
BENZO(A)ANTHRACENE	-	-	-	-	-	200J
CHRYSENE	-	-	-	-	-	190J
UNIDENTIFIED COMPOUNDS	20,000J/14	20,000J/18	30,000J/12	10,000J/9	90,000J/14	20,000J/15

- Material analyzed for but not detected above minimum quantitation limit
J Estimated value
N Presumptive evidence of presence of material
1 Tentatively identified compound (TIC). This compound is not on CLP Target Compound List (TCL) and is reported only as detected in individual samples; MQL not determined.
U Material was analyzed for but not detected above minimum quantitation limit. Number given is the minimum quantitation limit.

TABLE 4

SUMMARY OF ORGANIC ANALYTICAL RESULTS
SEDIMENT SAMPLES
INTERNATIONAL PAPER COMPANY
MOBILE, MOBILE COUNTY, ALABAMA

PARAMETERS (ug/kg)	Leachate Collection Ditch	Overflow Ditch	Hog Bayou	Upper Impoundment Basin	Chickasaw Creek	
			Control Sample			
	IP-SD-01	IP-SD-02	IP-SD-03	IP-SD-04	IP-SD-05	IP-SD-06
TETRAMETHYLPHENANTHRENE	1000JN	500JN	-	2000JN	-	-
HEXADECANOIC ACID[1]		1000JN				
ETHYLIDENEBISETHYLBENZENE[1]				1000JN		700JN
HEXATHIEPANE[1]				700JN		
CINEOLE[1]					10,000JN	
TERPIN HYDRATE[1]					4000JN	
CARYOPHYLLENE[1]					2000JN	
OCTAHYDROMETHYLMETHYLENE(METHYLETHYL)NAPHTHALENE (ISOMERS)[1]					40,00JN/2	
DIMETHYL(METHYLETHYL)NAPHTHALENE[1]					3000JN	

- Material analyzed for but not detected above minimum quantitation limit
J Estimated value
N Presumptive evidence of presence of material
1 Tentatively identified compound (TIC). This compound is not on CLP Target Compound List (TCL) and is reported only as detected in individual samples; MQL not determined.
U Material was analyzed for but not detected above minimum quantitation limit. Number given is the minimum quantitation limit.

TABLE 5

SUMMARY OF INORGANIC ANALYTICAL RESULTS
SEDIMENT SAMPLES
INTERNATIONAL PAPER COMPANY
MOBILE, MOBILE COUNTY, ALABAMA

	Leachate Collection Ditch	Overflow Ditch	Hog Bayou	Upper Impoundment Basin	Chickasaw Creek	
			Control Sample			
PARAMETERS (mg/kg)	IP-SD-01	IP-SD-02	IP-SD-03	IP-SD-04	IP-SD-05	IP-SD-06
ALUMINUM	20,000	4500	16,000	8000	26,000	12,000
ARSENIC	6.9J	-	5.9J	-	-	9.9J
BARIUM	120	120	83	17	220	220
CALCIUM	62,000	62,000	2700	4200	100,000	50,000
CHROMIUM	59	43	33	15	71	51
COBALT	7.8	-	6.8	-	-	7.6
COPPER	41	-	-	-	110	73
IRON	27,000	11,000	17,000	7000	18,000	18,000
LEAD	-	-	-	-	-	-
MAGNESIUM	1400	1100	2600	270	4500	2000
MANGANESE	980	400	140	49	1900	300
MERCURY	-	-	.77	-	-	2.8
NICKEL	-	-	-	-	46	16
POTASSIUM	460	450	1100	400	590	840
SODIUM	1000	730	860	2300	1900	1000
VANADIUM	66	28	32	12	49	31
ZINC	1500	54	260	29	4000	270

- Material analyzed for but not detected above minimum quantitation limit
J Estimated value
N Presumptive evidence of presence of material
U Material was analyzed for but not detected above minimum quantitation limit. Number given is the minimum quantitation limit.

5.0 SUMMARY

The primary pathway of concern associated with the International Paper Company is the surface water pathway. Although drinking water supplies are not threatened by a potential release from this site, portions of the 4-mile radius encompass part of the highly sensitive Mobile Delta. This area supports numerous recreational activities, major commercial fisheries, and an abundance of wildlife, including endangered plant and animal species. A number of industries along the Mobile River, including International Paper Company, are responsible for some of the pollution load that poses a potential threat to this sensitive area.

Analysis of samples collected during the field investigation revealed elevated levels of several inorganic contaminants in onsite soil samples. Most of these contaminants were also detected in the sediment samples collected from Hog Bayou and Chickasaw Creek. Some of the inorganics detected may be related to the green liquor sludge disposed of in the surface impoundments and possibly the former landfill.

Because International Paper Company is located in a heavily industrial area it is not possible to attribute contamination solely to the facility; however, the analytical results do suggest that the offsite contamination may be linked to the site. In addition, although drinking water supplies in the area are unthreatened by the facility, potential contamination of the Mobile Delta remains a concern. Therefore, FIT 4 recommends that International Paper Company be evaluated using the HRS (effective March 14, 1991).

REFERENCES

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3. Charles E. Garrett and James B. McCutchan, "Proposed Closure Plan: Lower Impoundment Basin and Mill Dump Disposal Sites", HLA Job No. 6261, 002.12, prepared for International Paper Company (Houston, Texas: Harding Lawson Associates, November 1983).

4. Lori C. Conway, NUS Corporation; memo to file for International Paper Company, April 23, 1990. Subject: Meeting with Pablo Vasquez, Coordinator of Environmental Services/East for International Paper Company regarding planned sampling investigation.

5. NUS Corporation Field Logbook No. F4-2227 for International Paper Company, TDD No. F4-9002-66. Documentation of Screening Site Inspection, May 2, 1990.

6. Charles Fleming, interoffice memorandum to Bernard E. Cox, Alabama Department of Environmental Management, June 12, 1984. Subject: Cresylic acid tar being used at International Paper Company.

7. Dixie Beatty-Carmack, Alabama Department of Environmental Management, telephone conversation with Lori C. Conway, NUS Corporation, February 15, 1991. Subject: RCRA status of International Paper Company's Mobile Mill.

8. John Poole, Industrial Permits Branch, ADEM, telephone conversation with Lori C. Conway, NUS Corporation, February 15, 1991. Subject: NPDES permit held by International Paper Company.

9. Glen Golson, Air Division, ADEM, telephone conversation with Lori C. Conway, NUS Corporation, February 15, 1991. Subject: Air permits held by International Paper Company.

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15. Les Brown, water service engineer, city of Mobile water service, telephone conversation with Terry Tanner, NUS Corporation, January 4, 1991. Subject: Mobile surface water intake; existence of private wells in Mobile service area.

16. Roy King, Prichard Water Department, telephone conversation with K.D. Pass, NUS Corporation, June 12, 1989. Subject: Prichard surface water intake and service area.

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18. Charles W. Copeland, ed., Geology of the Alabama Coastal Plain, Circular 47 (University of Alabama, Geological Survey of Alabama, 1968).

19. W.H. Robinson, W.J. Powell, and Eugene Brown, Water Resources of the Mobile Area, Alabama (Washington, D.C.: U.S. Geological Survey, 1956).

20. Will S. Mooty, Geohydrology and Susceptibility of Major Aquifer to Surface Contamination in Alabama, Water Resources Investigations Report 88-4080 (Tuscaloosa, Alabama: U.S. Geological Survey, 1988).

21. Joseph F. Riccio, J.D. Hardin, and George M. Lamb, Development of a Hydrologic Concept of the Greater Mobile Metropolitan-Urban Environment Bulletin No. 106 (University of Alabama, Geological Survey of Alabama).

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OVERSIZED

DOCUMENT

APPENDIX B

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

07/17/90

SPECIFIED ANALYSIS DATA REPORT

*** ***
** PROJECT NO. 90-436 SAMPLE NO. 45710 SAMPLE TYPE: SOIL PROG ELEM: NSF COLLECTED BY: L CONWAY **
** SOURCE: INTERNATIONAL PAPER CITY: MOBILE ST: AL **
** STATION ID: SB-01 COLLECTION START: 05/02/90 1000 STOP: 00/00/00 **
** CASE NO.: 14000 SAS NO.: D. NO.. T191 MD NO: T191 **
** **
*** ***

RESULTS	UNITS	PARAMETER
1.2U	MG/KG	CYANIDE

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*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 QUANTITATION LIMIT.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

07/17/90

SPECIFIED ANALYSIS DATA REPORT

*** ***
** PROJECT NO. 90-436 SAMPLE NO. 45713 SAMPLE TYPE: SOIL PROG ELEM: NSF COLLECTED BY: L CONWAY **
** SOURCE: INTERNATIONAL PAPER CITY: MOBILE ST: AL **
** STATION ID: SB-02 COLLECTION START: 05/02/90 1230 STOP: 00/00/00 **
** CASE.NO.: 14000 SAS NO.: D. NO.: T208 MD NO: T208 **
** **
*** ***

RESULTS	UNITS	PARAMETER
1.3U	MG/KG	CYANIDE

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*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 QUANTITATION LIMIT.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

07/17/90

SPECIFIED ANALYSIS DATA REPORT

PROJECT NO. 90-436 SAMPLE NO. 45712 SAMPLE TYPE: SOIL
PROG ELEM: NSF COLLECTED BY: L CONWAY
SOURCE: INTERNATIONAL PAPER
CITY: MOBILE ST: AL
STATION ID: SD-01
COLLECTION START: 05/02/90 1115 STOP: 00/00/00
CASE NO.: 14000 SAS NO.:
D. NO.. T200 MD NO: T200

RESULTS	UNITS	PARAMETER
2.3U	MG/KG	CYANIDE

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*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 QUANTITATION LIMIT.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

07/17/90

SPECIFIED ANALYSIS DATA REPORT

PROJECT NO. 90-436 SAMPLE NO. 45714 SAMPLE TYPE: SOIL PROG ELEM: NSF COLLECTED BY: L CONWAY
SOURCE: INTERNATIONAL PAPER CITY: MOBILE ST: AL
STATION ID: SD-02 COLLECTION START: 05/02/90 1250 STOP: 00/00/00
CASE.NO.: 14000 SAS NO.: D. NO.. T201 MD NO: T201

RESULTS	UNITS	PARAMETER
1.8U	MG/KG	CYANIDE

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*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 QUANTITATION LIMIT.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

07/17/90

SPECIFIED ANALYSIS DATA REPORT

*** ***
** PROJECT NO. 90-436 SAMPLE NO. 45715 SAMPLE TYPE: SOIL PROG ELEM: NSF COLLECTED BY: L CONWAY **
** SOURCE: INTERNATIONAL PAPER CITY: MOBILE ST: AL **
** STATION ID: SD-03 COLLECTION START: 05/02/90 1330 STOP: 00/00/00 **
** CASE NO.: 14000 SAS NO.: D. NO.. T202 MD NO: T202 **
** **
*** ***

RESULTS	UNITS	PARAMETER
2.9U	MG/KG	CYANIDE

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*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 QUANTITATION LIMIT.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

07/17/90

SPECIFIED ANALYSIS DATA REPORT

PROJECT NO. 90-436   SAMPLE NO. 45717   SAMPLE TYPE: SOIL   PROG ELEM: NSF   COLLECTED BY: L CONWAY
SOURCE: INTERNATIONAL PAPER   CITY: MOBILE   ST: AL
STATION ID: SD-04   COLLECTION START: 05/02/90 1350   STOP: 00/00/00
CASE.NO.: 14000   SAS NO.:   D. NO.. T203   MD NO: T203

RESULTS	UNITS	PARAMETER
1.4U	MG/KG	CYANIDE

FOOTNOTES
*A-AVERAGE VALUE   *NA-NOT ANALYZED   *NAI-INTERFERENCES   *J-ESTIMATED VALUE   *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*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 QUANTITATION LIMIT.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

07/17/90

SPECIFIED ANALYSIS DATA REPORT

PROJECT NO. 90-436 SAMPLE NO. 45716 SAMPLE TYPE: SOIL PROG ELEM: NSF COLLECTED BY: L CONWAY
SOURCE: INTERNATIONAL PAPER CITY: MOBILE ST: AL
STATION ID: SD-05 COLLECTION START: 05/02/90 1335 STOP: 00/00/00
CASE NO.: 14000 SAS NO.: D. NO.: T204 MD NO: T204

RESULTS	UNITS	PARAMETER
4.4U	MG/KG	CYANIDE

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*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 QUANTITATION LIMIT.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

07/17/90

SPECIFIED ANALYSIS DATA REPORT

PROJECT NO. 90-436   SAMPLE NO. 45718   SAMPLE TYPE: SOIL   PROG ELEM: NSF   COLLECTED BY: L CONWAY
SOURCE: INTERNATIONAL PAPER   CITY: MOBILE   ST: AL
STATION ID: SD-06   COLLECTION START: 05/02/90 1420   STOP: 00/00/00
CASE.NO.: 14000   SAS NO.:   D. NO.. T205   MD NO: T205

RESULTS	UNITS	PARAMETER
2U	MG/KG	CYANIDE

FOOTNOTES
*A-AVERAGE VALUE   *NA-NOT ANALYZED   *NAI-INTERFERENCES   *J-ESTIMATED VALUE   *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*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 QUANTITATION LIMIT.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

07/17/90

SPECIFIED ANALYSIS DATA REPORT

*** ***
** PROJECT NO. 90-436 SAMPLE NO. 45719 SAMPLE TYPE: SEDIMBLK PROG ELEM: NSF COLLECTED BY: L CONWAY **
** SOURCE: INTERNATIONAL PAPER CITY: MOBILE ST: AL **
** STATION ID: SD-07 (REGION IV QC BLANK) COLLECTION START: 05/02/90 1510 STOP: 00/00/00 **
** CASE.NO.: 14000 SAS NO.: D. NO.. T189 MD NO: T189 **
** **
*** ***

RESULTS	UNITS	PARAMETER
1.1U	MG/KG	CYANIDE

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*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 QUANTITATION LIMIT.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

07/17/90

SPECIFIED ANALYSIS DATA REPORT

*** ***
** PROJECT NO. 90-436 SAMPLE NO. 45709 SAMPLE TYPE: PROG ELEM: NSF COLTED BY: L CONWAY **
** SOURCE: CITY: MOBILE ST: AL **
** STATION ID: SS-01 COLLECTION START: 05/02/90 0945 STOP: 00/00/00 **
** CASE.NO.: 14000 SAS NO.: D. NO.. T190 MD NO: T190 **
**   **
*** ***

RESULTS	UNITS	PARAMETER
1.1U	MG/KG	CYANIDE

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*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 QUANTITATION LIMIT.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

07/17/90

SPECIFIED ANALYSIS DATA REPORT

PROJECT NO. 90-436 SAMPLE NO. 45711 SAMPLE TYPE: SOIL
PROG ELEM: NSF COLLECTED BY: L CONWAY
SOURCE: INTERNATIONAL PAPER
CITY: MOBILE ST: AL
STATION ID: SS-02
COLLECTION START: 05/02/90 1040 STOP: 00/00/00
CASE NO.: 14000 SAS NO.:
D. NO.: T192 MD NO: T192

RESULTS	UNITS	PARAMETER
1.1U	MG/KG	CYANIDE

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*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 QUANTITATION LIMIT.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

METALS DATA REPORT 07/17/90

PROJECT NO. 90-436 SAMPLE NO. 45710 SAMPLE TYPE: SOIL
SOURCE: INTERNATIONAL PAPER
STATION ID: SB-01
CASE NUMBER: 14000 SAS NUMBER:

PROG ELEM: NSF COLLECTED BY: L CONWAY
CITY: MOBILE ST: AL
COLLECTION START: 05/02/90 1000 STOP: 00/00/00
MD NUMBER: T191

MG/KG	ANALYTICAL RESULTS	MG/KG	ANALYTICAL RESULTS
24000	ALUMINUM	10	MANGANESE
8UJ	ANTIMONY	.12U	MERCURY
6.7J	ARSENIC	8U	NICKEL
28	BARIUM	450	POTASSIUM
.25U	BERYLLIUM	1.5J	SELENIUM
1U	CADMIUM	.75UR	SILVER
440	CALCIUM	60	SODIUM
43	CHROMIUM	2U	THALLIUM
5.7	COBALT	NA	TIN
7U	COPPER	65	VANADIUM
40000	IRON	21	ZINC
20UJ	LEAD	20	PERCENT MOISTURE
590	MAGNESIUM		

REMARKS ***REMARKS***

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*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 QUANTITATION LIMIT.
*R-QC INDICATES THAT DATA UNUSABLE. COMPOUND MAY OR MAY NOT BE PRESENT. RESAMPLING AND REANALYSIS IS NECESSARY FOR VERIFICATION.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

METALS DATA REPORT 07/17/90

** PROJECT NO. 90-436 SAMPLE NO. 45713 SAMPLE TYPE: SOIL PROG ELEM: NSF COLLECTED BY: L CONWAY **
** SOURCE: INTERNATIONAL PAPER CITY: MOBILE ST: AL **
** STATION ID: SB-02 COLLECTION START: 05/02/90 1230 STOP: 00/00/00 **
** CASE NUMBER: 14000 SAS NUMBER: MD NUMBER: !208 **

MG/KG	ANALYTICAL RESULTS	MG/KG	ANALYTICAL RESULTS
12000	ALUMINUM	280	MANGANESE
80J	ANTIMONY	1.5	MERCURY
3.6J	ARSENIC	17	NICKEL
120	BARIUM	670	POTASSIUM
1U	BERYLLIUM	1UJ	SELENIUM
1U	CADMIUM	.77UR	SILVER
89000	CALCIUM	540	SODIUM
33	CHROMIUM	.51U	THALLIUM
5.8	COBALT	NA	TIN
63	COPPER	28	VANADIUM
28000	IRON	180	ZINC
180	LEAD	22	PERCENT MOISTURE
1300	MAGNESIUM		

REMARKS ***REMARKS***

FOOTNOTES
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

METALS DATA REPORT 07/17/90

PROJECT NO. 90-436 SAMPLE NO. 45712 SAMPLE TYPE: SOIL
SOURCE: INTERNATIONAL PAPER
STATION ID: SD-01
CASE NUMBER: 14000 SAS NUMBER:

PROG ELEM: NSF COLLECTED BY: L CONWAY
CITY: MOBILE ST: AL
COLLECTION START: 05/02/90 1115 STOP: 00/00/00
MD NUMBER: T200

MG/KG	ANALYTICAL RESULTS	MG/KG	ANALYTICAL RESULTS
20000	ALUMINUM	980	MANGANESE
20UR	ANTIMONY	.23U	MERCURY
6.9J	ARSENIC	20U	NICKEL
120	BARIUM	460	POTASSIUM
.47U	BERYLLIUM	2UJ	SELENIUM
1.9U	CADMIUM	1.4UR	SILVER
62000	CALCIUM	1000	SODIUM
59	CHROMIUM	.94U	THALLIUM
7.8	COBALT	NA	TIN
41	COPPER	66	VANADIUM
27000	IRON	1500	ZINC
40UJ	LEAD	57	PERCENT MOISTURE
1400	MAGNESIUM		

REMARKS ***REMARKS***

FOOTNOTES
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

METALS DATA REPORT 07/17/90

PROJECT NO. 90-436 SAMPLE NO. 45714 SAMPLE TYPE: SOIL
SOURCE: INTERNATIONAL PAPER
STATION ID: SD-02
CASE NUMBER: 14000 SAS NUMBER:

PROG ELEM: NSF COLLECTED BY: L CONWAY
CITY: MOBILE ST: AL
COLLECTION START: 05/02/90 1250 STOP: 00/00/00
MD NUMBER: T201

MG/KG	ANALYTICAL RESULTS	MG/KG	ANALYTICAL RESULTS
4500	ALUMINUM	400	MANGANESE
20UJ	ANTIMONY	.18U	MERCURY
3UJ	ARSENIC	10U	NICKEL
120	BARIUM	450	POTASSIUM
.37U	BERYLLIUM	1UJ	SELENIUM
1.5U	CADMIUM	1.1UR	SILVER
62000	CALCIUM	730	SODIUM
43	CHROMIUM	.74U	THALLIUM
3U	COBALT	NA	TIN
6U	COPPER	28	VANADIUM
11000	IRON	54	ZINC
4UJ	LEAD	46	PERCENT MOISTURE
1100	MAGNESIUM		

REMARKS ***REMARKS***

FOOTNOTES
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

METALS DATA REPORT 07/17/90

** PROJECT NO. 90-436 SAMPLE NO. 45715 SAMPLE TYPE: SOIL PROG ELEM: NSF COLLECTED BY: L CONWAY **
** SOURCE: INTERNATIONAL PAPER CITY: MOBILE ST: AL **
** STATION ID: SD-03 COLLECTION START: 05/02/90 1330 STOP: 00/00/00 **
** CASE NUMBER: 14000 SAS NUMBER: MD NUMBER: 1202 **

MG/KG	ANALYTICAL RESULTS	MG/KG	ANALYTICAL RESULTS
16000	ALUMINUM	140	MANGANESE
15UR	ANTIMONY	.77	MERCURY
5.9J	ARSENIC	20U	NICKEL
83	BARIUM	1100	POTASSIUM
1U	BERYLLIUM	1.2UR	SELENIUM
2.3U	CADMIUM	1.7UR	SILVER
2700	CALCIUM	860	SODIUM
33	CHROMIUM	1.2U	THALLIUM
6.8	COBALT	NA	TIN
30U	COPPER	32	VANADIUM
17000	IRON	260	ZINC
20UJ	LEAD	65	PERCENT MOISTURE
2600	MAGNESIUM		

REMARKS ***REMARKS***

FOOTNOTES
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

METALS DATA REPORT 07/17/90

PROJECT NO. 90-436 SAMPLE NO. 45717 SAMPLE TYPE: SOIL
SOURCE: INTERNATIONAL PAPER
STATION ID: SD-04
CASE NUMBER: 14000 SAS NUMBER:

PROG ELEM: NSF COLLECTED BY: L CONWAY
CITY: MOBILE ST: AL
COLLECTION START: 05/02/90 1350 STOP: 00/00/00
MD NUMBER: T203

MG/KG	ANALYTICAL RESULTS	MG/KG	ANALYTICAL RESULTS
8000	ALUMINUM	49	MANGANESE
9UJ	ANTIMONY	.14U	MERCURY
2UJ	ARSENIC	7.6U	NICKEL
17	BARIUM	400	POTASSIUM
.28U	BERYLLIUM	.56UR	SELENIUM
1.1U	CADMIUM	.85UR	SILVER
4200	CALCIUM	2300	SODIUM
15	CHROMIUM	.56U	THALLIUM
2.3U	COBALT	NA	TIN
4U	COPPER	12	VANADIUM
7000	IRON	29	ZINC
4UJ	LEAD	29	PERCENT MOISTURE
270	MAGNESIUM		

REMARKS ***REMARKS***

FOOTNOTES
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

METALS DATA REPORT 07/17/90

PROJECT NO. 90-436 SAMPLE NO. 45716 SAMPLE TYPE: SOIL PROG ELEM: NSF COLLECTED BY: L CONWAY
SOURCE: INTERNATIONAL PAPER CITY: MOBILE ST: AL
STATION ID: SD-05 COLLECTION START: 05/02/90 1335 STOP: 00/00/00
CASE NUMBER: 14000 SAS NUMBER: MD NUMBER: 1204

MG/KG	ANALYTICAL RESULTS	MG/KG	ANALYTICAL RESULTS
26000	ALUMINUM	1900	MANGANESE
30UR	ANTIMONY	.44U	MERCURY
9UJ	ARSENIC	46	NICKEL
220	BARIUM	590	POTASSIUM
.87U	BERYLLIUM	1.7UR	SELENIUM
3.5U	CADMIUM	2.6UR	SILVER
100000	CALCIUM	1900	SODIUM
71	CHROMIUM	1.7U	THALLIUM
9U	COBALT	NA	TIN
110	COPPER	49	VANADIUM
18000	IRON	4000	ZINC
4.4UR	LEAD	77	PERCENT MOISTURE
4500	MAGNESIUM		

REMARKS ***REMARKS***

FOOTNOTES
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

METALS DATA REPORT 07/17/90

PROJECT NO. 90-436 SAMPLE NO. 45718 SAMPLE TYPE: SOIL
SOURCE: INTERNATIONAL PAPER
STATION ID: SD-06
CASE NUMBER: 14000 SAS NUMBER:

PROG ELEM: NSF COLLECTED BY: L CONWAY
CITY: MOBILE ST: AL
COLLECTION START: 05/02/90 1420 STOP: 00/00/00
MD NUMBER: T205

MG/KG	ANALYTICAL RESULTS	MG/KG	ANALYTICAL RESULTS
12000	ALUMINUM	300	MANGANESE
20UJ	ANTIMONY	2.8	MERCURY
9.9J	ARSENIC	16	NICKEL
220	BARIUM	840	POTASSIUM
1U	BERYLLIUM	.78UR	SELENIUM
1.6U	CADMIUM	2UJ	SILVER
50000	CALCIUM	1000	SODIUM
51	CHROMIUM	.78U	THALLIUM
7.6	COBALT	NA	TIN
73	COPPER	31	VANADIUM
18000	IRON	270	ZINC
2UR	LEAD	49	PERCENT MOISTURE
2000	MAGNESIUM		

REMARKS

REMARKS

FOOTNOTES
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

METALS DATA REPORT 07/17/90

PROJECT NO. 90-436 SAMPLE NO. 45719 SAMPLE TYPE: SEDIMBLK PROG ELEM: NSF COLLECTED BY: L CONWAY
SOURCE: INTERNATIONAL PAPER CITY: MOBILE ST: AL
STATION ID: SD-07 (REGION IV QC BLANK) COLLECTION START: 05/02/90 1510 STOP: 00/00/00
CASE NUMBER: 14000 SAS NUMBER: MD NUMBER: 1189

MG/KG	ANALYTICAL RESULTS	MG/KG	ANALYTICAL RESULTS
230	ALUMINUM	1.2	MANGANESE
5.6U	ANTIMONY	.11U	MERCURY
.43U	ARSENIC	5.9U	NICKEL
3.9U	BARIUM	130U	POTASSIUM
.22U	BERYLLIUM	.43U	SELENIUM
.87U	CADMIUM	.65U	SILVER
20U	CALCIUM	30U	SODIUM
1.1U	CHROMIUM	.43U	THALLIUM
1.7U	COBALT	NA	TIN
1.2	COPPER	2.4U	VANADIUM
100	IRON	.87U	ZINC
12	LEAD	08	PERCENT MOISTURE
9.1U	MAGNESIUM		

REMARKS ***REMARKS***

FOOTNOTES
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

METALS DATA REPORT 07/17/90

PROJECT NO. 90-436 SAMPLE NO. 45709 SAMPLE TYPE:
SOURCE:
STATION ID: SS-01
CASE NUMBER: 14000 SAS NUMBER:

PROG ELEM: NSF COLLECTED BY: L CONY
CITY: MOBILE ST: AL
COLLECTION START: 05/02/90 0945 STOP: 00/00/00
MD NUMBER: 1190

MG/KG	ANALYTICAL RESULTS	MG/KG	ANALYTICAL RESULTS
8300	ALUMINUM	160	MANGANESE
8UJ	ANTIMONY	.11U	MERCURY
2UJ	ARSENIC	6.2U	NICKEL
16	BARIUM	130U	POTASSIUM
.23U	BERYLLIUM	.46UR	SELENIUM
.92U	CADMIUM	.69UR	SILVER
7000	CALCIUM	30U	SODIUM
6.2	CHROMIUM	.46U	THALLIUM
1.8U	COBALT	NA	TIN
2U	COPPER	13	VANADIUM
5400	IRON	7.9	ZINC
.23UR	LEAD	13	PERCENT MOISTURE
190	MAGNESIUM		

REMARKS ***REMARKS***

FOOTNOTES
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

METALS DATA REPORT 07/17/90

PROJECT NO. 90-436 SAMPLE NO. 45711 SAMPLE TYPE: SOIL
SOURCE: INTERNATIONAL PAPER
STATION ID: SS-02
CASE NUMBER: 14000 SAS NUMBER:

PROG ELEM: NSF COLLECTED BY: L CONWAY
CITY: MOBILE ST: AL
COLLECTION START: 05/02/90 1040 STOP: 00/00/00
MO NUMBER: 1192

MG/KG	ANALYTICAL RESULTS	MG/KG	ANALYTICAL RESULTS
12000	ALUMINUM	120	MANGANESE
7UJ	ANTIMONY	.11U	MERCURY
3.4J	ARSENIC	7	NICKEL
53	BARIUM	390	POTASSIUM
.22U	BERYLLIUM	1UJ	SELENIUM
.89U	CADMIUM	.67UR	SILVER
20000	CALCIUM	280	SODIUM
24	CHROMIUM	.45U	THALLIUM
3.7	COBALT	NA	TIN
20U	COPPER	26	VANADIUM
12000	IRON	41	ZINC
20UJ	LEAD	10	PERCENT MOISTURE
700	MAGNESIUM		

REMARKS

REMARKS

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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

PURGEABLE ORGANICS DATA REPORT 07/17/90

PROJECT NO. 90-436 SAMPLE NO. 45710 SAMPLE TYPE: SOIL
SOURCE: INTERNATIONAL PAPER
STATION ID: SB-01

CASE NO.: 14000 SAS NO.:

PROG ELEM: NSF COLLECTED BY: L CONWAY
CITY: MOBILE ST: AL
COLLECTION START: 05/02/90 1000 STOP: 00/00/00

D. NO.. T191

UG/KG	ANALYTICAL RESULTS
13U	CHLOROMETHANE
13U	BROMOMETHANE
13U	VINYL CHLORIDE
13U	CHLOROETHANE
20U	METHYLENE CHLORIDE
20U	ACETONE
6U	CARBON DISULFIDE
6U	1,1-DICHLOROETHENE(1,1-DICHLOROETHYLENE)
6U	1,1-DICHLOROETHANE
6U	1,2 DICHLOROETHENE (TOTAL)
6U	CHLOROFORM
6U	1,2-DICHLOROETHANE
13U	METHYL ETHYL KETONE
6U	1,1,1-TRICHLOROETHANE
6U	CARBON TETRACHLORIDE
13U	VINYL ACETATE
6U	BROMODICHLOROMETHANE

UG/KG	ANALYTICAL RESULTS
6U	1,2-DICHLOROPROPANE
6U	CIS-1,3-DICHLOROPROPENE
6U	TRICHLOROETHENE(TRICHLOROETHYLENE)
6U	DIBROMOCHLOROMETHANE
6U	1,1,2-TRICHLOROETHANE
6U	BENZENE
6U	TRANS-1,3-DICHLOROPROPENE
6U	BROMOFORM
13U	METHYL ISOBUTYL KETONE
13U	METHYL BUTYL KETONE
6U	TETRACHLOROETHENE(TETRACHLOROETHYLENE)
6U	1,1,2,2-TETRACHLOROETHANE
6U	TOLUENE
6U	CHLOROBENZENE
6U	ETHYL BENZENE
6U	STYRENE
6U	TOTAL XYLENES
20	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

07/17/90

PURGEABLE ORGANICS DATA REPORT

PROJECT NO. 90-436 SAMPLE NO. 45713 SAMPLE TYPE: SOIL
SOURCE: INTERNATIONAL PAPER
STATION ID: SB-02

PROG ELEM: NSF COLLECTED BY: L CONWAY
CITY: MOBILE ST: AL
COLLECTION START: 05/02/90 1230 STOP: 00/00/00

CASE NO.: 14000 SAS NO.: D. NO.. T208

UG/KG	ANALYTICAL RESULTS
13U	CHLOROMETHANE
13U	BROMOMETHANE
13U	VINYL CHLORIDE
13U	CHLOROETHANE
30U	METHYLENE CHLORIDE
20U	ACETONE
6U	CARBON DISULFIDE
6U	1,1-DICHLOROETHENE(1,1-DICHLOROETHYLENE)
6U	1,1-DICHLOROETHANE
6U	1,2 DICHLOROETHENE (TOTAL)
6U	CHLOROFORM
6U	1,2-DICHLOROETHANE
13UR	METHYL ETHYL KETONE
6U	1,1,1-TRICHLOROETHANE
6U	CARBON TETRACHLORIDE
13U	VINYL ACETATE
6U	BROMODICHLOROMETHANE

UG/KG	ANALYTICAL RESULTS
6U	1,2-DICHLOROPROPANE
6U	CIS-1,3-DICHLOROPROPENE
6U	TRICHLOROETHENE(TRICHLOROETHYLENE)
6U	DIBROMOCHLOROMETHANE
6U	1,1,2-TRICHLOROETHANE
6U	BENZENE
6U	TRANS-1,3-DICHLOROPROPENE
6U	BROMOFORM
13U	METHYL ISOBUTYL KETONE
13U	METHYL BUTYL KETONE
6U	TETRACHLOROETHENE(TETRACHLOROETHYLENE)
6U	1,1,2,2-TETRACHLOROETHANE
6U	TOLUENE
6U	CHLOROBENZENE
6U	ETHYL BENZENE
6U	STYRENE
6U	TOTAL XYLENES
23	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

PURGEABLE ORGANICS DATA REPORT 07/17/90

PROJECT NO. 90-436 SAMPLE NO. 45712 SAMPLE TYPE: SOIL
SOURCE: INTERNATIONAL PAPER
STATION ID: SD-01

PROG ELEM: NSF COLLECTED BY: L CONWAY
CITY: MOBILE ST: AL
COLLECTION START: 05/02/90 1115 STOP: 00/00/00

CASE NO.: 14000 SAS NO.: D. NO.. T200

UG/KG	ANALYTICAL RESULTS
22U	CHLOROMETHANE
22U	BROMOMETHANE
22U	VINYL CHLORIDE
22U	CHLOROETHANE
40U	METHYLENE CHLORIDE
30U	ACETONE
11U	CARBON DISULFIDE
11U	1,1-DICHLOROETHENE(1,1-DICHLOROETHYLENE)
11U	1,1-DICHLOROETHANE
11U	1,2 DICHLOROETHENE (TOTAL)
11U	CHLOROFORM
11U	1,2-DICHLOROETHANE
22U	METHYL ETHYL KETONE
11U	1,1,1-TRICHLOROETHANE
11U	CARBON TETRACHLORIDE
22U	VINYL ACETATE
11U	BROMODICHLOROMETHANE

UG/KG	ANALYTICAL RESULTS
11U	1,2-DICHLOROPROPANE
11U	CIS-1,3-DICHLOROPROPENE
11U	TRICHLOROETHENE(TRICHLOROETHYLENE)
11U	DIBROMOCHLOROMETHANE
11U	1,1,2-TRICHLOROETHANE
11U	BENZENE
11U	TRANS-1,3-DICHLOROPROPENE
11U	BROMOFORM
22U	METHYL ISOBUTYL KETONE
22U	METHYL BUTYL KETONE
11U	TETRACHLOROETHENE(TETRACHLOROETHYLENE)
11U	1,1,2,2-TETRACHLOROETHANE
11U	TOLUENE
11U	CHLOROBENZENE
11U	ETHYL BENZENE
11U	STYRENE
11U	TOTAL XYLENES
55	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*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 QUANTITATION LIMIT.
*R-QC INDICATES THAT DATA UNUSABLE. COMPOUND MAY OR MAY NOT BE PRESENT. RESAMPLING AND REANALYSIS IS NECESSARY FOR VERIFICATION.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

PURGEABLE ORGANICS DATA REPORT 07/17/90

PROJECT NO. 90-436 SAMPLE NO. 45714 SAMPLE TYPE: SOIL
SOURCE: INTERNATIONAL PAPER
STATION ID: SD-02

PROG ELEM: NSF COLLECTED BY: L CONWAY
CITY: MOBILE ST: AL
COLLECTION START: 05/02/90 1250 STOP: 00/00/00

CASE NO.: 14000 SAS NO.: D. NO.: T201

UG/KG	ANALYTICAL RESULTS
13U	CHLOROMETHANE
13U	BROMOMETHANE
13U	VINYL CHLORIDE
13U	CHLOROETHANE
30U	METHYLENE CHLORIDE
13U	ACETONE
7U	CARBON DISULFIDE
7U	1,1-DICHLOROETHENE(1,1-DICHLOROETHYLENE)
7U	1,1-DICHLOROETHANE
7U	1,2 DICHLOROETHENE (TOTAL)
7U	CHLOROFORM
7U	1,2-DICHLOROETHANE
13U	METHYL ETHYL KETONE
7U	1,1,1-TRICHLOROETHANE
7U	CARBON TETRACHLORIDE
13U	VINYL ACETATE
7U	BROMODICHLOROMETHANE

UG/KG	ANALYTICAL RESULTS
7U	1,2-DICHLOROPROPANE
7U	CIS-1,3-DICHLOROPROPENE
7U	TRICHLOROETHENE(TRICHLOROETHYLENE)
7U	DIBROMOCHLOROMETHANE
7U	1,1,2-TRICHLOROETHANE
7U	BENZENE
7U	TRANS-1,3-DICHLOROPROPENE
7U	BROMOFORM
13U	METHYL ISOBUTYL KETONE
13U	METHYL BUTYL KETONE
7U	TETRACHLOROETHENE(TETRACHLOROETHYLENE)
7U	1,1,2,2-TETRACHLOROETHANE
7U	TOLUENE
7U	CHLOROBENZENE
7U	ETHYL BENZENE
7U	STYRENE
7U	TOTAL XYLENES
24	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

PURGEABLE ORGANICS DATA REPORT 07/17/90

PROJECT NO. 90-436 SAMPLE NO. 45715 SAMPLE TYPE: SOIL
SOURCE: INTERNATIONAL PAPER
STATION ID: SD-03

PROG ELEM: NSF COLLECTED BY: L CONWAY
CITY: MOBILE ST: AL
COLLECTION START: 05/02/90 1330 STOP: 00/00/00

CASE NO.: 14000 SAS NO.: D. NO.. T202

UG/KG	ANALYTICAL RESULTS
29U	CHLOROMETHANE
29U	BROMOMETHANE
29U	VINYL CHLORIDE
29U	CHLOROETHANE
70U	METHYLENE CHLORIDE
29U	ACETONE
15U	CARBON DISULFIDE
15U	1,1-DICHLOROETHENE(1,1-DICHLOROETHYLENE)
15U	1,1-DICHLOROETHANE
15U	1,2 DICHLOROETHENE (TOTAL)
15U	CHLOROFORM
15U	1,2-DICHLOROETHANE
29U	METHYL ETHYL KETONE
15U	1,1,1-TRICHLOROETHANE
15U	CARBON TETRACHLORIDE
29U	VINYL ACETATE
15U	BROMODICHLOROMETHANE

UG/KG	ANALYTICAL RESULTS
15U	1,2-DICHLOROPROPANE
15U	CIS-1,3-DICHLOROPROPENE
15U	TRICHLOROETHENE(TRICHLOROETHYLENE)
15U	DIBROMOCHLOROMETHANE
15U	1,1,2-TRICHLOROETHANE
15U	BENZENE
15U	TRANS-1,3-DICHLOROPROPENE
15U	BROMOFORM
29U	METHYL ISOBUTYL KETONE
29U	METHYL BUTYL KETONE
15U	TETRACHLOROETHENE(TETRACHLOROETHYLENE)
15U	1,1,2,2-TETRACHLOROETHANE
15U	TOLUENE
15U	CHLOROBENZENE
15U	ETHYL BENZENE
15U	STYRENE
15U	TOTAL XYLENES
66	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

PURGEABLE ORGANICS DATA REPORT 07/17/90

PROJECT NO. 90-436 SAMPLE NO. 45717 SAMPLE TYPE: SOIL
SOURCE: INTERNATIONAL PAPER
STATION ID: SD-04

PROG ELEM: NSF COLLECTED BY: L CONWAY
CITY: MOBILE ST: AL
COLLECTION START: 05/02/90 1350 STOP: 00/00/00

CASE NO.: 14000 SAS NO.: D. NO.: T203

UG/KG	ANALYTICAL RESULTS
13U	CHLOROMETHANE
13U	BROMOMETHANE
13U	VINYL CHLORIDE
13U	CHLOROETHANE
30U	METHYLENE CHLORIDE
20U	ACETONE
2J	CARBON DISULFIDE
7U	1,1-DICHLOROETHENE(1,1-DICHLOROETHYLENE)
7U	1,1-DICHLOROETHANE
7U	1,2 DICHLOROETHENE (TOTAL)
7U	CHLOROFORM
7U	1,2-DICHLOROETHANE
13U	METHYL ETHYL KETONE
7U	1,1,1-TRICHLOROETHANE
7U	CARBON TETRACHLORIDE
13U	VINYL ACETATE
7U	BROMODICHLOROMETHANE

UG/KG	ANALYTICAL RESULTS
7U	1,2-DICHLOROPROPANE
7U	CIS-1,3-DICHLOROPROPENE
7U	TRICHLOROETHENE(TRICHLOROETHYLENE)
7U	DIBROMOCHLOROMETHANE
7U	1,1,2-TRICHLOROETHANE
7U	BENZENE
7U	TRANS-1,3-DICHLOROPROPENE
7U	BROMOFORM
13U	METHYL ISOBUTYL KETONE
13U	METHYL BUTYL KETONE
7U	TETRACHLOROETHENE(TETRACHLOROETHYLENE)
7U	1,1,2,2-TETRACHLOROETHANE
7U	TOLUENE
7U	CHLOROBENZENE
7U	ETHYL BENZENE
7U	STYRENE
7U	TOTAL XYLENES
24	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
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*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS THE MINIMUM QUANTITATION LIMIT.
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

PURGEABLE ORGANICS DATA REPORT 07/17/90

PROJECT NO. 90-436 SAMPLE NO. 45716 SAMPLE TYPE: SOIL
SOURCE: INTERNATIONAL PAPER
STATION ID: SD-05

PROG ELEM: NSF COLLECTED BY: L CONWAY
CITY: MOBILE ST: AL
COLLECTION START: 05/02/90 1335 STOP: 00/00/00

CASE NO.: 14000 SAS NO.: D. NO.: T204

UG/KG	ANALYTICAL RESULTS
40U	CHLOROMETHANE
40U	BROMOMETHANE
40U	VINYL CHLORIDE
40U	CHLOROETHANE
80U	METHYLENE CHLORIDE
40U	ACETONE
20U	CARBON DISULFIDE
20U	1,1-DICHLOROETHENE(1,1-DICHLOROETHYLENE)
20U	1,1-DICHLOROETHANE
20U	1,2 DICHLOROETHENE (TOTAL)
20U	CHLOROFORM
20U	1,2-DICHLOROETHANE
40U	METHYL ETHYL KETONE
20U	1,1,1-TRICHLOROETHANE
20U	CARBON TETRACHLORIDE
40U	VINYL ACETATE
20U	BROMODICHLOROMETHANE

UG/KG	ANALYTICAL RESULTS
20U	1,2-DICHLOROPROPANE
20U	CIS-1,3-DICHLOROPROPENE
20U	TRICHLOROETHENE(TRICHLOROETHYLENE)
20U	DIBROMOCHLOROMETHANE
20U	1,1,2-TRICHLOROETHANE
20U	BENZENE
20U	TRANS-1,3-DICHLOROPROPENE
20U	BROMOFORM
40U	METHYL ISOBUTYL KETONE
40U	METHYL BUTYL KETONE
20U	TETRACHLOROETHENE(TETRACHLOROETHYLENE)
20U	1,1,2,2-TETRACHLOROETHANE
20U	TOLUENE
20U	CHLOROBENZENE
20U	ETHYL BENZENE
20U	STYRENE
20U	TOTAL XYLENES
75	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*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 QUANTITATION LIMIT.
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

PURGEABLE ORGANICS DATA REPORT 07/17/90

PROJECT NO. 90-436 SAMPLE NO. 45718 SAMPLE TYPE: SOIL
SOURCE: INTERNATIONAL PAPER
STATION ID: SD-06

PROG ELEM: NSF COLLECTED BY: L CONWAY
CITY: MOBILE ST: AL
COLLECTION START: 05/02/90 1420 STOP: 00/00/00

CASE NO.: 14000 SAS NO.: D. NO.. T205

UG/KG	ANALYTICAL RESULTS
19U	CHLOROMETHANE
19U	BROMOMETHANE
19U	VINYL CHLORIDE
19U	CHLOROETHANE
20U	METHYLENE CHLORIDE
30U	ACETONE
9U	CARBON DISULFIDE
9U	1,1-DICHLOROETHENE(1,1-DICHLOROETHYLENE)
9U	1,1-DICHLOROETHANE
9U	1,2 DICHLOROETHENE (TOTAL)
9U	CHLOROFORM
9U	1,2-DICHLOROETHANE
19UR	METHYL ETHYL KETONE
9U	1,1,1-TRICHLOROETHANE
9U	CARBON TETRACHLORIDE
19U	VINYL ACETATE
9U	BROMODICHLOROMETHANE

UG/KG	ANALYTICAL RESULTS
9U	1,2-DICHLOROPROPANE
9U	CIS-1,3-DICHLOROPROPENE
9U	TRICHLOROETHENE(TRICHLOROETHYLENE)
9U	DIBROMOCHLOROMETHANE
9U	1,1,2-TRICHLOROETHANE
9U	BENZENE
9U	TRANS-1,3-DICHLOROPROPENE
9U	BROMOFORM
19U	METHYL ISOBUTYL KETONE
19U	METHYL BUTYL KETONE
9U	TETRACHLOROETHENE(TETRACHLOROETHYLENE)
9U	1,1,2,2-TETRACHLOROETHANE
9U	TOLUENE
9U	CHLOROBENZENE
9U	ETHYL BENZENE
9U	STYRENE
9U	TOTAL XYLENES
47	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

PURGEABLE ORGANICS DATA REPORT 07/17/90

PROJECT NO. 90-436 SAMPLE NO. 45719 SAMPLE TYPE: SEDIMBLK PROG ELEM: NSF COLLECTED BY: L CONWAY
SOURCE: INTERNATIONAL PAPER CITY: MOBILE ST: AL
STATION ID: SD-07 (REGION IV QC BLANK) COLLECTION START: 05/02/90 1510 STOP: 00/00/00

CASE NO.: 14000 SAS NO.: D. NO.. T189

UG/KG	ANALYTICAL RESULTS
11U	CHLOROMETHANE
11U	BROMOMETHANE
11U	VINYL CHLORIDE
11U	CHLOROETHANE
30	METHYLENE CHLORIDE
21	ACETONE
5U	CARBON DISULFIDE
5U	1,1-DICHLOROETHENE(1,1-DICHLOROETHYLENE)
5U	1,1-DICHLOROETHANE
5U	1,2 DICHLOROETHENE (TOTAL)
5U	CHLOROFORM
5U	1,2-DICHLOROETHANE
11U	METHYL ETHYL KETONE
5U	1,1,1-TRICHLOROETHANE
5U	CARBON TETRACHLORIDE
11U	VINYL ACETATE
5U	BROMODICHLOROMETHANE

UG/KG	ANALYTICAL RESULTS
5U	1,2-DICHLOROPROPANE
5U	CIS-1,3-DICHLOROPROPENE
5U	TRICHLOROETHENE(TRICHLOROETHYLENE)
5U	DIBROMOCHLOROMETHANE
5U	1,1,2-TRICHLOROETHANE
5U	BENZENE
5U	TRANS-1,3-DICHLOROPROPENE
5U	BROMOFORM
11U	METHYL ISOBUTYL KETONE
11U	METHYL BUTYL KETONE
5U	TETRACHLOROETHENE(TETRACHLOROETHYLENE)
5U	1,1,2,2-TETRACHLOROETHANE
1J	TOLUENE
5U	CHLOROBENZENE
5U	ETHYL BENZENE
5U	STYRENE
5U	TOTAL XYLENES
8	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

PURGEABLE ORGANICS DATA REPORT 07/17/90

PROJECT NO. 90-436 SAMPLE NO. 45709 SAMPLE TYPE:
SOURCE:
STATION ID: SS-01
CASE NO.: 14000 SAS NO.:

PROG ELEM: NSF COLLECTD BY: L CONWAY
CITY: MOBILE ST: AL
COLLECTION START: 05/02/90 0945 STOP: 00/00/00
D. NO.. T190

UG/KG	ANALYTICAL RESULTS
12U	CHLOROMETHANE
12U	BROMOMETHANE
12U	VINYL CHLORIDE
12U	CHLOROETHANE
30U	METHYLENE CHLORIDE
20U	ACETONE
6U	CARBON DISULFIDE
6U	1,1-DICHLOROETHENE(1,1-DICHLOROETHYLENE)
6U	1,1-DICHLOROETHANE
6U	1,2 DICHLOROETHENE (TOTAL)
6U	CHLOROFORM
6U	1,2-DICHLOROETHANE
12U	METHYL ETHYL KETONE
6U	1,1,1-TRICHLOROETHANE
6U	CARBON TETRACHLORIDE
12U	VINYL ACETATE
6U	BROMODICHLOROMETHANE

UG/KG	ANALYTICAL RESULTS
6U	1,2-DICHLOROPROPANE
6U	CIS-1,3-DICHLOROPROPENE
6U	TRICHLOROETHENE(TRICHLOROETHYLENE)
6U	DIBROMOCHLOROMETHANE
6U	1,1,2-TRICHLOROETHANE
6U	BENZENE
6U	TRANS-1,3-DICHLOROPROPENE
6U	BROMOFORM
12U	METHYL ISOBUTYL KETONE
12U	METHYL BUTYL KETONE
6U	TETRACHLOROETHENE(TETRACHLOROETHYLENE)
6U	1,1,2,2-TETRACHLOROETHANE
6U	TOLUENE
6U	CHLOROBENZENE
6U	ETHYL BENZENE
6U	STYRENE
6U	TOTAL XYLENES
14	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*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 QUANTITATION LIMIT.
*R-QC INDICATES THAT DATA UNUSABLE. COMPOUND MAY OR MAY NOT BE PRESENT. RESAMPLING AND REANALYSIS IS NECESSARY FOR VERIFICATION.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

PURGEABLE ORGANICS DATA REPORT 07/17/90

PROJECT NO. 90-436 SAMPLE NO. 45711 SAMPLE TYPE: SOIL
SOURCE: INTERNATIONAL PAPER
STATION ID: SS-02

PROG ELEM: NSF COLLECTED BY: L CONWAY
CITY: MOBILE ST: AL
COLLECTION START: 05/02/90 1040 STOP: 00/00/00

CASE NO.: 14000 SAS NO.: D. NO.. T192

UG/KG	ANALYTICAL RESULTS
11U	CHLOROMETHANE
11U	BROMOMETHANE
11U	VINYL CHLORIDE
11U	CHLOROETHANE
30U	METHYLENE CHLORIDE
11U	ACETONE
6U	CARBON DISULFIDE
6U	1,1-DICHLOROETHENE(1,1-DICHLOROETHYLENE)
6U	1,1-DICHLOROETHANE
6U	1,2 DICHLOROETHENE (TOTAL)
6U	CHLOROFORM
6U	1,2-DICHLOROETHANE
11U	METHYL ETHYL KETONE
6U	1,1,1-TRICHLOROETHANE
6U	CARBON TETRACHLORIDE
11U	VINYL ACETATE
6U	BROMODICHLOROMETHANE

UG/KG	ANALYTICAL RESULTS
6U	1,2-DICHLOROPROPANE
6U	CIS-1,3-DICHLOROPROPENE
6U	TRICHLOROETHENE(TRICHLOROETHYLENE)
6U	DIBROMOCHLOROMETHANE
6U	1,1,2-TRICHLOROETHANE
6U	BENZENE
6U	TRANS-1,3-DICHLOROPROPENE
6U	BROMOFORM
11U	METHYL ISOBUTYL KETONE
11U	METHYL BUTYL KETONE
6U	TETRACHLOROETHENE(TETRACHLOROETHYLENE)
6U	1,1,2,2-TETRACHLOROETHANE
7U	TOLUENE
6U	CHLOROBENZENE
6U	ETHYL BENZENE
6U	STYRENE
6U	TOTAL XYLENES
11	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*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 QUANTITATION LIMIT.
*R-QC INDICATES THAT DATA UNUSABLE. COMPOUND MAY OR MAY NOT BE PRESENT. RESAMPLING AND REANALYSIS IS NECESSARY FOR VERIFICATION.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

07/17/90

MISCELLANEOUS PURGEABLE ORGANICS - DATA REPORT

*** ***
** PROJECT NO. 90-436 SAMPLE NO. 45717 SAMPLE TYPE: SOIL PROG ELEM: NSF COLLECTED BY: L CONWAY **
** SOURCE: INTERNATIONAL PAPER CITY: MOBILE ST: AL **
** STATION ID: SD-04 COLLECTION START: 05/02/90 1350 STOP: 00/00/00 **
** CASE.NO.: 14000 SAS NO.: D. NO.. T203 MD NO: T203 **
** **
*** ***

ANALYTICAL RESULTS UG/KG

60JN	METHYL(METHYLETHYL)BICYCLOHEXENE
10JN	DIMETHYLMETHYLENEBICYCLOHEPTANE

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*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 QUANTITATION LIMIT.
*R-QC INDICATES THAT DATA UNUSABLE. COMPOUND MAY OR MAY NOT BE PRESENT. RESAMPLING AND REANALYSIS IS NECESSARY FOR VERIFICATION.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

EXTRACTABLE ORGANICS DATA REPORT 07/17/90

PROJECT NO. 90-436 SAMPLE NO. 45710 SAMPLE TYPE: SOIL
SOURCE: INTERNATIONAL PAPER
STATION ID: SB-01

PROG ELEM: NSF COLLECTED BY: L CONWAY
CITY: MOBILE ST: AL
COLLECTION START: 05/02/90 1000 STOP: 00/00/00

CASE NO.: 14000 SAS NO.: D. NO.: T191

UG/KG	ANALYTICAL RESULTS
410U	PHENOL
410U	BIS(2-CHLOROETHYL) ETHER
410U	2-CHLOROPHENOL
410U	1,3-DICHLOROBENZENE
410U	1,4-DICHLOROBENZENE
410U	BENZYL ALCOHOL
410U	1,2-DICHLOROBENZENE
410U	2-METHYLPHENOL
410U	BIS(2-CHLOROISOPROPYL) ETHER
410U	(3 AND/OR 4-)METHYLPHENOL
410U	N-NITROSODI-N-PROPYLAMINE
410UR	HEXACHLOROETHANE
410U	NITROBENZENE
410U	ISOPHORONE
410U	2-NITROPHENOL
410U	2,4-DIMETHYLPHENOL
2000U	BENZOIC ACID
410U	BIS(2-CHLOROETHOXY) METHANE
410U	2,4-DICHLOROPHENOL
410U	1,2,4-TRICHLOROBENZENE
410U	NAPHTHALENE
410U	4-CHLOROANILINE
410U	HEXACHLOROBUTADIENE
410U	4-CHLORO-3-METHYLPHENOL
410U	2-METHYLNAPHTHALENE
410U	HEXACHLOROCYCLOPENTADIENE (HCCP)
410U	2,4,6-TRICHLOROPHENOL
2000U	2,4,5-TRICHLOROPHENOL
410U	2-CHLORONAPHTHALENE
2000U	2-NITROANILINE
410U	DIMETHYL PHTHALATE
410U	ACENAPHTHYLENE
410U	2,6-DINITROTOLUENE

UG/KG	ANALYTICAL RESULTS
2000U	3-NITROANILINE
410U	ACENAPHTHENE
2000U	2,4-DINITROPHENOL
2000U	4-NITROPHENOL
410U	DIBENZOFURAN
410U	2,4-DINITROTOLUENE
410U	DIETHYL PHTHALATE
410U	4-CHLOROPHENYL PHENYL ETHER
410U	FLUORENE
2000U	4-NITROANILINE
2000U	2-METHYL-4,6-DINITROPHENOL
410U	N-NITROSODIPHENYLAMINE/DIPHENYLAMINE
410U	4-BROMOPHENYL PHENYL ETHER
410U	HEXACHLOROBENZENE (HCB)
2000UJ	PENTACHLOROPHENOL
410U	PHENANTHRENE
410U	ANTHRACENE
410U	DI-N-BUTYLPHTHALATE
410U	FLUORANTHENE
410U	PYRENE
410U	BENZYL BUTYL PHTHALATE
830U	3,3'-DICHLOROBENZIDINE
410U	BENZO(A)ANTHRACENE
410U	CHRYSENE
410U	BIS(2-ETHYLHEXYL) PHTHALATE
410U	DI-N-OCTYLPHTHALATE
410U	BENZO(B AND/OR K)FLUORANTHENE
410U	BENZO-A-PYRENE
410U	INDENO (1,2,3-CD) PYRENE
410U	DIBENZO(A,H)ANTHRACENE
410U	BENZO(GHI)PERYLENE
20	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*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 QUANTITATION LIMIT.
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

EXTRACTABLE ORGANICS DATA REPORT 07/17/90

PROJECT NO. 90-436 SAMPLE NO. 45713 SAMPLE TYPE: SOIL
SOURCE: INTERNATIONAL PAPER
STATION ID: SB-02

PROG ELEM: NSF COLLECTED BY: L CONWAY
CITY: MOBILE ST: AL
COLLECTION START: 05/02/90 1230 STOP: 00/00/00

CASE NO.: 14000 SAS NO.: D. NO.. T208

UG/KG	ANALYTICAL RESULTS
430U	PHENOL
430U	BIS(2-CHLOROETHYL) ETHER
430U	2-CHLOROPHENOL
430U	1,3-DICHLOROBENZENE
430U	1,4-DICHLOROBENZENE
430U	BENZYL ALCOHOL
430U	1,2-DICHLOROBENZENE
430U	2-METHYLPHENOL
430U	BIS(2-CHLOROISOPROPYL) ETHER
430U	(3 AND/OR 4-)METHYLPHENOL
430U	N-NITROSODI-N-PROPYLAMINE
430UR	HEXACHLOROETHANE
430U	NITROBENZENE
430U	ISOPHORONE
430U	2-NITROPHENOL
430U	2,4-DIMETHYLPHENOL
2100U	BENZOIC ACID
430U	BIS(2-CHLOROETHOXY) METHANE
430U	2,4-DICHLOROPHENOL
430U	1,2,4-TRICHLOROBENZENE
430U	NAPHTHALENE
430U	4-CHLOROANILINE
430U	HEXACHLOROBUTADIENE
430U	4-CHLORO-3-METHYLPHENOL
430U	2-METHYLNAPHTHALENE
430U	HEXACHLOROCYCLOPENTADIENE (HCCP)
430U	2,4,6-TRICHLOROPHENOL
2100U	2,4,5-TRICHLOROPHENOL
430U	2-CHLORONAPHTHALENE
2100U	2-NITROANILINE
430U	DIMETHYL PHTHALATE
430U	ACENAPHTHYLENE
430U	2,6-DINITROTOLUENE

UG/KG	ANALYTICAL RESULTS
2100U	3-NITROANILINE
430U	ACENAPHTHENE
2100U	2,4-DINITROPHENOL
2100U	4-NITROPHENOL
430U	DIBENZOFURAN
430U	2,4-DINITROTOLUENE
430U	DIETHYL PHTHALATE
430U	4-CHLOROPHENYL PHENYL ETHER
430U	FLUORENE
2100U	4-NITROANILINE
2100U	2-METHYL-4,6-DINITROPHENOL
430U	N-NITROSODIPHENYLAMINE/DIPHENYLAMINE
430U	4-BROMOPHENYL PHENYL ETHER
430U	HEXACHLOROBENZENE (HCB)
2100UJ	PENTACHLOROPHENOL
430U	PHENANTHRENE
430U	ANTHRACENE
430U	DI-N-BUTYLPHTHALATE
430U	FLUORANTHENE
430U	PYRENE
430U	BENZYL BUTYL PHTHALATE
850U	3,3'-DICHLOROBENZIDINE
430U	BENZO(A)ANTHRACENE
430U	CHRYSENE
430U	BIS(2-ETHYLHEXYL) PHTHALATE
430U	DI-N-OCTYLPHTHALATE
430U	BENZO(B AND/OR K)FLUORANTHENE
430U	BENZO-A-PYRENE
430U	INDENO (1,2,3-CD) PYRENE
430U	DIBENZO(A,H)ANTHRACENE
430U	BENZO(GHI)PERYLENE
23	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

EXTRACTABLE ORGANICS DATA REPORT 07/17/90

PROJECT NO. 90-436 SAMPLE NO. 45712 SAMPLE TYPE: SOIL
SOURCE: INTERNATIONAL PAPER
STATION ID: SD-01

PROG ELEM: NSF COLLECTED BY: L CONWAY
CITY: MOBILE ST: AL
COLLECTION START: 05/02/90 1115 STOP: 00/00/00

CASE NO.: 14000 SAS NO.: D. NO.. T200

UG/KG	ANALYTICAL RESULTS
730U	PHENOL
730U	BIS(2-CHLOROETHYL) ETHER
730U	2-CHLOROPHENOL
730U	1,3-DICHLOROBENZENE
730U	1,4-DICHLOROBENZENE
730U	BENZYL ALCOHOL
730U	1,2-DICHLOROBENZENE
730U	2-METHYLPHENOL
730U	BIS(2-CHLOROISOPROPYL) ETHER
730U	(3 AND/OR 4-)METHYLPHENOL
730U	N-NITROSODI-N-PROPYLAMINE
730UR	HEXACHLOROETHANE
730U	NITROBENZENE
730U	ISOPHORONE
730U	2-NITROPHENOL
730U	2,4-DIMETHYLPHENOL
3600U	BENZOIC ACID
730U	BIS(2-CHLOROETHOXY) METHANE
730U	2,4-DICHLOROPHENOL
730U	1,2,4 TRICHLOROBENZENE
730U	NAPHTHALENE
730U	4-CHLOROANILINE
730U	HEXACHLOROBUTADIENE
730U	4-CHLORO-3-METHYLPHENOL
730U	2-METHYLNAPHTHALENE
730U	HEXACHLOROCYCLOPENTADIENE (HCCP)
730U	2,4,6-TRICHLOROPHENOL
3600U	2,4,5-TRICHLOROPHENOL
730U	2-CHLORONAPHTHALENE
3600U	2-NITROANILINE
730U	DIMETHYL PHTHALATE
730U	ACENAPHTHYLENE
730U	2,6-DINITROTOLUENE

UG/KG	ANALYTICAL RESULTS
3600U	3-NITROANILINE
730U	ACENAPHTHENE
3600U	2,4-DINITROPHENOL
3600U	4-NITROPHENOL
730U	DIBENZOFURAN
730U	2,4-DINITROTOLUENE
730U	DIETHYL PHTHALATE
730U	4-CHLOROPHENYL PHENYL ETHER
730U	FLUORENE
3600U	4-NITROANILINE
3600U	2-METHYL-4,6-DINITROPHENOL
730U	N-NITROSODIPHENYLAMINE/DIPHENYLAMINE
730U	4-BROMOPHENYL PHENYL ETHER
730U	HEXACHLOROBENZENE (HCB)
3600UJ	PENTACHLOROPHENOL
730U	PHENANTHRENE
730U	ANTHRACENE
730U	DI-N-BUTYLPHTHALATE
730U	FLUORANTHENE
730U	PYRENE
730U	BENZYL BUTYL PHTHALATE
1500U	3,3'-DICHLOROBENZIDINE
730U	BENZO(A)ANTHRACENE
730U	CHRYSENE
730U	BIS(2-ETHYLHEXYL) PHTHALATE
730U	DI-N-OCTYLPHTHALATE
730U	BENZO(B AND/OR K)FLUORANTHENE
730U	BENZO-A-PYRENE
730U	INDENO (1,2,3-CD) PYRENE
730U	DIBENZO(A,H)ANTHRACENE
730U	BENZO(GHI)PERYLENE
55	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

EXTRACTABLE ORGANICS DATA REPORT 07/17/90

PROJECT NO. 90-436 SAMPLE NO. 45714 SAMPLE TYPE: SOIL
SOURCE: INTERNATIONAL PAPER
STATION ID: SD-02

PROG ELEM: NSF COLLECTED BY: L CONWAY
CITY: MOBILE ST: AL
COLLECTION START: 05/02/90 1250 STOP: 00/00/00

CASE NO.: 14000 SAS NO.: D. NO.. T201

UG/KG	ANALYTICAL RESULTS
430U	PHENOL
430U	BIS(2-CHLOROETHYL) ETHER
430U	2-CHLOROPHENOL
430U	1,3-DICHLOROBENZENE
430U	1,4-DICHLOROBENZENE
430U	BENZYL ALCOHOL
430U	1,2-DICHLOROBENZENE
430U	2-METHYLPHENOL
430U	BIS(2-CHLOROISOPROPYL) ETHER
430U	(3 AND/OR 4-)METHYLPHENOL
430U	N-NITROSODI-N-PROPYLAMINE
430UR	HEXACHLOROETHANE
430U	NITROBENZENE
430U	ISOPHORONE
430U	2-NITROPHENOL
430U	2,4-DIMETHYLPHENOL
2100U	BENZOIC ACID
430U	BIS(2-CHLOROETHOXY) METHANE
430U	2,4-DICHLOROPHENOL
430U	1,2,4-TRICHLOROBENZENE
430U	NAPHTHALENE
430U	4-CHLOROANILINE
430U	HEXACHLOROBUTADIENE
430U	4-CHLORO-3-METHYLPHENOL
430U	2-METHYLNAPHTHALENE
430U	HEXACHLOROCYCLOPENTADIENE (HCCP)
430U	2,4,6-TRICHLOROPHENOL
2100U	2,4,5-TRICHLOROPHENOL
430U	2-CHLORONAPHTHALENE
2100U	2-NITROANILINE
430U	DIMETHYL PHTHALATE
430U	ACENAPHTHYLENE
430U	2,6-DINITROTOLUENE

UG/KG	ANALYTICAL RESULTS
2100U	3-NITROANILINE
430U	ACENAPHTHENE
2100U	2,4-DINITROPHENOL
2100U	4-NITROPHENOL
430U	DIBENZOFURAN
430U	2,4-DINITROTOLUENE
430U	DIETHYL PHTHALATE
430U	4-CHLOROPHENYL PHENYL ETHER
430U	FLUORENE
2100U	4-NITROANILINE
2100U	2-METHYL-4,6-DINITROPHENOL
430U	N-NITROSODIPHENYLAMINE/DIPHENYLAMINE
430U	4-BROMOPHENYL PHENYL ETHER
430U	HEXACHLOROBENZENE (HCB)
2100UJ	PENTACHLOROPHENOL
430U	PHENANTHRENE
430U	ANTHRACENE
430U	DI-N-BUTYLPHTHALATE
430U	FLUORANTHENE
430U	PYRENE
430U	BENZYL BUTYL PHTHALATE
870U	3,3'-DICHLOROBENZIDINE
430U	BENZO(A)ANTHRACENE
430U	CHRYSENE
430U	BIS(2-ETHYLHEXYL) PHTHALATE
430U	DI-N-OCTYLPHTHALATE
430U	BENZO(B AND/OR K)FLUORANTHENE
430U	BENZO-A-PYRENE
430U	INDENO (1,2,3-CD) PYRENE
430U	DIBENZO(A,H)ANTHRACENE
430U	BENZO(GHI)PERYLENE
24	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

EXTRACTABLE ORGANICS DATA REPORT 07/17/90

PROJECT NO. 90-436 SAMPLE NO. 45715 SAMPLE TYPE: SOIL
SOURCE: INTERNATIONAL PAPER
STATION ID: SD-03

PROG ELEM: NSF COLLECTED BY: L CONWAY
CITY: MOBILE ST: AL
COLLECTION START: 05/02/90 1330 STOP: 00/00/00

CASE NO.: 14000 SAS NO.: D. NO.: T202

UG/KG	ANALYTICAL RESULTS
980U	PHENOL
980U	BIS(2-CHLOROETHYL) ETHER
980U	2-CHLOROPHENOL
980U	1,3-DICHLOROBENZENE
980U	1,4-DICHLOROBENZENE
980U	BENZYL ALCOHOL
980U	1,2-DICHLOROBENZENE
980U	2-METHYLPHENOL
980U	BIS(2-CHLOROISOPROPYL) ETHER
980U	(3 AND/OR 4-)METHYLPHENOL
980U	N-NITROSODI-N-PROPYLAMINE
980UR	HEXACHLOROETHANE
980U	NITROBENZENE
980U	ISOPHORONE
980U	2-NITROPHENOL
980U	2,4-DIMETHYLPHENOL
4800U	BENZOIC ACID
980U	BIS(2-CHLOROETHOXY) METHANE
980U	2,4-DICHLOROPHENOL
980U	1,2,4-TRICHLOROBENZENE
980U	NAPHTHALENE
980U	4-CHLOROANILINE
980U	HEXACHLOROBUTADIENE
980U	4-CHLORO-3-METHYLPHENOL
980U	2-METHYLNAPHTHALENE
980U	HEXACHLOROCYCLOPENTADIENE (HCCP)
980U	2,4,6-TRICHLOROPHENOL
4800U	2,4,5-TRICHLOROPHENOL
980U	2-CHLORONAPHTHALENE
4800U	2-NITROANILINE
980U	DIMETHYL PHTHALATE
980U	ACENAPHTHYLENE
980U	2,6-DINITROTOLUENE

UG/KG	ANALYTICAL RESULTS
4800U	3-NITROANILINE
980U	ACENAPHTHENE
4800U	2,4-DINITROPHENOL
4800U	4-NITROPHENOL
980U	DIBENZOFURAN
980U	2,4-DINITROTOLUENE
980U	DIETHYL PHTHALATE
980U	4-CHLOROPHENYL PHENYL ETHER
980U	FLUORENE
4800U	4-NITROANILINE
4800U	2-METHYL-4,6-DINITROPHENOL
980U	N-NITROSODIPHENYLAMINE/DIPHENYLAMINE
980U	4-BROMOPHENYL PHENYL ETHER
980U	HEXACHLOROBENZENE (HCB)
4800UJ	PENTACHLOROPHENOL
980U	PHENANTHRENE
980U	ANTHRACENE
980U	DI-N-BUTYLPHTHALATE
980U	FLUORANTHENE
980U	PYRENE
980U	BENZYL BUTYL PHTHALATE
2000U	3,3'-DICHLOROBENZIDINE
980U	BENZO(A)ANTHRACENE
980U	CHRYSENE
980U	BIS(2-ETHYLHEXYL) PHTHALATE
980U	DI-N-OCTYLPHTHALATE
980U	BENZO(B AND/OR K)FLUORANTHENE
980U	BENZO-A-PYRENE
980U	INDENO (1,2,3-CD) PYRENE
980U	DIBENZO(A,H)ANTHRACENE
980U	BENZO(GHI)PERYLENE
67	PERCENT MOISTURE

REMARKS

REMARKS

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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

EXTRACTABLE ORGANICS DATA REPORT 07/17/90

PROJECT NO. 90-436 SAMPLE NO. 45717 SAMPLE TYPE: SOIL
SOURCE: INTERNATIONAL PAPER
STATION ID: SD-04

PROG ELEM: NSF COLLECTED BY: L CONWAY
CITY: MOBILE ST: AL
COLLECTION START: 05/02/90 1350 STOP: 00/00/00

CASE NO.: 14000 SAS NO.: D. NO.. T203

UG/KG	ANALYTICAL RESULTS
430U	PHENOL
430U	BIS(2-CHLOROETHYL) ETHER
430U	2-CHLOROPHENOL
430U	1,3-DICHLOROBENZENE
430U	1,4-DICHLOROBENZENE
430U	BENZYL ALCOHOL
430U	1,2-DICHLOROBENZENE
430U	2-METHYLPHENOL
430U	BIS(2-CHLOROISOPROPYL) ETHER
430U	(3 AND/OR 4-)METHYLPHENOL
430U	N-NITROSODI-N-PROPYLAMINE
430UR	HEXACHLOROETHANE
430U	NITROBENZENE
430U	ISOPHORONE
430U	2-NITROPHENOL
430U	2,4-DIMETHYLPHENOL
2100U	BENZOIC ACID
430U	BIS(2-CHLOROETHOXY) METHANE
430U	2,4-DICHLOROPHENOL
430U	1,2,4 TRICHLOROBENZENE
430U	NAPHTHALENE
430U	4-CHLOROANILINE
430U	HEXACHLOROBUTADIENE
430U	4-CHLORO-3-METHYLPHENOL
430U	2-METHYLNAPHTHALENE
430U	HEXACHLOROCYCLOPENTADIENE (HCCP)
430U	2,4,6-TRICHLOROPHENOL
2100U	2,4,5-TRICHLOROPHENOL
430U	2-CHLORONAPHTHALENE
2100U	2-NITROANILINE
430U	DIMETHYL PHTHALATE
430U	ACENAPHTHYLENE
430U	2,6-DINITROTOLUENE

UG/KG	ANALYTICAL RESULTS
2100U	3-NITROANILINE
430U	ACENAPHTHENE
2100U	2,4-DINITROPHENOL
2100U	4-NITROPHENOL
430U	DIBENZOFURAN
430U	2,4-DINITROTOLUENE
430U	DIETHYL PHTHALATE
430U	4-CHLOROPHENYL PHENYL ETHER
430U	FLUORENE
2100U	4-NITROANILINE
2100U	2-METHYL-4,6-DINITROPHENOL
430U	N-NITROSODIPHENYLAMINE/DIPHENYLAMINE
430U	4-BROMOPHENYL PHENYL ETHER
430U	HEXACHLOROBENZENE (HCB)
2100UJ	PENTACHLOROPHENOL
430U	PHENANTHRENE
430U	ANTHRACENE
430U	DI-N-BUTYLPHTHALATE
430U	FLUORANTHENE
430U	PYRENE
430U	BENZYL BUTYL PHTHALATE
870U	3,3'-DICHLOROBENZIDINE
430U	BENZO(A)ANTHRACENE
430U	CHRYSENE
430U	BIS(2-ETHYLHEXYL) PHTHALATE
430U	DI-N-OCTYLPHTHALATE
430U	BENZO(B AND/OR K)FLUORANTHENE
430U	BENZO-A-PYRENE
430U	INDENO (1,2,3-CD) PYRENE
430U	DIBENZO(A,H)ANTHRACENE
430U	BENZO(GHI)PERYLENE
24	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

EXTRACTABLE ORGANICS DATA REPORT 07/17/90

** PROJECT NO. 90-436 SAMPLE NO. 45716 SAMPLE TYPE: SOIL
** SOURCE: INTERNATIONAL PAPER
** STATION ID: SD-05
**
** CASE NO.: 14000 SAS NO.:

PROG ELEM: NSF COLLECTED BY: L CONWAY
CITY: MOBILE ST: AL
COLLECTION START: 05/02/90 1335 STOP: 00/00/00

D. NO.. T204

UG/KG	ANALYTICAL RESULTS
1300U	PHENOL
1300U	BIS(2-CHLOROETHYL) ETHER
1300U	2-CHLOROPHENOL
1300U	1,3-DICHLOROBENZENE
1300U	1,4-DICHLOROBENZENE
1300U	BENZYL ALCOHOL
1300U	1,2-DICHLOROBENZENE
1300U	2-METHYLPHENOL
1300U	BIS(2-CHLOROISOPROPYL) ETHER
1300U	(3 AND/OR 4-)METHYLPHENOL
1300U	N-NITROSODI-N-PROPYLAMINE
1300UR	HEXACHLOROETHANE
1300U	NITROBENZENE
1300U	ISOPHORONE
1300U	2-NITROPHENOL
1300U	2,4-DIMETHYLPHENOL
6100U	BENZOIC ACID
1300U	BIS(2-CHLOROETHOXY) METHANE
1300U	2,4-DICHLOROPHENOL
1300U	1,2,4 TRICHLOROBENZENE
1300U	NAPHTHALENE
1300U	4-CHLOROANILINE
1300U	HEXACHLOROBUTADIENE
1300U	4-CHLORO-3-METHYLPHENOL
1300U	2-METHYLNAPHTHALENE
1300U	HEXACHLOROCYCLOPENTADIENE (HCCP)
1300U	2,4,6-TRICHLOROPHENOL
6100U	2,4,5-TRICHLOROPHENOL
1300U	2-CHLORONAPHTHALENE
6100U	2-NITROANILINE
1300U	DIMETHYL PHTHALATE
1300U	ACENAPHTHYLENE
1300U	2,6-DINITROTOLUENE

UG/KG	ANALYTICAL RESULTS
6100U	3-NITROANILINE
1300U	ACENAPHTHENE
6100U	2,4-DINITROPHENOL
6100U	4-NITROPHENOL
1300U	DIBENZOFURAN
1300U	2,4-DINITROTOLUENE
1300U	DIETHYL PHTHALATE
1300U	4-CHLOROPHENYL PHENYL ETHER
1300U	FLUORENE
6100U	4-NITROANILINE
6100U	2-METHYL-4,6-DINITROPHENOL
1300U	N-NITROSODIPHENYLAMINE/DIPHENYLAMINE
1300U	4-BROMOPHENYL PHENYL ETHER
1300U	HEXACHLOROBENZENE (HCB)
6100UJ	PENTACHLOROPHENOL
1300U	PHENANTHRENE
1300U	ANTHRACENE
1300U	DI-N-BUTYLPHTHALATE
1300U	FLUORANTHENE
1300U	PYRENE
1300U	BENZYL BUTYL PHTHALATE
2500U	3,3'-DICHLOROBENZIDINE
1300U	BENZO(A)ANTHRACENE
1300U	CHRYSENE
1300U	BIS(2-ETHYLHEXYL) PHTHALATE
1300U	DI-N-OCTYLPHTHALATE
1300U	BENZO(B AND/OR K)FLUORANTHENE
1300U	BENZO-A-PYRENE
1300U	INDENO (1,2,3-CD) PYRENE
1300U	DIBENZO(A,H)ANTHRACENE
1300U	BENZO(GHI)PERYLENE
75	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

EXTRACTABLE ORGANICS DATA REPORT 07/17/90

PROJECT NO. 90-436 SAMPLE NO. 45718 SAMPLE TYPE: SOIL
SOURCE: INTERNATIONAL PAPER
STATION ID: SD-06

PROG ELEM: NSF COLLECTED BY: L CONWAY
CITY: MOBILE ST: AL
COLLECTION START: 05/02/90 1420 STOP: 00/00/00

CASE NO.: 14000 SAS NO.: D. NO.. T205

UG/KG	ANALYTICAL RESULTS
620U	PHENOL
620U	BIS(2-CHLOROETHYL) ETHER
620U	2-CHLOROPHENOL
620U	1,3-DICHLOROBENZENE
620U	1,4-DICHLOROBENZENE
620U	BENZYL ALCOHOL
620U	1,2-DICHLOROBENZENE
620U	2-METHYLPHENOL
620U	BIS(2-CHLOROISOPROPYL) ETHER
620U	(3 AND/OR 4-)METHYLPHENOL
620U	N-NITROSODI-N-PROPYLAMINE
620UR	HEXACHLOROETHANE
620U	NITROBENZENE
620U	ISOPHORONE
620U	2-NITROPHENOL
620U	2,4-DIMETHYLPHENOL
3000U	BENZOIC ACID
620U	BIS(2-CHLOROETHOXY) METHANE
620U	2,4-DICHLOROPHENOL
620U	1,2,4 TRICHLOROBENZENE
620U	NAPHTHALENE
620U	4-CHLOROANILINE
620U	HEXACHLOROBUTADIENE
620U	4-CHLORO-3-METHYLPHENOL
74J	2-METHYLNAPHTHALENE
620U	HEXACHLOROCYCLOPENTADIENE (HCCP)
620U	2,4,6-TRICHLOROPHENOL
3000U	2,4,5-TRICHLOROPHENOL
620U	2-CHLORONAPHTHALENE
3000U	2-NITROANILINE
620U	DIMETHYL PHTHALATE
620U	ACENAPHTHYLENE
620U	2,6-DINITROTOLUENE

UG/KG	ANALYTICAL RESULTS
3000U	3-NITROANILINE
620U	ACENAPHTHENE
3000U	2,4-DINITROPHENOL
3000U	4-NITROPHENOL
620U	DIBENZOFURAN
620U	2,4-DINITROTOLUENE
620U	DIETHYL PHTHALATE
620U	4-CHLOROPHENYL PHENYL ETHER
620U	FLUORENE
3000U	4-NITROANILINE
3000U	2-METHYL-4,6-DINITROPHENOL
620U	N-NITROSODIPHENYLAMINE/DIPHENYLAMINE
620U	4-BROMOPHENYL PHENYL ETHER
620U	HEXACHLOROBENZENE (HCB)
3000UJ	PENTACHLOROPHENOL
110J	PHENANTHRENE
620U	ANTHRACENE
620U	DI-N-BUTYLPHTHALATE
260J	FLUORANTHENE
210J	PYRENE
620U	BENZYL BUTYL PHTHALATE
1200U	3,3'-DICHLOROBENZIDINE
200J	BENZO(A)ANTHRACENE
190J	CHRYSENE
620U	BIS(2-ETHYLHEXYL) PHTHALATE
620U	DI-N-OCTYLPHTHALATE
620U	BENZO(B AND/OR K)FLUORANTHENE
620U	BENZO-A-PYRENE
620U	INDENO (1,2,3-CD) PYRENE
620U	DIBENZO(A,H)ANTHRACENE
620U	BENZO(GHI)PERYLENE
47	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

EXTRACTABLE ORGANICS DATA REPORT 07/17/90

PROJECT NO. 90-436 SAMPLE NO. 45719 SAMPLE TYPE: SEDIMBLK PROG ELEM: NSF COLLECTED BY: L CONWAY
SOURCE: INTERNATIONAL PAPER CITY: MOBILE ST: AL
STATION ID: SD-07 (REGION IV QC BLANK) COLLECTION START: 05/02/90 1510 STOP: 00/00/00

CASE NO.: 14000 SAS NO.: D. NO.. T189

UG/KG	ANALYTICAL RESULTS
360U	PHENOL
360U	BIS(2-CHLOROETHYL) ETHER
360U	2-CHLOROPHENOL
360U	1,3-DICHLOROBENZENE
360U	1,4-DICHLOROBENZENE
360U	BENZYL ALCOHOL
360U	1,2-DICHLOROBENZENE
360U	2-METHYLPHENOL
360U	BIS(2-CHLOROISOPROPYL) ETHER
360U	(3 AND/OR 4-)METHYLPHENOL
360U	N-NITROSODI-N-PROPYLAMINE
360U	HEXACHLOROETHANE
360U	NITROBENZENE
360U	ISOPHORONE
360U	2-NITROPHENOL
360U	2,4-DIMETHYLPHENOL
1700U	BENZOIC ACID
360U	BIS(2-CHLOROETHOXY) METHANE
360U	2,4-DICHLOROPHENOL
360U	1,2,4-TRICHLOROBENZENE
360U	NAPHTHALENE
360U	4-CHLOROANILINE
360U	HEXACHLOROBUTADIENE
360U	4-CHLORO-3-METHYLPHENOL
360U	2-METHYLNAPHTHALENE
360U	HEXACHLOROCYCLOPENTADIENE (HCCP)
360U	2,4,6-TRICHLOROPHENOL
1700U	2,4,5-TRICHLOROPHENOL
360U	2-CHLORONAPHTHALENE
1700U	2-NITROANILINE
360U	DIMETHYL PHTHALATE
360U	ACENAPHTHYLENE
360U	2,6-DINITROTOLUENE

UG/KG	ANALYTICAL RESULTS
1700U	3-NITROANILINE
360U	ACENAPHTHENE
1700U	2,4-DINITROPHENOL
1700U	4-NITROPHENOL
360U	DIBENZOFURAN
360U	2,4-DINITROTOLUENE
360U	DIETHYL PHTHALATE
360U	4-CHLOROPHENYL PHENYL ETHER
360U	FLUORENE
1700U	4-NITROANILINE
1700U	2-METHYL-4,6-DINITROPHENOL
360U	N-NITROSODIPHENYLAMINE/DIPHENYLAMINE
360U	4-BROMOPHENYL PHENYL ETHER
360U	HEXACHLOROBENZENE (HCB)
1700U	PENTACHLOROPHENOL
360U	PHENANTHRENE
360U	ANTHRACENE
360U	DI-N-BUTYLPHTHALATE
360U	FLUORANTHENE
360U	PYRENE
360U	BENZYL BUTYL PHTHALATE
720U	3,3'-DICHLOROBENZIDINE
360U	BENZO(A)ANTHRACENE
360U	CHRYSENE
360U	BIS(2-ETHYLHEXYL) PHTHALATE
360U	DI-N-OCTYLPHTHALATE
360U	BENZO(B AND/OR K)FLUORANTHENE
360U	BENZO-A-PYRENE
360U	INDENO (1,2,3-CD) PYRENE
360U	DIBENZO(A,H)ANTHRACENE
360U	BENZO(GHI)PERYLENE
8	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

EXTRACTABLE ORGANICS DATA REPORT 07/17/90

PROJECT NO. 90-436 SAMPLE NO. 45720 SAMPLE TYPE: SEDIMSPK PROG ELEM: NSF COLLECTED BY: L CONWAY
SOURCE: INTERNATIONAL PAPER CITY: MOBILE ST: AL
STATION ID: SD-08 (REGION IV QC SPIKE) COLLECTION START: 05/02/90 1525 STOP: 00/00/00

CASE NO.: 14000 SAS NO.: D. NO.. T188

UG/KG	ANALYTICAL RESULTS
77%	PHENOL
32%	BIS(2-CHLOROETHYL) ETHER
50%	2-CHLOROPHENOL
350U	1,3-DICHLOROBENZENE
350U	1,4-DICHLOROBENZENE
350U	BENZYL ALCOHOL
350U	1,2-DICHLOROBENZENE
350U	2-METHYLPHENOL
350U	BIS(2-CHLOROISOPROPYL) ETHER
63%	(3 AND/OR 4-)METHYLPHENOL
350U	N-NITROSODI-N-PROPYLAMINE
3.5%	HEXACHLOROETHANE
350U	NITROBENZENE
47%	ISOPHORONE
350U	2-NITROPHENOL
350U	2,4-DIMETHYLPHENOL
1700U	BENZOIC ACID
350U	BIS(2-CHLOROETHOXY) METHANE
350U	2,4-DICHLOROPHENOL
350U	1,2,4-TRICHLOROBENZENE
350U	NAPHTHALENE
350U	4-CHLOROANILINE
350U	HEXACHLOROBUTADIENE
350U	4-CHLORO-3-METHYLPHENOL
350U	2-METHYLNAPHTHALENE
350U	HEXACHLOROCYCLOPENTADIENE (HCCP)
350U	2,4,6-TRICHLOROPHENOL
1700U	2,4,5-TRICHLOROPHENOL
350U	2-CHLORONAPHTHALENE
1700U	2-NITROANILINE
53%	DIMETHYL PHTHALATE
350U	ACENAPHTHYLENE
350U	2,6-DINITROTOLUENE

UG/KG	ANALYTICAL RESULTS
1700U	3-NITROANILINE
39%	ACENAPHTHENE
47%	2,4-DINITROPHENOL
1700U	4-NITROPHENOL
350U	DIBENZOFURAN
350U	2,4-DINITROTOLUENE
350U	DIETHYL PHTHALATE
350U	4-CHLOROPHENYL PHENYL ETHER
350U	FLUORENE
1700U	4-NITROANILINE
1700U	2-METHYL-4,6-DINITROPHENOL
350U	N-NITROSODIPHENYLAMINE/DIPHENYLAMINE
350U	4-BROMOPHENYL PHENYL ETHER
350U	HEXACHLOROBENZENE (HCB)
15%	PENTACHLOROPHENOL
50%	PHENANTHRENE
350U	ANTHRACENE
39J	DI-N-BUTYLPHTHALATE
350U	FLUORANTHENE
56%	PYRENE
350U	BENZYL BUTYL PHTHALATE
690U	3,3'-DICHLOROBENZIDINE
350U	BENZO(A)ANTHRACENE
350U	CHRYSENE
350U	BIS(2-ETHYLHEXYL) PHTHALATE
350U	DI-N-OCTYLPHTHALATE
57%	BENZO(B AND/OR K)FLUORANTHENE
350U	BENZO-A-PYRENE
350U	INDENO (1,2,3-CD) PYRENE
350U	DIBENZO(A,H)ANTHRACENE
45%	BENZO(GHI)PERYLENE
5	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

EXTRACTABLE ORGANICS DATA REPORT 07/17/90

PROJECT NO. 90-436 SAMPLE NO. 45709 SAMPLE TYPE:
SOURCE:
STATION ID: SS-01

PROG ELEM: NSF COLLECTED BY: L CONWAY
CITY: MOBILE ST: AL
COLLECTION START: 05/02/90 0945 STOP: 00/00/00

CASE NO.: 14000 SAS NO.: D. NO.. T190

UG/KG	ANALYTICAL RESULTS
380U	PHENOL
380U	BIS(2-CHLOROETHYL) ETHER
380U	2-CHLOROPHENOL
380U	1,3-DICHLOROBENZENE
380U	1,4-DICHLOROBENZENE
380U	BENZYL ALCOHOL
380U	1,2-DICHLOROBENZENE
380U	2-METHYLPHENOL
380U	BIS(2-CHLOROISOPROPYL) ETHER
380U	(3 AND/OR 4-)METHYLPHENOL
380U	N-NITROSODI-N-PROPYLAMINE
380UR	HEXACHLOROETHANE
380U	NITROBENZENE
380U	ISOPHORONE
380U	2-NITROPHENOL
380U	2,4-DIMETHYLPHENOL
1900U	BENZOIC ACID
380U	BIS(2-CHLOROETHOXY) METHANE
380U	2,4-DICHLOROPHENOL
380U	1,2,4-TRICHLOROBENZENE
380U	NAPHTHALENE
380U	4-CHLOROANILINE
380U	HEXACHLOROBUTADIENE
380U	4-CHLORO-3-METHYLPHENOL
380U	2-METHYLNAPHTHALENE
380U	HEXACHLOROCYCLOPENTADIENE (HCCP)
380U	2,4,6-TRICHLOROPHENOL
1900U	2,4,5-TRICHLOROPHENOL
380U	2-CHLORONAPHTHALENE
1900U	2-NITROANILINE
380U	DIMETHYL PHTHALATE
380U	ACENAPHTHYLENE
380U	2,6-DINITROTOLUENE

UG/KG	ANALYTICAL RESULTS
1900U	3-NITROANILINE
380U	ACENAPHTHENE
1900U	2,4-DINITROPHENOL
1900U	4-NITROPHENOL
380U	DIBENZOFURAN
380U	2,4-DINITROTOLUENE
380U	DIETHYL PHTHALATE
380U	4-CHLOROPHENYL PHENYL ETHER
380U	FLUORENE
1900U	4-NITROANILINE
1900U	2-METHYL-4,6-DINITROPHENOL
380U	N-NITROSODIPHENYLAMINE/DIPHENYLAMINE
380U	4-BROMOPHENYL PHENYL ETHER
380U	HEXACHLOROBENZENE (HCB)
1900UJ	PENTACHLOROPHENOL
380U	PHENANTHRENE
380U	ANTHRACENE
380U	DI-N-BUTYLPHTHALATE
380U	FLUORANTHENE
380U	PYRENE
380U	BENZYL BUTYL PHTHALATE
770U	3,3'-DICHLOROBENZIDINE
380U	BENZO(A)ANTHRACENE
380U	CHRYSENE
380U	BIS(2-ETHYLHEXYL) PHTHALATE
380U	DI-N-OCTYLPHTHALATE
380U	BENZO(B AND/OR K)FLUORANTHENE
380U	BENZO-A-PYRENE
380U	INDENO (1,2,3-CD) PYRENE
380U	DIBENZO(A,H)ANTHRACENE
380U	BENZO(GHI)PERYLENE
14	PERCENT MOISTURE

REMARKS

REMARKS

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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

EXTRACTABLE ORGANICS DATA REPORT 07/17/90

** PROJECT NO. 90-436 SAMPLE NO. 45711 SAMPLE TYPE: SOIL PROG ELEM: NSF COLLECTED BY: L CONWAY **
** SOURCE: INTERNATIONAL PAPER CITY: MOBILE ST: AL **
** STATION ID: SS-02 COLLECTION START: 05/02/90 1040 STOP: 00/00/00 **
**
** CASE NO.: 14000 SAS NO.: D. NO.: T192 **

UG/KG	ANALYTICAL RESULTS
370U	PHENOL
370U	BIS(2-CHLOROETHYL) ETHER
370U	2-CHLOROPHENOL
370U	1,3-DICHLOROBENZENE
370U	1,4-DICHLOROBENZENE
370U	BENZYL ALCOHOL
370U	1,2-DICHLOROBENZENE
370U	2-METHYLPHENOL
370U	BIS(2-CHLOROISOPROPYL) ETHER
370U	(3 AND/OR 4-)METHYLPHENOL
370U	N-NITROSODI-N-PROPYLAMINE
370UR	HEXACHLOROETHANE
370U	NITROBENZENE
370U	ISOPHORONE
370U	2-NITROPHENOL
370U	2,4-DIMETHYLPHENOL
1800U	BENZOIC ACID
370U	BIS(2-CHLOROETHOXY) METHANE
370U	2,4-DICHLOROPHENOL
370U	1,2,4-TRICHLOROBENZENE
370U	NAPHTHALENE
370U	4-CHLOROANILINE
370U	HEXACHLOROBUTADIENE
370U	4-CHLORO-3-METHYLPHENOL
370U	2-METHYLNAPHTHALENE
370U	HEXACHLOROCYCLOPENTADIENE (HCCP)
370U	2,4,6-TRICHLOROPHENOL
1800U	2,4,5-TRICHLOROPHENOL
370U	2-CHLORONAPHTHALENE
1800U	2-NITROANILINE
370U	DIMETHYL PHTHALATE
370U	ACENAPHTHYLENE
370U	2,6-DINITROTOLUENE

UG/KG	ANALYTICAL RESULTS
1800U	3-NITROANILINE
370U	ACENAPHTHENE
1800U	2,4-DINITROPHENOL
1800U	4-NITROPHENOL
370U	DIBENZOFURAN
370U	2,4-DINITROTOLUENE
370U	DIETHYL PHTHALATE
370U	4-CHLOROPHENYL PHENYL ETHER
370U	FLUORENE
1800U	4-NITROANILINE
1800U	2-METHYL-4,6-DINITROPHENOL
370U	N-NITROSODIPHENYLAMINE/DIPHENYLAMINE
370U	4-BROMOPHENYL PHENYL ETHER
370U	HEXACHLOROBENZENE (HCB)
1800UJ	PENTACHLOROPHENOL
370U	PHENANTHRENE
370U	ANTHRACENE
370U	DI-N-BUTYLPHTHALATE
370U	FLUORANTHENE
370U	PYRENE
370U	BENZYL BUTYL PHTHALATE
740U	3,3'-DICHLOROBENZIDINE
370U	BENZO(A)ANTHRACENE
370U	CHRYSENE
370U	BIS(2-ETHYLHEXYL) PHTHALATE
370U	DI-N-OCTYLPHTHALATE
370U	BENZO(B AND/OR K)FLUORANTHENE
370U	BENZO-A-PYRENE
370U	INDENO (1,2,3-CD) PYRENE
370U	DIBENZO(A,H)ANTHRACENE
370U	BENZO(GHI)PERYLENE
11	PERCENT MOISTURE

REMARKS ***REMARKS***

FOOTNOTES
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

07/17/90

MISCELLANEOUS EXTRACTABLE COMPOUNDS - DATA REPORT

*** ***
** PROJECT NO. 90-436 SAMPLE NO. 45713 SAMPLE TYPE: SOIL PROG ELEM: NSF COLLECTED BY: L CONWAY **
** SOURCE: INTERNATIONAL PAPER CITY: MOBILE ST: AL **
** STATION ID: SB-02 COLLECTION START: 05/02/90 1230 STOP: 00/00/00 **
** CASE NO.: 14000 SAS NO.: D. NO.. T208 MD NO: T208 **
** **
*** ***

ANALYTICAL RESULTS UG/KG

5000J 8 UNIDENTIFIED COMPOUNDS

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*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 QUANTITATION LIMIT.
*R-QC INDICATES THAT DATA UNUSABLE. COMPOUND MAY OR MAY NOT BE PRESENT. RESAMPLING AND REANALYSIS IS NECESSARY FOR VERIFICATION.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

07/17/90

MISCELLANEOUS EXTRACTABLE COMPOUNDS - DATA REPORT

PROJECT NO. 90-436 SAMPLE NO. 45712 SAMPLE TYPE: SOIL PROG ELEM: NSF COLLECTED BY: L CONWAY
SOURCE: INTERNATIONAL PAPER CITY: MOBILE ST: AL
STATION ID: SD-01 COLLECTION START: 05/02/90 1115 STOP: 00/00/00
CASE.NO.: 14000 SAS NO.: D. NO.: T200 MD NO: T200

ANALYTICAL RESULTS UG/KG

20000J	14 UNIDENTIFIED COMPOUNDS
1000JN	TETRAMETHYLPHENANTHRENE

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

07/17/90

MISCELLANEOUS EXTRACTABLE COMPOUNDS - DATA REPORT

PROJECT NO. 90-436 SAMPLE NO. 45714 SAMPLE TYPE: SOIL
SOURCE: INTERNATIONAL PAPER
STATION ID: SD-02
CASE.NO.: 14000 SAS NO.:

PROG ELEM: NSF COLLECTED BY: L CONWAY
CITY: MOBILE ST: AL
COLLECTION START: 05/02/90 1250 STOP: 00/00/00
D. NO.. T201 MD NO: T201

ANALYTICAL RESULTS UG/KG

1000JN	HEXADECANOIC ACID
500JN	TETRAMETHYLPHENANTHRENE
20000J	18 UNIDENTIFIED COMPOUNDS

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

07/17/90

MISCELLANEOUS EXTRACTABLE COMPOUNDS - DATA REPORT

PROJECT NO. 90-436 SAMPLE NO. 45715 SAMPLE TYPE: SOIL
SOURCE: INTERNATIONAL PAPER
STATION ID: SD-03
CASE NO.: 14000 SAS NO.:

PROG ELEM: NSF COLLECTED BY: L CONWAY
CITY: MOBILE ST: AL
COLLECTION START: 05/02/90 1330 STOP: 00/00/00
D. NO.: T202 MD NO: T202

ANALYTICAL RESULTS UG/KG

30000J 12 UNIDENTIFIED COMPOUNDS

FOOTNOTES
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

07/17/90

MISCELLANEOUS EXTRACTABLE COMPOUNDS - DATA REPORT

PROJECT NO. 90-436 SAMPLE NO. 45717 SAMPLE TYPE: SOIL
PROG ELEM: NSF COLLECTED BY: L CONWAY
SOURCE: INTERNATIONAL PAPER
CITY: MOBILE ST: AL
STATION ID: SD-04
COLLECTION START: 05/02/90 1350 STOP: 00/00/00
CASE NO.: 14000 SAS NO.:
D. NO.: T203 MD NO: T203

ANALYTICAL RESULTS UG/KG

10000J	9 UNIDENTIFIED COMPOUNDS
1000JN	ETHYLIDENEBISETHYLBENZENE
2000JN	TETRAMETHYLPHENANTHRENE
700JN	HEXATHIEPANE

FOOTNOTES
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MISCELLANEOUS EXTRACTABLE COMPOUNDS - DATA REPORT

PROJECT NO. 90-436 SAMPLE NO. 45716 SAMPLE TYPE: SOIL
PROG ELEM: NSF COLLECTEDBY: L CONWAY
SOURCE: INTERNATIONAL PAPER
CITY: MOBILE ST: AL
STATION ID: SD-05
COLLECTION START: 05/02/90 1335 STOP: 00/00/00
CASE NO.: 14000 SAS NO.:
D. NO.. T204 MD NO: T204

ANALYTICAL RESULTS UG/KG

10000JN	CINEOLE
4000JN	TERPIN HYDRATE
2000JN	CARYOPHYLLENE
	OCTAHYDROMETHYLMETHYLENE(METHYLETHYL)-
4000JN	NAPHTHALENE (2 ISOMERS)
3000JN	DIMETHYL(METHYLETHYL)NAPHTHALENE
90000J	14 UNIDENTIFIED COMPOUNDS

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

07/17/90

MISCELLANEOUS EXTRACTABLE COMPOUNDS - DATA REPORT

PROJECT NO. 90-436 SAMPLE NO. 45718 SAMPLE TYPE: SOIL PROG ELEM: NSF COLLECTED BY: L CONWAY
SOURCE: INTERNATIONAL PAPER CITY: MOBILE ST: AL
STATION ID: SD-06 COLLECTION START: 05/02/90 1420 STOP: 00/00/00
CASE NO.: 14000 SAS NO.: D. NO.. T205 MD NO: T205

ANALYTICAL RESULTS UG/KG

20000J	15 UNIDENTIFIED COMPOUNDS
700JN	ETHYLDIMETHYLBENZENE

FOOTNOTES
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

07/17/90

MISCELLANEOUS EXTRACTABLE COMPOUNDS - DATA REPORT

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** PROJECT NO. 90-436 SAMPLE NO. 45709 SAMPLE TYPE: PROG ELEM: NSF COLLECTED BY: L CONWAY **
** SOURCE: CITY: MOBILE ST: AL **
** STATION ID: SS-01 COLLECTION START: 05/02/90 0945 STOP: 00/00/00 **
** CASE.NO.: 14000 SAS NO.: D. NO.. T190 MD NO: T190 **
**
*** ***

ANALYTICAL RESULTS UG/KG

400J 1 UNIDENTIFIED COMPOUND

FOOTNOTES
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

07/17/90

MISCELLANEOUS EXTRACTABLE COMPOUNDS - DATA REPORT

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**   PROJECT NO. 90-436    SAMPLE NO. 45711   SAMPLE TYPE: SOIL        PROG ELEM: NSF    COLLECTED BY: L CONWAY          **
**   SOURCE: INTERNATIONAL PAPER                                       CITY: MOBILE                ST: AL                **
**   STATION ID: SS-02                                                 COLLECTION START: 05/02/90  1040   STOP: 00/00/00 **
**   CASE.NO.: 14000          SAS NO.:                                 D. NO.. T192               MD NO: T192            **
**                                                                                                                        **
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ANALYTICAL RESULTS UG/KG

10000J   13 UNIDENTIFIED COMPOUND

FOOTNOTES
*A-AVERAGE VALUE   *NA-NOT ANALYZED   *NAI-INTERFERENCES   *J-ESTIMATED VALUE   *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

PESTICIDES/PCB'S DATA REPORT 07/17/90

PROJECT NO. 90-436 SAMPLE NO. 45710 SAMPLE TYPE: SOIL
SOURCE: INTERNATIONAL PAPER
STATION ID: SB-01
CASE NUMBER: 14000 SAS NUMBER:

PROG ELEM: NSF COLLECTED BY: L CONWAY
CITY: MOBILE ST: AL
COLLECTION START: 05/02/90 1000 STOP: 00/00/00
D NUMBER: 1191

UG/KG	ANALYTICAL RESULTS
10.U	ALPHA-BHC
10.U	BETA-BHC
10.U	DELTA-BHC
10.U	GAMMA-BHC (LINDANE)
10.U	HEPTACHLOR
10.U	ALDRIN
10.U	HEPTACHLOR EPOXIDE
10.U	ENDOSULFAN I (ALPHA)
20.U	DIELDRIN
20.U	4,4' DDE (P,P'-DDE)
20.U	ENDRIN
20.U	ENDOSULFAN II (BETA)
20.U	4,4'-DDD (P,P'-DDD)
20.U	ENDOSULFAN SULFATE
20.U	4,4'-DDT (P,P'-DDT)

UG/KG	ANALYTICAL RESULTS
100U	METHOXYCHLOR
20.U	ENDRIN KETONE
	CHLORDANE (TECH. MIXTURE) /1
100U	GAMMA-CHLORDANE /2
100U	ALPHA-CHLORDANE /2
200U	TOXAPHENE
100U	PCB-1016 (AROCLOR 1016)
100U	PCB-1221 (AROCLOR 1221)
100U	PCB-1232 (AROCLOR 1232)
100U	PCB-1242 (AROCLOR 1242)
100U	PCB-1248 (AROCLOR 1248)
200U	PCB-1254 (AROCLOR 1254)
200U	PCB-1260 (AROCLOR 1260)
20	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

PESTICIDES/PCB'S DATA REPORT 07/17/90

PROJECT NO. 90-436 SAMPLE NO. 45713 SAMPLE TYPE: SOIL
SOURCE: INTERNATIONAL PAPER
STATION ID: SB-02
CASE NUMBER: 14000 SAS NUMBER:

PROG ELEM: NSF COLLECTED BY: L CONWAY
CITY: MOBILE ST: AL
COLLECTION START: 05/02/90 1230 STOP: 00/00/00
D NUMBER: T208

UG/KG	ANALYTICAL RESULTS
10.U	ALPHA-BHC
10.U	BETA-BHC
10.U	DELTA-BHC
10.U	GAMMA-BHC (LINDANE)
10.U	HEPTACHLOR
10.U	ALDRIN
10.U	HEPTACHLOR EPOXIDE
10.U	ENDOSULFAN I (ALPHA)
21.U	DIELDRIN
21.U	4,4'-DDE (P,P'-DDE)
21.U	ENDRIN
21.U	ENDOSULFAN II (BETA)
21.U	4,4'-DDD (P,P'-DDD)
21.U	ENDOSULFAN SULFATE
21.U	4,4'-DDT (P,P'-DDT)

UG/KG	ANALYTICAL RESULTS
100U	METHOXYCHLOR
21.U	ENDRIN KETONE
	CHLORDANE (TECH. MIXTURE) /1
100U	GAMMA-CHLORDANE /2
100U	ALPHA-CHLORDANE /2
210U	TOXAPHENE
100U	PCB-1016 (AROCLOR 1016)
100U	PCB-1221 (AROCLOR 1221)
100U	PCB-1232 (AROCLOR 1232)
100U	PCB-1242 (AROCLOR 1242)
100U	PCB-1248 (AROCLOR 1248)
210U	PCB-1254 (AROCLOR 1254)
210U	PCB-1260 (AROCLOR 1260)
23	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

07/17/90

PESTICIDES/PCB'S DATA REPORT

PROJECT NO. 90-436 SAMPLE NO. 45712 SAMPLE TYPE: SOIL
SOURCE: INTERNATIONAL PAPER
STATION ID: SD-01
CASE NUMBER: 14000 SAS NUMBER:

PROG ELEM: NSF COLLECTED BY: L CONWAY
CITY: MOBILE ST: AL
COLLECTION START: 05/02/90 1115 STOP: 00/00/00
D NUMBER: T200

UG/KG	ANALYTICAL RESULTS
18.U	ALPHA-BHC
18.U	BETA-BHC
18.U	DELTA-BHC
18.U	GAMMA-BHC (LINDANE)
18.U	HEPTACHLOR
18.U	ALDRIN
18.U	HEPTACHLOR EPOXIDE
18.U	ENDOSULFAN I (ALPHA)
36.U	DIELDRIN
36.U	4,4'-DDE (P,P'-DDE)
36.U	ENDRIN
36.U	ENDOSULFAN II (BETA)
36.U	4,4'-DDD (P,P'-DDD)
36.U	ENDOSULFAN SULFATE
36.U	4,4'-DDT (P,P'-DDT)

UG/KG	ANALYTICAL RESULTS
180U	METHOXYCHLOR
36.U	ENDRIN KETONE
	CHLORDANE (TECH. MIXTURE) /1
180U	GAMMA-CHLORDANE /2
180U	ALPHA-CHLORDANE /2
360U	TOXAPHENE
180U	PCB-1016 (AROCLOR 1016)
180U	PCB-1221 (AROCLOR 1221)
180U	PCB-1232 (AROCLOR 1232)
180U	PCB-1242 (AROCLOR 1242)
180U	PCB-1248 (AROCLOR 1248)
360U	PCB-1254 (AROCLOR 1254)
360U	PCB-1260 (AROCLOR 1260)
55	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

PESTICIDES/PCB'S DATA REPORT 07/17/90

PROJECT NO. 90-436 SAMPLE NO. 45714 SAMPLE TYPE: SOIL
SOURCE: INTERNATIONAL PAPER
STATION ID: SD-02
CASE NUMBER: 14000 SAS NUMBER:

PROG ELEM: NSF COLLECTED BY: L CONWAY
CITY: MOBILE ST: AL
COLLECTION START: 05/02/90 1250 STOP: 00/00/00
D NUMBER: T201

UG/KG	ANALYTICAL RESULTS	UG/KG	ANALYTICAL RESULTS
10.U	ALPHA-BHC	100U	METHOXYCHLOR
10.U	BETA-BHC	21.U	ENDRIN KETONE
10.U	DELTA-BHC		CHLORDANE (TECH. MIXTURE) /1
10.U	GAMMA-BHC (LINDANE)	100U	GAMMA-CHLORDANE /2
10.U	HEPTACHLOR	100U	ALPHA-CHLORDANE /2
10.U	ALDRIN	210U	TOXAPHENE
10.U	HEPTACHLOR EPOXIDE	100U	PCB-1016 (AROCLOR 1016)
10UR	ENDOSULFAN I (ALPHA)	100U	PCB-1221 (AROCLOR 1221)
21.U	DIELDRIN	100U	PCB-1232 (AROCLOR 1232)
21.U	4,4' DDE (P,P'-DDE)	100U	PCB-1242 (AROCLOR 1242)
21.U	ENDRIN	100U	PCB-1248 (AROCLOR 1248)
21.U	ENDOSULFAN II (BETA)	210U	PCB-1254 (AROCLOR 1254)
21.U	4,4'-DDD (P,P'-DDD)	210U	PCB-1260 (AROCLOR 1260)
21.U	ENDOSULFAN SULFATE	24	PERCENT MOISTURE
21.U	4,4'-DDT (P,P'-DDT)		

REMARKS ***REMARKS***

FOOTNOTES
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

PESTICIDES/PCB'S DATA REPORT 07/17/90

PROJECT NO. 90-436 SAMPLE NO. 45715 SAMPLE TYPE: SOIL
SOURCE: INTERNATIONAL PAPER
STATION ID: SD-03
CASE NUMBER: 14000 SAS NUMBER:

PROG ELEM: NSF COLLECTED BY: L CONWAY
CITY: MOBILE ST: AL
COLLECTION START: 05/02/90 1330 STOP: 00/00/00
D NUMBER: 1202

UG/KG	ANALYTICAL RESULTS
24.U	ALPHA-BHC
24.U	BETA-BHC
24.U	DELTA-BHC
24.U	GAMMA-BHC (LINDANE)
24.U	HEPTACHLOR
24.U	ALDRIN
24.U	HEPTACHLOR EPOXIDE
24.U	ENDOSULFAN I (ALPHA)
48.U	DIELDRIN
48.U	4,4'-DDE (P,P'-DDE)
48.U	ENDRIN
48.U	ENDOSULFAN II (BETA)
48.U	4,4'-DDD (P,P'-DDD)
48.U	ENDOSULFAN SULFATE
48.U	4,4'-DDT (P,P'-DDT)

UG/KG	ANALYTICAL RESULTS
240U	METHOXYCHLOR
48.U	ENDRIN KETONE
	CHLORDANE (TECH. MIXTURE) /1
240U	GAMMA-CHLORDANE /2
240U	ALPHA-CHLORDANE /2
480U	TOXAPHENE
240U	PCB-1016 (AROCLOR 1016)
240U	PCB-1221 (AROCLOR 1221)
240U	PCB-1232 (AROCLOR 1232)
240U	PCB-1242 (AROCLOR 1242)
240U	PCB-1248 (AROCLOR 1248)
480U	PCB-1254 (AROCLOR 1254)
480U	PCB-1260 (AROCLOR 1260)
66	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

07/17/90

PESTICIDES/PCB'S DATA REPORT

PROJECT NO. 90-436 SAMPLE NO. 45717 SAMPLE TYPE: SOIL
SOURCE: INTERNATIONAL PAPER
STATION ID: SD-04
CASE NUMBER: 14000 SAS NUMBER:

PROG ELEM: NSF COLLECTED BY: L CONWAY
CITY: MOBILE ST: AL
COLLECTION START: 05/02/90 1350 STOP: 00/00/00
D. NUMBER: 1203

UG/KG	ANALYTICAL RESULTS
10.U	ALPHA-BHC
230U	BETA-BHC
10.U	DELTA-BHC
10.U	GAMMA-BHC (LINDANE)
10.U	HEPTACHLOR
10.U	ALDRIN
10.U	HEPTACHLOR EPOXIDE
10.U	ENDOSULFAN I (ALPHA)
21.U	DIELDRIN
21.U	4,4'-DDE (P,P'-DDE)
21.U	ENDRIN
21.U	ENDOSULFAN II (BETA)
21.U	4,4'-DDD (P,P'-DDD)
21.U	ENDOSULFAN SULFATE
21.U	4,4'-DDT (P,P'-DDT)

UG/KG	ANALYTICAL RESULTS
100U	METHOXYCHLOR
21.U	ENDRIN KETONE
	CHLORDANE (TECH. MIXTURE) /1
100U	GAMMA-CHLORDANE /2
100U	ALPHA-CHLORDANE /2
210U	TOXAPHENE
100U	PCB-1016 (AROCLOR 1016)
100U	PCB-1221 (AROCLOR 1221)
100U	PCB-1232 (AROCLOR 1232)
100U	PCB-1242 (AROCLOR 1242)
100U	PCB-1248 (AROCLOR 1248)
210U	PCB-1254 (AROCLOR 1254)
210U	PCB-1260 (AROCLOR 1260)
24	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*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 QUANTITATION LIMIT.
*R-QC INDICATES THAT DATA UNUSABLE. COMPOUND MAY OR MAY NOT BE PRESENT. RESAMPLING AND REANALYSIS IS NECESSARY FOR VERIFICATION.
*C-CONFIRMED BY GCMS 1. WHEN NO VALUE IS REPORTED, SEE CHLORDANE CONSTITUENTS.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

PESTICIDES/PCB'S DATA REPORT 07/17/90

PROJECT NO. 90-436 SAMPLE NO. 45716 SAMPLE TYPE: SOIL
SOURCE: INTERNATIONAL PAPER
STATION ID: SD-05
CASE NUMBER: 14000 SAS NUMBER:

PROG ELEM: NSF COLLECTED BY: L CONWAY
CITY: MOBILE ST: AL
COLLECTION START: 05/02/90 1335 STOP: 00/00/00
D NUMBER: 1204

UG/KG	ANALYTICAL RESULTS
30.U	ALPHA-BHC
30.U	BETA-BHC
30.U	DELTA-BHC
30.U	GAMMA-BHC (LINDANE)
30.U	HEPTACHLOR
30.U	ALDRIN
30.U	HEPTACHLOR EPOXIDE
30.U	ENDOSULFAN I (ALPHA)
61.U	DIELDRIN
61.U	4,4'-DDE (P,P'-DDE)
61.U	ENDRIN
61.U	ENDOSULFAN II (BETA)
61.U	4,4'-DDD (P,P'-DDD)
61.U	ENDOSULFAN SULFATE
61.U	4,4'-DDT (P,P'-DDT)

UG/KG	ANALYTICAL RESULTS
300U	METHOXYCHLOR
61.U	ENDRIN KETONE
	CHLORDANE (TECH. MIXTURE) /1
300U	GAMMA-CHLORDANE /2
300U	ALPHA-CHLORDANE /2
610U	TOXAPHENE
300U	PCB-1016 (AROCLOR 1016)
300U	PCB-1221 (AROCLOR 1221)
300U	PCB-1232 (AROCLOR 1232)
300U	PCB-1242 (AROCLOR 1242)
300U	PCB-1248 (AROCLOR 1248)
610U	PCB-1254 (AROCLOR 1254)
610U	PCB-1260 (AROCLOR 1260)
75	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

PESTICIDES/PCB'S DATA REPORT 07/17/90

PROJECT NO. 90-436 SAMPLE NO. 45718 SAMPLE TYPE: SOIL
SOURCE: INTERNATIONAL PAPER
STATION ID: SD-06
CASE NUMBER: 14000 SAS NUMBER:

PROG ELEM: NSF COLLECTED BY: L CONWAY
CITY: MOBILE ST: AL
COLLECTION START: 05/02/90 1420 STOP: 00/00/00
D NUMBER: T205

UG/KG	ANALYTICAL RESULTS
15.U	ALPHA-BHC
15.U	BETA-BHC
15.U	DELTA-BHC
15.U	GAMMA-BHC (LINDANE)
15.U	HEPTACHLOR
15.U	ALDRIN
15.U	HEPTACHLOR EPOXIDE
15.U	ENDOSULFAN I (ALPHA)
30.U	DIELDRIN
30.U	4,4'-DDE (P,P'-DDE)
30.U	ENDRIN
30.U	ENDOSULFAN II (BETA)
30.U	4,4'-DDD (P,P'-DDD)
30.U	ENDOSULFAN SULFATE
30.U	4,4'-DDT (P,P'-DDT)

UG/KG	ANALYTICAL RESULTS
150U	METHOXYCHLOR
30.U	ENDRIN KETONE
	CHLORDANE (TECH. MIXTURE) /1
150U	GAMMA-CHLORDANE /2
150U	ALPHA-CHLORDANE /2
300U	TOXAPHENE
150U	PCB-1016 (AROCLOR 1016)
150U	PCB-1221 (AROCLOR 1221)
150U	PCB-1232 (AROCLOR 1232)
150U	PCB-1242 (AROCLOR 1242)
150U	PCB-1248 (AROCLOR 1248)
300U	PCB-1254 (AROCLOR 1254)
2400	PCB-1260 (AROCLOR 1260)
47	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

PESTICIDES/PCB'S DATA REPORT 07/17/90

PROJECT NO. 90-436 SAMPLE NO. 45719 SAMPLE TYPE: SEDIMBLK
SOURCE: INTERNATIONAL PAPER
STATION ID: SD-07 (REGION IV QC BLANK)
CASE NUMBER: 14000 SAS NUMBER:

PROG ELEM: NSF COLLECTED BY: L CONWAY
CITY: MOBILE ST: AL
COLLECTION START: 05/02/90 1510 STOP: 00/00/00
D NUMBER: 1189

UG/KG	ANALYTICAL RESULTS
8.7U	ALPHA-BHC
8.7U	BETA-BHC
8.7U	DELTA-BHC
8.7U	GAMMA-BHC (LINDANE)
8.7U	HEPTACHLOR
8.7U	ALDRIN
8.7U	HEPTACHLOR EPOXIDE
8.7U	ENDOSULFAN I (ALPHA)
17.U	DIELDRIN
17.U	4,4'-DDE (P,P'-DDE)
17.U	ENDRIN
17.U	ENDOSULFAN II (BETA)
17.U	4,4'-DDD (P,P'-DDD)
17.U	ENDOSULFAN SULFATE
17.U	4,4'-DDT (P,P'-DDT)

UG/KG	ANALYTICAL RESULTS
87.U	METHOXYCHLOR
17.U	ENDRIN KETONE
	CHLORDANE (TECH. MIXTURE) /1
87.U	GAMMA-CHLORDANE /2
87.U	ALPHA-CHLORDANE /2
170U	TOXAPHENE
87.U	PCB-1016 (AROCLOR 1016)
87.U	PCB-1221 (AROCLOR 1221)
87.U	PCB-1232 (AROCLOR 1232)
87.U	PCB-1242 (AROCLOR 1242)
87.U	PCB-1248 (AROCLOR 1248)
170U	PCB-1254 (AROCLOR 1254)
170U	PCB-1260 (AROCLOR 1260)
8	PERCENT MOISTURE

REMARKS

REMARKS

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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

PESTICIDES/PCB'S DATA REPORT 07/17/90

PROJECT NO. 90-436 SAMPLE NO. 45720 SAMPLE TYPE: SEDIMSPK
SOURCE: INTERNATIONAL PAPER
STATION ID: SD-08 (REGION IV QC SPIKE)
CASE NUMBER: 14000 SAS NUMBER:

PROG ELEM: NSF COLLECTED BY: L CONWAY
CITY: MOBILE ST: AL
COLLECTION START: 05/02/90 1525 STOP: 00/00/00
D NUMBER: I188

UG/KG	ANALYTICAL RESULTS
33%	ALPHA-BHC
8.4U	BETA-BHC
8.4U	DELTA-BHC
8.4U	GAMMA-BHC (LINDANE)
50%	HEPTACHLOR
8.4U	ALDRIN
8.4U	HEPTACHLOR EPOXIDE
8.4U	ENDOSULFAN I (ALPHA)
0%	DIELDRIN
17.U	4,4'-DDE (P,P'-DDE)
17.U	ENDRIN
0%	ENDOSULFAN II (BETA)
17.U	4,4'-DDD (P,P'-DDD)
17.U	ENDOSULFAN SULFATE
57%	4,4'-DDT (P,P'-DDT)

UG/KG	ANALYTICAL RESULTS
84.U	METHOXYCHLOR
17.U	ENDRIN KETONE
	CHLORDANE (TECH. MIXTURE) /1
84.U	GAMMA-CHLORDANE /2
84.U	ALPHA-CHLORDANE /2
170U	TOXAPHENE
84.U	PCB-1016 (AROCLOR 1016)
84.U	PCB-1221 (AROCLOR 1221)
84.U	PCB-1232 (AROCLOR 1232)
84.U	PCB-1242 (AROCLOR 1242)
84.U	PCB-1248 (AROCLOR 1248)
170U	PCB-1254 (AROCLOR 1254)
170U	PCB-1260 (AROCLOR 1260)
5	PERCENT MOISTURE

REMARKS

REMARKS

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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

PESTICIDES/PCB'S DATA REPORT 07/17/90

PROJECT NO. 90-436 SAMPLE NO. 45709 SAMPLE TYPE:
SOURCE:
STATION ID: SS-01
CASE NUMBER: 14000 SAS NUMBER:

PROG ELEM: NSF COLLECTED BY: L CONWAY
CITY: MOBILE ST: AL
COLLECTION START: 05/02/90 0945 STOP: 00/00/00
D NUMBER: T190

UG/KG	ANALYTICAL RESULTS
9.3U	ALPHA-BHC
9.3U	BETA-BHC
9.3U	DELTA-BHC
9.3U	GAMMA-BHC (LINDANE)
9.3U	HEPTACHLOR
9.3U	ALDRIN
9.3U	HEPTACHLOR EPOXIDE
9.3U	ENDOSULFAN I (ALPHA)
19.U	DIELDRIN
19.U	4,4' DDE (P,P'-DDE)
19.U	ENDRIN
19.U	ENDOSULFAN II (BETA)
19.U	4,4'-DDD (P,P'-DDD)
19.U	ENDOSULFAN SULFATE
19.U	4,4'-DDT (P,P'-DDT)

UG/KG	ANALYTICAL RESULTS
93.U	METHOXYCHLOR
19.U	ENDRIN KETONE
	CHLORDANE (TECH. MIXTURE) /1
93.U	GAMMA-CHLORDANE /2
93.U	ALPHA-CHLORDANE /2
190U	TOXAPHENE
93.U	PCB-1016 (AROCLOR 1016)
93.U	PCB-1221 (AROCLOR 1221)
93.U	PCB-1232 (AROCLOR 1232)
93.U	PCB-1242 (AROCLOR 1242)
93.U	PCB-1248 (AROCLOR 1248)
190U	PCB-1254 (AROCLOR 1254)
190U	PCB-1260 (AROCLOR 1260)
14	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

PESTICIDES/PCB'S DATA REPORT 07/17/90

PROJECT NO. 90-436 SAMPLE NO. 45711 SAMPLE TYPE: SOIL
SOURCE: INTERNATIONAL PAPER
STATION ID: SS-02
CASE NUMBER: 14000 SAS NUMBER:

PROG ELEM: NSF COLLECTED BY: L CONWAY
CITY: MOBILE ST: AL
COLLECTION START: 05/02/90 1040 STOP: 00/00/00
D NUMBER: T192

UG/KG	ANALYTICAL RESULTS
9.0U	ALPHA-BHC
9.0U	BETA-BHC
9.0U	DELTA-BHC
9.0U	GAMMA-BHC (LINDANE)
9.0U	HEPTACHLOR
9.0U	ALDRIN
9.0U	HEPTACHLOR EPOXIDE
9.0U	ENDOSULFAN I (ALPHA)
18.U	DIELDRIN
18.U	4,4' DDE (P,P'-DDE)
18.U	ENDRIN
18.U	ENDOSULFAN II (BETA)
18.U	4,4'-DDD (P,P'-DDD)
18.U	ENDOSULFAN SULFATE
18.U	4,4'-DDT (P,P'-DDT)

UG/KG	ANALYTICAL RESULTS
90.U	METHOXYCHLOR
18.U	ENDRIN KETONE
	CHLORDANE (TECH. MIXTURE) /1
90.U	GAMMA-CHLORDANE /2
90.U	ALPHA-CHLORDANE /2
180U	TOXAPHENE
90.U	PCB-1016 (AROCLOR 1016)
90.U	PCB-1221 (AROCLOR 1221)
90.U	PCB-1232 (AROCLOR 1232)
90.U	PCB-1242 (AROCLOR 1242)
90.U	PCB-1248 (AROCLOR 1248)
180U	PCB-1254 (AROCLOR 1254)
180U	PCB-1260 (AROCLOR 1260)
11	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
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APPENDIX C

Environmental Protection Agency
Hazardous Response
Washington, DC 20460
July 1981

EPA

Potential Hazardous Waste Site

Site Inspection Report

Site Inspection Report

EPA

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

I. IDENTIFICATION
01 STATE: ALD | 02 SITE NUMBER: 008161861

II. SITE NAME AND LOCATION

01 SITE NAME: International Paper Company
02 STREET, ROUTE NO., OR SPECIFIC LOCATION IDENTIFIER: Papermill Road - PO Box 2448
03 CITY: Mobile
04 STATE: AL | 05 ZIP CODE: 36652 | 06 COUNTY: Mobile | 07 COUNTY CODE | 08 CONG DIST
09 COORDINATES: LATITUDE 30 44 40.0 | LONGITUDE 088 03 37.0
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: 05,02,90 (MONTH DAY YEAR)
02 SITE STATUS: ☒ ACTIVE ☐ INACTIVE
03 YEARS OF OPERATION: 1929 (BEGINNING YEAR) | present (ENDING YEAR) ☐ UNKNOWN
04 AGENCY PERFORMING INSPECTION (Check all that apply): ☐ A. EPA ☒ B. EPA CONTRACTOR NUS Corporation ☐ C. MUNICIPAL ☐ D. MUNICIPAL CONTRACTOR ☐ E. STATE ☐ F. STATE CONTRACTOR ☐ G. OTHER

05 CHIEF INSPECTOR	06 TITLE	07 ORGANIZATION	08 TELEPHONE NO.
Lori C. Conway	Project Manager Technical Editor	NUS Corp.	(404)938-7710
09 OTHER INSPECTORS	10 TITLE	11 ORGANIZATION	12 TELEPHONE NO.
R. Roger Franklin	Asst. Regional Manager	NUS Corp.	(404)938-7710
			( )
			( )
			( )
			( )

13 SITE REPRESENTATIVES INTERVIEWED	14 TITLE	15 ADDRESS	16 TELEPHONE NO.
Pablo J. Vasquez	Environmental Serv./East Coord.	6075 Corners Pkwy. Ste. 108 Norcross, GA 30092	(404)246-4171
David S. Hitt	Environmental Engineer-Mobile	P.O. Box 2448 Mobile, AL 36652	(205)470-3307
			( )
			( )
			( )
			( )

17 ACCESS GAINED BY (Check one): ☒ PERMISSION ☐ WARRANT
18 TIME OF INSPECTION: 0740 - 1530
19 WEATHER CONDITIONS: Partly cloudy, humid ~ 70°F

IV. INFORMATION AVAILABLE FROM

01 CONTACT	02 OF (Agency/Organization)	03 TELEPHONE NO.
Lori C. Conway	NUS Corp.	(404)938-7710

04 PERSON RESPONSIBLE FOR SITE INSPECTION FORM	05 AGENCY	06 ORGANIZATION	07 TELEPHONE NO.	08 DATE
Same as above				08,09,90 (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
ALD	008161861

II. WASTE STATES, QUANTITIES, AND CHARACTERISTICS

01 PHYSICAL STATES (Check all that apply)

- [x] 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: unknown
CUBIC YARDS: unknown
NO. OF DRUMS: unknown

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		"green liquor sludge"
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
OCC	Unidentified Compounds	N/A	Lower Imp. Surface Soil	10,000J/13	ug/kg
OCC	Unidentified Compounds	N/A	Former Landfill Subs.	5000J/8	ug/kg
MES	Chromium	7440-47-3	Lower Imp. Surface Soil	24	mg/kg
MES	Zinc	7440-66-6	" " " "	41	mg/kg
MES	Mercury	7439-97-6	Former Landfill Subsoil	1.5	mg/kg
MES	Lead	7439-92-1	" " "	180	mg/kg
MES	Copper	7440-50-8	" " "	63	mg/kg
OCC	Unidentified Compounds	N/A	Chickasaw Creek	90,000J/14	ug/kg
MES	Chromium	7440-47-3	Chickasaw Creek	71	mg/kg
MES	Copper	7440-50-8	Chickasaw Creek	110	mg/kg

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, sampling records, reports)

EPA + state file material
Interview with Pablo Vasquez
Impoundment Closure Plan

EPA FORM 2070-13 (7-81)

EPA

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

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
ALD	008161861

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 ☐ A. GROUNDWATER CONTAMINATION
03 POPULATION POTENTIALLY AFFECTED: 0
02 ☐ OBSERVED (DATE _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

Groundwater is not utilized in the study area.

01 ☐ B. SURFACE WATER CONTAMINATION
03 POPULATION POTENTIALLY AFFECTED: 0
02 ☐ OBSERVED (DATE _____) ☑ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

Surface water downstream is not used for drinking. However, there are extensive wetlands and sensitive environments downstream.

01 ☐ C. CONTAMINATION OF AIR
03 POPULATION POTENTIALLY AFFECTED: 88,849
02 ☐ OBSERVED (DATE _____) ☑ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

According to the GEMS Data Base, there are 88,849 residents within 4 miles of the facility. The facility employs ~ 1200 workers.

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

01 ☐ E. DIRECT CONTACT
03 POPULATION POTENTIALLY AFFECTED: 1200
02 ☐ OBSERVED (DATE _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

There are about 1200 employees. Unlikely that non-employees would directly contact waste, due to security measures.

01 ☐ F. CONTAMINATION OF SOIL
03 AREA POTENTIALLY AFFECTED: 47.1 (Acres)
02 ☐ OBSERVED (DATE 5/2/91) ☐ POTENTIAL ☑ ALLEGED
04 NARRATIVE DESCRIPTION

Inorganic contamination was found in samples taken from the former landfill (14.5 acres) and the closed lower impoundment (32.6 acres), during this inspection.

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

01 ☐ H. WORKER EXPOSURE/INJURY
03 WORKERS POTENTIALLY AFFECTED: 1200
02 ☐ OBSERVED (DATE _____) ☑ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

The facility employs 1200 people

01 ☐ I. POPULATION EXPOSURE/INJURY
03 POPULATION POTENTIALLY AFFECTED: N/A
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
ALD	008161861

II. HAZARDOUS CONDITIONS AND INCIDENTS (Continued)

01 ☒ J. DAMAGE TO FLORA — 02 ☐ OBSERVED (DATE 5/2/90) ☐ POTENTIAL ☒ ALLEGED
04 NARRATIVE DESCRIPTION
Vegetation in Upper Impoundment Basin stressed. Vegetation elsewhere healthy, however.

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

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

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

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

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

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

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

III. TOTAL POPULATION POTENTIALLY AFFECTED: 99,049

IV. COMMENTS

V. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)
Field logbook
EPA + state file material

EPA FORM 2070-13 (7-81)

EPA

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

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
ALD	008161861

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 Unknown				

III. SITE DESCRIPTION

01 STORAGE/DISPOSAL (Check all that apply)	02 AMOUNT	03 UNIT OF MEASURE
☑ A. SURFACE IMPOUNDMENT	32.6	acres
	50	acres
☐ B. PILES		
☐ C. DRUMS, ABOVE GROUND		
☐ D. TANK, ABOVE GROUND		
☐ E. TANK, BELOW GROUND		
☑ F. LANDFILL	14.5	acres
☐ 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: 75 (Acres)

07 COMMENTS

Entire plant property covers 75 acres. The Lower Impoundment Basin (closed) covered 32.6 acres. The closed Landfill covered 14.5 acres. The Upper Impoundment (active) covers 50 acres.

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.

Lower impoundment may have clay liner. Closed lower imp. has a leachate collection ditch. A gravel berm surrounds the portion of the upper impoundment where waste is most concentrated. The berm is ~5 ft high. Landfill capped and vegetated; probably was unlined while in use.

V. ACCESSIBILITY

01 WASTE EASILY ACCESSIBLE ☐ YES ☑ NO

02 COMMENTS

Much of plant property is fenced and security at main entrance is tight. Closed impoundment & landfill could only be reached by boat. Without access via main gate.

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

Field logbook

EPA / state file material

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
ALD	008161861

II. DRINKING WATER SUPPLY

01 TYPE OF DRINKING SUPPLY (Check as applicable)	SURFACE	WELL	02 STATUS: ENDANGERED	AFFECTED	MONITORED	03 DISTANCE TO SITE
COMMUNITY	A ☑	B. ☐	A ☐	B. ☐	C. ☐	A. ~10 (mi) upstream
NON-COMMUNITY	C ☐	D. ☐	D. ☐	E. ☐	F ☐	B. ____ (mi)

III. GROUNDWATER

01 GROUNDWATER USE IN VICINITY (Check one)

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

02 POPULATION SERVED BY GROUND WATER: 0

03 DISTANCE TO NEAREST DRINKING WATER WELL: >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
10 (ft)	Southeast	94 (ft)	2 million (gpd)	☐ YES ☑ NO

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

N/A No wells within 4 miles of facility

10 RECHARGE AREA: ☑ YES ☐ NO — COMMENTS: Recharge to the aquifer occurs within Mobile + Baldwin counties' boundaries.

11 DISCHARGE AREA: ☐ 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
Hog Bayou / Chickasaw Creek	☐	0 (mi)
Mobile River	☐	1 (mi)
Mobile Bay	☐	7 (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. 4,230 (NO. OF PERSONS)	B. 19,108 (NO. OF PERSONS)	C. 34,272 (NO. OF PERSONS)

02 DISTANCE TO NEAREST POPULATION: 1/4 (mi)

03 NUMBER OF BUILDINGS WITHIN TWO (2) MILES OF SITE: >1000

04 DISTANCE TO NEAREST OFF-SITE BUILDING: 1/4 (mi)

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

Facility located in a densely populated urban area of north Mobile. Western, southwestern and southern areas of the 4-mile radius are heavily populated with residential and commercial areas. Numerous schools are within the study area, four of which are within 1 mile.

EPA

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

I. IDENTIFICATION

01 STATE: ALD | 02 SITE NUMBER: 008161861

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
94 (ft)	unknown (ft)	unknown

06 NET PRECIPITATION	07 ONE YEAR 24 HOUR RAINFALL	08 SLOPE: SITE SLOPE	DIRECTION OF SITE SLOPE	TERRAIN AVERAGE SLOPE
16 (in)	4.7 (in)	3 %	east	%

09 FLOOD POTENTIAL

SITE IS IN _____ YEAR FLOODPLAIN

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

11 DISTANCE TO WETLANDS (5 acre minimum)

ESTUARINE: A. 1/2 (mi) OTHER: B. _____ (mi)

12 DISTANCE TO CRITICAL HABITAT (of endangered species)

_____ (mi)

ENDANGERED SPECIES: _____

13 LAND USE IN VICINITY

DISTANCE TO:

COMMERCIAL INDUSTRIAL	RESIDENTIAL AREAS, NATIONAL/STATE PARKS, FORESTS, OR WILDLIFE RESERVES	AGRICULTURAL LANDS: PRIME AG LAND	AGRICULTURAL LANDS: AG LAND
A. 0 (mi)	B. 1/4 (mi)	C. _____ (mi)	D. _____ (mi)

14 DESCRIPTION OF SITE IN RELATION TO SURROUNDING TOPOGRAPHY

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

USGS Topographic Map
Field Logbook
Draft Report Narrative

EPA FORM 2070-13 (7-81)

EPA

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

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
ALD	008161861

II. SAMPLES TAKEN

SAMPLE TYPE	01 NUMBER OF SAMPLES TAKEN	02 SAMPLES SENT TO	03 ESTIMATED DATE RESULTS AVAILABLE
GROUNDWATER			
SURFACE WATER			
WASTE			
AIR			
RUNOFF			
SPILL			
SOIL	10	Compuchem, Silver Valley	
VEGETATION			
OTHER			

III. FIELD MEASUREMENTS TAKEN

01 TYPE	02 COMMENTS

IV. PHOTOGRAPHS AND MAPS

01 TYPE ☑ GROUND ☐ AERIAL

02 IN CUSTODY OF NUS Corporation - FIT 4
(Name of organization or individual)

03 MAPS ☐ YES ☑ NO

04 LOCATION OF MAPS N/A

V. OTHER FIELD DATA COLLECTED (Provide narrative description)

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

Field Logbook

EPA FORM 2070-13 (7-81)

EPA

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

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
ALD	008161861

II. CURRENT OWNER(S)

01 NAME	02 D+B NUMBER
International Paper Co.	

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
6075 The Corners Pkwy. Suite 108	

05 CITY	06 STATE	07 ZIP CODE
Norcross	GA	30092

01 NAME	02 D+B NUMBER

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

05 CITY	06 STATE	07 ZIP CODE

01 NAME	02 D+B NUMBER

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

05 CITY	06 STATE	07 ZIP CODE

01 NAME	02 D+B NUMBER

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

05 CITY	06 STATE	07 ZIP CODE

PARENT COMPANY (If applicable)

08 NAME	09 D+B NUMBER
Same	

10 STREET ADDRESS (P.O. Box, RFD #, etc.)	11 SIC CODE

12 CITY	13 STATE	14 ZIP CODE

08 NAME	09 D+B NUMBER

10 STREET ADDRESS (P.O. Box, RFD #, etc.)	11 SIC CODE

12 CITY	13 STATE	14 ZIP CODE

08 NAME	09 D+B NUMBER

10 STREET ADDRESS (P.O. Box, RFD #, etc.)	11 SIC CODE

12 CITY	13 STATE	14 ZIP CODE

08 NAME	09 D+B NUMBER

10 STREET ADDRESS (P.O. Box, RFD #, etc.)	11 SIC CODE

12 CITY	13 STATE	14 ZIP CODE

III. PREVIOUS OWNER(S) (List most recent first)

01 NAME	02 D+B NUMBER

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

05 CITY	06 STATE	07 ZIP CODE

01 NAME	02 D+B NUMBER

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

05 CITY	06 STATE	07 ZIP CODE

01 NAME	02 D+B NUMBER

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

05 CITY	06 STATE	07 ZIP CODE

IV. REALTY OWNER(S) (If applicable; list most recent first)

01 NAME	02 D+B NUMBER

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

05 CITY	06 STATE	07 ZIP CODE

01 NAME	02 D+B NUMBER

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

05 CITY	06 STATE	07 ZIP CODE

01 NAME	02 D+B NUMBER

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

05 CITY	06 STATE	07 ZIP CODE

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

Interview with Pablo Vasquez
EPA/state File Material

EPA

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

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
ALD	008161861

II. CURRENT OPERATOR (Provide if different from owner)

01 NAME: International Paper Co.	02 D+B NUMBER:
03 STREET ADDRESS (P.O. Box, RFD #, etc.): Papermill Road Po Box 2448	04 SIC CODE:
05 CITY: Mobile	06 STATE: AL / 07 ZIP CODE: 36652
08 YEARS OF OPERATION: 61	09 NAME OF OWNER: International Paper Co.

OPERATOR'S PARENT COMPANY (If applicable)

10 NAME: International Paper Co.	11 D+B NUMBER:
12 STREET ADDRESS (P.O. Box, RFD #, etc.): 6075 The Corners Pkwy. Ste. 108	13 SIC CODE:
14 CITY: Norcross	15 STATE: GA / 16 ZIP CODE: 30092

III. PREVIOUS OPERATOR(S) (List most recent first; provide only if different from owner)

01 NAME:	02 D+B NUMBER:
03 STREET ADDRESS (P.O. Box, RFD #, etc.):	04 SIC CODE:
05 CITY:	06 STATE: / 07 ZIP CODE:
08 YEARS OF OPERATION:	09 NAME OF OWNER DURING THIS PERIOD:
01 NAME:	02 D+B NUMBER:
03 STREET ADDRESS (P.O. Box, RFD #, etc.):	04 SIC CODE:
05 CITY:	06 STATE: / 07 ZIP CODE:
08 YEARS OF OPERATION:	09 NAME OF OWNER DURING THIS PERIOD:
01 NAME:	02 D+B NUMBER:
03 STREET ADDRESS (P.O. Box, RFD #, etc.):	04 SIC CODE:
05 CITY:	06 STATE: / 07 ZIP CODE:
08 YEARS OF OPERATION:	09 NAME OF OWNER DURING THIS PERIOD:

PREVIOUS OPERATORS' PARENT COMPANIES (If applicable)

10 NAME:	11 D+B NUMBER:
12 STREET ADDRESS (P.O. Box, RFD #, etc.):	13 SIC CODE:
14 CITY:	15 STATE: / 16 ZIP CODE:
10 NAME:	11 D+B NUMBER:
12 STREET ADDRESS (P.O. Box, RFD #, etc.):	13 SIC CODE:
14 CITY:	15 STATE: / 16 ZIP CODE:
10 NAME:	11 D+B NUMBER:
12 STREET ADDRESS (P.O. Box, RFD #, etc.):	13 SIC CODE:
14 CITY:	15 STATE: / 16 ZIP CODE:

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

EPA / State File Material

EPA

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

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
ALD	008161861

II. ON-SITE GENERATOR

01 NAME	02 D+B NUMBER
International Paper Co.	

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
Papermill Road P.O. Box 2448	

05 CITY	06 STATE	07 ZIP CODE
Mobile	AL	36652

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	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/state file material

EPA

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

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
ALD	008161861

II. PAST RESPONSE ACTIVITIES

01 ☐ A. WATER SUPPLY CLOSED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
N/A

01 ☐ B. TEMPORARY WATER SUPPLY PROVIDED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
N/A

01 ☐ C. PERMANENT WATER SUPPLY PROVIDED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
N/A

01 ☐ D. SPILLED MATERIAL REMOVED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
N/A

01 ☐ E. CONTAMINATED SOIL REMOVED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
N/A

01 ☐ F. WASTE REPACKAGED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
N/A

01 ☐ G. WASTE DISPOSED ELSEWHERE — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
Landfill on site + 2 surface impoundments

01 ☐ H. ON SITE BURIAL — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
Landfill + 2 surface impoundments on site.

01 ☐ I. IN SITU CHEMICAL TREATMENT — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
N/A

01 ☐ J. IN SITU BIOLOGICAL TREATMENT — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
N/A

01 ☐ K. IN SITU PHYSICAL TREATMENT — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
N/A

01 ☐ L. ENCAPSULATION — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
N/A

01 ☐ M. EMERGENCY WASTE TREATMENT — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
N/A

01 ☐ N. CUTOFF WALLS — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
N/A

01 ☐ O. EMERGENCY DIKING/SURFACE WATER DIVERSION — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
N/A

01 ☐ P. CUTOFF TRENCHES/SUMP — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
N/A

01 ☐ Q. SUBSURFACE CUTOFF WALL — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
N/A

EPA

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

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
ALD	008161861

II PAST RESPONSE ACTIVITIES (Continued)

01 ☐ R BARRIER WALLS CONSTRUCTED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
N/A

01 ☐ S. CAPPING/COVERING — 02 DATE 1984 — 03 AGENCY _____
04 DESCRIPTION
Lower impoundment + landfill are closed + capped.

01 ☐ T BULK TANKAGE REPAIRED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
N/A

01 ☐ U GROUT CURTAIN CONSTRUCTED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
N/A

01 ☐ V BOTTOM SEALED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
N/A

01 ☐ W GAS CONTROL — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
N/A

01 ☐ X FIRE CONTROL — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
N/A

01 ☐ Y LEACHATE TREATMENT — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
N/A

01 ☐ Z AREA EVACUATED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
N/A

01 ☐ 1 ACCESS TO SITE RESTRICTED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
N/A

01 ☐ 2 POPULATION RELOCATED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
N/A

01 ☐ 3 OTHER REMEDIAL ACTIVITIES — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

Both the landfill and the lower impoundment have been closed and capped, apparently in accordance with closure plans approved by the state.

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

Field logbook.

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

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
ALD	008161861

II. ENFORCEMENT INFORMATION

01 PAST REGULATORY ENFORCEMENT ACTION ☐ YES ☑ NO

02 DESCRIPTION OF FEDERAL, STATE, LOCAL REGULATORY ENFORCEMENT ACTION

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

EPA / State File Material

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT

General Information

The Potential Hazardous Waste Site, Site Inspection Report form is used to record information collected during, or associated with, an inspection of the site and other information about responsible parties and past response activities.

The Site Inspection Report form contains eleven parts:

Part 1 – Site Location and Inspection Information

Part 2 – Waste Information

Part 3 – Description of Hazardous Conditions and Incidents

Part 4 – Permit and Descriptive Information

Part 5 – Water, Demographic, and Environmental Data

Part 6 – Sample and Field Information

Part 7 – Owner Information

Part 8 – Operator Information

Part 9 – Generator/Transporter Information

Part 10 – Past Response Activities

Part 11 – Enforcement Information

Part 1 – Site Location and Inspection Information contains all of the data elements also contained on the Site Identification and Preliminary Assessment forms required to add a site to the automated Site Tracking System (STS). It is therefore possible to add a site to STS at the Site Inspection stage. Instructions are given below.

Part 2 – Waste Information and Part 3 – Description of Hazardous Conditions and Incidents are used to record specific information about substances, amounts, hazards, and targets, e.g., population potentially affected. Parts 2 and 3 are also contained in the Potential Hazardous Waste Site, Preliminary Assessment form. Information recorded on Part 2 and Part 3 during a preliminary assessment may be updated, added, deleted, or corrected on the Site Inspection Report form.

An Appendix with feedstock names and CAS Numbers and the most frequently cited hazardous substances and CAS Numbers is located behind the instructions for the Site Inspection Report.

A number of the data items collected throughout the Site Inspection Report support the Site Ranking Model. The majority of these data items are found in Part 5 – Water, Demographic, and Environmental Data.

General Instructions

1. Complete the Site Inspection Report form as completely as possible.

2. Starred items (*) are required before inspection information can be added to STS. The system will not accept incomplete inspection information.

3. To add a site to STS at the Site Inspection stage, write "New" across the top of the form and complete items II-01, 02, 03, 04, and 08, Site Name and Location, II-09 Coordinates, and II-10, Type of Ownership.

4. Data items carried in STS, which are identical to those on the Site Identification and Preliminary Assessment forms and which can be added, deleted, or changed using the Site Inspection Report form, are indicated with a pound sign (#). To ensure that the proper action is taken, outline the item(s) to be added, deleted, or changed with a bright color and indicate the proper action with "A" (add), "D" (delete) or "C" (change).

5. There are two options available for adding, deleting, or changing information supplied on the Site Inspection Report form. The first is to use a new Site Inspection Report form, completing only those items to be added, deleted, or changed. Mark the form clearly, using "A", "D", or "C", to indicate the action to be taken. If only data in STS are to be altered, the Site Source Data Report may be used. Using the report, mark clearly the items to be changed and the action to be taken.

Detailed Instructions

Part 1 Site Location and Inspection Information

I. **Identification**: Identification (State and Site Number) is the site record key, or primary identifier, for the site. Site records in the STS are updated based on Identification. It is essential that State and Site Number are correctly entered on each form.

*I-01 State: Enter the two character alpha FIPS code for the state in which the site is located. It must be identical to State on the Site Identification form.

*I-02 Site Number: Enter the ten character alphanumeric code for sites which have a Dun and Bradstreet or EPA "user" Dun and Bradstreet number or the ten character numeric GSA identification code for federal sites. The Site Number must be identical to the Site Number on the Site Identification and Preliminary Assessment forms.

II. **Site Name and Location**: If Site Name and Location information require no additions or changes, these items are not required on the Site Inspection Report form. However, completing these items will facilitate use of the completed form and records management procedures.

#II-01 Site Name: Enter the legal, common, or descriptive name of the site.

#II-02 Site Street: Enter the street address and number (if appropriate) where the site is located. If the precise street address is unavailable for this site, enter brief direction identifier, e.g., NW Jct I-295 & US 99; Post Rd, 5 mi W of Rt. 5.

#II-03 Site City: Enter the city, town, village, or other municipality in which the site is located. If the site is not located in a municipality, enter the name of the municipality (or place) which is nearest the site or which most easily locates the site.

#II-04 Site State: Enter the two character alpha FIPS code for the state in which the site is located. The code must be the same as in item I-01.

#II-05 Site Zip Code: Enter the five character numeric zip code for the postal zone in which the site is located.

#II-06 Site County: Enter the name of the county, parish (Louisiana), or borough (Alaska) in which the site is located.

#II-07 County Code: Enter the three character numeric FIPS county code for the county, parish, or borough in which the site is located. (The regional data analyst can furnish this data item.)

#II-08 Site Congressional District: Enter the two character number for the congressional district in which the site is located.

*#II-09 Coordinates: Enter the Coordinates, Latitude and Longitude, of the site in degrees, minutes, seconds, and tenths of seconds. If a tenth of a second is insignificant at this site, enter "0" in the tenths position.

#II-10 Type of Ownership: Check the appropriate box to indicate the type of site ownership. If the site is under the jurisdiction of an activity of the federal government, enter the name of the department, agency, or activity. If Other is indicated, specify the type of ownership and name.

III. **Inspection Information**

*III-01 Date of Inspection: Enter the date the inspection occurred, or began for multiple day inspections.

*III-02 Site Status: Check the appropriate box(es) to indicate the current status of the site. Active sites are those which treat, store, or dispose of wastes. Check Active for those active sites with an inactive storage or disposal area. Inactive sites are those at which treatment, storage, or disposal activities no longer occur.

#III-03 Years of Operation: Enter the beginning and ending years (or beginning only if operations at the site are on-going), e.g., 1878/1932, of site operation. Check Unknown if years of operation are not known.

*III-04 Agency Performing Inspection: Check the appropriate box(es) to indicate parties participating in the inspection. If contractors participate, provide the name of the firm(s).

III-05 Chief Inspector: Enter the name of the chief, or lead inspector.

III-06 Title: Enter the Chief Inspector's title, e.g., Team Leader, FIT team.

III-07 Organization: Enter the name of the organization where the Chief Inspector is employed, e.g., EPA – Region 4, VA State Health Dept., Environmental Research Co.

III-08 Telephone Number: Enter the Chief Inspector's area code and local commercial telephone number.

III-09 Other Inspectors: Enter the names of other parties participating in the inspection.

III-10 Title: Enter the titles of other parties participating in the inspection.

III-11 Organization: Enter the names of the organizations where other parties participating in the inspection are employed.

III-12 Telephone Number: Enter the area code and local commercial telephone numbers of other parties participating in the inspection.

III-13 Site Representatives Interviewed: Enter the names of individuals representing responsible parties interviewed in connection with the inspection. Interviews do not necessarily occur during the inspection.

III-14 Title: Enter the titles of the individuals interviewed.

III-15 Address: Enter the business, mailing, or residential addresses of the individuals interviewed.

III-16 Telephone Number: Enter the area code and local commercial telephone numbers of the individuals interviewed.

III-17 Access Gained By: Check the appropriate box to indicate whether access to the site was gained through permission or warrant.

III-18 Time of Inspection: Using a 24-hour clock, enter the time the inspection began, e.g., for 3:24 p.m. enter 1524.

III-19 Weather Conditions: Describe the weather conditions during the site inspection, especially any unusual conditions which might affect results or observations taken.

IV. **Information Available From**

IV-01 Contact: Enter the name of the individual who can provide information about the site.

IV-02 Of: If appropriate, enter the name of the public or private agency, firm, or company and the organization within the agency, firm, or company of the individual named as Contact.

IV-03 Telephone Number: Enter the area code and local telephone number of the individual named as contact.

IV-04 Person Responsible for Site Inspection Report Form: Enter the name of the individual who was responsible for the information entered on the Site Inspection Report form. The person responsible for the Site Inspection Report form may be different from the individual who prepared the form.

IV-05 Agency: Enter the name of the Agency where the individual who is responsible for the Site Inspection Report form is employed.

IV-06 Organization: Enter the name of the organization within the Agency.

IV-07 Telephone Number: Enter the area code and local telephone number of the individual who is responsible for the Site Inspection Report form.

IV-08 Date: Enter the date the Site Inspection Report form was prepared.

Part 2 Waste Information

*I. **Identification**: Refer to Part 1–I.

II. **Waste States, Quantities, and Characteristics**: Waste States, Quantities, and Characteristics provide information about the physical structure and form of the waste, measures of gross amounts at the site, and the hazards posed by the waste, considering acute and chronic health effects and mobility along a pathway.

*II-01 Physical States: Check the appropriate box(es) to indicate the state(s) of waste present at the site. If Other is indicated, specify the physical state of the waste.

*II-02 Waste Quantity at Site: Enter estimates of amounts of waste at the site. Estimates may be in weight (Tons) or volume (Cubic Yards or Number of Drums). Use as many entries as are appropriate; however, measurements must be independent. For example, do not measure the same amounts of waste as both tons and cubic yards.

*II-03 Waste Characteristics: Check all appropriate entries to indicate the hazards posed by waste at the site. If waste at the site poses no hazard, check Not Applicable.

III. **Waste Category**: General categories of waste typically found are listed here. Enter the estimated gross amount of each category of waste and the appropriate unit of measure.

*III-01 Gross Amount: Gross Amount is the estimate of the amount of the waste category found at the site. Estimates should be furnished in metric tons (MT), tons (TN), cubic meters (CM), cubic yards (CY), drums (DR), acres (AC), acre feet (AF), liters (LT), or gallons (GA). Enter the estimated amount next to the appropriate waste category.

*III-02 Unit of Measure: Enter the appropriate unit of measure, MT (metric tons), TN (tons), CM (cubic meters), CY (cubic yards), DR (number of drums), AC (acres), AF (acre feet), LT (liters), or GA (gallons) next to the estimate of gross amount.

III-03 Comments: Comments may be used to further explain, or provide additional information, about particular waste categories.

IV. **Hazardous Substances**: Specific hazardous, or potentially hazardous, chemicals, mixtures, and substances found at the site are listed here. For each substance listed those data items marked with an "at" sign (@) must be included.

@IV-01 Category: Enter in front of the substance name the three character waste category from Section III which best describes the substance, e.g., OLW (Oily Waste).

@IV-02 Substance Name: Enter one of the following: the name of the substance registered with the Chemical Abstract Service, the common or accepted abbreviation of the substance, the generic name of the substance, or commercial name of the substance.

@IV-03 CAS Number: Enter the number assigned to the substance when it was registered with the Chemical Abstract Service. Refer to the Appendix for most frequently cited CAS Numbers. CAS Numbers must be furnished for each substance listed. If a CAS Number for this substance has not been assigned, enter "999".

@IV-04 Storage/Disposal Method: Enter the type of storage or disposal facility in which the substance was found: SI (surface impoundment, including pits, ponds, and lagoons), PL (pile), DR (drum), TK (tank), LF (landfill), LM (landfarm), OD (open dump).

IV-05 Concentration: Enter the concentration of the substance found in samples taken at the site.

IV-06 Measure of Concentration: Enter the appropriate unit of measure for the measured concentration of the substance found in the sample, e.g., MG/L, UG/L.

V. **Feedstocks**

V-01 Feedstock Name: If feedstocks, or substances derived from one or more feedstocks, are present at the site, enter the name of each feedstock found. See the Appendix for the feedstock list.

V-02 CAS Number: Enter the CAS Number for each feedstock named. See the Appendix for feedstock CAS Numbers.

VI. **Sources of Information**: List the sources used to obtain information for this form. Sources cited may include: sample analysis, reports, inspections, official records, or other documentation. Sources cited provide the basis for information entered on the form and may be used to obtain further information about the site.

Part 3 Description of Hazardous Conditions and Incidents

*I. **Identification**: Refer to Part 1–I.

II. **Hazardous Conditions and Incidents:**

II-01 Hazards: Indicate each hazardous, or potentially hazardous, condition known, or claimed, to exist at the site.

II-02 Observed, Potential, or Alleged: Check Observed and enter the date, or approximate date, of occurrence if a release of contaminants to the environment, or some other hazardous incident, is known to have occurred. In cases of a continuing release, e.g., groundwater contamination, enter the date, or approximate date, the condition first became apparent. If conditions exist for a potential release, check potential. Check Alleged for hazardous, or potentially hazardous, conditions claimed to exist at the site.

II-03 Population Potentially Affected: For each hazardous condition at the site, enter the number of people potentially affected. For Soil enter the number of acres potentially affected.

II-04 Narrative Description: Provide a narrative description, or explanation, of each condition. Include any additional information which further explains the condition.

II-05 Description of Any Other Known, Potential, or Alleged Hazards: Provide a narrative description of any other hazardous, or potentially hazardous, conditions at the site not covered above.

III. **Total Population Potentially Affected**: Enter the total number of people potentially affected by the existence of hazardous, or potentially hazardous, conditions at the site. Do not sum the numbers shown for each condition.

IV. **Comments**: Other information relevant to observed, potential, or alleged hazards may be entered here.

V. **Sources of Information**: List the sources used to obtain information for this form. Sources cited may include: sample analysis, reports, inspections, official records, or other documentation. Sources cited provide the basis for information entered on the form and may be used to obtain further information about the site.

Part 4 Permit and Descriptive Information

*I. **Identification**: Refer to Part 1–I.

II. **Permit Information**

II-01 Type of Permit Issued: Check the appropriate box(es) to indicate the types of permits issued to the site. If state, local, or other types of environmental permits have been issued, specify the type.

II-02 Permit Number: Enter the permit number for each issued permit.

II-03 Date Issued: Enter the date each permit was issued.

II-04 Expiration Date: Enter the date each permit expires or expired.

II-05 Comments: Enter any information which further explains the types of permits issued or status of the permits.

III. **Site Description**

*III-01 Storage/Disposal: Check the appropriate box(es) to indicate the types of storage/disposal facilities found at the site. If Other is checked, specify the type of facility.

*III-02 Amount: Enter the gross amount of waste associated with each type of storage/disposal facility. Amounts may be measured in: metric tons, tons, cubic meters, cubic yards, drums, acres, acre feet, liters, or gallons.

*III-03 Unit of Measure: Enter the appropriate unit of measure for each entry. Units of measure are MT (metric tons), TN (tons), CM (cubic meters), CY (cubic yards), DR (drums), AC (acres), AF (acre feet), LT (liters), or GA (gallons).

*III-04 Treatment: If waste is treated at the site, check the appropriated box(es) to indicate treatment methods used. If Other is checked, specify treatment method.

III-05 Other: If there are buildings on site, check this box.

*III-06 Area of Site: Enter total area of site in acres.

III-07 Comments: Enter any other pertinent information.

IV. **Containment**: Containment is a measure of the natural or artificial means taken to minimize or preclude health hazards and to minimize or prevent contamination of the environment from waste at the site.

*IV-01 Containment of Wastes: Check the appropriate box to indicate the condition of containment measures at the site. When choosing the appropriate box, consider the potential for environmental contamination, i.e., the worst case for containment in conjunction with the most hazardous substances.

IV-02 Description of Drums, Diking, Liners, Barriers: Provide a narrative description of the condition of containment measures at the site, e.g., waste adequately contained, drums rusting and leaking, diking collapsing, liners leaking and contaminants leaching into soil and groundwater.

V. **Accessibility**: Accessibility is an indicator of the potential for direct contact with hazardous substances.

*V-01 Waste Easily Accessible: If there are no real barriers preventing human access to hazardous waste, check Yes, otherwise check No.

V-02 Comments: Additional information about accessibility to hazardous waste may be provided.

VI. **Sources of Information**: List the sources used to obtain information for this form. Sources cited may include: sample analysis, reports, inspections, official records, or other documentation. Sources cited provide the basis for information entered on the form and may be used to obtain further information about the site.

Part 5 Water, Demographic, and Environmental Data

*I. **Identification**: Refer to Part 1–I.

II. **Drinking Water Supply**

II-01 Type of Drinking Water Supply: Check the appropriate box(es) to indicate the types and sources of drinking water within the vicinity of the site. Community refers to municipal sources. Non-community refers to private sources, e.g., private wells.

II-02 Status: Check the appropriate box(es) to indicate whether the water supply is endangered or affected by contaminants from the site. Check the appropriate box to indicate if the water supply is being monitored for possible contamination.

II-03 Distance to Site: Enter the distance in miles to the nearest tenth, hundredth, or thousandth (as needed to indicate the precision required) from the site to nearest drinking water source.

III. **Groundwater**

III-01 Groundwater Use in Vicinity: Check the appropriate box to indicate groundwater use in the vicinity of the site. The concern is to indicate the seriousness of groundwater contamination from waste at the site. Only Source for Drinking indicates that current water sources are limited to wells in the vicinity of the site. Drinking; Commercial, Industrial, Irrigation indicates that groundwater is used for drinking, but that other limited drinking sources are available and that no other sources for these additional uses are available. Commercial, Industrial, Irrigation indicates that groundwater is used for these purposes, but that limited other sources of water are available. Not used, Unuseable indicates that groundwater use in the area is not critical.

III-02 Population Served by Groundwater: Enter the number of people served by groundwater in the vicinity of the site. Population for the purposes of the Site Inspection Report includes residents and daytime workers and students but excludes transients in the neighborhood or on local highways and roads. When estimating population from aerial photographs or other sources, the conversion factor is 3.8 persons for each dwelling unit or 3 persons per acre in rural areas.

III-03 Distance to Nearest Drinking Water Well: Enter the distance in miles to the nearest tenth, hundredth, or thousandth (as needed to indicate the precision required) from the site to the nearest drinking water well.

III-04 Depth to Groundwater: Enter the depth in feet to groundwater.

III-05 Depth of Groundwater Flow: Enter the cardinal direction of groundwater flow, e.g., NNW.

III-06 Depth to Aquifer of Concern: Enter the depth in feet to the aquifer of concern.

III-07 Potential Yield of Aquifer: Enter the potential yield of the aquifer in gallons per day.

III-08 Sole Source Aquifer: Check the appropriate box to indicate the aquifer of concern is, or is not, a sole source aquifer.

III-09 Description of Wells: Provide a narrative description of wells in the vicinity of the site, including useage, depth, and location relative to population and buildings.

III-10 Recharge Area: Check the appropriate box to indicate the site is located in a recharge area. Comments provide additional information on the recharge area.

III-11 Discharge Area: Check the appropriate box to indicate the site is located in a discharge area. Comments provide additional information on the discharge area.

IV. **Surface Water**

IV-01 Surface Water Use: Check the appropriate box to indicate surface water use in the vicinity of the site. The order of precedence is Reservoir, Recreation, Drinking Water Source; Irrigation, Economically Important Reserves; Commercial/Industrial; Not Currently Used.

IV-02 Affected/Potentially Affected Bodies of Water: Enter the names of bodies of surface water affected, or potentially affected, by contaminants from the site. List the body of surface water nearest the site first. For each body of water check Affected if contaminants have been identified in samples of the water. Enter the shortest distance from the body of water to the site in miles to the nearest tenth, hundredth, or thousandth (as needed to indicate the precision required).

V. **Demographic and Property Information**

V-01 Total Population Within: Enter the total population within one (1) mile, two (2) miles, and three (3) miles of the site. Distances are measured from site boundaries. Population for the purposes of the Site Inspection Report includes residents and daytime workers and students but excludes transients in the neighborhood or on local highways and roads. When estimating population from aerial photographs or other sources, the conversion factor is 3.8 persons for each dwelling unit or 3 persons per acre in rural areas.

V-02 Distance to Nearest Population: Enter in miles to the nearest tenth, hundredth, or thousandth (as needed to indicate the precision required) the distance from the site boundary to the nearest population (one person minimum).

V-03 Number of Buildings Within Two (2) Miles of Site: Enter the number of buildings within two miles from the boundaries of the site.

V-04 Distance to Nearest Off-Site Building: Enter the distance in miles to the nearest tenth, hundredth, or thousandth (as needed to indicate the precision required) from the site boundary to the nearest off-site building.

V-05 Population in Vicinity of Site: Provide a narrative description of the nature of the population within the vicinity of the site. Examples include rural area, small truck farms, urban industrial area, densely populated urban residential area.

VI. **Environmental Information**

VI-01 Permeability of Unsaturated Zone: Check the appropriate box to indicate the permeability of the earth material above the water table in the vicinity of the site.

VI-02 Permeability of Bedrock: Check the appropriate box to indicate the permeability of the bedrock in the vicinity of the site.

VI-03 Depth to Bedrock: Enter the depth to bedrock in feet.

VI-04 Depth of Contaminated Soil Zone: Enter the depth of the contaminated soil zone in feet.

VI-05 Soil pH: Enter the pH of the soil in the vicinity of the site.

VI-06 Net Precipitation: Enter net precipitation in inches. If net precipitation is not known, subtract the average evaporation figure on the U.S. National Weather Service map showing average annual evaporation in inches from the U.S. Environmental Data Service map showing mean annual precipitation.

VI-07 One Year 24 Hour Rainfall: Enter in inches the figure for one year 24 hour rainfall.

VI-08 Slope: Enter the percentage of site slope, the direction of site slope, and the percentage of the surrounding terrain average slope.

VI-09 Flood Potential: Enter the boundary year for the floodplain in which the site is located. Sites flooded annually are in a 1 (one) year floodplain. Other examples include 10, 20, 50, 100, 500, etc., indicating the probability of flooding within that time period.

VI-10 Site is on Barrier Island, Coastal High Hazard Area, Riverine Floodway: If site is located in one of these areas, check this box.

VI-11 Distance to Wetlands: If applicable, enter the distance in miles to the nearest tenth, hundredth, or thousandth (as needed to indicate the precision required) from the site to the closest wetlands (five acre minimum) for Estuarine and Other types of wetlands.

VI-12 Distance to Critical Habitat: If applicable, enter the distance in miles to the nearest tenth, hundredth, or thousandth (as needed to indicate the precision required) from the site to the nearest critical habitat

of an endangered species. Enter the name(s) of the endangered species.

VI-13 Land Use in Vicinity: Enter the distance in miles to the nearest tenth, hundredth, or thousandth (as needed to indicate the precision required) to the nearest Commercial/Industrial area; Residential Area, National/State Parks, Forests, or Wildlife Reserves; or Agricultural Lands, Prime Ag Land and Ag Land. Prime Ag Land is that crop, pasture, range, or forest land which produces the highest yield in relation to inputs. Ag Land is the remaining agricultural land, frequently considered marginal.

VI-14 Description of Site in Relation to Surrounding Topography: Provide a narrative description of significant or unusual aspects of the surrounding topography in relation to the site. Examples might include: site is in a valley surrounded on all sides by mountains, site is at edge of a river or stream which floods frequently, etc.

VII. Sources of Information: List the sources used to obtain information for this form. Sources cited may include: sample analysis, reports, inspections, official records, or other documentation. Sources cited provide the basis for information entered on the form and may be used to obtain further information about the site.

Part 6 Sample and Field Information

*I. Identification: Refer to Part 1–I.

II. Samples Taken

II-01 Number of Samples Taken: Next to each sample type enter the number of samples of that type taken.

II-02 Samples Sent To: Enter the name of the laboratory or other facility where the samples were sent for analysis.

II-03 Estimated Date Results Available: Enter the estimated date the results are expected to be available.

III. Field Measurements Taken

III-01 Type: Enter the type, e.g., radioactivity, explosivity, organic vapor or gas detection and analysis, reagent type gas detection, of each field measurement taken.

III-02 Comments: Describe results of field measurements, whether they were taken on or off site, and if applicable, the type of disposal facility tested, e.g., drum, surface impoundment, landfill.

IV. Photographs and Maps

IV-01 Type: If photographs of the site have been taken, check the appropriate box(es) to indicate the type.

IV-02 In Custody Of: Enter the name of the organization or person who has custody of the photographs.

IV-03 Maps: Check the appropriate box to indicate that maps of the site area have been prepared or obtained.

IV-04 Location of Maps: If site maps are available, indicate their location, e.g., Region 1 Air and Hazardous Materials Division.

V. Other Field Data Collected: Provide a narrative description of any other field data collected.

VI. Sources of Information: List the sources used to obtain information for this form. Sources cited may include: sample analysis, reports, inspections, official records, or other documentation. Sources cited provide the basis for information entered on the form and may be used to obtain further information about the site.

Part 7 Owner Information

*I. Identification: Refer to Part 1–I.

II. Current Owner(s) – Parent Company: Current owner(s) and parent companies, for those owners which are companies partly or wholly owned by another company, provide locator information about responsible parties. Each Part 7 provides space for four (4) current owners and their respective parent companies. If additional space is required, complete another Part 7.

II-01 Name: Enter the legal name of the owner of the site. The owner may be a firm, government agency, association, individual, etc.

II-02 D&B Number: Where available, enter the owner's D&B (Dun and Bradstreet) number. If the current owner is a federal agency, enter the GSA identification code.

II-03 Street Address: Enter the business, mailing, or residential street address of the owner.

II-04 SIC Code: If applicable, enter the owner's primary SIC Code.

II-05 City: Enter the city of the owner's business, mailing, or residential address.

II-06 State: Enter the two character alpha FIPS code for the state of the owner's business, mailing, or residential address.

II-07 Zip Code: Enter the five digit zip code for the owner's business, mailing, or residential address.

II-08 Name: If the owner is a partly or wholly owned subsidiary of another company, enter the legal name of the owner's parent company.

II-09 D&B Number: Enter the parent company's Dun and Bradstreet number.

II-10 Street Address: Enter the business or mailing street address of the parent company.

II-11 SIC Code: If applicable, enter the parent company's primary SIC code.

II-12 City: Enter the city of the parent company's business or mailing address.

II-13 State: Enter the two character alpha FIPS code for the state of the parent company's business or mailing address.

II-14 Zip Code: Enter the five digit zip code for the parent company's business or mailing address.

III. Previous Owner(s): List previous owners in reverse chronological order, i.e., most recent first. If additional space is required, complete another Part 7.

III-01 Name: Enter the legal name of the previous owner. The previous owner may have been a firm, government agency, association, individual, etc.

III-02 D&B Number: Enter the previous owner's Dun and Bradstreet number if available. If the previous owner was a federal agency, enter the GSA identification code if available.

III-03 Street Address: Enter the business, mailing, or residential street address of the previous owner.

III-04 SIC Code: If applicable, enter the primary SIC Code of the previous owner.

III-05 City: Enter the city of the previous owner's business, mailing, or residential address.

III-06 State: Enter the two character alpha FIPS code for the state of the previous owner's business, mailing, or residential address.

III-07 Zip Code: Enter the zip code of the previous owner's business, mailing, or residential address.

IV. **Realty Owner(s):** Realty owner applies when the owner leased to another entity property which was used for the storage or disposal of hazardous waste. List current or most recent first.

IV-01 Name: Enter the legal name of the realty owner. The realty owner may be a firm, government agency, association, individual, etc.

IV-02 D&B Number: Enter the previous owner's Dun and Bradstreet number if available. If the previous owner was a federal agency, enter the GSA identification code if available.

IV-03 Street Address: Enter the realty owner's business, mailing, or residential street address.

IV-04 SIC Code: If applicable, enter the realty owner's primary SIC Code.

IV-05 City: Enter the city of the realty owner's business, mailing, or residential address.

IV-06 State: Enter the two character alpha FIPS code for the state of the realty owner's business, mailing, or residential address.

IV-07 Zip Code: Enter the zip code of the realty owner's business, mailing, or residential address.

V. **Sources of Information:** List the sources used to obtain information for this form. Sources cited may include: sample analysis, reports, inspections, official records, or other documentation. Sources cited provide the basis for information entered on the form and may be used to obtain further information about the site.

Part 8 Operator Information

*I. **Identification:** Refer to Part 1—I.

II. **Current Operator—Operator's Parent Company:** Information on operators is applicable when the operator is not the owner.

II-01 Name: Enter the legal name of the operator. The operator may be a firm, government agency, association, individual, etc.

II-02 D&B Number: Enter the operator's Dun and Bradstreet number if available. If the operator is a federal agency, enter the GSA identification code if available.

II-03 Street Address: Enter the operator's business, mailing, or residential street address.

II-04 SIC Code: If applicable, enter the operator's primary SIC Code.

II-05 City: Enter the city of the operator's business, mailing, or residential address.

II-06 State: Enter the two character alpha FIPS code for the state of the operator's business, mailing, or residential address.

II-07 Zip Code: Enter the zip code of the operator's business, mailing, or residential address.

II-08 Years of Operation: Enter the beginning and ending years (or beginning only if operations are on-going), e.g., 1932/1948, of operation at the site.

II-09 Name of Owner: Enter the name of the owner for the period cited for this operator.

II-10 Name: If applicable, enter the legal name of the operator's parent company.

II-11 D&B Number: Enter the operator's parent company Dun and Bradstreet number if available.

II-12 Street Address: Enter the operator's parent company business, mailing, or residential street address.

II-13 SIC Code: If applicable, enter the operator's parent company primary SIC Code.

II-14 City: Enter the city of the operator's parent company business, mailing, or residential address.

II-15 State: Enter the two character alpha FIPS code for the state of the operator's parent company business, mailing, or residential address.

II-16 Zip Code: Enter the zip code of the operator's parent company business, mailing, or residential address.

III. **Previous Operator(s)—Previous Operators' Parent Companies**

III-01 Name: Enter the legal name of the previous operator. The previous operator may be a firm, government agency, association, individual, etc.

III-02 D&B Number: Enter the previous operator's Dun and Bradstreet number if available. If the previous operator was a federal agency, enter the GSA identification code if available.

III-03 Street Address: Enter the previous operator's business, mailing, or residential street address.

III-04 SIC Code: If applicable, enter the previous operator's primary SIC Code.

III-05 City: Enter the city of the previous operator's business, mailing, or residential address.

III-06 State: Enter the two character alpha FIPS code for the state of the previous operator's business, mailing, or residential address.

III-07 Zip Code: Enter the zip code of the previous operator's business, mailing, or residential address.

III-08 Years of Operation: Enter the beginning and ending years of operation for this operator at the site.

III-09 Name of Owner: Enter the name of the owner for the period cited for this operator.

III-10 Name: If applicable, enter the legal name of the previous operator's parent company.

III-11 D&B Number: Enter the previous operator's parent company Dun and Bradstreet number if available.

III-12 Street Address: Enter the previous operator's parent company business, mailing, or residential street address.

III-13 SIC Code: If applicable, enter the previous operator's parent company primary SIC Code.

III-14 City: Enter the city of the previous operator's parent company business, mailing, or residential address.

III-15 State: Enter the two character alpha FIPS code for the state of the previous operator's parent company business, mailing, or residential address.

III-16 Zip Code: Enter the zip code of the previous operator's parent company business, mailing, or residential address.

IV. **Sources of Information**: List the sources used to obtain information for this form. Sources cited may include: sample analysis, reports, inspections, official records, or other documentation. Sources cited provide the basis for information entered on the form and may be used to obtain further information about the site.

Part 9 Generator/Transporter Information

*I. **Identification**: Refer to Part 1—I.

II. **On-Site Generator**: A company or agency, located within the contiguous area of the site and generating waste disposed on the site, is entered here.

II-01 Name: If there is an on-site generator, enter the legal name of the on-site generator. The on-site generator may be a firm or government agency.

II-02 D&B Number: Where available, enter the on-site generator's D&B (Dun and Bradstreet) number. If the on-site generator is a federal agency, enter the GSA identification code.

II-03 Street Address: Enter the business or mailing street address of the on-site generator.

II-04 SIC Code: If applicable, enter the on-site generator's primary SIC Code.

II-05 City: Enter the city of the on-site generator's business or mailing address.

II-06 State: Enter the two character alpha FIPS code for the state of the on-site generator's business or mailing address.

II-07 Zip Code: Enter the five digit zip code for the on-site generator's business or mailing address.

III. **Off-Site Generator(s)**: Those companies or agencies off-site who have generated waste which has been disposed at the site are listed here.

III-01 Name: Enter the legal name of the off-site generator. The off-site generator may be a firm or government agency.

III-02 D&B Number: Where available, enter the off-site generator's D&B (Dun and Bradstreet) number. If the off-site generator is a federal agency, enter the GSA identification code.

III-03 Street Address: Enter the business or mailing street address of the off-site generator.

III-04 SIC Code: If applicable, enter the off-site generator's primary SIC Code.

III-05 City: Enter the city of the off-site generator's business or mailing address.

III-06 State: Enter the two character alpha FIPS code for the state of the off-site generator's business or mailing address.

III-07 Zip Code: Enter the five digit zip code for the off-site generator's business or mailing address.

IV. **Transporter(s)**: Those carriers who are known to have transported waste to the site are listed here.

IV-01 Name: Enter the legal name of the transporter. The transporter may be a firm, government agency, association, individual, etc.

IV-02 D&B Number: Where available, enter the transporter's D&B (Dun and Bradstreet) number. If the transporter is a federal agency, enter the GSA identification code.

IV-03 Street Address: Enter the business, mailing, or residential street address of the transporter.

IV-04 SIC Code: If applicable, enter the transporter's primary SIC Code.

IV-05 City: Enter the city of the transporter's business, mailing, or residential address.

IV-06 State: Enter the two character alpha FIPS code for the state of the transporter's business, mailing, or residential address.

IV-07 Zip Code: Enter the five digit zip code for the transporter's business, mailing, or residential address.

V. **Sources of Information**: List the sources used to obtain information for this form. Sources cited may include: sample analysis, reports, inspections, official records, or other documentation. Sources cited provide the basis for information entered on the form and may be used to obtain further information about the site.

Part 10 Past Response Activities

*I. **Identification**: Refer to Part 1—I.

II. **Past Response Activities**

II-01 Past Response Activities: Check the appropriate box(es) to indicate response activities initiated prior to the passage of CERCLA, December, 1980.

II-02 Date: Enter the start date (or approximate date) of the activity.

II-03 Agency: Enter the name of the Agency responsible for the activity.

II-04 Description: Provide a brief narrative description of the activity.

III. **Sources of Information**: List the sources used to obtain information for this form. Sources cited may include: sample analysis, reports, inspections, official records, or other documentation. Sources cited provide the basis for information entered on the form and may be used to obtain further information about the site.

Part 11 Enforcement Information

*I. **Identification**: Refer to Part 1–I.

II. **Enforcement Information**

II-01 **Past Regulatory/Enforcement Action**: Check the appropriate box to indicate past regulatory or enforcement action at the federal, state, or local level related to this site.

II-02 **Description of Federal, State, Local Regulatory or Enforcement Action**: Provide a narrative description of regulatory or enforcement action to date. Do not include any enforcement action contemplated in the process of development.

III. **Sources of Information**: List the sources used to obtain information for this form. Sources cited may include: sample analysis, reports, inspections, official records, or other documentation. Sources cited provide the basis for information entered on the form and may be used to obtain further information about the site.

APPENDIX

I. FEEDSTOCKS

CAS Number	Chemical Name
1. 7664-41-7	Ammonia
2. 7440-36-0	Antimony
3. 1309-64-4	Antimony Trioxide
4. 7440-38-2	Arsenic
5. 1327-53-3	Arsenic Trioxide
6. 21109-95-5	Barium Sulfide
7. 7726-95-6	Bromine
8. 106-99-0	Butadiene
9. 7440-43-9	Cadmium
10. 7782-50-5	Chlorine
11. 12737-27-8	Chromite
12. 7440-47-3	Chromium
13. 7440-48-4	Cobalt
14. 1317-38-0	Cupric Oxide
15. 7758-98-7	Cupric Sulfate
16. 1317-39-1	Cuprous Oxide
17. 74-85-1	Ethylene
18. 7647-01-0	Hydrochloric Acid
19. 7664-39-3	Hydrogen Fluoride
20. 1335-25-7	Lead Oxide
21. 7439-97-6	Mercury
22. 74-82-8	Methane
23. 91-20-3	Napthalene
24. 7440-02-0	Nickel
25. 7697-37-2	Nitric Acid
26. 7723-14-0	Phosphorus
27. 7778-50-9	Potassium Dichromate
28. 1310-58-3	Potassium Hydroxide
29. 115-07-1	Propylene
30. 10588-01-9	Sodium Dichromate
31. 1310-73-2	Sodium Hydroxide
32. 7646-78-8	Stannic Chloride
33. 7772-99-8	Stannous Chloride
34. 7664-93-9	Sulfuric Acid
35. 108-88-3	Toluene
36. 1330-20-7	Xylene
37. 7646-85-7	Zinc Chloride
38. 7733-02-0	Zinc Sulfate

II. HAZARDOUS SUBSTANCES

CAS Number	Chemical Name
1. 75-07-0	Acetaldehyde
2. 64-19-7	Acetic Acid
3. 108-24-7	Acetic Anhydride
4. 75-86-5	Acetone Cyanohydrin
5. 506-96-7	Acetyl Bromide
6. 75-36-5	Acetyl Chloride
7. 107-02-8	Acrolein
8. 107-13-1	Acrylonitrile
9. 124-04-9	Adipic Acid
10. 309-00-2	Aldrin
11. 10043-01-3	Aluminum Sulfate
12. 107-18-6	Allyl Alcohol
13. 107-05-1	Allyl Chloride
14. 7664-41-7	Ammonia
15. 631-61-8	Ammonium Acetate
16. 1863-63-4	Ammonium Benzoate
17. 1066-33-7	Ammonium Bicarbonate
18. 7789-09-5	Ammonium Bichromate
19. 1341-49-7	Ammonium Bifluoride
20. 10192-30-0	Ammonium Bisulfite
21. 1111-78-0	Ammonium Carbamate
22. 12125-02-9	Ammonium Chloride
23. 7788-98-9	Ammonium Chromate
24. 3012-65-5	Ammonium Citrate, Dibasic
25. 13826-83-0	Ammonium Fluoborate
26. 12125-01-8	Ammonium Fluoride
27. 1336-21-6	Ammonium Hydroxide
28. 6009-70-7	Ammonium Oxalate
29. 16919-19-0	Ammonium Silicofluoride
30. 7773-06-0	Ammonium Sulfamate
31. 12135-76-1	Ammonium Sulfide
32. 10196-04-0	Ammonium Sulfite
33. 14307-43-8	Ammonium Tartrate
34. 1762-95-4	Ammonium Thiocyanate
35. 7783-18-8	Ammonium Thiosulfate
36. 628-63-7	Amyl Acetate
37. 62-53-3	Aniline
38. 7647-18-9	Antimony Pentachloride
39. 7789-61-9	Antimony Tribromide
40. 10025-91-9	Antimony Trichloride
41. 7783-56-4	Antimony Trifluoride
42. 1309-64-4	Antimony Trioxide
43. 1303-32-8	Arsenic Disulfide
44. 1303-28-2	Arsenic Pentoxide
45. 7784-34-1	Arsenic Trichloride
46. 1327-53-3	Arsenic Trioxide
47. 1303-33-9	Arsenic Trisulfide
48. 542-62-1	Barium Cyanide
49. 71-43-2	Benzene
50. 65-85-0	Benzoic Acid
51. 100-47-0	Benzonitrile
52. 98-88-4	Benzoyl Chloride
53. 100-44-7	Benzyl Chloride
54. 7440-41-7	Beryllium
55. 7787-47-5	Beryllium Chloride
56. 7787-49-7	Beryllium Fluoride
57. 13597-99-4	Beryllium Nitrate
58. 123-86-4	Butyl Acetate
59. 84-74-2	n-Butyl Phthalate
60. 109-73-9	Butylamine
61. 107-92-6	Butyric Acid
62. 543-90-8	Cadmium Acetate
63. 7789-42-6	Cadmium Bromide
64. 10108-64-2	Cadmium Chloride
65. 7778-44-1	Calcium Arsenate
66. 52740-16-6	Calcium Arsenite
67. 75-20-7	Calcium Carbide
68. 13765-19-0	Calcium Chromate
69. 592-01-8	Calcium Cyanide
70. 26264-06-2	Calcium Dodecylbenzene Sulfonate
71. 7778-54-3	Calcium Hypochlorite
72. 133-06-2	Captan
73. 63-25-2	Carbaryl
74. 1563-66-2	Carbofuran
75. 75-15-0	Carbon Disulfide
76. 56-23-5	Carbon Tetrachloride
77. 57-74-9	Chlordane
78. 7782-50-5	Chlorine
79. 108-90-7	Chlorobenzene
80. 67-66-3	Chloroform
81. 7790-94-5	Chlorosulfonic Acid
82. 2921-88-2	Chlorpyrifos
83. 1066-30-4	Chromic Acetate
84. 7738-94-5	Chromic Acid
85. 10101-53-8	Chromic Sulfate
86. 10049-05-5	Chromous Chloride
87. 544-18-3	Cobaltous Formate
88. 14017-41-5	Cobaltous Sulfamate
89. 56-72-4	Coumaphos
90. 1319-77-3	Cresol
91. 4170-30-3	Crotonaldehyde
92. 142-71-2	Cupric Acetate
93. 12002-03-8	Cupric Acetoarsenite
94. 7447-39-4	Cupric Chloride
95. 3251-23-8	Cupric Nitrate
96. 5893-66-3	Cupric Oxalate
97. 7758-99-7	Cupric Sulfate
98. 10380-29-7	Cupric Sulfate Ammoniated
99. 815-82-7	Cupric Tartrate
100. 506-77-4	Cyanogen Chloride
101. 110-82-7	Cyclohexane
102. 94-75-7	2,4-D Acid
103. 94-11-1	2,4-D Esters
104. 50-29-3	DDT
105. 333-41-5	Diazinon
106. 1918-00-9	Dicamba
107. 1194-65-6	Dichlobenil
108. 117-80-6	Dichlone
109. 25321-22-6	Dichlorobenzene (all isomers)
110. 26638-19-7	Dichloropropane (all isomers)
111. 26952-23-8	Dichloropropene (all isomers)
112. 8003-19-8	Dichloropropene-Dichloropropane Mixture
113. 75-99-0	2-2-Dichloropropionic Acid
114. 62-73-7	Dichlorvos
115. 60-57-1	Dieldrin
116. 109-89-7	Diethylamine
117. 124-40-3	Dimethylamine
118. 25154-54-5	Dinitrobenzene (all isomers)
119. 51-28-5	Dinitrophenol
120. 25321-14-6	Dinitrotoluene (all isomers)
121. 85-00-7	Diquat
122. 298-04-4	Disulfoton
123. 330-54-1	Diuron
124. 27176-87-0	Dodecylbenzenesulfonic Acid
125. 115-29-7	Endosulfan (all isomers)
126. 72-20-8	Endrin and Metabolites
127. 106-89-8	Epichlorohydrin
128. 563-12-2	Ethion
129. 100-41-4	Ethyl Benzene
130. 107-15-3	Ethylenediamine
131. 106-93-4	Ethylene Dibromide
132. 107-06-2	Ethylene Dichloride
133. 60-00-4	EDTA
134. 1185-57-5	Ferric Ammonium Citrate
135. 2944-67-4	Ferric Ammonium Oxalate
136. 7705-08-0	Ferric Chloride

II. HAZARDOUS SUBSTANCES

CAS Number	Chemical Name
137. 7783-50-8	Ferric Fluoride
138. 10421-48-4	Ferric Nitrate
139. 10028-22-5	Ferric Sulfate
140. 10045-89-3	Ferrous Ammonium Sulfate
141. 7758-94-3	Ferrous Chloride
142. 7720-78-7	Ferrous Sulfate
143. 206-44-0	Fluoranthene
144. 50-00-0	Formaldehyde
145. 64-18-6	Formic Acid
146. 110-17-8	Fumaric Acid
147. 98-01-1	Furfural
148. 86-50-0	Guthion
149. 76-44-8	Heptachlor
150. 118-74-1	Hexachlorobenzene
151. 87-68-3	Hexachlorobutadiene
152. 67-72-1	Hexachloroethane
153. 70-30-4	Hexachlorophene
154. 77-47-4	Hexachlorocyclopentadiene
155. 7647-01-0	Hydrochloric Acid (Hydrogen Chloride)
156. 7664-39-3	Hydrofluoric Acid (Hydrogen Fluoride)
157. 74-90-8	Hydrogen Cyanide
158. 7783-06-4	Hydrogen Sulfide
159. 78-79-5	Isoprene
160. 42504-46-1	Isopropanolamine Dodecylbenzenesulfonate
161. 115-32-2	Kelthane
162. 143-50-0	Kepone
163. 301-04-2	Lead Acetate
164. 3687-31-8	Lead Arsenate
165. 7758-95-4	Lead Chloride
166. 13814-96-5	Lead Fluoborate
167. 7783-46-2	Lead Fluoride
168. 10101-63-0	Lead Iodide
169. 18256-99-9	Lead Nitrate
170. 7428-48-0	Lead Stearate
171. 15739-80-7	Lead Sulfate
172. 1314-87-0	Lead Sulfide
173. 592-87-0	Lead Thiocyanate
174. 58-89-9	Lindane
175. 14307-35-8	Lithium Chromate
176. 121-75-5	Malthion
177. 110-16-7	Maleic Acid
178. 108-31-6	Maleic Anhydride
179. 2032-65-7	Mercaptodimethur
180. 592-04-1	Mercuric Cyanide
181. 10045-94-0	Mercuric Nitrate
182. 7783-35-9	Mercuric Sulfate
183. 592-85-8	Mercuric Thiocyanate
184. 10415-75-5	Mercurous Nitrate
185. 72-43-5	Methoxychlor
186. 74-93-1	Methyl Mercaptan
187. 80-62-6	Methyl Methacrylate
188. 298-00-0	Methyl Parathion
189. 7786-34-7	Mevinphos
190. 315-18-4	Mexacarbate
191. 75-04-7	Monoethylamine
192. 74-89-5	Monomethylamine
193. 300-76-5	Naled
194. 91-20-3	Naphthalene
195. 1338-24-5	Naphthenic Acid
196. 7440-02-0	Nickel
197. 15699-18-0	Nickel Ammonium Sulfate
198. 37211-05-5	Nickel Chloride
199. 12054-48-7	Nickel Hydroxide
200. 14216-75-2	Nickel Nitrate
201. 7786-81-4	Nickel Sulfate
202. 7697-37-2	Nitric Acid
203. 98-95-3	Nitrobenzene
204. 10102-44-0	Nitrogen Dioxide
205. 25154-55-6	Nitrophenol (all isomers)
206. 1321-12-6	Nitrotoluene
207. 30525-89-4	Paraformaldehyde
208. 56-38-2	Parathion
209. 608-93-5	Pentachlorobenzene
210. 87-86-5	Pentachlorophenol
211. 85-01-8	Phenanthrene
212. 108-95-2	Phenol
213. 75-44-5	Phosgene
214. 7664-38-2	Phosphoric Acid
215. 7723-14-0	Phosphorus
216. 10025-87-3	Phosphorus Oxychloride
217. 1314-80-3	Phosphorus Pentasulfide
218. 7719-12-2	Phosphorus Trichloride
219. 7784-41-0	Potassium Arsenate
220. 10124-50-2	Potassium Arsenite
221. 7778-50-9	Potassium Bichromate
222. 7789-00-6	Potassium Chromate
223. 7722-64-7	Potassium Permanganate
224. 2312-35-8	Propargite
225. 79-09-4	Propionic Acid
226. 123-62-6	Propionic Anhydride
227. 1336-36-3	Polychlorinated Biphenyls
228. 151-50-8	Potassium Cyanide
229. 1310-58-3	Potassium Hydroxide
230. 75-56-9	Propylene Oxide
231. 121-29-9	Pyrethrins
232. 91-22-5	Quinoline
233. 108-46-3	Resorcinol
234. 7446-08-4	Selenium Oxide
235. 7761-88-8	Silver Nitrate
236. 7631-89-2	Sodium Arsenate
237. 7784-46-5	Sodium Arsenite
238. 10588-01-9	Sodium Bichromate
239. 1333-83-1	Sodium Bifluoride
240. 7631-90-5	Sodium Bisulfite
241. 7775-11-3	Sodium Chromate
242. 143-33-9	Sodium Cyanide
243. 25155-30-0	Sodium Dodecylbenzene Sulfonate
244. 7681-49-4	Sodium Fluoride
245. 16721-80-5	Sodium Hydrosulfide
246. 1310-73-2	Sodium Hydroxide
247. 7681-52-9	Sodium Hypochlorite
248. 124-41-4	Sodium Methylate
249. 7632-00-0	Sodium Nitrate
250. 7558-79-4	Sodium Phosphate, Dibasic
251. 7601-54-9	Sodium Phosphate, Tribasic
252. 10102-18-8	Sodium Selenite
253. 7789-06-2	Strontium Chromate
254. 57-24-9	Strychnine and Salts
255. 100-420-5	Styrene
256. 12771-08-3	Sulfur Monochloride
257. 7664-93-9	Sulfuric Acid
258. 93-76-5	2,4,5-T Acid
259. 2008-46-0	2,4,5-T Amines
260. 93-79-8	2,4,5-T Esters
261. 13560-99-1	2,4,5-T Salts
262. 93-72-1	2,4,5-TP Acid
263. 32534-95-5	2,4,5-TP Acid Esters
264. 72-54-8	TDE
265. 95-94-3	Tetrachlorobenzene
266. 127-18-4	Tetrachloroethane
267. 78-00-2	Tetraethyl Lead
268. 107-49-3	Tetraethyl Pyrophosphate
269. 7446-18-6	Thallium (I) Sulfate
270. 108-88-3	Toluene
271. 8001-35-2	Toxaphene
272. 12002-48-1	Trichlorobenzene (all isomers)
273. 52-68-6	Trichlorfon
274. 25323-89-1	Trichloroethane (all isomers)
275. 79-01-6	Trichloroethylene
276. 25167-82-2	Trichlorophenol (all isomers)
277. 27323-41-7	Triethanolamine Dodecylbenzenesulfonate
278. 121-44-8	Triethylamine
279. 75-50-3	Trimethylamine
280. 541-09-3	Uranyl Acetate
281. 10102-06-4	Uranyl Nitrate
282. 1314-62-1	Vanadium Pentoxide
283. 27774-13-6	Vanadyl Sulfate
284. 108-05-4	Vinyl Acetate
285. 75-35-4	Vinylidene Chloride
286. 1300-71-6	Xylenol
287. 557-34-6	Zinc Acetate
288. 52628-25-8	Zinc Ammonium Chloride
289. 1332-07-6	Zinc Borate
290. 7699-45-8	Zinc Bromide
291. 3486-35-9	Zinc Carbonate
292. 7646-85-7	Zinc Chloride
293. 557-21-1	Zinc Cyanide
294. 7783-49-3	Zinc Fluoride
295. 557-41-6	Zinc Formate
296. 7779-86-4	Zinc Hydrosulfite
297. 7779-88-6	Zinc Nitrate
298. 127-82-2	Zinc Phenolsulfonate
299. 1314-84-7	Zinc Phosphide
300. 16871-71-9	Zinc Silicofluoride
301. 7733-02-0	Zinc Sulfate
302. 13746-89-9	Zirconium Nitrate
303. 16923-95-8	Zirconium Potassium Fluoride
304. 14644-61-2	Zirconium Sulfate
305. 10026-11-6	Zirconium Tetrachloride

DATE REPORT ACCEPTED 3-13-91
POSITION NFRAD
SIGNATURE Grace D Townsend

D-586-7-0-20

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DRAFT REPORT

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INTERNATIONAL PAPER COMPANY
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FOR THE

WASTE MANAGEMENT DIVISION
U.S. ENVIRONMENTAL PROTECTION AGENCY

FEBRUARY 26, 1991

NUS CORPORATION
SUPERFUND DIVISION

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EXECUTIVE SUMMARY

International Paper Company is a large pulp and paper mill that has operated in north Mobile, Alabama, since 1929. The facility has operated two surface impoundments, one of which is currently closed. These impoundments were used to dispose of various wastes of the pulping process, including "green liquor sludge". In addition, the facility operated an onsite landfill from 1929 to 1981. This landfill received paper waste, construction debris, mill wastes, and possibly green liquor sludge.

Groundwater in the Mobile area occurs under both water-table and semi-confined conditions. The principal water-bearing formations in the area are the Quaternary alluvium and the Miocene sediments. These deposits are hydraulically connected and are considered to be one aquifer. The depth to groundwater in the facility area is estimated to be between 10-20 feet below land surface. Groundwater use in the area is extremely limited, however, to only a few private wells in rural areas around Mobile. There are virtually no wells within 4 miles of International Paper Company.

The primary pathway of concern associated with the International Paper Company is the surface water pathway. The facility is surrounded on the northwest, northeast and eastern sides by surface water that flows into the Mobile River and subsequently the Mobile Bay. Although drinking water supplies are not threatened by a potential release from this site, portions of the 4-mile radius encompass part of the highly sensitive Mobile Delta. This area supports numerous recreational activities, major commercial fisheries, and an abundance of wildlife, including endangered plant and animal species. A number of industries along the Mobile River, including International Paper Company, are responsible for some of the pollution load that poses a potential threat to this sensitive area.

Analysis of samples collected during the field investigation revealed elevated levels of several inorganic contaminants in onsite soil samples. Most of these contaminants were also detected in the sediment samples collected from Hog Bayou and Chickasaw Creek. Some of the inorganics detected may be related to the green liquor sludge disposed of in the surface impoundments and possibly the former landfill.

Because International Paper Company is located in a heavily industrial area it is not possible to attribute contamination solely to the facility; however, the analytical results do suggest that the offsite contamination may be linked to the site. In addition, although drinking water supplies in the area are unthreatened by the facility, potential contamination of the Mobile Delta remains a concern.

Therefore, FIT 4 recommends that Phase I of a Listing Site Inspection be initiated for International Paper Company.

1.0 INTRODUCTION

The NUS Corporation Region 4 Field Investigation Team (FIT) was tasked by the U.S. Environmental Protection Agency (EPA), Waste Management Division to conduct a Screening Site Inspection (SSI), Phase II, at the International Paper Company site in Mobile, Mobile County, Alabama. The investigation was performed under the authority of the Comprehensive Environmental Response Compensation and Liability Act of 1980 (CERCLA) and the Superfund Amendments and Reauthorization Act of 1986 (SARA). The task was performed to satisfy the requirements stated in Technical Directive Document (TDD) number F4-9002-66. The field investigation was conducted on May 2, 1990.

1.1 OBJECTIVES

The objectives of this inspection were to determine the nature of contaminants present at the site and to determine if a release of these substances has occurred or may occur. Further, this inspection sought to determine the possible pathways by which contamination could migrate from the site and the populations and environments it would potentially affect. Through these objectives, a recommendation was made regarding future activities at the site.

1.2 SCOPE OF WORK

The objectives were achieved through the completion of a number of specific tasks. These activities were to:

- Obtain and review relevant background materials.
- Obtain information on local water systems.
- Evaluate target population potentially affected via the groundwater, surface water, air, and soil exposure pathways.
- Determine location and distance to nearest potable well.

- Develop a site sketch, to scale.

- Collect environmental samples.

2.0 SITE CHARACTERIZATION

2.1 SITE BACKGROUND AND HISTORY

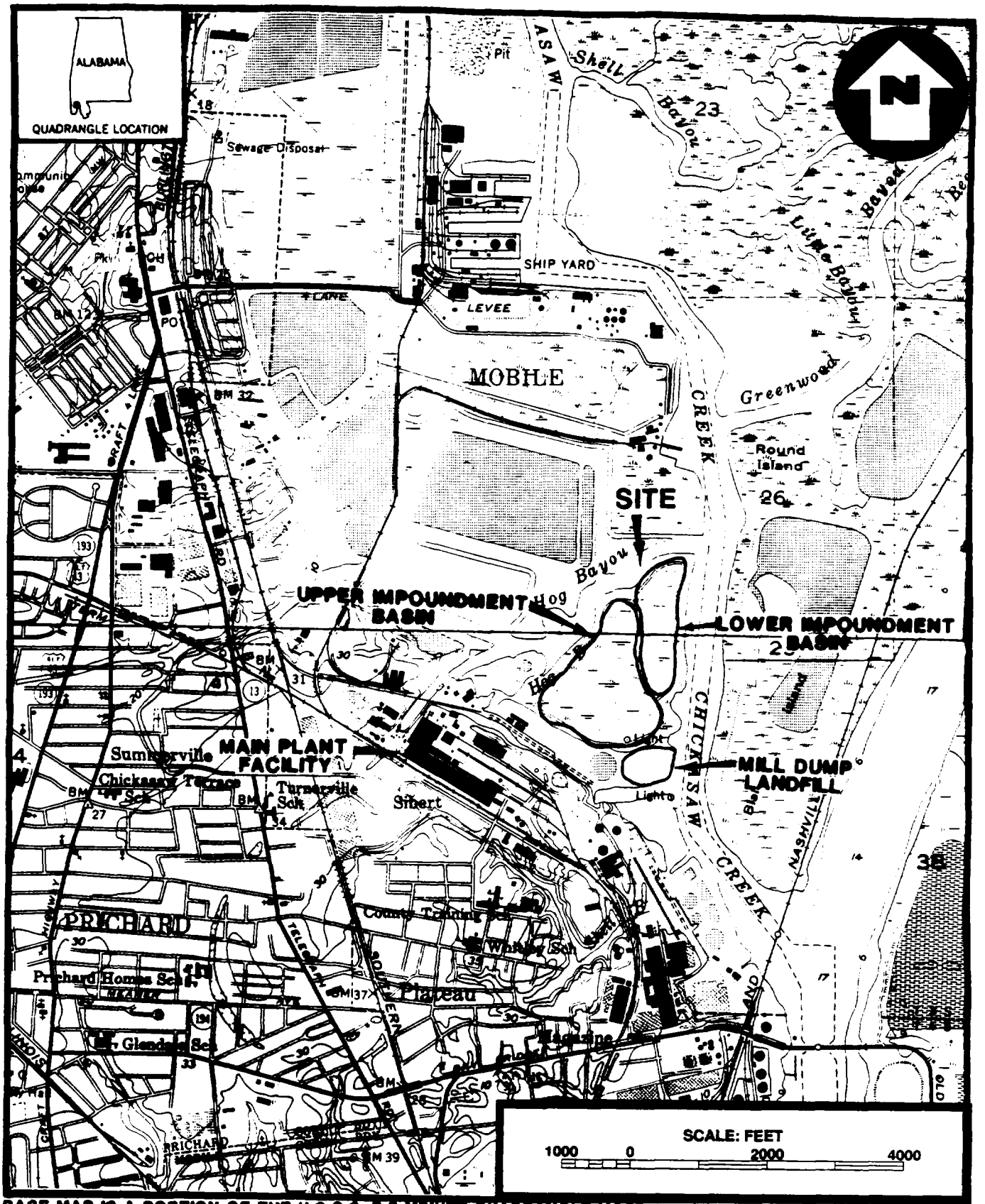
International Paper Company is located in north Mobile, Alabama (Figure 1). The 75-acre facility is a large pulp and paper mill, which has been owned and operated by International Paper Company since 1929 (Ref. 1). The company operated an onsite landfill from 1929 to 1981 (Ref. 2). This landfill, also known as Mill Dump, covered 14.5 acres and received paper waste, construction debris and mill wastes (Ref. 3). The landfill may also have received "green liquor sludge", a by-product of the pulp process (Ref. 2). The landfill was closed around 1984 (Ref. 4).

The facility also operated two surface impoundments. One of these, known as the Lower Impoundment Basin, was closed at about the same time as the landfill (Refs. 3, 4). The lower impoundment covered 32.6 acres and was used for wastewater treatment (Ref. 3). The other impoundment, known as the Upper Impoundment Basin, is still in use, although a facility representative stated that the company plans to close this impoundment in early 1991 (Refs. 2, 4). The upper impoundment covers 50 acres, is 10 to 12 feet deep, and has been in use since 1955 for disposal of fiber, lime mud, and green liquor sludge (Ref. 2). Since 1987, however, the facility's wastewater treatment sludge has been disposed of at International Paper's landfill in Chunchulla, Alabama (Ref. 5).

File material indicates that small amounts of solvents are used in the machine shop on site. They are recycled, however, and are not manifested off site (Ref. 2). International Paper also uses cresylic acid tar as a boiler fuel (Ref. 6).

International Paper Company filed a CERCLA 103(c) Notification in June 1981 for unknown wastes from pulp and paper mill operations (Ref. 1). According to a facility representative, no RCRA Part A Application was ever filed and there are no RCRA facilities in the paper division of the facility (Ref. 4). State records confirm that International Paper Company holds no RCRA status for the Mobile paper mill; however, the company's research and development laboratory, located at the same address, has small-quantity generator status (Ref. 7).

International Paper Company holds a National Pollution Discharge Elimination System (NPDES) permit (no. AL0002780) for this facility. According to state records, the effluent is carried via a pipeline to the Mobile River near downtown Mobile where it is discharged (Ref. 8). The facility also



BASE MAP IS A PORTION OF THE U.S.G.S. 7.5 MINUTE QUADRANGLE MOBILE 1982, CHICKASAW 1982, ALABAMA.

SITE LOCATION MAP
INTERNATIONAL PAPER COMPANY
MOBILE, MOBILE COUNTY, ALABAMA

FIGURE 1

NUS CORPORATION

holds 15 to 20 air permits, but there have been no major violations of either the air permits or the NPDES permit, according to the state (Refs. 8, 9).

2.2 SITE DESCRIPTION

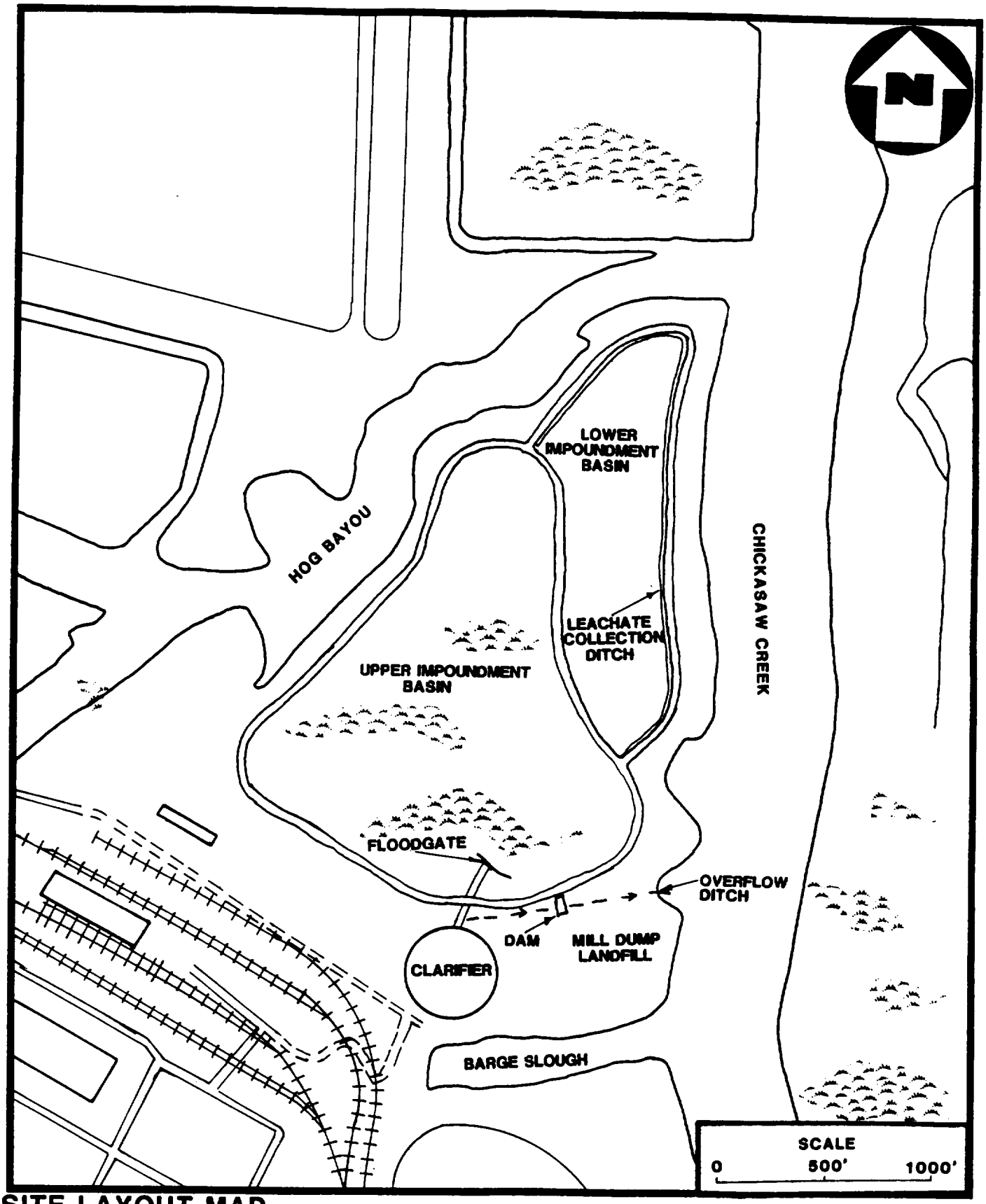
2.2.1 Site Features

The International Paper Company plant is located on Papermill Road in an industrial section of north Mobile, about 1 mile west of the Mobile River (Appendix A). The facility offices and plant area are located directly on Papermill Road. The surface impoundments and closed landfill are located along Chickasaw Creek, directly northeast of the main facility. A barge slough, is located directly south of the landfill where barges carrying timber are unloaded (Figure 2).

The closed Mill Dump landfill is approximately 40 feet high and is well vegetated with grass. According to the closure plan for this disposal area, the landfill was to be graded to a mounded shape with a minimum of 2 percent slopes and maximum side slopes no steeper than 20 percent. The cap was to be composed of a mixture of imported sandy soil (20 to 30 percent), flume grit (35 to 40 percent), and coal-filter cake and bark ash (35 to 40 percent). A grass cover was to be established on top of the cap (Ref. 3). From observations during the field investigation, the closure plan appeared to have been carried out. According to a facility representative, the landfill was probably unlined (Ref. 4).

Most of the waste deposited in the Lower Impoundment Basin was placed in the western, unvegetated portion of the impoundment. The eastern portion was heavily vegetated with undergrowth and large trees. When the impoundment was closed, the heavy vegetation to the east was left in place to reduce leachate formation, and the western portion was regraded, capped and seeded in the same manner as the landfill (Ref. 3). The lower impoundment is bordered on the east by Chickasaw Creek, and on the west by Hog Bayou. A leachate collection ditch was installed between the impoundment and the dam that surrounds the impoundment to prevent contamination from entering these two surface waters. During the field investigation, vegetation was heavy and healthy on both sides of the dam surrounding the impoundment (Ref. 5). According to a facility representative, the lower impoundment may have had a clay liner (Ref. 4).

The Upper Impoundment Basin currently receives the green liquor sludge. A pipe running above ground from the plant carries wastewater to the impoundment. The wastewater circulates around the impoundment, through a clarifier and back into the impoundment. During the field investigation, the contents of the impoundment were noted as having a greenish gray appearance,



SITE LAYOUT MAP
INTERNATIONAL PAPER COMPANY
MOBILE, MOBILE COUNTY, ALABAMA

FIGURE 2

NUS CORPORATION

and much of the vegetation in the impoundment was dead or stressed due to the high pH of the water. A 5-foot gravel berm surrounded the deepest portion of the impoundment where most of the waste is concentrated. A dike surrounds the entire upper impoundment (Refs. 4, 5).

Prior to the installation of a wastewater treatment system, overflow from the upper impoundment was diverted to Chickasaw Creek via a ditch that ran along the western and northern sides of the Mill Dump landfill. A dam was later installed in the ditch to prevent overflow from entering the creek (Figure 2).

2.2.2 Waste Characteristics

Pulp is the raw material for the production of paper, paperboard, fiberboard and other similar products. The Kamyr continuous kraft pulping system is a widely used process of producing wood pulp. Wood chips are steamed, then pressurized and mixed with pulping liquors. The chips are then "digested" by heating and agitating the chips and liquors to achieve fiber separation (Ref. 10, pp. 379, 399-400).

The kraft pulping system depends on an associated recovery process for producing the digestion liquors. "Black liquor" is the used liquor separated from the pulp after processing is completed. The black liquor then undergoes evaporation and combustion for the recovery of inorganic chemicals as a smelt, which is later converted to "white liquor" for the next digestion. "Green liquor" is the solution obtained when the smelt is dissolved, and it contains an insoluble residue called dregs, which gives it a dark green appearance. The dregs contain a small amount of carbon plus a number of inorganic constituents, including iron sulfide, manganese dioxide, calcium carbonate, and magnesium aluminum silicate. These constituents originate in the wood and the process water or result from the corrosion of equipment (Ref. 10, pp. 401, 404-405).

The green liquor is separated from the dregs, and the clarified green liquor undergoes a causticizing reaction with calcium carbonate to form the white liquor for the next pulping process. Lime mud is the by-product of this reaction after the white liquor is removed (Ref. 10, p. 405).

International Paper used their surface impoundments to dispose of green liquor sludges and lime mud. In addition, the landfill may have received some similar wastes. Available file material contains no record of the exact quantity or nature of wastes disposed of.

3.0 REGIONAL POPULATIONS AND ENVIRONMENTS

3.1 POPULATION AND LAND USE

3.1.1 Population

International Paper Company is located in the densely populated urban area of north Mobile, Alabama. The facility is situated in a strip of heavy industry that runs along the Mobile River and down to the Mobile Bay. The western, southwestern and southern areas of the 4-mile radius are heavily populated with residential and commercial areas. There are numerous schools within the study area, four of which are within 1 mile (Appendix A). According to the GEMS Data Base, the population within 1 mile is 4,230 and within 4 miles is 88,849 (Ref. 11).

3.1.2 Land Use

The eastern, northeastern and northern areas of the 4-mile radius are comprised mainly of extensive wetlands and surface water bodies that feed the Mobile Bay (Appendix A). These areas are part of the extensive Mobile Delta, which supports an abundance of wildlife. Over 20 endangered or threatened animal species and over 50 such plant species can be found in this area (Ref. 12, pp. 1, 21-24).

3.2 SURFACE WATER

3.2.1 Climatology

The climate of coastal Alabama is primarily humid subtropical, due to the warming influence of the Gulf of Mexico. The presence of this warm water body is a major contributor to warm, humid summers and mild winters, with a fairly consistent range of temperature extremes (Ref. 12, p. 130). The average annual rainfall in the Mobile area is 64 inches and the average annual lake evaporation is 48 inches. Thus, the net annual precipitation is 16 inches (Ref. 13, pp. 43, 63). The 1-year 24-hour rainfall is 4.7 inches (Ref. 14, p. 93).

3.2.2 Overland Drainage

Run-off from the Mill Dump landfill, the Lower Impoundment Basin and the eastern portion of the Upper Impoundment Basin would flow directly into Chickasaw Creek, which flows into the Mobile River about 1 mile south of the facility. The Mobile River then flows another 6 miles into the Mobile Bay. Run-off from the western portion of the Upper Impoundment Basin would probably enter Hog Bayou, which flows northeast around the northern tip of the Lower Impoundment Basin and enters Chickasaw Creek 1.5 miles upstream of the Mobile River (Appendix A).

3.2.3 Potentially Affected Water Bodies

3.2.3.1 Surface Water Use

No drinking water intakes are located on any of the water bodies downstream of the site (Refs. 15, 16). Recreational and commercial fishing most likely occur somewhere along the 15-stream-mile surface water pathway, although it is unlikely that heavy fishing takes place in the immediate area around the facility due to the heavy industry in the area (Appendix A, Ref. 17).

3.2.3.2 Sensitive Environments

Of primary environmental concern along the coast of Alabama are the sensitive coastal and freshwater wetland areas and surface water bodies, and the abundance of animal and plant life that thrive in them. The Mobile Bay, the Mobile Sound, portions of the Gulf of Mexico, and the thousands of acres comprising the Mobile Delta are both ecologically and economically vital to the state of Alabama (Refs. 10, 17).

The natural importance of the Mobile Delta was recognized in 1974 when the Secretary of the Interior designated 189,000 acres of it as the Mobile-Tensaw River Bottomlands National Natural Landmark. The National Park Service classified this portion of the Delta as threatened in 1977. The Mobile Delta is comprised of a mixture of open water, fresh-mixed marsh, swamp, and mixed bottomland forest. The lower 25 percent of the Delta is a treeless plain, which is a prime waterfowl habitat and a center for sport and commercial fishing (Ref. 17, p. 164). Portions of the 4-mile radius surrounding International Paper Company encompass this critical area of the Delta (Appendix A).

The commercial freshwater fishery in the state is centered in the Mobile Delta, and major estuaries are Mobile Bay and the Mississippi Sound (Ref. 17, p. 53). The commercial fishery in this area is largely sustained by estuarine-dependent species (Ref. 17, p. 64). In 1975, the dockside value of the marine

and freshwater fishery was $33.6 million, and catches included 23 species of finfish and seven species of shellfish (Ref. 17, pp. v-vi).

Recreational activities are common among both residents and tourists along coastal Alabama, due to the warm climate and abundance of surface water. These activities include swimming, fishing, picnicking, hunting, and sightseeing. In 1980, an estimated 4.4 million tourists visited Mobile and Baldwin counties, which comprise coastal Alabama (Ref. 17, p. vii).

In 1978, the National Park Service conducted a survey of the Delta to document its significance and to develop preservation alternatives. Major threats to the Delta identified by this survey included the industrial development along the west bank of the Mobile River and the cumulative effects of water pollution (Ref. 17, p. 165).

Water pollution is a serious problem in and adjacent to the Mobile Bay, due in part to the area's heavy industrial development. Principal point sources of pollution in the area are inadequate municipal sewage treatment facilities and pollution loads from paper mills and chemical plants (Refs. 12, p. 165; 17, p. viii). In 1977, there were 38 industrial process wastewater sources with National Pollution Discharge Elimination System (NPDES) permits. Most of these discharges empty into Chickasaw Creek and the Mobile River. Although the greatest volume of discharge is from the electric generating plants, most of the pollution load comes from the paper mills and chemical plants (Ref. 12, p. 55). In 1979, International Paper Company was listed as one of the 38 permitted dischargers and had the third largest discharge with 33.2 million gallons/day (mgd). Scott Paper Company, which is located adjacent to International Paper, had the largest discharge with 42.43 mgd (Ref. 12, p. 157--Table 44).

3.3 GROUNDWATER

3.3.1 Hydrogeology

Mobile County lies in the East Gulf Coastal Plain physiographic province of Southern Alabama (Ref. 18, pp. 8, 10). The area lies within the Southern Pine Hills region of this province, which is characterized by low, rounded hills developed on Pleistocene to Holocene marine terraces, flood plains, and beach deposits (Ref. 18, p. 14). Immediately underlying the area are Pleistocene marine, estuarine, deltaic, stream, and beach deposits which are collectively termed "alluvium" (Ref. 19, pp. 2, 3). These deposits are made up of beds and lenses of gravel, fine- to coarse-grained sand, silty sand, silt, clay, and carbonaceous material (Ref. 20, p. 8). The alluvium can exceed 150 feet in thickness (Refs. 19, p. 28; 20, p. 8). The bedding of these deposits is often lenticular and

interfingering, which can create hydraulic interconnections to the underlying water-bearing beds (Ref. 20, pp. 8-9). Underlying the alluvium is the Citronelle Formation of Pliocene age. This formation consists of interbedded layers and lenses of sands and clays with occasional beds of gravel. The thickness of the Citronelle can reach over 200 feet (Ref. 20, p. 5). Below the Citronelle are a series of undifferentiated Miocene sediments composed of mainly sands, clays, and sandy clays. The thickness of the Miocene sequence ranges from 200 feet in outcrop to over 3,000 feet in southern Mobile County (Ref. 20, p. 5).

Groundwater in the Mobile area occurs under both water-table and semi-confined conditions (Ref. 19, p. 28; 20, p. 9). The principal water-bearing formations in the area are the Quaternary alluvium and the Miocene sediments. These deposits are hydraulically interconnected and considered to be one aquifer, with yields ranging from 0.5 to 1.0 million gallons per day (Mgal/day) (Ref. 20, p. 9). The depth to groundwater in the facility area is estimated to be between 10 to 20 feet below land surface (bls) (Ref. 20, plate 1, Appendix A). Most high-yield wells are completed in sand and gravel beds of beach and stream deposits. The silty and clayey channel deposits generally do not yield significant amounts of water, but do allow for infiltration of water to underlying sand and gravel beds (Ref. 20, p. 9).

Discontinuous clay lenses within the Miocene deposits may retard the vertical movement of groundwater but do not completely separate the aquifers (Ref. 20, p. 9). At depths below 550 feet, the clay sediments are semi-confining, thus the aquifer acts as a confined aquifer under short-term pumpage (Refs. 19, p. 28; 20, p. 9). Wells constructed in the Miocene aquifer may yield from 0.5 to 2.0 Mgal/day (Ref. 20, p. 9). Producing wells in this aquifer range in depth from 94 to 800 feet bls (Ref. 21, p. 89).

Recharge to the aquifer system is through the infiltration of precipitation and vertical leakage through the semi-confining layers. Most of the recharge to the aquifer occurs within the boundaries of Mobile and Baldwin Counties (Ref. 20, p. 9). The direction of groundwater flow in the area is generally toward the southeast (Ref. 20, p. 10, plate 1). The estimated hydraulic conductivity for the alluvial deposits is between 1.0×10^{-3} and 1.0×10^{-5} cm/sec (Ref. 22, p. 29).

3.3.2 Aquifer Use

Groundwater use within the 4-mile radius is extremely limited. The population within 4 miles of International Paper Company is served by two water companies: the Mobile Water Department and the Prichard Water Department. Both municipalities obtain water from intakes on Eightmile Creek at West Lee Street near the Chickasaw city limits. These intakes are well upstream of International Paper

Company. The Mobile Water Department serves about 95,000 homes in Mobile County (Refs. 15, 16). The Prichard Water Department serves its own municipality as well as the city of Chickasaw, for a total of about 15,700 homes (Refs. 16, 23).

According to the Mobile Water Department, private wells are present in outlying areas. It is unlikely that any private wells are within the 4-mile site radius (Ref. 15).

4.0 FIELD INVESTIGATION

4.1 SAMPLE COLLECTION

During the field investigation, conducted on May 2, 1990, FIT 4 attempted to identify and characterize contaminants which may be present in the environment as a result of activities that were conducted at International Paper Company. To accomplish this, FIT 4 collected 10 environmental soil and sediment samples from a number of strategic locations. These locations were selected based on historical information and direct observation at the site.

4.1.1 Sample Collection Methodology

All sample collection, sample preservation, and chain-of-custody procedures used during this investigation were in accordance with the standard operating procedures as specified in Sections 3 and 4 of the Engineering Support Branch Standard Operating Procedures and Quality Assurance Manual; United States Environmental Protection Agency, Region IV, Environmental Services, Division, April 1, 1986.

4.1.2 Split Samples

Split samples were offered to representatives of the International Paper Company. The samples were accepted by Messrs. David Hitt and Pablo Vasquez. Receipt for sample forms are on file at FIT 4.

4.1.3 Description of Samples and Sample Locations

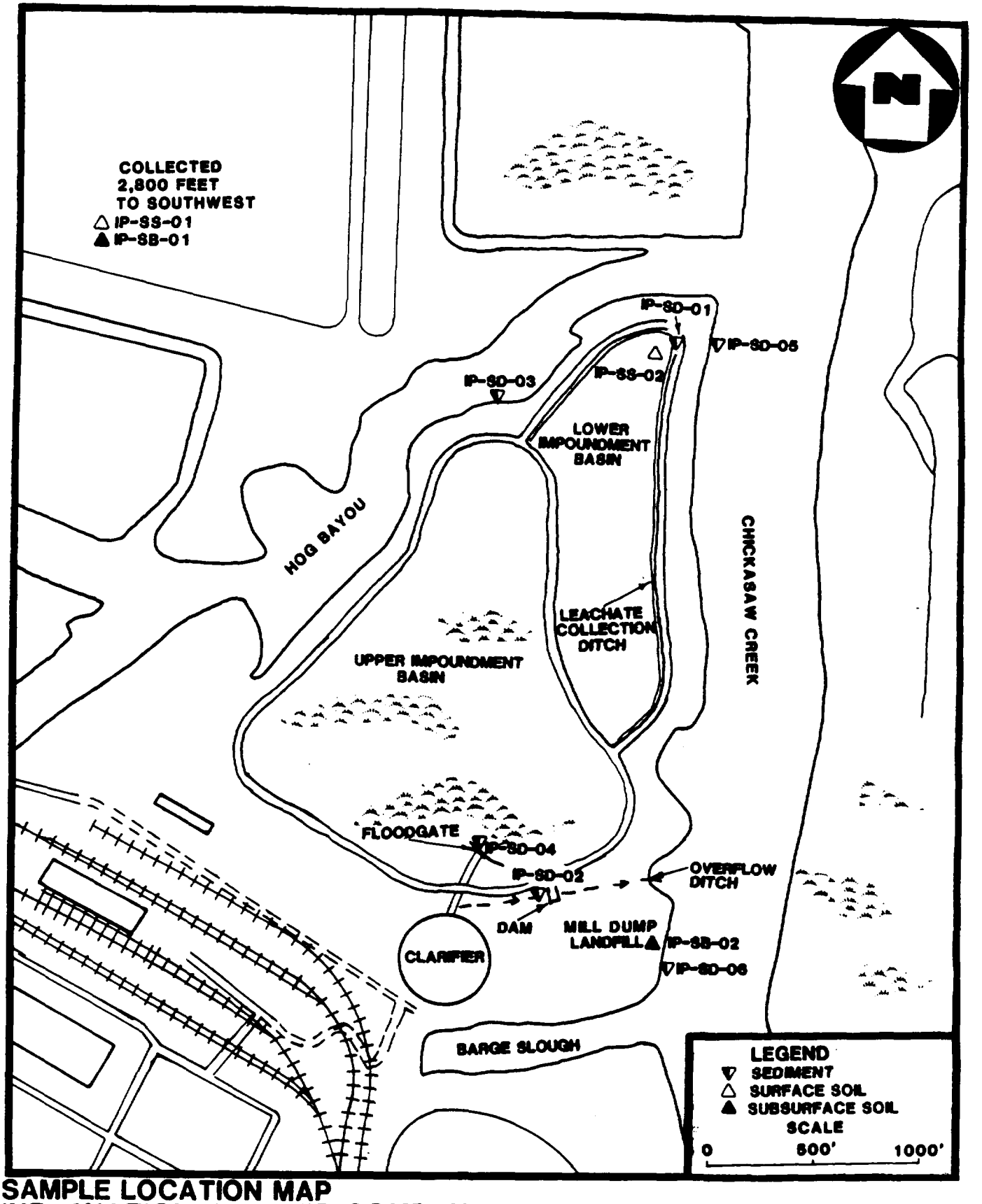
Two surface soil, two subsurface soil, and six sediment samples were collected during the onsite inspection. The samples were collected from background locations, disposal areas, migration pathways, and surface water bodies which could potentially receive contaminants. The study plan prepared for this investigation also called for the installation of temporary wells and the collection of groundwater samples. However, because groundwater use in the area is very limited and surface water was the primary pathway of concern, no groundwater samples were collected. This change in the study plan was requested and approved by EPA. Sample codes and descriptions are presented in Table 1. Sample locations are shown on Figure 3.

TABLE 1

SAMPLE CODES AND DESCRIPTIONS
INTERNATIONAL PAPER COMPANY
MOBILE, MOBILE COUNTY, ALABAMA

Sample Code	Collection Date	Collection Time	Description
IP-SS-01	5/2/90	0945	Background surface soil collected from grassy area west of guard house and north of parking lot. Collected from approximately 1 foot below land surface (bls) and consisted of black, sandy soil mixed with orangish-red clay.
IP-SS-02	5/2/90	1040	Surface soil sample collected from northern edge of closed lower impoundment. Sample collected from 6 inches bls and consisted of brown, sandy, rocky soil.
IP-SB-01	5/2/90	1000	Background subsurface soil collected from same location as IP-SS-01. Sample collected from 3 to 4 feet bls and consisted of mixed clay and sand.
IP-SB-02	5/2/90	1230	Subsurface soil collected from downgradient edge of former landfill. Sample collected from a depth of 2 to 3 feet bls.
IP-SD-01	5/2/90	1115	Sediment sample collected from leachate collection ditch below northern edge of lower surface impoundment.
IP-SD-02	5/2/90	1250	Sediment sample collected from drainage ditch along western edge of former landfill. Ditch formerly used to carry overflow from upper surface impoundment to Chickasaw Creek.
IP-SD-03	5/2/90	1330	Sediment sample collected from east bank of Hog Bayou near mouth. Control sample.
IP-SD-04	5/2/90	1350	Sediment sample collected from upper impoundment basin upstream of floodgate.
IP-SD-05	5/2/90	1335	Sediment sample collected from west bank of Chickasaw Creek near northeast edge of facility.
IP-SD-06	5/2/90	1420	Sediment sample collected from west bank of Chickasaw Creek below former landfill.

IP - International Paper Company
SS - Surface Soil
SB - Subsurface Soil
SD - Sediment



SAMPLE LOCATION MAP
INTERNATIONAL PAPER COMPANY
MOBILE, MOBILE COUNTY, ALABAMA

FIGURE 3

NUS CORPORATION

4.2 SAMPLE ANALYSIS

4.2.1 Analytical Support and Methodology

All samples collected were analyzed under the Contract Laboratory Program (CLP) and analyzed for all parameters listed in the Target Compound List (TCL). Organic analysis of soil samples was performed by Compu Chem Laboratories of Research Triangle Park, North Carolina. Inorganic analysis of soil samples was performed by Silver Valley of Kellogg, Idaho.

All laboratory analyses and laboratory quality assurance procedures used during this investigation were in accordance with standard procedures and protocols as specified in the Laboratory Operations and Quality Control Manual, United States Environmental Protection Agency, Region IV, Environmental Services Division, issued October 24, 1990; or as specified by the existing United States Environmental Protection Agency standard procedures and protocols for the Contract Laboratory Program (CLP) Statement of Work (SOW), as applicable.

4.2.2 Analytical Data Quality and Data Qualifiers

All analytical data were subjected to a quality assurance review as described in the EPA Environmental Services Division laboratory data evaluation guidelines. In the tables, some of the concentrations of the organic and inorganic parameters have been flagged with a "J". This indicates that the qualitative analysis was acceptable, but the quantitative value has been estimated. A few other compounds are flagged with an "N", indicating that they were detected based on the presumptive evidence of their presence. This means that the compound was tentatively identified, and its detection cannot be used as positive identification of its presence. Results for some background samples are reported with a "U" flag. This flag means that the material was analyzed for but not detected. The reported number is the laboratory-derived minimum quantitation limit (MQL) for the compound or element in that sample. At times, miscellaneous organic compounds that do not appear on the target compound list are reported with a data set. These compounds are labeled as "JN", indicating that they are tentatively identified at estimated quantities. Because these compounds are not routinely analyzed for or reported, background levels or MQL values are not generally available for comparison. The complete analytical data sheets are presented in Appendix B.

4.2.3 Presentation of Analytical Results

This section presents a discussion and interpretation of the analytical results from the environmental samples collected during the investigation at International Paper Company. Analytical results of soil and sediment samples are presented in Tables 2, 3, 4, and 5. Values for background sample results are presented as either a measured value or as the minimum quantitation limit (MQL). Samples containing concentrations of contaminants greater than three times the background level or MQL of these contaminants are considered to be elevated. These samples are noted in the text.

4.2.3.1 Soil Samples

Organic analysis of the soil samples, collected from the closed lower impoundment basin (IP-SS-02) and landfill (IP-SB-02) only revealed the presence of unidentified compounds (Table 2). Nevertheless, the number and concentrations of these compounds are considered elevated compared to the background samples.

Inorganic analysis, however, of these soil samples revealed the presence of a variety of metals (Table 3). Sample IP-SS-02 contained elevated levels of chromium, zinc, and barium. This sample also contained an elevated level of magnesium as well as concentrations of aluminum, calcium, and iron that were slightly above background. These latter four metals, though not particularly toxic, are constituents of the dregs contained in green liquor sludge. Thus, their presence may be attributable to sludge disposal in the impoundment.

Sample IP-SB-02 contained elevated levels of copper, lead, mercury, zinc, and barium. This sample also contained elevated levels of calcium (200 times background) and manganese and a slightly elevated level of magnesium, all of which are associated with the dregs in green liquor sludge.

4.2.3.2 Sediment Sampling

No background sediment sample was collected; however, sample IP-SD-03 was the most "upstream" sample collected. This sample contained no organic contamination except 12 unidentified compounds at a total concentration of 30,000J ug/kg (Table 4). Unidentified compounds were detected in all other sediment samples as well in quantities ranging from 9 to 18 compounds and concentrations ranging from 10,000J to 90,000J ug/kg.

In general, no pattern of organic contaminant migration can be seen in the analytical results. Although elevated levels of several organic constituents were detected in the sediment samples

collected from Chickasaw Creek, only one of these constituents (2-methylnaphthalene) was detected on site (in IP-SD-01). In addition, none of the organic constituents detected in IP-SD-06 were detected in the subsurface soil sample collected from the adjacent old Mill Dump Landfill. Thus, the landfill does not seem to be the source of these contaminants. Also, sample IP-SD-04, collected from the upper impoundment basin, contained several organic constituents; however, these contaminants were not found in the Chickasaw Creek or Hog Bayou samples so this impoundment does not appear to be releasing contamination to surrounding surface water at this time.

Inorganic analysis of the sediment samples (Table 5), however, revealed the presence of virtually the same contaminants in roughly the same concentrations found in the soil samples. Also, except for mercury and nickel, all of the inorganic contaminants found in the offsite samples (IP-SD-03, -05, -06) were also detected in the onsite samples (IP-SD-01, -02, -04).

TABLE 2

SUMMARY OF ORGANIC ANALYTICAL RESULTS
SOIL SAMPLES
INTERNATIONAL PAPER COMPANY
MOBILE, MOBILE COUNTY, ALABAMA

PARAMETERS (ug/kg)	Background IP-SS-01	Lower Impoundment Basin IP-SS-02	Background IP-SB-01	Old Mill Landfill IP-SB-02
PURGEABLE COMPOUNDS				
CARBON DISULFIDE	6U	-	6U	-
EXTRACTABLE COMPOUNDS				
2-METHYLNAPHTHALENE	380U	-	380U	-
PHENANTHRENE	380U	-	380U	-
FLUORANTHENE	380U	-	380U	-
PYRENE	380U	-	380U	-
BENZO(A)ANTHRACENE	380U	-	380U	-
CHRYSENE	380U	-	380U	-
UNIDENTIFIED COMPOUNDS	400J/1	10,000J/13	NA	5000J/8

- \- Material analyzed for but not detected above minimum quantitation limit
- J Estimated value
- N Presumptive evidence of material
- U Material was analyzed for but not detected above minimum quantitation limit. Number given is the minimum quantitation limit.
- NA Not analyzed

TABLE 3

SUMMARY OF INORGANIC ANALYTICAL RESULTS
SOIL SAMPLES
INTERNATIONAL PAPER COMPANY
MOBILE, MOBILE COUNTY, ALABAMA

PARAMETERS (mg/kg)	Background IP-SS-01	Lower Impoundment Basin IP-SS-02	Background IP-SB-01	Old Mill Landfill IP-SB-02
ALUMINUM	8300	12,000	24,000	12,000
ARSENIC	2UJ	3.4J	6.7J	3.6J
BARIUM	16	53	28	120
CALCIUM	7000	20,000	440	89,000
CHROMIUM	6.2	24	43	33
COBALT	1.8U	3.7	5.7	5.8
COPPER	2U	-	7U	63
IRON	5400	12,000	40,000	28,000
LEAD	23UR	-	20UJ	180
MAGNESIUM	190	700	590	1300
MANGANESE	160	120	10	280
MERCURY	11U	-	0.12U	1.5
NICKEL	6.2U	7	8U	17
POTASSIUM	130U	390	450	670
SELENIUM	0.46UR	-	1.5J	-
SODIUM	30U	280	60	540
VANADIUM	13	26	65	28
ZINC	7.9	41	21	180

- \- Material analyzed for but not detected above minimum quantitation limit
- J Estimated value
- N Presumptive evidence of presence of material
- U Material analyzed for but not detected above minimum quantitation limit. Number given is the minimum quantitation limit.
- R QC indicates data unusable. Compound may or may not be present. Resampling and reanalysis necessary for verification.

TABLE 4

SUMMARY OF ORGANIC ANALYTICAL RESULTS
SEDIMENT SAMPLES
INTERNATIONAL PAPER COMPANY
MOBILE, MOBILE COUNTY, ALABAMA

PARAMETERS (ug/kg)	Leachate Collection Ditch	Overflow Ditch	Hog Bayou	Upper Impoundment Basin	Chickasaw Creek	
			Control Sample			
	IP-SD-01	IP-SD-02	IP-SD-03	IP-SD-04	IP-SD-05	IP-SD-06
PURGEABLE COMPOUNDS						
CARBON DISULFIDE	-	-	-	2J	-	-
METHYL(METHYLETHYL)BICYCLOHEXENE[1]				60JN		
DIMETHYLMETHYLENEBICYCLOHEPTONE[1]				10JN		
EXTRACTABLE COMPOUNDS						
2-METHYLNAPHTHALENE	730U	-	-	-	-	74J
PHENANTHRENE	-	-	-	-	-	110J
FLUORANTHENE	-	-	-	-	-	260J
PYRENE	-	-	-	-	-	210J
BENZO(A)ANTHRACENE	-	-	-	-	-	200J
CHRYSENE	-	-	-	-	-	190J
UNIDENTIFIED COMPOUNDS	20,000J/14	20,000J/18	30,000J/12	10,000J/9	90,000J/14	20,000J/15

- Material analyzed for but not detected above minimum quantitation limit
J Estimated value
N Presumptive evidence of presence of material
1 Tentatively identified compound (TIC). This compound is not on CLP Target Compound List (TCL) and is reported only as detected in individual samples; MQL not determined.
U Material was analyzed for but not detected above minimum quantitation limit. Number given is the minimum quantitation limit.

TABLE 4

SUMMARY OF ORGANIC ANALYTICAL RESULTS
SEDIMENT SAMPLES
INTERNATIONAL PAPER COMPANY
MOBILE, MOBILE COUNTY, ALABAMA

PARAMETERS (ug/kg)	Leachate Collection Ditch	Overflow Ditch	Hog Bayou	Upper Impoundment Basin	Chickasaw Creek	
			Control Sample			
	IP-SD-01	IP-SD-02	IP-SD-03	IP-SD-04	IP-SD-05	IP-SD-06
TETRAMETHYLPHENANTHRENE	1000JN	500JN	-	2000JN	-	-
HEXADECANOIC ACID[1]		1000JN				
ETHYLIDENEBISETHYLBENZENE[1]				1000JN		700JN
HEXATHIEPANE[1]				700JN		
CINEOLE[1]					10,000JN	
TERPIN HYDRATE[1]					4000JN	
CARYOPHYLLENE[1]					2000JN	
OCTAHYDROMETHYLMETHYLENE(METHYLETHYL)NAPHTHALENE (ISOMERS)[1]					40,00JN/2	
DIMETHYL(METHYLETHYL)NAPHTHALENE[1]					3000JN	

- Material analyzed for but not detected above minimum quantitation limit
J Estimated value
N Presumptive evidence of presence of material
1 Tentatively identified compound (TIC). This compound is not on CLP Target Compound List (TCL) and is reported only as detected in individual samples; MQL not determined.
U Material was analyzed for but not detected above minimum quantitation limit. Number given is the minimum quantitation limit.

TABLE 5

SUMMARY OF INORGANIC ANALYTICAL RESULTS
SEDIMENT SAMPLES
INTERNATIONAL PAPER COMPANY
MOBILE, MOBILE COUNTY, ALABAMA

	Leachate Collection Ditch	Overflow Ditch	Hog Bayou	Upper Impoundment Basin	Chickasaw Creek	
			Control Sample			
PARAMETERS (mg/kg)	IP-SD-01	IP-SD-02	IP-SD-03	IP-SD-04	IP-SD-05	IP-SD-06
ALUMINUM	20,000	4500	16,000	8000	26,000	12,000
ARSENIC	6.9J	-	5.9J	-	-	9.9J
BARIUM	120	120	83	17	220	220
CALCIUM	62,000	62,000	2700	4200	100,000	50,000
CHROMIUM	59	43	33	15	71	51
COBALT	7.8	-	6.8	-	-	7.6
COPPER	41	-	-	-	110	73
IRON	27,000	11,000	17,000	7000	18,000	18,000
LEAD	-	-	-	-	-	-
MAGNESIUM	1400	1100	2600	270	4500	2000
MANGANESE	980	400	140	49	1900	300
MERCURY	-	-	.77	-	-	2.8
NICKEL	-	-	-	-	46	16
POTASSIUM	460	450	1100	400	590	840
SODIUM	1000	730	860	2300	1900	1000
VANADIUM	66	28	32	12	49	31
ZINC	1500	54	260	29	4000	270

- Material analyzed for but not detected above minimum quantitation limit
J Estimated value
N Presumptive evidence of presence of material
U Material was analyzed for but not detected above minimum quantitation limit. Number given is the minimum quantitation limit.

5.0 SUMMARY

The primary pathway of concern associated with the International Paper Company is the surface water pathway. Although drinking water supplies are not threatened by a potential release from this site, portions of the 4-mile radius encompass part of the highly sensitive Mobile Delta. This area supports numerous recreational activities, major commercial fisheries, and an abundance of wildlife, including endangered plant and animal species. A number of industries along the Mobile River, including International Paper Company, are responsible for some of the pollution load that poses a potential threat to this sensitive area.

Analysis of samples collected during the field investigation revealed elevated levels of several inorganic contaminants in onsite soil samples. Most of these contaminants were also detected in the sediment samples collected from Hog Bayou and Chickasaw Creek. Some of the inorganics detected may be related to the green liquor sludge disposed of in the surface impoundments and possibly the former landfill.

Because International Paper Company is located in a heavily industrial area it is not possible to attribute contamination solely to the facility; however, the analytical results do suggest that the offsite contamination may be linked to the site. In addition, although drinking water supplies in the area are unthreatened by the facility, potential contamination of the Mobile Delta remains a concern. Therefore, FIT 4 recommends that Phase I of a Listing Site Inspection be initiated for International Paper Company.

REFERENCES

1. EPA Notification of Hazardous Waste Site (EPA Form 8900-1) for International Paper Company - Mobile Mill, Mobile, Alabama. Filed by Peter C. Redfern, Mill Manager, June 15, 1981.

2, Potential Hazardous Waste Site Preliminary Assessment (EPA Form 3012-III) for International Paper Company - Landfill, Mobile, Alabama, circa 1985.

3. Charles E. Garrett and James B. McCutchan, "Proposed Closure Plan: Lower Impoundment Basin and Mill Dump Disposal Sites", HLA Job No. 6261, 002.12, prepared for International Paper Company (Houston, Texas: Harding Lawson Associates, November 1983).

4. Lori C. Conway, NUS Corporation; memo to file for International Paper Company, April 23, 1990. Subject: Meeting with Pablo Vasquez, Coordinator of Environmental Services/East for International Paper Company regarding planned sampling investigation.

5. NUS Corporation Field Logbook No. F4-2227 for International Paper Company, TDD No. F4-9002-66. Documentation of Screening Site Inspection, May 2, 1990.

6. Charles Fleming, interoffice memorandum to Bernard E. Cox, Alabama Department of Environmental Management, June 12, 1984. Subject: Cresylic acid tar being used at International Paper Company.

7. Dixie Beatty-Carmack, Alabama Department of Environmental Management, telephone conversation with Lori C. Conway, NUS Corporation, February 15, 1991. Subject: RCRA status of International Paper Company's Mobile Mill.

8. John Poole, Industrial Permits Branch, ADEM, telephone conversation with Lori C. Conway, NUS Corporation, February 15, 1991. Subject: NPDES permit held by International Paper Company.

9. Glen Golson, Air Division, ADEM, telephone conversation with Lori C. Conway, NUS Corporation, February 15, 1991. Subject: Air permits held by International Paper Company.

10. James Minor, "Pulp," Kirk-Othmer Encyclopedia of Chemical Technology, 3rd ed., Vol. 19 (New York: John Wiley & Sons, 1983).

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

12. U.S. Department of the Interior, Fish and Wildlife Service, Ecological Characterization Atlas of Coastal Alabama: Map Narrative, FWS/OBS-82/46, MMS 84-0052 (August 1984).

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

14. U.S. Department of Commerce, Rainfall Frequency Atlas of the United States, Technical Paper Number 40 (Washington, D.C.: GPO, 1961).

15. Les Brown, water service engineer, city of Mobile water service, telephone conversation with Terry Tanner, NUS Corporation, January 4, 1991. Subject: Mobile surface water intake; existence of private wells in Mobile service area.

16. Roy King, Prichard Water Department, telephone conversation with K.D. Pass, NUS Corporation, June 12, 1989. Subject: Prichard surface water intake and service area.

17. U.S. Department of the Interior, Fish and Wildlife Service, Alabama Coastal Region Ecological Characterization, Volume 3: A Socioeconomic Study, FWS/OBS-81/41 (October 1982).

18. Charles W. Copeland, ed., Geology of the Alabama Coastal Plain, Circular 47 (University of Alabama, Geological Survey of Alabama, 1968).

19. W.H. Robinson, W.J. Powell, and Eugene Brown, Water Resources of the Mobile Area, Alabama (Washington, D.C.: U.S. Geological Survey, 1956).

20. Will S. Mooty, Geohydrology and Susceptibility of Major Aquifer to Surface Contamination in Alabama, Water Resources Investigations Report 88-4080 (Tuscaloosa, Alabama: U.S. Geological Survey, 1988).

21. Joseph F. Riccio, J.D. Hardin, and George M. Lamb, Development of a Hydrologic Concept of the Greater Mobile Metropolitan-Urban Environment Bulletin No. 106 (University of Alabama, Geological Survey of Alabama).

22. R. Allan Freeze and John A. Cherry, Groundwater (Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1979).

23. Bradley A. Jackson, NUS Corporation, letter to Richard D. Green, U.S. Environmental Protection Agency, November 20, 1986. Subject: Mobile, Alabama area hazardous waste sites and drinking water sources.

RECONNAISSANCE CHECKLIST FOR HRS2 CONCERNS

Instructions: Obtain as much "up front" information as possible prior to conducting fieldwork. Complete the form in as much detail as you can, providing attachments as necessary. Cite the source for all information obtained.

Site name: International Paper
City, County, State: Mobile, Mobile County, Alabama
EPA ID No.: ALD008161861
Person responsible for form: Teresa Sawyer
Date: 8/7/89

Air Pathway

Describe any potential air emission sources onsite: unknown

Identify any sensitive environments within 4 miles: The Mobile Delta is just adjacent to the site and is a highly productive fishery. It also supports several endangered species

Identify the maximally exposed individual (nearest residence or regularly occupied building - workers do count): This is a very large facility and therefore has many employees

Groundwater Pathway

Identify any areas of karst terrain: N/A

Identify additional population due to consideration of wells completed in overlying aquifers to the AOC: N/A

Do significant targets exist between 3 and 4 miles from the site? No private wells were located during the site reconnaissance.

Is the AOC a sole source aquifer according to Safe Drinking Water Act? (i.e. is the site located in Dade, Broward, Volusia, Putnam, or Flager County, Florida) No.

Surface Water Pathway

Are there intakes located on the extended 15-mile migration pathway? No. There is one intake upstream and another 20 miles west of the site

Are there recreational areas, sensitive environments, or human food chain targets (fisheries) along the extended pathway? Yes, Mobile Bay is directly to the east of the facility.

Onsite Exposure Pathway

Is there waste or contaminated soil onsite at 2 feet below land surface or higher? unknown.

Is the site accessible to non-employees (workers do not count)? No, the entire facility is fenced and has guard posts.

Are there residences, schools, or daycare centers onsite or in close proximity? There are several schools in close proximity.

Are there barriers to travel (e.g., a river) within one mile?

Yes, Chickasaw Creek lies within the one mile radius

HAZARD RANKING SYSTEM SCORING SUMMARY

FOR

INTERNATIONAL PAPER COMPANY
EPA SITE NUMBER ALD008161861
MOBILE
MOBILE COUNTY, AL
EPA REGION: 4

SCORE STATUS: IN PREPARATION

SCORED BY LORI C. CONWAY
OF NUS CORPORATION
ON 01/16/91

DATE OF THIS REPORT: 01/16/91
DATE OF LAST MODIFICATION: 01/16/91

GROUND WATER ROUTE SCORE	:	11.43
SURFACE WATER ROUTE SCORE	:	18.91
AIR ROUTE SCORE	:	0.00
MIGRATION SCORE	:	12.77

HRS GROUND WATER ROUTE SCORE

CATEGORY/FACTOR	RAW DATA	ASN. VALUE	SCORE
1. OBSERVED RELEASE	NO	0	0
2. ROUTE CHARACTERISTICS			
DEPTH TO WATER TABLE	10 FEET		
DEPTH TO BOTTOM OF WASTE	10 FEET		
DEPTH TO AQUIFER OF CONCERN	0 FEET	3	6
PRECIPITATION	64.0 INCHES		
EVAPORATION	48.0 INCHES		
NET PRECIPITATION	16.0 INCHES	3	3
PERMEABILITY	1.0X10-4 CM/SEC	2	2
PHYSICAL STATE		3	3
TOTAL ROUTE CHARACTERISTICS SCORE:			14
3. CONTAINMENT		3	3
4. WASTE CHARACTERISTICS			
TOXICITY/PERSISTENCE:LEAD			18
WASTE QUANTITY CUBIC YDS	2501		
DRUMS	0		
GALLONS	0		
TONS	0		
TOTAL	2501 CU. YDS	8	8
TOTAL WASTE CHARACTERISTICS SCORE:			26
5. TARGETS			
GROUND WATER USE		2	6
DISTANCE TO NEAREST WELL	0 FEET		
AND	MATRIX VALUE	0	0
TOTAL POPULATION SERVED	0 PERSONS		
NUMBER OF HOUSES	0		
NUMBER OF PERSONS	0		
NUMBER OF CONNECTIONS	0		
NUMBER OF IRRIGATED ACRES	0		
TOTAL TARGETS SCORE:			6

GROUND WATER ROUTE SCORE (Sgw) = 11.43

HRS SURFACE WATER ROUTE SCORE

CATEGORY/FACTOR	RAW DATA	ASN. VALUE	SCORE
1. OBSERVED RELEASE	NO	0	0
2. ROUTE CHARACTERISTICS			
SITE LOCATED IN SURFACE WATER	NO		
SITE WITHIN CLOSED BASIN	NO		
FACILITY SLOPE	3.0 %		
INTERVENING SLOPE	5.0 %	1	1
24-HOUR RAINFALL	4.7 INCHES	3	3
DISTANCE TO DOWN-SLOPE WATER	50 FEET	3	6
PHYSICAL STATE	3		3
TOTAL ROUTE CHARACTERISTICS SCORE:			13
3. CONTAINMENT	3		3
4. WASTE CHARACTERISTICS			
TOXICITY/PERSISTENCE:CHROMIUM			18
WASTE QUANTITY CUBIC YDS	2501		
DRUMS	0		
GALLONS	0		
TONS	0		
TOTAL	2501 CU. YDS	8	8
TOTAL WASTE CHARACTERISTICS SCORE:			26
5. TARGETS			
SURFACE WATER USE		2	6
DISTANCE TO SENSITIVE ENVIRONMENTS		3	6
COASTAL WETLANDS	NONE		
FRESH-WATER WETLANDS	0 FEET		
CRITICAL HABITAT	NONE		
DISTANCE TO STATIC WATER	> 3 MILES		
DISTANCE TO WATER SUPPLY INTAKE	> 3 MILES		
AND	MATRIX VALUE	0	0
TOTAL POPULATION SERVED	0		
NUMBER OF HOUSES	0		
NUMBER OF PERSONS	0		
NUMBER OF CONNECTIONS	0		
NUMBER OF IRRIGATED ACRES	0		
TOTAL TARGETS SCORE:			12

SURFACE WATER ROUTE SCORE (Ssw) = 18.91

HRS AIR ROUTE SCORE

CATEGORY/FACTOR	RAW DATA	ASN. VALUE	SCORE
1. OBSERVED RELEASE	NO	0	0

2. WASTE CHARACTERISTICS

REACTIVITY: MATRIX VALUE

INCOMPATIBILITY

TOXICITY

WASTE QUANTITY CUBIC YARDS
DRUMS
GALLONS
TONS

TOTAL

TOTAL WASTE CHARACTERISTICS SCORE: N/A

3. TARGETS

POPULATION WITHIN 4-MILE RADIUS
- 0 to 0.25 mile
- 0 to 0.50 mile
- 0 to 1.0 mile
- 0 to 4.0 miles

DISTANCE TO SENSITIVE ENVIRONMENTS
- COASTAL WETLANDS
- FRESH-WATER WETLANDS
- CRITICAL HABITAT

DISTANCE TO LAND USES
- COMMERCIAL/INDUSTRIAL
- PARK/FOREST/RESIDENTIAL
- AGRICULTURAL LAND
- PRIME FARMLAND
- HISTORIC SITE WITHIN VIEW?

TOTAL TARGETS SCORE: N/A

AIR ROUTE SCORE (Sa) = 0.00

HAZARD RANKING SYSTEM SCORING CALCULATIONS
FOR
SITE: INTERNATIONAL PAPER COMPANY
AS OF 01/15/91

GROUND WATER ROUTE SCORE

ROUTE CHARACTERISTICS		14
CONTAINMENT	X	3
WASTE CHARACTERISTICS	X	26
TARGETS	X	6

= 6552 /57,330 X 100 = 11.43 = S_{gw}

SURFACE WATER ROUTE SCORE

ROUTE CHARACTERISTICS		13
CONTAINMENT	X	3
WASTE CHARACTERISTICS	X	26
TARGETS	X	12

= 12163 /64,350 X 100 = 18.91 = S_{sw}

AIR ROUTE SCORE

OBSERVED RELEASE 0 /35,100 X 100 = 0.00 = S_{air}

SUMMARY OF MIGRATION SCORE CALCULATIONS

	S	S^2
GROUND WATER ROUTE SCORE (S_{gw})	11.43	130.64
SURFACE WATER ROUTE SCORE (S_{sw})	18.91	357.59
AIR ROUTE SCORE (S_{air})	0.00	0.00
$S^2_{gw} + S^2_{sw} + S^2_{air}$		488.23
$\sqrt{(S^2_{gw} + S^2_{sw} + S^2_{air})}$		22.10
$S_M = \sqrt{(S^2_{gw} + S^2_{sw} + S^2_{air})}/1.73$		12.77

OVERSIZED

DOCUMENT

APPENDIX B

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

07/17/90

IFIED ANALYSIS DATA REPORT

PROJECT NO. 90-436 SAMPLE NO. 45710 SAMPLE TYPE: SOIL
SOURCE: INTERNATIONAL PAPER
STATION ID: SB-01
CASE.NO.: 14000 SAS NO.:

PROG ELEM: NSF COLLECTED BY: L CONWAY
CITY: MOBILE ST: AL
COLLECTION START: 05/02/90 1000 STOP: 00/00/00
D. NO.. T191 MD NO: T191

RESULTS	UNITS	PARAMETER
1.2U	MG/KG	CYANIDE

OOTNOTES***
A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
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 QUANTITATION LIMIT.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

07/17/90

SPECIFIED ANALYSIS DATA REPORT

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**  PROJECT NO. 90-436   SAMPLE NO. 45713  SAMPLE TYPE: SOIL       PROG ELEM: NSF   COLLECTED BY: L CONWAY                 **
**  SOURCE: INTERNATIONAL PAPER                                     CITY: MOBILE                ST: AL                        **
**  STATION ID: SB-02                                               COLLECTION START: 05/02/90  1230   STOP: 00/00/00         **
**  CASE.NO.: 14000          SAS NO.:                               D. NO.. T208                MD NO: T208                   **
**                                                                                                                            **
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RESULTS	UNITS	PARAMETER
1.3U	MG/KG	CYANIDE

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*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 QUANTITATION LIMIT.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

07/17/90

SPECIFIED ANALYSIS DATA REPORT

PROJECT NO. 90-436 SAMPLE NO. 45712 SAMPLE TYPE: SOIL
SOURCE: INTERNATIONAL PAPER
STATION ID: SD-01
CASE NO.: 14000 SAS NO.:

PROG ELEM: NSF COLLECTED BY: L CONWAY
CITY: MOBILE ST: AL
COLLECTION START: 05/02/90 1115 STOP: 00/00/00
D. NO.. T200 MD NO: T200

RESULTS	UNITS	PARAMETER
2.3U	MG/KG	CYANIDE

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*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 QUANTITATION LIMIT.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

07/17/90

SPECIFIED ANALYSIS DATA REPORT

PROJECT NO. 90-436 SAMPLE NO. 45714 SAMPLE TYPE: SOIL
SOURCE: INTERNATIONAL PAPER
STATION ID: SD-02
CASE NO.: 14000 SAS NO.:

PROG ELEM: NSF COLLECTED BY: L CONWAY
CITY: MOBILE ST: AL
COLLECTION START: 05/02/90 1250 STOP: 00/00/00
D. NO.: T201 MD NO: T201

RESULTS	UNITS	PARAMETER
1.8U	MG/KG	CYANIDE

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*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 QUANTITATION LIMIT.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

07/17/90

SPECIFIED ANALYSIS DATA REPORT

PROJECT NO. 90-436 SAMPLE NO. 45715 SAMPLE TYPE: SOIL PROG ELEM: NSF COLLECTED BY: L CONWAY
SOURCE: INTERNATIONAL PAPER CITY: MOBILE ST: AL
STATION ID: SD-03 COLLECTION START: 05/02/90 1330 STOP: 00/00/00
CASE.NO.: 14000 SAS NO.: D. NO.. T202 MD NO: T202

RESULTS	UNITS	PARAMETER
2.9U	MG/KG	CYANIDE

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*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 QUANTITATION LIMIT.

SPECIFIED ANALYSIS DATA REPORT

PROJECT NO. 90-436   SAMPLE NO. 45717   SAMPLE TYPE: SOIL   PROG ELEM: NSF   COLLECTED BY: L CONWAY
SOURCE: INTERNATIONAL PAPER   CITY: MOBILE   ST: AL
STATION ID: SD-04   COLLECTION START: 05/02/90 1350   STOP: 00/00/00
CASE.NO.: 14000   SAS NO.:   D. NO.. T203   MD NO: T203

RESULTS	UNITS	PARAMETER
1.4U	MG/KG	CYANIDE

FOOTNOTES
*A-AVERAGE VALUE   *NA-NOT ANALYZED   *NAI-INTERFERENCES   *J-ESTIMATED VALUE   *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*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 QUANTITATION LIMIT.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

07/17/90

SPECIFIED ANALYSIS DATA REPORT

*** ***
** PROJECT NO. 90-436 SAMPLE NO. 45716 SAMPLE TYPE: SOIL PROG ELEM: NSF COLLECTED BY: L CONWAY **
** SOURCE: INTERNATIONAL PAPER CITY: MOBILE ST: AL **
** STATION ID: SD-05 COLLECTION START: 05/02/90 1335 STOP: 00/00/00 **
** CASE.NO.: 14000 SAS NO.: D. NO.. T204 MD NO: T204 **
** **
*** ***

RESULTS	UNITS	PARAMETER
4.4U	MG/KG	CYANIDE

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*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 QUANTITATION LIMIT.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

07/17/90

SPECIFIED ANALYSIS DATA REPORT

PROJECT NO. 90-436 SAMPLE NO. 45718 SAMPLE TYPE: SOIL
SOURCE: INTERNATIONAL PAPER
STATION ID: SD-06
CASE NO.: 14000 SAS NO.:

PROG ELEM: NSF COLLECTED BY: L CONWAY
CITY: MOBILE ST: AL
COLLECTION START: 05/02/90 1420 STOP: 00/00/00
D. NO.. T205 MD NO: T205

RESULTS	UNITS	PARAMETER
2U	MG/KG	CYANIDE

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*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 QUANTITATION LIMIT.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

07/17/90

SPECIFIED ANALYSIS DATA REPORT

PROJECT NO. 90-436 SAMPLE NO. 45719 SAMPLE TYPE: SEDIMBLK PROG ELEM: NSF COLLECTED BY: L CONWAY
SOURCE: INTERNATIONAL PAPER CITY: MOBILE ST: AL
STATION ID: SD-07 (REGION IV QC BLANK) COLLECTION START: 05/02/90 1510 STOP: 00/00/00
CASE NO.: 14000 SAS NO.: D. NO.: T189 MD NO: T189

RESULTS	UNITS	PARAMETER
1.1U	MG/KG	CYANIDE

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*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 QUANTITATION LIMIT.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

07/17/90

SPECIFIED ANALYSIS DATA REPORT

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**   PROJECT NO. 90-436    SAMPLE NO. 45709  SAMPLE TYPE:               PROG ELEM: NSF   COLTED BY: L CONWAY              **
**   SOURCE:                                                            CITY: MOBILE                ST: AL                    **
**   STATION ID: SS-01                                                  COLLECTION START: 05/02/90  0945   STOP: 00/00/00     **
**   CASE.NO.: 14000           SAS NO.:                                 D. NO.. T190               MD NO: T190                **
**                                                                                                                            **
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RESULTS	UNITS	PARAMETER
1.1U	MG/KG	CYANIDE

FOOTNOTES
*A-AVERAGE VALUE   *NA-NOT ANALYZED   *NAI-INTERFERENCES   *J-ESTIMATED VALUE   *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN   *L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

07/17/90

SPECIFIED ANALYSIS DATA REPORT

PROJECT NO. 90-436 SAMPLE NO. 45711 SAMPLE TYPE: SOIL
SOURCE: INTERNATIONAL PAPER
STATION ID: SS-02
CASE.NO.: 14000 SAS NO.:

PROG ELEM: NSF COLLECTED BY: L CONWAY
CITY: MOBILE ST: AL
COLLECTION START: 05/02/90 1040 STOP: 00/00/00
D. NO.: T192 MD NO: T192

RESULTS	UNITS	PARAMETER
1.1U	MG/KG	CYANIDE

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

METALS DATA REPORT 07/17/90

** PROJECT NO. 90-436 SAMPLE NO. 45710 SAMPLE TYPE: SOIL PROG ELEM: NSF COLLECTED BY: L CONWAY **
** SOURCE: INTERNATIONAL PAPER CITY: MOBILE ST: AL **
** STATION ID: SB-01 COLLECTION START: 05/02/90 1000 STOP: 00/00/00 **
** CASE NUMBER: 14000 SAS NUMBER: MD NUMBER: T191 **

MG/KG	ANALYTICAL RESULTS	MG/KG	ANALYTICAL RESULTS
24000	ALUMINUM	10	MANGANESE
8UJ	ANTIMONY	.12U	MERCURY
6.7J	ARSENIC	8U	NICKEL
28	BARIUM	450	POTASSIUM
.25U	BERYLLIUM	1.5J	SELENIUM
1U	CADMIUM	.75UR	SILVER
440	CALCIUM	60	SODIUM
43	CHROMIUM	2U	THALLIUM
5.7	COBALT	NA	TIN
7U	COPPER	65	VANADIUM
40000	IRON	21	ZINC
20UJ	LEAD	20	PERCENT MOISTURE
590	MAGNESIUM		

REMARKS ***REMARKS***

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
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*R-QC INDICATES THAT DATA UNUSABLE. COMPOUND MAY OR MAY NOT BE PRESENT. RESAMPLING AND REANALYSIS IS NECESSARY FOR VERIFICATION.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

METALS DATA REPORT 07/17/90

PROJECT NO. 90-436 SAMPLE NO. 45713 SAMPLE TYPE: SOIL
SOURCE: INTERNATIONAL PAPER
STATION ID: SB-02
CASE NUMBER: 14000 SAS NUMBER:

PROG ELEM: NSF COLLECTED BY: L CONWAY
CITY: MOBILE ST: AL
COLLECTION START: 05/02/90 1230 STOP: 00/00/00
MD NUMBER: 1208

MG/KG	ANALYTICAL RESULTS	MG/KG	ANALYTICAL RESULTS
12000	ALUMINUM	280	MANGANESE
8UJ	ANTIMONY	1.5	MERCURY
3.6J	ARSENIC	17	NICKEL
120	BARIUM	670	POTASSIUM
1U	BERYLLIUM	1UJ	SELENIUM
1U	CADMIUM	.77UR	SILVER
89000	CALCIUM	540	SODIUM
33	CHROMIUM	.51U	THALLIUM
5.8	COBALT	NA	TIN
63	COPPER	28	VANADIUM
28000	IRON	180	ZINC
180	LEAD	22	PERCENT MOISTURE
1300	MAGNESIUM		

REMARKS ***REMARKS***

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

07/17/90

METALS DATA REPORT

PROJECT NO. 90-436 SAMPLE NO. 45712 SAMPLE TYPE: SOIL PROG ELEM: NSF COLLECTED BY: L CONWAY
SOURCE: INTERNATIONAL PAPER CITY: MOBILE ST: AL
STATION ID: SD-01 COLLECTION START: 05/02/90 1115 STOP: 00/00/00
CASE NUMBER: 14000 SAS NUMBER: MD NUMBER: T200

MG/KG	ANALYTICAL RESULTS	MG/KG	ANALYTICAL RESULTS
20000	ALUMINUM	980	MANGANESE
20UR	ANTIMONY	.23U	MERCURY
6.9J	ARSENIC	20U	NICKEL
120	BARIUM	460	POTASSIUM
.47U	BERYLLIUM	2UJ	SELENIUM
1.9U	CADMIUM	1.4UR	SILVER
62000	CALCIUM	1000	SODIUM
59	CHROMIUM	.94U	THALLIUM
7.8	COBALT	NA	TIN
41	COPPER	66	VANADIUM
27000	IRON	1500	ZINC
40UJ	LEAD	57	PERCENT MOISTURE
1400	MAGNESIUM		

REMARKS

REMARKS

FOOTNOTES

*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

METALS DATA REPORT 07/17/90

PROJECT NO. 90-436 SAMPLE NO. 45714 SAMPLE TYPE: SOIL
SOURCE: INTERNATIONAL PAPER
STATION ID: SD-02
CASE NUMBER: 14000 SAS NUMBER:

PROG ELEM: NSF COLLECTED BY: L CONWAY
CITY: MOBILE ST: AL
COLLECTION START: 05/02/90 1250 STOP: 00/00/00
MD NUMBER: T201

MG/KG	ANALYTICAL RESULTS	MG/KG	ANALYTICAL RESULTS
4500	ALUMINUM	400	MANGANESE
20UJ	ANTIMONY	.18U	MERCURY
3UJ	ARSENIC	10U	NICKEL
120	BARIUM	450	POTASSIUM
.37U	BERYLLIUM	1UJ	SELENIUM
1.5U	CADMIUM	1.1UR	SILVER
62000	CALCIUM	730	SODIUM
43	CHROMIUM	.74U	THALLIUM
3U	COBALT	NA	TIN
6U	COPPER	28	VANADIUM
11000	IRON	54	ZINC
4UJ	LEAD	46	PERCENT MOISTURE
1100	MAGNESIUM		

REMARKS ***REMARKS***

FOOTNOTES
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

METALS DATA REPORT 07/17/90

PROJECT NO. 90-436 SAMPLE NO. 45715 SAMPLE TYPE: SOIL
SOURCE: INTERNATIONAL PAPER
STATION ID: SD-03
CASE NUMBER: 14000 SAS NUMBER:

PROG ELEM: NSF COLLECTED BY: L CONWAY
CITY: MOBILE ST: AL
COLLECTION START: 05/02/90 1330 STOP: 00/00/00
MD NUMBER: T202

MG/KG	ANALYTICAL RESULTS	MG/KG	ANALYTICAL RESULTS
16000	ALUMINUM	140	MANGANESE
15UR	ANTIMONY	.77	MERCURY
5.9J	ARSENIC	20U	NICKEL
83	BARIUM	1100	POTASSIUM
1U	BERYLLIUM	1.2UR	SELENIUM
2.3U	CADMIUM	1.7UR	SILVER
2700	CALCIUM	860	SODIUM
33	CHROMIUM	1.2U	THALLIUM
6.8	COBALT	NA	TIN
30U	COPPER	32	VANADIUM
17000	IRON	260	ZINC
20UJ	LEAD	65	PERCENT MOISTURE
2600	MAGNESIUM		

REMARKS ***REMARKS***

FOOTNOTES
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

METALS DATA REPORT 07/17/90

PROJECT NO. 90-436 SAMPLE NO. 45717 SAMPLE TYPE: SOIL
SOURCE: INTERNATIONAL PAPER
STATION ID: SD-04
CASE NUMBER: 14000 SAS NUMBER:

PROG ELEM: NSF COLLECTED BY: L CONWAY
CITY: MOBILE ST: AL
COLLECTION START: 05/02/90 1350 STOP: 00/00/00
MD NUMBER: 1203

MG/KG	ANALYTICAL RESULTS	MG/KG	ANALYTICAL RESULTS
8000	ALUMINUM	49	MANGANESE
9UJ	ANTIMONY	.14U	MERCURY
2UJ	ARSENIC	7.6U	NICKEL
17	BARIUM	400	POTASSIUM
.28U	BERYLLIUM	.56UR	SELENIUM
1.1U	CADMIUM	.85UR	SILVER
4200	CALCIUM	2300	SODIUM
15	CHROMIUM	.56U	THALLIUM
2.3U	COBALT	NA	TIN
4U	COPPER	12	VANADIUM
7000	IRON	29	ZINC
4UJ	LEAD	29	PERCENT MOISTURE
270	MAGNESIUM		

REMARKS ***REMARKS***

FOOTNOTES
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

METALS DATA REPORT 07/17/90

PROJECT NO. 90-436 SAMPLE NO. 45716 SAMPLE TYPE: SOIL
SOURCE: INTERNATIONAL PAPER
STATION ID: SD-05
CASE NUMBER: 14000 SAS NUMBER:

PROG ELEM: NSF COLLECTED BY: L CONWAY
CITY: MOBILE ST: AL
COLLECTION START: 05/02/90 1335 STOP: 00/00/00
MD NUMBER: T204

MG/KG	ANALYTICAL RESULTS	MG/KG	ANALYTICAL RESULTS
26000	ALUMINUM	1900	MANGANESE
30UR	ANTIMONY	.44U	MERCURY
9UJ	ARSENIC	46	NICKEL
220	BARIUM	590	POTASSIUM
.87U	BERYLLIUM	1.7UR	SELENIUM
3.5U	CADMIUM	2.6UR	SILVER
100000	CALCIUM	1900	SODIUM
71	CHROMIUM	1.7U	THALLIUM
9U	COBALT	NA	TIN
110	COPPER	49	VANADIUM
18000	IRON	4000	ZINC
4.4UR	LEAD	77	PERCENT MOISTURE
4500	MAGNESIUM		

REMARKS ***REMARKS***

FOOTNOTES
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

METALS DATA REPORT 07/17/90

PROJECT NO. 90-436 SAMPLE NO. 45718 SAMPLE TYPE: SOIL
SOURCE: INTERNATIONAL PAPER
STATION ID: SD-06
CASE NUMBER: 14000 SAS NUMBER:

PROG ELEM: NSF COLLECTED BY: L CONWAY
CITY: MOBILE ST: AL
COLLECTION START: 05/02/90 1420 STOP: 00/00/00
MD NUMBER: T205

MG/KG	ANALYTICAL RESULTS	MG/KG	ANALYTICAL RESULTS
12000	ALUMINUM	300	MANGANESE
20UJ	ANTIMONY	2.8	MERCURY
9.9J	ARSENIC	16	NICKEL
220	BARIUM	840	POTASSIUM
1U	BERYLLIUM	.78UR	SELENIUM
1.6U	CADMIUM	2UJ	SILVER
50000	CALCIUM	1000	SODIUM
51	CHROMIUM	.78U	THALLIUM
7.6	COBALT	NA	TIN
73	COPPER	31	VANADIUM
18000	IRON	270	ZINC
2UR	LEAD	49	PERCENT MOISTURE
2000	MAGNESIUM		

REMARKS ***REMARKS***

FOOTNOTES
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

METALS DATA REPORT 07/17/90

PROJECT NO. 90-436 SAMPLE NO. 45719 SAMPLE TYPE: SEDIMBLK PROG ELEM: NSF COLLECTED BY: L CONWAY
SOURCE: INTERNATIONAL PAPER CITY: MOBILE ST: AL
STATION ID: SD-07 (REGION IV QC BLANK) COLLECTION START: 05/02/90 1510 STOP: 00/00/00
CASE NUMBER: 14000 SAS NUMBER: MD NUMBER: T189

MG/KG	ANALYTICAL RESULTS	MG/KG	ANALYTICAL RESULTS
230	ALUMINUM	1.2	MANGANESE
5.6U	ANTIMONY	.11U	MERCURY
.43U	ARSENIC	5.9U	NICKEL
3.9U	BARIUM	130U	POTASSIUM
.22U	BERYLLIUM	.43U	SELENIUM
.87U	CADMIUM	.65U	SILVER
20U	CALCIUM	30U	SODIUM
1.1U	CHROMIUM	.43U	THALLIUM
1.7U	COBALT	NA	TIN
1.2	COPPER	2.4U	VANADIUM
100	IRON	.87U	ZINC
12	LEAD	08	PERCENT MOISTURE
9.1U	MAGNESIUM		

REMARKS ***REMARKS***

FOOTNOTES
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

METALS DATA REPORT 07/17/90

PROJECT NO. 90-436 SAMPLE NO. 45709 SAMPLE TYPE:
SOURCE:
STATION ID: SS-01
CASE NUMBER: 14000 SAS NUMBER:

PROG ELEM: NSF COLLECTED BY: L CONY
CITY: MOBILE ST: AL
COLLECTION START: 05/02/90 0945 STOP: 00/00/00
MD NUMBER: 1190

MG/KG	ANALYTICAL RESULTS	MG/KG	ANALYTICAL RESULTS
8300	ALUMINUM	160	MANGANESE
8UJ	ANTIMONY	.11U	MERCURY
2UJ	ARSENIC	6.2U	NICKEL
16	BARIUM	130U	POTASSIUM
.23U	BERYLLIUM	.46UR	SELENIUM
.92U	CADMIUM	.69UR	SILVER
7000	CALCIUM	30U	SODIUM
6.2	CHROMIUM	.46U	THALLIUM
1.8U	COBALT	NA	TIN
2U	COPPER	13	VANADIUM
5400	IRON	7.9	ZINC
.23UR	LEAD	13	PERCENT MOISTURE
190	MAGNESIUM		

REMARKS ***REMARKS***

FOOTNOTES
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

METALS DATA REPORT 07/17/90

** PROJECT NO. 90-436 SAMPLE NO. 45711 SAMPLE TYPE: SOIL PROG ELEM: NSF COLLECTED BY: L CONWAY **
** SOURCE: INTERNATIONAL PAPER CITY: MOBILE ST: AL **
** STATION ID: SS-02 COLLECTION START: 05/02/90 1040 STOP: 00/00/00 **
** CASE NUMBER: 14000 SAS NUMBER: MD NUMBER: T192 **

MG/KG	ANALYTICAL RESULTS	MG/KG	ANALYTICAL RESULTS
12000	ALUMINUM	120	MANGANESE
70J	ANTIMONY	.11U	MERCURY
3.4J	ARSENIC	7	NICKEL
53	BARIUM	390	POTASSIUM
.22U	BERYLLIUM	1UJ	SELENIUM
.89U	CADMIUM	.67UR	SILVER
20000	CALCIUM	280	SODIUM
24	CHROMIUM	.45U	THALLIUM
3.7	COBALT	NA	TIN
20U	COPPER	26	VANADIUM
12000	IRON	41	ZINC
20UJ	LEAD	10	PERCENT MOISTURE
700	MAGNESIUM		

REMARKS ***REMARKS***

FOOTNOTES
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

07/17/90

PURGEABLE ORGANICS DATA REPORT

PROJECT NO. 90-436 SAMPLE NO. 45710 SAMPLE TYPE: SOIL
SOURCE: INTERNATIONAL PAPER
STATION ID: SB-01

PROG ELEM: NSF COLLECTED BY: L CONWAY
CITY: MOBILE ST: AL
COLLECTION START: 05/02/90 1000 STOP: 00/00/00

CASE NO.: 14000 SAS NO.: D. NO.. T191

UG/KG	ANALYTICAL RESULTS
13U	CHLOROMETHANE
13U	BROMOMETHANE
13U	VINYL CHLORIDE
13U	CHLOROETHANE
20U	METHYLENE CHLORIDE
20U	ACETONE
6U	CARBON DISULFIDE
6U	1,1-DICHLOROETHENE(1,1-DICHLOROETHYLENE)
6U	1,1-DICHLOROETHANE
6U	1,2 DICHLOROETHENE (TOTAL)
6U	CHLOROFORM
6U	1,2-DICHLOROETHANE
13U	METHYL ETHYL KETONE
6U	1,1,1-TRICHLOROETHANE
6U	CARBON TETRACHLORIDE
13U	VINYL ACETATE
6U	BROMODICHLOROMETHANE

UG/KG	ANALYTICAL RESULTS
6U	1,2-DICHLOROPROPANE
6U	CIS-1,3-DICHLOROPROPENE
6U	TRICHLOROETHENE(TRICHLOROETHYLENE)
6U	DIBROMOCHLOROMETHANE
6U	1,1,2-TRICHLOROETHANE
6U	BENZENE
6U	TRANS-1,3-DICHLOROPROPENE
6U	BROMOFORM
13U	METHYL ISOBUTYL KETONE
13U	METHYL BUTYL KETONE
6U	TETRACHLOROETHENE(TETRACHLOROETHYLENE)
6U	1,1,2,2-TETRACHLOROETHANE
6U	TOLUENE
6U	CHLOROBENZENE
6U	ETHYL BENZENE
6U	STYRENE
6U	TOTAL XYLENES
20	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*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 QUANTITATION LIMIT.
*R-QC INDICATES THAT DATA UNUSABLE. COMPOUND MAY OR MAY NOT BE PRESENT. RESAMPLING AND REANALYSIS IS NECESSARY FOR VERIFICATION.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

07/17/90

PURGEABLE ORGANICS DATA REPORT

PROJECT NO. 90-436 SAMPLE NO. 45713 SAMPLE TYPE: SOIL
SOURCE: INTERNATIONAL PAPER
STATION ID: SB-02

PROG ELEM: NSF COLLECTED BY: L CONWAY
CITY: MOBILE ST: AL
COLLECTION START: 05/02/90 1230 STOP: 00/00/00

CASE NO.: 14000 SAS NO.: D. NO.: T208

UG/KG	ANALYTICAL RESULTS
13U	CHLOROMETHANE
13U	BROMOMETHANE
13U	VINYL CHLORIDE
13U	CHLOROETHANE
30U	METHYLENE CHLORIDE
20U	ACETONE
6U	CARBON DISULFIDE
6U	1,1-DICHLOROETHENE(1,1-DICHLOROETHYLENE)
6U	1,1-DICHLOROETHANE
6U	1,2 DICHLOROETHENE (TOTAL)
6U	CHLOROFORM
6U	1,2-DICHLOROETHANE
13UR	METHYL ETHYL KETONE
6U	1,1,1-TRICHLOROETHANE
6U	CARBON TETRACHLORIDE
13U	VINYL ACETATE
6U	BROMODICHLOROMETHANE

UG/KG	ANALYTICAL RESULTS
6U	1,2-DICHLOROPROPANE
6U	CIS-1,3-DICHLOROPROPENE
6U	TRICHLOROETHENE(TRICHLOROETHYLENE)
6U	DIBROMOCHLOROMETHANE
6U	1,1,2-TRICHLOROETHANE
6U	BENZENE
6U	TRANS-1,3-DICHLOROPROPENE
6U	BROMOFORM
13U	METHYL ISOBUTYL KETONE
13U	METHYL BUTYL KETONE
6U	TETRACHLOROETHENE(TETRACHLOROETHYLENE)
6U	1,1,2,2-TETRACHLOROETHANE
6U	TOLUENE
6U	CHLOROBENZENE
6U	ETHYL BENZENE
6U	STYRENE
6U	TOTAL XYLENES
23	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN *L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

PURGEABLE ORGANICS DATA REPORT 07/17/90

PROJECT NO. 90-436 SAMPLE NO. 45712 SAMPLE TYPE: SOIL
SOURCE: INTERNATIONAL PAPER
STATION ID: SD-01

PROG ELEM: NSF COLLECTED BY: L CONWAY
CITY: MOBILE ST: AL
COLLECTION START: 05/02/90 1115 STOP: 00/00/00

CASE NO.: 14000 SAS NO.: D. NO.: T200

UG/KG	ANALYTICAL RESULTS
22U	CHLOROMETHANE
22U	BROMOMETHANE
22U	VINYL CHLORIDE
22U	CHLOROETHANE
40U	METHYLENE CHLORIDE
30U	ACETONE
11U	CARBON DISULFIDE
11U	1,1-DICHLOROETHENE(1,1-DICHLOROETHYLENE)
11U	1,1-DICHLOROETHANE
11U	1,2 DICHLOROETHENE (TOTAL)
11U	CHLOROFORM
11U	1,2-DICHLOROETHANE
22U	METHYL ETHYL KETONE
11U	1,1,1-TRICHLOROETHANE
11U	CARBON TETRACHLORIDE
22U	VINYL ACETATE
11U	BROMODICHLOROMETHANE

UG/KG	ANALYTICAL RESULTS
11U	1,2-DICHLOROPROPANE
11U	CIS-1,3-DICHLOROPROPENE
11U	TRICHLOROETHENE(TRICHLOROETHYLENE)
11U	DIBROMOCHLOROMETHANE
11U	1,1,2-TRICHLOROETHANE
11U	BENZENE
11U	TRANS-1,3-DICHLOROPROPENE
11U	BROMOFORM
22U	METHYL ISOBUTYL KETONE
22U	METHYL BUTYL KETONE
11U	TETRACHLOROETHENE(TETRACHLOROETHYLENE)
11U	1,1,2,2-TETRACHLOROETHANE
11U	TOLUENE
11U	CHLOROBENZENE
11U	ETHYL BENZENE
11U	STYRENE
11U	TOTAL XYLENES
55	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN *L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

PURGEABLE ORGANICS DATA REPORT 07/17/90

PROJECT NO. 90-436 SAMPLE NO. 45714 SAMPLE TYPE: SOIL
SOURCE: INTERNATIONAL PAPER
STATION ID: SD-02

PROG ELEM: NSF COLLECTED BY: L CONWAY
CITY: MOBILE ST: AL
COLLECTION START: 05/02/90 1250 STOP: 00/00/00

CASE NO.: 14000 SAS NO.: D. NO.: T201

UG/KG	ANALYTICAL RESULTS
13U	CHLOROMETHANE
13U	BROMOMETHANE
13U	VINYL CHLORIDE
13U	CHLOROETHANE
30U	METHYLENE CHLORIDE
13U	ACETONE
7U	CARBON DISULFIDE
7U	1,1-DICHLOROETHENE(1,1-DICHLOROETHYLENE)
7U	1,1-DICHLOROETHANE
7U	1,2 DICHLOROETHENE (TOTAL)
7U	CHLOROFORM
7U	1,2-DICHLOROETHANE
13U	METHYL ETHYL KETONE
7U	1,1,1-TRICHLOROETHANE
7U	CARBON TETRACHLORIDE
13U	VINYL ACETATE
7U	BROMODICHLOROMETHANE

UG/KG	ANALYTICAL RESULTS
7U	1,2-DICHLOROPROPANE
7U	CIS-1,3-DICHLOROPROPENE
7U	TRICHLOROETHENE(TRICHLOROETHYLENE)
7U	DIBROMOCHLOROMETHANE
7U	1,1,2-TRICHLOROETHANE
7U	BENZENE
7U	TRANS-1,3-DICHLOROPROPENE
7U	BROMOFORM
13U	METHYL ISOBUTYL KETONE
13U	METHYL BUTYL KETONE
7U	TETRACHLOROETHENE(TETRACHLOROETHYLENE)
7U	1,1,2,2-TETRACHLOROETHANE
7U	TOLUENE
7U	CHLOROBENZENE
7U	ETHYL BENZENE
7U	STYRENE
7U	TOTAL XYLENES
24	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN *L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

PURGEABLE ORGANICS DATA REPORT 07/17/90

PROJECT NO. 90-436 SAMPLE NO. 45715 SAMPLE TYPE: SOIL
SOURCE: INTERNATIONAL PAPER
STATION ID: SD-03

PROG ELEM: NSF COLLECTED BY: L CONWAY
CITY: MOBILE ST: AL
COLLECTION START: 05/02/90 1330 STOP: 00/00/00

CASE NO.: 14000 SAS NO.: D. NO.. T202

UG/KG	ANALYTICAL RESULTS
29U	CHLOROMETHANE
29U	BROMOMETHANE
29U	VINYL CHLORIDE
29U	CHLOROETHANE
70U	METHYLENE CHLORIDE
29U	ACETONE
15U	CARBON DISULFIDE
15U	1,1-DICHLOROETHENE(1,1-DICHLOROETHYLENE)
15U	1,1-DICHLOROETHANE
15U	1,2 DICHLOROETHENE (TOTAL)
15U	CHLOROFORM
15U	1,2-DICHLOROETHANE
29U	METHYL ETHYL KETONE
15U	1,1,1-TRICHLOROETHANE
15U	CARBON TETRACHLORIDE
29U	VINYL ACETATE
15U	BROMODICHLOROMETHANE

UG/KG	ANALYTICAL RESULTS
15U	1,2-DICHLOROPROPANE
15U	CIS-1,3-DICHLOROPROPENE
15U	TRICHLOROETHENE(TRICHLOROETHYLENE)
15U	DIBROMOCHLOROMETHANE
15U	1,1,2-TRICHLOROETHANE
15U	BENZENE
15U	TRANS-1,3-DICHLOROPROPENE
15U	BROMOFORM
29U	METHYL ISOBUTYL KETONE
29U	METHYL BUTYL KETONE
15U	TETRACHLOROETHENE(TETRACHLOROETHYLENE)
15U	1,1,2,2-TETRACHLOROETHANE
15U	TOLUENE
15U	CHLOROBENZENE
15U	ETHYL BENZENE
15U	STYRENE
15U	TOTAL XYLENES
66	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

07/17/90

PURGEABLE ORGANICS DATA REPORT

PROJECT NO. 90-436 SAMPLE NO. 45717 SAMPLE TYPE: SOIL
SOURCE: INTERNATIONAL PAPER
STATION ID: SD-04

PROG ELEM: NSF COLLECTED BY: L CONWAY
CITY: MOBILE ST: AL
COLLECTION START: 05/02/90 1350 STOP: 00/00/00

CASE NO.: 14000 SAS NO.: D. NO.. T203

UG/KG	ANALYTICAL RESULTS
13U	CHLOROMETHANE
13U	BROMOMETHANE
13U	VINYL CHLORIDE
13U	CHLOROETHANE
30U	METHYLENE CHLORIDE
20U	ACETONE
2J	CARBON DISULFIDE
7U	1,1-DICHLOROETHENE(1,1-DICHLOROETHYLENE)
7U	1,1-DICHLOROETHANE
7U	1,2 DICHLOROETHENE (TOTAL)
7U	CHLOROFORM
7U	1,2-DICHLOROETHANE
13U	METHYL ETHYL KETONE
7U	1,1,1-TRICHLOROETHANE
7U	CARBON TETRACHLORIDE
13U	VINYL ACETATE
7U	BROMODICHLOROMETHANE

UG/KG	ANALYTICAL RESULTS
7U	1,2-DICHLOROPROPANE
7U	CIS-1,3-DICHLOROPROPENE
7U	TRICHLOROETHENE(TRICHLOROETHYLENE)
7U	DIBROMOCHLOROMETHANE
7U	1,1,2-TRICHLOROETHANE
7U	BENZENE
7U	TRANS-1,3-DICHLOROPROPENE
7U	BROMOFORM
13U	METHYL ISOBUTYL KETONE
13U	METHYL BUTYL KETONE
7U	TETRACHLOROETHENE(TETRACHLOROETHYLENE)
7U	1,1,2,2-TETRACHLOROETHANE
7U	TOLUENE
7U	CHLOROBENZENE
7U	ETHYL BENZENE
7U	STYRENE
7U	TOTAL XYLENES
24	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

07/17/90

PURGEABLE ORGANICS DATA REPORT

PROJECT NO. 90-436 SAMPLE NO. 45716 SAMPLE TYPE: SOIL
SOURCE: INTERNATIONAL PAPER
STATION ID: SD-05

PROG ELEM: NSF COLLECTED BY: L CONWAY
CITY: MOBILE ST: AL
COLLECTION START: 05/02/90 1335 STOP: 00/00/00

CASE NO.: 14000 SAS NO.: D. NO.: T204

UG/KG	ANALYTICAL RESULTS
40U	CHLOROMETHANE
40U	BROMOMETHANE
40U	VINYL CHLORIDE
40U	CHLOROETHANE
80U	METHYLENE CHLORIDE
40U	ACETONE
20U	CARBON DISULFIDE
20U	1,1-DICHLOROETHENE(1,1-DICHLOROETHYLENE)
20U	1,1-DICHLOROETHANE
20U	1,2 DICHLOROETHENE (TOTAL)
20U	CHLOROFORM
20U	1,2-DICHLOROETHANE
40U	METHYL ETHYL KETONE
20U	1,1,1-TRICHLOROETHANE
20U	CARBON TETRACHLORIDE
40U	VINYL ACETATE
20U	BROMODICHLOROMETHANE

UG/KG	ANALYTICAL RESULTS
20U	1,2-DICHLOROPROPANE
20U	CIS-1,3-DICHLOROPROPENE
20U	TRICHLOROETHENE(TRICHLOROETHYLENE)
20U	DIBROMOCHLOROMETHANE
20U	1,1,2-TRICHLOROETHANE
20U	BENZENE
20U	TRANS-1,3-DICHLOROPROPENE
20U	BROMOFORM
40U	METHYL ISOBUTYL KETONE
40U	METHYL BUTYL KETONE
20U	TETRACHLOROETHENE(TETRACHLOROETHYLENE)
20U	1,1,2,2-TETRACHLOROETHANE
20U	TOLUENE
20U	CHLOROBENZENE
20U	ETHYL BENZENE
20U	STYRENE
20U	TOTAL XYLENES
75	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
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*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS THE MINIMUM QUANTITATION LIMIT.
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

PURGEABLE ORGANICS DATA REPORT 07/17/90

PROJECT NO. 90-436 SAMPLE NO. 45718 SAMPLE TYPE: SOIL
SOURCE: INTERNATIONAL PAPER
STATION ID: SD-06

PROG ELEM: NSF COLLECTED BY: L CONWAY
CITY: MOBILE ST: AL
COLLECTION START: 05/02/90 1420 STOP: 00/00/00

CASE NO.: 14000 SAS NO.: D. NO.. T205

UG/KG	ANALYTICAL RESULTS
19U	CHLOROMETHANE
19U	BROMOMETHANE
19U	VINYL CHLORIDE
19U	CHLOROETHANE
20U	METHYLENE CHLORIDE
30U	ACETONE
9U	CARBON DISULFIDE
9U	1,1-DICHLOROETHENE(1,1-DICHLOROETHYLENE)
9U	1,1-DICHLOROETHANE
9U	1,2 DICHLOROETHENE (TOTAL)
9U	CHLOROFORM
9U	1,2-DICHLOROETHANE
19UR	METHYL ETHYL KETONE
9U	1,1,1-TRICHLOROETHANE
9U	CARBON TETRACHLORIDE
19U	VINYL ACETATE
9U	BROMODICHLOROMETHANE

UG/KG	ANALYTICAL RESULTS
9U	1,2-DICHLOROPROPANE
9U	CIS-1,3-DICHLOROPROPENE
9U	TRICHLOROETHENE(TRICHLOROETHYLENE)
9U	DIBROMOCHLOROMETHANE
9U	1,1,2-TRICHLOROETHANE
9U	BENZENE
9U	TRANS-1,3-DICHLOROPROPENE
9U	BROMOFORM
19U	METHYL ISOBUTYL KETONE
19U	METHYL BUTYL KETONE
9U	TETRACHLOROETHENE(TETRACHLOROETHYLENE)
9U	1,1,2,2-TETRACHLOROETHANE
9U	TOLUENE
9U	CHLOROBENZENE
9U	ETHYL BENZENE
9U	STYRENE
9U	TOTAL XYLENES
47	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*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 QUANTITATION LIMIT.
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

07/17/90

PURGEABLE ORGANICS DATA REPORT

PROJECT NO. 90-436 SAMPLE NO. 45719 SAMPLE TYPE: SEDIMBLK
SOURCE: INTERNATIONAL PAPER
STATION ID: SD-07 (REGION IV QC BLANK)

PROG ELEM: NSF COLLECTED BY: L CONWAY
CITY: MOBILE ST: AL
COLLECTION START: 05/02/90 1510 STOP: 00/00/00

CASE NO.: 14000 SAS NO.: D. NO.. T189

UG/KG	ANALYTICAL RESULTS	UG/KG	ANALYTICAL RESULTS
11U	CHLOROMETHANE	5U	1,2-DICHLOROPROPANE
11U	BROMOMETHANE	5U	CIS-1,3-DICHLOROPROPENE
11U	VINYL CHLORIDE	5U	TRICHLOROETHENE(TRICHLOROETHYLENE)
11U	CHLOROETHANE	5U	DIBROMOCHLOROMETHANE
30	METHYLENE CHLORIDE	5U	1,1,2-TRICHLOROETHANE
21	ACETONE	5U	BENZENE
5U	CARBON DISULFIDE	5U	TRANS-1,3-DICHLOROPROPENE
5U	1,1-DICHLOROETHENE(1,1-DICHLOROETHYLENE)	5U	BROMOFORM
5U	1,1-DICHLOROETHANE	11U	METHYL ISOBUTYL KETONE
5U	1,2 DICHLOROETHENE (TOTAL)	11U	METHYL BUTYL KETONE
5U	CHLOROFORM	5U	TETRACHLOROETHENE(TETRACHLOROETHYLENE)
5U	1,2-DICHLOROETHANE	5U	1,1,2,2-TETRACHLOROETHANE
11U	METHYL ETHYL KETONE	1J	TOLUENE
5U	1,1,1-TRICHLOROETHANE	5U	CHLOROBENZENE
5U	CARBON TETRACHLORIDE	5U	ETHYL BENZENE
11U	VINYL ACETATE	5U	STYRENE
5U	BROMODICHLOROMETHANE	5U	TOTAL XYLENES
		8	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*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 QUANTITATION LIMIT.
*R-QC INDICATES THAT DATA UNUSABLE. COMPOUND MAY OR MAY NOT BE PRESENT. RESAMPLING AND REANALYSIS IS NECESSARY FOR VERIFICATION.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

PURGEABLE ORGANICS DATA REPORT 07/17/90

PROJECT NO. 90-436 SAMPLE NO. 45709 SAMPLE TYPE:
SOURCE:
STATION ID: SS-01

PROG ELEM: NSF COLLECTD BY: L CONWAY
CITY: MOBILE ST: AL
COLLECTION START: 05/02/90 0945 STOP: 00/00/00

CASE NO.: 14000 SAS NO.: D. NO.. T190

UG/KG	ANALYTICAL RESULTS
12U	CHLOROMETHANE
12U	BROMOMETHANE
12U	VINYL CHLORIDE
12U	CHLOROETHANE
30U	METHYLENE CHLORIDE
20U	ACETONE
6U	CARBON DISULFIDE
6U	1,1-DICHLOROETHENE(1,1-DICHLOROETHYLENE)
6U	1,1-DICHLOROETHANE
6U	1,2 DICHLOROETHENE (TOTAL)
6U	CHLOROFORM
6U	1,2-DICHLOROETHANE
12U	METHYL ETHYL KETONE
6U	1,1,1-TRICHLOROETHANE
6U	CARBON TETRACHLORIDE
12U	VINYL ACETATE
6U	BROMODICHLOROMETHANE

UG/KG	ANALYTICAL RESULTS
6U	1,2-DICHLOROPROPANE
6U	CIS-1,3-DICHLOROPROPENE
6U	TRICHLOROETHENE(TRICHLOROETHYLENE)
6U	DIBROMOCHLOROMETHANE
6U	1,1,2-TRICHLOROETHANE
6U	BENZENE
6U	TRANS-1,3-DICHLOROPROPENE
6U	BROMOFORM
12U	METHYL ISOBUTYL KETONE
12U	METHYL BUTYL KETONE
6U	TETRACHLOROETHENE(TETRACHLOROETHYLENE)
6U	1,1,2,2-TETRACHLOROETHANE
6U	TOLUENE
6U	CHLOROBENZENE
6U	ETHYL BENZENE
6U	STYRENE
6U	TOTAL XYLENES
14	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*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 QUANTITATION LIMIT.
*R-QC INDICATES THAT DATA UNUSABLE. COMPOUND MAY OR MAY NOT BE PRESENT. RESAMPLING AND REANALYSIS IS NECESSARY FOR VERIFICATION.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

PURGEABLE ORGANICS DATA REPORT 07/17/90

PROJECT NO. 90-436 SAMPLE NO. 45711 SAMPLE TYPE: SOIL
SOURCE: INTERNATIONAL PAPER
STATION ID: SS-02

PROG ELEM: NSF COLLECTED BY: L CONWAY
CITY: MOBILE ST: AL
COLLECTION START: 05/02/90 1040 STOP: 00/00/00

CASE NO.: 14000 SAS NO.: D. NO.. T192

UG/KG	ANALYTICAL RESULTS
11U	CHLOROMETHANE
11U	BROMOMETHANE
11U	VINYL CHLORIDE
11U	CHLOROETHANE
30U	METHYLENE CHLORIDE
11U	ACETONE
6U	CARBON DISULFIDE
6U	1,1-DICHLOROETHENE(1,1-DICHLOROETHYLENE)
6U	1,1-DICHLOROETHANE
6U	1,2 DICHLOROETHENE (TOTAL)
6U	CHLOROFORM
6U	1,2-DICHLOROETHANE
11U	METHYL ETHYL KETONE
6U	1,1,1-TRICHLOROETHANE
6U	CARBON TETRACHLORIDE
11U	VINYL ACETATE
6U	BROMODICHLOROMETHANE

UG/KG	ANALYTICAL RESULTS
6U	1,2-DICHLOROPROPANE
6U	CIS-1,3-DICHLOROPROPENE
6U	TRICHLOROETHENE(TRICHLOROETHYLENE)
6U	DIBROMOCHLOROMETHANE
6U	1,1,2-TRICHLOROETHANE
6U	BENZENE
6U	TRANS-1,3-DICHLOROPROPENE
6U	BROMOFORM
11U	METHYL ISOBUTYL KETONE
11U	METHYL BUTYL KETONE
6U	TETRACHLOROETHENE(TETRACHLOROETHYLENE)
6U	1,1,2,2-TETRACHLOROETHANE
7U	TOLUENE
6U	CHLOROBENZENE
6U	ETHYL BENZENE
6U	STYRENE
6U	TOTAL XYLENES
11	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*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 QUANTITATION LIMIT.
*R-QC INDICATES THAT DATA UNUSABLE. COMPOUND MAY OR MAY NOT BE PRESENT. RESAMPLING AND REANALYSIS IS NECESSARY FOR VERIFICATION.

MISCELLANEOUS PURGEABLE ORGANICS - DATA REPORT

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** PROJECT NO. 90-436    SAMPLE NO. 45717  SAMPLE TYPE: SOIL        PROG ELEM: NSF   COLLECTED BY: L CONWAY          **
** SOURCE: INTERNATIONAL PAPER                                      CITY: MOBILE                ST: AL                **
** STATION ID: SD-04                                                COLLECTION START: 05/02/90  1350   STOP: 00/00/00 **
** CASE.NO.: 14000          SAS NO.:                                D. NO.. T203                MD NO: T203           **
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ANALYTICAL RESULTS UG/KG

60JN	METHYL(METHYLETHYL)BICYCLOHEXENE
10JN	DIMETHYLMETHYLENEBICYCLOHEPTANE

FOOTNOTES
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

07/17/90

EXTRACTABLE ORGANICS DATA REPORT

PROJECT NO. 90-436 SAMPLE NO. 45710 SAMPLE TYPE: SOIL
SOURCE: INTERNATIONAL PAPER
STATION ID: SB-01

PROG ELEM: NSF COLLECTED BY: L CONWAY
CITY: MOBILE ST: AL
COLLECTION START: 05/02/90 1000 STOP: 00/00/00

CASE NO.: 14000 SAS NO.: D. NO.. T191

UG/KG	ANALYTICAL RESULTS
410U	PHENOL
410U	BIS(2-CHLOROETHYL) ETHER
410U	2-CHLOROPHENOL
410U	1,3-DICHLOROBENZENE
410U	1,4-DICHLOROBENZENE
410U	BENZYL ALCOHOL
410U	1,2-DICHLOROBENZENE
410U	2-METHYLPHENOL
410U	BIS(2-CHLOROISOPROPYL) ETHER
410U	(3 AND/OR 4-)METHYLPHENOL
410U	N-NITROSODI-N-PROPYLAMINE
410UR	HEXACHLOROETHANE
410U	NITROBENZENE
410U	ISOPHORONE
410U	2-NITROPHENOL
410U	2,4-DIMETHYLPHENOL
2000U	BENZOIC ACID
410U	BIS(2-CHLOROETHOXY) METHANE
410U	2,4-DICHLOROPHENOL
410U	1,2,4-TRICHLOROBENZENE
410U	NAPHTHALENE
410U	4-CHLOROANILINE
410U	HEXACHLOROBUTADIENE
410U	4-CHLORO-3-METHYLPHENOL
410U	2-METHYLNAPHTHALENE
410U	HEXACHLOROCYCLOPENTADIENE (HCCP)
410U	2,4,6-TRICHLOROPHENOL
2000U	2,4,5-TRICHLOROPHENOL
410U	2-CHLORONAPHTHALENE
2000U	2-NITROANILINE
410U	DIMETHYL PHTHALATE
410U	ACENAPHTHYLENE
410U	2,6-DINITROTOLUENE

UG/KG	ANALYTICAL RESULTS
2000U	3-NITROANILINE
410U	ACENAPHTHENE
2000U	2,4-DINITROPHENOL
2000U	4-NITROPHENOL
410U	DIBENZOFURAN
410U	2,4-DINITROTOLUENE
410U	DIETHYL PHTHALATE
410U	4-CHLOROPHENYL PHENYL ETHER
410U	FLUORENE
2000U	4-NITROANILINE
2000U	2-METHYL-4,6-DINITROPHENOL
410U	N-NITROSODIPHENYLAMINE/DIPHENYLAMINE
410U	4-BROMOPHENYL PHENYL ETHER
410U	HEXACHLOROBENZENE (HCB)
2000UJ	PENTACHLOROPHENOL
410U	PHENANTHRENE
410U	ANTHRACENE
410U	DI-N-BUTYLPHTHALATE
410U	FLUORANTHENE
410U	PYRENE
410U	BENZYL BUTYL PHTHALATE
830U	3,3'-DICHLOROBENZIDINE
410U	BENZO(A)ANTHRACENE
410U	CHRYSENE
410U	BIS(2-ETHYLHEXYL) PHTHALATE
410U	DI-N-OCTYLPHTHALATE
410U	BENZO(B AND/OR K)FLUORANTHENE
410U	BENZO-A-PYRENE
410U	INDENO (1,2,3-CD) PYRENE
410U	DIBENZO(A,H)ANTHRACENE
410U	BENZO(GHI)PERYLENE
20	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

EXTRACTABLE ORGANICS DATA REPORT 07/17/90

PROJECT NO. 90-436 SAMPLE NO. 45713 SAMPLE TYPE: SOIL
SOURCE: INTERNATIONAL PAPER
STATION ID: SB-02

PROG ELEM: NSF COLLECTED BY: L CONWAY
CITY: MOBILE ST: AL
COLLECTION START: 05/02/90 1230 STOP: 00/00/00

CASE NO.: 14000 SAS NO.: D. NO.: T208

UG/KG	ANALYTICAL RESULTS
430U	PHENOL
430U	BIS(2-CHLOROETHYL) ETHER
430U	2-CHLOROPHENOL
430U	1,3-DICHLOROBENZENE
430U	1,4-DICHLOROBENZENE
430U	BENZYL ALCOHOL
430U	1,2-DICHLOROBENZENE
430U	2-METHYLPHENOL
430U	BIS(2-CHLOROISOPROPYL) ETHER
430U	(3 AND/OR 4-)METHYLPHENOL
430U	N-NITROSODI-N-PROPYLAMINE
430UR	HEXACHLOROETHANE
430U	NITROBENZENE
430U	ISOPHORONE
430U	2-NITROPHENOL
430U	2,4-DIMETHYLPHENOL
2100U	BENZOIC ACID
430U	BIS(2-CHLOROETHOXY) METHANE
430U	2,4-DICHLOROPHENOL
430U	1,2,4-TRICHLOROBENZENE
430U	NAPHTHALENE
430U	4-CHLOROANILINE
430U	HEXACHLOROBUTADIENE
430U	4-CHLORO-3-METHYLPHENOL
430U	2-METHYLNAPHTHALENE
430U	HEXACHLOROCYCLOPENTADIENE (HCCP)
430U	2,4,6-TRICHLOROPHENOL
2100U	2,4,5-TRICHLOROPHENOL
430U	2-CHLORONAPHTHALENE
2100U	2-NITROANILINE
430U	DIMETHYL PHTHALATE
430U	ACENAPHTHYLENE
430U	2,6-DINITROTOLUENE

UG/KG	ANALYTICAL RESULTS
2100U	3-NITROANILINE
430U	ACENAPHTHENE
2100U	2,4-DINITROPHENOL
2100U	4-NITROPHENOL
430U	DIBENZOFURAN
430U	2,4-DINITROTOLUENE
430U	DIETHYL PHTHALATE
430U	4-CHLOROPHENYL PHENYL ETHER
430U	FLUORENE
2100U	4-NITROANILINE
2100U	2-METHYL-4,6-DINITROPHENOL
430U	N-NITROSODIPHENYLAMINE/DIPHENYLAMINE
430U	4-BROMOPHENYL PHENYL ETHER
430U	HEXACHLOROBENZENE (HCB)
2100UJ	PENTACHLOROPHENOL
430U	PHENANTHRENE
430U	ANTHRACENE
430U	DI-N-BUTYLPHTHALATE
430U	FLUORANTHENE
430U	PYRENE
430U	BENZYL BUTYL PHTHALATE
850U	3,3'-DICHLOROBENZIDINE
430U	BENZO(A)ANTHRACENE
430U	CHRYSENE
430U	BIS(2-ETHYLHEXYL) PHTHALATE
430U	DI-N-OCTYLPHTHALATE
430U	BENZO(B AND/OR K)FLUORANTHENE
430U	BENZO-A-PYRENE
430U	INDENO (1,2,3-CD) PYRENE
430U	DIBENZO(A,H)ANTHRACENE
430U	BENZO(GHI)PERYLENE
23	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

07/17/90

EXTRACTABLE ORGANICS DATA REPORT

PROJECT NO. 90-436 SAMPLE NO. 45712 SAMPLE TYPE: SOIL
SOURCE: INTERNATIONAL PAPER
STATION ID: SD-01

PROG ELEM: NSF COLLECTED BY: L CONWAY
CITY: MOBILE ST: AL
COLLECTION START: 05/02/90 1115 STOP: 00/00/00

CASE NO.: 14000 SAS NO.: D. NO.. T200

UG/KG	ANALYTICAL RESULTS
730U	PHENOL
730U	BIS(2-CHLOROETHYL) ETHER
730U	2-CHLOROPHENOL
730U	1,3-DICHLOROBENZENE
730U	1,4-DICHLOROBENZENE
730U	BENZYL ALCOHOL
730U	1,2-DICHLOROBENZENE
730U	2-METHYLPHENOL
730U	BIS(2-CHLOROISOPROPYL) ETHER
730U	(3 AND/OR 4-)METHYLPHENOL
730U	N-NITROSODI-N-PROPYLAMINE
730UR	HEXACHLOROETHANE
730U	NITROBENZENE
730U	ISOPHORONE
730U	2-NITROPHENOL
730U	2,4-DIMETHYLPHENOL
3600U	BENZOIC ACID
730U	BIS(2-CHLOROETHOXY) METHANE
730U	2,4-DICHLOROPHENOL
730U	1,2,4 TRICHLOROBENZENE
730U	NAPHTHALENE
730U	4-CHLOROANILINE
730U	HEXACHLOROBUTADIENE
730U	4-CHLORO-3-METHYLPHENOL
730U	2-METHYLNAPHTHALENE
730U	HEXACHLOROCYCLOPENTADIENE (HCCP)
730U	2,4,6-TRICHLOROPHENOL
3600U	2,4,5-TRICHLOROPHENOL
730U	2-CHLORONAPHTHALENE
3600U	2-NITROANILINE
730U	DIMETHYL PHTHALATE
730U	ACENAPHTHYLENE
730U	2,6-DINITROTOLUENE

UG/KG	ANALYTICAL RESULTS
3600U	3-NITROANILINE
730U	ACENAPHTHENE
3600U	2,4-DINITROPHENOL
3600U	4-NITROPHENOL
730U	DIBENZOFURAN
730U	2,4-DINITROTOLUENE
730U	DIETHYL PHTHALATE
730U	4-CHLOROPHENYL PHENYL ETHER
730U	FLUORENE
3600U	4-NITROANILINE
3600U	2-METHYL-4,6-DINITROPHENOL
730U	N-NITROSODIPHENYLAMINE/DIPHENYLAMINE
730U	4-BROMOPHENYL PHENYL ETHER
730U	HEXACHLOROBENZENE (HCB)
3600UJ	PENTACHLOROPHENOL
730U	PHENANTHRENE
730U	ANTHRACENE
730U	DI-N-BUTYLPHTHALATE
730U	FLUORANTHENE
730U	PYRENE
730U	BENZYL BUTYL PHTHALATE
1500U	3,3'-DICHLOROBENZIDINE
730U	BENZO(A)ANTHRACENE
730U	CHRYSENE
730U	BIS(2-ETHYLHEXYL) PHTHALATE
730U	DI-N-OCTYLPHTHALATE
730U	BENZO(B AND/OR K)FLUORANTHENE
730U	BENZO-A-PYRENE
730U	INDENO (1,2,3-CD) PYRENE
730U	DIBENZO(A,H)ANTHRACENE
730U	BENZO(GHI)PERYLENE
55	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

EXTRACTABLE ORGANICS DATA REPORT 07/17/90

PROJECT NO. 90-436 SAMPLE NO. 45714 SAMPLE TYPE: SOIL
SOURCE: INTERNATIONAL PAPER
STATION ID: SD-02

PROG ELEM: NSF COLLECTED BY: L CONWAY
CITY: MOBILE ST: AL
COLLECTION START: 05/02/90 1250 STOP: 00/00/00

CASE NO.: 14000 SAS NO.: D. NO.. T201

UG/KG	ANALYTICAL RESULTS
430U	PHENOL
430U	BIS(2-CHLOROETHYL) ETHER
430U	2-CHLOROPHENOL
430U	1,3-DICHLOROBENZENE
430U	1,4-DICHLOROBENZENE
430U	BENZYL ALCOHOL
430U	1,2-DICHLOROBENZENE
430U	2-METHYLPHENOL
430U	BIS(2-CHLOROISOPROPYL) ETHER
430U	(3 AND/OR 4-)METHYLPHENOL
430U	N-NITROSODI-N-PROPYLAMINE
430UR	HEXACHLOROETHANE
430U	NITROBENZENE
430U	ISOPHORONE
430U	2-NITROPHENOL
430U	2,4-DIMETHYLPHENOL
2100U	BENZOIC ACID
430U	BIS(2-CHLOROETHOXY) METHANE
430U	2,4-DICHLOROPHENOL
430U	1,2,4-TRICHLOROBENZENE
430U	NAPHTHALENE
430U	4-CHLOROANILINE
430U	HEXACHLOROBUTADIENE
430U	4-CHLORO-3-METHYLPHENOL
430U	2-METHYLNAPHTHALENE
430U	HEXACHLOROCYCLOPENTADIENE (HCCP)
430U	2,4,6-TRICHLOROPHENOL
2100U	2,4,5-TRICHLOROPHENOL
430U	2-CHLORONAPHTHALENE
2100U	2-NITROANILINE
430U	DIMETHYL PHTHALATE
430U	ACENAPHTHYLENE
430U	2,6-DINITROTOLUENE

UG/KG	ANALYTICAL RESULTS
2100U	3-NITROANILINE
430U	ACENAPHTHENE
2100U	2,4-DINITROPHENOL
2100U	4-NITROPHENOL
430U	DIBENZOFURAN
430U	2,4-DINITROTOLUENE
430U	DIETHYL PHTHALATE
430U	4-CHLOROPHENYL PHENYL ETHER
430U	FLUORENE
2100U	4-NITROANILINE
2100U	2-METHYL-4,6-DINITROPHENOL
430U	N-NITROSODIPHENYLAMINE/DIPHENYLAMINE
430U	4-BROMOPHENYL PHENYL ETHER
430U	HEXACHLOROBENZENE (HCB)
2100UJ	PENTACHLOROPHENOL
430U	PHENANTHRENE
430U	ANTHRACENE
430U	DI-N-BUTYLPHTHALATE
430U	FLUORANTHENE
430U	PYRENE
430U	BENZYL BUTYL PHTHALATE
870U	3,3'-DICHLOROBENZIDINE
430U	BENZO(A)ANTHRACENE
430U	CHRYSENE
430U	BIS(2-ETHYLHEXYL) PHTHALATE
430U	DI-N-OCTYLPHTHALATE
430U	BENZO(B AND/OR K)FLUORANTHENE
430U	BENZO-A-PYRENE
430U	INDENO (1,2,3-CD) PYRENE
430U	DIBENZO(A,H)ANTHRACENE
430U	BENZO(GHI)PERYLENE
24	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

EXTRACTABLE ORGANICS DATA REPORT 07/17/90

PROJECT NO. 90-436 SAMPLE NO. 45715 SAMPLE TYPE: SOIL
SOURCE: INTERNATIONAL PAPER
STATION ID: SD-03

PROG ELEM: NSF COLLECTED BY: L CONWAY
CITY: MOBILE ST: AL
COLLECTION START: 05/02/90 1330 STOP: 00/00/00

CASE NO.: 14000 SAS NO.: D. NO.. T202

UG/KG	ANALYTICAL RESULTS
980U	PHENOL
980U	BIS(2-CHLOROETHYL) ETHER
980U	2-CHLOROPHENOL
980U	1,3-DICHLOROBENZENE
980U	1,4-DICHLOROBENZENE
980U	BENZYL ALCOHOL
980U	1,2-DICHLOROBENZENE
980U	2-METHYLPHENOL
980U	BIS(2-CHLOROISOPROPYL) ETHER
980U	(3 AND/OR 4-)METHYLPHENOL
980U	N-NITROSODI-N-PROPYLAMINE
980UR	HEXACHLOROETHANE
980U	NITROBENZENE
980U	ISOPHORONE
980U	2-NITROPHENOL
980U	2,4-DIMETHYLPHENOL
4800U	BENZOIC ACID
980U	BIS(2-CHLOROETHOXY) METHANE
980U	2,4-DICHLOROPHENOL
980U	1,2,4-TRICHLOROBENZENE
980U	NAPHTHALENE
980U	4-CHLOROANILINE
980U	HEXACHLOROBUTADIENE
980U	4-CHLORO-3-METHYLPHENOL
980U	2-METHYLNAPHTHALENE
980U	HEXACHLOROCYCLOPENTADIENE (HCCP)
980U	2,4,6-TRICHLOROPHENOL
4800U	2,4,5-TRICHLOROPHENOL
980U	2-CHLORONAPHTHALENE
4800U	2-NITROANILINE
980U	DIMETHYL PHTHALATE
980U	ACENAPHTHYLENE
980U	2,6-DINITROTOLUENE

UG/KG	ANALYTICAL RESULTS
4800U	3-NITROANILINE
980U	ACENAPHTHENE
4800U	2,4-DINITROPHENOL
4800U	4-NITROPHENOL
980U	DIBENZOFURAN
980U	2,4-DINITROTOLUENE
980U	DIETHYL PHTHALATE
980U	4-CHLOROPHENYL PHENYL ETHER
980U	FLUORENE
4800U	4-NITROANILINE
4800U	2-METHYL-4,6-DINITROPHENOL
980U	N-NITROSODIPHENYLAMINE/DIPHENYLAMINE
980U	4-BROMOPHENYL PHENYL ETHER
980U	HEXACHLOROBENZENE (HCB)
4800UJ	PENTACHLOROPHENOL
980U	PHENANTHRENE
980U	ANTHRACENE
980U	DI-N-BUTYLPHTHALATE
980U	FLUORANTHENE
980U	PYRENE
980U	BENZYL BUTYL PHTHALATE
2000U	3,3'-DICHLOROBENZIDINE
980U	BENZO(A)ANTHRACENE
980U	CHRYSENE
980U	BIS(2-ETHYLHEXYL) PHTHALATE
980U	DI-N-OCTYLPHTHALATE
980U	BENZO(B AND/OR K)FLUORANTHENE
980U	BENZO-A-PYRENE
980U	INDENO (1,2,3-CD) PYRENE
980U	DIBENZO(A,H)ANTHRACENE
980U	BENZO(GHI)PERYLENE
67	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

EXTRACTABLE ORGANICS DATA REPORT 07/17/90

PROJECT NO. 90-436 SAMPLE NO. 45717 SAMPLE TYPE: SOIL
SOURCE: INTERNATIONAL PAPER
STATION ID: SD-04

PROG ELEM: NSF COLLECTED BY: L CONWAY
CITY: MOBILE ST: AL
COLLECTION START: 05/02/90 1350 STOP: 00/00/00

CASE NO.: 14000 SAS NO.: D. NO.: T203

UG/KG	ANALYTICAL RESULTS
430U	PHENOL
430U	BIS(2-CHLOROETHYL) ETHER
430U	2-CHLOROPHENOL
430U	1,3-DICHLOROBENZENE
430U	1,4-DICHLOROBENZENE
430U	BENZYL ALCOHOL
430U	1,2-DICHLOROBENZENE
430U	2-METHYLPHENOL
430U	BIS(2-CHLOROISOPROPYL) ETHER
430U	(3 AND/OR 4-)METHYLPHENOL
430U	N-NITROSODI-N-PROPYLAMINE
430UR	HEXACHLOROETHANE
430U	NITROBENZENE
430U	ISOPHORONE
430U	2-NITROPHENOL
430U	2,4-DIMETHYLPHENOL
2100U	BENZOIC ACID
430U	BIS(2-CHLOROETHOXY) METHANE
430U	2,4-DICHLOROPHENOL
430U	1,2,4 TRICHLOROBENZENE
430U	NAPHTHALENE
430U	4-CHLOROANILINE
430U	HEXACHLOROBUTADIENE
430U	4-CHLORO-3-METHYLPHENOL
430U	2-METHYLNAPHTHALENE
430U	HEXACHLOROCYCLOPENTADIENE (HCCP)
430U	2,4,6-TRICHLOROPHENOL
2100U	2,4,5-TRICHLOROPHENOL
430U	2-CHLORONAPHTHALENE
2100U	2-NITROANILINE
430U	DIMETHYL PHTHALATE
430U	ACENAPHTHYLENE
430U	2,6-DINITROTOLUENE

UG/KG	ANALYTICAL RESULTS
2100U	3-NITROANILINE
430U	ACENAPHTHENE
2100U	2,4-DINITROPHENOL
2100U	4-NITROPHENOL
430U	DIBENZOFURAN
430U	2,4-DINITROTOLUENE
430U	DIETHYL PHTHALATE
430U	4-CHLOROPHENYL PHENYL ETHER
430U	FLUORENE
2100U	4-NITROANILINE
2100U	2-METHYL-4,6-DINITROPHENOL
430U	N-NITROSODIPHENYLAMINE/DIPHENYLAMINE
430U	4-BROMOPHENYL PHENYL ETHER
430U	HEXACHLOROBENZENE (HCB)
2100UJ	PENTACHLOROPHENOL
430U	PHENANTHRENE
430U	ANTHRACENE
430U	DI-N-BUTYLPHTHALATE
430U	FLUORANTHENE
430U	PYRENE
430U	BENZYL BUTYL PHTHALATE
870U	3,3'-DICHLOROBENZIDINE
430U	BENZO(A)ANTHRACENE
430U	CHRYSENE
430U	BIS(2-ETHYLHEXYL) PHTHALATE
430U	DI-N-OCTYLPHTHALATE
430U	BENZO(B AND/OR K)FLUORANTHENE
430U	BENZO-A-PYRENE
430U	INDENO (1,2,3-CD) PYRENE
430U	DIBENZO(A,H)ANTHRACENE
430U	BENZO(GHI)PERYLENE
24	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

07/17/90

EXTRACTABLE ORGANICS DATA REPORT

PROJECT NO. 90-436 SAMPLE NO. 45716 SAMPLE TYPE: SOIL
SOURCE: INTERNATIONAL PAPER
STATION ID: SD-05

PROG ELEM: NSF COLLECTED BY: L CONWAY
CITY: MOBILE ST: AL
COLLECTION START: 05/02/90 1335 STOP: 00/00/00

CASE NO.: 14000 SAS NO.: D. NO.. T204

UG/KG	ANALYTICAL RESULTS
1300U	PHENOL
1300U	BIS(2-CHLOROETHYL) ETHER
1300U	2-CHLOROPHENOL
1300U	1,3-DICHLOROBENZENE
1300U	1,4-DICHLOROBENZENE
1300U	BENZYL ALCOHOL
1300U	1,2-DICHLOROBENZENE
1300U	2-METHYLPHENOL
1300U	BIS(2-CHLOROISOPROPYL) ETHER
1300U	(3 AND/OR 4-)METHYLPHENOL
1300U	N-NITROSODI-N-PROPYLAMINE
1300UR	HEXACHLOROETHANE
1300U	NITROBENZENE
1300U	ISOPHORONE
1300U	2-NITROPHENOL
1300U	2,4-DIMETHYLPHENOL
6100U	BENZOIC ACID
1300U	BIS(2-CHLOROETHOXY) METHANE
1300U	2,4-DICHLOROPHENOL
1300U	1,2,4 TRICHLOROBENZENE
1300U	NAPHTHALENE
1300U	4-CHLOROANILINE
1300U	HEXACHLOROBUTADIENE
1300U	4-CHLORO-3-METHYLPHENOL
1300U	2-METHYLNAPHTHALENE
1300U	HEXACHLOROCYCLOPENTADIENE (HCCP)
1300U	2,4,6-TRICHLOROPHENOL
6100U	2,4,5-TRICHLOROPHENOL
1300U	2-CHLORONAPHTHALENE
6100U	2-NITROANILINE
1300U	DIMETHYL PHTHALATE
1300U	ACENAPHTHYLENE
1300U	2,6-DINITROTOLUENE

UG/KG	ANALYTICAL RESULTS
6100U	3-NITROANILINE
1300U	ACENAPHTHENE
6100U	2,4-DINITROPHENOL
6100U	4-NITROPHENOL
1300U	DIBENZOFURAN
1300U	2,4-DINITROTOLUENE
1300U	DIETHYL PHTHALATE
1300U	4-CHLOROPHENYL PHENYL ETHER
1300U	FLUORENE
6100U	4-NITROANILINE
6100U	2-METHYL-4,6-DINITROPHENOL
1300U	N-NITROSODIPHENYLAMINE/DIPHENYLAMINE
1300U	4-BROMOPHENYL PHENYL ETHER
1300U	HEXACHLOROBENZENE (HCB)
6100UJ	PENTACHLOROPHENOL
1300U	PHENANTHRENE
1300U	ANTHRACENE
1300U	DI-N-BUTYLPHTHALATE
1300U	FLUORANTHENE
1300U	PYRENE
1300U	BENZYL BUTYL PHTHALATE
2500U	3,3'-DICHLOROBENZIDINE
1300U	BENZO(A)ANTHRACENE
1300U	CHRYSENE
1300U	BIS(2-ETHYLHEXYL) PHTHALATE
1300U	DI-N-OCTYLPHTHALATE
1300U	BENZO(B AND/OR K)FLUORANTHENE
1300U	BENZO-A-PYRENE
1300U	INDENO (1,2,3-CD) PYRENE
1300U	DIBENZO(A,H)ANTHRACENE
1300U	BENZO(GHI)PERYLENE
75	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

07/17/90

EXTRACTABLE ORGANICS DATA REPORT

PROJECT NO. 90-436 SAMPLE NO. 45718 SAMPLE TYPE: SOIL
SOURCE: INTERNATIONAL PAPER
STATION ID: SD-06

PROG ELEM: NSF COLLECTED BY: L CONWAY
CITY: MOBILE ST: AL
COLLECTION START: 05/02/90 1420 STOP: 00/00/00

CASE NO.: 14000 SAS NO.: D. NO.: T205

UG/KG	ANALYTICAL RESULTS
620U	PHENOL
620U	BIS(2-CHLOROETHYL) ETHER
620U	2-CHLOROPHENOL
620U	1,3-DICHLOROBENZENE
620U	1,4-DICHLOROBENZENE
620U	BENZYL ALCOHOL
620U	1,2-DICHLOROBENZENE
620U	2-METHYLPHENOL
620U	BIS(2-CHLOROISOPROPYL) ETHER
620U	(3 AND/OR 4-)METHYLPHENOL
620U	N-NITROSODI-N-PROPYLAMINE
620UR	HEXACHLOROETHANE
620U	NITROBENZENE
620U	ISOPHORONE
620U	2-NITROPHENOL
620U	2,4-DIMETHYLPHENOL
3000U	BENZOIC ACID
620U	BIS(2-CHLOROETHOXY) METHANE
620U	2,4-DICHLOROPHENOL
620U	1,2,4-TRICHLOROBENZENE
620U	NAPHTHALENE
620U	4-CHLOROANILINE
620U	HEXACHLOROBUTADIENE
620U	4-CHLORO-3-METHYLPHENOL
74J	2-METHYLNAPHTHALENE
620U	HEXACHLOROCYCLOPENTADIENE (HCCP)
620U	2,4,6-TRICHLOROPHENOL
3000U	2,4,5-TRICHLOROPHENOL
620U	2-CHLORONAPHTHALENE
3000U	2-NITROANILINE
620U	DIMETHYL PHTHALATE
620U	ACENAPHTHYLENE
620U	2,6-DINITROTOLUENE

UG/KG	ANALYTICAL RESULTS
3000U	3-NITROANILINE
620U	ACENAPHTHENE
3000U	2,4-DINITROPHENOL
3000U	4-NITROPHENOL
620U	DIBENZOFURAN
620U	2,4-DINITROTOLUENE
620U	DIETHYL PHTHALATE
620U	4-CHLOROPHENYL PHENYL ETHER
620U	FLUORENE
3000U	4-NITROANILINE
3000U	2-METHYL-4,6-DINITROPHENOL
620U	N-NITROSODIPHENYLAMINE/DIPHENYLAMINE
620U	4-BROMOPHENYL PHENYL ETHER
620U	HEXACHLOROBENZENE (HCB)
3000UJ	PENTACHLOROPHENOL
110J	PHENANTHRENE
620U	ANTHRACENE
620U	DI-N-BUTYLPHTHALATE
260J	FLUORANTHENE
210J	PYRENE
620U	BENZYL BUTYL PHTHALATE
1200U	3,3'-DICHLOROBENZIDINE
200J	BENZO(A)ANTHRACENE
190J	CHRYSENE
620U	BIS(2-ETHYLHEXYL) PHTHALATE
620U	DI-N-OCTYLPHTHALATE
620U	BENZO(B AND/OR K)FLUORANTHENE
620U	BENZO-A-PYRENE
620U	INDENO (1,2,3-CD) PYRENE
620U	DIBENZO(A,H)ANTHRACENE
620U	BENZO(GHI)PERYLENE
47	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

EXTRACTABLE ORGANICS DATA REPORT 07/17/90

PROJECT NO. 90-436 SAMPLE NO. 45719 SAMPLE TYPE: SEDIMBLK PROG ELEM: NSF COLLECTED BY: L CONWAY
SOURCE: INTERNATIONAL PAPER CITY: MOBILE ST: AL
STATION ID: SD-07 (REGION IV QC BLANK) COLLECTION START: 05/02/90 1510 STOP: 00/00/00

CASE NO.: 14000 SAS NO.: D. NO.. T189

UG/KG	ANALYTICAL RESULTS
360U	PHENOL
360U	BIS(2-CHLOROETHYL) ETHER
360U	2-CHLOROPHENOL
360U	1,3-DICHLOROBENZENE
360U	1,4-DICHLOROBENZENE
360U	BENZYL ALCOHOL
360U	1,2-DICHLOROBENZENE
360U	2-METHYLPHENOL
360U	BIS(2-CHLOROISOPROPYL) ETHER
360U	(3 AND/OR 4-)METHYLPHENOL
360U	N-NITROSODI-N-PROPYLAMINE
360U	HEXACHLOROETHANE
360U	NITROBENZENE
360U	ISOPHORONE
360U	2-NITROPHENOL
360U	2,4-DIMETHYLPHENOL
1700U	BENZOIC ACID
360U	BIS(2-CHLOROETHOXY) METHANE
360U	2,4-DICHLOROPHENOL
360U	1,2,4 TRICHLOROBENZENE
360U	NAPHTHALENE
360U	4-CHLOROANILINE
360U	HEXACHLOROBUTADIENE
360U	4-CHLORO-3-METHYLPHENOL
360U	2-METHYLNAPHTHALENE
360U	HEXACHLOROCYCLOPENTADIENE (HCCP)
360U	2,4,6-TRICHLOROPHENOL
1700U	2,4,5-TRICHLOROPHENOL
360U	2-CHLORONAPHTHALENE
1700U	2-NITROANILINE
360U	DIMETHYL PHTHALATE
360U	ACENAPHTHYLENE
360U	2,6-DINITROTOLUENE

UG/KG	ANALYTICAL RESULTS
1700U	3-NITROANILINE
360U	ACENAPHTHENE
1700U	2,4-DINITROPHENOL
1700U	4-NITROPHENOL
360U	DIBENZOFURAN
360U	2,4-DINITROTOLUENE
360U	DIETHYL PHTHALATE
360U	4-CHLOROPHENYL PHENYL ETHER
360U	FLUORENE
1700U	4-NITROANILINE
1700U	2-METHYL-4,6-DINITROPHENOL
360U	N-NITROSODIPHENYLAMINE/DIPHENYLAMINE
360U	4-BROMOPHENYL PHENYL ETHER
360U	HEXACHLOROBENZENE (HCB)
1700U	PENTACHLOROPHENOL
360U	PHENANTHRENE
360U	ANTHRACENE
360U	DI-N-BUTYLPHTHALATE
360U	FLUORANTHENE
360U	PYRENE
360U	BENZYL BUTYL PHTHALATE
720U	3,3'-DICHLOROBENZIDINE
360U	BENZO(A)ANTHRACENE
360U	CHRYSENE
360U	BIS(2-ETHYLHEXYL) PHTHALATE
360U	DI-N-OCTYLPHTHALATE
360U	BENZO(B AND/OR K)FLUORANTHENE
360U	BENZO-A-PYRENE
360U	INDENO (1,2,3-CD) PYRENE
360U	DIBENZO(A,H)ANTHRACENE
360U	BENZO(GHI)PERYLENE
8	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

EXTRACTABLE ORGANICS DATA REPORT 07/17/90

PROJECT NO. 90-436 SAMPLE NO. 45720 SAMPLE TYPE: SEDIMSPK PROG ELEM: NSF COLLECTED BY: L CONWAY
SOURCE: INTERNATIONAL PAPER CITY: MOBILE ST: AL
STATION ID: SD-08 (REGION IV QC SPIKE) COLLECTION START: 05/02/90 1525 STOP: 00/00/00

CASE NO.: 14000 SAS NO.: D. NO.. T188

UG/KG	ANALYTICAL RESULTS
77%	PHENOL
32%	BIS(2-CHLOROETHYL) ETHER
50%	2-CHLOROPHENOL
350U	1,3-DICHLOROBENZENE
350U	1,4-DICHLOROBENZENE
350U	BENZYL ALCOHOL
350U	1,2-DICHLOROBENZENE
350U	2-METHYLPHENOL
350U	BIS(2-CHLOROISOPROPYL) ETHER
63%	(3 AND/OR 4-)METHYLPHENOL
350U	N-NITROSODI-N-PROPYLAMINE
3.5%	HEXACHLOROETHANE
350U	NITROBENZENE
47%	ISOPHORONE
350U	2-NITROPHENOL
350U	2,4-DIMETHYLPHENOL
1700U	BENZOIC ACID
350U	BIS(2-CHLOROETHOXY) METHANE
350U	2,4-DICHLOROPHENOL
350U	1,2,4-TRICHLOROBENZENE
350U	NAPHTHALENE
350U	4-CHLOROANILINE
350U	HEXACHLOROBUTADIENE
350U	4-CHLORO-3-METHYLPHENOL
350U	2-METHYLNAPHTHALENE
350U	HEXACHLOROCYCLOPENTADIENE (HCCP)
350U	2,4,6-TRICHLOROPHENOL
1700U	2,4,5-TRICHLOROPHENOL
350U	2-CHLORONAPHTHALENE
1700U	2-NITROANILINE
53%	DIMETHYL PHTHALATE
350U	ACENAPHTHYLENE
350U	2,6-DINITROTOLUENE

UG/KG	ANALYTICAL RESULTS
1700U	3-NITROANILINE
39%	ACENAPHTHENE
47%	2,4-DINITROPHENOL
1700U	4-NITROPHENOL
350U	DIBENZOFURAN
350U	2,4-DINITROTOLUENE
350U	DIETHYL PHTHALATE
350U	4-CHLOROPHENYL PHENYL ETHER
350U	FLUORENE
1700U	4-NITROANILINE
1700U	2-METHYL-4,6-DINITROPHENOL
350U	N-NITROSODIPHENYLAMINE/DIPHENYLAMINE
350U	4-BROMOPHENYL PHENYL ETHER
350U	HEXACHLOROBENZENE (HCB)
15%	PENTACHLOROPHENOL
50%	PHENANTHRENE
350U	ANTHRACENE
39J	DI-N-BUTYLPHTHALATE
350U	FLUORANTHENE
56%	PYRENE
350U	BENZYL BUTYL PHTHALATE
690U	3,3'-DICHLOROBENZIDINE
350U	BENZO(A)ANTHRACENE
350U	CHRYSENE
350U	BIS(2-ETHYLHEXYL) PHTHALATE
350U	DI-N-OCTYLPHTHALATE
57%	BENZO(B AND/OR K)FLUORANTHENE
350U	BENZO-A-PYRENE
350U	INDENO (1,2,3-CD) PYRENE
350U	DIBENZO(A,H)ANTHRACENE
45%	BENZO(GHI)PERYLENE
5	PERCENT MOISTURE

REMARKS

REMARKS

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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

07/17/90

EXTRACTABLE ORGANICS DATA REPORT

PROJECT NO. 90-436 SAMPLE NO. 45709 SAMPLE TYPE:
SOURCE:
STATION ID: SS-01

PROG ELEM: NSF COLLECTED BY: L CONWAY
CITY: MOBILE ST: AL
COLLECTION START: 05/02/90 0945 STOP: 00/00/00

CASE NO.: 14000 SAS NO.: D. NO.. T190

UG/KG	ANALYTICAL RESULTS
380U	PHENOL
380U	BIS(2-CHLOROETHYL) ETHER
380U	2-CHLOROPHENOL
380U	1,3-DICHLOROBENZENE
380U	1,4-DICHLOROBENZENE
380U	BENZYL ALCOHOL
380U	1,2-DICHLOROBENZENE
380U	2-METHYLPHENOL
380U	BIS(2-CHLOROISOPROPYL) ETHER
380U	(3 AND/OR 4-)METHYLPHENOL
380U	N-NITROSODI-N-PROPYLAMINE
380UR	HEXACHLOROETHANE
380U	NITROBENZENE
380U	ISOPHORONE
380U	2-NITROPHENOL
380U	2,4-DIMETHYLPHENOL
1900U	BENZOIC ACID
380U	BIS(2-CHLOROETHOXY) METHANE
380U	2,4-DICHLOROPHENOL
380U	1,2,4-TRICHLOROBENZENE
380U	NAPHTHALENE
380U	4-CHLOROANILINE
380U	HEXACHLOROBUTADIENE
380U	4-CHLORO-3-METHYLPHENOL
380U	2-METHYLNAPHTHALENE
380U	HEXACHLOROCYCLOPENTADIENE (HCCP)
380U	2,4,6-TRICHLOROPHENOL
1900U	2,4,5-TRICHLOROPHENOL
380U	2-CHLORONAPHTHALENE
1900U	2-NITROANILINE
380U	DIMETHYL PHTHALATE
380U	ACENAPHTHYLENE
380U	2,6-DINITROTOLUENE

UG/KG	ANALYTICAL RESULTS
1900U	3-NITROANILINE
380U	ACENAPHTHENE
1900U	2,4-DINITROPHENOL
1900U	4-NITROPHENOL
380U	DIBENZOFURAN
380U	2,4-DINITROTOLUENE
380U	DIETHYL PHTHALATE
380U	4-CHLOROPHENYL PHENYL ETHER
380U	FLUORENE
1900U	4-NITROANILINE
1900U	2-METHYL-4,6-DINITROPHENOL
380U	N-NITROSODIPHENYLAMINE/DIPHENYLAMINE
380U	4-BROMOPHENYL PHENYL ETHER
380U	HEXACHLOROBENZENE (HCB)
1900UJ	PENTACHLOROPHENOL
380U	PHENANTHRENE
380U	ANTHRACENE
380U	DI-N-BUTYLPHTHALATE
380U	FLUORANTHENE
380U	PYRENE
380U	BENZYL BUTYL PHTHALATE
770U	3,3'-DICHLOROBENZIDINE
380U	BENZO(A)ANTHRACENE
380U	CHRYSENE
380U	BIS(2-ETHYLHEXYL) PHTHALATE
380U	DI-N-OCTYLPHTHALATE
380U	BENZO(B AND/OR K)FLUORANTHENE
380U	BENZO-A-PYRENE
380U	INDENO (1,2,3-CD) PYRENE
380U	DIBENZO(A,H)ANTHRACENE
380U	BENZO(GHI)PERYLENE
14	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

07/17/90

EXTRACTABLE ORGANICS DATA REPORT

PROJECT NO. 90-436 SAMPLE NO. 45711 SAMPLE TYPE: SOIL
SOURCE: INTERNATIONAL PAPER
STATION ID: SS-02

PROG ELEM: NSF COLLECTED BY: L CONWAY
CITY: MOBILE ST: AL
COLLECTION START: 05/02/90 1040 STOP: 00/00/00

CASE NO.: 14000 SAS NO.: D. NO.: T192

UG/KG	ANALYTICAL RESULTS
370U	PHENOL
370U	BIS(2-CHLOROETHYL) ETHER
370U	2-CHLOROPHENOL
370U	1,3-DICHLOROBENZENE
370U	1,4-DICHLOROBENZENE
370U	BENZYL ALCOHOL
370U	1,2-DICHLOROBENZENE
370U	2-METHYLPHENOL
370U	BIS(2-CHLOROISOPROPYL) ETHER
370U	(3 AND/OR 4-)METHYLPHENOL
370U	N-NITROSODI-N-PROPYLAMINE
370UR	HEXACHLOROETHANE
370U	NITROBENZENE
370U	ISOPHORONE
370U	2-NITROPHENOL
370U	2,4-DIMETHYLPHENOL
1800U	BENZOIC ACID
370U	BIS(2-CHLOROETHOXY) METHANE
370U	2,4-DICHLOROPHENOL
370U	1,2,4-TRICHLOROBENZENE
370U	NAPHTHALENE
370U	4-CHLOROANILINE
370U	HEXACHLOROBUTADIENE
370U	4-CHLORO-3-METHYLPHENOL
370U	2-METHYLNAPHTHALENE
370U	HEXACHLOROCYCLOPENTADIENE (HCCP)
370U	2,4,6-TRICHLOROPHENOL
1800U	2,4,5-TRICHLOROPHENOL
370U	2-CHLORONAPHTHALENE
1800U	2-NITROANILINE
370U	DIMETHYL PHTHALATE
370U	ACENAPHTHYLENE
370U	2,6-DINITROTOLUENE

UG/KG	ANALYTICAL RESULTS
1800U	3-NITROANILINE
370U	ACENAPHTHENE
1800U	2,4-DINITROPHENOL
1800U	4-NITROPHENOL
370U	DIBENZOFURAN
370U	2,4-DINITROTOLUENE
370U	DIETHYL PHTHALATE
370U	4-CHLOROPHENYL PHENYL ETHER
370U	FLUORENE
1800U	4-NITROANILINE
1800U	2-METHYL-4,6-DINITROPHENOL
370U	N-NITROSODIPHENYLAMINE/DIPHENYLAMINE
370U	4-BROMOPHENYL PHENYL ETHER
370U	HEXACHLOROBENZENE (HCB)
1800UJ	PENTACHLOROPHENOL
370U	PHENANTHRENE
370U	ANTHRACENE
370U	DI-N-BUTYLPHTHALATE
370U	FLUORANTHENE
370U	PYRENE
370U	BENZYL BUTYL PHTHALATE
740U	3,3'-DICHLOROBENZIDINE
370U	BENZO(A)ANTHRACENE
370U	CHRYSENE
370U	BIS(2-ETHYLHEXYL) PHTHALATE
370U	DI-N-OCTYLPHTHALATE
370U	BENZO(B AND/OR K)FLUORANTHENE
370U	BENZO-A-PYRENE
370U	INDENO (1,2,3-CD) PYRENE
370U	DIBENZO(A,H)ANTHRACENE
370U	BENZO(GHI)PERYLENE
11	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*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 QUANTITATION LIMIT.
*R-QC INDICATES THAT DATA UNUSABLE. COMPOUND MAY OR MAY NOT BE PRESENT. RESAMPLING AND REANALYSIS IS NECESSARY FOR VERIFICATION.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

07/17/90

MISCELLANEOUS EXTRACTABLE COMPOUNDS - DATA REPORT

PROJECT NO. 90-436 SAMPLE NO. 45713 SAMPLE TYPE: SOIL PROG ELEM: NSF COLLECTED BY: L CONWAY
SOURCE: INTERNATIONAL PAPER CITY: MOBILE ST: AL
STATION ID: SB-02 COLLECTION START: 05/02/90 1230 STOP: 00/00/00
CASE.NO.: 14000 SAS NO.: D. NO.. T208 MD NO: T208

ANALYTICAL RESULTS UG/KG

5000J 8 UNIDENTIFIED COMPOUNDS

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*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 QUANTITATION LIMIT.
*R-QC INDICATES THAT DATA UNUSABLE. COMPOUND MAY OR MAY NOT BE PRESENT. RESAMPLING AND REANALYSIS IS NECESSARY FOR VERIFICATION.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

07/17/90

MISCELLANEOUS EXTRACTABLE COMPOUNDS - DATA REPORT

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** PROJECT NO. 90-436 SAMPLE NO. 45712 SAMPLE TYPE: SOIL PROG ELEM: NSF COLLECTED BY: L CONWAY **
** SOURCE: INTERNATIONAL PAPER CITY: MOBILE ST: AL **
** STATION ID: SD-01 COLLECTION START: 05/02/90 1115 STOP: 00/00/00 **
** CASE.NO.: 14000 SAS NO.: D. NO.: T200 MD NO: T200 **
** **
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ANALYTICAL RESULTS UG/KG

20000J	14 UNIDENTIFIED COMPOUNDS
1000JN	TETRAMETHYLPHENANTHRENE

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*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 QUANTITATION LIMIT.
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

07/17/90

MISCELLANEOUS EXTRACTABLE COMPOUNDS - DATA REPORT

PROJECT NO. 90-436 SAMPLE NO. 45714 SAMPLE TYPE: SOIL	PROG ELEM: NSF COLLECTED BY: L CONWAY
SOURCE: INTERNATIONAL PAPER	CITY: MOBILE ST: AL
STATION ID: SD-02	COLLECTION START: 05/02/90 1250 STOP: 00/00/00
CASE.NO.: 14000 SAS NO.:	D. NO.. T201 MD NO: T201

ANALYTICAL RESULTS UG/KG

1000JN	HEXADECANOIC ACID
500JN	TETRAMETHYLPHENANTHRENE
20000J	18 UNIDENTIFIED COMPOUNDS

FOOTNOTES
*A-AVERAGE VALUE   *NA-NOT ANALYZED   *NAI-INTERFERENCES   *J-ESTIMATED VALUE   *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*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 QUANTITATION LIMIT.
*R-QC INDICATES THAT DATA UNUSABLE. COMPOUND MAY OR MAY NOT BE PRESENT. RESAMPLING AND REANALYSIS IS NECESSARY FOR VERIFICATION.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

07/17/90

MISCELLANEOUS EXTRACTABLE COMPOUNDS - DATA REPORT

PROJECT NO. 90-436 SAMPLE NO. 45715 SAMPLE TYPE: SOIL
SOURCE: INTERNATIONAL PAPER
STATION ID: SD-03
CASE NO.: 14000 SAS NO.:

PROG ELEM: NSF COLLECTED BY: L CONWAY
CITY: MOBILE ST: AL
COLLECTION START: 05/02/90 1330 STOP: 00/00/00
D. NO.: T202 MD NO: T202

ANALYTICAL RESULTS UG/KG

30000J 12 UNIDENTIFIED COMPOUNDS

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*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 QUANTITATION LIMIT.
*R-QC INDICATES THAT DATA UNUSABLE. COMPOUND MAY OR MAY NOT BE PRESENT. RESAMPLING AND REANALYSIS IS NECESSARY FOR VERIFICATION.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

07/17/90

MISCELLANEOUS EXTRACTABLE COMPOUNDS - DATA REPORT

PROJECT NO. 90-436 SAMPLE NO. 45717 SAMPLE TYPE: SOIL PROG ELEM: NSF COLLECTED BY: L CONWAY
SOURCE: INTERNATIONAL PAPER CITY: MOBILE ST: AL
STATION ID: SD-04 COLLECTION START: 05/02/90 1350 STOP: 00/00/00
CASE NO.: 14000 SAS NO.: D. NO.. T203 MD NO: T203

ANALYTICAL RESULTS UG/KG

10000J	9 UNIDENTIFIED COMPOUNDS
1000JN	ETHYLIDENEBISETHYLBENZENE
2000JN	TETRAMETHYLPHENANTHRENE
700JN	HEXATHIEPANE

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*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 QUANTITATION LIMIT.
*R-QC INDICATES THAT DATA UNUSABLE. COMPOUND MAY OR MAY NOT BE PRESENT. RESAMPLING AND REANALYSIS IS NECESSARY FOR VERIFICATION.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

07/17/90

MISCELLANEOUS EXTRACTABLE COMPOUNDS - DATA REPORT

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**   PROJECT NO. 90-436    SAMPLE NO. 45716  SAMPLE TYPE: SOIL          PROG ELEM: NSF   COLLECTEDBY: L CONWAY                  **
**   SOURCE: INTERNATIONAL PAPER                                        CITY: MOBILE                ST: AL                      **
**   STATION ID: SD-05                                                  COLLECTION START: 05/02/90  1335   STOP: 00/00/00      **
**   CASE NO.: 14000              SAS NO.:                              D. NO.. T204                MD NO: T204                 **
**                                                                                                                              **
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ANALYTICAL RESULTS UG/KG

10000JN	CINEOLE
4000JN	TERPIN HYDRATE
2000JN	CARYOPHYLLENE
	OCTAHYDROMETHYLMETHYLENE(METHYLETHYL)-
4000JN	NAPHTHALENE (2 ISOMERS)
3000JN	DIMETHYL(METHYLETHYL)NAPHTHALENE
90000J	14 UNIDENTIFIED COMPOUNDS

FOOTNOTES
*A-AVERAGE VALUE   *NA-NOT ANALYZED   *NAI-INTERFERENCES   *J-ESTIMATED VALUE   *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN   *L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
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*R-QC INDICATES THAT DATA UNUSABLE. COMPOUND MAY OR MAY NOT BE PRESENT. RESAMPLING AND REANALYSIS IS NECESSARY FOR VERIFICATION.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

07/17/90

MISCELLANEOUS EXTRACTABLE COMPOUNDS - DATA REPORT

*** ***
** PROJECT NO. 90-436 SAMPLE NO. 45718 SAMPLE TYPE: SOIL PROG ELEM: NSF COLLECTED BY: L CONWAY **
** SOURCE: INTERNATIONAL PAPER CITY: MOBILE ST: AL **
** STATION ID: SD-06 COLLECTION START: 05/02/90 1420 STOP: 00/00/00 **
** CASE NO.: 14000 SAS NO.: D. NO.. T205 MD NO: T205 **
** **
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ANALYTICAL RESULTS UG/KG

20000J	15 UNIDENTIFIED COMPOUNDS
700JN	ETHYLDIMETHYLBENZENE

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*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 QUANTITATION LIMIT.
*R-QC INDICATES THAT DATA UNUSABLE. COMPOUND MAY OR MAY NOT BE PRESENT. RESAMPLING AND REANALYSIS IS NECESSARY FOR VERIFICATION.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

07/17/90

MISCELLANEOUS EXTRACTABLE COMPOUNDS - DATA REPORT

PROJECT NO. 90-436 SAMPLE NO. 45709 SAMPLE TYPE: PROG ELEM: NSF COLLECTED BY: L CONWAY
SOURCE: CITY: MOBILE ST: AL
STATION ID: SS-01 COLLECTION START: 05/02/90 0945 STOP: 00/00/00
CASE NO.: 14000 SAS NO.: D. NO.: T190 MD NO: T190

ANALYTICAL RESULTS UG/KG

400J 1 UNIDENTIFIED COMPOUND

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*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 QUANTITATION LIMIT.
*R-QC INDICATES THAT DATA UNUSABLE. COMPOUND MAY OR MAY NOT BE PRESENT. RESAMPLING AND REANALYSIS IS NECESSARY FOR VERIFICATION.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

07/17/90

MISCELLANEOUS EXTRACTABLE COMPOUNDS - DATA REPORT

PROJECT NO. 90-436 SAMPLE NO. 45711 SAMPLE TYPE: SOIL
SOURCE: INTERNATIONAL PAPER
STATION ID: SS-02
CASE NO.: 14000 SAS NO.:

PROG ELEM: NSF COLLECTED BY: L CONWAY
CITY: MOBILE ST: AL
COLLECTION START: 05/02/90 1040 STOP: 00/00/00
D. NO.. T192 MD NO: T192

ANALYTICAL RESULTS UG/KG

10000J 13 UNIDENTIFIED COMPOUND

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
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*R-QC INDICATES THAT DATA UNUSABLE. COMPOUND MAY OR MAY NOT BE PRESENT. RESAMPLING AND REANALYSIS IS NECESSARY FOR VERIFICATION.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

PESTICIDES/PCB'S DATA REPORT 07/17/90

PROJECT NO. 90-436 SAMPLE NO. 45710 SAMPLE TYPE: SOIL
SOURCE: INTERNATIONAL PAPER
STATION ID: SB-01
CASE NUMBER: 14000 SAS NUMBER:

PROG ELEM: NSF COLLECTED BY: L CONWAY
CITY: MOBILE ST: AL
COLLECTION START: 05/02/90 1000 STOP: 00/00/00
D NUMBER: 1191

UG/KG	ANALYTICAL RESULTS
10.U	ALPHA-BHC
10.U	BETA-BHC
10.U	DELTA-BHC
10.U	GAMMA-BHC (LINDANE)
10.U	HEPTACHLOR
10.U	ALDRIN
10.U	HEPTACHLOR EPOXIDE
10.U	ENDOSULFAN I (ALPHA)
20.U	DIELDRIN
20.U	4,4' DDE (P,P'-DDE)
20.U	ENDRIN
20.U	ENDOSULFAN II (BETA)
20.U	4,4'-DDD (P,P'-DDD)
20.U	ENDOSULFAN SULFATE
20.U	4,4'-DDT (P,P'-DDT)

UG/KG	ANALYTICAL RESULTS
100U	METHOXYCHLOR
20.U	ENDRIN KETONE
	CHLORDANE (TECH. MIXTURE) /1
100U	GAMMA-CHLORDANE /2
100U	ALPHA-CHLORDANE /2
200U	TOXAPHENE
100U	PCB-1016 (AROCLOR 1016)
100U	PCB-1221 (AROCLOR 1221)
100U	PCB-1232 (AROCLOR 1232)
100U	PCB-1242 (AROCLOR 1242)
100U	PCB-1248 (AROCLOR 1248)
200U	PCB-1254 (AROCLOR 1254)
200U	PCB-1260 (AROCLOR 1260)
20	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN *L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
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*R-QC INDICATES THAT DATA UNUSABLE. COMPOUND MAY OR MAY NOT BE PRESENT. RESAMPLING AND REANALYSIS IS NECESSARY FOR VERIFICATION.
*C-CONFIRMED BY GCMS 1. WHEN NO VALUE IS REPORTED, SEE CHLORDANE CONSTITUENTS.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

PESTICIDES/PCB'S DATA REPORT 07/17/90

PROJECT NO. 90-436 SAMPLE NO. 45713 SAMPLE TYPE: SOIL
SOURCE: INTERNATIONAL PAPER
STATION ID: SB-02
CASE NUMBER: 14000 SAS NUMBER:

PROG ELEM: NSF COLLECTED BY: L CONWAY
CITY: MOBILE ST: AL
COLLECTION START: 05/02/90 1230 STOP: 00/00/00
D NUMBER: 1208

UG/KG	ANALYTICAL RESULTS
10.U	ALPHA-BHC
10.U	BETA-BHC
10.U	DELTA-BHC
10.U	GAMMA-BHC (LINDANE)
10.U	HEPTACHLOR
10.U	ALDRIN
10.U	HEPTACHLOR EPOXIDE
10.U	ENDOSULFAN I (ALPHA)
21.U	DIELDRIN
21.U	4,4' DDE (P,P'-DDE)
21.U	ENDRIN
21.U	ENDOSULFAN II (BETA)
21.U	4,4'-DDD (P,P'-DDD)
21.U	ENDOSULFAN SULFATE
21.U	4,4'-DDT (P,P'-DDT)

UG/KG	ANALYTICAL RESULTS
100U	METHOXYCHLOR
21.U	ENDRIN KETONE
	CHLORDANE (TECH. MIXTURE) /1
100U	GAMMA-CHLORDANE /2
100U	ALPHA-CHLORDANE /2
210U	TOXAPHENE
100U	PCB-1016 (AROCLOR 1016)
100U	PCB-1221 (AROCLOR 1221)
100U	PCB-1232 (AROCLOR 1232)
100U	PCB-1242 (AROCLOR 1242)
100U	PCB-1248 (AROCLOR 1248)
210U	PCB-1254 (AROCLOR 1254)
210U	PCB-1260 (AROCLOR 1260)
23	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
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*C-CONFIRMED BY GCMS 1. WHEN NO VALUE IS REPORTED, SEE CHLORDANE CONSTITUENTS.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

PESTICIDES/PCB'S DATA REPORT 07/17/90

PROJECT NO. 90-436 SAMPLE NO. 45712 SAMPLE TYPE: SOIL
SOURCE: INTERNATIONAL PAPER
STATION ID: SD-01
CASE NUMBER: 14000 SAS NUMBER:

PROG ELEM: NSF COLLECTED BY: L CONWAY
CITY: MOBILE ST: AL
COLLECTION START: 05/02/90 1115 STOP: 00/00/00
D NUMBER: T200

UG/KG	ANALYTICAL RESULTS
18.U	ALPHA-BHC
18.U	BETA-BHC
18.U	DELTA-BHC
18.U	GAMMA-BHC (LINDANE)
18.U	HEPTACHLOR
18.U	ALDRIN
18.U	HEPTACHLOR EPOXIDE
18.U	ENDOSULFAN I (ALPHA)
36.U	DIELDRIN
36.U	4,4'-DDE (P,P'-DDE)
36.U	ENDRIN
36.U	ENDOSULFAN II (BETA)
36.U	4,4'-DDD (P,P'-DDD)
36.U	ENDOSULFAN SULFATE
36.U	4,4'-DDT (P,P'-DDT)

UG/KG	ANALYTICAL RESULTS
180U	METHOXYCHLOR
36.U	ENDRIN KETONE
	CHLORDANE (TECH. MIXTURE) /1
180U	GAMMA-CHLORDANE /2
180U	ALPHA-CHLORDANE /2
360U	TOXAPHENE
180U	PCB-1016 (AROCLOR 1016)
180U	PCB-1221 (AROCLOR 1221)
180U	PCB-1232 (AROCLOR 1232)
180U	PCB-1242 (AROCLOR 1242)
180U	PCB-1248 (AROCLOR 1248)
360U	PCB-1254 (AROCLOR 1254)
360U	PCB-1260 (AROCLOR 1260)
55	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*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 QUANTITATION LIMIT.
*R-QC INDICATES THAT DATA UNUSABLE. COMPOUND MAY OR MAY NOT BE PRESENT. RESAMPLING AND REANALYSIS IS NECESSARY FOR VERIFICATION.
*C-CONFIRMED BY GCMS 1. WHEN NO VALUE IS REPORTED, SEE CHLORDANE CONSTITUENTS.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

PESTICIDES/PCB'S DATA REPORT 07/17/90

PROJECT NO. 90-436 SAMPLE NO. 45714 SAMPLE TYPE: SOIL
SOURCE: INTERNATIONAL PAPER
STATION ID: SD-02
CASE NUMBER: 14000 SAS NUMBER:

PROG ELEM: NSF COLLECTED BY: L CONWAY
CITY: MOBILE ST: AL
COLLECTION START: 05/02/90 1250 STOP: 00/00/00
D NUMBER: T201

UG/KG	ANALYTICAL RESULTS
10.U	ALPHA-BHC
10.U	BETA-BHC
10.U	DELTA-BHC
10.U	GAMMA-BHC (LINDANE)
10.U	HEPTACHLOR
10.U	ALDRIN
10.U	HEPTACHLOR EPOXIDE
10UR	ENDOSULFAN I (ALPHA)
21.U	DIELDRIN
21.U	4,4' DDE (P,P'-DDE)
21.U	ENDRIN
21.U	ENDOSULFAN II (BETA)
21.U	4,4'-DDD (P,P'-DDD)
21.U	ENDOSULFAN SULFATE
21.U	4,4'-DDT (P,P'-DDT)

UG/KG	ANALYTICAL RESULTS
100U	METHOXYCHLOR
21.U	ENDRIN KETONE
	CHLORDANE (TECH. MIXTURE) /1
100U	GAMMA-CHLORDANE /2
100U	ALPHA-CHLORDANE /2
210U	TOXAPHENE
100U	PCB-1016 (AROCLOR 1016)
100U	PCB-1221 (AROCLOR 1221)
100U	PCB-1232 (AROCLOR 1232)
100U	PCB-1242 (AROCLOR 1242)
100U	PCB-1248 (AROCLOR 1248)
210U	PCB-1254 (AROCLOR 1254)
210U	PCB-1260 (AROCLOR 1260)
24	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*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 QUANTITATION LIMIT.
*R-QC INDICATES THAT DATA UNUSABLE. COMPOUND MAY OR MAY NOT BE PRESENT. RESAMPLING AND REANALYSIS IS NECESSARY FOR VERIFICATION.
*C-CONFIRMED BY GCMS 1. WHEN NO VALUE IS REPORTED, SEE CHLORDANE CONSTITUENTS.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

PESTICIDES/PCB'S DATA REPORT 07/17/90

PROJECT NO. 90-436 SAMPLE NO. 45715 SAMPLE TYPE: SOIL
SOURCE: INTERNATIONAL PAPER
STATION ID: SD-03
CASE NUMBER: 14000 SAS NUMBER:

PROG ELEM: NSF COLLECTED BY: L CONWAY
CITY: MOBILE ST: AL
COLLECTION START: 05/02/90 1330 STOP: 00/00/00
D NUMBER: 1202

UG/KG	ANALYTICAL RESULTS
24.U	ALPHA-BHC
24.U	BETA-BHC
24.U	DELTA-BHC
24.U	GAMMA-BHC (LINDANE)
24.U	HEPTACHLOR
24.U	ALDRIN
24.U	HEPTACHLOR EPOXIDE
24.U	ENDOSULFAN I (ALPHA)
48.U	DIELDRIN
48.U	4,4'-DDE (P,P'-DDE)
48.U	ENDRIN
48.U	ENDOSULFAN II (BETA)
48.U	4,4'-DDD (P,P'-DDD)
48.U	ENDOSULFAN SULFATE
48.U	4,4'-DDT (P,P'-DDT)

UG/KG	ANALYTICAL RESULTS
240U	METHOXYCHLOR
48.U	ENDRIN KETONE
	CHLORDANE (TECH. MIXTURE) /1
240U	GAMMA-CHLORDANE /2
240U	ALPHA-CHLORDANE /2
480U	TOXAPHENE
240U	PCB-1016 (AROCLOR 1016)
240U	PCB-1221 (AROCLOR 1221)
240U	PCB-1232 (AROCLOR 1232)
240U	PCB-1242 (AROCLOR 1242)
240U	PCB-1248 (AROCLOR 1248)
480U	PCB-1254 (AROCLOR 1254)
480U	PCB-1260 (AROCLOR 1260)
66	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

PESTICIDES/PCB'S DATA REPORT 07/17/90

PROJECT NO. 90-436 SAMPLE NO. 45717 SAMPLE TYPE: SOIL
SOURCE: INTERNATIONAL PAPER
STATION ID: SD-04
CASE NUMBER: 14000 SAS NUMBER:

PROG ELEM: NSF COLLECTED BY: L CONWAY
CITY: MOBILE ST: AL
COLLECTION START: 05/02/90 1350 STOP: 00/00/00
D NUMBER: 1203

UG/KG	ANALYTICAL RESULTS
10.U	ALPHA-BHC
230U	BETA-BHC
10.U	DELTA-BHC
10.U	GAMMA-BHC (LINDANE)
10.U	HEPTACHLOR
10.U	ALDRIN
10.U	HEPTACHLOR EPOXIDE
10.U	ENDOSULFAN I (ALPHA)
21.U	DIELDRIN
21.U	4,4'-DDE (P,P'-DDE)
21.U	ENDRIN
21.U	ENDOSULFAN II (BETA)
21.U	4,4'-DDD (P,P'-DDD)
21.U	ENDOSULFAN SULFATE
21.U	4,4'-DDT (P,P'-DDT)

UG/KG	ANALYTICAL RESULTS
100U	METHOXYCHLOR
21.U	ENDRIN KETONE
	CHLORDANE (TECH. MIXTURE) /1
100U	GAMMA-CHLORDANE /2
100U	ALPHA-CHLORDANE /2
210U	TOXAPHENE
100U	PCB-1016 (AROCLOR 1016)
100U	PCB-1221 (AROCLOR 1221)
100U	PCB-1232 (AROCLOR 1232)
100U	PCB-1242 (AROCLOR 1242)
100U	PCB-1248 (AROCLOR 1248)
210U	PCB-1254 (AROCLOR 1254)
210U	PCB-1260 (AROCLOR 1260)
24	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

PESTICIDES/PCB'S DATA REPORT 07/17/90

PROJECT NO. 90-436 SAMPLE NO. 45716 SAMPLE TYPE: SOIL
SOURCE: INTERNATIONAL PAPER
STATION ID: SD-05
CASE NUMBER: 14000 SAS NUMBER:

PROG ELEM: NSF COLLECTED BY: L CONWAY
CITY: MOBILE ST: AL
COLLECTION START: 05/02/90 1335 STOP: 00/00/00
D NUMBER: 1204

UG/KG	ANALYTICAL RESULTS
30.U	ALPHA-BHC
30.U	BETA-BHC
30.U	DELTA-BHC
30.U	GAMMA-BHC (LINDANE)
30.U	HEPTACHLOR
30.U	ALDRIN
30.U	HEPTACHLOR EPOXIDE
30.U	ENDOSULFAN I (ALPHA)
61.U	DIELDRIN
61.U	4,4' DDE (P,P'-DDE)
61.U	ENDRIN
61.U	ENDOSULFAN II (BETA)
61.U	4,4'-DDD (P,P'-DDD)
61.U	ENDOSULFAN SULFATE
61.U	4,4'-DDT (P,P'-DDT)

UG/KG	ANALYTICAL RESULTS
300U	METHOXYCHLOR
61.U	ENDRIN KETONE
	CHLORDANE (TECH. MIXTURE) /1
300U	GAMMA-CHLORDANE /2
300U	ALPHA-CHLORDANE /2
610U	TOXAPHENE
300U	PCB-1016 (AROCLOR 1016)
300U	PCB-1221 (AROCLOR 1221)
300U	PCB-1232 (AROCLOR 1232)
300U	PCB-1242 (AROCLOR 1242)
300U	PCB-1248 (AROCLOR 1248)
610U	PCB-1254 (AROCLOR 1254)
610U	PCB-1260 (AROCLOR 1260)
75	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

PESTICIDES/PCB'S DATA REPORT 07/17/90

PROJECT NO. 90-436 SAMPLE NO. 45718 SAMPLE TYPE: SOIL
SOURCE: INTERNATIONAL PAPER
STATION ID: SD-06
CASE NUMBER: 14000 SAS NUMBER:

PROG ELEM: NSF COLLECTED BY: L CONWAY
CITY: MOBILE ST: AL
COLLECTION START: 05/02/90 1420 STOP: 00/00/00
D NUMBER: T205

UG/KG	ANALYTICAL RESULTS
15.U	ALPHA-BHC
15.U	BETA-BHC
15.U	DELTA-BHC
15.U	GAMMA-BHC (LINDANE)
15.U	HEPTACHLOR
15.U	ALDRIN
15.U	HEPTACHLOR EPOXIDE
15.U	ENDOSULFAN I (ALPHA)
30.U	DIELDRIN
30.U	4,4'-DDE (P,P'-DDE)
30.U	ENDRIN
30.U	ENDOSULFAN II (BETA)
30.U	4,4'-DDD (P,P'-DDD)
30.U	ENDOSULFAN SULFATE
30.U	4,4'-DDT (P,P'-DDT)

UG/KG	ANALYTICAL RESULTS
150U	METHOXYCHLOR
30.U	ENDRIN KETONE
	CHLORDANE (TECH. MIXTURE) /1
150U	GAMMA-CHLORDANE /2
150U	ALPHA-CHLORDANE /2
300U	TOXAPHENE
150U	PCB-1016 (AROCLOR 1016)
150U	PCB-1221 (AROCLOR 1221)
150U	PCB-1232 (AROCLOR 1232)
150U	PCB-1242 (AROCLOR 1242)
150U	PCB-1248 (AROCLOR 1248)
300U	PCB-1254 (AROCLOR 1254)
2400	PCB-1260 (AROCLOR 1260)
47	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

PESTICIDES/PCB'S DATA REPORT 07/17/90

PROJECT NO. 90-436 SAMPLE NO. 45719 SAMPLE TYPE: SEDIMBLK
SOURCE: INTERNATIONAL PAPER
STATION ID: SD-07 (REGION IV QC BLANK)
CASE NUMBER: 14000 SAS NUMBER:

PROG ELEM: NSF COLLECTED BY: L CONWAY
CITY: MOBILE ST: AL
COLLECTION START: 05/02/90 1510 STOP: 00/00/00
D NUMBER: 1189

UG/KG	ANALYTICAL RESULTS
8.7U	ALPHA-BHC
8.7U	BETA-BHC
8.7U	DELTA-BHC
8.7U	GAMMA-BHC (LINDANE)
8.7U	HEPTACHLOR
8.7U	ALDRIN
8.7U	HEPTACHLOR EPOXIDE
8.7U	ENDOSULFAN I (ALPHA)
17.U	DIELDRIN
17.U	4,4'-DDE (P,P'-DDE)
17.U	ENDRIN
17.U	ENDOSULFAN II (BETA)
17.U	4,4'-DDD (P,P'-DDD)
17.U	ENDOSULFAN SULFATE
17.U	4,4'-DDT (P,P'-DDT)

UG/KG	ANALYTICAL RESULTS
87.U	METHOXYCHLOR
17.U	ENDRIN KETONE
	CHLORDANE (TECH. MIXTURE) /1
87.U	GAMMA-CHLORDANE /2
87.U	ALPHA-CHLORDANE /2
170U	TOXAPHENE
87.U	PCB-1016 (AROCLOR 1016)
87.U	PCB-1221 (AROCLOR 1221)
87.U	PCB-1232 (AROCLOR 1232)
87.U	PCB-1242 (AROCLOR 1242)
87.U	PCB-1248 (AROCLOR 1248)
170U	PCB-1254 (AROCLOR 1254)
170U	PCB-1260 (AROCLOR 1260)
8	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

PESTICIDES/PCB'S DATA REPORT 07/17/90

PROJECT NO. 90-436 SAMPLE NO. 45720 SAMPLE TYPE: SEDIMSPK
SOURCE: INTERNATIONAL PAPER
STATION ID: SD-08 (REGION IV QC SPIKE)
CASE NUMBER: 14000 SAS NUMBER:

PROG ELEM: NSF COLLECTED BY: L CONWAY
CITY: MOBILE ST: AL
COLLECTION START: 05/02/90 1525 STOP: 00/00/00
D NUMBER: 1188

UG/KG	ANALYTICAL RESULTS
33%	ALPHA-BHC
8.4U	BETA-BHC
8.4U	DELTA-BHC
8.4U	GAMMA-BHC (LINDANE)
50%	HEPTACHLOR
8.4U	ALDRIN
8.4U	HEPTACHLOR EPOXIDE
8.4U	ENDOSULFAN I (ALPHA)
0%	DIELDRIN
17.U	4,4'-DDE (P,P'-DDE)
17.U	ENDRIN
0%	ENDOSULFAN II (BETA)
17.U	4,4'-DDD (P,P'-DDD)
17.U	ENDOSULFAN SULFATE
57%	4,4'-DDT (P,P'-DDT)

UG/KG	ANALYTICAL RESULTS
84.U	METHOXYCHLOR
17.U	ENDRIN KETONE
	CHLORDANE (TECH. MIXTURE) /1
84.U	GAMMA-CHLORDANE /2
84.U	ALPHA-CHLORDANE /2
170U	TOXAPHENE
84.U	PCB-1016 (AROCLOR 1016)
84.U	PCB-1221 (AROCLOR 1221)
84.U	PCB-1232 (AROCLOR 1232)
84.U	PCB-1242 (AROCLOR 1242)
84.U	PCB-1248 (AROCLOR 1248)
170U	PCB-1254 (AROCLOR 1254)
170U	PCB-1260 (AROCLOR 1260)
5	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

PESTICIDES/PCB'S DATA REPORT 07/17/90

PROJECT NO. 90-436 SAMPLE NO. 45709 SAMPLE TYPE:
SOURCE:
STATION ID: SS-01
CASE NUMBER: 14000 SAS NUMBER:

PROG ELEM: NSF COLLECTED BY: L CONWAY
CITY: MOBILE ST: AL
COLLECTION START: 05/02/90 0945 STOP: 00/00/00
D NUMBER: 1190

UG/KG	ANALYTICAL RESULTS
9.3U	ALPHA-BHC
9.3U	BETA-BHC
9.3U	DELTA-BHC
9.3U	GAMMA-BHC (LINDANE)
9.3U	HEPTACHLOR
9.3U	ALDRIN
9.3U	HEPTACHLOR EPOXIDE
9.3U	ENDOSULFAN I (ALPHA)
19.U	DIELDRIN
19.U	4,4' DDE (P,P'-DDE)
19.U	ENDRIN
19.U	ENDOSULFAN II (BETA)
19.U	4,4'-DDD (P,P'-DDD)
19.U	ENDOSULFAN SULFATE
19.U	4,4'-DDT (P,P'-DDT)

UG/KG	ANALYTICAL RESULTS
93.U	METHOXYCHLOR
19.U	ENDRIN KETONE
	CHLORDANE (TECH. MIXTURE) /1
93.U	GAMMA-CHLORDANE /2
93.U	ALPHA-CHLORDANE /2
190U	TOXAPHENE
93.U	PCB-1016 (AROCLOR 1016)
93.U	PCB-1221 (AROCLOR 1221)
93.U	PCB-1232 (AROCLOR 1232)
93.U	PCB-1242 (AROCLOR 1242)
93.U	PCB-1248 (AROCLOR 1248)
190U	PCB-1254 (AROCLOR 1254)
190U	PCB-1260 (AROCLOR 1260)
14	PERCENT MOISTURE

REMARKS

REMARKS

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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

PESTICIDES/PCB'S DATA REPORT 07/17/90

PROJECT NO. 90-436 SAMPLE NO. 45711 SAMPLE TYPE: SOIL
SOURCE: INTERNATIONAL PAPER
STATION ID: SS-02
CASE NUMBER: 14000 SAS NUMBER:

PROG ELEM: NSF COLLECTED BY: L CONWAY
CITY: MOBILE ST: AL
COLLECTION START: 05/02/90 1040 STOP: 00/00/00
D NUMBER: 1192

UG/KG	ANALYTICAL RESULTS
9.0U	ALPHA-BHC
9.0U	BETA-BHC
9.0U	DELTA-BHC
9.0U	GAMMA-BHC (LINDANE)
9.0U	HEPTACHLOR
9.0U	ALDRIN
9.0U	HEPTACHLOR EPOXIDE
9.0U	ENDOSULFAN I (ALPHA)
18.U	DIELDRIN
18.U	4,4'-DDE (P,P'-DDE)
18.U	ENDRIN
18.U	ENDOSULFAN II (BETA)
18.U	4,4'-DDD (P,P'-DDD)
18.U	ENDOSULFAN SULFATE
18.U	4,4'-DDT (P,P'-DDT)

UG/KG	ANALYTICAL RESULTS
90.U	METHOXYCHLOR
18.U	ENDRIN KETONE
	CHLORDANE (TECH. MIXTURE) /1
90.U	GAMMA-CHLORDANE /2
90.U	ALPHA-CHLORDANE /2
180U	TOXAPHENE
90.U	PCB-1016 (AROCLOR 1016)
90.U	PCB-1221 (AROCLOR 1221)
90.U	PCB-1232 (AROCLOR 1232)
90.U	PCB-1242 (AROCLOR 1242)
90.U	PCB-1248 (AROCLOR 1248)
180U	PCB-1254 (AROCLOR 1254)
180U	PCB-1260 (AROCLOR 1260)
11	PERCENT MOISTURE

REMARKS

REMARKS

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APPENDIX C

Environmental Protection
Agency

Remedial Response
Washington, DC 20460

EPA Form 2070-13
July, 1981

EPA

Potential Hazardous Waste Site

Site Inspection Report

Site Inspection Report

EPA

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

I. IDENTIFICATION
01 STATE: ALD | 02 SITE NUMBER: 008161861

II. SITE NAME AND LOCATION

01 SITE NAME (Legal, common, or descriptive name of site)	International Paper Company
02 STREET, ROUTE NO., OR SPECIFIC LOCATION IDENTIFIER	Papermill Road - PO Box 2448
03 CITY	Mobile
04 STATE	AL
05 ZIP CODE	36652
06 COUNTY	Mobile
07 COUNTY CODE	
08 CONG. DIST.	
09 COORDINATES LATITUDE	30 41 40.0
LONGITUDE	088 03 37.0
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 (MONTH DAY YEAR)	05,02,90
02 SITE STATUS	☒ ACTIVE ☐ INACTIVE
03 YEARS OF OPERATION	1929 (BEGINNING YEAR) / present (ENDING YEAR) ☐ UNKNOWN

04 AGENCY PERFORMING INSPECTION (Check all that apply)
☐ A. EPA ☒ B. EPA CONTRACTOR NUS Corporation (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.
Lori C. Conway	Project Manager Technical Editor	NUS Corp.	1404)938-7710
09 OTHER INSPECTORS	10 TITLE	11 ORGANIZATION	12 TELEPHONE NO.
R. Roger Franklin	Asst. Regional Manager	NUS Corp.	1404)938-7710
			( )
			( )
			( )
			( )

13 SITE REPRESENTATIVES INTERVIEWED	14 TITLE	15 ADDRESS	16 TELEPHONE NO.
Pablo J. Vasquez	Environmental Serv./East Coord.	6075 Corners Pkwy. Ste. 108 Norcross, GA 30092	(404)246-4171
David S. Hitt	Environmental Engineer-Mobile	P.O. Box 2448 · Mobile, AL 36652	(205)470-3307
			( )
			( )
			( )
			( )

17 ACCESS GAINED BY (Check one)	18 TIME OF INSPECTION	19 WEATHER CONDITIONS
☒ PERMISSION ☐ WARRANT	0740 - 1530	Partly cloudy, humid ~ 70°F

IV. INFORMATION AVAILABLE FROM

01 CONTACT	02 OF (Agency/Organization)	03 TELEPHONE NO.
Lori C. Conway	NUS Corp.	1404)938-7710

04 PERSON RESPONSIBLE FOR SITE INSPECTION FORM	05 AGENCY	06 ORGANIZATION	07 TELEPHONE NO.	08 DATE
Same as above				08,09,90 (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
ALD	008161861

II. WASTE STATES, QUANTITIES, AND CHARACTERISTICS

01 PHYSICAL STATES (Check all that apply)

- [x] 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 unknown
CUBIC YARDS unknown
NO. OF DRUMS unknown

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		"green liquor sludge"
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
OCC	Unidentified Compounds	N/A	Lower Imp. Surface Soil	10,000J/13	ug/kg
OCC	Unidentified Compounds	N/A	Former Landfill Subs.	5000J/8	ug/kg
MES	Chromium	7440-47-3	Lower Imp. Surface Soil	24	mg/kg
MES	Zinc	7440-66-6	" " " "	41	mg/kg
MES	Mercury	7439-97-6	Former Landfill Subsoil	1.5	mg/kg
MES	Lead	7439-92-1	" " "	180	mg/kg
MES	Copper	7440-50-8	" " "	63	mg/kg
OCC	Unidentified Compounds	N/A	Chickasaw Creek	90,000J/14	ug/kg
MES	Chromium	7440-47-3	Chickasaw Creek	71	mg/kg
MES	Copper	7440-50-8	Chickasaw Creek	110	mg/kg

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)

EPA + state file material
Interview with Pablo Vasquez
Impoundment Closure Plan

EPA FORM 2070-13 (7-81)

EPA

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

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
ALD	008161861

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 ☐ A. GROUNDWATER CONTAMINATION — 02 ☐ OBSERVED (DATE _____) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: 0
04 NARRATIVE DESCRIPTION

Groundwater is not utilized in the study area.

01 ☐ B. SURFACE WATER CONTAMINATION — 02 ☐ OBSERVED (DATE _____) ☑ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: 0
04 NARRATIVE DESCRIPTION

Surface water downstream is not used for drinking. However, there are extensive wetlands and sensitive environments downstream.

01 ☐ C. CONTAMINATION OF AIR — 02 ☐ OBSERVED (DATE _____) ☑ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: 88,849
04 NARRATIVE DESCRIPTION

According to the GEMS Data Base, there are 88,849 residents within 4 miles of the facility. The facility employs ~ 1200 workers.

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

01 ☐ E. DIRECT CONTACT — 02 ☐ OBSERVED (DATE _____) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: 1200
04 NARRATIVE DESCRIPTION

There are about 1200 employees. Unlikely that non-employees would directly contact waste, due to security measures.

01 ☐ F. CONTAMINATION OF SOIL — 02 ☐ OBSERVED (DATE 5/2/91) ☐ POTENTIAL ☑ ALLEGED
03 AREA POTENTIALLY AFFECTED: 47.1 (Acres)
04 NARRATIVE DESCRIPTION

Inorganic contamination was found in samples taken from the former landfill (14.5 acres) and the closed lower impoundment (32.6 acres), during this inspection.

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

01 ☐ H. WORKER EXPOSURE/INJURY — 02 ☐ OBSERVED (DATE _____) ☑ POTENTIAL ☐ ALLEGED
03 WORKERS POTENTIALLY AFFECTED: 1200
04 NARRATIVE DESCRIPTION

The facility employs 1200 people

01 ☐ I. POPULATION EXPOSURE/INJURY — 02 ☐ OBSERVED (DATE _____) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: N/A
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
ALD	008161861

II. HAZARDOUS CONDITIONS AND INCIDENTS (Continued)

01 ☑ J. DAMAGE TO FLORA — 02 ☐ OBSERVED (DATE 5/2/90) ☐ POTENTIAL ☑ ALLEGED
04 NARRATIVE DESCRIPTION
Vegetation in Upper Impoundment Basin stressed. Vegetation elsewhere healthy, however.

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

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

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

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

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

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

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

III. TOTAL POPULATION POTENTIALLY AFFECTED: 99,049

IV. COMMENTS

V. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)
Field logbook
EPA + state file material

EPA FORM 2070-13 (7-81)

EPA

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

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
ALD	008161861

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 Unknown				

III. SITE DESCRIPTION

01 STORAGE/DISPOSAL (Check all that apply)	02 AMOUNT	03 UNIT OF MEASURE
☑ A SURFACE IMPOUNDMENT	32.6	acres
	50	acres
☐ B PILES		
☐ C DRUMS, ABOVE GROUND		
☐ D TANK, ABOVE GROUND		
☐ E TANK, BELOW GROUND		
☑ F LANDFILL	14.5	acres
☐ 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: 75 (Acres)

07 COMMENTS

Entire plant property covers 75 acres. The Lower Impoundment Basin (closed) covered 32.6 acres. The closed Landfill covered 14.5 acres. The Upper Impoundment (active) covers 50 acres.

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.

Lower impoundment may have clay liner. Closed lower imp. has a leachate collection ditch. A gravel berm surrounds the portion of the upper impoundment where waste is most concentrated. The berm is ~5 ft high. Landfill capped and vegetated; probably was unlined while in use.

V. ACCESSIBILITY

01 WASTE EASILY ACCESSIBLE: ☐ YES ☑ NO

02 COMMENTS

Much of plant property is fenced and security at main entrance is tight. Closed impoundment + landfill could only be reached by boat without access via main gate.

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

Field logbook

EPA / state file material

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
ALD	008161861

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) upstream
B _____ (mi)

III. GROUNDWATER

01 GROUNDWATER USE IN VICINITY (Check one)

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

02 POPULATION SERVED BY GROUND WATER 0

03 DISTANCE TO NEAREST DRINKING WATER WELL >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
10 (ft)	Southeast	94 (ft)	2 million (gpd)	☐ YES ☑ NO

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

N/A No wells within 4 miles of facility

10 RECHARGE AREA
☑ YES
☐ NO
COMMENTS Recharge to the aquifer occurs within Mobile + Baldwin counties' boundaries.

11 DISCHARGE AREA
☐ 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
Hog Bayou / Chickasaw Creek	☐	0 (mi)
Mobile River	☐	1 (mi)
Mobile Bay	☐	7 (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. 4,230 NO. OF PERSONS	B. 19,108 NO. OF PERSONS	C. 34,272 NO. OF PERSONS

02 DISTANCE TO NEAREST POPULATION 1/4 (mi)

03 NUMBER OF BUILDINGS WITHIN TWO (2) MILES OF SITE >1000

04 DISTANCE TO NEAREST OFF-SITE BUILDING 1/4 (mi)

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

Facility located in a densely populated urban area of north Mobile. Western, southwestern and southern areas of the 4-mile radius are heavily populated with residential and commercial areas. Numerous schools are within the study area, four of which are within 1 mile.

EPA

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

I. IDENTIFICATION

01 STATE: ALD | 02 SITE NUMBER: 008161861

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
94 (ft)	unknown (ft)	unknown

06 NET PRECIPITATION	07 ONE YEAR 24 HOUR RAINFALL	08 SLOPE: SITE SLOPE	DIRECTION OF SITE SLOPE	TERRAIN AVERAGE SLOPE
16 (in)	4.7 (in)	3 %	east	%

09 FLOOD POTENTIAL

SITE IS IN _____ YEAR FLOODPLAIN

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

11 DISTANCE TO WETLANDS (5 acre minimum)

ESTUARINE: A. 1/2 (mi) OTHER: B. _____ (mi)

12 DISTANCE TO CRITICAL HABITAT (of endangered species)

_____ (mi)

ENDANGERED SPECIES: _____

13 LAND USE IN VICINITY

DISTANCE TO

COMMERCIAL, INDUSTRIAL	RESIDENTIAL AREAS, NATIONAL/STATE PARKS, FORESTS, OR WILDLIFE RESERVES	AGRICULTURAL LANDS: PRIME AG LAND	AGRICULTURAL LANDS: AG LAND
A. 0 (mi)	B. 1/4 (mi)	C. _____ (mi)	D. _____ (mi)

14 DESCRIPTION OF SITE IN RELATION TO SURROUNDING TOPOGRAPHY

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

USGS Topographic Map
Field Logbook
Draft Report Narrative

EPA FORM 2070-13 (7-81)

EPA

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

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
ALD	008164861

II. SAMPLES TAKEN

SAMPLE TYPE	01 NUMBER OF SAMPLES TAKEN	02 SAMPLES SENT TO	03 ESTIMATED DATE RESULTS AVAILABLE
GROUNDWATER			
SURFACE WATER			
WASTE			
AIR			
RUNOFF			
SPILL			
SOIL	10	Compuchem, Silver Valley	
VEGETATION			
OTHER			

III. FIELD MEASUREMENTS TAKEN

01 TYPE	02 COMMENTS

IV. PHOTOGRAPHS AND MAPS

01 TYPE ☑ GROUND ☐ AERIAL

02 IN CUSTODY OF NUS Corporation - FIT 4
(Name of organization or individual)

03 MAPS ☐ YES ☒ NO

04 LOCATION OF MAPS N/A

V. OTHER FIELD DATA COLLECTED (Provide narrative description)

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

Field Logbook

EPA FORM 2070-13 (7-81)

EPA

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

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
ALD	008161861

II. CURRENT OWNER(S)

01 NAME	02 D+B NUMBER
International Paper Co.	

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
6075 The Corners Pkwy. Suite 108	

05 CITY	06 STATE	07 ZIP CODE
Norcross	GA	30092

01 NAME	02 D+B NUMBER

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

05 CITY	06 STATE	07 ZIP CODE

01 NAME	02 D+B NUMBER

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

05 CITY	06 STATE	07 ZIP CODE

01 NAME	02 D+B NUMBER

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

05 CITY	06 STATE	07 ZIP CODE

PARENT COMPANY (If applicable)

08 NAME	09 D+B NUMBER
Same	

10 STREET ADDRESS (P.O. Box, RFD #, etc.)	11 SIC CODE

12 CITY	13 STATE	14 ZIP CODE

08 NAME	09 D+B NUMBER

10 STREET ADDRESS (P.O. Box, RFD #, etc.)	11 SIC CODE

12 CITY	13 STATE	14 ZIP CODE

08 NAME	09 D+B NUMBER

10 STREET ADDRESS (P.O. Box, RFD #, etc.)	11 SIC CODE

12 CITY	13 STATE	14 ZIP CODE

08 NAME	09 D+B NUMBER

10 STREET ADDRESS (P.O. Box, RFD #, etc.)	11 SIC CODE

12 CITY	13 STATE	14 ZIP CODE

III. PREVIOUS OWNER(S) (List most recent first)

01 NAME	02 D+B NUMBER

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

05 CITY	06 STATE	07 ZIP CODE

01 NAME	02 D+B NUMBER

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

05 CITY	06 STATE	07 ZIP CODE

01 NAME	02 D+B NUMBER

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

05 CITY	06 STATE	07 ZIP CODE

IV. REALTY OWNER(S) (If applicable, list most recent first)

01 NAME	02 D+B NUMBER

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

05 CITY	06 STATE	07 ZIP CODE

01 NAME	02 D+B NUMBER

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

05 CITY	06 STATE	07 ZIP CODE

01 NAME	02 D+B NUMBER

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

05 CITY	06 STATE	07 ZIP CODE

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

Interview with Pablo Vasquez

EPA/state File Material

EPA

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

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
ALD	008161861

II. CURRENT OPERATOR (Provide if different from owner)

01 NAME: International Paper Co.	02 D+B NUMBER:
03 STREET ADDRESS (P.O. Box, RFD #, etc.): Papermill Road Po Box 2448	04 SIC CODE:
05 CITY: Mobile	06 STATE: AL / 07 ZIP CODE: 36652
08 YEARS OF OPERATION: 61	09 NAME OF OWNER: International Paper Co.

OPERATOR'S PARENT COMPANY (If applicable)

10 NAME: International Paper Co.	11 D+B NUMBER:
12 STREET ADDRESS (P.O. Box, RFD #, etc.): 6075 The Corners Pkwy. Ste. 108	13 SIC CODE:
14 CITY: Norcross	15 STATE: GA / 16 ZIP CODE: 30092

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:
03 STREET ADDRESS (P.O. Box, RFD #, etc.):	04 SIC CODE:
05 CITY:	06 STATE: / 07 ZIP CODE:
08 YEARS OF OPERATION:	09 NAME OF OWNER DURING THIS PERIOD:

10 NAME:	11 D+B NUMBER:
12 STREET ADDRESS (P.O. Box, RFD #, etc.):	13 SIC CODE:
14 CITY:	15 STATE: / 16 ZIP CODE:

01 NAME:	02 D+B NUMBER:
03 STREET ADDRESS (P.O. Box, RFD #, etc.):	04 SIC CODE:
05 CITY:	06 STATE: / 07 ZIP CODE:
08 YEARS OF OPERATION:	09 NAME OF OWNER DURING THIS PERIOD:

10 NAME:	11 D+B NUMBER:
12 STREET ADDRESS (P.O. Box, RFD #, etc.):	13 SIC CODE:
14 CITY:	15 STATE: / 16 ZIP CODE:

01 NAME:	02 D+B NUMBER:
03 STREET ADDRESS (P.O. Box, RFD #, etc.):	04 SIC CODE:
05 CITY:	06 STATE: / 07 ZIP CODE:
08 YEARS OF OPERATION:	09 NAME OF OWNER DURING THIS PERIOD:

10 NAME:	11 D+B NUMBER:
12 STREET ADDRESS (P.O. Box, RFD #, etc.):	13 SIC CODE:
14 CITY:	15 STATE: / 16 ZIP CODE:

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

EPA / State File Material

EPA FORM 2070-13 (7-81)

EPA

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

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
ALD	008161861

II. ON-SITE GENERATOR

01 NAME	02 D+B NUMBER
International Paper Co.	
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
Papermill Road P.O. Box 2448	
05 CITY	06 STATE / 07 ZIP CODE
Mobile	AL / 36652

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	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/state file material

EPA

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

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
ALD	008161861

II. PAST RESPONSE ACTIVITIES

01 ☐ A. WATER SUPPLY CLOSED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION: N/A

01 ☐ B. TEMPORARY WATER SUPPLY PROVIDED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION: N/A

01 ☐ C. PERMANENT WATER SUPPLY PROVIDED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION: N/A

01 ☐ D. SPILLED MATERIAL REMOVED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION: N/A

01 ☐ E. CONTAMINATED SOIL REMOVED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION: N/A

01 ☐ F. WASTE REPACKAGED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION: N/A

01 ☐ G. WASTE DISPOSED ELSEWHERE — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION: Landfill on site + 2 surface impoundments

01 ☐ H. ON SITE BURIAL — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION: Landfill + 2 surface impoundments on site.

01 ☐ I. IN SITU CHEMICAL TREATMENT — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION: N/A

01 ☐ J. IN SITU BIOLOGICAL TREATMENT — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION: N/A

01 ☐ K. IN SITU PHYSICAL TREATMENT — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION: N/A

01 ☐ L. ENCAPSULATION — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION: N/A

01 ☐ M. EMERGENCY WASTE TREATMENT — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION: N/A

01 ☐ N. CUTOFF WALLS — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION: N/A

01 ☐ O. EMERGENCY DIKING/SURFACE WATER DIVERSION — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION: N/A

01 ☐ P. CUTOFF TRENCHES/SUMP — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION: N/A

01 ☐ Q. SUBSURFACE CUTOFF WALL — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION: N/A

EPA

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

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
ALD	008161861

II PAST RESPONSE ACTIVITIES (Continued)

01 ☐ R. BARRIER WALLS CONSTRUCTED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION: N/A

01 ☐ S. CAPPING/COVERING — 02 DATE 1984 — 03 AGENCY _____
04 DESCRIPTION: Lower impoundment + landfill are closed + capped.

01 ☐ T. BULK TANKAGE REPAIRED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION: N/A

01 ☐ U. GROUT CURTAIN CONSTRUCTED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION: N/A

01 ☐ V. BOTTOM SEALED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION: N/A

01 ☐ W. GAS CONTROL — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION: N/A

01 ☐ X. FIRE CONTROL — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION: N/A

01 ☐ Y. LEACHATE TREATMENT — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION: N/A

01 ☐ Z. AREA EVACUATED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION: N/A

01 ☐ 1. ACCESS TO SITE RESTRICTED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION: N/A

01 ☐ 2. POPULATION RELOCATED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION: N/A

01 ☐ 3. OTHER REMEDIAL ACTIVITIES — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION:

Both the landfill and the lower impoundment have been closed and capped, apparently in accordance with closure plans approved by the state.

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

Field logbook.

EPA FORM 2070-13 (7-81)

EPA

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

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
ALD	008161861

II. ENFORCEMENT INFORMATION

01 PAST REGULATORY ENFORCEMENT ACTION ☐ YES ☑ NO

02 DESCRIPTION OF FEDERAL, STATE, LOCAL REGULATORY ENFORCEMENT ACTION

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

EPA / State File Material

EPA FORM 2070-13 (7-81)

REFERENCE PACKAGE

EPA Notification of Hazardous Waste Site

R

10609

United States Environmental Protection Agency Washington DC 20460

This initial notifica required by Section hensive Environmei sation, and Liability be mailed by June 9

REFERENCE # 1

in ink. If you need separate sheets of tter of the item

ALS000001125

A Person Required to Notify:

Enter the name and address of the person or organization required to notify.

Name: International Paper Company - Mobile Mill

Street: P.O. Box 2448

City: Mobile State: AL Zip Code: 36652

B Site Location:

Enter the common name (if known) and actual location of the site.

ALD008161861

Name of Site: International Paper Company Landfill

Street: Papermill Rd.

City: Mobile County: Mobile State: AL Zip Code: 36652

C Person to Contact:

Enter the name, title (if applicable), and business telephone number of the person to contact regarding information submitted on this form.

Name (Last, First and Title): Redfern, Peter C. Mill Manager

Phone: (205)457-8961

D Dates of Waste Handling:

Enter the years that you estimate waste treatment, storage, or disposal began and ended at the site.

From (Year): 1929 To (Year): Present

E Waste Type: Choose the option you prefer to complete

Option 1: Select general waste types and source categories. If you do not know the general waste types or sources, you are encouraged to describe the site in Item I—Description of Site.

General Type of Waste:
Place an X in the appropriate boxes. The categories listed overlap. Check each applicable category.

1. ☐ Organics
2. ☐ Inorganics
3. ☐ Solvents
4. ☐ Pesticides
5. ☐ Heavy metals
6. ☐ Acids
7. ☐ Bases
8. ☐ PCBs
9. ☐ Mixed Municipal Waste
10. ☒ Unknown
11. ☐ Other (Specify)

Source of Waste:
Place an X in the appropriate boxes.

1. ☐ Mining
2. ☐ Construction
3. ☐ Textiles
4. ☐ Fertilizer
5. ☐ Paper/Printing
6. ☐ Leather Tanning
7. ☐ Iron/Steel Foundry
8. ☐ Chemical, General
9. ☐ Plating/Polishing
10. ☐ Military/Ammunition
11. ☐ Electrical Conductors
12. ☐ Transformers
13. ☐ Utility Companies
14. ☐ Sanitary/Refuse
15. ☐ Photofinish
16. ☐ Lab/Hospital
17. ☐ Unknown
18. ☒ Other (Specify) Pulp and Paper Mill Operations

Option 2: This option is available to persons familiar with the Resource Conservation and Recovery Act (RCRA) Section 300 regulations (40 CFR Part 261).

Specific Type of Waste:
EPA has assigned a four-digit number to each hazardous wast listed in the regulations under Section 3001 of RCRA. Enter th appropriate four-digit number in the boxes provided. A copy of the list of hazardous wastes and codes can be obtained by contacting the EPA Region serving the State in which the site located.

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0 9 0 1 0 7

Form Approved
OMB No. 2000-0138

EPA Form 8900-1

Place an X in the appropriate boxes to indicate the facility types found at the site

In the "total facility waste amount" space give the estimated combined quantity (volume) of hazardous wastes at the site using cubic feet or gallons.

In the "total facility area" space, give the estimated area size which the facilities occupy using square feet or acres.

Facility Type

1. ☐ Piles
2. ☐ Land Treatment
3. ☒ Landfill
4. ☐ Tanks
5. ☒ Impoundment
6. ☐ Underground Injection
7. ☐ Drums, Above Ground
8. ☐ Drums, Below Ground
9. ☐ Other (Specify) _____

Total Facility Waste Amount

cubic feet unknown *

gallons

Total Facility Area

square feet

acres approx. 75

Known, Suspected or Likely Releases to the Environment:

Place an X in the appropriate boxes to indicate any known, suspected, or likely releases of wastes to the environment.

☐ Known ☐ Suspected ☐ Likely ☒ None

Note: Items H and I are optional. Completing these items will assist EPA and State and local governments in locating and assessing hazardous waste sites. Although completing the items is not required, you are encouraged to do so.

Sketch Map of Site Location: (Optional)

Sketch a map showing streets, highways, routes or other prominent landmarks near the site. Place an X on the map to indicate the site location. Draw an arrow showing the direction north. You may substitute a publishing map showing the site location.

Description of Site: (Optional)

Describe the history and present conditions of the site. Give directions to the site and describe any nearby wells, springs, lakes, or housing. Include such information as how waste was disposed and where the waste came from. Provide any other information or comments which may help describe the site conditions.

* This notification is submitted only because of the possibility that very small quantities of hazardous waste may have accumulated to a total of 55 gallons over the 52 years of operation at this site. No significant quantities of hazardous waste are known to have been disposed at this facility.

Signature and Title:

The person or authorized representative (such as plant managers, superintendents, trustees or attorneys) of persons required to notify must sign the form and provide a mailing address (if different than address in item A). For other persons providing notification, the signature is optional. Check the boxes which best describe the relationship to the site of the person required to notify. If you are not required to notify check "Other".

Name Peter C. Redfern, Mill Manager

Street P.O. Box 2448

City Mobile State AL Zip Code 36652

Signature Peter C. Redfern Date 6/15/81

☐ Owner, Present
☐ Owner, Past
☐ Transporter
☒ Operator, Present
☐ Operator, Past
☐ Other

EPA Notification of Hazardous Waste Site

R

United States Environmental Protection Agency
Washington DC 20460

This initial notification information is required by Section 103(c) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 and must be mailed by June 9, 1981.

Please type or print in ink. If you need additional space, use separate sheets of paper. Indicate the letter of the item which applies.

810609

ALS000001125

A Person Required to Notify:
Enter the name and address of the person or organization required to notify.

Name: International Paper Company - Mobile Mill
Street: P.O. Box 2448
City: Mobile State: AL Zip Code: 36652

B Site Location:
Enter the common name (if known) and actual location of the site.

Name of Site: International Paper Company Landfill
Street: Papermill Rd.
City: Mobile County: Mobile State: AL Zip Code: 36652

C Person to Contact:
Enter the name, title (if applicable), and business telephone number of the person to contact regarding information submitted on this form.

Name (Last, First and Title): Redfern, Peter C. Mill Manager
Phone:

D Dates of Waste Handling:
Enter the years that you estimate waste treatment, storage, or disposal began and ended at the site.

From (Year): 1929 To (Year): ~~Present~~ 1981

E Waste Type: Choose the option you prefer to complete

Option 1: Select general waste types and source categories. If you do not know the general waste types or sources, you are encouraged to describe the site in Item I—Description of Site.

General Type of Waste:
Place an X in the appropriate boxes. The categories listed overlap. Check each applicable category.

1. ☐ Organics
2. ☐ Inorganics
3. ☐ Solvents
4. ☐ Pesticides
5. ☐ Heavy metals
6. ☐ Acids
7. ☐ Bases
8. ☐ PCBs
9. ☐ Mixed Municipal Waste
10. ☒ Unknown
11. ☐ Other (Specify)

Source of Waste:
Place an X in the appropriate boxes.

1. ☐ Mining
2. ☐ Construction
3. ☐ Textiles
4. ☐ Fertilizer
5. ☐ Paper/Printing
6. ☐ Leather Tanning
7. ☐ Iron/Steel Foundry
8. ☐ Chemical, General
9. ☐ Plating/Polishing
10. ☐ Military/Ammunition
11. ☐ Electrical Conductors
12. ☐ Transformers
13. ☐ Utility Companies
14. ☐ Sanitary/Refuse
15. ☐ Photofinish
16. ☐ Lab/Hospital
17. ☐ Unknown
18. ☒ Other (Specify) Pulp and Paper Mill Operations

Option 2: This option is available to persons familiar with the Resource Conservation and Recovery Act (RCRA) Section 3001 regulations (40 CFR Part 261).

Specific Type of Waste:
EPA has assigned a four-digit number to each hazardous waste listed in the regulations under Section 3001 of RCRA. Enter the appropriate four-digit number in the boxes provided. A copy of the list of hazardous wastes and codes can be obtained by contacting the EPA Region serving the State in which the site is located.

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JUN 3 12 41 PM '81
ENFORCEMENT DIVISION

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Form Approved
OMB No. 2000-0138
EPA Form 8900-1

F Waste Quantity:

Place an X in the appropriate boxes to indicate the facility types found at the site.

In the "total facility waste amount" space give the estimated combined quantity (volume) of hazardous wastes at the site using cubic feet or gallons.

In the "total facility area" space, give the estimated area size which the facilities occupy using square feet or acres.

Facility Type

1. ☐ Piles
2. ☐ Land Treatment
3. ☒ Landfill
4. ☐ Tanks
5. ☒ Impoundment
6. ☐ Underground Injection
7. ☐ Drums, Above Ground
8. ☐ Drums, Below Ground
9. ☐ Other (Specify) _____

Total Facility Waste Amount

cubic feet unknown *

gallons

Total Facility Area

square feet

acres approx. 75

G Known, Suspected or Likely Releases to the Environment:

Place an X in the appropriate boxes to indicate any known, suspected, or likely releases of wastes to the environment.

☐ Known ☐ Suspected ☐ Likely ☒ None

Note: Items H and I are optional. Completing these items will assist EPA and State and local governments in locating and assessing hazardous waste sites. Although completing the items is not required, you are encouraged to do so.

H Sketch Map of Site Location: (Optional)

Sketch a map showing streets, highways, routes or other prominent landmarks near the site. Place an X on the map to indicate the site location. Draw an arrow showing the direction north. You may substitute a publishing map showing the site location.

I Description of Site: (Optional)

Describe the history and present conditions of the site. Give directions to the site and describe any nearby wells, springs, lakes, or housing. Include such information as how waste was disposed and where the waste came from. Provide any other information or comments which may help describe the site conditions.

* over the 52 years

J Signature and Title:

The person or authorized representative (such as plant managers, superintendents, trustees or attorneys) of persons required to notify must sign the form and provide a mailing address (if different than address in item A). For other persons providing notification, the signature is optional. Check the boxes which best describe the relationship to the site of the person required to notify. If you are not required to notify check "Other".

Name Peter C. Redfern

Street P.O. Box 2448

City Mobile State AL Zip Code 36652

Signature Peter C. Redfern Date 6/8/81

☐ Owner, Present
☐ Owner, Past
☐ Transporter
☒ Operator, Present
☐ Operator, Past
☐ Other

Waste info. - green liquor sludge only

POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
EPS FORM 3012-III

INDUSTRIAL NARRATIVE SHEET

1. Site Identification:

Site number: ALD008161861

Site name: International Paper Company - Landfill

Site county: Mobile

2. Industrial Narrative Summary:

Company Name: International Paper Company - Mobile Mill

Address: Papermill Road
Mobile, AL 36652

Telephone No.: 205/470-3752

Contact: Scott Tait

Discussion: In 1981, International Paper (IP) reported under Superfund a landfill which potentially received a small quantity of hazardous waste. This landfill is wood waste from 1929-1981. IP investigated the landfill and collected samples from borings taken throughout. Test results did not indicate the presence of any hazardous waste. The complete report is on file under "Plans and Procedures" in the ADEM offices. Conversations with Scott Tait indicated that "green liquor sludge" may have been disposed in the landfill, however, greatly diluted by other plant wastes.

Presently the "green liquor sludge" (fifteen dregs) enters a 50 acre surface impoundment which also receives fiber and lime mud ($CaCo_3$) wastes. It is estimated that <15% of the solids in this impoundment are "green liquor." Solvents are used in the machine shop and are recycled.

3. Disposition:

Although the "green liquor sludge" may contain sulfides, this waste is greatly diluted by other plant wastes and is maintained in an alkaline ($CaCo_3$) environment. It does not appear to pose a threat to health or environment.

POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
EPS FORM 3012-II

TELEPHONE LOG SHEET

1. Site Identification:
   Site number: ALD 008161861
   Site name: INTERNATIONAL PAPER COMPANY - MOBILE MILL LANDFILL

2. Interview Data: (Party called)
   Name: SCOTT TAIT
   Position: PLANT MANAGER
   Firm: I.P.
   Address: PAPERMILL ROAD
   MOBILE, AL 36652
   Telephone No.: (205) 470-3752

3. EPS Analyst Data:
   Name: Donalea Dinsmore
   Purpose of call: Determine landfill status

   Form 2070-12 (7-81) P.N.
   Date of call: 7-26-85

4. Interview Narrative Summary: Directions to site given - Do have both black and green liquor. When clean out tanks, goes into wastewater treatment system. Do not believe any has been hauled.

Green liquor dregs washer filtrant is sent to surface impoundment where it mixed with a couple tons per day fil. This may have been ~~[illegible]~~ dredged and sent to landfill. Impoundment begun in 1955. 50 acres 10-12' deep pH 10-11. Guess < 15% solids are from green liquor

Solvents used in machine shop. Small amount - recycled. Do not believe they are manifested

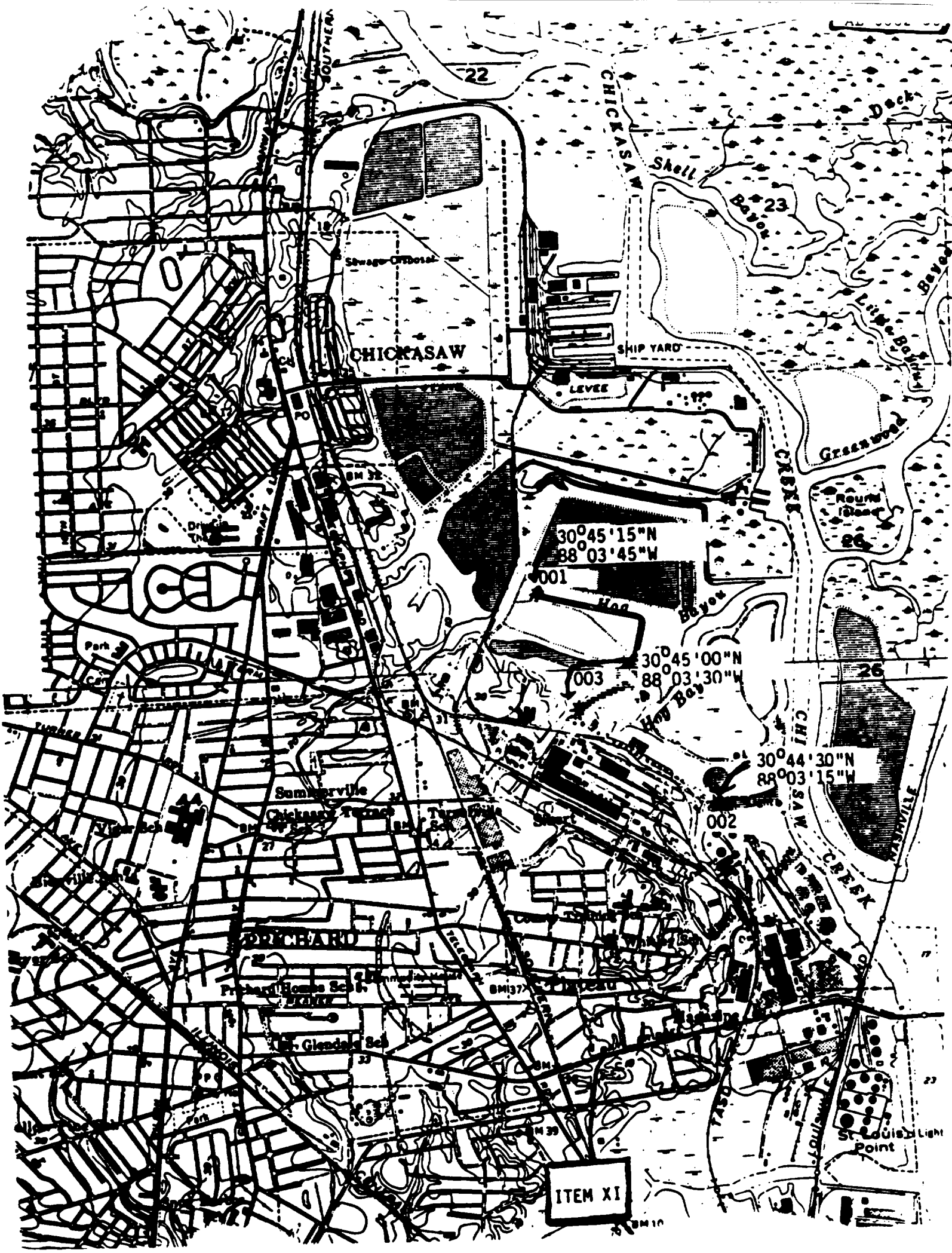
IP ran tests on landfill samples & didn't find anything

5. Disposition/Comments:
Although sulfides may be present, quantity and dilution factor seem to reduce potential hazards.

6. Comments: Any additional sites used by this company?
   Location:
   Dates of use:
   Description of waste:

   Comments:

26
Possible landfill area
International Paper Company
38
CHICKASAW CREEK
BM 37
BM 10
BM 3
St Louis Point
Light
INDUSTRIAL CANAL
MOBILE
RIVER
SPANISH TRAIL
LEVEE
Turning Basin
SLF
N
MOBILE QUADRANGLE
ALABAMA
7.5 MINUTE SERIES (TOPOGRAPHIC)



CHICKASAW
SHIP YARD
LEVEE
Shell Bayou
Greenwood
Round Island
CHICKASAW CREEK
Hog Bayou
Hog Bay
30°45'15"N
88°03'45"W
001
30°45'00"N
88°03'30"W
003
30°44'30"N
88°03'15"W
002
Summerville
Chickasaw Terrace
PRICHARD
Prichard Homes Sch
Glendale Sch
St. Louis Light Point
ITEM XI

REFERENCE # 3

INTERNATIONAL PAPER COMPANY

PROPOSED CLOSURE PLAN
Lower Impoundment Basin
and
Mill Dump Disposal Sites
November 8, 1983
INTERNATIONAL PAPER COMPANY
Mobile, Alabama

PROPOSED CLOSURE PLAN

Lower Impoundment Basin

and

Mill Dump Disposal Sites

November 8, 1983

INTERNATIONAL PAPER COMPANY

Mobile, Alabama

A Report Prepared for:

International Paper Company
P. O. Box 2448
Mobile, Alabama 36652

PROPOSED CLOSURE PLAN
LOWER IMPOUNDMENT BASIS AND
MILL DUMP DISPOSAL SITES

HLA Job No. 6261,002.12

Prepared by:

Charles E. Garrett by E.R.W.
Charles E. Garrett, P.E.
Senior Engineer

James B. McCutchan
James B. McCutchan, P.E.
Senior Engineer

Harding Lawson Associates
6300 Westpark Drive, Suite 100
Houston, Texas 77057
Telephone: (713) 789-8050

November 9, 1983

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Plate 3 Grading Closure Plan - LIB	
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I. INTRODUCTION

International Paper Company (IPCO) plans to close two of its solid waste disposal sites known as the Lower Impoundment Basin (LIB) and Mill Dump at its Mobile, Alabama Mill. This document presents closure plans IPCO proposes to use.

The LIB and Mill Dump comprise 32.6 and 14.5 acres, respectively, and are located as shown on Plate 1. Technical data and support concerning geohydrology of the disposal sites, disposal sites leachate quality and its impact on local groundwater quality is presented in Harding Lawson Associates' (HLA) geohydrological report on the sites, dated November 9, 1983. Harding Lawson Associates is a consulting engineering firm specializing in geotechnical/waste management engineering services contracted by IPCO to perform geohydrological studies of the disposal sites to help with closure planning.

II. LEACHATE QUALITY/IMPACT ON CHICKASAW CREEK AND HOG BAYOU

To evaluate disposal site leachate contamination, HLA installed monitoring wells around and within the disposal sites. Well samples were collected and tested. In addition, samples of ponded water were obtained from within the Lower Basin. Such ponded water is surface run-off that has been in contact with wastes contained within the basin.

The samples were tested for the following parameters:

- EPA interim primary inorganic drinking water standards;
- RCRA parameters used to indicate groundwater quality; and
- RCRA parameters used as indicators of groundwater contamination.

These parameters are listed in the May 19, 1980 Federal Register, 40 CFR 265.92, on pages 33240 and 33241.

Results of the testing indicate that disposal site leachate does not have a significant impact on the water quality of Chickasaw Creek.

III. CLOSURE PLANS

IPCO proposes the closure plans presented below. These plans were developed using the Alabama Solid Waste Management Regulations, Section 4-112 concerning Open Dumps, which is the classification of the Lower Impoundment Basin and Mill Dump.

A. Lower Impoundment Basin - Vegetation/Grading/Drainage

1. Existing Vegetation:

Plate 1 illustrates the configuration of the LIB. The basin varies from Elevation +21 to +22 along much of the western half where waste placement over the recent past has been concentrated, to Elevation +7 to +8 feet in the eastern half.

The eastern section of the LIB is heavily vegetated with undergrowth and large trees, many of which are over 20 feet in height. IPCO proposes to leave this vegetative cover in place for two reasons: 1) It reduces leachate formation through evapotranspiration, and 2) it would be extremely difficult to remove this cover because the underlying wastes are very soft and could not support even low-ground-pressure earth moving equipment.

2. Slope Grades/Drainage:

The drainage plan IPCO proposes is illustrated on Plate 2. The plan calls for grading the existing unvegetated waste in the western section of the basin to slopes between 2% to 5% on the top or higher portions, and to slopes no steeper than 20% around the perimeter, i.e., the face/edge of the wastes adjacent to the vegetated eastern section or adjacent to the perimeter dike. The grading plan is illustrated on Plate 3.

Most of the run-off will sheet-flow off the slopes and collect in the lower, vegetated eastern section of the LIB. Open pipes will discharge the run-off collected along the eastern side directly to Chickasaw Creek.

In areas where waste is sloped down to the top of the perimeter dike as shown on Plate 3, run-off will sheet-flow across the dike and into the bayou and/or creek.

B. Mill Dump - Grading/Drainage

Plate 1 illustrates the location and configuration of the Mill Dump. The Mill Dump is a landfill of paper waste, construction debris and mill wastes. It extends in places up to about Elevation +40 feet and covers approximately 15 acres.

1. Grading

IPCO proposes to reshape the Mill Dump into a more stable configuration, by enlarging the base as shown on Plate 5. This configuration will have flatter slopes and will blend in more naturally with the existing earthwork in the area (the Upper Impoundment Basin). The result will be a more aesthetically pleasing and more stable arrangement.

The site will be graded to a convex slope on top with a minimum of 2% slopes and maximum side slopes no steeper than 20%. A general configuration is shown on Plate 5.

Tracked dozers or landfill compactors will perform the waste relocation to the sides of the Upper Basin. The new configuration will help to buttress the Upper Impoundment Basin dike in this area.

2. Drainage

Drainage will sheet-flow off the mounded shape into Chickasaw Creek. The expanded base will require re-routing the current drainage between the Mill Dump and the Upper Basin to between the Mill Dump and the Clarifier as shown on Plate 5.

C. Cover/Vegetation

In the process of grading the LIB and Mill Dump, tracked dozers and truck traffic will compact the wastes. The final compacted waste slopes will be protected by establishing a grass vegetation cover which will also increase evapo-transpiration rates as well as provide an aesthetically pleasing appearance. Grass cover would be supported in a soil/waste mixture of the following approximate proportions:

20 to 30% - Imported Sandy Soil
35 to 40% - Flume Grit
35 to 40% - Coil-Filter Cake and Bark Ash

The mixture would be no less than 12 inches in thickness and well mixed. The mixed wastes would be placed initially and then sandy soil imported, spread on top and disced in.

To evaluate the potential of such a waste mixture to support vegetation, IPCO sent a sample of waste mixture of the following proportions to Auburn University Soil Testing Laboratory:

1/3 Flume grit
1/3 Bark Ash
1/3 Coil Filter Cake (sludge)

Results of the tests indicate the following pertinent characteristics of the mixture:

pH	=	7.3
Potassium	=	200 (index of % sufficiency)
Magnesium	=	2,120 (index of % sufficiency)

Auburn University testing indicated that with the addition of approximately 60 lbs. of nitrogen and 80 lbs. of phosphorous per acre, this medium will readily support Bermuda or Bahia grasses. The heavy vegetation currently growing on the Lower and Upper Basins indicates that vegetation is easily supported by these wastes.

Based on these results, IPCO will fertilize the soil waste mixture using a nitrogen-phosphorous fertilizer at the rate of approximately 60 lbs. nitrogen and 80 lbs. phosphorous per acre. Bermuda or Bahia grass will then be seeded and watered. Grass vegetation will be carefully monitored. In areas where seeding has not taken, appropriate measures will be taken to establish grass growth.

D. Other Site Closure Actions

1. Barricade and Secure Entrance: Road access to the disposal sites will be blocked by locking gates. Signs will be posted on the gates indicating the disposal site is closed.

IV. RUN-OFF QUALITY FROM CLOSED DISPOSAL SITES

After closure, run-off into Chickasaw Creek and Hog Bayou from the Lower Basin and Mill Dump will have contacted wastes in the soil/waste vegetated cover. To estimate to what extent run-off will be contaminated, IPCO had tested, as discussed above in "Leachate Quality/Impact on Chickasaw Creek and Hog Bayou", samples of collected run-off ponded inside the Lower Basin. Test results are presented in Table 1. Test results indicate that surface run-off is currently not, and will not be after closure, significantly contaminated and will have no significant impact on the water quality of Chickasaw Creek. Water quality data for Chickasaw Creek in the vicinity of the waste site is presented in Table 6 of HLA's Geohydrological Investigation report dated November 9, 1983.

TABLE 1

Summary of Lab Test Results

on Ponded Surface Water in LIB[1]

	Sample Location			
	Inside Dike near Piezometer P-3		Inside Dike near Piezometer P-4	
Date Collected:	1/12/83	5/25/83	1/12/83	5/25/83
Test Item[2]				
Chloride (Cl) mg/l	190	48	100	63
Sulfate (SO_4) mg/l	240	46	390	50
Specific Conductance @ 25°C, umhos/cm	-[3]	1,400	-	1,600
5-day BOD, mg/l	-	7.3	-	3.4
Iron (Fe), mg/l	-	0.21	-	1.1
Manganese (Mn), mg/l	-	0.88	-	0.88
Sodium (Na), mg/l	520	170	360	210
Phenols, mg/l	-	<.01	-	<.01
Chemical Oxygen Demand, mg/l	-	92	-	92
Total Organic Carbon, mg/l	-	27	-	32
pH @ °C	6.9	7.3@27	7.0	7.6@24

(1) Harding Lawson Associates Geohydrological Report, Job. No. 6261,002.12, dated July 22, 1983, Tables 3 & 4

(2) Test parameters are RCRA parameters used as indicators of groundwater quality and groundwater contamination

(3) (-) indicates parameters were not tested for.

CLosure Cost Summary

Lower Impoundment Basin (LIB)

and

Mill Dump

I. LIB - $80,000 to $90,000

II. MILL DUMP - $325,000 to $350,000

Cost breakdowns are itemized on the following pages.

I. LIB - For 14-acre coverage - non-vegetated area, 1' cover equal to 22,600 C.Y.

ITEM	QUANTITY	UNIT PRICE	EXTENSION
A. Mix and Haul costs for plant wastes - sludge, bark ash, flume grit (2,560 c.y./day mixing adds a loader = $0.25)	18,100 C.Y.	$1.25	$22,600
B. Imported Sandy Soil (20% of total material req'd.)	4,500 C.Y.	$5.00	22,500
C. Spread Mixture/ grade control	22,600 C.Y.	$1.00	22,600
		Sub-Total	$67,700
D. Vegetation, fertilizing/ seeding	14 acres	$800/acre	$11,200
E. Siphon Culverts 6" dia. PVC pipe	3	$500	$ 1,500
		TOTAL LIB	$81,000

NOTE: Actual costs will depend on actual extent of non-vegetated area at time closing begins.

II. MILL DUMP - Expanded Base Configuration

ITEM	QUANTITY	UNIT PRICE	EXTENSION
A. Grading to Expand Base			
1. Dozer	44,000 C.Y.	$ 2.22	$ 97,000
2. Drag Line	5,000 C.Y.	3.32	16,600
3. Grade Control	49,000 C.Y.	0.20	9,800
		Sub Total	$124,000
B. Mill Dump Cover - (2' cover)	Cover: Assume 16 acres; 1' of plant wastes plus 1' of waste/soil mix for vegetation to provide 2' of cover required 52,000 C.Y.		
1. Haul plant wastes for 1' layer on dump	26,000 C.Y.	$ 1.00	$ 26,000
2. Spread wastes	26,000 C.Y.	$ 1.00	$ 26,000
3. Imported sandy soil (20% of material req'd for 1' layer)	5,200 C.Y.	$ 5.00	$ 26,000
4. Haul costs for mixed plant wastes (80% of material for 1' layer)	20,800 C.Y.	$ 1.25	$ 26,000
5. Spread mixture plant wastes/ soil	26,000 C.Y.	$ 1.00	$ 26,000
6. Vegetation/	16 acres	$800.00	$ 12,000
		Total for 2' cover	$143,000

ITEM	QUANTITY	UNIT PRICE	EXTENSION
C. Drainage Re-Route - 290' of 48" dia. culvert pipe from clarifier spillway to Barge Dock			
1. Sheetpiling Excavation (for 210 feet of trench length - assume 10' to 12' depths of sheetpile) (7.2 tons/day at $650/ton [salvaged])	210 feet	$143.00	$ 30,000
2. Class 3, 48"dia. reinforced concrete culvert	290 ft.	$ 72.00	$ 20,900
3. Excavation av. 6' deep excavation 6" wide	390 C.Y.	$ 3.11	$ 1,200
4. Bedding 6" deep sand	32 C.Y.	$ 6.45	$ 210
compacted	1,7640 ft^2	$ 0.27	$ 470
5. Backfill	--	--	$ 200
6. Discharge erosion control	--	--	$ 1,200
		Total for Drainage Reroute	$ 54,000

Slope Protection - Expect natural grasses to provide sufficient slope protection.

TOTAL CLOSURE COSTS - MILL DUMP

1. Grading to Expanded Base	$124,000
2. Drainage Reroute	54,000
3. Cover Vegetation	143,000
	$321,000

Say $325,000 to $350,000.

DISTRIBUTION

3 copies to: International Paper Company
P. O. Box 2448
Mobile, Alabama 36652

Attn: Mr. Scott Tait

CEG/JBM:dhw/dkh

QUALITY CONTROL REVIEW:

Michael P. Marlin

Michael P. Marlin, P.E.
Senior Engineer

ILLUSTRATIONS

Plate 1 Boring Location Plan (Site Plan)

Plate 2 Drainage Closure Plan - LIB

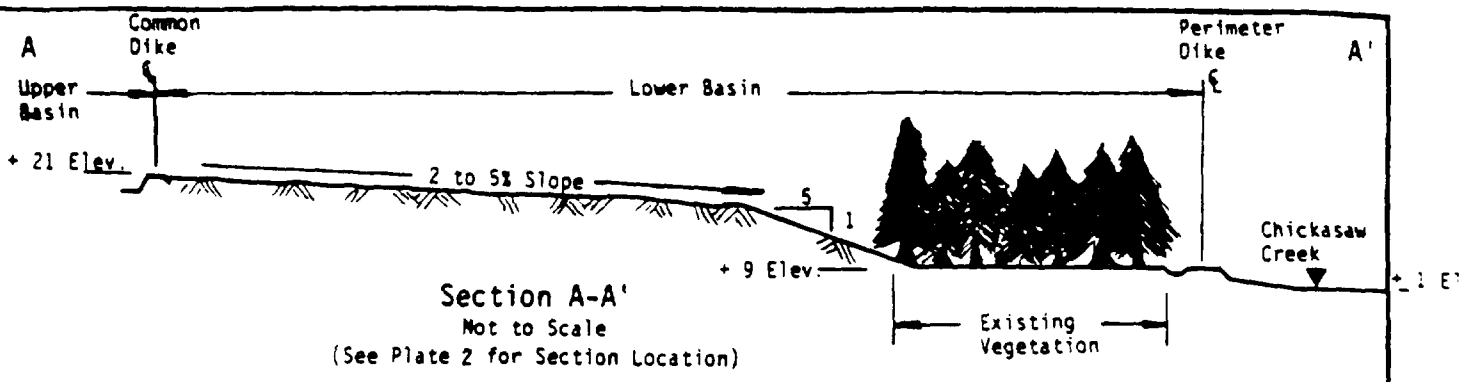
Plate 3 Grading Closure Plan - LIB

Plate 4 Not Used

Plate 5 Closure Plan - Mill Dump

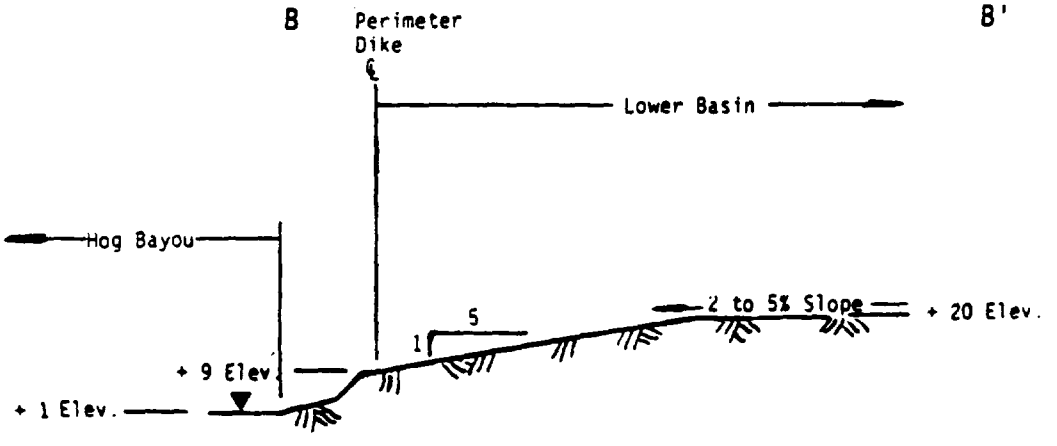
Plate 6 Section A-A' - Mill Dump

P-3
Groundwater Gradients
P-6
P-2
Lower Impoundment Basin
Lower Impoundment Basin Dike
HOG BAYOU
B-12
Approximate Location Of Filled In Hog Bayou
Upper Impoundment Basin Dike
P-7
Upper Impoundment Basin
1981 Dike Failure Area
CHICKASAW CREEK
P-4
B-2
B-3
Barge Dock
P-5
LEGEND
Test Boring Monitoring Wells
Previous Test Boring By Others
Harding Lawson Associates
1



Section A-A'
Not to Scale
(See Plate 2 for Section Location)

DRAINAGE: Drainage will sheet flow off of grassed slopes into existing vegetated eastern section of lower basin. After heavy rains, siphon culverts will be opened to discharge collected run-off to Chickasaw Creek. At all other times, culvert valves will be shut and no discharge will occur. (Culvert details are shown on Plate 4.)



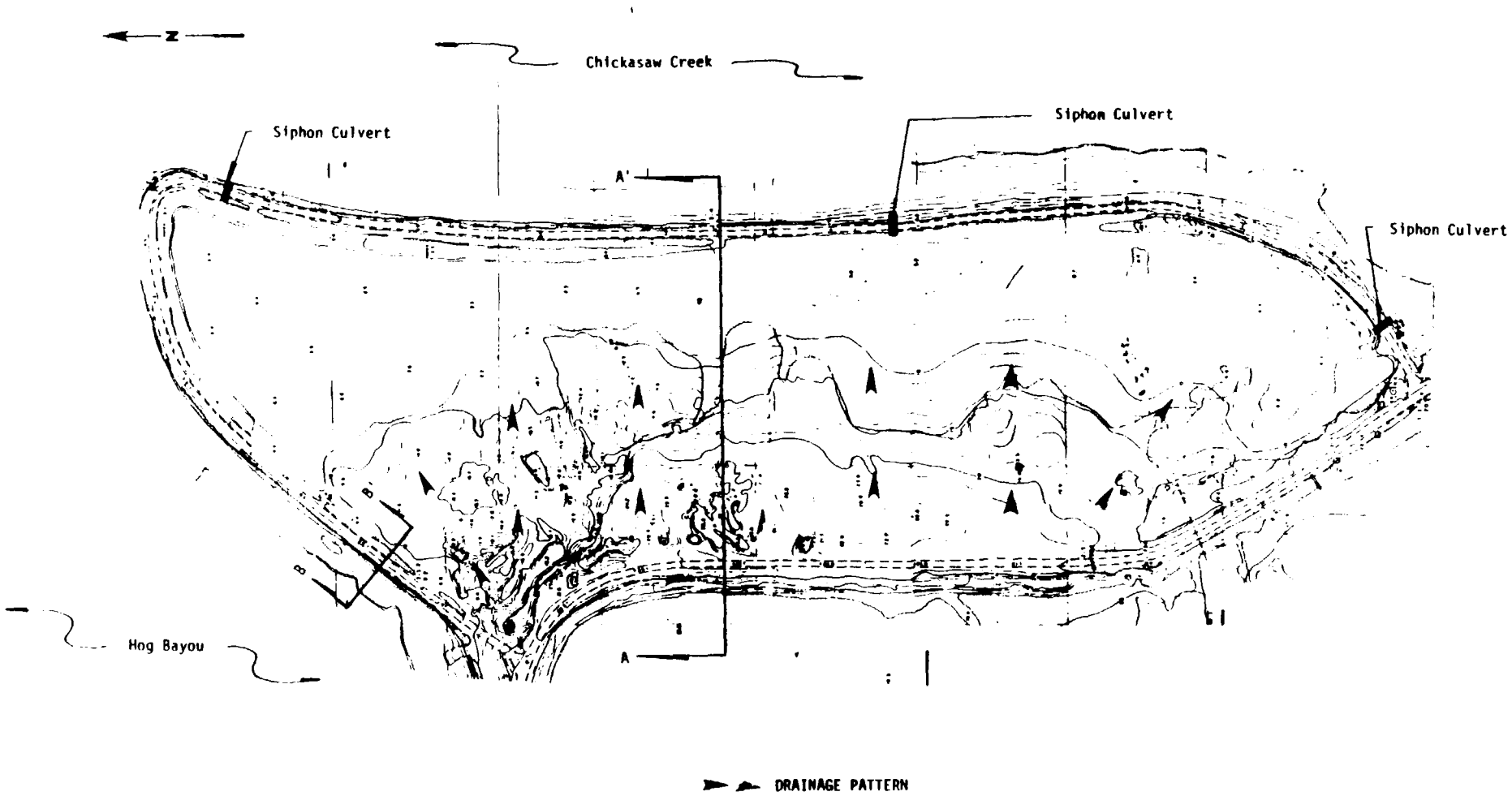
Section B-B'
Not to Scale
(See Plate 2 for Section Location)

DRAINAGE: Drainage will sheet flow off grassed slopes and over the Perimeter Dike into Hog Bayou and/or Chickasaw Creek

GRADING CLOSURE PLAN
Lower Impoundment Basin
International Paper
Mobile, Alabama

PLATE 3

DRAWN		APPROVED	DATE	REVISED	DATE
D.K.K.	6261,002.12	JBm	Nov 83		



DRAINAGE CLOSURE PLAN
Lower Impoundment Basin
International Paper
Mobile, Alabama

PLATE **2**

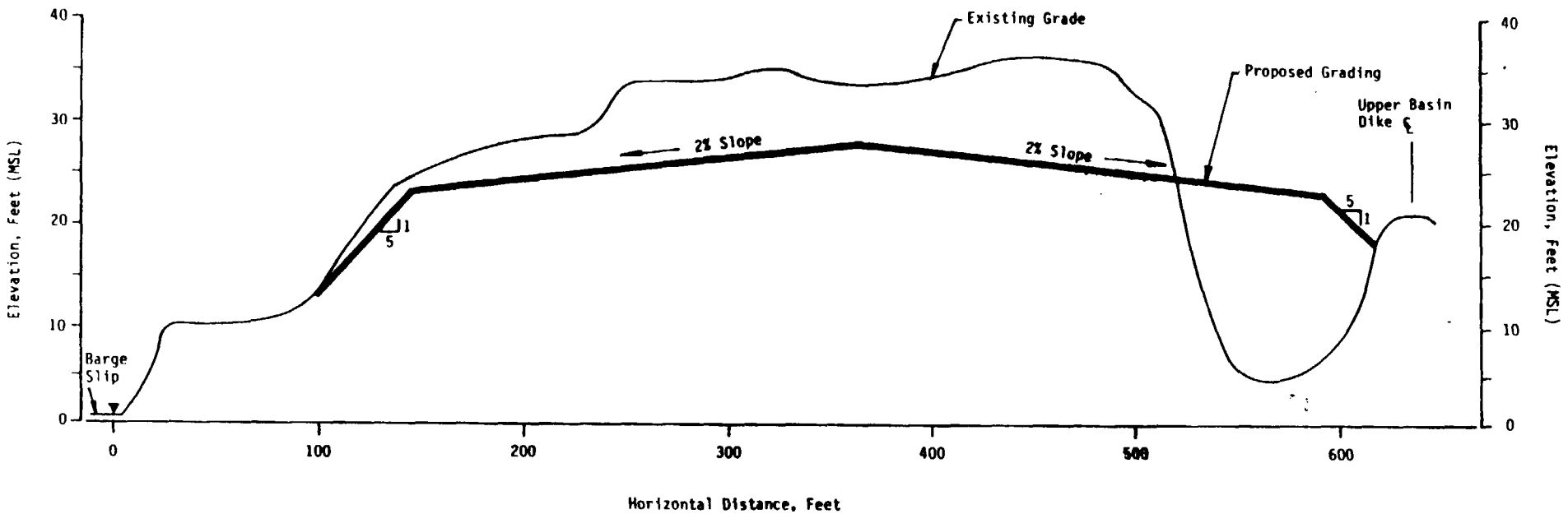
DRAWN	JOB NUMBER	APPROVED	DATE	REVISED	DATE
GM	6261,002.12	FBM	Nov 83		

CLOSURE PLAN - MILL DUMP

INTERNATIONAL PAPER COMPANY
MOBILE, ALABAMA

PLATE 5

Drawn		Approved	Date	Revised	Date
GM	6261,002.12	JBm	4/14/83	JBm	Nov 83



Scale:

1"=50' Horizontal
1"=10' Vertical

For Section Location
See Plate 5

SECTION A-A'/GRADING PLAN
Mill Dump
International Paper Company
Mobile, Alabama

PLATE 6

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED	DATE
HM	6261,002.12	JBm	Nov 83		

NUS CORPORATION
SUPERFUND DIVISION

PROJECT NOTES

TO: International Paper Co. file DATE: April 23, 1990 LCC

FROM: Lori C. Conway Lori C. Conway COPIES:

SUBJECT: Meeting with Pablo Vasquez, ~~4-24-90~~ 4-23-90 LCC

REFERENCE: TDD No. F4-9002-66

This morning, Roger Franklin and I met with Pablo Vasquez, Coordinator of Environmental Services/EAST for International Paper Company in his Atlanta office. This meeting was a prerequisite for the company to grant us access to sample.

First, we discussed the planned FIT sampling strategy, and the analysis required (Target Compound List). Then we discussed splitting samples and container requirements. We then discussed some of the facility's waste generation and disposal history.

The three source areas on site will be:

Lower Impoundment Basin -- closed

Mill Dump (landfill) -- closed sometime after 1983

Upper Impoundment Basin -- open and operating at this time

Sampling of the lower impoundment and landfill was conducted in 1981 prior to the development of closure plans for these two areas. Results are contained in the proposed closure plans, which he will make available to us the day of the sampling.

International Paper plans to close the Upper Impoundment in early 1991. Landfill and lower impoundment were closed probably at the same time, probably around 1984.

Mr. Vasquez said no RCRA Part A application was ever filed for these source areas. He further stated that there are no RCRA facilities in IP's paper division.

When asked whether the source areas were lined, he stated that the lower impoundment may have a clay bottom, but he did not think the landfill was lined.

66

REFERENCE # 5

"Rite in the Rain" - A unique All-Weather Writing Paper created to shed water and enhance the written image. It is widely used throughout the world for recording critical field data in all kinds of weather.

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TACOMA, WA 98421-3696 USA

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ALL-WEATHER
LEVEL
Notebook No. 311

F4-2227

TDD No. F4-9002-66
International Paper Company
Mobile, Mobile County, Alabama
Project Managers: Roger Franklin
Lori Conway

LOGBOOK REQUIREMENTS
REVISED - NOVEMBER 29, 1988

NOTE: ALL LANGUAGE SHOULD BE FACTUAL AND OBJECTIVE

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

5/2/90

The following personnel have read and understand the Work Plan, Site Safety Plan and Study Plan for International Paper Company.

Lori Conway — Lori A. Conway
Roger Franklin — Roger Franklin
Andy Spaugh — Andy Spaugh
Ron Young — Ron Young
Eric Tschudi — Eric Tschudi
Sam McIver — Sam McIver

Additional sampling information available on field sheets.
Samples to be split with PRP; FIT will provide sample containers for PRP samples.

Lori A. Conway

2 5/2/90

0740 Arrived at facility, checked in. David Hitt accompanied us to the closed landfill area (what the facility refers to as the Old Mill Dump Area). Decon line and paperwork table were set up.

Weather is humid, ~ 70°F, partly cloudy. Facility is active.

0815 Roger Franklin and I left with David Hitt to meet with Pablo Vasquez and other facility representatives.

Ron Young left facility to return to hotel to ship samples collected at another site yesterday

0820 Met with Pablo Vasquez and David Hitt. Mr. Vasquez provided a copy of the Proposed closure Plans

Lon C. Conway

5/2/90

for the Lower Impoundment and Mill Dump, as well as a blueprint aerial photo of the entire facility. We discussed sample locations, both on site and possible background locations.

~~0930~~ LCC 5/2/90

0920 Drove around facility with Mr. Hitt and Mr. Vasquez. Selected background location ~ north of parking lot near guard shack at plant entrance.

Mr. Hitt stated that the facility employs ~ 1200 workers.

0925 Arrived back at paperwork/decon station; rejoined rest of crew.

Andy Spaugh calibrated ~~pH/conductivity meter~~ HNu # 41539 LCC 5/2/90

10.2 probe - span 7.8/8.2

Lon C Conway

3

Cond./pH meter was not calibrated since no water samples will be collected.

0945 Collected IP-SS-01
Background surface soil collected directly north of parking lot west of guard shack from grassy, landscaped area.
- black sandy soil mixed with orange red clay
- collected by E. Tschudi and S. McIver
- no readings on HNu above background
- depth ~ 12 in.

1000 Collected IP-SB-01
Background subsurface soil collected from same location as IP-SS-01
- red clayey, sandy soil
- collected at ~ 3-4 ft bls
- collected by E. Tschudi and S. McIver
- no readings on HNu above bkgd.

Lori C. Conway

1040 Collected IP-SS-02
Surface soil sample collected from northern tip of closed lower impoundment
- brown, sandy, rocky soil
- collected at ~ 6 inches bls
- collected by E. Tschudi and S. McIver
- no readings on HNu above bkgnd.

1055 Attempted to auger down by hand to collect SB-02 but hit a metallic object. Will proceed to next sample location for now - leachate collection ditch outside northern tip of lower impoundment. Will collect sediment here to see if anything is leaching out of impoundment.

1115 Collected IP-SD-01
Sediment sample collected from leachate collection ditch

Lori C. Conway

outside northern tip of lower impoundment
- black, wet, sandy soil
- collected by E. Tschudi, S. McIver

1200 Walked landfill (Old Mill Dump) with ~~Bitt~~ LCC 5/2/90 Mr. Hitt and Mr. Vasquez. Decided to collect subsurface soil sample at toe of landfill along eastern perimeter of old landfill adjacent to Chickasaw Creek to determine ~~in~~ LCC 5/2/90 if contaminants are leaching out of landfill. This sample will be IP-SB-02.

1230 Collected IP-SB-02
Subsurface soil sample from location described in previous entry.
- collected by E. Tschudi, S. McIver
- depth ~ 2-3 ft bls
- no readings on HNu above bkgnd.

Lon C. Conway

1250 Collected IP-SD-02
Sediment sample collected from drainage ditch along western side of former landfill. Mr. Hitt said that this ditch used to carry over flow from impoundment (upper) out to creek prior to installation of the wastewater treatment system. A dam in the ditch, which was installed with the treatment system, now prevents the overflow from flowing down the ditch and out to creek. The sample was collected north of this dam to determine what entered the ditch prior to installation of treatment system.
- collected from edge of standing pool of water
- collected by E. Tschudi, S. McIver
- black, wet, sandy soil
- no readings on HNu above bkgd.

Lon C. Conway

8 5/2/90

1330 Collected IP-SD-03
Sediment sample collected from Hog Bayou, east bank adjacent to northwest end of upper impoundment ditch
- collected by R. Young and Roger Franklin

1335 Collected IP-SD-05
Sediment sample collected from Chickasaw Creek, west bank along northeast tip of facility
- collected by S. McIver, E. Tschudi
- black, wet, sandy soil
- collected at edge of creek

1350 Collected IP-SD-04
Sediment sample collected from upper impoundment ditch upstream of floodgate
- collected by R. Young

Lori C. Conway

5/2/90

1420 Collected IP-SD-06
Sediment sample collected along west bank of Chickasaw Creek adjacent to former landfill.
- collected by E. Tschudi, S. McIver
- black sandy soil collected at edge of creek.

1500 Presently, wastewater treatment sludge is disposed of at International Paper's landfill at Chunchulla, AL since 1987. A few years prior to 1987, it was disposed of in a municipal landfill. Before that, to the best of my knowledge, it went into either the onsite landfill or impoundments. This information is according to David Hitt.

5/2/90

Lori C. Conway

C-O-C 4-12516,15

Receipt La Sagile 4-3282

Case No. 14000

Low Concentration yes/no

Samples

	Media	Lab	Airbill No.
12		Conway/Chem	5877179033
11	Water	Silver Valley	6873595960

5/2/90

TDD # F4-9002-66

Date 5-2-90 By Whom: Lori Conway

Time: 1150 # keyed to map:

Location: Atop landfill (closed) facing South

Picture of: Photos 1-10 - panorama of facility - Chickasaw Creek to extreme left, Scott Paper Co.,

TDD # plant w/ a barrier in foreground,

Date upper impoundment in distance,

Time and landfill # keyed to map:

Location: Lower impoundment not shown.

Picture of:

TDD # F4-9002-66

Date 5-2-90 By Whom: Lori Conway

Time 1230 # keyed to map:

Location: Eastern edge of former landfill

Picture of: IP-SB-02

Sample location

Lori C. Conway

41

42 5/2/90

TDD # E4-9002-66
Date 5/2/90 By Whom: L. Conway
Time: 1250 # keyed to map:
Location: Drainage ditch along western side of former landfill
Picture of: IP-SD-02 sample location

TDD # E4-9002-66
Date 5/2/90 By Whom: L. Conway
Time: 1250 # keyed to map:
Location: Drainage ditch along western side of former landfill
Picture of: IP-SD-02 sample location

TDD # E4-9002-66
Date 5/2/90 By Whom: L. Conway
Time: 1330 # keyed to map:
Location: Upper impoundment dam - SE side of impoundment
Picture of: Photos 1 of 3 panorama of upper impoundment (3 photos total)

Lori C. Conway

5/2/90

TDD # E4-9002-66
Date 5-2-90 By Whom: L. Conway
Time: 1345 # keyed to map:
Location: SW side of closed lower impoundment
Picture of: Photos 1-5 - panorama of lower impoundment

TDD #
Date By Whom:
Time # keyed to map:
Location:
Picture of:

TDD #
Date By Whom:
Time # keyed to map:
Location:
Picture of:

Lori C. Conway

REFERENCE # 6

ADEM

ALABAMA
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

Mailing Address:
State Capitol
Montgomery, AL
36130
205/834-1303

Field Offices:

P. O. Box 953
Decatur, AL
35602
205/353-1713

Unit 806, Building 8
225 Oxmoor Circle
Birmingham, AL
35209
205/942-6168

4358 Midmost Drive
Mobile, AL
36609
205/343-7841

June 12, 1984

Cresylic Acid tar spill

MEMORANDUM

TO: Bernard E. Cox BEC

FROM: Charles Fleming CF

Re: International Paper Company

On June 1, 1984 at 9:20 a.m., I met with Mr. Scott Tait and Mr. Steve Stauton to discuss the cresylic acid tar which is being used as boiler fuel and to sample some spillage of this material.

International Paper Company has been using this boiler fuel for 2 - 3 months. They pay 15¢ per gallon. It is shipped to them by railroad but it is their plan to use a barge.

I took a sample of some of the material which had leaked from the holding tank at 10:30 a.m.

CF/sjw

REFERENCE # 7

NUS CORPORATION AND SUBSIDIARIES

ECON NOTE

CONTROL NO:	DATE:	TIME:
F4-9002-66	February 15, 1991	1445

DISTRIBUTION:

International Paper Company

BETWEEN:	OF:	PHONE:
Dixie Beatty-Carmack	Alabama Dept. of Env. Management	(205) 271-7700

AND:

Lori C. Conway, NUS Corporation

DISCUSSION:

RCRA status of Mobile Mill for International Paper. The mill itself has not filed a Hazardous Waste Permit Application.

The International Paper Co. Erling Riis Lab, also located on Papermill Road, has small-quantity generator status. This is apparently a research and development lab.

ACTION ITEMS:

NUS 067 REVISED 0685

FACILITY ID CONTACT PH#	FACILITY NAME CONTACT	NOTIF DATE	MAIL STREET LOC STREET	MAIL CITY LOC CITY	ST MZIP ST LZIP	GEN	TRN	TSD	UIC	INT	CONF IN	FACIL. STATUS	PERMIT STATUS
ALD051235562 3128492500	INTERLAKE INC/AL METALLURGICAL KRIKAU F DIRECTOR ENV C*	800818	PO BOX 348 OLD MONTGOMERY HWY	SELMA SELMA	AL 36701 AL 36701	1					00		
ALD041906173 2056996171	INTERSTATE LEAD CO INC MOSELEY MARVIN	800815	P O BOX 276 1247 BORDEN AVENUE	LEEDS LEEDS	AL 35094 AL 35094	1		X		Y R	00	C119-1	C1105-4
ALD000652453 2054578911	INTNL PAPER CO ERLING RIIS LAB MARANO GERALD RESEARCH *	800818	PO BOX 2787 PAPER MILL RD	MOBILE MOBILE	AL 36652 AL 36610	2					00		
ALD004009163 2054282391	IRECO INC KNIGHT HERBERT TECH SUPV	800725	PO BOX 190 MCADORY JUNCTION	BESSEMER BESSEMER	AL 35020 AL 35020	1		X	X	Y S	00	C119-1	C1105-1
ALD982104358 2054788022	ISLAND CLEANERS WILLIAMS RICHARD	870331	1314 DAUPHIN ISLAND PKWY 1314 DAUPHIN ISLAND PKWY	MOBILE MOBILE	AL 36605 AL 36605	2						C119-2	
ALD050164565 2058815759	ITEC INC NEIGHBORS ROBERT	860124	PO BOX 4147 520 GREEN COVE RD	HUNTSVILLE HUNTSVILLE	AL 35815 AL 35803	1							
ALD063694772	IVAN LEONARD CHEVROLET GARY SALTER	861008	1620 MONTGOMERY HWY 1620 MONTGOMERY HWY	BIRMINGHAM BIRMINGHAM	AL 35216 AL 35216	2						C119-2	
ALD059903641 2055348426	J & A ENTERPRISES ATKINSON ADDIE PRESIDENT	830804	1003 ORCHARD ST 1003 ORCHARD ST	HUNTSVILLE HUNTSVILLE	AL 35801 AL 35801			X					
ALD981027832 2054798641	J & M AUTO REPAIR MICHAEL CLAUSELL OWNER		652 B WESTERN DR 652 B WESTERN DR	MOBILE MOBILE	AL 36607 AL 36607	1							
ALD120891577 2058595770	J&J SOUTH CENTRAL SMITH GLENN	860421	PO BOX 3387 3420 STANWOOD BLVD	HUNTSVILLE HUNTSVILLE	AL 35810 AL 35810	2						C119-1	
ALD981477029 2057556290	JACKS DRIVE IN ONE HR WILSON JACK	861006	PO BOX 804 310 6TH ST	CLANTON CLANTON	AL 35045 AL 35045	2							
ALD040661118 2053424745	JAGUAR CLEANERS HOLT D T	851010	5640 OLD SHELL RD 5640 OLD SHELL RD	MOBILE MOBILE	AL 36608 AL 36608	2							
ALD981476187	JAMES MCGRIFF NON-NOTIFIER	860717	COURT STREET COURT STREET	PRATTVILLE PRATTVILLE	AL 36067 AL 36067								
ALD039135231 2056542421	JAMES RIVER CORPORATION GAY PAUL SUPV OF ENVIR *	870826	NAHEOLA MILL STATE HWY 114	PENNINGTON PENNINGTON	AL 36916 AL 36916	1							
ALD981477128 2052504090	JASPER DISTRICT GARAGE BOWERS W L	860815	2700 HWY 78 WEST 2700 HWY 78 WEST	JASPER JASPER	AL 35501 AL 35501	2							

REFERENCE # 8

NUS CORPORATION AND SUBSIDIAI

TELECON NOTE

CONTROL NO:	DATE:	TIME:
F4-9002-66	February 15, 1991	1410

DISTRIBUTION:

International Paper Company

BETWEEN:	OF:	PHONE:
John Poole	ADEM -- Industrial Permits Branch	(205) 271-7700

AND:

Lori C. Conway, NUS Corporation

DISCUSSION:

Mr. Poole stated that International Paper Company's Mobile Mill holds NPDES Permit no. AL0002780. He said he did not know of any significant violations of the permit, if any.

He said the effluent is carried via a pipeline to the Mobile River, near downtown, where it is discharged.

ACTION ITEMS:

NUS 067 REVISED 0685

REFERENCE # 9

NUS CORPORATION AND SUBSIDIARI

ELECON NOTE

CONTROL NO:	DATE:	TIME:
F4-9002-66	February 15, 1991	1600

DISTRIBUTION:

International Paper Company

BETWEEN:	OF:	PHONE:
Glen Golson	ADEM Air Branch	(205) 271-7861

AND:

Lori C. Conway, NUS Corporation

DISCUSSION:

International Paper Company holds 15-20 air permits for their Mobile Mill. He was not aware of any major violations of these permits, if any.

He could not describe the permits in detail over the phone, as they were too numerous.

ACTION ITEMS:

NUS 067 REVISED 0685

139. R.-M. Jacob and
140. K. Stach and F. E
141. U.S. Pat. 3,000,903 (Sept. 15, 1959), J. H. Biel (to Lakeside Laboratories, Inc.).
142. T. S. Gardner, E. Wenis, and J. Lee, *J. Med. Pharm. Chem.* **2,** 133 (1960).
143. A. Burger and W. L. Yost, *J. Am. Chem. Soc.* **70,** 2198 (1948); U.S. Pat. 2,997,422 (Jan. 9, 1959), R. E. Tedeschi (to Smith Kline & French Laboratories).
144. U.S. Pat. 3,381,000 (April 30, 1968), G. Palazzo and B. Silvestrini (to Aziende Chemishe Riunite Francesco Angelini).
145. G. Palazzo, *Curr. Ther. Res.* **15,** 745 (1973).

L. H. STERNBACH
W. D. HORST
Hoffmann-La Roche & Co., Inc.

PULP

Pulp is the raw material for the production of paper (qv), paperboard, fiberboard, and similar manufactured products. In purified form, it is a source of cellulose (qv) for rayon (qv), cellulose esters (qv), and other cellulose-derived products. Pulp is obtained from plant fiber and is, therefore, a renewable source (see also Chemurgy). Fibrous plants have been used as a source for writing materials, eg, papyrus, since the earliest Babylonian and Egyptian civilizations. The origin of papermaking, which is the formation of a cohesive sheet from the rebonding of separated fibers, has been attributed to Ts'ai-Lun in China in 105 AD, who used bamboo, mulberry bark, and rags. At the same time in Europe, parchment was used and, during the Middle Ages, the use of rags and rope supplanted the above material. The use of wood (qv) as a source of papermaking fiber was not commercially applied until the mid-1800s. The principal wood-pulping processes in use today, eg, the groundwood, soda, SO_2 or acid sulfite, and the sulfate or kraft processes were developed in 1844, 1853, 1866, and 1870, respectively. Since their development, the basic processes have been modified and adapted and the technology has been highly refined. However, the scientific base for this technology is considerably slower in its development, largely because of the physical and chemical heterogeneity of wood, and the complexity of its component polymers and their interactions.

As with most industries, the environmental and energy concerns of the 1970s effected large changes in the operation of pulp and paper mills as well as much research effort to develop the most energy-efficient and cleanest methods of production. In most cases, the practical result for the short term has been add-on methods, eg, scrubbers, precipitators, holding ponds, etc, which minimize the discharge of effluents. For the future, dramatic modifications of existing procedures or totally new technologies are being considered. Recent trends have been the increasing use of high yield pulps by modifying the groundwood process to improve pulp quality, the use of more

of the tree in harvesting and chipping, and elimination or minimization of malodorous sulfur compounds in pulping and of the toxic and corrosive chlorine compounds from bleaching.

Wood is the original source of 99% of the pulp fiber produced in the United States. Although virtually any wood can be pulped by some process, there are certain species commonly used for pulp because of desirability of fiber, ease of pulping, availability, competition with other wood products, etc. The common pulpwoods in the United States are listed in Table 1.

Wood

In terms of abundance and suitability for pulping, there are two chief botanical classifications of trees: the softwoods or evergreens, which are gymnosperms, and the hardwoods or broad-leaved deciduous trees, which are dicotyledon angiosperms. The chemistry and anatomy of wood varies somewhat with the species of tree, but there are gross similarities within the two classifications. The softwoods, which are preferred for most pulp products because of their longer fibers, generally contain a higher percentage of lignin (26–32% on an extractives-free basis) and a lower percentage of hemicellulose (14–17%) than the hardwoods, which contain 17–26% lignin and 18–27% hemicellulose (see Lignin).

Anatomy and Morphology. A cross section of pine is shown in Figure 1 as a representation of the anatomy of softwoods. The main cell type is the axially aligned tracheid (TR). Although in botanical terminology tracheids are not considered to be true fibers, they are the papermaking fibers from softwoods and are referred to as fibers throughout this article as is common practice in the industry. Other cell types in softwoods are the ray cells, ie, the fusiform wood ray (FWR) and wood ray (WR) cells, and the longitudinal and epithelial parenchyma, which are the cells surrounding the horizontal and vertical resin ducts (HRD and VRD, respectively).

As a tree grows, the cells are produced in concentric lamella in the cambium layer, which is between the bark and the wood. In the spring, when moisture is plentiful and the tree is growing rapidly, the tracheid cell wall is thin (3–4 μm) and the hollow center or lumen is relatively large (26–43 μm). This portion is called springwood (Sp). During the summer or later in the growing season, the cell wall thickness increases to 8–12 μm and the outside diameter decreases from 47–29 μm in short-leaf pine. These cells

Table 1. Pulpwood Species by Main U.S. Pulp-Producing Regions

	Softwoods		Hardwoods	
Region	Dominant	Secondary	Dominant	Secondary
Northeast	spruce	hemlock	oak	aspen
	fir	tamarack	hickory	poplar
		white pine	maple	
South	yellow pines	cypress	oaks	
			gums	
Northwest	douglas fir	true firs	red alder	
	hemlock	spruce		
Lake States	jack pine	white pine	red oak	birch
	red pine	tamarack	aspen	
			maple	

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	poplar
	birch

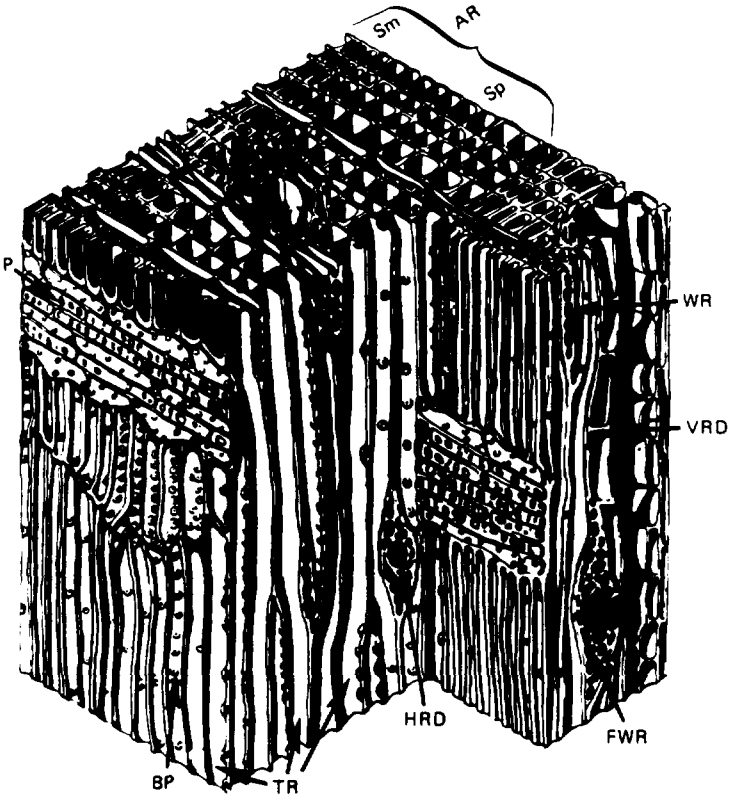

Figure 1. Schematic section of softwood. AR = annual ring, BP = bordered pits, FWR = fusiform wood ray, HRD = horizontal resin ducts, P = primary wall, Sm = summerwood, Sp = springwood, TR = tracheid, VRD = vertical resins ducts, WR = wood ray.

form the summerwood (Sm). The sequential combination of seasonal cell types leads to the characteristic annual ring (AR) of trees, which is more or less distinct in softwoods, depending on the species.

In the living tree, nutrients flow through the cells of the sapwood. The pattern of liquid conductance is important for the penetration of chemicals in the initial stage of chemical pulping. In softwoods, liquid is transferred from rays to tracheids and between tracheids through tiny voids or pits (P) in the cell wall. Usually, pits in adjacent cells are aligned so that a passage between the lumens of the two cells is formed that is blocked only by a thin pit membrane of intercellular substance. In bordered pits (BP), this membrane contains a thickened circular portion called a torus, which functions as a check valve to seal the passage against a return flow of liquid.

Figure 2 is a cross section of the structure of yellow poplar as a typical hardwood. Hardwoods have a more varied and more complex arrangement of cells than softwoods. The main structural element of hardwoods is the wood fiber (F), which is significantly shorter than the softwood tracheid (1–2 mm vs 3–6 mm), and generally is thinner, ie, ca 20 μm in dia. The true fibers are uniform throughout the annual ring. Hardwoods also contain a sizable proportion of short, large-diameter cells or vessels (V) through which sap is transported. Vessels may be larger in springwood, eg, oaks, hickories, etc, or uniform throughout the annual ring, eg, yellow poplar, aspen, etc. Vessels have open ends or a connecting gratelike tissue called a scalariform plate (SC). Hardwood fibers

The 4-*O*-methylglucuronoarabinoxylans are substituted at *C*-2 in the xylan backbone by the uronic acid group. This inhibits the tautomeric formation of a keto group at that position and, therefore, inhibits peeling. If the xylan unit is not substituted at *C*-2, but does carry an arabinose substituent at *C*-3, the arabinose is eliminated with formation of a xylometasaccharinic acid end unit, and peeling is inhibited. Galactoglucomannan, however, includes unsubstituted *C*-2 and *C*-3 positions and is highly susceptible to the alkaline peeling sequence. This is reflected in the much higher relative loss of galactoglucomannan during kraft pulping, as shown in Table 3. Cellulose is unsubstituted at *C*-2 and -3, but its higher molecular weight, crystallinity, and inaccessibility minimize the extent of degradation.

Polysaccharides are also susceptible to alkali-catalyzed glycosidic hydrolysis. Although much slower than acid-catalyzed hydrolysis, the rate of alkaline cleavage becomes significant at 170°C, which is the commonly used temperature in kraft pulping. When a chain is cleaved, a new reducing end group is formed and the peeling sequence may be reinstituted in a previously stabilized chain. Approximately 65 glucose units are degraded by peeling with each hydrolytic cleavage (12).

Diffusion and Topochemistry. Topochemical and diffusion processes are important in all chemical and semichemical pulping operations because of the solid nature of the wood components and the liquid or gaseous state of the pulping reagents. The initial liquid transport through wood chips is through the bordered pits of softwoods and the vessels of hardwoods. Liquid penetration of sapwood is higher than that of heartwood, especially in the case of some hardwood species where the heartwood vessels are plugged with tyloses. Penetration is also affected by the density of the wood. In general, penetration into softwoods is faster than into hardwoods, especially in the cross-fiber direction. With the strongly alkaline cooking liquors of the kraft process, diffusion takes place at nearly equal rates in all directions.

To make pulping as homogeneous as possible, an effort is made to achieve uniform penetration before pulping temperatures are reached. This may be done by presteaming chips at or above atmospheric pressure, applying hydrostatic pressure to chips submerged in pulping liquors, and allowing sufficient time during heating to process temperature.

When the chips are saturated with pulping liquors, the fiber lumens are filled with liquid. However, for fiber separation, the lignin in the intercellular middle lamella must be dissolved. Pulping is accomplished by transport of reagents through the submicroscopic pores of the fiber wall, contact and reaction with lignin in the cell wall and middle lamella, and transport of dissolved fragments back to the bulk solution in the lumen and that surrounding the chip. In the digester, the chips and liquor are kept in constant motion relative to one another to facilitate this transport. The exact topochemical sequence depends on the process (13). In kraft pulping, very little

Table 3. Yields of Carbohydrate Component from Loblolly Pine

Component	Wood	Chlorite holocellulose	Kraft
4-*O*-methylglucuronoarabinoxylan, wt %	11	5.8	3.9
galactoglucomannan, wt %	17	15.4	4.4
cellulose, wt %	41	40	36.8

middle-lamella lignin is lost until about half of the cell-wall lignin has been removed; then, middle-lamella delignification is very rapid. At the end of the cooking phase, the residual lignin is almost entirely in the cell wall. In the sulfite processes, particularly those involving neutral sulfite, the dissolution of lignin begins in the cell wall, but middle-lamella lignin removal begins earlier than in the kraft process. There is much less difference in rate of delignification in the two regions.

Pulping. Solutions of sodium sulfide and sodium hydroxide are in equilibrium: $H_2O + Na_2S \rightleftharpoons NaHS + NaOH$. Aqueous sodium sulfide is therefore a source of hydroxide ions and this must be considered in adjusting the chemical charge. A system has been developed in the North American industry to put sodium hydroxide and sodium sulfide on an equivalent basis by expressing them both as their equivalent weight to sodium oxide, Na_2O. The percent of sodium sulfide in the mixture, when both Na_2S and NaOH are expressed as Na_2O, is known as the sulfidity. The chemicals are charged as a percent of the wood on an oven-dry (o.d.) basis, and the sum of Na_2S and NaOH as their Na_2O equivalent is called the active alkali. The actual concentration of pulping chemicals relative to lignin is determined by the liquor-to-wood ratio (L/W) as the total liquid volume, which includes moisture originally in the chips, divided by the dry wood weight. Since one-half a formula weight of Na_2S is equivalent to a formula weight of NaOH, the effective alkali is the sum of sodium hydroxide and one-half the sodium sulfide; both are expressed as percent of sodium oxide equivalent based on the wood. In practice, with recycled chemicals ca 15% of the sodium is present as sodium carbonate from incomplete causticizing, and other sodium sulfur compounds are present in small amounts as thiosulfate, sulfate, and sulfite.

The chemical charge, liquor composition, time of heat-up, and time and temperature of reaction are functions of the wood species or species mix being digested and the intended use of the pulp. A typical set of conditions for southern pine chips in the production of bleachable-grade pulp for fine papers is active alkali, 18%; sulfidity, 25%; liquor-to-wood ratio, 4/1; 90 min to 170°C; and 90 min at 170°C. Hardwoods require less vigorous conditions primarily because of the lower initial lignin content.

Both batch and continuous digesting systems are in operation. Continuous digesters usually are installed in new mills, but they have not completely replaced the batch systems, partly because of the high capital cost of replacement, and also because the batch digestion method has advantages, eg, flexibility to process and product changes, lower maintenance costs, and higher turpentine yields. The advantages of continuous digesters in addition to uninterrupted process flow include higher pulp yields and heat recovery, relative ease of automation, and in-line processing, eg, partial washing and blowline refining.

A schematic of the widely used Kamyr continuous kraft pulping system is shown in Figure 10. The chips are first continuously steamed at low pressure and the turpentine and gases are vented to the condenser. The chips are then brought to digester pressure of ca 1000 kPa (150 psi). They are picked up in a stream of recycled liquor to which white liquor, ie, fresh pulping solution, makeup has been added. This stream carries through to the top of the digester, where the recycling feed liquor is extracted from the chips. The chips with the balance of the liquor flow continuously down through the digester, their temperature being raised to ca 170°C in a top heating zone; this step requires ca 1.5 h. They are then held at 170°C for 1.5 h while passing through a second zone. At this point, the digestion is essentially complete; they next pass

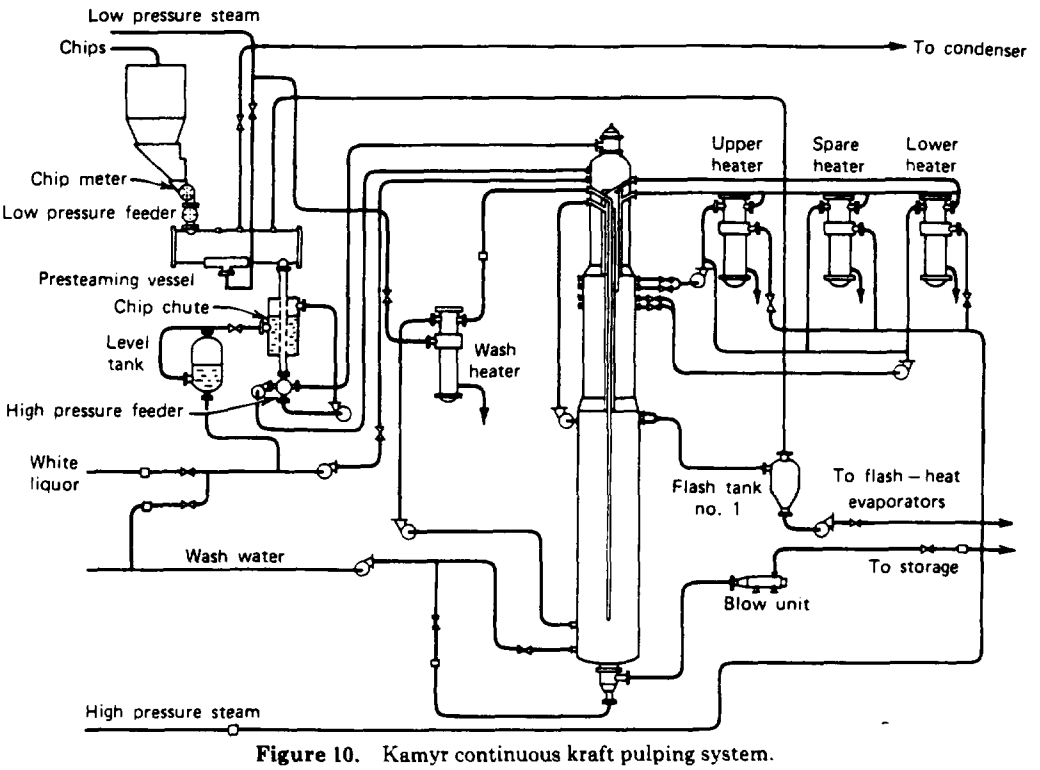

Figure 10. Kamyr continuous kraft pulping system.

continuously through a countercurrent washing and cooling zone; the black liquor or spent pulping solution leaves the digester from the top of this zone while the digested and partially washed chips leave the bottom of the digester through a blow valve to the blow tank. The force of the release is sufficient to fiberize the cooked chips. Cooling the chips prior to fiberization is necessary to assure adequate pulp properties.

Process Control. The rate of delignification depends on the concentrations of hydroxide and hydrosulfide ions as well as the lignin content of the wood. However, if values of lignin remaining in the wood are plotted as kinetically first order, they are described by three straight lines, as shown in Figure 11. The first and most rapid rate is initial delignification. During this phase, there is a rapid consumption of alkali by easily soluble carbohydrates and reactive functional groups, eg, esters. The initially removed lignin is probably associated with the solubilized fraction of hemicellulose. In commercial practice, this phase is usually completed during the extended heat-up period. The second and slower rate is the bulk delignification. In this phase, the decrease in effective alkali is much slower. Most of the lignin is removed during this time at the final pulping temperature. The amount of lignin removed relative to carbohydrates is greater in this phase than in initial delignification. Some readsorption of deesterified polysaccharides does occur. The lignin that remains, ie, residual lignin, is more difficult to remove than either initial or bulk-phase lignin. Pulping is usually terminated as this stage is approached. If desired, the residual lignin is removed in a bleaching operation where more selective, but more expensive, chemicals are employed.

For control purposes, the delignification rate is treated as a homogeneous reaction,

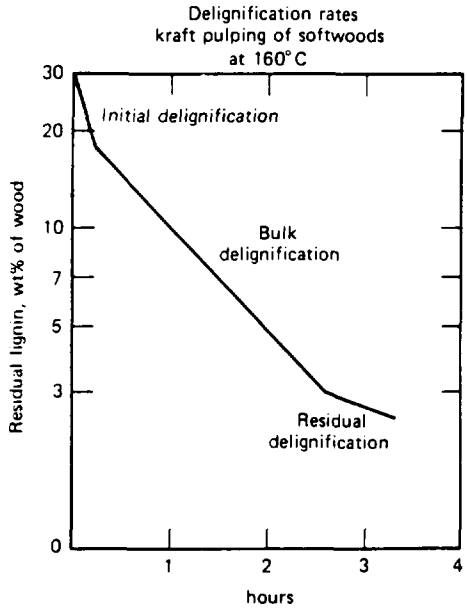

Figure 11. Rate of kraft pulping.

which is first order with respect to the lignin remaining in the wood. The influence of time and temperature has been incorporated into one term, called the *H* factor, by utilizing an Arrhenius-type of equation relating the change in the first-order rate constant to changes in absolute temperature. An *H* factor value of unity is assigned to the effect of pulping for 1 h at 100°C. Relative rates at other temperatures can then be calculated, and allowance can be made for the effect of varying heat-up times and maximum temperatures. For example, the kraft cooking of softwoods to a bleachable-grade pulp requires an *H* factor of ca 2000. The *H* factor does not take into account the effect of chemical concentrations on pulping rates, and modifications that include additional factors have been proposed. These modifications are designed to be programmed into computer control systems (see Instrumentation and control).

Computers (qv) are used to continuously perform calculations and adjust or recommend adjustments of process parameters. Developing analytical methods suitable for automation and, preferably, continuous monitoring has been a significant effort of the 1970s. The main control problem in pulping is the variability of the raw material, including the moisture content of the wood, the species mix, and the amount of bark, decay, knots, dirt, and other extraneous material.

A direct determination of the lignin remaining in the wood or pulp during the cooking phase requires sampling and analysis of large heterogeneous particles. This cannot be automated directly, but continuous monitoring of moisture, weight, and density as well as inline determination of the effective alkali can be accomplished. This information can be combined with computed *H* factors to give reproducible, automated control of both batch and continuous digesters.

Recovery System. Kraft pulping depends on its associated recovery process for producing the digestion liquor. This recovery is illustrated schematically in Figure 12. The chemical recovery cycle involves the separation of the black liquor from the pulp, its evaporation, and its combustion for the recovery of the inorganic chemicals as a smelt, which is subsequently converted to the white liquor for the next digestion.

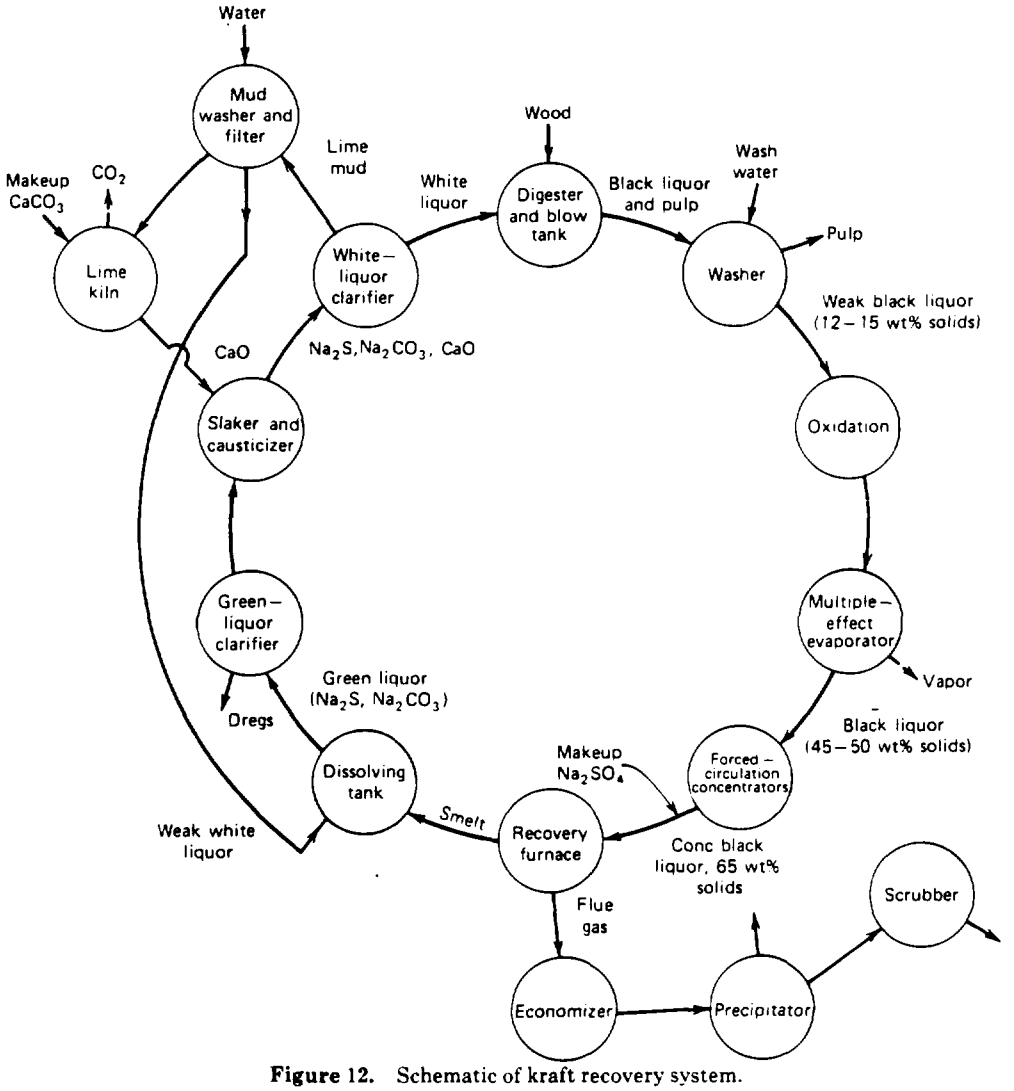

Figure 12. Schematic of kraft recovery system.

The recovery system, together with its heat and material balance, has been described in some detail in ref. 14.

Much of the equipment used in the recovery system is identical with, or closely related to, similar equipment used in other chemical industries. This includes the rotary filters used for brown-stock washing, the multiple-effect evaporators and forced-circulation concentrators, the causticizing equipment, and the lime kiln. The following discussion, therefore, concerns the function and nature of equipment essentially unique to the kraft recovery system.

Black-Liquor Processing. The black liquor is normally separated from the pulp by continuous diffusion washing, and two or three countercurrent stages are used. After this separation, it is subjected to evaporation, the last stage of which can be by contact with the recovery-furnace flue gas. Under these conditions, residual sodium hydrosulfide partially hydrolyzes to hydrogen sulfide and sodium hydroxide, whereas sodium methanethiolate, CH_3SNa, partially hydrolyzes to methyl mercaptan and sodium

hydroxide. In order to prevent the escape of the volatile hydrogen sulfide and methyl mercaptan with the flue gas, the black liquor is oxidized with air or oxygen, which gives sodium thiosulfate and dimethyl disulfide, respectively, according to the following reactions:

$$2\,NaHS + 2\,O_2 \rightarrow Na_2S_2O_3 + H_2O \tag{6}$$

$$2\,CH_3SNa + \tfrac{1}{2}\,O_2 + H_2O \rightarrow CH_3SSCH_3 + NaOH \tag{7}$$

Black-liquor oxidation is normally carried out by passing a stream of liquor and a stream of air or oxygen to a tower fitted with perforated plates or with suitable packing to allow repeated, intimate contact of liquor and gas. Because of the presence of fatty acid sodium salts, ie, soaps, foaming may occur, particularly when unseasoned pine is used, and a number of designs have been used to rectify this problem (see also Defoamers). Less foaming is obtained at a higher solids concentration, and this can be obtained by recycling a portion of the evaporated liquor through the oxidation tower. Black-liquor oxidation must achieve 99% efficiency to meet emission standards where direct-contact evaporation is employed. The pH of the black liquor must also be kept high to minimize the hydrolysis to volatile compounds.

As the solids concentration of black liquor is increased as a result of evaporation, the liquor becomes increasingly viscous. For this reason, the evaporation is conducted in two separate operations. Multiple-effect evaporation is used to bring the liquor to a concentration of ca 45–50 wt % solids and forced-circulation evaporation or additional effects are used to bring it to ca 65–70 wt % solids, ie, the concentration at which it is fired in the recovery furnace (see Evaporation).

Evaporation of the black liquor by direct contact with the hot recovery-furnace flue gases was a common procedure and involved either cascade evaporators or venturi scrubbers. However, this method was a principal source of air pollution and, although various schemes were proposed to minimize the emissions problems, these methods of liquor concentration have generally been eliminated (see also Air pollution control methods).

Recovery Furnace. The function of the recovery furnace is to burn the organic matter, recover the chemical in the form of sodium carbonate and sodium sulfide, and generate steam through utilization of the heat that is liberated. The steam is generated at ca 1360 kPa (200 psi) for direct use as process steam or as superheated steam at up to 8160 kPa (1200 psi) for driving a turbine for electric-power generation; the turbine exhaust steam is used as process steam.

In the recovery furnace and after addition of makeup sodium sulfate, the evaporated liquor is heated to ca 120°C and is fired through one or more special oscillating nozzles or spray oscillators in the front of the furnace. These spray oscillators throw the droplets to the far and side walls. The remaining water quickly evaporates. The dried liquor increases to a certain depth on the wall and then drops off from its own weight in chunks and falls towards the hearth, which is covered with char. Primary air is admitted through a series of ports; thus, the depth of the charred mass is controlled by burning. Reducing conditions are maintained in this zone so that the sodium- and sulfur-containing compounds are largely reduced to sodium sulfide, as indicated by the following reaction:

$$Na_2SO_4 + 2\,C \rightarrow Na_2S + 2\,CO_2 \tag{8}$$

The inorganic residue melts at ca 990–1020°C, depending on its exact composition,

and runs continuously from the furnace through smelt spouts at the lower end of a sloping hearth. Secondary air is admitted at a higher level to limit the height of the bed and also to effect gas-phase reactions, eg, conversion of CO to CO_2 and H_2S to SO_2. Tertiary air is added at an even higher point and at relatively high velocity to ensure mixing of the gases and to complete their oxidation. A small excess of oxygen is required to ensure complete combustion of the gases; a large excess is avoided because it favors conversion of SO_2 to SO_3. The furnace temperature is ca 1250°C. Approximately 10% of the sodium salts is volatilized in the form of Na_2O, which quickly reacts with CO_2 to form Na_2CO_3; the latter reacts in the upper portion of the furnace with SO_3 and SO_2 to form Na_2SO_3 and Na_2SO_4. The walls of the furnace are water-cooled by an arrangement of fintubes connected to the water circulation of the boiler. The unit is designed so that the combustion gases are cooled to a temperature below the melting point of the inorganic constituents during the upward passage of the gases through the furnace. When the salts condense on the closely spaced boiler tubes at the top and back of the furnace, they are present as a dustlike solid which can be blown off, rather than as a slag which would block the gas passage. Automatically timed soot blowers, which impinge jets of steam or compressed air on the tubes, traverse the boiler banks, thereby cleaning them. The released ash falls either towards the hearth or to a special hopper, where it is collected and added to the black liquor for recycle to the furnace.

Proper control of the reactions in the furnace is important. Reducing conditions are necessary at the base of the furnace if the smelt is to contain sodium sulfide rather than the inert sodium sulfate. Slightly oxidizing conditions are needed above the bed, which causes the conversion of volatile sulfur compounds to sulfur dioxide; the latter not only reacts with the fume but is absorbed in the direct-contact evaporator, if one is used. Strongly oxidizing conditions in the upper portion of the furnace are undesirable, since sulfur trioxide forms in large amounts. Sulfur trioxide reacts with the sodium sulfate fume to form sodium pyrosulfate, which melts at 400°C and forms a glasslike, corrosive covering on the boiler tubes.

$$Na_2SO_4 + SO_3 \rightarrow Na_2S_2O_7 \qquad (9)$$

Accidental introduction of water into the smelt can result in serious explosions. Furnace explosions occur by mistake when weak rather than strong black liquor is fired in the furnace and reaches the pool of smelt on the hearth. Explosions also occur when one or more of the tubes in the wall rupture, thus allowing water to flow into the unit. This can occur if the furnace is relighted after a blackout that has resulted from an interruption of fuel or air and if the furnace is not first purged of the explosive gas mixture which may be present. If the primary explosion ruptures a tube, a large secondary explosion results.

The industry has considerable experience in the safe operation of recovery furnaces, and various safeguards are employed, eg, computer control. However, the explosion danger persists, and various proposals have been made to eliminate the smelt bed, improve the heat recovery, and minimize emissions. These proposals include the Swedish NSP furnace, St. Regis' hydropyrolysis system, Weyerhaeuser's dry pyrolysis, and adaptation of the SCA-Billerud NSSC recovery process to kraft black liquors.

Preparation of White Liquor. The smelt is continuously run from the furnace to the dissolving tank. The liquor is strongly agitated to dissipate the heat. The temperature in the tank is readily controlled by dispersion of the hot smelt with a steam jet before the smelt is added to the water, which prevents the explosive mixture that

results from addition of water to a pool of hot smelt. Weak white liquor obtained from washing the lime mud in the causticizing plant is used for dissolving the smelt.

The green liquor, ie, the solution obtained on dissolving the smelt, contains an insoluble residue called dregs, which gives it a dark green appearance. The dregs contain a small amount of carbon plus a number of inorganic constituents, including iron sulfide, manganese dioxide, calcium carbonate, magnesium aluminum silicate, etc. These constituents originate in the wood and the process water or result from corrosion of equipment. The liquor is separated from the dregs by continuous decantation, the separated dregs are mixed with water, and the decanted solution is used for washing the lime mud at a subsequent stage.

The clarified green liquor is used for slaking the lime. For one to two hours, the mixture is passed through a series of tanks equipped with agitators. The causticizing reaction is as follows:

$$Na_2CO_3 + Ca(OH)_2 \rightarrow 2\ NaOH + CaCO_3 \qquad (10)$$

The white liquor is separated from the calcium carbonate by decantation in a clarifier and then is available for a new cycle. The underflow from the clarifier, which contains the calcium carbonate and is referred to as lime mud, is diluted with water and is passed to a second clarifier known as the lime-mud washer. The clarified weak white liquor then enters the dissolving tank, and the residue is passed to a rotary filter and then to the lime kiln where calcium carbonate is converted back to calcium oxide, thus completing the lime cycle.

Uses. The kraft process provides wide adaptability to the pulping of virtually any wood species and yields pulps that are suitable for a broad range of products. Packaging products have stringent strength requirements, and the use of kraft pulps in linerboard has enabled the replacement of wooden cases by corrugated cartons. Similarly, bags and multiwalled sacks of kraft pulp have replaced those made of cotton or jute. After partial or complete bleaching, kraft pulps are often blended with less expensive but weaker pulps, eg, groundwood, to add enough strength to meet product requirements as, for example, in newsprint, which must have sufficient strength to be run on modern, high speed printing presses. The brown color of kraft pulps is undesirable for applications such as writing and printing papers, but they can be bleached to remove the residual lignin and other chromophores. The bleached white product does not darken on aging.

By-products. There are three stages within the pulping operation at which wood-derived chemicals can be recovered as by-products. Turpentine is obtained from the relief gases after an initial steaming of chips in the digester. Better yields of turpentine are obtained from batch digesters than from continuous systems, and pines and firs are the best species. Turpentine is composed principally of unsaturated bicyclic hydrocarbons of which ca 90% are α- and β-pinenes and 5–12% other terpenes.

In the initial black-liquor concentration, saponified fatty and resin acid salts separate as tall oil soaps (see Tall oil). These soaps can be skimmed from the aqueous spent liquor, acidified, and refined to give a crude tall oil composed of resin acids, chiefly abietic and neoabietic; fatty acids, chiefly oleic and linoleic; and an unsaponifiable fraction composed of phytosterols, alcohols, and hydrocarbons. Tall oil is fractionated primarily into fatty acids (see Carboxylic acids).

The final source of by-products is the spent liquor. Possible utilization of kraft black liquors as a source of chemicals has been evaluated, but the mixture is too

complex and the market value of the individual components too low to warrant the extensive separation and purification procedures that would be required. The organic constituents are mainly the various fragments and degradation products of lignin and of the carbohydrates, eg, saccharinic acids and their low molecular weight analogues such as lactic acid. The dissolved alkali lignin, which is still polymeric, can be separated from black liquor by acidification and can be further purified or chemically modified to give useful materials. The production from only a few mills is sufficient to meet the present world demand.

Another product from kraft black liquor is dimethyl sulfide. This chemical, which is added to natural gas to give it odor, is also oxidized to produce the versatile solvent, dimethyl sulfoxide (see Sulfoxides).

Modifications. Although the kraft process is a highly developed, adaptable, and efficient process, there are some problems and disadvantages to its use. Efforts are being made in individual mills to minimize energy, water, and chemical requirements, but there are two problems inherent in the chemistry of the process: low carbohydrate yield and the formation of malodorous organic sulfur compounds.

The low carbohydrate yield results largely from the alkaline peeling reactions. Since peeling is initiated at the hemiacetal or reducing end of the polysaccharide chains, modification of this functional group inhibits peeling and, thereby, increases the yield of carbohydrate material in alkaline pulping. A number of methods have proven effective in the laboratory, including glycosidation, reduction, reductive thiolation, and oxidation. To be effective as a process modification, however, the method must be compatible with kraft pulping and chemical recovery systems and be sufficiently inexpensive so that the cost is more than offset by the increased yield less fuel loss and other factors.

Polysulfide Process. One modification to the kraft process that is being applied commercially is the polysulfide process. When elemental sulfur is added to a solution of sodium sulfide and sodium hydroxide, the sulfur dissolves and forms a mixture of complexes with the general formula Na_2S_x (where x is 2–5, depending on equilibrium conditions and how much sulfur is added). Sulfur as Na_2S_x is an oxidizing agent which, under the conditions of kraft pulping, converts the hemiacetal function to a relatively alkali-stable aldonic acid. The reaction intermediate involves oxidation at C-2; thus, the epimeric acids are obtained. The increase in yield in the polysulfide process is proportional to the amount of added sulfur up to ca 10% based on wood. As expected from the sensitivity of the glucomannans to the peeling sequence, the greatest increase comes from their stabilization in softwoods (15) (see Fig. 13).

The additional sulfur for polysulfide pulping can upset the sodium–sulfur balance in the kraft recovery cycle, and sulfur-emission problems increase. In the MOXY (Mead Corp.) process, polysulfide is formed from kraft white liquor by catalytic oxygen oxidation of the sodium sulfide normally present. The need for additional sulfur is eliminated, but the sulfur level is limited to Na_2S_2. Under these conditions, yield gains of 2–2.5% based on wood are achieved and sulfur emissions are lower because of the reduced amount of Na_2S (16).

Anthraquinone. In the early 1970s, it was reported that the addition of sodium anthraquinone-2-sulfonate to sodium hydroxide solutions accelerates pulping to a rate similar to that obtained with sodium sulfide (17). The effect is partially additive, since improved yields and pulp properties are obtained from the kraft process when small amounts of the quinone salt are added to kraft pulping liquors. The sulfonate

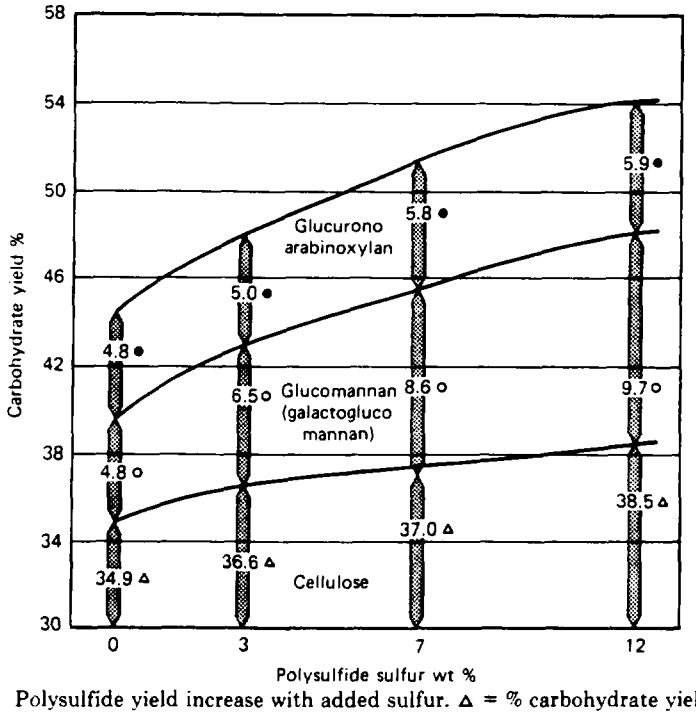

Figure 13. Polysulfide yield increase with added sulfur. △ = % carbohydrate yield attributed to cellulose; ○ = % carbohydrate yield attributed to glucomannan; ● = % carbohydrate yield attributed to glucuronoarabinoxylan.

salt is soluble in the alkaline solutions. A few years later it was discovered that the underivatized anthraquinone (AQ), although less soluble in alkaline solutions, is much more effective in accelerating pulping (18). Anthraquinone (qv) is being used as a kraft pulping additive in commercial production but, because it cannot be recovered, the economic benefits are marginal. The real potential for anthraquinone is in eliminating the use of sodium sulfide.

Modified Soda Pulping. Wood pulping with caustic soda solutions was the first chemical pulping process, but the beneficial effect of including sodium sulfide in the liquors was soon discovered. The soda process is used to advantage in pulping some hardwood species and nonwood plants, but wood pulping with sodium hydroxide was never widely used. The volatile malodorous sulfur compounds hydrogen sulfide, H_2S, methyl mercaptan, dimethyl sulfide, CH_3SCH_3, and dimethyl disulfide are produced as undesirable by-products of kraft pulping. These compounds are not easily contained in the large-volume pulping process, and research efforts have been aimed at eliminating the use of sulfur. Two possibilities have been tested on a pilot-plant scale: use of soda–oxygen or soda–anthraquinone.

Soda–Oxygen. Oxygen is an effective, readily available, and innocuous delignifying agent in aqueous alkaline solutions. However, it is a gas of low solubility and it degrades pulp polysaccharides. The diffusion of oxygen into the chips is the rate-determining step, and it is exacerbated by the rapid surface reaction with lignin, which depletes the oxygen supply. This problem can be minimized by increasing the oxygen pressure, maximizing gas contact, chipping the wood into thin wafers 1–2 mm thick, or decreasing the rate of the delignification reaction by lower temperatures (125–

Figure 14. Electron micrograph of neutral sulfite semichemical (NSSC) pulp handsheet.

involves selective sulfonation and partial hydrolysis of the lignin. The selectivity is high, and corrosion is minimized if the pH is maintained at ca pH 7. The sodium sulfite solution is usually buffered with sodium bicarbonate. Additional buffer forms from the wood as pulping progresses, because the carbohydrate acetyl groups hydrolyze, wood acids dissolve, and lignosulfonates form.

As with other chemical pulping, continuous and batch digesters are used. In continuous pulping, the temperature is higher (190°C) and the time is shorter (10–12 min) than in batch systems (170–180°C for ca 20–60 min). At the higher temperatures, complete penetration of pulping chemicals into the chips is especially important. A screw feeder is used to compress the chips in the presence of pulping liquors. When the pressure is released, the liquid is rapidly absorbed by the wood. After being cooked, the chips are fiberized or screw-pressed up to 60% consistency before being fiberized in two or more refining stages before washing.

A computer control system has been developed in which the pulping rate is mathematically related to time, temperature, and chemical charge. The pH is monitored for fast feedback, and refiner energy is monitored as a delayed feedback (31).

Demands for pollution abatement forced the development of chemical-recovery methods for all sulfite pulping processes, including NSSC. One response to environmental concerns was the development of other semichemical pulping methods. Semichemical pulping can be performed using kraft green liquor. This procedure is especially advantageous if the semichemical pulp mill has access to an existing kraft recovery system. Neutral sulfite semichemical liquors can also be fed into a kraft recovery system as makeup for the kraft chemicals that are consumed, but the balance is unfavorable and the relative amount of NSSC liquors that could be utilized is small.

Semichemical pulping can be accomplished by a sulfur-free system of sodium hydroxide and sodium carbonate. The sodium carbonate is recovered by simple incineration, and sodium hydroxide is added as makeup. Advantages in recovery operation are obtained if potassium hydroxide is added occasionally to maintain ca 20 mol % potassium carbonate (32).

Bleaching

Pulps vary considerably in their color after pulping, depending on the wood species, method of processing, and extraneous components. For many paper types, particularly printing grades, bleaching of the raw pulp is required. The brightness standard is measured as the reflectance of light in the blue range (457 nm) compared with magnesium oxide as 100% white. Two scales are used, depending on the commercial meter. In the United States, the General Electric meter is the standard. In other countries, the Zeiss Elrepho is standard. In general, the GE brightness is 0.5–1% lower than the Elrepho value.

There are basically two types of bleaching operations: those that chemically modify the chromophoric groups by oxidation or reduction but remove very little lignin or other substances from the fibers, and those that complete the delignification and remove pitch and some carbohydrate material. In the special case of dissolving-pulp production, bleaching is a final purification of cellulose, and most of the residual hemicellulose is removed (see also Bleaching agents).

Mechanical Pulps. The lignin-retaining type of bleaching is used with high yield mechanical and chemimechanical pulps in paper grades, eg, newsprint, where brightness stability is not critical. The initial brightness values of these pulps usually are 50–65% GE. If sodium bisulfite is added in a chemimechanical process, the pulps are a few points brighter.

The most effective bleaching agent for most groundwoods is hydrogen peroxide (qv). Bleaching is performed in alkaline solutions; thus, sodium peroxide is also used. Sodium silicate and magnesium sulfate usually are added to buffer the solutions and to sequester metal ions, which would otherwise wastefully accelerate the decomposition of the peroxide (see Chelating agents). Typical conditions are 1–3 wt % hydrogen peroxide, 1.1 wt % sodium hydroxide, 5 wt % sodium silicate, and 0.05 wt % magnesium sulfate. The pH should be 10.5–11 and the consistency ca 12%, although higher consistencies have been used. The reaction requires 3 h at 40°C and is followed by a neutralization and destruction of excess peroxide with SO_2.

Brightening of high yield pulps can also be achieved reductively with sodium or zinc hydrosulfite. Sodium tripolyphosphate is added with the hydrosulfite at pH 6–7. Bleaching is performed with 0.5–1 wt % hydrosulfite for ca 2 hours at 55°C. Hydrosulfite bleaching is also performed in the refiner and latency-removal chest at pH 5.5 for zinc hydrosulfite.

Chemical Pulps. If all of the lignin, pitch, carbohydrate degradation products, and other chromophores and uv-absorbing materials are removed, a very white (over 90% GE), highly color-stable pulp can be obtained. This condition is limited to full chemical pulps, because it is much less expensive and more efficient to remove most of the lignin with pulping chemicals. The reagents for full bleaching are mostly oxidative. Since the carbohydrates are also susceptible to oxidation, bleaching is accomplished under the mildest conditions possible. It is not clear whether residual lignin

is structurally different from the bulk lignin or whether the observed decrease in delignification rate during pulping is caused by other factors. In either case, the remaining lignin is intimately associated with the cell-wall polysaccharides. The final depolymerization and removal is performed gently in several stages.

Because of the variety of staging combinations that have been developed, a set of commonly accepted abbreviations are in use (33) (see Table 5). For example, the five-stage sequence CEDED refers to an initial chlorination of the lignin under acidic conditions followed by alkaline hydrolysis and extraction of the chlorinated lignin, mild oxidation with chlorine dioxide followed by another alkaline extraction, and final brightening with chlorine dioxide. Other common sequences are C/DEDED, CEHDED, and OCEDED where H and O refer to hypochlorite and oxygen, respectively. Washing is performed between stages when necessary.

Chlorination involves substitution of the aromatic ring and side chains and oxidative depolymerization through ether cleavages and ring openings. Chlorine also reacts by both ionic and free-radical mechanisms. It is desirable to minimize substitution and free-radical reactions for most effective bleaching and protection of carbohydrates. Inclusion of chlorine dioxide in the chlorination stage to function partly as a radical scavenger is common. The formation of mutagenic organochlorine compounds and discharge in the effluent is undesirable, and many attempts have been made to eliminate this stage. The reasons for the effectiveness of chlorine are not clear but, to date, a generally applicable substitute has not been found.

Chlorination can be carried out at 25°C or below; however, the reaction is exothermic and, as mills have closed their bleaching cycles, operating temperatures have unavoidably risen. Retention times are 30–60 min but decrease as temperature increases. The normal pulp consistency has been 3–4%, but the trend is toward higher consistency (ca 10%) or gas-phase chlorination. In the subsequent alkaline extraction, ca 1.5–3.5% NaOH on a pulp basis is used. Since sulfonated lignins are more water-soluble, the extraction is carried out at 20–40°C; with kraft pulps, 50–60°C is required.

Table 5. Symbols Representing Bleaching Stages[a]

Name of stage	Symbol	Chemical used
chlorination	C	chlorine gas or chlorine water
caustic extraction	E	sodium hydroxide solution
hypochlorite	H	sodium or calcium hypochlorite
chlorine dioxide	D	water solution of chlorine dioxide
oxygen	O	oxygen gas and alkali
peroxide	P	hydrogen peroxide (50 wt % soln)
ozone	Z	gaseous ozone (2 wt % in oxygen)
mixtures of chlorine and chlorine dioxide	C/D	chlorine–chlorine dioxide mixture
sequential dioxide and chlorine	(D–C)	chlorine dioxide followed by chlorine
oxidative extraction	E/H	inclusion of sodium hypochlorite in caustic extraction stage
peroxide extraction	E/P	inclusion of peroxide in an extraction stage
hydrosulfite	H	solution or solid sodium or zinc hydrosulfite
acid treatment	A	sulfuric acid
acid souring	S	sulfur dioxide gas

[a] Ref. 33.

Chlorine dioxide gas is essentially nondegrading to cellulose and is capable of producing very bright pulps, and the formation of chlorinated organic compounds is minimal. However, the gas is explosive at high concentration, toxic, and highly corrosive. For safety, it is generated at the point of use in low concentration. The use of proper vents and corrosion-resistant materials of construction, eg, titanium, is required. The reaction is conducted at 60–80°C for 2–6 h at pH 4 and consistency 12–15%. With sulfite and bisulfite pulps, a brightness of 90–92 can be reached at the end of this stage. With kraft pulps, the brightness is typically ca 85, and a second caustic extraction followed by a second chlorine dioxide stage is required to bring the kraft pulp brightness to the same level.

Hypochlorite is sometimes used following the first extraction stage or is included in an oxidative extraction stage (E/H). The pH must be maintained at ca pH 11 to minimize degradation to the carbohydrates.

Oxygen bleaching is a relatively new development but is fairly common in the industry. The reaction is conducted in a solution of sodium hydroxide. However, because the solubility of oxygen in aqueous solutions is low and decreases with increasing temperature, special attention must be given to maintaining adequate supplies of oxygen in solution. The original oxygen bleaching systems Sapoxal and MoDoCIL involve high consistency bleaching where the pulp, which is wet with alkaline solution, is pressed to 25–30% consistency, fluffed, and then bleached in a gas-phase oxygen reactor. Autoxidation and combustion, especially of pulp impurities such as pitch, are problems under these conditions, and systems that operate at lower consistencies have been proposed (34).

Oxygen bleaching is usually a prebleach stage before chlorination; one of the main advantages of oxygen bleaching is the compatibility of the spent liquors with the kraft recovery system. Under these conditions, it is used with 2–3 wt % NaOH for 1–2 h at 85–110°C to reduce the lignin content of softwood kraft pulp from 6 wt % to ca 3 wt %. Because the pulp polysaccharides are susceptible to oxygen degradation and the reaction is catalyzed by trace heavy metals, magnesium salts are usually added as protectors. The catalytic metal concentration can be minimized by incorporating a preliminary acid wash or A stage. Alternatively, oxygen bleaching is used in place of, or as part of, the caustic extraction stage following chlorination.

Pollution Control. The pulp-and-paper industry has had three very difficult pollution problems to solve: the development of suitable systems for sulfite waste liquor recovery; elimination of the volatile, malodorous, and toxic reduced sulfur compounds from kraft air emissions; and elimination of the toxic elements, bacterial oxygen demand (BOD), chemical oxygen demand (COD), and color from bleach-plant effluents. Of these, the bleach-plant problems have been the least amenable to solution. The energy requirements to evaporate the huge volumes of water from the dilute bleaching and extracting solutions are prohibitive, and the chlorination waste liquors are not readily compatible with the kraft recovery system because of corrosion, the volatility of NaCl, and the changes sodium chloride produces in the properties of the smelt.

The quantity of water necessary for bleaching has been decreased significantly by various schemes for recycle of liquors, eg, pulp washing with dilute spent liquors, countercurrent flow, etc. Highly reduced water use and reduced capital, chemical, and energy costs is achieved by displacement bleaching. In this system, the CEDED sequence occurs in a single upflow tower, and washing takes place only after the last stage. The Kamyr continuous-displacement bleaching system with medium consistency chlorination is illustrated in Figure 15.

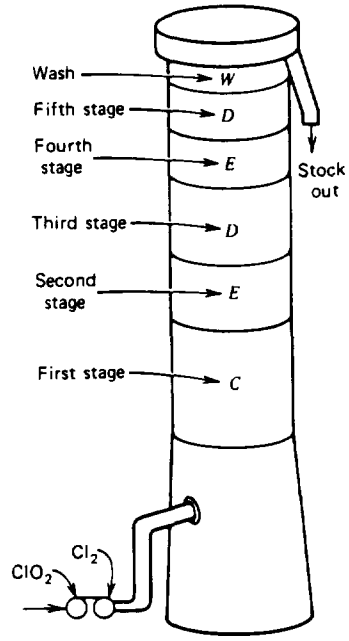

Figure 15. Kamyr continuous-displacement bleaching system. (For explanation of symbols, see Table 5.)

Some mills are attempting to minimize the amount of elemental chlorine by incorporating an oxygen stage or by substituting chlorine dioxide for most of the chlorine, either in the chlorination stage or sequentially. Two systems that involve cycling of chlorine-containing effluent into the kraft recovery system are being tested. In the Hooker APS system, the chlorination effluent is neutralized with lime and then is treated in standard effluent-treatment facilities. The extraction liquors, which contain some sodium chloride, are cycled into the recovery system. The sodium chloride is removed from the precipitator dust (35). In the Rapson-Reeve closed-cycle kraft mill, the chlorination liquors, after being used for brown stock washing, are combined with pulping black liquors, are evaporated, and are burned in the recovery furnace. The sodium chloride is removed from the causticized liquor by concentration and selective crystallization. The salt is used to regenerate chlorine and chlorine dioxide (36).

The other option is to eliminate the use of elemental chlorine entirely. This has not been possible with oxygen bleaching, but various combinations of ozone (Z) with peroxide or chlorine dioxide, such as ZED, ZEP, or OZEP, have been tested and seem promising (37).

Effluent Treatments

It has been reported that the tainting of fish taste by pulp-mill effluent compounds can be detected at levels below 0.1 ppb in fish flesh (38) and that the volatile reduced sulfur compounds, specifically dimethyl sulfide and hydrogen sulfide, of the kraft process can be detected by smell at ca 1 ppb in air (39) (see Water, water pollution; Air pollution). Most mills worldwide have the capability of treating their liquid effluent biologically, either in the plant or in cooperation with a municipality. Frequently, secondary and tertiary treatment is employed. The main sources of aqueous pulp-mill

effluents are from barking operations, weak black liquor from final washings or leaks and spills, scrubbing operations, bleach plants, and paper machines. The capital expenditures of the pulp-and-paper industry for environmental protection through 1979 were ca $\$4.7 \times 10^9$: $\$2.5 \times 10^9$ for water, $\$2.0 \times 10^9$ for air, and $\$160 \times 10^6$ for solid wastes.

Pulp and paper-mill effluent contains 8 of the 129 priority water pollutants listed by the EPA: trichlorophenol, pentachlorophenol, chloroform, PCBs (polychlorobiphenyls), cyanides, phenol, zinc, and lead (40). In addition, the various effluents contain substances that are mutagenic (41), toxic to fish (42), and that taint the taste of fish (38). The principal identified hazardous components are low molecular weight chlorinated compounds from the chlorine bleaching stage, chlorinated phenols from the extraction stage, chloroform from the hypochlorite and the chlorine stages, and resin acids, fatty acids, diterpenes, and phenols from barking and pulping operations and their chlorinated analogs from bleaching. Efficient removal of environmental hazards by biological treatment has been demonstrated, but there are reports that some toxicity persists through aeration ponds (42–44).

Many questions remain about the magnitude and severity of environmental problems. Rapid progress is being made in the identification of chemicals present in the various effluent streams, but an enormous amount of testing remains to be done on linking specific chemicals and concentrations to mutagenic, toxic, and esthetic effects. In addition, there are questions of the indirect problems of biological and chemical degradability, effects on BOD, accumulation in the food chain, etc.

Economic Aspects

Pulp production and per capita consumption of paper and board for 1978 is shown in Table 6 (45). The United States, Canada, Sweden, and Finland are the principal exporters. In 1978, they supplied 77% of all pulp exports. The United States is, however, a net importer of pulp and paper. Worldwide demand for pulp products is expected to increase for many years.

The production of wood pulp for selected years through the 1970s is shown in Table 7 (46). In the recession year of 1975, overall demand was down, but the kraft process continued to increase in dominance at the expense of soda and sulfite. Groundwood production remained stable, but the refiner mechanical and semichemical pulp production increased. These trends may change because of recent developments, eg, pressurized groundwood and soda–anthraquinone and neutral sulfite–anthraquinone pulping.

Table 6. Pulp Production and Per Capita Consumption of Paper and Board for 1978[a]

Region	Production, 10^3 t	Per capita consumption, kg
North America	71,401	282
Western Europe	40,574	110
Asia and Oceania	32,140	14
Eastern Europe	15,569	40
Latin America	6,354	24
Africa	1,472	5

[a] Ref. 45.

Table 7. Estimated U.S. Production of Wood Pulp by Type, Metric Tons[a]

Pulp type	1969	1972	1975	1978
kraft				
unbleached	14,704	16,141	13,941	16,783
bleached	9,688	11,304	11,293	15,534
semibleached	1,561	1,428	1,266	
Subtotal	*25,953*	*28,873*	*26,500*	*32,317*
groundwood	4,006	4,208	3,956	3,963
semichemical	3,284	3,435	2,904	3,661
defibrated or exploded	1,666	2,159	2,294	2,762
sulfite	2,072	1,970	1,761	1,596
special alpha and dissolving	1,520	1,502	1,436	1,284
soda	219	167	136 (estd)	73 (estd)
other	118	111	98	100
Total	*38,838*	*42,425*	*39,085*	*45,756*

[a] Ref. 46.

Energy

The pulp-and-paper industry is a significant industrial consumer of energy, but much of the energy used can be generated from combustion of spent liquors, bark, and nonprocessed wood. The total energy usage of the industry in 1978 was 2.3×10^{18} J [2.2 quads (2.2×10^{24} Btu)] and of this, 47% was supplied from plant-generated wastes. The energy self-sufficiency of the pulp-and-paper industry probably will continue to increase for a number of years as energy efficiency and conservation is improved. Many companies are large woodlands owners and can utilize wood as process fuel. Many can generate their own electric power through back-pressure steam or hydroelectric turbines.

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U.S. Forest Products Laboratory

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1	3	Alabama	Baldwin Co
1	97	Alabama	Mobile Co

CENTER POINT AT STATE : 1 Alabama
COUNTY : 97 Mobile Co

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REGION OF THE COUNTRY

Zipcode found: 36554 at a distance of 1.5 Km

STATE	CITY NAME	FIPSCODE	LATITUDE	LONGITUDE
AL	MAGAZINE	01097	30.7500	88.0750

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CENSUS DATA

International Paper Company
LATITUDE 30:44:40 LONGITUDE 88: 3:37 1980 POPULATION

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S 2	0	0	0	0	0	0	0
S 3	0	0	0	0	0	0	0
S 4	0	0	0	0	372	0	372
S 5	0	815	525	2778	5137	12796	22051
S 6	0	0	1556	5484	14208	11775	33023
S 7	0	0	2149	7625	9886	5352	25012
S 8	0	0	0	3221	4669	0	7890
RING TOTALS	501	815	4230	19108	34272	29923	88849

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STAR STATION

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03855	PENSACOLA/FOREST SHE	30.3500	87.3167			6 83.56
13820	BILOXI/KEESLER MS	30.4167	88.9167			5 89.64
93841	MILTON/WHITING FL	30.7000	87.0167			6 99.79
13865	MERIDIAN/KEY MS	32.3333	88.7500			5188.21
13850	SELMA/CRAIG AL	32.3333	86.9833			6203.85
12958	NEW ORLEANS/CALLENDE	29.8167	90.0167			6214.13

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U.S. SOIL DATA

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FIELD CAPACITY FOR TOP SOIL	: 6.0000E-02			
EFFECTIVE POROSITY BETWEEN	: 2.0000E-02	AND	3.0000E-01	
SEEPAGE TO GROUNDWATER BETWEEN	: 4.6330E+03	AND	1.3900E+04	CM/MONTH
DISTANCE TO DRINKING WELL	: 2.8000E+04			CM

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U.S. CITY

STATE	PLACE NAME	FIPSCODE	LATITUDE	LONGITUDE
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AL	MOBILE	01097	30.6977	88.0979

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MENU: Geodata Handling Data List procedures

1. Site level retrieval of data (SITERET)
2. Access Census Data (CENSUS)
3. Determine County Coverage (COVERAGE)
4. Geographic Data Management (GEODM)
5. HUCODE/SOIL locator (HUCODE)
6. Convert to Lat/Long (LATLON)
7. Lookup/Examine Star Station Data (STAR)
8. Find US cities (USCITY)
9. Find Soil Survey Status of Counties (SSURVEY)

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Enter an option number or a procedure name (in parentheses)
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GEMS> EXIT

Type YES to confirm the EXIT command; type NO to restart GEMS
GEMS> YES
$
$ LOGOUT
 WRT          logged out at  3-DEC-1990 15:40:30.50
 Itemized resource charges, for this session, follow:

NODE: VAXTM1
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PROJ: NTISNUCN                          FINISH TIME:     3-DEC-1990 15:40:30.50
USER: WRT                               BILLING PERIOD:901201
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Ecological Characterization Atlas of Coastal Alabama: Map Narrative

Fish and Wildlife Service

Minerals Management Service

U.S. Department of the Interior

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MMS 84-0052
August 1984

ECOLOGICAL CHARACTERIZATION ATLAS OF COASTAL ALABAMA: MAP NARRATIVE

by

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BIOLOGICAL RESOURCES

INTRODUCTION

Coastal Alabama has a great diversity of habitats within its boundaries. These habitats support many different species of plants and animals, in some instances large populations. Included are a majority of the terrestrial and freshwater species characteristic of temperate Eastern United States along with subtropical species found in the lower Coastal Plain. A great variety of salt and brackish water animals and plants is also found in the state's coastal waters

Diverse habitats meet and blend in this coastal area, producing a richness of plant and animal life seldom found in inland areas. Man has been utilizing the biological resources of coastal Alabama for thousands of years and will continue to utilize them in the future, preferably with wise management practices.

WETLAND HABITATS

In coastal Alabama wetlands habitats are located essential nesting, breeding, rearing, nursery, and feeding grounds for many species of fish, birds, and other wildlife. Wetlands provide habitats for unique floral and faunal communities, many of which include endangered or threatened species. Wetlands are also important in improving water quality by recycling nutrients and removing toxic materials from the environment. They provide erosion control and reduce turbidity as well as providing water storage areas.

Increasing recognition of the value of wetlands has led to a need for more information on how these systems operate and how they are affected by human activities and naturally occurring changes in the environment. To provide a system suitable for gathering scientific information on a nationwide basis, the U.S. Fish and Wildlife Service is conducting a National Wetlands Inventory based on a standardized classification system. The following description is from Classification of Wetlands and Deepwater Habitats of the United States (Cowardin et al. 1979) and describes the concepts and definitions utilized in the National Wetlands Inventory classification system.

Only in recent years has the concept of "wetland" unified the older classifications of swamp, marsh, bog, etc. Wetlands are generally lands where the dominant factor determining the nature of soil development and the types of plants and animals inhabiting the area is saturation with water. The substrate or soil is at least periodically saturated with or covered by

Table 6. Federally listed endangered and threatened species of Mobile and Baldwin Counties, Alabama (U.S. Fish and Wildlife Service January 1982; U.S. Department of the Interior 1975; Federal Register 1985).

Status[a]	Species	Alabama range
Mammals		
E	Florida manatee (*Trichechus manatus*)	Coastal waters
E	Florida panther (*Felis concolor coryi*)	Entire State
E	Blue whale (*Balaenoptera musculus*)	Coastal waters
E	Finback whale (*Balaenoptera physalus*)	Coastal waters
E	Sei whale (*Balaenoptera borealis*)	Coastal waters
E	Humpback whale (*Megaptera novaeangliae*)	Coastal waters
E	Sperm whale (*Physeter catodon*)	Coastal waters
E	Alabama beach mouse (*Peromyscus polionotus ammobates*	Coastal dunes
E	Perdido Key beach mouse (*Peromyscus polionotus trissyllepsis*	Coastal dunes
Birds		
E	Bald eagle (*Haliaeetus leucocephalus*)	Entire State
T	Arctic peregrine falcon (*Falco peregrinus tundrius*)	Entire State
E	Bachman's warbler (*Vermivora bachmanii*)	Entire State
E	Ivory-billed woodpecker (*Campephilus principalis*)	South, West Central
E	Red-cockaded woodpecker (*Picoides [=Dendrocopos] borealis*)	Entire State
Reptiles		
E	American alligator (*Alligator mississippiensis*)	Coastal plain
E	Kemp's (Atlantic) Ridley turtle (*Lepidochelys kempii*)	Coastal waters
E	Hawksbill turtle (*Eretmochelys imbricata*)	Coastal waters
E	Leatherback turtle (*Dermochelys coriacea*)	Coastal waters
T	Loggerhead turtle (*Caretta caretta*)	Coastal waters
T	Green sea turtle (*Chelonia mydas*)	Coastal waters
T	Eastern indigo snake (*Drymarchon corais couperi*)	South Alabama
Plants		
None as of January 1, 1982		

[a]E = Endangered, T = Threatened.

Table 7. Recommended State of Alabama endangered and threatened species of Mobile and Baldwin Counties (Boschung 1976; Freeman et al. 1979).

Recommended status[a]	Species
Mammals	
E	Alabama Gulf beach mouse, *Peromyscus polionotus ammobates*
E	Perdido Bay beach mouse, *Peromyscus polionotus trissyllepsis*
E	Florida black bear, *Ursus americanus floridanus*
E	Florida panther, *Felis concolor coryi*
Birds	
E	Bald eagle, *Haliaeetus leucocephalus*
E	Peregrine falcon, *Falco peregrinus*
E	Osprey, *Pandion haliaetus*
E	Snowy plover, *Charadrius alexandrinus*
E	Ivory-billed woodpecker, *Campephilus principalis*
E	Red-cockaded woodpecker, *Picoides (=Dendrocopos) borealis*
E	Bachman's warbler, *Vermivora bachmanii*
T	Mottled duck, *Anas fulvigula*
T	Reddish egret, *Egretta rufescens*
Reptiles	
E	Eastern indigo snake, *Drymarchon corais couperi*
E	Black pine snake, *Pituophis melanoleucas lodingi*
E	Atlantic loggerhead turtle, *Caretta caretta*
E	Green sea turtle, *Chelonia mydas*
E	Atlantic hawksbill turtle, *Eretmochelys imbricata imbricata*
E	Atlantic ridley turtle, *Lepidochelys kempi*
T	American alligator, *Alligator mississippiensis*
T	Atlantic leatherback turtle, *Dermochelys coriacea*
T	Alabama red-bellied turtle, *Pseudemys (=Chrysemys) alabamensis*
T	Gopher tortoise, *Gopherus polyphemus*
Amphibians	
E	Flatwoods salamander, *Ambystoma cingulatum*
T	Dusky gopher frog, *Rana areolata sevosa*
Fishes	
T	Atlantic sturgeon, *Acipenser oxyrhynchus*
T	Blue sucker, *Cycleptus elongatus*

(continued)

Table 7. (continued)

Recommended status	Species	Habitat assoc. (County)[b]
Plants		
	Aquifoliaceae	
E	Ilex amelanchier	Acid swamp woodlands (M)
	Araceae	
T	Sweet flag, Acorus calamus	Shallow streams (B)
T	Spoon flower, Peltandra sagittaefolia	Pineland bogs (B)
	Cannaceae	
T	Golden canna, Canna flaccida	Freshwater swamps (MB)
	Cyperaceae	
E	Horned rush, Rhynchospora crinipes	Pine savannahs (M)
	Ericaceae	
T	Pieris phillyreifolia	Probably no longer in counties (MB)
	Fabaceae	
E	Psoralea simplex	Wet pinelands (M)
	Gentianaceae	
E	Gentiana villosa	Oak-pine-hickory woods (M)
T	Sabatia brevifolia	Pinelands (B)
	Hypericaceae	
T	St. Johns wort, Hypericum nitidum	Acid pine savannah (M)
	Juncaceae	
T	Juncus gymnocarpus	Swamp woodlands (M)
	Lentibulariaceae	
T	Bladderwort, Utricularia floridana	Low pH ponds (M)
T	Bladderwort, Utricularia inflata	Lakes (M)
T	Bladderwort, Utricularia purpurea	Low pH streams (BM)
	Liliaceae	
E	Lily, Lilium iridollae	Acid swamp woodlands (B)
	Onagraceae	
T	Ludwigia arcuata	Pond banks (M)
E	Evening primrose, Oenothera grandiflora	Rich low woodlands (B)
	Orchidaeceae	
T	Spreading pogonia, Cleistes divaricata	Pineland bogs (MB)
E	Green-fly orchid, Epidendrum conopseum	Epiphytic gum/ magnolia (MB)
	Poaceae	
T	Panicum nudicaule	Acid swamps (MB)
	Potamogetonaceae	
E	Pondweed, Potomogeton robbinsii	Streams, Mobile Delta (MB)

(continued)

Table 7. (concluded)

Recommended status	Species	Habitat assoc. (County)
Plants		
	Rhamnaceae	
T	*Segeretia minutiflora*	Mobile beaches (M)
	Sarraceniaceae	
T	Pitcher-plant, *Sarracenia psittacina*	Wet pine flatwoods (MB)
T	Sweet pitcher-plant, *Sarracenia rubra*	Wet pine flatwoods (B)
	Theaceae	
T	Loblolly bay, *Gordonia lasianthus*	Pocosin borders (MB)
	Ulmaceae	
T	*Momisia iguanea*	Beach strands (MB)
	Xridaceae	
T	Yellow-eyed grass, *Xyris drummondii*	Acid sandy sites (MB)
T	Yellow-eyed grass, *Xyris scabrifolia*	Wet pinelands (MB)

[a]E = Endangered; T = Threatened.
[b]M = Mobile; B = Baldwin.

County (Jim Davis, Alabama Department of Conservation and Natural Resources, Jackson, AL, 11 March 1982; pers. comm.).

Birds

The bald eagle, *Haliaeetus leucocephalus*, ranges throughout the state as a migrant, and formerly nested in Mobile and Baldwin Counties. Although bald eagles are known to nest in Louisiana, Florida, Mississippi, and South Carolina, they rarely nest elsewhere in the Southeast.

The Arctic peregrine falcon, *Falco peregrinus tundrius*, migrates through Alabama on its way from the arctic tundra regions to southern South America, and fairly numerous sightings (perhaps 30 per year) are made on the Fort Morgan Peninsula (Dennis Jordan, U.S. Fish and Wildlife Service, Jackson, MS, 11 March 1982; pers. comm.). Some individuals are believed to overwinter along the Gulf coast and southern Florida. The falcon has been recently reclassified from endangered to threatened (Federal Register, March 20, 1984).

Bachman's warbler, *Vermivora bachmanii*, is extremely rare, if not extinct. It may pass through Alabama in the spring on its migration from Cuba to widespread localities in the Southeast.

ridges. The amount of vegetation on the dune ridges has tended to stabilize them.

POINT SOURCE DISCHARGES

The South Alabama Regional Planning Commission has made an assessment of both point and nonpoint sources of pollution in Mobile and Baldwin Counties and the controls needed to meet the goals of Section 208 of the 1972 amendment to the Federal Water Pollution Control Act. The South Alabama Regional Planning Commission (1979), Friend et al. (1981), and D. W. Brady (1979) are the primary sources of the following material, and should be consulted for more detailed information.

For purposes of this mapping study, point-source discharges have been divided into two categories: industrial sources that discharge effluent that may need chemical treatment; and municipal, semipublic and public sources that discharge domestic effluent that can generally be treated biologically.

In Mobile and Baldwin Counties there were 19 municipal waste-water point sources with an aggregate discharge of 208 million liters per day (mld) (55 million gallons per day (mgd)) in 1977. There were 38 industrial process waste-water sources with National Pollution Discharge Elimination System (NPDES) permits, with an aggregate discharge of about 507 mld (134 mgd). Also in the study area were 49 semipublic and private point sources of non-permit effluents such as sanitary waste, cooling water, boiler blowdown, and rain water runoff. Most of the industrial dischargers empty into Chickasaw Creek and the Mobile River (Mobile quadrangle). The greatest volume of discharge is from the two electrical generating plants, which discharge cooling water and steam condensate, and paper mills. In contrast, most of the pollution load comes from the paper mills and chemical plants.

The majority of point dischargers in Baldwin County are municipal wastewater treatment plants, of which there are seven, and municipal lagoons, of which there are three. The industrial discharges in Baldwin County are from several industries in the vicinity of Bay Minette (Bay Minette quadrangle), and about five seafood distributors in Bon Secour (Pensacola quadrangle).

Mobile County is more heavily populated and industrialized than Baldwin County, with nearly three times as many point source dischargers. There are 12 municipal wastewater treatment plants and several municipal lagoons in the county. Industrial dischargers include about a dozen chemical and mineral plants, most of which are located either in the Mobile area, the area around Bucks, or Theodore (Mobile quadrangle). Two large power plants are located on the Mobile River north of Mobile. Four paper/lumber plants, two railroad yards, and the State docks are also located in the Mobile area. A number of seafood distributors are located in Bayou La Batre (Biloxi quadrangle). Other information on water quality is included in the climatology and hydrology narrative.

CLIMATOLOGY AND HYDROLOGY

INTRODUCTION

This section relates information on water availability and its use in coastal Alabama. Included is a description of the coastal climate and how it affects the area, stream and river discharge, and surface and ground water availability and quality. Currents and their effects on salinities in the coastal estuaries are also discussed.

CLIMATE

Temperature

The climate of coastal Alabama is primarily humid subtropical, due to the warming influence of the Gulf of Mexico. This large warm-water surface is a major contributor to warm, humid summers, and mild winters, with a fairly consistent range of temperature extremes (Lineback 1973).

Coastal Alabama air temperatures are relatively mild, with an average annual temperature in Mobile of 20 °C (68 °F). Mean annual temperature variation is approximately 10 °C (18 °F) (Table 31). Summer temperatures are rarely high ranging between 21 and 32 °C (70 and 90 °F). Temperatures in winter generally range between 4 to 16 °C (40 and 60 °F), with temperatures below freezing occurring on an average of 22 days per year. Periods of freezing temperatures generally do not last more than 2 or 3 days. The lowest mean monthly temperatures, 10 °C (50 °F), occur in January, while July produces the highest average temperatures (28 °C, 82 °F). Temperature extremes in the Mobile area vary from a maximum of 40 °C (104 °F) (July 1952) to a low of -18 °C (-1 °F) (February 1899) (National Climate Center 1980).

Mobile and Baldwin Counties have a growing season ranging from 230 days in the northern sector to 300 days in areas near the coast. The first killing frost occurs in early November in the northern parts of the counties and early December in areas near the coast. The last killing frost occurs in mid-February near the coast (O'Neil and Mettee 1982).

Precipitation

The normal annual rainfall in coastal Alabama is the highest in the state and among the highest in the United States. Average annual rainfall in the Mobile area is about 162.5 cm (64 inches) (Table 32). Rainfall is fairly evenly distributed throughout the year with a slight maximum at the height of the summer thunderstorm season in July and a slight minimum during the late fall in October.

Table 32. Rainfall in coastal Alabama based on 25 years data, 1955-79 (modified from Crance 1971).

Location	Mean precipitation (inches)					
	Mobile[a] (Mobile quad)	Bay Minette (Bay Minette quad)	Fairhope (Bay Minette quad)	Robertsdale (Bay Minette quad)	Gulf Shores[b] (Pensacola quad)	Fort Morgan[c] (Pensacola quad)
January	4.73	5.15	4.95	5.33	4.36	3.52
February	4.93	5.26	5.04	5.89	5.67	3.98
March	6.63	6.29	5.82	5.89	5.01	4.91
April	5.13	4.95	4.43	4.23	4.31	3.53
May	4.71	5.71	5.06	5.04	3.32	2.71
June	5.49	5.38	5.89	5.92	4.87	4.28
July	7.57	7.94	7.71	8.12	5.97	5.78
August	6.62	7.03	6.56	7.52	6.98	5.04
September	5.62	6.13	7.10	7.41	8.61	8.30
October	3.20	3.12	3.41	3.63	3.70	3.46
November	3.73	3.24	3.68	3.90	3.11	2.90
December	5.15	5.12	4.70	5.97	4.02	4.10
Annual[d]	63.56	62.70	64.74	66.29	59.60	50.49

[a] 1941-80.
[b] 1955-74 station closed.
[c] 1955-75 station closed.
[d] Annual mean may not correspond to monthly means due to method of calculation.

During the spring and summer, south and southeasterly winds blow from the Gulf of Mexico. These warm offshore winds are heavily laden with moisture and the resulting convective activity generates numerous thunderstorms. This thundershower activity, which averages about 87 days a year, generates the maximum rainfall of the year (O'Neil and Mettee 1982).

At Robertsdale the average monthly precipitation in July is 20.6 cm (8.12 inches); at Mobile, 19.2 cm (7.57 inches). At Ft. Morgan (Biloxi quad-

rangle) and Gulf Shores (Pensacola quadrangle) the highest amounts of monthly rainfall occur in September (Table 32), with respective amounts of 21.1 cm (8.30 inches) and 21.9 cm (8.61 inches).

Rainfall in October averages the lowest for the year in coastal Alabama, ranging from 9.4 cm (3.70 inches) at Gulf Shores to 7.9 cm (3.12 inches) at Bay Minette (Bay Minette quadrangle). The lowest monthly average rainfall in coastal Alabama occurs at Ft. Morgan during November.

During winter months frontal systems and on-shore horizontal convergence produce much of the precipitation in coastal Alabama. Snow (which averages 0.2 inches/yr), hail, and sleet are rare. Most of the rainfall occurs in showers and long periods of heavy rainfall are rare. Monthly rainfall during December, January, and February averages about 74 cm (29 inches)/month.

Cloud Cover, Fog, and Relative Humidity

Cloud cover in the vicinity of Mobile has an annual value of about 6/10 (60 percent of total sky area covered in daylight periods). In general, cloud cover tends to be highest in winter and summer and lowest in spring and fall. October has the minimum mean cloud cover with just over 4/10, while January and July have maximum means of almost 7/10. Summer cloudiness is mainly convective cumulus or high thin clouds, while winter cloudiness is the result of frontal systems associated with extratropical cyclones and may produce gray, overcast days (O'Neil and Mettee 1982).

Fog is the main visibility inhibitor in coastal Alabama, occurring from November through May. Winter fogs are fairly frequent and generally produce the lowest visibilities of the year, 0.4 km (0.25 mi) (O'Neil and Mettee 1982).

Because of the availability of water vapor from the Gulf surface, high humidities prevail throughout the year with little seasonal variation. Annual mean relative humidity at Mobile varies from 56% to 87% according to the time of day, with highest readings at 6 a.m. E.S.T. Annual average humidity is approximately 74% (National Climate Center 1980).

Winds

The prevailing surface winds for the coastal Alabama area are southerly for March through July, easterly for August and September, and northerly for the remaining months. The average annual wind velocity in coastal Alabama is 13.3 kmph (8.3 mph) (Chermock 1974). The Bermuda High is the most permanent feature affecting the general circulation. During the spring, this subtropical anticyclone intensifies and extends its western boundaries over the Gulf region. This produces periods of prolonged light winds from a south to southeasterly direction. The greatest (attained) winds occur from May through November with passing hurricanes. The highest recorded wind speed in the study area was 233 kmph (145 mph) on Dauphin Island during Hurricane Fredric in September 1979 (Corps of Engineers 1981). The Bermuda High begins to weaken in autumn and move slightly southeastward. This, along with the southern movement of the equatorial trough, permits the continental pressure

Table 44. Flow summary of industrial process wastewater discharges, 1979 (Brady 1979, O'Neil and Mettee 1982).

Number[a]	Company	Flow (mgd)[b]
1	Barber Pure Milk	0.05
2	SARS	0.02
3	Aquila Seafood	0.001
4	Plashes Seafood	0.003
5	Grass Seafood	0.001
6	Gulf Shrimp	0.010
7	Mallon Seafood	0.0005
8	Oyster Bay Seafood	0.001
9	Star Fish & Oyster	0.288
10	Patronas Seafood	0.001
11	Causeway Seafood	0.001
12	Gulf Coast Knight Seafood	0.013
13	Bon Secour Fisheries	0.014
14	Crown Zellerbach	0.010
15	International Paper	33.2
16	Scott Paper	42.43
17	Stone Container	0.02
18	Stauffer Chemical-LaMoyne	1.10
19	Diamond Shamrock	0.06
20	Union Carbide-Chickasaw	3.634
21	Halby	0.0025
22	American Cyanamid	0.0600
23	ALCOA	0.8000
24	Virginia	0.2000
25	Eagle Chemical	0.2250
26	Courtaulds of North America	8.80
27	Reichhold Chemical	0.1900
28	Degussa	0.3710
29	Shell Chemical	1.044
30	Stauffer Chemical Cold Creek	0.400
31	Marion Refinery	0.0453
32	Louisiana Land & Exploration	0.110
33	Chevron Asphalt	0.350
34	Airco Alloys	0.354
35	Frisco Railroad	0.000325
36	I.C.G. Railroad	0.0115
37	Alabama Power-Barry Steam Plant	40.0
38	Thompson-Hayward	0.0041

[a] For locations see Figure 17.
[b] Million gallons/day

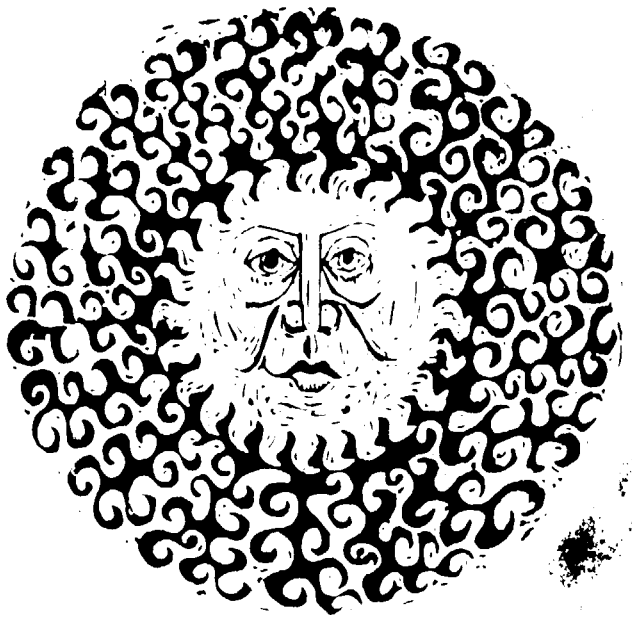
Water quality of the Mobile River above its confluence with Chickasaw Creek is generally good, although fecal coliform levels are high during periods of high flows (generally in the winter months) and power plant cooling water discharges increase temperature levels. Below the entrance of Chickasaw Creek (Mobile quadrangle) water quality tends to be lowered somewhat, because of the greater loads of municipal waste water and industrial wastes contributed by Chickasaw Creek, Norton Creek, and Threemile Creek (Mobile quadrangle) (Table 46). The combined municipal and industrial waste discharge into these streams is 68 mgd (SARPC 1979). Offsetting these high waste loads is the greater absorbtive capacity of the Mobile River for oxygen-consuming wastes. Comparing water quality (DO and BOD) from stations above and below these creeks' confluences (Table 46) indicates that they have a moderate influence on these aspects of water quality (U.S. Army Corps of Engineers 1983). However, this influence combined with salt levels, fecal coliform counts, temperature and turbidity in this segment of the river reduces it to an Agricultural and Industrial classification use only (Table 46).

Mobile Bay. Bacterial and viral pollution can be a serious problem in Mobile Bay. When significantly high (14 most probable number per 100 milliliters (MPN/100 ml)) levels of bacterial pollution occur, oyster-reef closures are necessary, causing direct economic losses to the area's economy. The pollution of estuaries by bacteria in Alabama can be attributed primarily to municipal and industrial wastes (Chermock 1974). Gallagher et al. (1969) reported that the most significant source of these pollutants in Mobile Bay was the Mobile metropolitan area via the Mobile River. Measurements made during flood stage at the mouth of the river ranged from 11,000 to 150,000 MPN/100 ml. Approximately 77% to 97% of this total was attributed to

Table 48. (concluded).

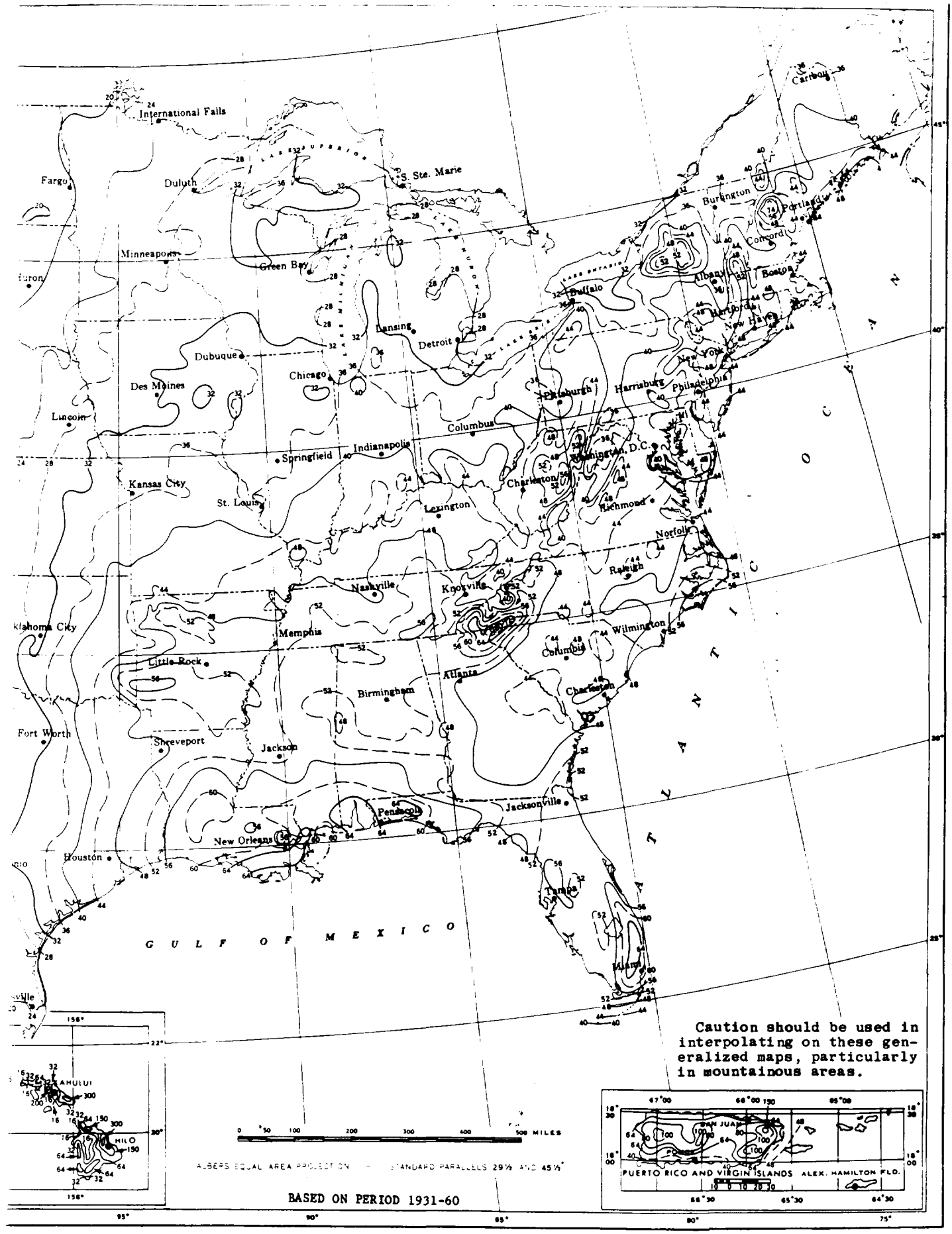
TKN (mg/l)	Oil and grease (mg/l)	Total dissolved solids (mg/l)	Total lead (mg/l)	Total zinc (mg/l)	Total phosphorus (mg/l)	Chlorophyll a (mg/l)
1.01	1	24,600	0.01	0.036	0.13	10
0.08	1	76	0.01	0.011	0.034	2
0.54	1	18,000	0.01	0.074	0.17	17
0.044	1	83	0.01	.01	0.030	1
3.20	1	15,900	0.01	0.049	0.062	33
0.039	1	18	0.01	0.01	0.018	1

REFERENCE # 13

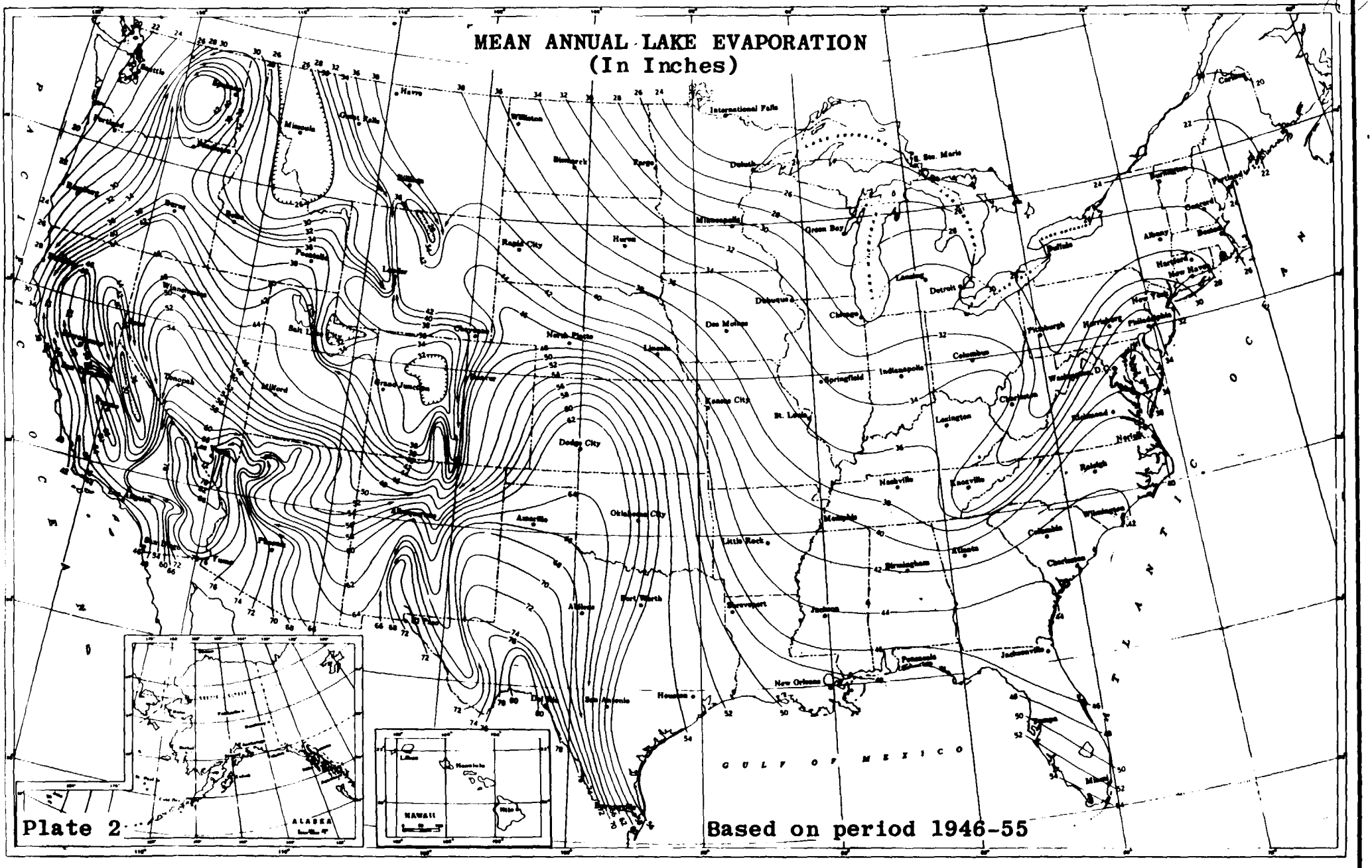


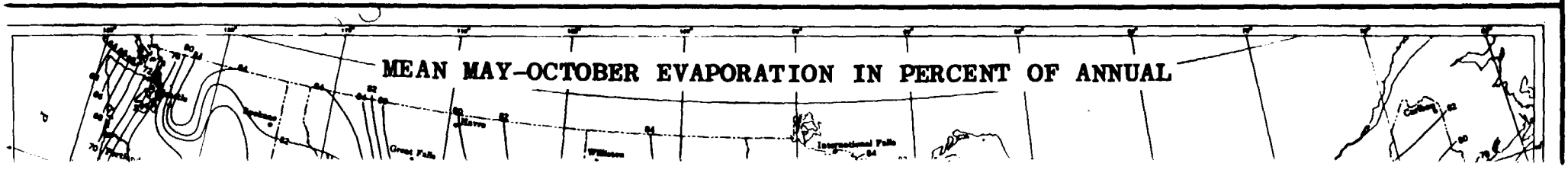
CLIMATIC ATLAS OF THE UNITED STATES

ental Scien vices Administration . Environmental Data Service



Caution should be used in interpolating on these generalized maps, particularly in mountainous areas.


MEAN ANNUAL LAKE EVAPORATION
(In Inches)
Plate 2
Based on period 1946-55
GULF OF MEXICO
ALASKA
HAWAII


MEAN MAY-OCTOBER EVAPORATION IN PERCENT OF ANNUAL

DEPARTMENT OF COMMERCE
Frank G. Honaker, Secretary

WEATHER BUREAU
F. W. Reichelderfer, Chief

REFERENCE # 14

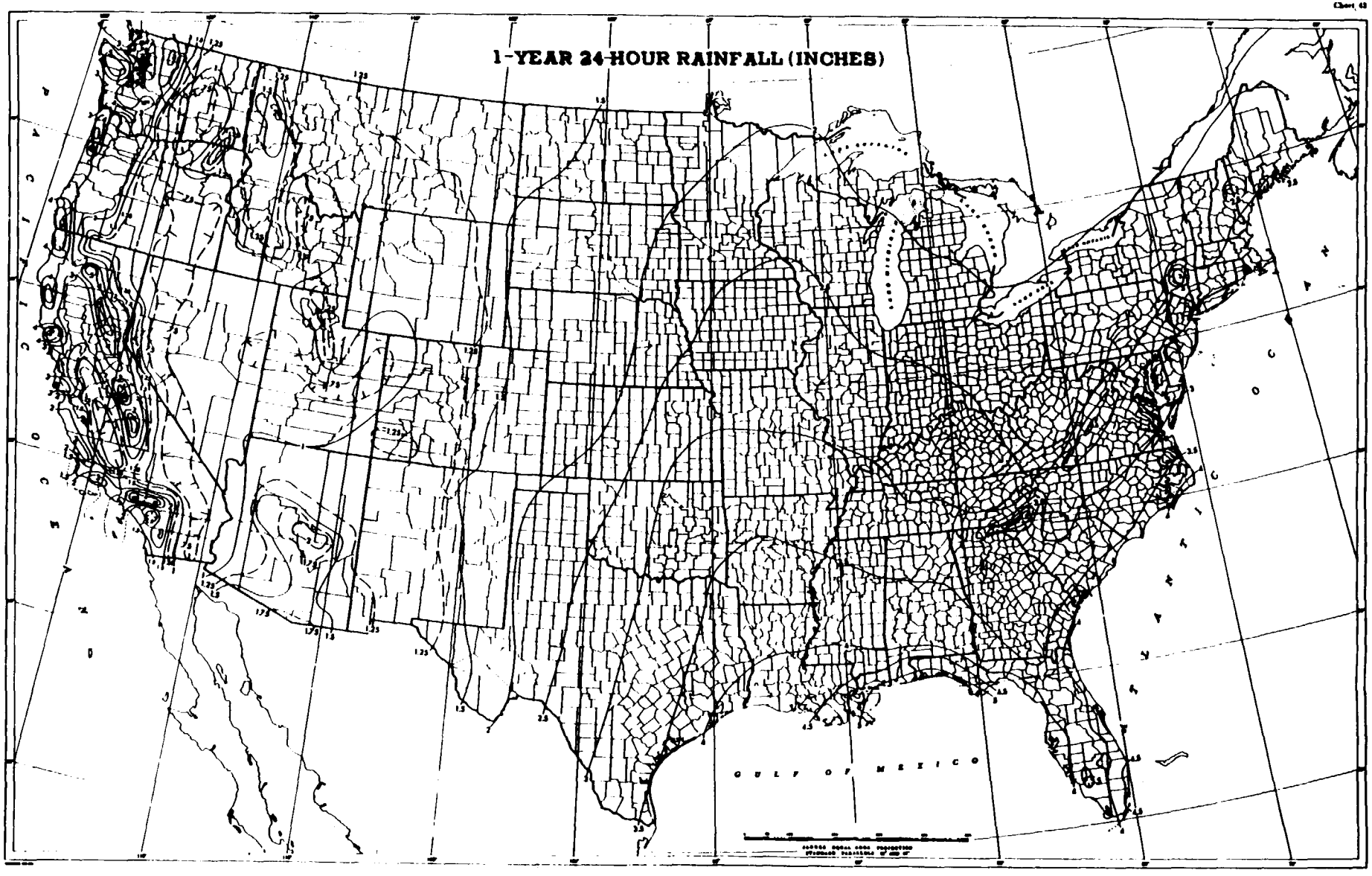
TECHNICAL PAPER NO. 40

RAINFALL FREQUENCY ATLAS OF THE UNITED STATES

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

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

PROPERTY OF EPA
FTI IV


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

REFERENCE # 15

NUS CORPORATION AND SUBSIDIARIE.

TELECON NOTE

CONTROL NO.	DATE: January 4, 1991	TIME: 1344

DISTRIBUTION:

Browning Ferris Industries-Chunchula Landfill

BETWEEN: Les Brown, Water Service Engineer	OF: City of Mobile Water Service	PHONE: 205-694-3100

AND: Terry Tanner, NUS Corporation

DISCUSSION:

Mr. Brown indicated that the city of Mobile obtained its water from 8 Mile Creek at the Chickasaw City limits on West Lee Street. This municipality serves approximately 95,000 homes in Mobile County. Water companies to the north include Prichard, Saraland, and South Alabama Utilities. Private wells do exist in outlying areas.

REFERENCE # 16

NUS CORPORATION AN **TELECON NOTE**

CONTROL NO. F4-8902-05	DATE: June 12, 1989	TIME: 1545

DISTRIBUTION:

Moreland McKesson Company file

BETWEEN: Roy King	OF: Prichard Water Department	PHONE: (205) 457-3396

AND: K. D. Pass, NUS Corporation

DISCUSSION:

The Prichard Water Department provides potable water to everything in the Prichard and Chickasaw city limits. Their surface water intake is on Eightmile Creek at West Lee Street.

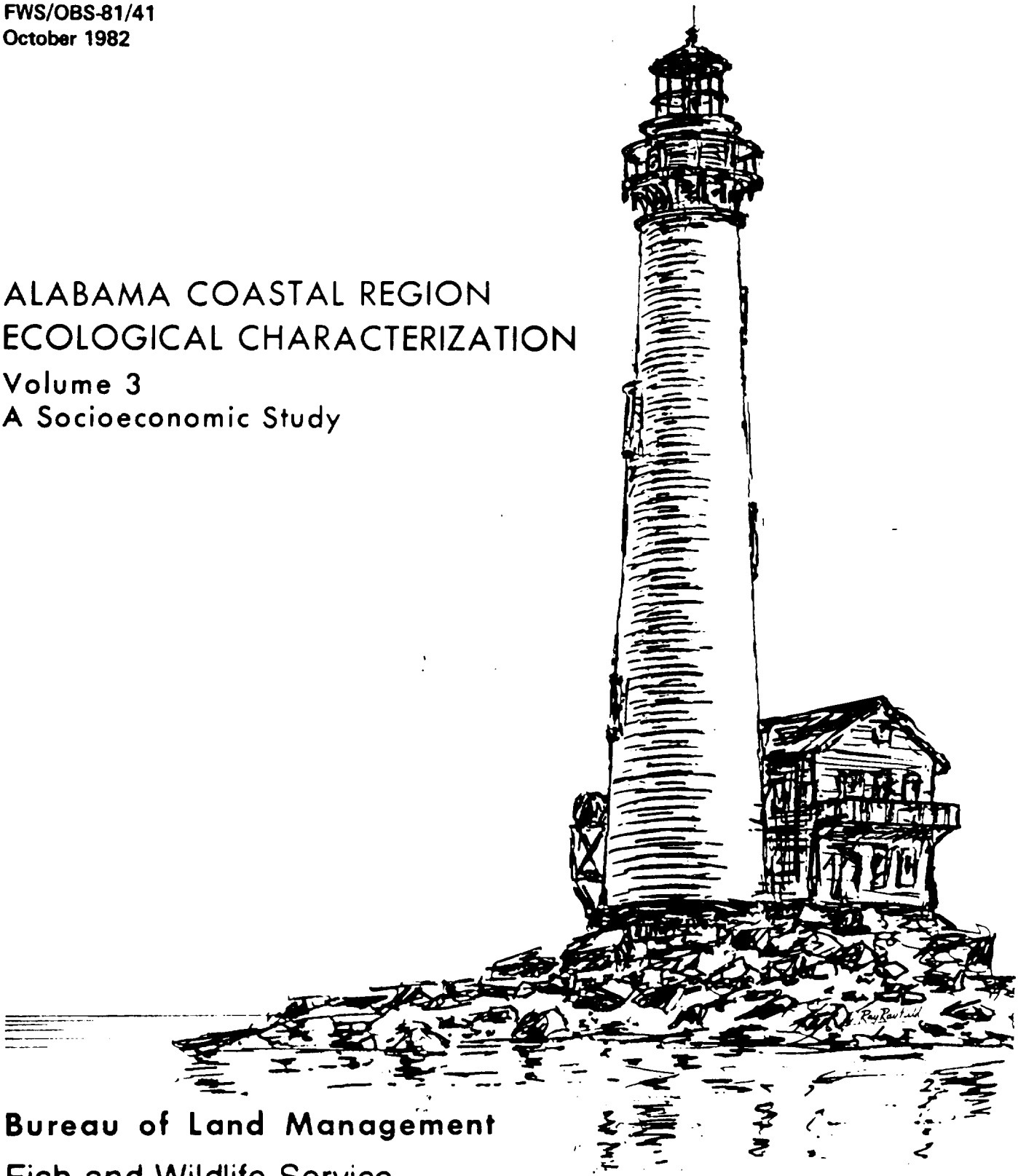
ACTION ITEMS:

Biological Services Program

FWS/OBS-81/41
October 1982

ALABAMA COASTAL REGION ECOLOGICAL CHARACTERIZATION

Volume 3
A Socioeconomic Study



Bureau of Land Management

Fish and Wildlife Service

U.S. Department of the Interior

FWS/OBS-81/41
October 1982

ALABAMA COASTAL REGION ECOLOGICAL CHARACTERIZATION
VOLUME 3
A SOCIOECONOMIC STUDY

by

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Contract No. 14-16-0009-80-1016

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Performed for

National Coastal Ecosystems Team
Office of Biological Services
Fish and Wildlife Service
U.S. Department of Interior
Washington, D.C. 20240

In Cooperation With

Bureau of Land Management
Outer Continental Shelf Office
New Orleans, LA 70130

SUMMARY

PHYSICAL DESCRIPTION

The Alabama Coastal Region is located in the extreme southwest corner of Alabama, bordering Mississippi on the west and Florida on the east. It includes Mobile and Baldwin Counties, Mobile Bay, the adjacent waters of the Mississippi Sound, and waters within the 3-mile limit of the Gulf of Mexico. Mobile Bay and the Mobile-Tensaw River Delta divide Mobile and Baldwin Counties.

The topography of the region generally is flat to slightly rolling but hilly in the northern portion. Mobile Bay is the dominant topographical feature of the area. The Bay is shallow—less than 3 m (10 ft) deep in most areas—but contains several ship channels up to 12 m (40 ft) deep.

Physiographically, coastal Alabama lies in the Gulf Coastal Plain (GCP) province. The Southern Pine Hills, a moderately dissected southward sloping plain, comprise a major portion of the province. Excellent forestry resources and agricultural lands characterize the area. South of the GCP province, the coastal lowlands form a narrow border adjacent to and paralleling the shoreline. This area includes the alluvial-deltaic plains of the Mobile, Tensaw, and Perdido fluvial systems and many streams and rivers.

The climate of coastal Alabama is humid and nearly subtropical. Summers are long and hot, and winters are short and moderate. July temperatures average 27°C (80°F) and January temperatures average 10°C (50°F). Annual rainfall is high, averaging 173 cm (68 inches) according to the South Alabama Regional Planning Commission (1975).

Coastal Alabama contains approximately 7,484 km^2 (2,890 mi^2) of land area: 321,408 ha (793,600 acres) in Mobile County and 427,835 ha (1,056,400 acres) in Baldwin County. Baldwin County is the largest county in Alabama.

SOCIAL AND DEMOGRAPHIC CHARACTERISTICS

Coastal Alabama is a fast growing area. The population of Mobile and Baldwin Counties increased from 174,300 in 1940 to 442,800 in 1980. Rapid growth is expected to continue but at a slower rate. By 2000, the population of the coastal counties may be about 512,600. The population of Mobile, the area's largest population center, currently is about 200,500.

Compared to many areas of the Nation, the people of coastal Alabama are less affluent, less educated, and the population has a larger proportion of Blacks. Recent trends indicate that the gap in income is narrowing.

INDUSTRIAL AND RESIDENTIAL DEVELOPMENT

For an area to grow and prosper, it must produce goods and services that exceed local demand and can be exported. A sector of the local economy that exports goods and services is "basic" in the sense that its growth stimulates growth in local trade and other services. Basic industries are the "prime movers" of the local economy.

The eight basic industries or services in the coastal region are paper and allied products; shipbuilding and repair; chemicals and allied products; construction; transportation, communication, and utilities; lumber and wood products; services; and wholesale and retail trade.

The natural resources that support basic industries are lands that support agriculture, forests that generate raw materials for paper and lumber production, rivers that provide paper and chemical operations with essential water supplies, and a port area that supports shipbuilding and commerce.

Coastal Alabama's employment increased from 131,600 in 1969 to 172,300 in 1978 and should reach 233,400 by the year

2000. Impetus for future economic expansion will be generated by the Tennessee-Tombigbee Waterway, increased coal shipments through the Port of Mobile, and expanded production, storage, and transportation of oil and gas.

The land area of the coastal counties is 7,484 km^2 (2,890 mi^2). In 1975, forested lands made up 48% of the total land area; agriculture made up 19%; transportation, communication, and utilities, 3%; residential, 2%; industrial and commercial, 1%; and 27%, undeveloped.

Mobile County is an urban and industrial complex centered around the city of Mobile. Major industrial developments are along the Mobile River east of the urbanized center and in the Theodore area south of the city. Baldwin County is predominantly rural. Major residential developments are concentrated along the eastern shore of Mobile Bay.

AGRICULTURAL PRODUCTION

Although agriculture and forestry are the dominant land uses in the two coastal counties, income from these sectors is relatively low. In 1978, agriculture, directly and indirectly, generated about 11% of the total employment and income, and forestry generated only 1%.

Most agriculture is concentrated in the southern portions of the coastal counties, whereas much of the timber production occurs in the north. The principal agricultural products are soybeans, vegetables, cattle and calves, and nursery products. The major forestry products are lumber and pulpwood.

MINERAL PRODUCTION

The principal products of the mineral industry are oil, gas, sand, gravel, clay, and oyster shells. Among these, oil and gas production is by far the most economically important.

Oil and gas production represent a relatively new but rapidly growing industry in coastal Alabama. Onshore discoveries of oil and gas began in the 1950's and have continued to the present. In 1979, Alabama ranked 17th nationally in the production of oil and condensate and 20th in the production of natural gas. Of the State total, the coastal region contributed 29% of the oil production, 45% of the condensate production, and 12% of natural gas production.

Until recently, oil and gas production in coastal Alabama was limited to onshore wells, however, the recent discovery of natural gas in Mobile Bay has increased interest in bay, nearshore, and offshore exploration, although the primary exploration and production areas are inland. In April 1980, the State of Alabama leased thirteen tracts in the Mobile Bay, Mississippi Sound, and Gulf 3-mile offshore area; in the near future, the federal government may offer tracts for lease sale in the Outer Continental Shelf (OCS) waters of Alabama.

COMMERCIAL FISHING

During early settlement of the region, fish was a major sustenance food, but as preservation methods and efficient transportation developed, fish were exported to inland and overseas markets. Commercial fishing now is an integral part of the coastal economy, contributing food, employment, and income. In 1975, the dockside value of the marine and freshwater fishery was $33.6 million, the processed value of fishery products was $73.1 million, and boats and vessels of the fishing fleet numbered 1,031. The fishery supported 1,923 fishermen, 3,435 seasonal and full-time employees in processing and wholesaling, and 63 wholesale plants. Bayou La Batre and Bon Secour ranked 11th and 19th among U.S. ports in the value of landings (largely shrimp).

In 1978, 23 species (or groups or species) of finfish and seven species of shellfish were landed commercially in coastal Alabama. Shrimp have consistently ranked first in volume and value since 1955, accounting for 33% to 50% of the total pounds landed and between 80% and 85% of the dockside value. In 1976, Alabama shrimp landings were 8.5 million kg (18.7 million lb) worth $30.4 million. The oyster and crab fisheries are relatively small. Dockside values of oysters and crabs were $1.2 million and $281,000, respectively, in 1976. In recent years, Atlantic croaker (*Micropogonias undulatus*) has become the principal finfish species caught in the coastal waters of Alabama, and in 1976, Alabama fishermen caught 77% of the Gulf harvest of croakers. Other major commercial species in the saltwater finfish catch were spotted seatrout (*Cynoscion nebulosus*), southern flounder (*Paralichthys lethostigma*), and striped mullet (*Mugil cephalus*). Commercial freshwater fishing is common in the Mobile Delta, but landings reported for freshwater species there are not considered reliable because of incomplete statistics. Channel catfish (*Ictalurus punctatus*), smallmouth buffalo (*Ictiobus bubalus*), and freshwater drum (*Aplodinotus grunniens*) are the major species.

In the future, federal fishery management programs provided for by the Fishery Conservation and Management Act of 1975 should help to sustain or enhance the coastal commercial fisheries and to reduce foreign competition in traditional fishing waters. The initiation of long-term monitoring programs by the State also will be helpful. The fishing industry, especially the shrimp fishery, has serious problems because of rising costs of fuel and supplies, high interest rates, and competition from foreign imports. This may cause more nearshore shrimp fishing in smaller boats.

TRANSPORTATION

Coastal Alabama is served by a well-developed transportation system. Terminal facilities for rail, highway, air, and water transportation are centered in Mobile County. Water transportation is dominant and has been a basic contributor to economic development of the area since the 17th century.

Mobile Bay is a natural harbor fed by a system of navigable waterways. Mobile currently handles about 36 million mt (40 million t) of traffic annually and ranks thirteenth among the Nation's ports. Bulk commodities comprise about 90% of port traffic. Coal, grain, and iron ore are the principal bulk products.

The Tennessee-Tombigbee Waterway, scheduled for completion in 1986, will link the Tennessee and Ohio Rivers to the Tombigbee River and the Port of Mobile. The "Tenn-Tom" should generate about 15 million mt (16 million t) of additional traffic through Mobile in its first year of operation. According to the U.S. Army Corps of Engineers' projections, commerce moving in deep-draft vessels through the Port of Mobile (including Theodore) should increase from 15 million mt (16 million t) in 1975 to 78 million mt (68 million t) in 2035 because of natural growth and the added Tenn-Tom traffic.

In preparation for increases in navigation, the Alabama State Docks Department has embarked on a massive capital expansion program that emphasizes new coal and grain handling facilities. In addition, the Corps of Engineers has approved a plan to deepen Mobile Harbor's ship channel from its present 12 m (40 ft) to a 17 m (55 ft) depth required to accommodate large bulk-carrier vessels. A controversial element of this plan is the proposal to create a large dredge disposal area on the western shore of Mobile Bay near Brookley Field.

Although the direct economic impact of greatly increased bulk traffic has not been determined, there are indications that the impact on employment and wages may be relatively small.

Major aspects of the other transportation modes are as follows. Intercity highway transportation is served by Interstate highways 10 and 65, and by five other federal highways (31, 43, 45, 90 and 98). Rail service is provided by four railroads—Louisville and Nashville, Illinois Central Gulf, St. Louis-San Francisco (Frisco), and Southern. Only freight service is available.

Air transportation is available at Bates Field and Brookley Field which are owned by the City of Mobile. Bates Field is a commercial aviation facility served by Eastern, Republic, and Pan-American airlines. Brookley, formerly an Air Force Base, is a general aviation facility.

RECREATION/TOURISM INDUSTRY

Coastal Alabama's recreation-tourism industry is directly related to its geography, climate, and history. Because of the warm climate and abundance of surface water, resident recreation is dominated by swimming, fishing, picnicking, hunting, and sightseeing. In 1980, resident and tourist outdoor recreation in Mobile and Baldwin Counties was expected to add up to over 51 million user days. Most of this user participation was near the shore. In 1980, an estimated 4.4 million tourists visited the two-county area and spent $117.8 million.

Sport fishing and hunting are major sports in Alabama because of the extensive area of fresh water, brackish water, and marine habitat and forests. The principal freshwater fishing area in southern Alabama is the Mobile Delta. Its natural high fertility provides ideal conditions for sport species and at the same time serves as a major nursery for many fish and crustaceans. The most important freshwater sport fish are largemouth bass (*Micropterus salmoides*), sunfish (*Lepomis* spp.), crappies (*Pomoxis* spp.), channel catfish (*Ictalurus punctatus*), and alligator gar (*Lepisosteus spatula*).

Marine fishermen use all estuaries and bays of the region as well as the Mississippi Sound and Gulf waters. The most important sport fish are lesser amberjack (*Seriola fasciata*), Spanish and king mackerel (*Scomberomorus maculatus* and *S. cavalla*), southern flounder (*Paralichthys lethostigma*), striped mullet (*Mugil cephalus*), and spotted seatrout (*Cynoscion nebulosus*). Shrimping and crabbing also are major sport activities.

Hunting seasons in coastal Alabama begin in mid-September and continue to late April. Duck and raccoon are hunted in the winter months in the lower Delta, although duck populations have declined drastically since the 1950's. Whitetail deer (*Odocoileus virginianus*), turkey (*Meleagris gallopavo*), and small game are taken in most areas of the region. Trapping is conducted on a very limited scale.

MULTIPLE-USE CONFLICTS

Many of the social and economic benefits prevalent in coastal Alabama are dependent upon natural resources. Competition for these resources causes multiple-use conflicts and environmental stress. Although the conflicts generate some social, economic, and political repercussions, the issues usually are environmental. Major environmental conflicts are dredging, mining, petroleum extraction, construction, transportation, pollution, waste disposal, farming, and logging. Recreation activities most likely to be affected by these multiple uses are commercial fishing, sport fishing, hunting, recreational boating, swimming, hiking and camping.

ENVIRONMENTAL ISSUES AND REGULATIONS

Because of competition for water, land, and air resources, many environmental issues have emerged. With further industrial and port development and population growth, the sharing of these resources will become more difficult.

Water pollution is a serious problem in and adjacent to Mobile Bay. The shallow water and the distance from the Port of Mobile to deeper Gulf waters have required the construction and maintenance of long ship channels. Spoil disposal from these operations has caused serious environmental concerns. Most spoil grounds are adjacent to the channels or in nearshore Gulf waters.

Alteration or destruction of marshes and shallow bay bottoms are caused largely by industrial, urban, suburban, port, commercial, residential, and recreational development. A major need is the prevention of further adverse impacts on those areas that are essential to estuarine productivity and profitable recreational and commercial fishing.

Water quality problems caused by urban and industrial development are common in the metropolitan Mobile area and in localized areas in both counties. Principal point sources of pollution in the area are inadequate municipal sewage treatment facilities and pollution loads from paper mills and chemical plants. Non-point pollution sources include sediment loads from urban storm water runoff, bacterial contamination of Mobile Bay from surface water runoff north of the City, and septic tank drainfields in low-lying areas.

Land utilization in coastal Alabama is complicated by unregulated growth in several unincorporated areas in the two counties. The lack of zoning authority by either county and residential development in flood-prone areas (e.g., residences built on former marsh lands), particularly along the coastline, are particularly serious problems. As coastal development continues, saltwater intrusion, ground water pollution from septic tanks, and habitat loss will become even greater.

Air pollution is confined largely to Mobile County. The county as a whole is designated a non-attainment area for ozone, and a portion of downtown Mobile has unacceptable levels of particulates. The prevention of air pollution associated with increasing industrialization and the need for adequate monitoring are important environmental problems.

Oil and gas exploration and development in State waters has added to and complicated the environmental problems in coastal Alabama. The discovery of gas reserves in Mobile Bay is likely to cause more intensive exploration and development. A new lease sale of State submerged lands and the development of additional exploratory wells by Mobil Oil Company are indicative of this trend. Onshore siting of petroleum-related facilities, placement of pipelines to shore, and the disposal of drilling wastes are potential environmental problems.

A major environmental issue is the loss of natural habitats, many of which provide direct benefits to man. Some of the benefits of estuaries, marshes, and barrier islands, for example, are storm protection (from wind and waves), waste assimilation, and recreation. Threatened and endangered natural lands and waters and other areas of high ecological value to man are the Mobile Delta, coastal barrier islands, submerged grassbeds, tidal marshes, wet acid pinelands, mesic ravine woods, and habitats of endangered and threatened species.

Federal and State environmental laws have important impacts on any problem or issue principally because the laws regulate many activities that generate issues and are major hedges against large-scale environmental destruction. Of major significance are the federal and State water and air pollution control laws, the coastal zone management laws, and laws and regulations governing petroleum exploration and extraction in State and federal waters.

COMMERCIAL FISHING

INTRODUCTION

The commerical fishery is an historically important part of the coastal Alabama economy. In 1976, the dockside value of the fishery was $33.6 million; the processed value of fishery products was $73.1 million; boats and vessels numbered 1,031; the number of fishermen totaled 1,923; and the 3,435 seasonal and full-time employees in the processing and wholesaling sector worked in 63 plants. The many other industries and businesses are directly or indirectly dependent upon the industry range from boat builders, net makers, and fuel suppliers to retailers and restaurant operators. The economies of Bon Secour and Bayou La Batre center entirely around commercial fishing. In 1976, the Bon Secour-Gulf Shores and Bayou La Batre ports ranked 19th and 11th, respectively, among U.S. ports in value of landings. Historically, fishing was the first industry of the coast, arising to meet local food needs when the coast was first settled. Later, the fishing industry expanded to reach far inland and, more recently, to other countries.

By whatever measure applied, the local value of the commercial fishery is overshadowed by the value of the resources upon which the fishery depends. Alabama's coastline is small, a tiny fraction of the Gulf states' total, yet it includes Mobile Bay, one of the Nation's major estuaries. Mobile Bay is fed by the fourth largest river system in the United States. The flow from the Mobile River supplies the Mobile River Delta and Bay with a rich supply of nutrients and minerals.

The estuaries of Alabama are protected by barrier islands. The islands combined with a favorable warm climate and nutrients from inland and sea, make Mobile Bay an outstanding fish and shellfish nursery area.

The importance of estuaries is demonstrated by the number of commercial and sport species that depend upon them. About two-thirds of the fish species of the coastal United States are estuarine dependent. Gunter (1967) reported that 97.5% of the total Gulf commercial catch was composed of estuarine-dependent species. Only 2% were marine species and 0.5% were freshwater species. Swingle (1971) reported that 96% of the value and 93.7% of the landings were composed of estuarine-dependent species.

About 2.8 million ha (7.0 million acres) of the Nation's 8.1 million ha (20.1 million acres) of estuaries are in the Gulf region (Gulf South Research Institute 1976). Alabama contributes 174,815 ha (431,967 acres) of estuaries, which is 6.2% of the Gulf total and 2.1% of the national total.

This paper briefly describes the history of Alabama's commercial fishery and related socioeconomic trends. Whenever possible, the current status of a species is compared with that of 1955. Mariculture programs and fishery management problems and programs also are described, as well as identifying problems such as foreign imports and escalating fuel costs that are troubling the industry.

HISTORICAL BACKGROUND

OYSTERS

Over 3,500 years ago, prehistoric Indians gathered oysters from the Mississippi Sound and Mobile Bay. Oysters, readily available and easily taken from shallow waters, provided an excellent food source. From the earliest French and Spanish explorers to today, oysters have been a valuable source of food and a vital local industry. Indian shell middens are a physical record of early exploitation of Gulf fishery resources. In coastal Alabama, these middens date back several thousand years. Coastal middens such as those on Dauphin Island are composed mostly of oyster shells intermixed with some pottery sherds and fish bones. Inland middens usually contain large quantities of brackish water clams. An abundance of oyster shells in middens 64.4 km (40 miles) inland indicates early commerce (Swingle 1979).

FISH

The earliest Gulf commerce in finfish was limited to estuarine and nearshore marine species which were preserved for transport by salting, smoking, or drying. Barrels of salted mullet were shipped some distance inland in the early 1800's. The search for red snapper led to the development of an offshore fishery in the Gulf and the New England fishermen brought their schooners to the Florida panhandle to fish for snapper (Gulf South Research Institute 1976). Snapper was a prominent commercial species in Alabama until 1966 when the snapper fleet was sold to a Pascagoula firm and was transferred to Mississippi. In the late 1970's, Alabama's share of the Gulf reef fish harvest (dominated by the red snapper) was only about 4% (Gulf of Mexico Fishery Management Council 1980a).

The Atlantic croaker (*Micropogonias undulatus*) in Alabama became a major commercial fish in the early 1970's because of the rise in market demand on the Atlantic coast. The croaker fishery is an Alabama "specialty," because it developed here and not in other Gulf states.

The commercial production of mullet historically has been high, but the dockside value has been low (Swingle 1977). From early times, mullet has been sought commercially, but the low return on the investment has depressed this fishery (Swingle 1977).

Many offshore finfish are now landed incidentally by shrimp fishermen. Shrimp trawls catch Spanish mackerel, black and red drums, sand and silver (speckled) seatrouts, sheepshead, flounders, and spot. From 1955 to 1981, the catch of finfish rose 68% and the market value increased 173%.

The catch and value of major fish and shellfish landed by commercial fishermen in coastal Alabama for selected years since 1955 are given in Tables 75 and 76 and the common and scientific names of species most frequently landed at Alabama ports are given in Table 77.

The number of commercial fishermen and employees in wholesale and processing plants has not increased proportionately to the dockside and processed value of seafood landed in Alabama (Swingle 1979). From 1955 to 1976, the value of landings and processed seafood increased about 800%, yet the number of fishermen and wholesale and processing employees increased only 48% and 78%, respectively.

COASTAL FISHERY AREAS AND RESOURCE OWNERSHIP

Alabama's coastal aquatic habitats are nearshore marine waters, estuaries, and inland rivers and streams. The commercial freshwater fishery is centered in the Mobile Delta, and major estuaries are Mobile Bay and the Mississippi Sound. Less important estuaries are Perdido Bay and Little Lagoon. Alabama estuaries and their acreages are given in Table 78. The physical and biological features of the estuaries are described by Crance (1971) and Swingle (1971).

The territorial waters of Alabama extend three miles seaward from shore. Federal jurisdiction seaward was established through the Fishery Conservation and Management Act of 1976. This act gives the United States exclusive management authority over domestic and foreign fisheries from State territorial waters to 370.4 km (200 nautical mi) from the U.S. coastline.

The ownership of fishery resources in Alabama is more accurately described as a custodianship (Swingle 1977). The State has the power to manage and regulate fishing in the best interests of the State's citizens. Creel limits, seasonal restrictions, and equipment regulations are examples of regulatory measures.

The ownership of oyster beds is different. Since the oyster is immobile, it has been considered as specific property, subject for lease or ownership. At one time, the State leased oyster beds for private production. No areas are presently leased, and all oyster beds

FINFISH

The finfish fishery is troubled generally by low dockside prices. Declines in mullet landings were caused by low prices, which were accentuated by higher operating costs. Shrimp trawlers will continue to be the principal suppliers of finfish other than croaker. Many of the other species are caught in trawls fishing for shrimp.

Conflicts between sport and commercial fishermen are continually unresolved. Each group blames the other for reducing fish populations. Sport fishermen claim the gear damages small, unmarketable fish. The basis of conflict is always an assumption that there is not a sufficient population of a particular species to supply both interests. Most conflicts have ended in species or gear restrictions for commercial fishermen. These restrictions are seldom, if ever, based upon sound data such as trends in catch, population size, rate of natural and fishing mortality, catch per unit of effort, year-class composition, and other biological considerations (Swingle 1977).

UNDERUTILIZED FISHERY RESOURCES

Many fish and shellfish species in the northern Gulf of Mexico are abundant but are not landed because there is no demand for them (Swingle 1977). For example, squids and sharks are highly prized in other countries but are not usually consumed in the United States. Alligator gar, which is sold in large numbers in Louisiana, is not eaten in Alabama. The exploitation of a number of commercial species by commercial and sport fishermen, as well as the potential that they have for future utilization, is summarized in Table 85.

SUMMARY

Commercial fishing is an historical industry of coastal Alabama. Since 1955, this industry has been characterized by sustained growth in the volume and value of landings, and of processed products. The most valuable species are shrimps. Alabama produces 9% of the volume and 11% of the value of shrimp landed in the Gulf states, which yield 83% of the total U.S. shrimp catch.

The commercial fishery is largely sustained by estuarine-dependent species. To maintain the industry, estuaries must be protected from excessive destruction, modification, and contamination. As the human population increases, there will be more stress on estuaries, yet the need for abundant, high protein food also will increase. Some reasonable balance between human needs and estuary protection must be achieved.

RECOMMENDATIONS

1. Require that sport and commercial fishermen in inland, brackish, and marine waters be licensed annually to provide records and sources of information to help determine the status of the fisheries and help provide sufficient funds for implementing management.

2. Periodically conduct seasonal fishermen counts and creel census surveys and otherwise monitor the freshwater fishery resources in the Delta to analyze socioeconomic effects and change.

3. Improve oyster production through more State shell and seed oyster planting on suitable bottoms or, if adequate sources of seed oysters can be identified, reinstitution of a State leasing of oyster beds with requirements that the leasors maintain the reefs by shell and seed oyster plantings.

4. More cooperation among federal, state, and local governmental agencies to halt additional detrimental changes in Alabama estuaries, including more thorough consideration of probable effects of commercialism on the fishing industry (e.g., dredge and fill operations, channel dredging and maintenance, agriculture, clear-cut silviculture).

5. Periodically hold symposia similar to that on Mobile Bay in 1979. Such meetings would encourage dissemination of diverse data on natural and physical features and processes. Non-technical collective abstracts of papers presented at these meetings would be made available to decision makers and managers to help them make better environmental and fishery resource decisions.

DATA GAPS

The marine commercial fishery of Alabama has been rather thoroughly studied, and the catch and value of landings have been compiled for many years. In contrast, data on the coastal freshwater fishery generally is incomplete or lacking. The major data gaps are as follows:

1. Lack of reliable data on fishing intensity and catch of freshwater species.
2. Deficiency of data on population trends in estuarine waters.
3. Scarcity of commercial catch statistics in Mobile Bay, Mississippi Sound, and other specific coastal waters after 1975.
4. Lack of precise data on the volume and value of fish and shellfish landings. Reporting is incomplete because many financial transactions are on a cash basis and are unrecorded.
5. Insufficient data on the cumulative impacts of man's activities on estuarine-dependent species of fishes and shellfish in estuaries.

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sites because of current agricultural and forestry practices has endangered the red-cockaded woodpecker, once a common bird of mature southern pine forests. Man's direct impact on a species is illustrated by the over-exploitation of the alligator, which eventually reduced this once common species to precariously low population levels.

In general, man has eliminated the larger predators. Alabama's largest remaining Florida black bear population is in the more remote areas of the Mobile Delta. These animals once were widely distributed in the southern portion of the State.

Of the 26 endangered and threatened plants on the Alabama list for coastal counties, 9 are on the Federal list (Table 148). Twelve of the 28 animals contained in the State list also are federally listed (Table 147). Unless a species is on the federal list, there is no practical way to protect the habitats of most other species. Because Alabama does not have a non-game wildlife program such as those of Colorado and Kentucky, or a natural areas acquisition program, there is currently no effective way to preserve the habitats of most plants and animals.

MOBILE DELTA

William Bartram, who visited the Mobile Delta before 1800, was deeply moved by the primeaval magnificence he found: "Opposite this bluff, on the other side of the river, is a district of swamp or low land, the richest I ever saw, or perhaps anywhere to be seen: as for the trees I shall forbear to describe them, because it would appear incredible; let it suffice to mention, that the Cypress, Ash, Plantanus, Populus, Liquidambar, and others are by far the tallest, straightest, and in every way the most enormous that I have seen or heard of" (U.S. Department of the Interior, National Park Service 1979). The forest Bartram knew was radically altered by logging during the subsequent 100 years. In 1880, forester Charles Mohr wrote: "The large number of logs harvested shows clearly with what activity the destruction of these treasures of the forest is being pushed; and the reports, as of heavy thunder, caused by the fall of the mighty trees, resounding at short intervals from near and far, speak of its rapid progress" (U.S. Department of the Interior, National Park Service 1979). Yet today, the Mobile Delta is still a valuable natural area (Table 149). In 1974, its natural importance was recognized when the Secretary of the Interior designated 76,500 ha (189,000 acres) as the Mobile-Tensaw River Bottomlands National Natural Landmark. Its size, inaccessibility, and difficulty of conversion to other uses have been instrumental in retaining the Delta's natural integrity.

The Delta is a vast complex of vegetated lands interwoven with many waterways. It is estimated to be composed of 8,225 ha (20,323 acres) of open water, 4,229 ha (10,450 acres) of fresh-mixed marsh, 28,065 ha (69,348 acres) of swamp, and 34,334 ha (84,839 acres) of mixed bottomland forest (Alabama Coastal Area Board and U.S. Department of Commerce 1979). Within the Landmark boundaries, higher lands are occupied by mixed upland forest. The lower 25% of the Delta is a treeless plain, and its marshes are collectively considered among the finest in the Nation (Stout 1979). This portion of the Delta is a prime waterfowl habitat and a center for sport and commercial fishing. Despite ravage of the past, the entire Delta, because of the diversity and quality of its extensive habitats, is still rich in flora and wildlife.

Although the Delta has largely retained its natural characteristics as the Mobile area has grown, the National Park Service classified the Landmark portion as threatened in 1977 and conducted a survey in 1978 to document its significance and to develop preservation alternatives. This study (U.S. Department of the Interior, National Park Service 1979) concluded that major threats to the Delta, if unchecked, would result in loss of many natural values and the integrity upon which the original determination of national signifi-

cance was made. The major threats identified were as follows: industrial development along the west bank of the Mobile River with further expansion planned northward; cumulative effects of water pollution, particularly silt and agricultural chemicals; potential expansion of timber harvesting; uncontrolled shooting of wildlife; and the cumulative effects of dredging and spoil disposal from the Tenneesse-Tombigbee Waterway project. Of these threats, land-use changes, including development in the floodplain, are the greatest dangers.

Current ownership of the Delta Landmark is divided among 150 owners, some of whom have non-contiguous tracts. The southern half is largely owned by land and timber companies and a smaller section of about 1,200 ha (3,000 acres) is held by the State. Nearly one-fourth of the northern Delta is owned by another timber company. Although the Coastal Area Board has designated the Delta as a geographic area of particular concern, it is largely in private ownership and there is no authority to protect its natural resources. The Board's policy will be to prohibit uses of the Delta that degrade its natural functions, but this policy does not extend to regulations or enforcement.

A Park Service survey concluded that a downward trend in the Delta's natural values is strongly evident and that without effective controls, the landmark will lose much of its ecological value. Previous attempts to protect the Delta by federal acquisition have failed. The U.S. Fish and Wildlife Service twice tried to purchase the lower portion for a refuge, but local opposition cancelled these plans. An organized and vocal group of hunters and fishermen are opposed to federal ownership, apparently even if traditional hunting and fishing are to be permitted. Presently, large Delta tracts are leased by hunting clubs. The State has not attempted to acquire additional lands and probably lacks the funds to do so. The degradation of the Delta will be a continuing issue. The means to prevent or lessen the changes through protective ownership do not now exist.

BARRIER LANDS

Barrier lands of coastal Alabama include Dauphin Island, the Fort Morgan peninsula, Little Dauphin Island, and Sand-Pelican Island. The natural appeal of these areas has caused a rapid growth of second homes on Dauphin Island and the Fort Morgan peninsula, and resort facilities east of the peninsula at Gulf Shores. These developments considerably altered or destroyed the natural habitat.

Sand dunes are particularly threatened because there are no zoning regulations requiring setback of structures. The dunes are frequently leveled for development, and then the area is further altered by filling to accommodate septic tanks and field lines in areas not served by treatment plants.

The uncontrolled use of off-road vehicles also is a threat to dune vegetation and helps hasten dune erosion from wind and water. In a heavily used area such as Gulf Shores, foot traffic has somewhat the same effect. Pollution from septic tanks and disturbance of feeding and resting birds are additional negative impacts on the quality and aesthetics of dunes.

The vegetation of the foredunes is limited to several succulent plant species and some salt-tolerant species. Although sparce, their value is great because their extensive root systems and often trailing vine-like vegetation form traps and hold sand. Dunes are an integral part of an everchanging but naturally resilient shoreline environment. Barrier lands, with their dunes are a first line of defense against storms and help shield the mainland and its communities from direct wave, wind, and tidal forces.

Dunes also provide essential habitat for several species of animals. Loss or degradation of dunes has caused the endemic Alabama Gulf beach mouse and the Perdido Bay beach mouse to be placed on the State's list of endangered and threatened species. These species are restricted in distribution to dunes east of Mobile Bay and are dependent upon the seeds of sea oats for food.

Table 144. Areas with significant natural values which are protected[a] or proposed for protection in Baldwin(B) and Mobile (M) Counties; locations of areas shown in Figure 38 (Garrett 1981).

No.	Site	Location	Size	Status and description	Natural values
1	Shell Mound Park	Dauphin Island (M)	3 acres (1.2 ha)	State park. Large oyster shell midden, bordered by live oaks. Many herbaceous plants.	Excellent feeding and resting location for many migratory song bird (passerine) species.
2	National Audubon Sanctuary	Dauphin Island (M)	159 acres (63.6 ha)	Owned by Mobile County, leased by National Audubon Sanctuary. Includes beach-dune complex with high dunes, gum swamp, a large freshwater lake and sandy pine woods.	Vital to large numbers of migratory song birds for feeding, resting and freshwater supply prior to and upon arrival from trans-Gulf flights. Habitat for amphibians, reptiles and small mammals which is being lost with island development. Only large area other than western end of island not slated for development.
3	Cat Island	North of Dauphin Island; 0.6 miles (11 km) south of mainland (M)	13 acres (5.2 ha)	Leased for lifetime by Dr. W. W. Gaillard from Henderson estate as sanctuary. Fifty percent is tidally inundated salt marsh; 20% dense stands of marsh elder and saltbush.	Shrubby portions support largest heron-egret colony in coastal Alabama. Salt marsh portions are ideal feeding habitat for wading birds. Nesting species are little blue, Louisiana and green herons, cattle and snowy egrets, glossy and white-faced ibis. Major active site for Louisiana heron in coastal Alabama. One of three sites in world where the two ibis nest together.
4	Chickasabogue Creek Park	Near town of Chickasaw (M)	1,050 acres (420 ha)	Mobile County park. Includes relatively pristine example of coastal, acidic stream with associated bay forest.	Creek banks support large stands of mountain laurel and Atlantic white cedar, a species of special concern on Alabama's list of special status[b] plants. Abundant wildlife, including alligator; bears have been sighted.
5	Mobile Delta (State acreage)	Mobile Delta (B, M)	3,000+ acres (1,200 ha)	State-owned. Habitats are fresh-mixed marsh, submerged grassbeds, and mixed bottomland forest.	Wading bird, rail, waterfowl, small mammal and fishery species habitats. Supports endemic red-bellied turtle, alligator and swallow-tailed kite, species on the State list of special status[b] animals. Only large acreage in State ownership within the Mobile-Tensaw River Bottomlands Natural Landmark.

GEOLOGICAL SURVEY OF ALABAMA

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CIRCULAR 47

GEOLOGY OF THE ALABAMA COASTAL PLAIN

A Guidebook

Charles W. Copeland, Editor

UNIVERSITY, ALABAMA

1968

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GEOLOGY OF THE ALABAMA COASTAL PLAIN

Charles W. Copeland, Editor

INTRODUCTION

The purpose of this guidebook is to provide an opportunity for visiting geologists to become acquainted with the general geology of the Coastal Plain of Alabama and view a part of the industrial development having its base in Alabama's natural resources. The trip from Tuscaloosa to Mobile presents a brief reconnaissance of marine and nonmarine sedimentary rocks ranging in age from Late Cretaceous to Pliocene (pl. 1).

The city of Tuscaloosa is located on a high terrace of the Black Warrior River near the inner edge of the East Gulf Coastal Plain physiographic province. In the Tuscaloosa vicinity, Coastal Plain sediments overlap the Pottsville Formation of Pennsylvanian age. Outcrops of the Pottsville form the Fall Line in this area and are exposed in the immediate vicinity of the river.

The Alabama Coastal Plain exhibits considerable relief which may be attributed to a combination of erosional processes, the variety of rock types, and associated structural elements. The province in Alabama stands in marked contrast to the relatively flat topography characterizing coastal areas in neighboring states. The relief in the Alabama Coastal Plain exposes a nearly complete sequence of Upper Cretaceous and Tertiary sediments (pl. 1).

The planned route of the field trip will cross six major physiographic subdivisions of the East Gulf Coastal Plain physiographic province. The outcrop area of deposits of the Upper Cretaceous Series is divided physiographically into three major divisions: the Fall Line Hills, the Black Prairie, and the Chunnennuggee Hills. The outcrop area of the Tertiary System is divided physiographically into the Southern Red Hills, the Lime Hills, and the Southern Pine Hills.

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PHYSIOGRAPHY OF ALABAMA[1]

Alabama comprises an area of 51,000 square miles, and is about 300 miles from north to south and 200 miles from east to west. Altitudes range from sea level in the southwestern part of the State to 2,407 feet at Mt. Cheaha in east-central Alabama.

Alabama lies in parts of five physiographic provinces, as follows: Highland Rim Section of the Interior Low Plateaus, the Cumberland Plateau Section of the Appalachian Plateaus, the southernmost part of the Valley and Ridge, the Piedmont Upland Section of the Piedmont, and the East Gulf Coastal Plain Section of the Coastal Plain (fig. 2).

Descriptive information concerning the various physiographic divisions is from Adams (1926), Johnson (1933) , Fenneman (1938), Monroe (1941), and Peirce (1966).

INTERIOR LOW PLATEAUS PROVINCE

HIGHLAND RIM SECTION

The Highland Rim Section in Alabama is divided into the Tennessee Valley, Little Mountain, and Moulton Valley.

The Tennessee Valley has a rolling surface with a maximum relief of about 400 feet, and lies about 600 feet above sea level. It is underlain chiefly by carbonate rocks ranging in age from Late Ordovician to Early Mississippian (pl. 1). Little Mountain is a range of hills rising about 200 feet above the Tennessee Valley that is capped by the resistant southward dipping Hartselle Sandstone. It is bounded on the south by Moulton Valley, an undulating open lowland ranging in altitude from 575 to 650 feet, and underlain exclusively by the Bangor Limestone of Late Mississippian age.

APPALACHIAN PLATEAUS PROVINCE

CUMBERLAND PLATEAU SECTION

The Cumberland Plateau Section in Alabama is a submaturely to maturely dissected upland, underlain largely by rocks of Pennsylvanian age. The upland lies at altitudes ranging from 1,500 to

[1] Prepared by James A. Drahovzal, Geologist, Geological Survey of Alabama.

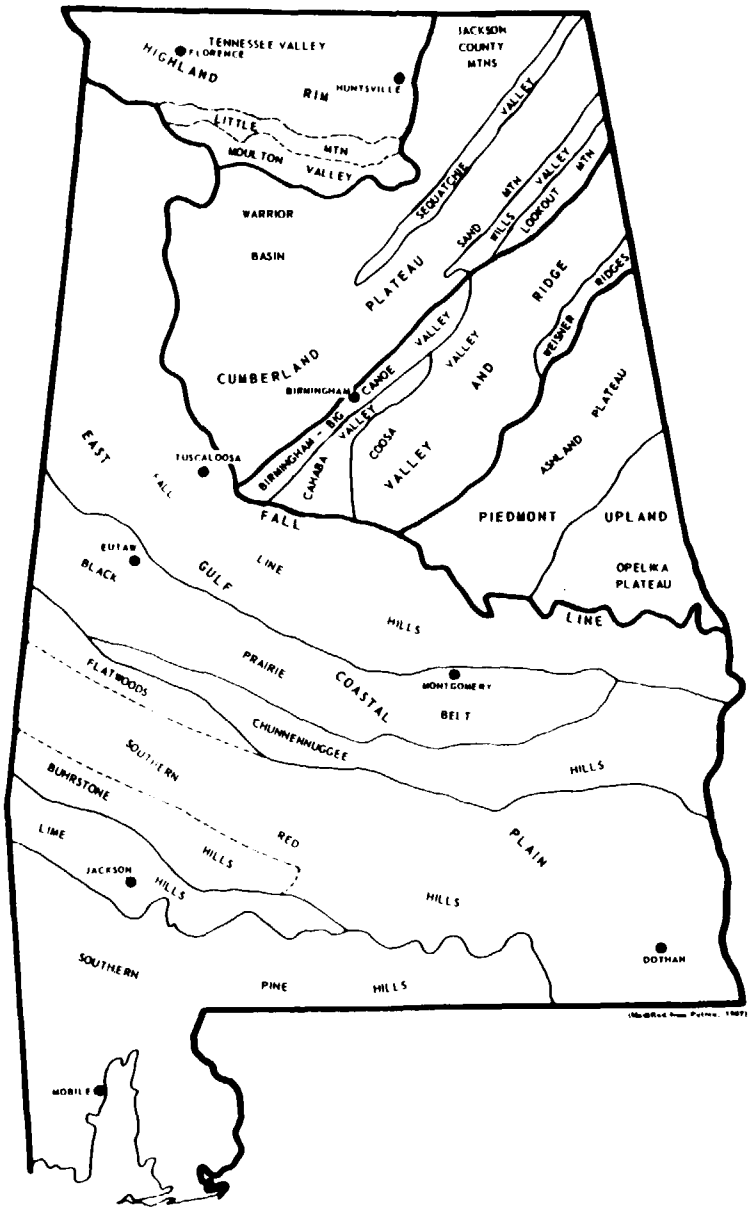

Figure 2.—Physiographic provinces of Alabama.

2,000 feet in the north to about 500 feet in the south, where it passes beneath the Coastal Plain. It is divided from east to west into the following units: Lookout Mountain, Wills Valley, Sand Mountain, Sequatchie Valley, Jackson County Mountains, and Warrior Basin.

Lookout Mountain and Sand Mountain are two synclinal flat-topped remnants of the Cumberland Plateau, underlain by clastic rocks of the Pottsville Formation, rising some 500 to 700 feet above the surrounding valleys. The intervening Wills and Sequatchie Valleys are narrow, faulted anticlinal valleys underlain predominantly by carbonate rocks ranging in age from Late Cambrian to Late Mississippian. The clastic material of the Red Mountain Formation and the chert of the Fort Payne Chert produce resistant hogbacks in both valleys. The Warrior Basin, a broad synclinal submaturely dissected plateau ranging in altitude from 1,100 feet in the north to 500 feet in the south, is underlain by the clastics of the Pottsville Formation. The Jackson County Mountains are submaturely dissected uplands capped by gently dipping rocks of the Pottsville, with carbonate rocks of Late Mississippian age underlying the intervening wide deep valleys. Relief in this area is as much as 1,000 feet.

VALLEY AND RIDGE PROVINCE

The Valley and Ridge province consists of a series of parallel ridges and valleys underlain by highly faulted and folded rocks of Cambrian to Pennsylvanian age. Local subdivisions from east to west include the Weisner Ridges, Coosa Valley, Coosa Ridges, Cahaba Valley, Cahaba Ridges, and the Birmingham-Big Canoe Valley.

The Weisner Ridges are a series of mountains as much as 2,130 feet high that are underlain by complexly faulted and folded quartzites and carbonates of predominantly Cambrian age. Immediately west of this area is the Coosa Valley, a broad valley of low relief lying 500 to 650 feet above mean sea level and underlain by complexly faulted and folded Paleozoic sedimentary rocks. The generally low relief of the valley is interrupted locally by low hills and ridges formed by rocks of resistant formations such as the

Weisner Quartzite, the Frog Mountain Sandstone, and the Red Mountain Formation. The Coosa and Cahaba Ridges are characterized by a series of parallel, northeast-trending ridges formed by the massive sandstone and conglomerate beds in the Pottsville and Parkwood Formations. The intervening valleys are underlain by shale of the Parkwood and Floyd Formations. The ridges rise 200 to 500 feet above the surrounding valleys. The Cahaba Valley lies between the Coosa Ridges and the Cahaba Ridges, and is a faulted monoclinal valley underlain predominantly by the limestone and dolomite of Early Paleozoic age. Locally, chert-bearing Cambrian and Ordovician dolomites as well as the Fort Payne Chert form resistant ridges. The Birmingham-Big Canoe Valley, which lies west of the Cahaba Ridges, is a broad anticlinal valley underlain by faulted, asymmetrically folded rocks of Cambrian to Mississippian age. One of the most prominent ridges is Red Mountain, a long continuous ridge rising about 400 feet above the valley floor and formed by the southeastward dipping Red Mountain Formation and Fort Payne Chert.

PIEDMONT PROVINCE

PIEDMONT UPLAND SECTION

The Piedmont Upland Section is a submaturely dissected surface developed upon igneous and metamorphic rocks. It consists of the Ashland Plateau to the northwest and the Opelika Plateau to the southeast. The Ashland Plateau is a mountainous region characterized by narrow steep valleys, with a rolling upland surface lying 1,000 to 1,100 feet above mean sea level. The Opelika Plateau lies at altitudes ranging from 500 to 800 feet and is generally of much lower relief than the Ashland Plateau.

COASTAL PLAIN PROVINCE

EAST GULF COASTAL PLAIN SECTION

The East Gulf Coastal Plain Section is underlain by Mesozoic and Cenozoic sedimentary rocks which gently dip southward at 20 to 40 feet per mile. The resistant beds form cuestas that gently slope southward forming a series of arcuate, southeasterly to easterly, trending hilly belts across the State. In Alabama, the section

is divided into the Fall Line Hills, Black Prairie Belt, Chunnenuggee Hills, Southern Red Hills, Lime Hills and Southern Pine Hills.

FALL LINE HILLS

The Fall Line Hills is a dissected upland with a few broad, flat ridges separated by valleys ranging from 100 to 200 feet deep. The Fall Line Hills occupy a zone where streams descend from resistant Paleozoic sedimentary and Piedmont crystalline rocks to the less resistant sand and clay of pre-Selma age in the Coastal Plain. It has a maximum width in western Alabama of about 50 miles, and altitudes range from more than 700 feet in northwestern Alabama to about 250 feet along the northern edge of the Black Prairie Belt.

BLACK PRAIRIE BELT

The Black Prairie Belt lies to the south of the Fall Line Hills and occupies a narrow crescent-shaped area encompassing approximately 8,000 square miles, extending from western Tennessee and northern Mississippi into central Alabama. The area is characterized by an undulating deeply weathered plain of low relief, developed mainly on chalk and marl of the Selma Group. Because of the impurity of the chalk and marl and other factors, typical karst features generally formed in carbonate-rock terranes are missing. In western and central Alabama the interfluves lie at elevations of about 250 feet. The belt is not present in eastern Alabama because of facies changes, with the dominant chalk lithologies of western Alabama being replaced by clastic sedimentary units to the east.

The Arcola Cuesta, supported by the resistant Arcola Limestone Member of the Mooreville Chalk, occurs near the middle of the belt and trends southeastward and eastward from the Alabama-Mississippi boundary to southeast of Montgomery. The Arcola Cuesta is characterized by a line of hills rising 50 to 75 feet above the surrounding prairie floor.

CHUNNENNUGGEE HILLS

The Chunnennuggee Hills is a pine forested series of sand hills and cuestas developed on the Ripley Formation and Prairie Bluff Chalk in western Alabama and the Blufftown Formation, Ripley Formation, and Providence Sand in eastern Alabama. The hilly belt extends eastward from Sumter County across most of the State (pl. 1). It widens in eastern Alabama as the chalk of the Black Prairie Belt intertongues with the more resistant clay, siltstone and sandstone of the Blufftown and Ripley Formations and Providence Sand. In western Alabama the Chunnennuggee Hills are bounded on the north by the Black Prairie Belt and in easternmost Alabama by the Fall Line Hills.

In western Alabama the more indurated beds of the Ripley Formation support the prominent northward-facing cuesta termed the High Ridge Cuesta by Monroe (1941) and the Ripley Cuesta by Fenneman (1938). It is more generally known as the Ripley Cuesta, and that is the terminology used in this report. The cuesta rises 100 to 200 feet above the prairie floor to the north and is nearly continuous from Sumter County to Georgia.

In eastern Alabama four linear, roughly parallel, northward-facing cuestas are present (Monroe, 1941). The basal sand of the Blufftown Formation forms the Sand Fort Cuesta, separating the Chunnennuggee Hills from the Fall Line Hills. The scarp of the Sand Fort Cuesta is most prominent in Russell County (pl. 1), where it is about 200 feet high. The Blufftown Formation intertongues with the Mooreville Chalk in central Macon County and the cuesta is not present to the west of this area. The back slope of the cuesta is cut into low rounded sandy hills composed of the upper part of the Blufftown Formation.

The Enon Cuesta occurs near the southeastern boundary of the Black Prairie Belt and is supported by the basal Cusseta Sand Member of the Ripley Formation. The Enon Cuesta is 200 feet high in central Bullock County and is traceable eastward to the flood plain of the Chattahoochee River. It does not extend westward from Bullock County as a prominent feature, because of intertonguing of the Cusseta with the Demopolis Chalk.

The Ripley Cuesta south of the Enon Cuesta is by far the most continuous and distinctive topographic feature in the Chunnennuggee Hills. In southern Bullock County the cuesta rises from 120 to 150 feet above the area to the north.

The Lapine Cuesta, southernmost cuesta in the area, was formed on the resistant beds of sand and gravel in the Providence Sand. The cuesta is from 150 to 200 feet high in Barbour County; it is less prominent to the west but is traceable to western Lowndes County. The Providence Sand "pinches out" in Lowndes County in sediments that are probably correlative with the Prairie Bluff Chalk.

SOUTHERN RED HILLS

The Southern Red Hills includes the Flatwoods, a lowland generally about 5 to 8 miles wide that extends from Sumter County to just east of the Alabama River along the north edge of the area. The flat-lying, relatively smooth surface of the Flatwoods is at an altitude of about 200 feet and is developed on the dark clay of the Porters Creek Formation. The Flatwoods are bordered to the south by a range of hills that rise 200 to 400 feet. In this area, the hills are underlain by formations of the Wilcox Group, but, farther east, the Clayton Formation forms the boundary ridge south of the Chunnennuggee Hills. The northern edge of the Southern Red Hills lies at a nearly accordant altitude of 600 feet and local relief of several hundred feet is common. Considerably large areas of "red levels," or undissected uplands, remain, especially at the outer edge of the belt. Along the southern edge of the Southern Red Hills, a cuesta, known as the Buhrstone Hills, rises 300 to 400 feet above the nearby streams and is considered to be the most rugged topographic region in the Alabama Coastal Plain. This hilly belt is 10 or more miles wide, extends from the Pearl River in Mississippi across Alabama to about the middle of the State and is developed on the indurated resistant siliceous claystone and sandstone of the Tallahatta Formation.

LIME HILLS

The Lime Hills from near the Alabama-Mississippi boundary extend eastward in a belt 5 to 8 miles wide across southwestern

Choctaw County into Conecuh County. The rugged topography approaches that of the Buhrstone Hills in places, and it is caused partly by the reappearance of the highly resistant Tallahatta Formation in the Hatchetigbee anticline and partly by facies changes from soft clay, sand, and marl to resistant limestones in the upper Eocene and Oligocene deposits.

The Hatchetigbee anticline (fig. 2) affects an area at least 50 miles long and 20 miles wide and stratigraphic displacement at the land surface is at least 600 to 700 feet. The southern flank of the anticline lies in the Lime Hills and the northern flank in the Southern Red Hills. The topography in the western part of the Lime Hills is attributed to the resistant beds in the Tallahatta Formation and resistant limestones of the upper Eocene and Oligocene deposits. Relief of 200 to 250 feet from valley floors to ridge crests is common.

The eastern part of the belt in Monroe and Conecuh Counties is less rugged and the hills are approximately 100 to 150 feet above the valley floors. The sand, clay, and marl of the upper Eocene and Oligocene deposits have been almost entirely replaced by more resistant limestones.

SOUTHERN PINE HILLS

The Southern Pine Hills, a cuesta-like elevated southward sloping dissected plain is developed on Miocene estuarine deposits to the north and on sand and gravel of the Pliocene Citronelle Formation to the south. The plain ranges in altitude from 400 feet in the north to about 100 feet a few miles inland from the Gulf of Mexico. Relief is greatest in the northern part where streams draining eastward to the Tombigbee River and westward to the Alabama River drop to base level in relatively short distances. The relief is as much as 250 feet in this area. To the south the topography is more subdued, being characterized by low rounded hills.

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UNITED STATES DEPARTMENT OF THE INTERIOR
Douglas McKay, Secretary

GEOLOGICAL SURVEY
Thomas B. Nolan, Director

GEOLOGICAL SURVEY CIRCULAR 373

WATER RESOURCES OF THE MOBILE AREA, ALABAMA

By W. H. Robinson, W. J. Powell, and Eugene Brown

With a section on salinity of the Mobile River by the
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WATER RESOURCES OF THE MOBILE AREA, ALABAMA

By W. H. Robinson, W. J. Powell, and Eugene Brown

ABSTRACT

Water is an abundant resource of the Mobile area. The Mobile River has an estimated average flow of 60,000 cubic feet per second (cfs), or about 39,000 million gallons per day (mgd). It is the largest single source of water. Water is available in substantial quantities from the many local streams and extensive water-bearing formations almost anywhere in the area.

Surface water is low in dissolved mineral matter and is extremely soft. Salt water moving up the Mobile River from Mobile Bay during periods of low river flow, however, limits the use of that stream as a source of supply.

The principal water-bearing formations are the alluvium and sediments of Miocene age. The Miocene strata dip toward the southwest, forming an artesian basin in the downtown area of Mobile. Small ground-water supplies can be developed practically everywhere, and supplies for industrial or other large-scale uses are available north of Mobile.

The average use of water from all sources in the area during 1954 was about 356 mgd, of which about 20 mgd was used for domestic supplies and 336 mgd was used by industry. An estimated 42 mgd of ground water is used in the Mobile area. The discharge from wells used by industry ranges from 10 to 1,500 gallons per minute (gpm), and the specific capacity of the large-capacity wells ranges from less than 6 to about 63 gpm per foot of drawdown.

Concentrated pumping in the downtown area of Mobile between 1941 and 1945 resulted in encroachment of salt water from the Mobile River into the alluvium. Because of a decrease in pumping in that vicinity, the sodium chloride content of the water has decreased substantially since 1945.

The quality of ground water is variable. Hardness of waters sampled ranged from 1 to 2,190 parts per million (ppm), the dissolved solids from 27 to 13,000 ppm, and the chloride from 2.2 to 6,760 ppm. The water of best quality occurs between McIntosh and Prichard, and the water of poorest quality occurs in the downtown area of Mobile.

The water-supply systems presently developed in the metropolitan area could furnish a moderate increase without taxing their facilities; with some increase in plant and pumping facilities, they could support a substantial increase. Industries outside the metropolitan area must develop their own supplies from local streams or wells.

INTRODUCTION

The purpose of this report is to provide information on the water resources that may be useful in the location or expansion of water facilities for defense or non-defense industries and for municipalities.

The industrial development of an area is controlled in part by the water supply. The Mobile area has the large quantity of good quality water required for industrial use. This report summarizes the data relating to the use, chemical character, availability and occurrence of water in the Mobile area.

Description of Area

Location

This report concerns an area of about 1,500 square miles in parts of Mobile and Washington Counties, Ala. Most of the industrial development has been concentrated in, and north of, Mobile along the Mobile River (pl. 1), because of the easy access to river and ocean transportation. The studies were more intensive in the area of concentrated industrial development.

Topography and Geology

The topography of the Mobile area, as of other areas, is determined in part by the rocks that make up the land surface. Rocks that crop out in the Mobile area are sedimentary; that is, they were deposited in shallow inland seas or by streams. The Mobile and Tensaw Rivers have been important tools in sculpturing the present topography. Flood-plain deposits of clay, silt, sand, and gravel, laid down by the Mobile River, form a conspicuously flat surface bordering the rivers. The width of the flood plain ranges from about 6 miles in the vicinity of Mount Vernon to about 11 miles in the vicinity of Saraland. Altitude of the flood plain in Mobile ranges from 5 to 30 feet above mean sea level. Most of the large industrial development has been on this broad flood plain.

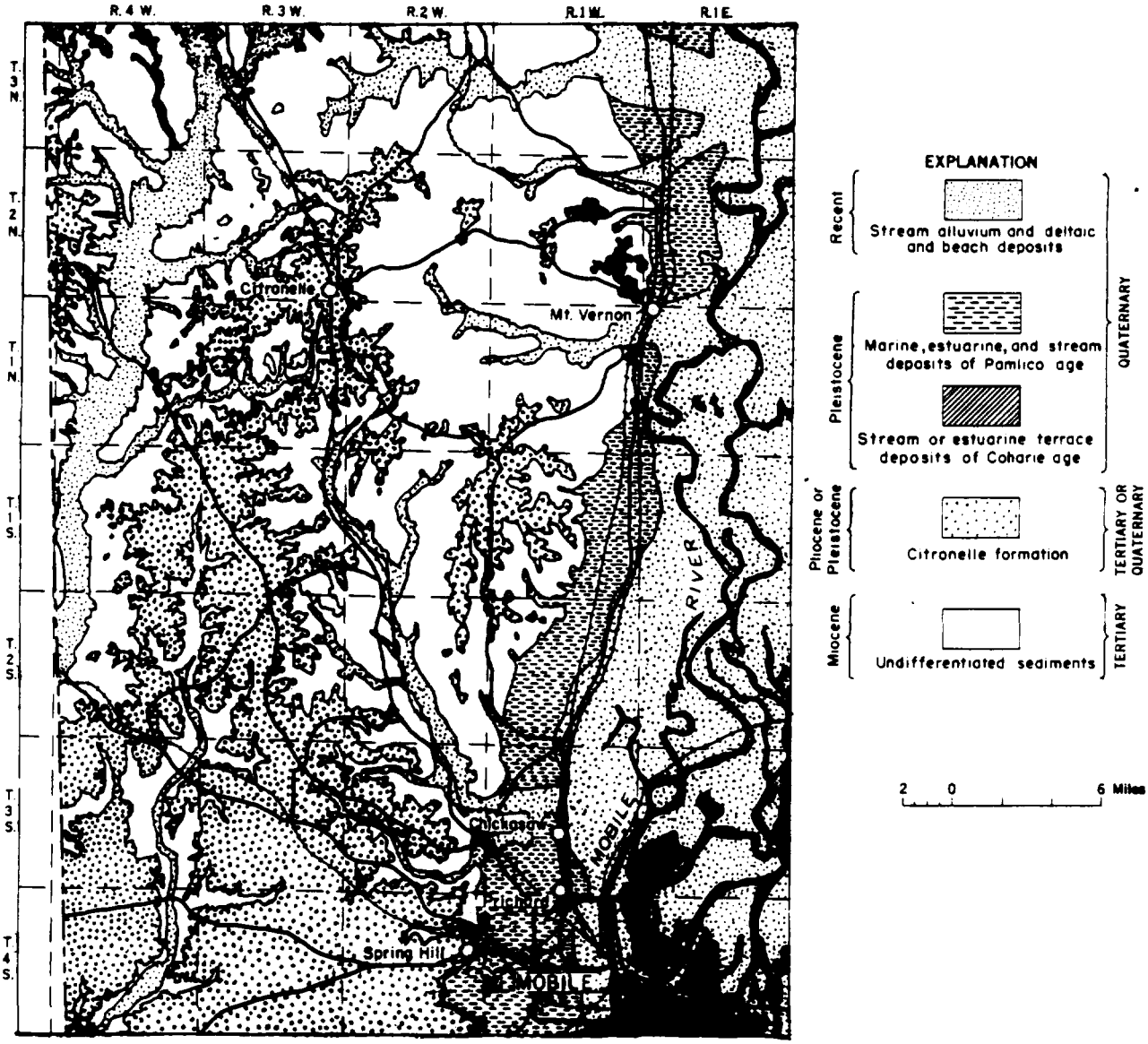
The most prominent topographic feature is the series of flat-topped hills that rise west of the flood plain. These hills are capped by deposits of sand, gravel, and clay of the Citronelle formation of Pliocene or early Pleistocene age, those in this area probably having been laid down by the ancestral Alabama River, as suggested by Carlston (1950, p. 1120). Altitude of this ridge between Spring Hill and the town of Citronelle ranges from about 200 to 330 feet. The ridge forms the drainage divide between the Escatawpa and Mobile Rivers.

The Citronelle formation is underlain unconformably by estuarine deposits of Miocene age. These Miocene deposits consist of sandstones, variegated argillaceous sand, and dark variegated clay. Steep slopes are generally typical of outcrops of the Miocene deposits along the sides of the Spring Hill-Citronelle ridge.

Geologic formations that crop out in the area are shown in figure 1. Alluvium beneath the flood plain of the Mobile River is underlain directly by the deposits of Miocene age, because there the Citronelle formation was removed by erosion before the deposition of the alluvium.

Climate

The U. S. Weather Bureau has collected climatological data at Mobile since November 6, 1870. Weather observations were discontinued in 1950 at the downtown station, in the vicinity of the U. S. Court House and Customs House, and were begun at Bates Field, about 12 miles west of the Post Office. Figure 2 shows the annual precipitation at Mobile from 1900 to 1953.



Modified from C. W. Carlston, 1950

Figure 1.—Geologic map of the Mobile area.

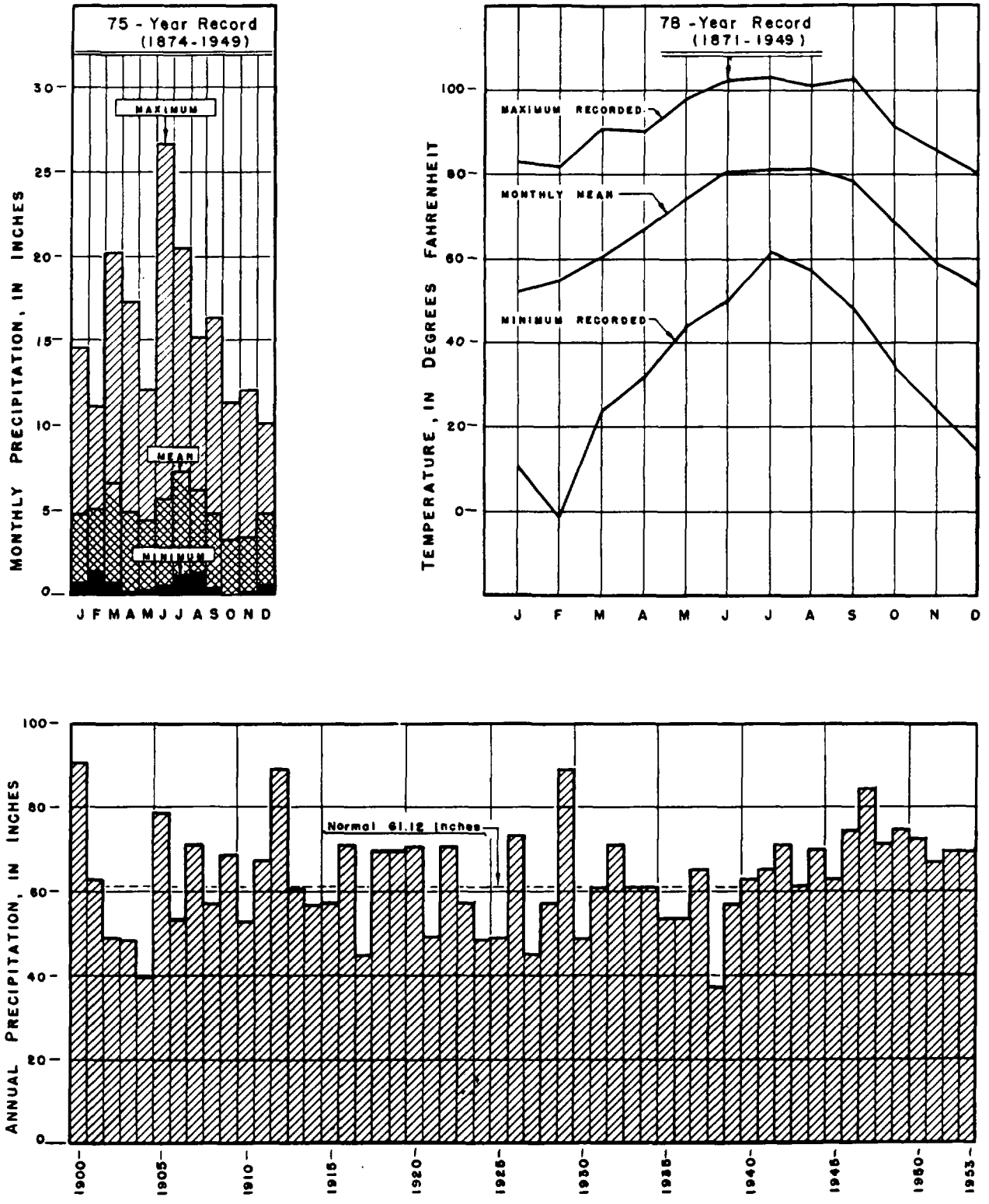


Figure 2.—Temperature and precipitation at Mobile.

Threemile Creek

Threemile Creek drains the area immediately to the west of Mobile. The stream skirts the northern edge of the city and empties into the Mobile River just north of the city. The stream is somewhat polluted in its lower reaches.

Seven discharge measurements were made at a site near Crichton, in the SE¼ sec. 12, T. 4 S., R. 2 W., at bridge on State Highway 43, 5 miles west of center of the city and 6 miles upstream from the mouth. Drainage area at the site is 12.1 square miles.

Halls Mill Creek

Halls Mill Creek, south of the city, appears to have excellent dry-weather flow. Several reconnaissance trips were made to locate a suitable site to gage the stream, but tidal effect made it impractical. However, on the basis of observations made on these trips, the low-water yield per square mile of drainage basin should be comparable to that for Eightmile Creek.

Floods on Tributary Streams

Information on the magnitude and frequency of floods on small streams in the Mobile area is very limited. Peirce (1954), in his study of flood frequency and magnitudes for streams in Alabama, developed a means of estimating the probable magnitude and frequency of floods on any stream in the State with a drainage area of more than 100 square miles. These curves, based on the combined records of all streams in and adjacent to Alabama, are probably the most reliable means of estimating probable floods in the Mobile area, even though Peirce had some rather serious reservations on accuracy of the definition of the curves applicable to this part of the State.

Figure 15, based on Peirce's curves for tributary streams in southwestern Alabama, can be used to estimate the probable magnitude of floods having a frequency of 10, 25, or 50 years for the larger tributary streams in the area. It should be recognized, however, that the recurrence interval does not imply any regularity of occurrence. It is only the probable average period between the floods equal to, or greater than, a given magnitude in a long period of time. Two 50-year floods could conceivably occur in consecutive years or even in the same year. For any given year, there is 1 chance in 50 that the 50-year flood will be equaled or exceeded.

Quality of Water of Tributary Streams

The general chemical character of water from the smaller streams in the Mobile area is indicated by the analyses of two samples from each of six selected streams. (See fig. 16). Water from these streams was found to be of excellent quality and suitable for most uses with little or no treatment. Although data on the daily quality of water were not available, the analyses given in table 6 are believed to be representative of nearly maximum concentration, because the samples analyzed were taken during essentially base-flow periods. Of the supplies examined, the maximum concentration of dissolved solids was 120 ppm; the minimum, 20 ppm; and the average, 50 ppm.

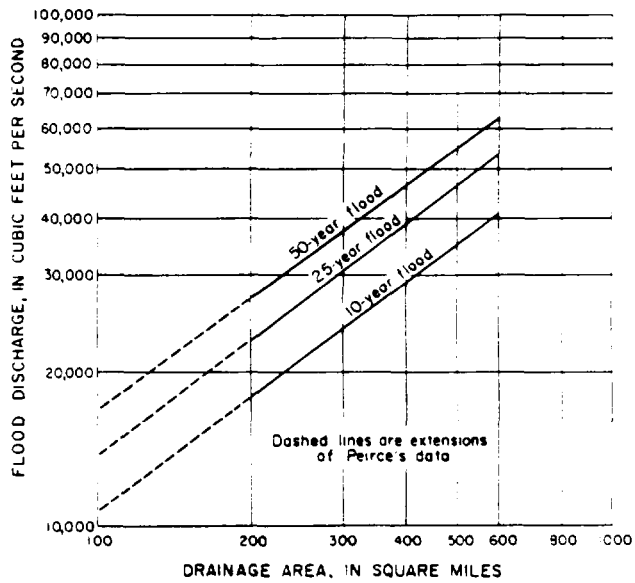


Figure 15.—Magnitude and frequency of floods on tributary streams in southwestern Alabama.

GROUND WATER

General Principles

Occurrence and Storage

Ground water in the Mobile area occurs in strata of Tertiary age and unconsolidated alluvial and terrace deposits, and is used to some extent by almost all the industries. The rural population outside the area served by the cities of Mobile and Prichard is dependent on ground water as a source of supply. Thus, ground water is a valuable and essential natural resource in the Mobile area.

The quantity of water available to wells is dependent on the type of rocks penetrated by a well and the local and regional geology of the water-bearing rocks, as well as on the climate. Therefore, some knowledge of the geology and occurrence of ground water is necessary before the ground-water resources can be appraised.

Rocks that form the outer crust of the earth generally contain many open spaces, called voids or interstices. These open spaces are the receptacles that hold the water found below the surface of the land. Part of this water is recovered through wells and springs. A body of rock that will yield water to wells is defined as an aquifer. The amount of water that can be stored in any rock depends on the volume of the rock that is occupied by open spaces, or the porosity of the rock. The ability of a rock to transmit water under pressure is defined as its permeability. Rocks that will not transmit water are said to be impermeable. Some deposits, such as

well-sorted silt or clay, may have a high porosity, but, because of the minute size of their pores, they transmit water slowly. Other deposits, such as well-sorted gravel, that contain large, freely interconnected openings will transmit water readily.

Ground water in the Mobile area occurs under both water-table and artesian conditions. Under water-table conditions, the ground water is unconfined; under artesian conditions, the water is confined under pressure between relatively impermeable strata. Artesian conditions generally exist in sands of Miocene age, because these sands are confined by layers of clay or shale. The hydrostatic pressure in these aquifers is caused by the weight of water at higher levels in the recharge area. If there were no leakage from the confined aquifer and no frictional resistance to the movement of water in the aquifer, the pressure on the confined aquifer would raise the water level to the same altitude it is in the recharge area; but because such losses in head do occur, the head is always lower down the dip from the recharge area.

The imaginary surface or level to which water will rise from an artesian aquifer is called the piezometric surface. A well fed by an artesian aquifer will flow if the piezometric surface is above the land surface. Both flowing and nonflowing artesian wells are found in the Mobile area. In metropolitan Mobile, water-table conditions generally occur in the alluvium and terrace deposits to a depth of about 150 feet. Wells that tap the permeable water-bearing material of Miocene age to a depth of about 550 feet are nonflowing, and those that penetrate water-bearing material below 550 feet generally flow. Water-table and artesian conditions are illustrated in figure 17.

Movement

Ground water in the unconfined aquifer is derived from local precipitation. Water in the artesian aquifers is from precipitation in areas at a considerable distance to the north, where those aquifers crop out at the land surface. The rate of movement of water through the artesian aquifers from the recharge areas to the points of discharge probably ranges from a fraction of a foot to a few feet per day.

The water table is defined as the upper surface of the zone of saturation, except where that surface is formed by an impermeable body (Meinzer, 1923, p. 32). It may also be regarded as the boundary between the zone of saturation and the zone of aeration. The water table is not a level surface, but is generally sloping, with many irregularities caused by differences in permeability, topography, or by additions to or withdrawals from the ground-water reservoirs.

The water table is not stationary but fluctuates, like the water level in a surface reservoir. If the withdrawal from an aquifer exceeds the recharge or replenishment, the difference is supplied from storage and the water level declines; conversely, if the recharge exceeds withdrawal, the water level rises. Where the water is unconfined, the response to local precipitation is generally reflected in a rise in the water table within a 24-hour period. Water levels rise as a result of recharge during the heavy rains and high streamflow in the spring. During the summer, except for local rises caused by occasional rainstorms, water levels decline because of the increased rate of evapotranspiration and pumping.

Wells that are too closely spaced interfere with one another, resulting in an accelerated decline in water levels and a reduction in the yield of wells. Slight declines in water levels have been noted in Prichard and southwest Mobile (pl. 2). Water levels in the vicinity of well 43 (pl. 2) are reported to have declined about 20 feet since 1937. Water levels in the vicinity of well 65 are reported to have declined about 5 feet since 1950, or at an average rate of about 1 foot per year. Overpumping of shallow wells in the downtown area of Mobile in the vicinity of well 55 (pl. 2) caused a decline in the water table and encroachment of salt water from the Mobile River during the period 1941-45. A reduction in pumping since that time has resulted in a lessening of the encroachment.

Recovery from Wells and Springs

When a well is pumped or allowed to flow, the water table or piezometric surface in the vicinity of the well declines and takes a form similar to that of an inverted cone; this is called the cone of depression. The cones of depression of a water-table well and a flowing and a nonflowing artesian well are shown in figure 17. The area around a well that is affected by the decline in water level resulting from withdrawals is called the area of influence. When a well is pumped, the water level drops rapidly at first and then more slowly, but it may continue to drop for several hours or even for many days. Under artesian conditions, if pumping causes a decline of the piezometric surface below the confining bed, water-table conditions will exist in the vicinity of the pumped well. The greater the pumping rate of a well, the greater the drawdown (difference between static and pumping water levels—fig. 17) and the larger the cone of depression. The rate of discharge of a well per unit of drawdown is the specific capacity of the well. Well 47 (pl. 2 and table 7), for example, yielded 280 gpm with a drawdown of 23 feet; hence, its specific capacity was 12.1 gpm per foot.

The discharge from industrial wells in the area range from 10 to 1,500 gpm and average about 450 gpm. Data on the specific capacities are not complete, but in those wells for which they are known they range from about 6 to 65 gpm per foot of drawdown. The discharge from wells is the amount of water pumped by the industries; it is not necessarily the maximum yield, because discharge from the wells is governed by the quantity of water required by the users. Well 51, for example, has a reported maximum yield of 1,000 gpm, but the regulated discharge is about 550 gpm. Well 1 is pumped at a rate of 650 gpm, but the maximum yield of the well is reported to be about 1,600 gpm. There are no reports of any serious declines in water levels in the industrial area north of Mobile.

Wells in the Mobile area are generally drilled by the rotary method. Test drilling a 5- or 6-inch hole to determine the character and thickness of the water-bearing material and the chemical character of the ground water generally precedes the development of any but a domestic ground-water supply.

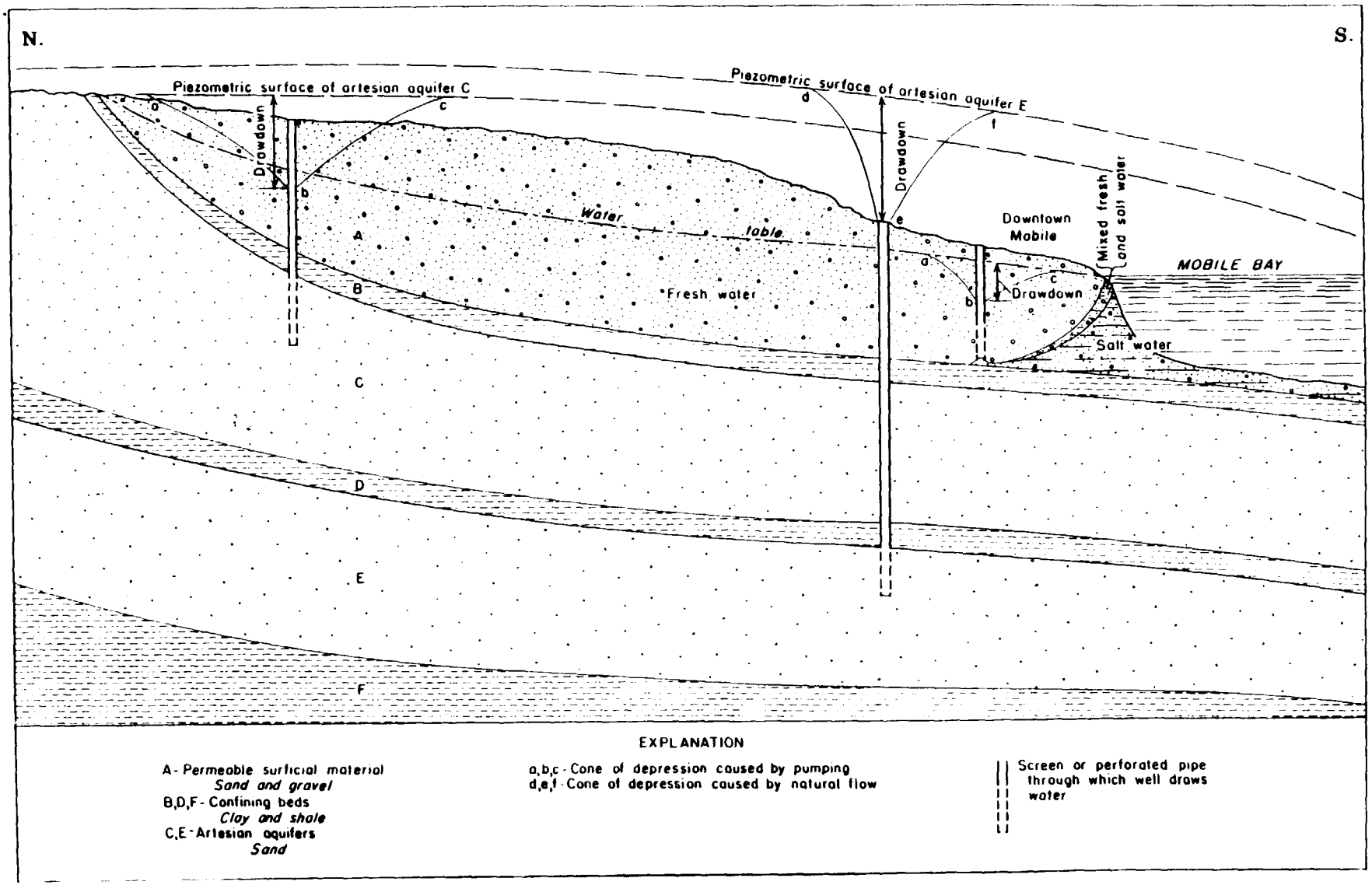


Figure 17.—Generalized diagram showing artesian and water-table conditions in the Mobile area.

Many of the large-capacity wells pump fine sand and silt. Occasionally the wells become filled with sand to the extent of reducing the discharge; these wells then require cleaning to restore their capacity. The screens of wells in the alluvium and terrace deposits become corroded and plugged with iron oxide. As a result, the screens of large-capacity wells require cleaning every 3 or 4 years.

Many small springs and seeps occur in the Mobile area, particularly in draws and along the steep slopes on the Spring Hill-Citronelle ridge. These springs supply small quantities of water for domestic and stock use.

The water from Cherokee Spring (no. 18), east of Citronelle, is highly mineralized (table 7). Smith (1907, p. 304) gives an analysis of the water from Cherokee Spring. The water was bottled and sold for a few years for its reported medicinal qualities. Discharge from Cherokee Spring was estimated to be about 1 gpm.

A spring (no. 8), owned by B. C. Pringle, has a wooden reservoir constructed around the outlet, and the water is pumped from the reservoir to an elevated storage tank. The discharge from this spring was estimated to be 3 gpm.

Water-Bearing Formations

Ground water occurs throughout the Mobile area in the alluvium and Quaternary terrace deposits, the Citronelle formation, and Miocene deposits.

Water in the alluvium, Quaternary terrace deposits, and Citronelle formation is unconfined, and it occurs under water-table conditions except where the water-bearing material may be locally confined by lenses of clay. Water in the Miocene deposits is confined by layers of clay or shale, and it occurs under artesian conditions. The distribution of the water-bearing formations is shown in figure 1.

The chemical quality of the water in the Mobile area varies, particularly in the metropolitan section; in some places it contains large amounts of chloride.

Miocene Deposits, Undifferentiated

Deposits of Miocene age have not been fully penetrated by wells in the area; however, from data on wells in adjacent areas, the thickness is estimated to be about 1,000 feet. The regional dip of the Miocene is to the southwest at the rate of 15 to 25 feet per mile. The deposits of Miocene age are of estuarine origin and consist of sediments ranging in texture from clay and silt to fine gravel. The character of the material composing the upper part of the Miocene is given in the following sample log of a test hole drilled near the intersection of Royal and St. Francis Streets.

	Thickness (feet)	Depth (feet)
Fill	15	15
Alluvium:		
Sand, fine to coarse, subangular; contains some fragments of pink, yellow, and gray clay	3	18
Sand, fine, subangular; contains fragments of pink, yellow, and gray clay	12	30
Sand, fine to medium, subangular, buff to white; contains some coarse sand and mica	18	48
Sand, fine to medium, subangular, buff to white; contains some coarse sand and limonite	6	54
Sand, fine to medium, subangular; contains fragments of gray micaceous clay	7	61
Sand, fine to medium, subangular, white; contains some fine to coarse sand and limonite	7	68
Sand, fine to medium, subangular, buff to white; contains some yellow and pink sand	6	74
Sand, fine to medium, subrounded; contains some coarse sand and fine gravel	6	80
Sand, fine, to gravel, fine; contains some limonite and mica	9	89
Sand, fine to medium, subangular, yellow; contains some clay, limonite, and mica	3	92
Sand, fine to medium, and clay, micaceous, sandy, gray to green	8	100
Clay, sandy, micaceous, gray	8	108
Sand, fine to coarse, yellow and blue; contains fine gravel	18	126
Miocene, undifferentiated:		
Sand, very fine to fine, subangular, gray, tan to white; contains some light-tan clay and mica	2	128
Sand, very fine to fine, subangular, gray, tan to white; contains clay, mica, and carbonaceous material	18	146
Sand, very fine to fine, subangular, gray, tan to white; contains some clay, mica, carbonaceous material, and a trace of glauconitic sand	25	171
Sand, fine	42	213
Clay, sandy	10	223
Sand, fine to medium	8	231
Sand, fine to medium, subangular, buff to white; contains some reddish-brown siderite, limonite and mica	10	241

WATER-RESOURCES INVESTIGATIONS REPORT 88-4080

FLOYD

GEOHYDROLOGY AND SUSCEPTIBILITY OF MAJOR AQUIFERS TO SURFACE CONTAMINATION IN ALABAMA; AREA 13

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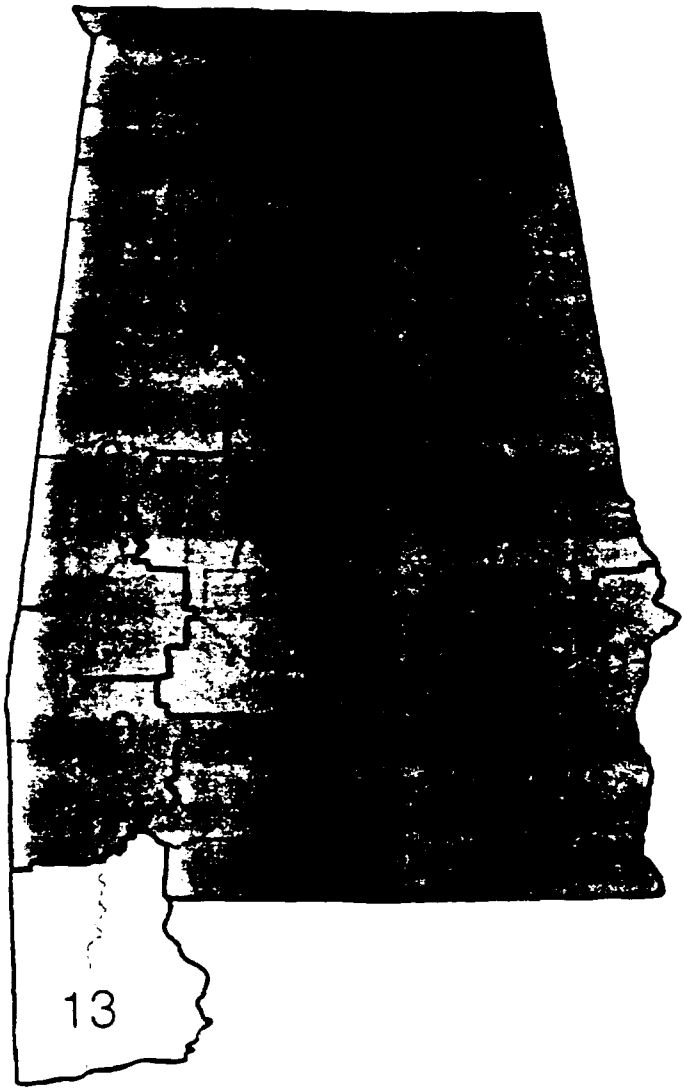

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GEOHYDROLOGY AND SUSCEPTIBILITY OF MAJOR AQUIFERS TO SURFACE CONTAMINATION IN ALABAMA; AREA 13

by Will S. Mooty

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Prepared in cooperation with the

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1988

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GEOHYDROLOGY AND SUSCEPTIBILITY OF MAJOR AQUIFERS TO SURFACE CONTAMINATION IN ALABAMA; AREA 13

By Will S. Mooty

ABSTRACT

The U.S. Geological Survey, in cooperation with the Alabama Department of Environmental Management, is conducting a series of geohydrologic studies to delineate the major aquifers in Alabama and their susceptibility to surface contamination. The geohydrology and susceptibility to surface contamination of the major aquifers in Area 13, which includes Baldwin and Mobile Counties, are described in this report.

The major aquifers in the study area are the Pliocene-Miocene aquifer and the alluvial-coastal aquifer. The Pliocene-Miocene aquifer consists of the Citronelle Formation and the undifferentiated deposits of the Miocene Series. No continuous confining units exist between the Citronelle Formation and the Miocene Series undifferentiated, and as a result, the two units act as a single hydrologic unit. The alluvial-coastal aquifer, which occurs in stream valleys and along the coast, is hydraulically connected to the underlying Pliocene-Miocene aquifer and these two aquifers often respond to stresses as one aquifer.

The entire study area coincides with the recharge area for the two aquifers. The soils throughout most of the study area are highly permeable and allow rapid infiltration of surface water. Consequently, the study area is considered susceptible to surface contamination.

The Prichard-Mobile area is highly susceptible to surface contamination because ground-water withdrawals have created a depression in the potentiometric surface of the aquifers in this area. This depression increases the hydraulic gradient of the potentiometric surface of the ground water and increases flow towards the pumping centers. Other areas highly susceptible to surface contamination are those areas that are very flat and are underlain by permeable sediments that allow the rapid infiltration of surface water.

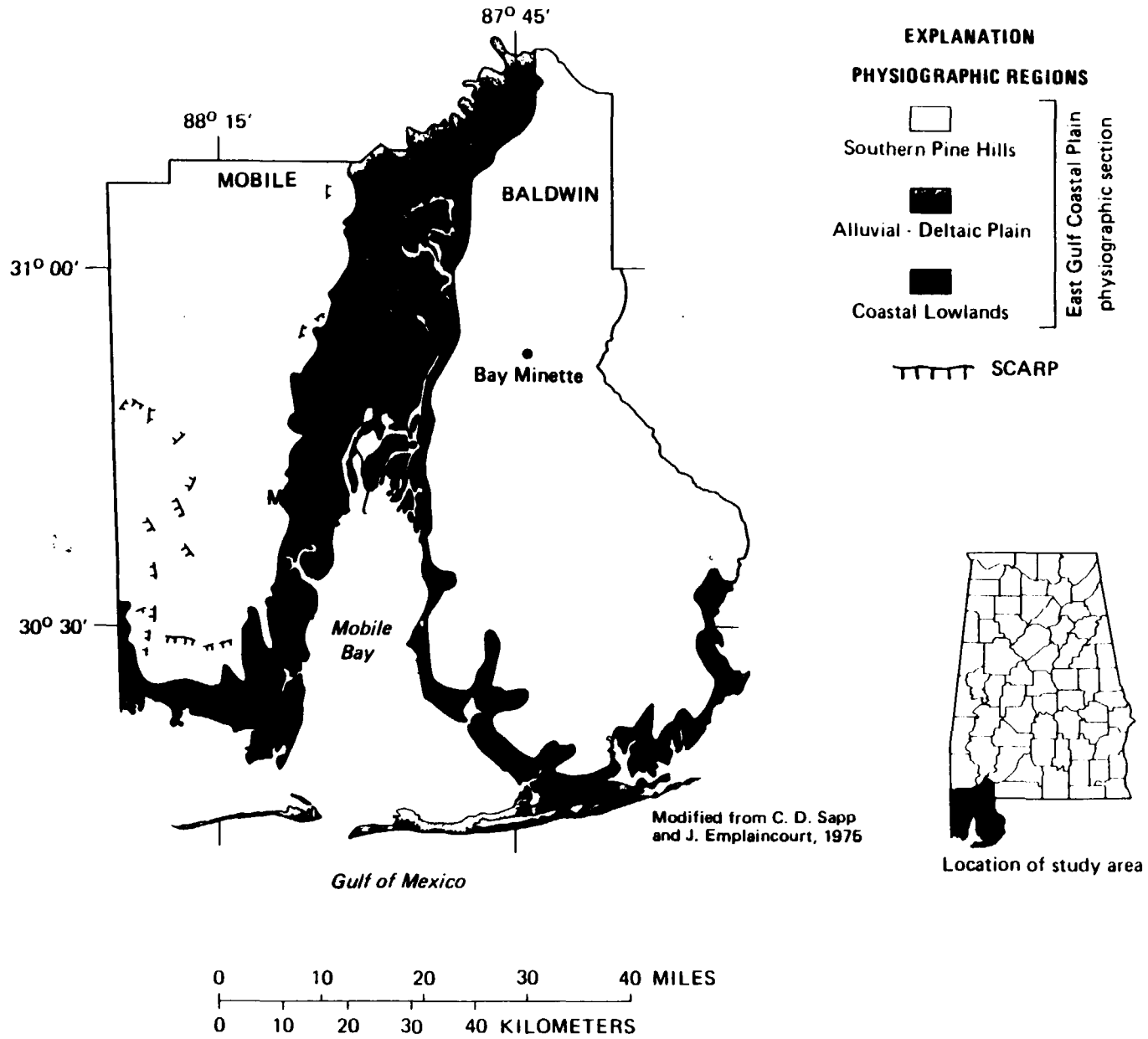

Figure 1.--Physiographic regions of the study area.

GEOHYDROLOGY

Geologic units that crop out in the study area range in age from Tertiary to Quaternary (table 1). The Tertiary age sedimentary deposits are generally unconsolidated. Alluvial and terrace deposits of Quaternary age overlie Tertiary age deposits in and adjacent to the flood plains of the larger streams and rivers, and along the coastal areas of Mobile Bay and the Gulf of Mexico (fig. 2).

Tertiary Deposits

A thick sequence of Tertiary age sediments underlies the study area. The geologic units that are sources of potable ground water are the Miocene Series undifferentiated and the Citronelle Formation.

Miocene Series Undifferentiated

The Miocene Series crops out in central and northern Mobile and Baldwin Counties. The unit ranges in thickness from 100 feet in northern Baldwin County to 3,400 feet in the subsurface in southern Mobile County (Reed, 1971). The Miocene sediments are somewhat wedge-shaped and dip southwestward toward the Gulf of Mexico (fig. 3). The dip of the sediments ranges from about 40 ft/mi (feet per mile) at the base of the series to about 15 ft/mi at the contact with the Citronelle Formation.

The Miocene Series consists of sedimentary deposits of marine and estuarine origin. The sediments consist mainly of laminated to thinly-bedded clays, sands, and sandy clays. The sands range from fine- to coarse-grained and are locally cross bedded. In outcrops, the sands weather to a variety of colors, some distinctly mottled. At some exposures, beds of sand contain gravel and petrified plant fossils, and clays contain carbonized leaf remains.

The Miocene appears to have been deposited in an environment transitional between the estuarine and deltaic deposits west of the study area and the shallow marine deposits east of the study area (Riccio and others, 1973).

Pliocene Series

Citronelle Formation

The Citronelle Formation of Pliocene age overlies the Miocene Series and crops out in central and southern parts of the study area. The formation, which is relatively thin in northern parts of the study area, is about 200 feet thick in the subsurface in the southern part of the study area (fig. 3). The sediments consist of gravelly sands and sandy clays. In many areas, lenses of sandy clay and clayey sand, which range in thickness from 5 to 15 feet, are interbedded with gravelly sand. Sediments along the base of the Citronelle Formation have a high clay content, indicating that they were deposited in an estuarine environment, whereas, overlying sediments were deposited by sediment-laden streams (Isphording and Lamb, 1971).

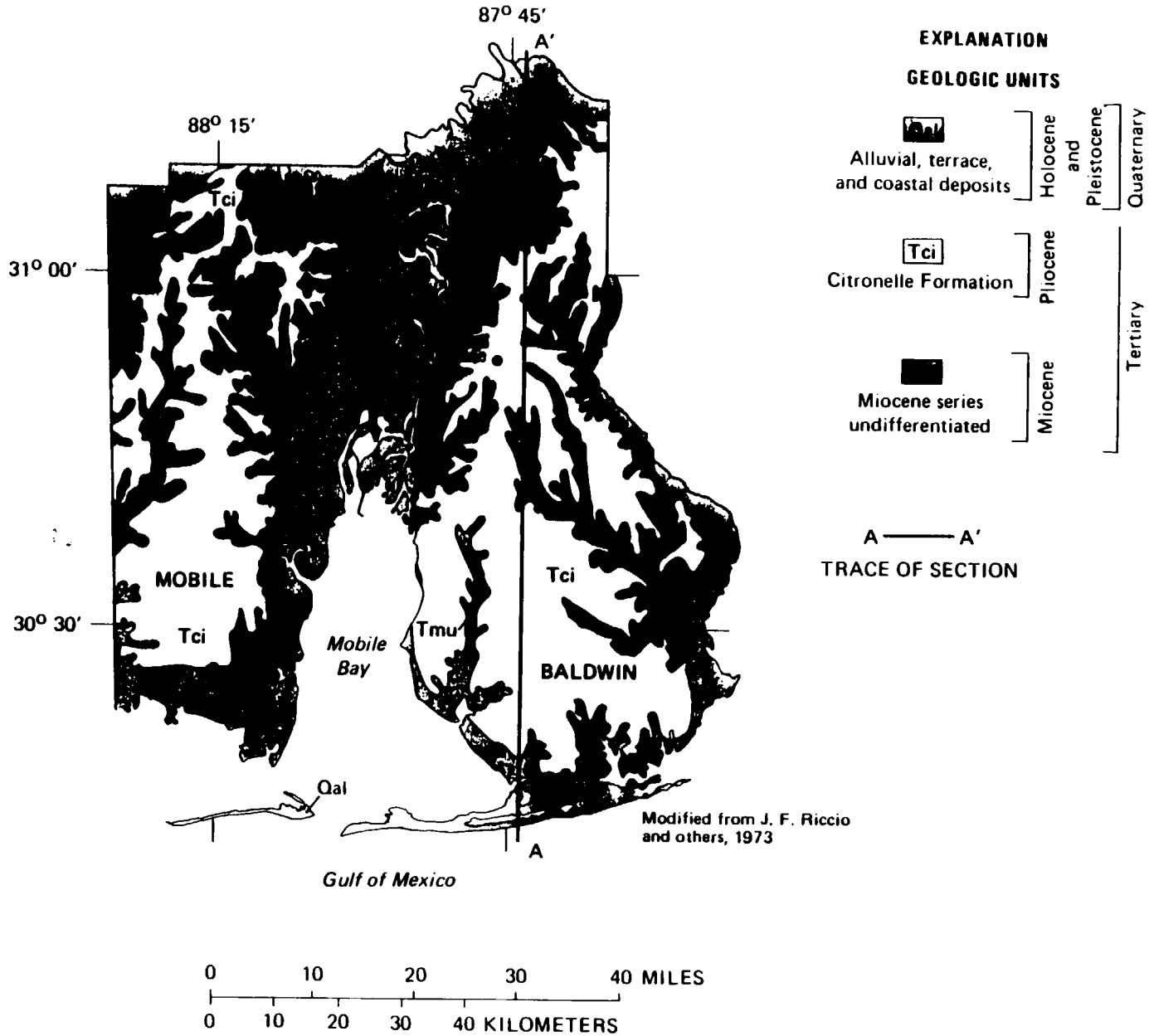

Figure 2.--Generalized geologic map of the study area.

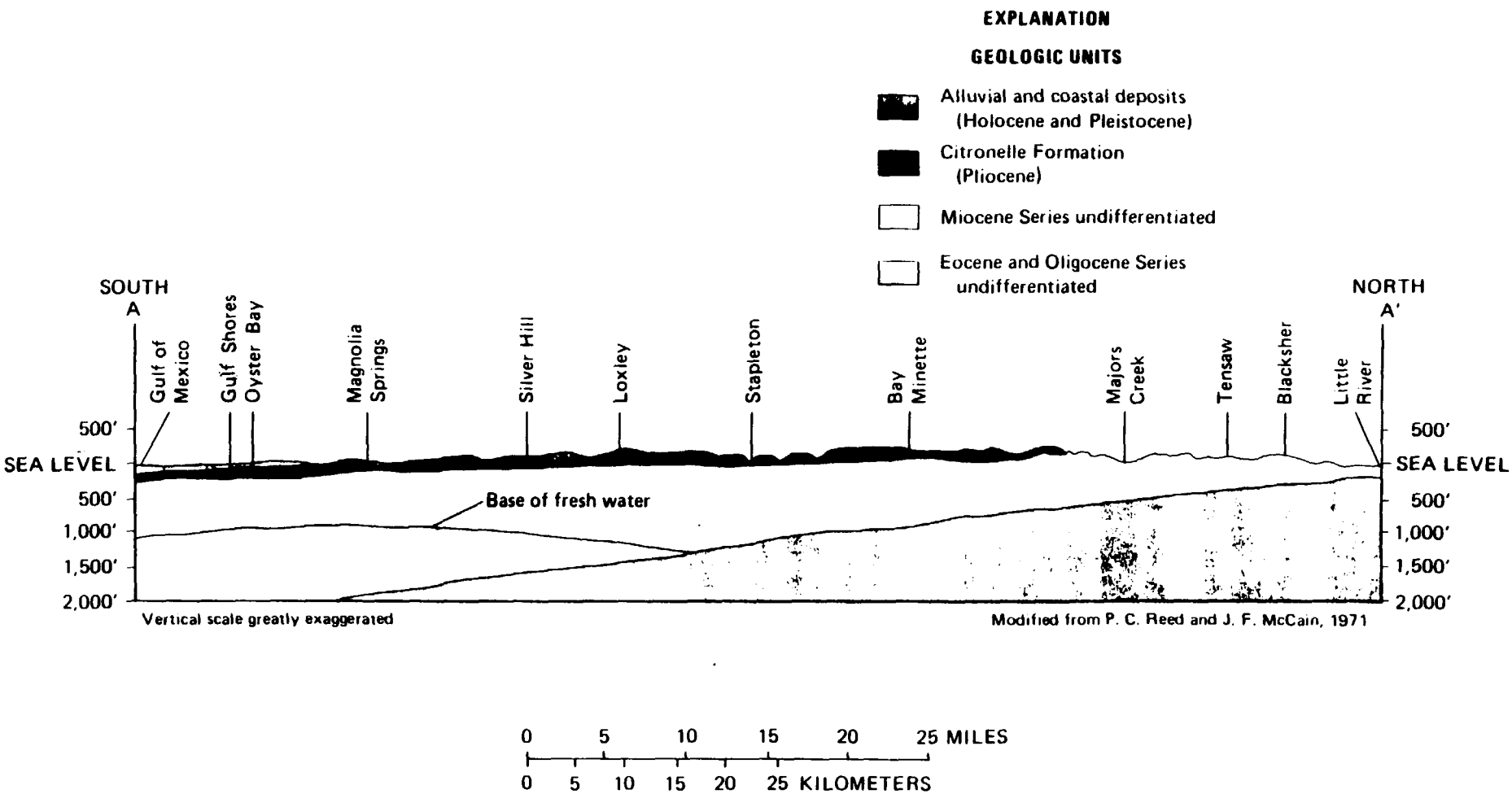

Figure 3.--Generalized geohydrologic section from south to north in Baldwin County (line of section shown on figure 2).

Quaternary Deposits

Pleistocene Series

High terrace deposits

High terrace deposits unconformably overlie Miocene sediments in the northeastern part of Mobile County and in many parts of Baldwin County that are adjacent to the Mobile River flood plain. The terrace deposits range in thickness from 0 to 50 feet with an average thickness ranging from 15 to 30 feet. The altitude of the base of the terrace deposits ranges from 130 to 180 feet above sea level in Mobile County, and from 60 to 210 feet above sea level in Baldwin County. The deposits consist primarily of sandy clay, fine- to coarse-grained sand, and sand containing gravel at some places. These terrace deposits are considered a part of the alluvial-coastal aquifer.

Pleistocene and Holocene Series

Alluvial, low terrace, and coastal deposits

Alluvial, low terrace, and coastal deposits overlie Miocene and Pliocene sediments in many parts of the counties. They represent complex beach, dune, lagoonal, estuarine, and deltaic depositional environments. The deposits consist of very fine- to coarse-grained sand that is gravelly in many exposures. Sandy clay is interbedded with the sand at some exposures. Chandler (1983) estimated the thickness of the alluvial, low terrace, and coastal deposits to range from 0 to 200 feet, based on the first occurrence of coarse siliclastic sediments.

The Quaternary sand and gravel beds represent buried channel deposits. Their width and depth are similar to that of the present river bed sediments. The length of individual sand and gravel beds probably ranges from a few hundred to a few thousand feet. These buried channel deposits are surrounded by silt and clay sediments similar to those being deposited on the present flood plain of the river.

HYDROLOGY OF THE MAJOR AQUIFERS

The major aquifers in the study area are the Pliocene-Miocene and the alluvial-coastal aquifers. Although the alluvial-coastal deposits, the Citronelle Formation (of the Pliocene Series), and the Miocene Series undifferentiated are lithologically different, they are hydraulically connected. These aquifers generally respond to stresses as a single aquifer and are shown as having only one potentiometric surface on plate 1 (Walter, 1976).

Ground water in the Pliocene-Miocene aquifer occurs in beds of sand and gravel which are lenticular in shape and of limited lateral extent. The sand and gravel beds in the Citronelle Formation and those at shallow depths in the Miocene Series undifferentiated are hydraulically connected to land surface; therefore, the aquifer is unconfined. Discontinuous lenses of clay within these deposits retard the vertical movement of water but do not separate the aquifers. At depth clayey sediments in the Miocene Series are semi-confining, which reduces vertical infiltration of water. Thus, the aquifer in deeper portions of the Miocene Series responds to short-term pumpage as a confined aquifer.

Except in northernmost and easternmost parts of the outcrop area, wells properly constructed in the Pliocene-Miocene aquifer yield from 0.5 to 2.0 Mgal/d. A few wells producing over 2 Mgal/d have been developed in Mobile and Baldwin Counties.

The alluvial-coastal aquifer is hydraulically connected to the Pliocene-Miocene aquifer. Properly constructed wells in the alluvial-coastal aquifer have the potential to yield from 0.5 to 1.0 Mgal/d. Most high-yield wells are completed in beds of sand and gravel that originate from coastal deposits and buried river sediments. The buried channels are surrounded by silty and clayey sediments that do not yield significant amounts of water, but do allow slow infiltration of water to the sand and gravel beds. Individual buried channels may be directly connected to the present channels of the Mobile River.

Recharge and Movement of Ground Water

The source of recharge to the aquifers is rainfall, which averages 62 in/yr (inches per year) in the study area (National Oceanic and Atmospheric Administration, 1985). About 28 in/yr of rainfall runs off during and immediately after storms (Reed and McCain, 1971); a small amount of rainfall infiltrates the subsurface as recharge to the aquifers; and the remainder is returned to the atmosphere by evaporation and transpiration of trees and other plants.

The amount of water that infiltrates the soil depends on the saturated hydraulic conductivity and permeability of the soil, the amount of water present in the soil during rainfall, and the slope of the land surface. Infiltration is greater in an area that is flat and underlain by gravel and coarse sand sediments than in an area with a sloping land surface that is underlain by dense clay.

Most recharge to the major aquifers in Mobile and Baldwin Counties occurs within the boundaries of the study area (plate 1), and a small amount is contributed from Miocene outcrop areas to the north. The amount of recharge to aquifers may be estimated from the base (dry-weather) flow of streams which is ground-water discharge. The average baseflow (7-day Q_2) for streams in Area 13 is about 0.601 $(ft^3/s)mi^2$ (cubic feet per second per square mile) of drainage area or about 8.16 in/yr (Bingham, 1982).

Water moves downdip from areas of recharge to areas of natural discharge or areas of ground-water withdrawals, generally perpendicular to the potentiometric contour lines shown on plate 1.

Natural Discharge and Ground-Water Withdrawals

Ground water discharges are primarily to streams, water bodies, and wells. Some of the larger ground-water pumping centers in the study area are the cities of Foley, Robertsdale, Bay Minette, Orange Beach, Gulf Shores, Fairhope, Daphne, and Spanish Fort in Baldwin County; and Grand Bay, Fairview, Dauphin Island, Theodore, Kushla, LeMoyne, Citronelle, Mt. Vernon, Bayou La Batre, Saraland, and St. Elmo in Mobile County (table 2).

In addition to public water supply, substantial quantities of ground water are used for irrigation in Baldwin and Mobile Counties. Mobile County has several chemical and paper factories and other industries that use large quantities of ground water. In 1985 total withdrawals of ground water for all uses in the study area were about 38 Mgal/d (Baker and Mooty, 1987).

Effects of Withdrawals from the Aquifers

Large withdrawals of water from an aquifer often cause a depression in the potentiometric surface of the aquifer. The extent of the depression depends on the amount of water withdrawn and the water-bearing characteristics of the sediments. A large depression exists around the Prichard-Mobile area in Mobile County (plate 1). Most of the ground-water withdrawals in this area are for industrial purposes. Other smaller depressions occur in the vicinity of some industries along the Mobile River in northern Mobile County. The effects of the depressions are localized because of their proximity to the Mobile River which is hydraulically connected to the aquifers in the area. The Mobile River has an average annual discharge of about 70,000 ft^3/s (cubic feet per second), which is more than adequate to recharge the aquifers as withdrawals occur. However, in tidal reaches of the Mobile River, the recharge could introduce saltwater into the aquifer.

Depressions in the potentiometric surface may eventually result in increased pumping costs due to the decline in the water surface and the depths at which some wells must be finished. A depression in the potentiometric surface also creates a steepened gradient in the vicinity of a pumping center and increases the rate of movement of a potential contaminant to points of ground-water withdrawal.

REFERENCE # 21

DEVELOPMENT OF A HYDROLOGIC CONCEPT FOR THE GREATER MOBILE METROPOLITAN-URBAN ENVIRONMENT

GEOLOGICAL SURVEY OF ALABAMA
BULLETIN 106

GEOLOGICAL SURVEY OF ALABAMA

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BULLETIN 106

DEVELOPMENT OF A HYDROLOGIC CONCEPT FOR THE GREATER MOBILE METROPOLITAN-URBAN ENVIRONMENT

By Joseph F. Riccio, J. D. Hardin, and George M. Lamb
with a section on Electrical Resistivity by
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This study was financially supported in part by the Water Resources Research Institute of Auburn University and the Office of Water Resources Research of the Department of the Interior under the Water Resources Research Act of 1964 as amended (Project B-038-ALA).

UNIVERSITY, ALABAMA

1978

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4. Generalized geologic map of Mobile, Baldwin, and Escambia Counties, Alabama.
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MIOCENE SERIES

Sediments of Miocene age in Alabama are believed to rep a transition between the better known estuarine and deltaic de of the Catahoula Sandstone - Hattiesburg Formation - Pasc Formation sequence to the west in Mississippi and the Ha Shoal River sequence of the Florida panhandle to the east. outcrop area north of Mobile and Baldwin Counties, the Mio sediments have been divided into the Paynes Hammock Sand the Catahoula Sandstone. However, these beds thicken and coa more clay to the south so that in the study area differentiation comes impossible, and in southern Mobile and Baldwin Coun subsurface studies indicate the Miocene to be largely clay, some thin layers of sandstone and limestone. The thickness ran from a little over 200 feet in the northern part of the outcrop to more than 3,000 feet in subsurface in the extreme southern of Mobile and Baldwin Counties. The sands and clays that compr the Miocene beds are discontinuous and subject to abrupt later and vertical variation as illustrated by a hydrogeologic secti through Theodore Industrial Complex, central Mobile County (fi 41). Correlation of individual aquifers over large distances is pra tically impossible. In most of the study area interconnection of th sand units occurs so that essentially they form one large aquifer; however, local artesian conditions do exist.

PLIOCENE AND PLEISTOCENE SERIES

CITRONELLE FORMATION

The Citronelle Formation consists of layers and lenses of interbedded sands and clays with occasional beds of gravel. The formation consists largely of sand throughout south Alabama, and is considered part of the principal aquifer described below. The Citronelle sediments were deposited under a combination of fluviatile and estuarine conditions, and they vary both laterally and vertically, and few, if any, marker beds are available for correlation over much distance. The thickness of the Citronelle varies from a very thin mantle to approximately 140 feet, and it occurs as a cap on the interfluve areas throughout south Alabama.

PLEISTOCENE

TERRACE DEPOSITS

ial terrace deposits, remnants of flood plains, occur at levels throughout the area, and generally are comprised of d materials derived from the underlying Citronelle or older ns.

HOLOCENE

ALLUVIUM

thickness of the alluvium ranges from a thin veneer in the p areas of the older geologic units to more than 150 feet near . In general, alluvium consists of beds and lenses of fine to e gravel, fine- to coarse-grained sand, silty sand, silt, sandy soft to stiff clay and carbonaceous material. Bedding is lly lenticular and interfingering of the sediments is common. idual beds usually cannot be correlated over great distances. of the large capacity (50 to 800 gpm) water wells developed e alluvium in the Mobile area produce from the coarser deposits r near the base of the alluvium.

PRINCIPAL AQUIFER

Over most of the study area, sand units of the Citronelle Formation overlie Miocene sand and, in many places, there is no permeability barrier separating them. The interconnection of these sand its causes this entire unit to be considered as one large continuous aquifer.

The aquifer can yield 1 mgd per well and, in many local areas, e yield may be larger. Large-capacity municipal wells that tap is aquifer range in depth from 94 to 800 feet. The wells reportedly re pumped at various rates from 100 to 1,000 gpm and have specific apacities ranging from 5 to 35 gpm per foot of drawdown. Prominent sand units in the lower part of the aquifer are not produced y wells in some areas because of the availability of adequate upplies at shallower depths. The principal aquifer map, plate 5, indicates the maximum elevation below mean sea level of the base of the aquifer from which individual wells should produce 1 mgd.

REFERENCE # 22

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GROUNDWATER

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If a temperature gradient can cause fluid flow as well as heat flow in a porous medium, it should come as no surprise to find that a hydraulic gradient can cause heat flow as well as fluid flow. This mutual interdependency is a reflection of the well-known thermodynamic concept of *coupled flow*. If we set $dh/dl = i_1$ and $dT/dl = i_2$, we can write a pair of equations patterned after Eq. (2.22):

$$v_1 = -L_{11}i_1 - L_{12}i_2 \tag{2.23}$$

$$v_2 = -L_{21}i_1 - L_{22}i_2 \tag{2.24}$$

where v_1 is the specific discharge of *fluid* through the medium and v_2 is the specific discharge of *heat* through the medium. The L's are known as *phenomenological coefficients*. If $L_{12} = 0$ in Eq. (2.23), we are left with Darcy's law of groundwater flow and L_{11} is the hydraulic conductivity. If $L_{21} = 0$ in Eq. (2.24), we are left with Fourier's law of heat flow and L_{22} is the thermal conductivity.

It is possible to write a complete set of coupled equations. The set of equations would have the form of Eq. (2.23) but would involve all the gradients of Eq. (2.21) and perhaps others. The development of the theory of coupled flows in porous media was pioneered by Taylor and Cary (1964). Olsen (1969) has carried out significant experimental research. Bear (1972) provides a more detailed development of the concepts than can be attempted here. The thermodynamic description of the physics of porous media flow is conceptually powerful, but in practice there are very few data on the nature of the off-diagonal coefficients in the matrix of phenomenological coefficients L_{ij}. In this text we will assume that groundwater flow is fully described by Darcy's law [Eq. (2.3)]; that the hydraulic head [Eq. (2.18)], with its elevation and pressure components, is a suitable representation of the total head; and that the hydraulic conductivity is the only important phenomenological coefficient in Eq. (2.21).

2.3 Hydraulic Conductivity and Permeability

As Hubbert (1956) has pointed out, the constant of proportionality in Darcy's law, which has been christened the hydraulic conductivity, is a function not only of the porous medium but also of the fluid. Consider once again the experimental apparatus of Figure 2.1. If Δh and Δl are held constant for two runs using the same sand, but water is the fluid in the first run and molasses in the second, it would come as no surprise to find the specific discharge v much lower in the second run than in the first. In light of such an observation, it would be instructive to search for a parameter that can describe the conductive properties of a porous medium independently from the fluid flowing through it.

To this end experiments have been carried out with ideal porous media consisting of uniform glass beads of diameter d. When various fluids of density ρ and dynamic viscosity μ are run through the apparatus under a constant hydraulic

gradient dh/dl, the following proportionality relationships are observed:

$$v \propto d^2$$

$$v \propto \rho g$$

$$v \propto \frac{1}{\mu}$$

Together with Darcy's original observation that $v \propto -dh/dl$, these three relationships lead to a new version of Darcy's law:

$$v = -\frac{Cd^2\rho g}{\mu}\frac{dh}{dl} \tag{2.25}$$

The parameter C is yet another constant of proportionality. For real soils it must include the influence of other media properties that affect flow, apart from the mean grain diameter: for example, the distribution of grain sizes, the sphericity and roundness of the grains, and the nature of their packing.

Comparison of Eq. (2.25) with the original Darcy equation [Eq. (2.3)] shows that

$$K = \frac{Cd^2\rho g}{\mu} \tag{2.26}$$

In this equation, ρ and μ are functions of the fluid alone and Cd^2 is a function of the medium alone. If we define

$$k = Cd^2 \tag{2.27}$$

then

$$K = \frac{k\rho g}{\mu} \tag{2.28}$$

The parameter k is known as the *specific* or *intrinsic permeability*. If K is always called hydraulic conductivity, it is safe to drop the adjectives and refer to k as simply the permeability. That is the convention that will be followed in this text, but it can lead to some confusion, especially when dealing with older texts and reports where the hydraulic conductivity K is sometimes called the *coefficient of permeability*.

Hubbert (1940) developed Eqs. (2.25) through (2.28) from fundamental principles by considering the relationships between driving and resisting forces on a microscopic scale during flow through porous media. The dimensional considerations inherent in his analysis provided us with the foresight to include the constant g in the proportionality relationship leading to Eq. (2.25). In this way C emerges as a dimensionless constant.

The permeability k is a function only of the medium and has dimensions $[L^2]$. The term is widely used in the petroleum industry, where the existence of gas,

oil, and water in multiphase flow systems makes the use of a fluid-free conductance parameter attractive. When measured in m^2 or cm^2, k is very small, so petroleum engineers have defined the *darcy* as a unit of permeability. If Eq. (2.28) is substituted in Eq. (2.3), Darcy's law becomes

$$v = \frac{-k\rho g}{\mu}\frac{dh}{dl} \tag{2.29}$$

Referring to this equation, 1 darcy is defined as the permeability that will lead to a specific discharge of 1 cm/s for a fluid with a viscosity of 1 cp under a hydraulic gradient that makes the term $\rho g\, dh/dl$ equal to 1 atm/cm. One darcy is approximately equal to 10^{-8} cm^2.

In the water well industry, the unit gal/day/ft^2 is widely used for hydraulic conductivity. Its relevance is clearest when Darcy's law is couched in terms of Eq. (2.4):

$$Q = -K\frac{dh}{dl}A$$

The early definitions provided by the U.S. Geological Survey with regard to this unit differentiate between a laboratory coefficient and a field coefficient. However, a recent updating of these definitions (Lohman, 1972) has discarded this formal differentiation. It is sufficient to note that differences in the temperature of measurement between the field environment and the laboratory environment can influence hydraulic conductivity values through the viscosity term in Eq. (2.28). The effect is usually small, so correction factors are seldom introduced. It still makes good sense to report whether hydraulic conductivity measurements have been carried out in the laboratory or in the field, because the methods of measurement are very different and the interpretations placed on the values may be dependent on the type of measurement. However, this information is of practical rather than conceptual importance.

Table 2.2 indicates the range of values of hydraulic conductivity and permeability in five different systems of units for a wide range of geological materials. The table is based in part on the data summarized in Davis' (1969) review. The primary conclusion that can be drawn from the data is that hydraulic conductivity varies over a very wide range. There are very few physical parameters that take on values over 13 orders of magnitude. In practical terms, this property implies that an order-of-magnitude knowledge of hydraulic conductivity can be very useful. Conversely, the third decimal place in a reported conductivity value probably has little significance.

Table 2.3 provides a set of conversion factors for the various common units of k and K. As an example of its use, note that a k value in cm^2 can be converted to one in ft^2 by multiplying by 1.08×10^{-3}. For the reverse conversion from ft^2 to cm^2, multiply by 9.29×10^2.

Table 2.2 Range of Values of Hydraulic Conductivity and Permeability

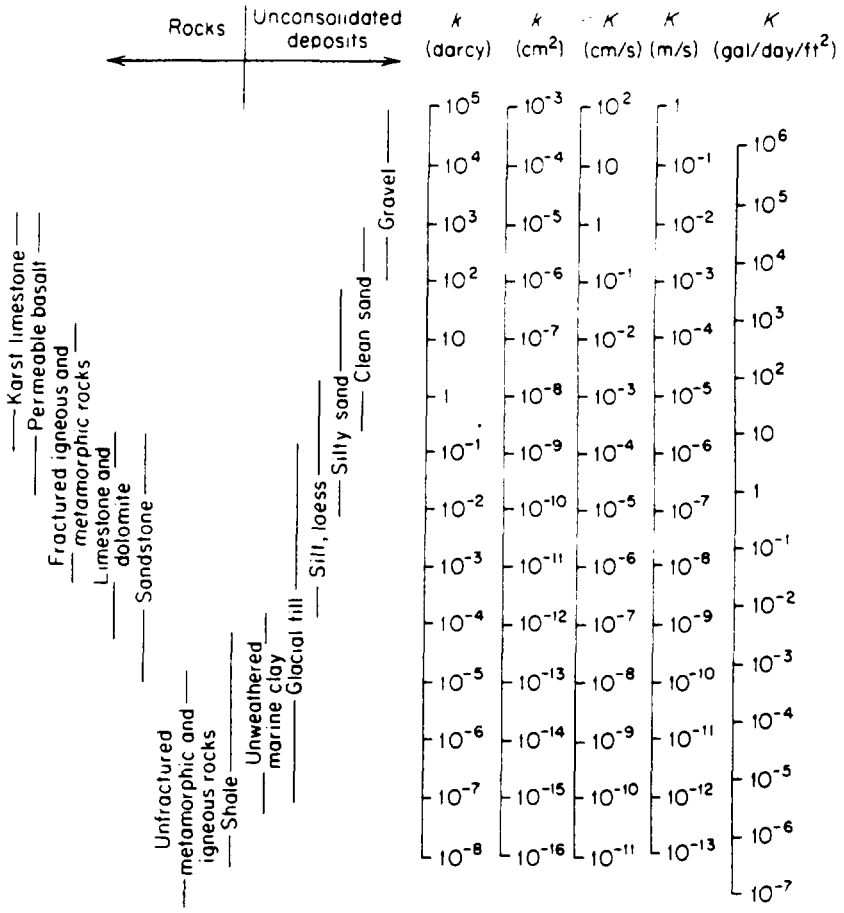

Table 2.3 Conversion Factors for Permeability and Hydraulic Conductivity Units

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

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

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C-586-11-6-32

November 20, 1986

Mr. Richard D. Green
Emergency and Remedial Response Branch
Air and Waste Management Division
Environmental Protection Agency
345 Courtland Street, N.E.
Atlanta, Georgia 30365

Subject: Mobile, Alabama Area
Mobile Lab Site Evaluation
TDD No. ~~F4-8607-01~~ F4-8611-18

Dear Mr. Green:

FIT assisted Mr. Bart Reedy, USEPA, during the week of September 18, 1986 in conducting an assessment of the Mobile, Alabama area as a possible candidate for a future mobile laboratory site. The scope of this survey included meetings with the Alabama Department of Environmental Management (ADEM) and various local agencies. Meetings were also held with representatives of the health departments and sanitation departments for the city of Mobile, and Mobile, Baldwin, Washington, and Clarke counties. As you are aware, the mobile laboratory objective was not met with a great deal of optimism or enthusiasm by ADEM. As a result, no potential site information was obtained from ADEM. The "areas of concern", primarily landfills, identified during this assessment were provided by the local health departments and sanitation departments.

During the survey of the Mobile area it was noted that, once outside of the immediate vicinity of the city of Mobile, the areas become very rural. Most of the industry is located near the city or just north of the city along some of the major highways. As a result, areas of concern were identified only in Mobile county and adjacent Baldwin county. Discussions with representatives in Washington and Clarke counties indicated that there is very little industry in the two counties, and that the few landfills in the counties only receive domestic waste. As part of the evaluation, FIT has compiled a list of the "areas of concern" identified in Mobile and Baldwin counties. Each list provides the site name, brief description, and approximate location. In conjunction with the list, maps have been prepared for Mobile and Baldwin counties, locating the "areas of concern".

To reiterate, ADEM did not provide any assistance in identifying potential sites in the Mobile area. Only "areas of concern", many of which are municipal landfills, were identified through contact with the local health departments and sanitation departments. Therefore, the "areas of concern" presently identified are likely an inaccurate representation of the potential hazardous waste sites that are often characteristic of a highly industrialized port city such as Mobile. The list of "areas of concern" should not be considered as all inclusive. Moreover, with regard to the information collected on the "areas of concern", FIT does not feel that the information is comprehensive enough to generate a list of potential sites as was done with the Pensacola Mobile Laboratory Site Evaluation.

In conjunction with the survey, FIT visited numerous municipal water supply systems in an effort to identify potential target populations. Information concerning municipal water supply systems and associated target populations was obtained for each county. A list of the municipal water supply systems was prepared for Mobile and Baldwin counties. The location of wells for various utilities are shown on the accompanying maps. During the survey, time only permitted for the identification of the larger water supply systems. FIT is aware of numerous smaller private systems that may serve small communities, subdivisions, or trailer parks. Once again, due to time constraints, very little information was obtained on the private systems and thus, these smaller systems are not shown on the accompanying maps.

During the survey, water levels could only be obtained for a small number of domestic and municipal wells scattered throughout Baldwin and Mobile counties (Source: Groundwater Levels in Alabama - 1985 Water Year, Circular 112E, James D. Moore and et al., Alabama Geological Survey). As a result, a groundwater contour map of the area could not be prepared. Instead, the depths to groundwater obtained were plotted on the accompanying maps to provide some idea as to the varying depths to groundwater which may be expected in the counties. In general, groundwater occurs between 5 and 10 feet along the coastal areas or large freshwater bodies and increases in depth toward inland areas. As shown on the Mobile county map, the depth to groundwater in a well near Citronelle was recorded at a depth of 270 feet bls. This is the maximum depth observed among the wells in the two counties. Most of the groundwater depths range between 30 and 130 feet bls.

In summary, the results of this evaluation should not be the sole determining factor in selecting the Mobile, Alabama area as a future mobile laboratory site. FIT believes that the information collected is not indicative of the "areas of concern" or potential sites actually in the Mobile area. Additional information should be obtained from ADEM prior to conducting a final assessment of the Mobile area.

If you have any questions concerning this evaluation, or if I can be of further assistance, please contact me at NUS Corporation.

Very truly yours,

Bradley A. Jackson
Environmental Scientist

Approval

BAJ/gwn

Enclosures (6)

cc: Bob Jourdan
Bart Reedy

60

40

AREAS OF CONCERN IDENTIFIED IN MOBILE COUNTY, ALABAMA

Map No.	Name/Description	Approximate Location
1	Irvington Landfill - County owned; closed Sept. 1982; received rayon waste from Courtaulds and other putrescible, commercial, and industrial wastes; 80 acres; located near 1/2 mile road	T6S R2W S08
2	Kushla Landfill - closed in 1980; received rayon waste from Courtaulds; located near Kushla-McLeod Road	Exact location undetermined
3	Alabama Port Landfill - inactive; located near the intersection of State Route 188 and Dauphin Island Parkway	Exact location undetermined
4	Deakle Road Landfill - inactive; located in Bayou la Batre	Exact location undetermined
5	Hickory Street Landfill - inactive; open dump operated and permitted by City of Mobile since 1970; located on Davis Avenue in Mobile; accepted any type of waste without restrictions including electroplating sludges, solvents, organic and inorganic chemicals, heavy metals, cyanide, and reactive sulfide wastes	T4S R1W
6	Prichard Landfill - located on Conception Street in Prichard	Exact location undetermined
7	Shelton Beach Road Landfill - inactive; located in Prichard	Exact location undetermined
8	City of Mobile Airport Landfill - State and County permitted; city owned; opened in early 1970's; received variety of waste in earlier years; now just receives trash; located just west of Bates Field at dead end of Flave Pierce Road	T4S R3W S14
9	Bucks Landfill - County permitted; city owned; opened in 1976; still active; receives putrescible wastes; located on Hwy. 43 in Bucks	Exact location undetermined
10	Dirt Inc. Pit #1 - State permitted; owned by Lamar Harrison; began operating 1978; still active; receives non-putrescible industrial and commercial wastes; located off I-10 service road and Theodore Dawes Road	Exact location undetermined
11	Dirt Inc. Pit #4 - State permitted; owned by Lamar Harrison; began operating 1982; still active; receives 50,000 to 60,000 cubic yards/ month putrescible wastes; open to public; received drilling mud from Sanders Engineering; located off Cottage Hill Road and Leroy Stevens Road	T5S R3W S12

AREAS OF CONCERN IDENTIFIED IN
MOBILE COUNTY, ALABAMA
PAGE TWO

Map No.	Name/Description	Approximate Location
12	Lott Road Landfill - permitted by State and City of Prichard; owned by Mr. Jackson; wastes include: trash from general public, industries, and businesses, paper mill sludge from Scott and International, fly ash from Scott's cogeneration plant, drilling mud	T3S R2W S21
13	W.D. Brunson Landfill - permitted by State and City of Prichard; privately owned by W.D. Brunson; hauls demolition debris, vegetative trash, lime waste from Union Carbide, located on Jarrett Road in Prichard	T3S R2W S21
14	Brownlee Pit - permitted by State and City of Prichard; privately owned; began operating in 1985; receives demolition and vegetative wastes from the general public and hauled in by the owner; located on Henry Road in Prichard	T3S R2W S16
15	City of Prichard Landfill - permitted by State and City of Prichard; privately owned; receives only trash; located on Bellcase Road in Prichard	T3S R2W S23
16	Chunchula Landfill - State permitted; County operated; began operating in 1980; still active; wastes include putrescibles, industrial trash and drilling mud; problem with volatiles in monitoring well; no longer accepts liquids	T1S R3W S15
17	Alabama Power Company - company owned; not open to public; regulated by ADEM and Mobile County; wastes include industrial trash and fly ash; located at the Barry Stream Plant in Bucks	T1S R1E S05
18	Roberts Road Landfill - owned by James Phillips; leachate and erosion problem observed by County in 1985; now closed; received rayon waste from Courtaulds and other industrial waste; located north of Roberts Road between Chunchula and Turnerville	R2W T1S S28

AREAS OF CONCERN IDENTIFIED IN
MOBILE COUNTY, ALABAMA
PAGE THREE

Map No.	Name/Description	Approximate Location
19	Whites Pit - State permitted; now closed; owned by two attorneys; Tommy Marrow and Maurey Freilander; operated by Mr. Brownlee; problem with lack of vegetation and erosion; received non-putrescible wastes from Alabama Waste (SCA), Shell Chemical, Virginia Chemical, and Courtaulds; located on Celeste Road, 4 miles north of Turnerville	Exact location undetermined
20	M.C. Williams Contractor Landfill - not permitted; privately owned dirt pit; wastes include trash hauled by the owner and tree trimmings; located on Old Government Street off Schillinger Road	Exact location undetermined
21	John Maples Hauling Company Landfill - not permitted; privately owned; wastes include trash; located on Airport Boulevard one mile west of Airport	Exact location undetermined
22	J.S. Walton Construction Company, Site #1 - not permitted; privately owned; wastes include trash hauled by the owner; located on Howells Ferry Road	Approximate location undetermined (Not shown on map)
23	J.S. Walton Cosntruction Company, Site #2 - not permitted; privately owned; wastes include trash hauled by the owner; located on Todd Acres Road	Approximate location undetermined (Not shown on map)
24	City of Citronelle Landfill - State permitted; trashfill; located on Celeste Road in Citronelle	Exact location undetermined
25	City of Saraland Landfill - State and County permitted; receives trash and putrescible wastes from Saraland and Satsuma; located on Celeste Road	T2S R2W S25
26	City of Mobile Landfill - State and County permitted; receives putrescible wastes from the City of Mobile	T1N R1W S13

AREAS OF CONCERN IDENTIFIED IN
MOBILE COUNTY, ALABAMA
PAGE FOUR

Map No.	Name/Description	Approximate Location
	The following facilities are located in Theodore Industrial Park	
27	Kerr McGee - manufactures pigments and paint intermediates; discharges iron oxide, containing low level radiation, into open pit onsite; pit recently had leakage problem; located on Rangeline Road	Exact location undetermined
28	Degussa of Alabama - manufactures fertilizers, foodstuffs, filament for toothpaste; uses cyanide and chloride; discharges waste into two ponds which are pumped into a State-owned spoil area, then into the canal and then into Mobile Bay; located on Rangeline Road	Exact location undetermined
29	Kayfries - subsidiary of Degussa; located off Rangeline Road	Approximate location undetermined (Not shown on map)
30	Marion Oil - closed; located on Hamilton Boulevard	Approximate location undetermined (Not shown on map)
31	Ideal Cement - located on Hamilton Boulevard	Approximate location undetermined (Not shown on map)
32	Air Products - located on Hamilton Boulevard	Approximate location undetermined (Not shown on map)
33	Barnett Mill Works - located on Hamilton Boulevard	Approximate location undetermined (Not shown on map)
34	Autlan Manganese - located on Hamilton Boulevard	Approximate location undetermined (Not shown on map)

AREAS OF CONCERN IDENTIFIED IN
MOBILE COUNTY, ALABAMA
PAGE FIVE

Map No.	Name/Description	Approximate Location
	The following facilities are located along "Chemical Row" (hwy. 43) in Mobile County	
35	Scott	Approximate location undetermined (Not shown on map)
36	Union Carbide - operates a trashfill for their own waste; located near the city limits of Mobile and Chickasaw	T3S R1W S22
37	Shell Chemical	Approximate location undetermined (Not shown on map)
38	Virginia Chemical	Approximate location undetermined (Not shown on map)
39	M & T	Approximate location undetermined (Not shown on map)
40	International Paper - State and County permitted; company owned; not yet operating; offsite disposal area for sludges from IP's plant; includes ponds, pits, leachate control system, and filtering system; located off Hwy 45 near Silver Creek	Approximate location undetermined (Not shown on map)
41	Courtaulds, Inc. - State and County permitted; company owned and operated; wastes include industrial trash and flammable/explosive solid rayon waste; located in Creola	T1S R1E S18
42	Cold Creek	Approximate location undetermined (Not shown on map)
43	Stauffer Chemical	Approximate location undetermined (Not shown on map)

Mobile County, Alabama Water Systems

Map Location	Utility	Approximate Population Served
1	Saraland Water System, Well #1	15,000
2	Saraland Water System, Well #2	
3	Saraland Water System, Well #3	
4	Saraland Water System, Well #4	
5	Saraland Water System, Well #5	
6	Satsuma Water System, Well #1	4,000
7	Satsuma Water System, Well #2	
8	Satsuma Water System, Well #3	
9	Mobile County Water & Fire Protection Authority, well	6,200
10	Mobile County Water & Fire Protection Authority, well	
11	Mobile County Water & Fire Protection Authority, well	
12	Mobile County Water & Fire Protection Authority, well	
13	Mobile County Water & Fire Protection Authority, well	
14	City of Mobile Water Service - Surface Water Intake	220,000
15	Prichard Water Works & Sewer Board - Surface Water Intake	60,000

AREAS OF CONCERN IDENTIFIED IN BALDWIN COUNTY, ALABAMA

Map No.	Name/Description	Location
1	Uniroyal - Nitrophenol contamination from manufacture of pesticide intermediates by the former occupant, Alpine Chemical. Contamination occurred between 1975-1976. Domestic well contaminated in 1981-82.	T2S R2E S22
2	Baldwin Pole and Piling - RCRA TSD Wood preserving facility in the process of closing under RCRA.	T2S R3E S10
3	Perdido Groundwater Contaminaiton - Contamination from train derailment. Current NPL site.	T7S R4E S36
4	Tensaco Fertilizer Company - Disposed of sulfuric acid into onsite pond. Low grade sulfuric acid was obtained from Alpine Chemical. Tree kill around pond has been documented.	T2S R2E S08
5	Walker Industrial Plastics - Foley, Alabama, waste type unknown.	Location undetermined.
6	Reichold Chemicals - Onsite settling ponds, treated waste discharged to city sewer system.	T2S R3E S10
7	Crosby Lumber Company - Wood preserver that uses the wolmanizing method.	T2S R3E S11
8	Elberton Area Pesticide Dump - Farmer created a several acre dump site for empty pesticide containers through years of personal use. ADEM reportedly conducted an emergency removal.	Location undetermined.
9	Spanish Fort - Received dredge material from a canal.	T4S R2E S32
10	8-mile Landfill - Received papermill sludge.	(Mobile County)
11	Fort Morganson Road Wastewater Treatment Plant - Treatment system is being bypassed allowing septic to percolate into the ground.	T9S R3E S14

AREAS OF CONCERN IDENTIFIED IN
BALDWIN COUNTY, ALABAMA
PAGE 2

Map No.	Name/Description	Location
12	Kaiser Farms - Stores low grade liquid nitrogen that is a byproduct from the production of acetylene.	T6S R5E S11
13	Joel Clark - Aerial applicator of pesticides, flies out of Bay Minette Airport.	T2S R3E S18
14	Bonner and Robertsdale - Aerial applicator of pesticides.	T6S R4E S03
15	Gulf Flying Services - Aerial applicator of pesticides, owner Sam Steine.	T7S R3E S25
16	Foley, City Landfill - Domestic waste, current methane problem.	Location undetermined.
17	Fairhope, City Landfill - Domestic waste, landfill closed.	T6S R2E S20
18	Bay Minette, City Landfill - Domestic waste.	T1S R3E S31
19	Redhill, County Landfill - Active domestic waste landfill, monitoring wells onsite. FIT 1985 Sampling Investigation.	T2S R2E S12
20	Magnolia, County Landfill - Active domestic waste landfill.	T7S R3E S09
21	Airport County Landfill - Domestic waste landfill closed. FIT 1985 Sampling Investigation.	T2S R3E S18

MUNICIPAL WELLS IDENTIFIED IN THE SHALLOW AQUIFER SYSTEM BALDWIN COUNTY, FLORIDA

Map No.	Utility	Population Served (People)
1	Bay Minette Water Utilities Board, well #1	15,000
2	Bay Minette Water Utilities Board, well #2	
3	Bay Minette Water Utilities Board, well #3	
4	Bay Minette Water Utilities Board, well #4	
5	Bay Minette Water Utilities Board, well #5	
6	Fairhope Water System, Well #1	14,000
7	Fairhope Water System, Well #2	
8	Fairhope Water System, Well #3	
9	Fairhope Water System, Well #4	
10	Riviera Utilities, Well #7	6,500
11	Riviera Utilities, Well #8	
12	Riviera Utilities, Well #9	
13	Alabama Gulf Utilities, Well #1	7,000
14	Alabama Gulf Utilities, Well #2	
15	Alabama Gulf Utilities, Well #3	
16	Alabama Gulf Utilities, Well #4	
17	Alabama Gulf Utilities, Well #6	
18	Alabama Gulf Utilities, Well #7	

2350

SITE INTERNATIONAL PAPER CO (FIT) AL

RPM/OSC ROGER FRANKLIN (NUS)

PROJECT # 90-436

SHIPWEEK 06/30/90

SOILVOA BOOKED	16	DATA RECEIVED	06/12/90	FOR	10	SAMPLES
H2OVOA BOOKED	6	DATA RECEIVED	/ /	FOR	0	SAMPLES
SOILEXT BOOKED	16	DATA RECEIVED	06/12/90	FOR	10	SAMPLES
H2OEXT BOOKED	6	DATA RECEIVED	/ /	FOR	0	SAMPLES
SOILPEST BOOKED	16	DATA RECEIVED	06/12/90	FOR	10	SAMPLES
H2OPEST BOOKED	6	DATA RECEIVED	/ /	FOR	0	SAMPLES
SOILMET BOOKED	16	DATA RECEIVED	06/20/90	FOR	10	SAMPLES
H2OMET BOOKED	6	DATA RECEIVED	/ /	FOR	0	SAMPLES
SOILCN BOOKED	16	DATA RECEIVED	06/20/90	FOR	10	SAMPLES
H2OCN BOOKED	6	DATA RECEIVED	/ /	FOR	0	SAMPLES
SOILOTH1 BOOKED	0	DATA RECEIVED	/ /	FOR	0	SAMPLES
SOILOTH2 BOOKED	0	DATA RECEIVED	/ /	FOR	0	SAMPLES
H2OOTH1 BOOKED	0	DATA RECEIVED	/ /	FOR	0	SAMPLES
H2OOTH2 BOOKED	0	DATA RECEIVED	/ /	FOR	0	SAMPLES
OTHER1 BOOKED	0	DATA RECEIVED	/ /	FOR	0	SAMPLES
OTHER2 BOOKED	0	DATA RECEIVED	/ /	FOR	0	SAMPLES

OV REQUESTED? F

LAB(CLP/ESD) CLP

SISB/SAS
RECEIVED
JUN 21 1990
EPA - REGION IV
ATLANTA, GA.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV
COLLEGE STATION RD.
ATHENS, GA. 30613

SISB/SAS
RECEIVED
JUN 21 1990
EPA - REGION IV
ATLANTA, GA

*****MEMORANDUM******

DATE: 06/08/90

SUBJECT: Results of Metals Analysis;
90-436 INTERNATIONAL PAPER
MOBILE AL
CASE NO: 14000

FROM: Robert W. Knight
Chief, Laboratory Evaluation/Quality Assurance Section

TO: PHIL BLACKWELL

Attached are the results of analysis of samples collected as part of the subject project.

If you have any questions please contact me.

ATTACHMENT

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

METALS DATA REPORT 06/07/90

PROJECT NO. 90-436 SAMPLE NO. 45709 SAMPLE TYPE:
SOURCE:
STATION ID: SS-01
CASE NUMBER: 14000 SAS NUMBER:

PROG ELEM: NSF COLLECTED BY: L CONWAY
CITY: MOBILE ST: AL
COLLECTION START: 05/02/90 0945 STOP: 00/00/00
MD NUMBER: T190

MG/KG	ANALYTICAL RESULTS	MG/KG	ANALYTICAL RESULTS
8300	ALUMINUM	160	MANGANESE
8UJ	ANTIMONY	.11U	MERCURY
2UJ	ARSENIC	6.2U	NICKEL
16	BARIUM	130U	POTASSIUM
.23U	BERYLLIUM	.46UR	SELENIUM
.92U	CADMIUM	.69UR	SILVER
7000	CALCIUM	30U	SODIUM
6.2	CHROMIUM	.46U	THALLIUM
1.8U	COBALT	NA	TIN
2U	COPPER	13	VANADIUM
5400	IRON	7.9	ZINC
.23UR	LEAD	13	PERCENT MOISTURE
190	MAGNESIUM		

REMARKS ***REMARKS***

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*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 QUANTITATION LIMIT.
*R-QC INDICATES THAT DATA UNUSABLE. COMPOUND MAY OR MAY NOT BE PRESENT. RESAMPLING AND REANALYSIS IS NECESSARY FOR VERIFICATION.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

METALS DATA REPORT 06/07/90

PROJECT NO. 90-436 SAMPLE NO. 45710 SAMPLE TYPE: SOIL PROG ELEM: NSF COLLECTED BY: L CONWAY
SOURCE: INTERNATIONAL PAPER CITY: MOBILE ST: AL
STATION ID: SB-01 COLLECTION START: 05/02/90 1000 STOP: 00/00/00
CASE NUMBER: 14000 SAS NUMBER: MD NUMBER: T191

MG/KG	ANALYTICAL RESULTS	MG/KG	ANALYTICAL RESULTS
24000	ALUMINUM	10	MANGANESE
8UJ	ANTIMONY	.12U	MERCURY
6.7J	ARSENIC	8U	NICKEL
28	BARIUM	450	POTASSIUM
.25U	BERYLLIUM	1.5J	SELENIUM
1U	CADMIUM	.75UR	SILVER
440	CALCIUM	60	SODIUM
43	CHROMIUM	2U	THALLIUM
5.7	COBALT	NA	TIN
7U	COPPER	65	VANADIUM
40000	IRON	21	ZINC
20UJ	LEAD	20	PERCENT MOISTURE
590	MAGNESIUM		

REMARKS ***REMARKS***

FOOTNOTES
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

06/07/90

METALS DATA REPORT

** PROJECT NO. 90-436 SAMPLE NO. 45711 SAMPLE TYPE: SOIL PROG ELEM: NSF COLLECTED BY: L CONWAY **
** SOURCE: INTERNATIONAL PAPER CITY: MOBILE ST: AL **
** STATION ID: SS-02 COLLECTION START: 05/02/90 1040 STOP: 00/00/00 **
** CASE NUMBER: 14000 SAS NUMBER: MD NUMBER: T192 **

MG/KG	ANALYTICAL RESULTS	MG/KG	ANALYTICAL RESULTS
12000	ALUMINUM	120	MANGANESE
7UJ	ANTIMONY	.11U	MERCURY
3.4J	ARSENIC	7	NICKEL
53	BARIUM	390	POTASSIUM
.22U	BERYLLIUM	1UJ	SELENIUM
.89U	CADMIUM	.67UR	SILVER
20000	CALCIUM	280	SODIUM
24	CHROMIUM	.45U	THALLIUM
3.7	COBALT	NA	TIN
20U	COPPER	26	VANADIUM
12000	IRON	41	ZINC
20UJ	LEAD	10	PERCENT MOISTURE
700	MAGNESIUM		

REMARKS

REMARKS

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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

06/07/90

METALS DATA REPORT

PROJECT NO. 90-436 SAMPLE NO. 45712 SAMPLE TYPE: SOIL PROG ELEM: NSF COLLECTED BY: L CONWAY
SOURCE: INTERNATIONAL PAPER CITY: MOBILE ST: AL
STATION ID: SD-01 COLLECTION START: 05/02/90 1115 STOP: 00/00/00
CASE NUMBER: 14000 SAS NUMBER: MD NUMBER: T200

MG/KG	ANALYTICAL RESULTS	MG/KG	ANALYTICAL RESULTS
20000	ALUMINUM	980	MANGANESE
20UR	ANTIMONY	.23U	MERCURY
6.9J	ARSENIC	20U	NICKEL
120	BARIUM	460	POTASSIUM
.47U	BERYLLIUM	2UJ	SELENIUM
1.9U	CADMIUM	1.4UR	SILVER
62000	CALCIUM	1000	SODIUM
59	CHROMIUM	.94U	THALLIUM
7.8	COBALT	NA	TIN
41	COPPER	66	VANADIUM
27000	IRON	1500	ZINC
40UJ	LEAD	57	PERCENT MOISTURE
1400	MAGNESIUM		

REMARKS ***REMARKS***

FOOTNOTES
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

METALS DATA REPORT 06/07/90

** SOURCE: INTERNATIONAL PAPERE NO. 45713 SAMPLE TYPE: SOIL CITY:EMOBILESF COLLECTED BST:LALONWAY **
** STATION ID: SB-02 COLLECTION START: 05/02/90 1230 STOP: 00/00/00 **
** CASE NUMBER: 14000 SAS NUMBER: MD NUMBER: T208 **

MG/KG	ANALYTICAL RESULTS	MG/KG	ANALYTICAL RESULTS
12000	ALUMINUM	280	MANGANESE
8UJ	ANTIMONY	1.5	MERCURY
3.6J	ARSENIC	17	NICKEL
120	BARIUM	670	POTASSIUM
1U	BERYLLIUM	1UJ	SELENIUM
1U	CADMIUM	.77UR	SILVER
89000	CALCIUM	540	SODIUM
33	CHROMIUM	.51U	THALLIUM
5.8	COBALT	NA	TIN
63	COPPER	28	VANADIUM
28000	IRON	180	ZINC
180	LEAD	22	PERCENT MOISTURE
1300	MAGNESIUM		

REMARKS ***REMARKS***

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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

METALS DATA REPORT 06/07/90

PROJECT NO. 90-436 SAMPLE NO. 45714 SAMPLE TYPE: SOIL
SOURCE: INTERNATIONAL PAPER
STATION ID: SD-02
CASE NUMBER: 14000 SAS NUMBER:

PROG ELEM: NSF COLLECTED BY: L CONWAY
CITY: MOBILE ST: AL
COLLECTION START: 05/02/90 1250 STOP: 00/00/00
MD NUMBER: T201

MG/KG	ANALYTICAL RESULTS	MG/KG	ANALYTICAL RESULTS
4500	ALUMINUM	400	MANGANESE
20UJ	ANTIMONY	.18U	MERCURY
3UJ	ARSENIC	10U	NICKEL
120	BARIUM	450	POTASSIUM
.37U	BERYLLIUM	1UJ	SELENIUM
1.5U	CADMIUM	1.1UR	SILVER
62000	CALCIUM	730	SODIUM
43	CHROMIUM	.74U	THALLIUM
3U	COBALT	NA	TIN
6U	COPPER	28	VANADIUM
11000	IRON	54	ZINC
4UJ	LEAD	46	PERCENT MOISTURE
1100	MAGNESIUM		

REMARKS ***REMARKS***

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*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 QUANTITATION LIMIT.
*R-QC INDICATES THAT DATA UNUSABLE. COMPOUND MAY OR MAY NOT BE PRESENT. RESAMPLING AND REANALYSIS IS NECESSARY FOR VERIFICATION.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

METALS DATA REPORT 06/07/90

PROJECT NO. 90-436 SAMPLE NO. 45715 SAMPLE TYPE: SOIL
SOURCE: INTERNATIONAL PAPER
STATION ID: SD-03
CASE NUMBER: 14000 SAS NUMBER:

PROG ELEM: NSF COLLECTED BY: L CONWAY
CITY: MOBILE ST: AL
COLLECTION START: 05/02/90 1330 STOP: 00/00/00
MD NUMBER: T202

MG/KG	ANALYTICAL RESULTS	MG/KG	ANALYTICAL RESULTS
16000	ALUMINUM	140	MANGANESE
15UR	ANTIMONY	77	MERCURY
5.9J	ARSENIC	20U	NICKEL
83	BARIUM	1100	POTASSIUM
1U	BERYLLIUM	1.2UR	SELENIUM
2.3U	CADMIUM	1.7UR	SILVER
2700	CALCIUM	860	SODIUM
33	CHROMIUM	1.2U	THALLIUM
6.8	COBALT	NA	TIN
30U	COPPER	32	VANADIUM
17000	IRON	260	ZINC
20UJ	LEAD	65	PERCENT MOISTURE
2600	MAGNESIUM		

REMARKS ***REMARKS***

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

METALS DATA REPORT 06/07/90

PROJECT NO. 90-436 SAMPLE NO. 45716 SAMPLE TYPE: SOIL
SOURCE: INTERNATIONAL PAPER
STATION ID: SD-05
CASE NUMBER: 14000 SAS NUMBER:

PROG ELEM: NSF COLLECTED BY: L CONWAY
CITY: MOBILE ST: AL
COLLECTION START: 05/02/90 1335 STOP: 00/00/00
MD NUMBER: T204

MG/KG	ANALYTICAL RESULTS	MG/KG	ANALYTICAL RESULTS
26000	ALUMINUM	1900	MANGANESE
30UR	ANTIMONY	.44U	MERCURY
9UJ	ARSENIC	46	NICKEL
220	BARIUM	590	POTASSIUM
.87U	BERYLLIUM	1.7UR	SELENIUM
3.5U	CADMIUM	2.6UR	SILVER
100000	CALCIUM	1900	SODIUM
71	CHROMIUM	1.7U	THALLIUM
9U	COBALT	NA	TIN
110	COPPER	49	VANADIUM
18000	IRON	4000	ZINC
4.4UR	LEAD	77	PERCENT MOISTURE
4500	MAGNESIUM		

REMARKS ***REMARKS***

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

METALS DATA REPORT 06/07/90

** SOURCE: INTERNATIONAL PAPERE NO. 45717 SAMPLE TYPE: SOIL CITY:EMOBILESF COLLECTED BST:LALONWAY **
** STATION ID: SD-04 COLLECTION START: 05/02/90 1350 STOP: 00/00/00 **
** CASE NUMBER: 14000 SAS NUMBER: MD NUMBER: T203 **

MG/KG	ANALYTICAL RESULTS	MG/KG	ANALYTICAL RESULTS
8000	ALUMINUM	49	MANGANESE
9UJ	ANTIMONY	.14U	MERCURY
2UJ	ARSENIC	7.6U	NICKEL
17	BARIUM	400	POTASSIUM
.28U	BERYLLIUM	.56UR	SELENIUM
1.1U	CADMIUM	.85UR	SILVER
4200	CALCIUM	2300	SODIUM
15	CHROMIUM	.56U	THALLIUM
2.3U	COBALT	NA	TIN
4U	COPPER	12	VANADIUM
7000	IRON	29	ZINC
4UJ	LEAD	29	PERCENT MOISTURE
270	MAGNESIUM		

REMARKS ***REMARKS***

FOOTNOTES
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

METALS DATA REPORT 06/07/90

PROJECT NO. 90-436 SAMPLE NO. 45718 SAMPLE TYPE: SOIL
SOURCE: INTERNATIONAL PAPER
STATION ID: SD-06
CASE NUMBER: 14000 SAS NUMBER:

PROG ELEM: NSF COLLECTED BY: L CONWAY
CITY: MOBILE ST: AL
COLLECTION START: 05/02/90 1420 STOP: 00/00/00
MD NUMBER: T205

MG/KG	ANALYTICAL RESULTS	MG/KG	ANALYTICAL RESULTS
12000	ALUMINUM	300	MANGANESE
20UJ	ANTIMONY	2.8	MERCURY
9.9J	ARSENIC	16	NICKEL
220	BARIUM	840	POTASSIUM
1U	BERYLLIUM	.78UR	SELENIUM
1.6U	CADMIUM	2UJ	SILVER
50000	CALCIUM	1000	SODIUM
51	CHROMIUM	.78U	THALLIUM
7.6	COBALT	NA	TIN
73	COPPER	31	VANADIUM
18000	IRON	270	ZINC
2UR	LEAD	49	PERCENT MOISTURE
2000	MAGNESIUM		

REMARKS ***REMARKS***

FOOTNOTES
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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV
COLLEGE STATION RD.
ATHENS, GA. 30613

SISB/SAS
RECEIVED
JUN 21 1990
EPA - REGION IV
ATLANTA, GA.

*****MEMORANDUM******

DATE: 06/08/90

SUBJECT: Results of Cyanide Analysis;
90-436 INTERNATIONAL PAPER
MOBILE AL
CASE NO: 14000

FROM: Robert W. Knight
Chief, Laboratory Evaluation/Quality Assurance Section

TO: PHIL BLACKWELL

Attached are the results of analysis of samples collected as part of the subject project.

If you have any questions please contact me.

ATTACHMENT

cc:

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

06/07/90

SPECIFIED ANALYSIS DATA REPORT

PROJECT NO. 90-436 SAMPLE NO. 45709 SAMPLE TYPE: PROG ELEM: NSF COLLECTED BY: L CONWAY
SOURCE: CITY: MOBILE ST: AL
STATION ID: SS-01 COLLECTION START: 05/02/90 0945 STOP: 00/00/00
CASE NO.: 14000 SAS NO.: D. NO.: T190 MD NO: T190

RESULTS	UNITS	PARAMETER
1.1U	MG/KG	CYANIDE

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

06/07/90

SPECIFIED ANALYSIS DATA REPORT

*** ***
** PROJECT NO. 90-436 SAMPLE NO. 45710 SAMPLE TYPE: SOIL PROG ELEM: NSF COLLECTED BY: L CONWAY **
** SOURCE: INTERNATIONAL PAPER CITY: MOBILE ST: AL **
** STATION ID: SB-01 COLLECTION START: 05/02/90 1000 STOP: 00/00/00 **
** CASE.NO.: 14000 SAS NO.: D. NO.: T191 MD NO: T191 **
** **
*** ***

RESULTS	UNITS	PARAMETER
1.2U	MG/KG	CYANIDE

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

06/07/90

SPECIFIED ANALYSIS DATA REPORT

*** ***
** PROJECT NO. 90-436 SAMPLE NO. 45711 SAMPLE TYPE: SOIL PROG ELEM: NSF COLLECTED BY: L CONWAY **
** SOURCE: INTERNATIONAL PAPER CITY: MOBILE ST: AL **
** STATION ID: SS-02 COLLECTION START: 05/02/90 1040 STOP: 00/00/00 **
** CASE.NO.: 14000 SAS NO.: D. NO.: T192 MD NO: T192 **
**   **
*** ***

RESULTS	UNITS	PARAMETER
1.1U	MG/KG	CYANIDE

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
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*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS THE MINIMUM QUANTITATION LIMIT.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

06/07/90

SPECIFIED ANALYSIS DATA REPORT

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**   PROJECT NO. 90-436   SAMPLE NO. 45712  SAMPLE TYPE: SOIL       PROG ELEM: NSF   COLLECTED BY: L CONWAY              **
**   SOURCE: INTERNATIONAL PAPER                                     CITY: MOBILE                 ST: AL                   **
**   STATION ID: SD-01                                               COLLECTION START: 05/02/90  1115   STOP: 00/00/00     **
**   CASE.NO.: 14000          SAS NO.:                               D. NO.: T200                 MD NO: I200              **
**                                                                                                                          **
*** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * ***
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RESULTS	UNITS	PARAMETER
2.3U	MG/KG	CYANIDE

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

06/07/90

SPECIFIED ANALYSIS DATA REPORT

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**  PROJECT NO. 90-436   SAMPLE NO. 45713  SAMPLE TYPE: SOIL       PROG ELEM: NSF   COLLECTED BY: L CONWAY              **
**  SOURCE: INTERNATIONAL PAPER                                   CITY: MOBILE                ST: AL                    **
**  STATION ID: SB-02                                             COLLECTION START: 05/02/90  1230   STOP: 00/00/00     **
**  CASE.NO.: 14000          SAS NO.:                             D. NO.: T208               MD NO: T208                **
**                                                                                                                      **
*** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * ***
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RESULTS	UNITS	PARAMETER
1.3U	MG/KG	CYANIDE

FOOTNOTES
*A-AVERAGE VALUE   *NA-NOT ANALYZED   *NAI-INTERFERENCES   *J-ESTIMATED VALUE   *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

06/07/90

SPECIFIED ANALYSIS DATA REPORT

*** ***
** PROJECT NO. 90-436 SAMPLE NO. 45714 SAMPLE TYPE: SOIL PROG ELEM: NSF COLLECTED BY: L CONWAY **
** SOURCE: INTERNATIONAL PAPER CITY: MOBILE ST: AL **
** STATION ID: SD-02 COLLECTION START: 05/02/90 1250 STOP: 00/00/00 **
** CASE.NO.: 14000 SAS NO.: D. NO.: T201 MD NO: T201 **
** **
*** ***

RESULTS	UNITS	PARAMETER
1.8U	MG/KG	CYANIDE

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

06/07/90

SPECIFIED ANALYSIS DATA REPORT

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**   PROJECT NO. 90-436    SAMPLE NO. 45715  SAMPLE TYPE: SOIL        PROG ELEM: NSF   COLLECTED BY: L CONWAY          **
**   SOURCE: INTERNATIONAL PAPER                                      CITY: MOBILE              ST: AL                **
**   STATION ID: SD-03                                                COLLECTION START: 05/02/90  1330   STOP: 00/00/00  **
**   CASE.NO.: 14000          SAS NO.:                                D. NO.: T202              MD NO: T202           **
**                                                                                                                      **
*** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * ***
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RESULTS	UNITS	PARAMETER
2.9U	MG/KG	CYANIDE

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

06/07/90

SPECIFIED ANALYSIS DATA REPORT

*** ***
** PROJECT NO. 90-436 SAMPLE NO. 45716 SAMPLE TYPE: SOIL PROG ELEM: NSF COLLECTED BY: L CONWAY **
** SOURCE: INTERNATIONAL PAPER CITY: MOBILE ST: AL **
** STATION ID: SD-05 COLLECTION START: 05/02/90 1335 STOP: 00/00/00 **
** CASE.NO.: 14000 SAS NO.: D. NO.: T204 MD NO: T204 **
** **
*** ***

RESULTS	UNITS	PARAMETER
4.4U	MG/KG	CYANIDE

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

06/07/90

SPECIFIED ANALYSIS DATA REPORT

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*** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * ***
**   PROJECT NO. 90-436    SAMPLE NO. 45717  SAMPLE TYPE: SOIL        PROG ELEM: NSF   COLLECTED BY: L CONWAY                  **
**   SOURCE: INTERNATIONAL PAPER                                      CITY: MOBILE              ST: AL                         **
**   STATION ID: SD-04                                                COLLECTION START: 05/02/90  1350   STOP: 00/00/00        **
**   CASE.NO.: 14000           SAS NO.:                               D. NO.: T203             MD NO: T203                     **
**                                                                                                                             **
*** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * ***
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RESULTS	UNITS	PARAMETER
1.4U	MG/KG	CYANIDE

FOOTNOTES
*A-AVERAGE VALUE   *NA-NOT ANALYZED   *NAI-INTERFERENCES   *J-ESTIMATED VALUE   *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

06/07/90

SPECIFIED ANALYSIS DATA REPORT

*** ***
** PROJECT NO. 90-436 SAMPLE NO. 45718 SAMPLE TYPE: SOIL PROG ELEM: NSF COLLECTED BY: L CONWAY **
** SOURCE: INTERNATIONAL PAPER CITY: MOBILE ST: AL **
** STATION ID: SD-06 COLLECTION START: 05/02/90 1420 STOP: 00/00/00 **
** CASE.NO.: 14000 SAS NO.: D. NO.: T205 MD NO: T205 **
**
*** ***

RESULTS	UNITS	PARAMETER
2U	MG/KG	CYANIDE

FOOTNOTES
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NUS CORPORATION

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

C-586-8-9-54

August 8, 1989

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

Subject: Phase I Screening Site Inspection
International Paper Company
Mobile, Mobile County, Alabama
TDD No. F4-8902-06
EPA ID No. ALD008161861

Dear Mr. Hanke:

This is in response to the comments concerning the International Paper Company site in Mobile, Mobile County, Alabama. Although the preliminary score for the site was very low, it was felt that the HRS2 concerns were important, especially the human food chain threat. This was the primary reason for the recommendation of a Screening Site Inspection - Phase II. Enclosed please find a complete reference package and the HRS2 checklist which was inadvertently left out. If you have any further questions or comments, please contact me at NUS Corporation.

Very truly yours,

Teresa Sawyer

Teresa Sawyer
Project Manager

Approved:

TS/kw

Enclosures

cc: Gena Townsend

RECONNAISSANCE CHECKLIST FOR HRS2 CONCERNS

Instructions: Obtain as much "up front" information as possible prior to conducting fieldwork. Complete the form in as much detail as you can, providing attachments as necessary. Cite the source for all information obtained.

Site name: International Paper
City, County, State: Mobile, Mobile County, Alabama
EPA ID No.: ALDC081161861
Person responsible for form: Teresa Sawyer
Date: 8/7/89

Air Pathway

Describe any potential air emission sources onsite: unknown

Identify any sensitive environments within 4 miles: The Mobile Delta is just adjacent to the site and is a highly productive fishery. It also supports several endangered species

Identify the maximally exposed individual (nearest residence or regularly occupied building - workers do count): This is a very large facility and therefore has many employees

Groundwater Pathway

Identify any areas of karst terrain: N/A

Identify additional population due to consideration of wells completed in overlying aquifers to the AOC: N/A

Do significant targets exist between 3 and 4 miles from the site? No private wells were located during the site reconnaissance.

Is the AOC a sole source aquifer according to Safe Drinking Water Act? (i.e. is the site located in Dade, Broward, Volusia, Putnam, or Flager County, Florida) No.

Surface Water Pathway

Are there intakes located on the extended 15-mile migration pathway? No. There is one intake upstream and another 20 miles west of the site

Are there recreational areas, sensitive environments, or human food chain targets (fisheries) along the extended pathway? Yes, Mobile Bay is directly to the east of the facility.

Onsite Exposure Pathway

Is there waste or contaminated soil onsite at 2 feet below land surface or higher? Unknown.

Is the site accessible to non-employees (workers do not count)? No, the entire facility is fenced and has guard posts.

Are there residences, schools, or daycare centers onsite or in close proximity? There are several schools in close proximity.

Are there barriers to travel (e.g., a river) within one mile?

Yes, Chickasaw Creek lies within the one-mile radius

EPA Nc

Reference No. 1

ste Site

810609

United States Environmental Protecti Agency Washington DC 20460

This initial notification information is required by Section 103(c) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 and must be mailed by June 9, 1981.

Please type or print in ink. If you need additional space, use separate sheets of paper. Indicate the letter of the item which applies.

Sub

ALS000001125

A Person Required to Notify:

Enter the name and address of the person or organization required to notify.

Name International Paper Company - Mobile Mill

Street P.O. Box 2448

City Mobile State AL Zip Code 36652

B Site Location:

Enter the common name (if known) and actual location of the site.

ALD008161861

Name of Site International Paper Company Landfill

Street Papermill Rd.

City Mobile County Mobile State AL Zip Code 36652

C Person to Contact:

Enter the name, title (if applicable), and business telephone number of the person to contact regarding information submitted on this form.

Name (Last, First and Title) Redfern, Peter C. Mill Manager

Phone (205)457-8961

D Dates of Waste Handling:

Enter the years that you estimate waste treatment, storage, or disposal began and ended at the site.

From (Year) 1929 To (Year) Present

E Waste Type: Choose the option you prefer to complete

Option I: Select general waste types and source categories. If you do not know the general waste types or sources, you are encouraged to describe the site in Item I—Description of Site.

General Type of Waste: Place an X in the appropriate boxes. The categories listed overlap. Check each applicable category.

1. ☐ Organics
2. ☐ Inorganics
3. ☐ Solvents
4. ☐ Pesticides
5. ☐ Heavy metals
6. ☐ Acids
7. ☐ Bases
8. ☐ PCBs
9. ☐ Mixed Municipal Waste
10. ☒ Unknown
11. ☐ Other (Specify)

Source of Waste: Place an X in the appropriate boxes.

1. ☐ Mining
2. ☐ Construction
3. ☐ Textiles
4. ☐ Fertilizer
5. ☐ Paper/Printing
6. ☐ Leather Tanning
7. ☐ Iron/Steel Foundry
8. ☐ Chemical, General
9. ☐ Plating/Polishing
10. ☐ Military/Ammunition
11. ☐ Electrical Conductors
12. ☐ Transformers
13. ☐ Utility Companies
14. ☐ Sanitary/Refuse
15. ☐ Photofinish
16. ☐ Lab/Hospital
17. ☐ Unknown
18. ☒ Other (Specify) Pulp and Paper Mill Operations

Option 2: This option is available to persons familiar with the Resource Conservation and Recovery Act (RCRA) Section 300 regulations (40 CFR Part 261).

Specific Type of Waste: EPA has assigned a four-digit number to each hazardous was listed in the regulations under Section 3001 of RCRA. Enter t appropriate four-digit number in the boxes provided. A copy o the list of hazardous wastes and codes can be obtained by contacting the EPA Region serving the State in which the site located.

RECEIVED EPA/REGION IV JUN 13 3 48 PM '81 ENVIRONMENT DIVISION

0 9 0 1 0 7

Form Approved OMB No. 2000-0138

EPA Form 8900-1

Reference No. 2

POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
EPS FORM 3012-III

INDUSTRIAL NARRATIVE SHEET

1. Site Identification:

Site number: ALD008161861

Site name: International Paper Company - Landfill

Site county: Mobile

2. Industrial Narrative Summary:

Company Name: International Paper Company - Mobile Mill

Address: Papermill Road
Mobile, AL 36652

Telephone No.: 205/470-3752

Contact: Scott Tait

Discussion: In 1981, International Paper (IP) reported under Superfund a landfill which potentially received a small quantity of hazardous waste. This landfill is wood waste from 1929-1981. IP investigated the landfill and collected samples from borings taken throughout. Test results did not indicate the presence of any hazardous waste. The complete report is on file under "Plans and Procedures" in the ADEM offices. Conversations with Scott Tait indicated that "green liquor sludge" may have been disposed in the landfill, however, greatly diluted by other plant wastes.

Presently the "green liquor sludge" (fifteen dregs) enters a 50 acre surface impoundment which also receives fiber and lime mud ($CaCo_3$) wastes. It is estimated that <15% of the solids in this impoundment are "green liquor." Solvents are used in the machine shop and are recycled.

3. Disposition:

Although the "green liquor sludge" may contain sulfides, this waste is greatly diluted by other plant wastes and is maintained in an alkaline ($CaCo_3$) environment. It does not appear to pose a threat to health or environment.

POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
EPS FORM 3012-II

TELEPHONE LOG SHEET

1. **Site Identification:**
   Site number: ALD 008161861
   Site name: INTERNATIONAL PAPER COMPANY - MOBILE MILL LANDFILL

2. Interview Data: (Party called)
   Name: SCOTT JAIT
   Position: PLANT MANAGER
   Firm: I.P.
   Address: PAPERMILL ROAD
   MOBILE, AL 36652
   Telephone No.: (205) 470-3752

3. **EPS Analyst Data:**
   Name: Donalea Dinamore
   Purpose of call: Determine landfill status

   Form 2070-12 (7-81) P.N.
   Date of call: 7-26-85

4. Interview Narrative Summary: Directions to site given - Do have both black and green liquor. When clean out tanks, goes into wastewater treatment system. Do not believe anyone has been hauled.

Green liquor dregs washer filtrate is sent to surface impoundment where it mixed with a couple tons per day lime. This may have been ~~[illegible]~~ dredged and sent to landfill. Impoundment begun in 1955. 50 acres 10-12' deep pH 10-11. Sludge < 15% solids are from green liquor.

Solvents used in machine shop. Small amount - recycled. Do not believe they are manifested.

IP ran tests on landfill samples & didn't find anything.

5. **Disposition/Comments:**
Although sulfides may be present, quantity and dilution factor seem to reduce potential hazards.

6. **Comments:** Any additional sites used by this company?
   Location:
   Dates of use:
   Description of waste:

   Comments:

26
Possible landfill area
International Paper Company
38
CHICKASAW CREEK
Sibert
BM 137
BM 10
BM 3
St Louis Point
INDUSTRIAL CANAL
MOBILE
RIVER
Turning Basin
MOBILE QUADRANGLE 12
ALABAMA
7.5 MINUTE SERIES (TOPOGRAPHIC)
N

Reference No. 3

ADEM

ALABAMA
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

Mailing Address:
State Capitol
Montgomery, AL
36130
205/834-1J03

Field Offices:

P. O. Box 953
Decatur, AL
35602
205/353-1713

Unit 808, Building 8
225 Oxmoor Circle
Birmingham, AL
35209
205/942-6168

4358 Midmost Drive
Mobile, AL
36609
205/343-7841

June 12, 1984

MEMORANDUM

TO: Bernard E. Cox BEC

FROM: Charles Fleming CF

Re: International Paper Company

On June 1, 1984 at 9:20 a.m., I met with Mr. Scott Tait and Mr. Steve Stauton to discuss the cresylic acid tar which is being used as boiler fuel and to sample some spillage of this material.

International Paper Company has been using this boiler fuel for 2 - 3 months. They pay 15¢ per gallon. It is shipped to them by railroad but it is their plan to use a barge.

I took a sample of some of the material which had leaked from the holding tank at 10:30 a.m.

CF/sjw

Reference No. 4

International Paper
Mobile

MERICHEM COMPANY

PHONE: A/C 713—224-3030 • 4800 TEXAS COMMERCE TOWER
TELEX: 775-178 • HOUSTON, TEXAS 77002-3068

JUN 1984
RECEIVED
ADEM
Land Division

June 13, 1984

Mr. Charles Fleming
Alabama Department of
Environmental Management
State Capitol
Montgomery, Alabama 36130

Dear Mr. Fleming:

Pursuant to our previous conversation concerning the Cresylic Acid Tar we sell to International Paper Corporation at their Mobile, Alabama location, this letter shall serve as Merichem's certification that the Cresylic Acid Tar is not a hazardous waste as defined by the EPA regulations (40 CFR 261).

Our conclusion is based on the following:

- Cresylic Acid Tar does not exhibit any of the four specific characteristics set forth in 40 CFR 261, Subpart C; that is, Cresylic Acid Tar is not ignitable, corrosive, reactive, or EP toxic, as those terms are defined, based on our analyses of this material.

- Cresylic Acid Tar is <u>not</u> a listed waste as set forth in 40 CFR 261, Subpart D, specifically 40 CFR 261.31 and 261.32. We would point out that the material is <u>not</u> a spent nonhalogenated solvent, e.g. cresol or cresylic acid, <u>nor</u> is it a still bottoms obtained from the recovery of such solvents. Therefore, it is not properly classifiable under F-004 in Section 261.31.

- Cresylic Acid Tar is <u>not</u> a discarded commercial chemical product nor is it an off-spec species, container residue or spill residue of any of the chemicals listed in 40 CFR 261.33, specifically Paragraph (f). Note the comment contained in Paragraph (d) of this same 40 CFR 261.33, which I set forth below:

"[Comment: The phrase "commercial chemical product or manufacturing chemical intermediate having the generic name listed in ..." refers to a chemical substance which is manufactured or formulated for commercial or manufacturing use which consists of the commercially pure grade of the chemical, any technical grades of the chemical that are produced or marketed, and all formulations in which the chemical is the sole active ingredient. It does not refer to a material, such as a manufacturing process waste, that contains any of the substances listed in paragraphs (e) or (f). Where a manufacturing process waste is deemed to be a hazardous waste because it contains a substance listed in paragraphs (e) or (f), such waste will be listed in either §§261.31 or 261.32 or will be identified as a hazardous waste by the characteristics set forth in Subpart C of this part.]" (emphasis added)

We would additionally point out that our treatment of this material as a non-RCRA waste has not been challenged by Stae or federal environmental authorities in any of the RCRA inspections we had had at our Houston plant. Also, we confirm that this material has been sold to others as a fuel component.

Therefore, we are confident that although our Cresylic Acid Tar is to be treated as a hazardous material in the general sense of the term, it is <u>not</u> a hazardous waste under RCRA.

I am enclosing some data on the physical properties of this product and a typical laboratory analysis.

If you have any further questions concerning this product or the application of the above regulations, please feel free to contact me.

Very truly yours,

Kirby L. Boston
General Counsel

sb

cc: Mr. Scott Tait, Superintendent Environmental Services
IP-Mobile Mill
P. O. Box 2448
Mobile, AL 36652

Reference No. 5

NUS CORPORATION
NORTH LAKE SQUARE OFFICE PARK
1726 MONTREAL CIRCLE
SUITE 20
TUCKER, GEORGIA 30084
(404) 938-7710

C-586-11-6-32

November 20, 1986

Mr. Richard D. Green
Emergency and Remedial Response Branch
Air and Waste Management Division
Environmental Protection Agency
345 Courtland Street, N.E.
Atlanta, Georgia 30365

Subject: Mobile, Alabama Area
Mobile Lab Site Evaluation
TDD No. F4-8607-01

Dear Mr. Green:

FIT assisted Mr. Bart Reedy, USEPA, during the week of September 18, 1986 in conducting an assessment of the Mobile, Alabama area as a possible candidate for a future mobile laboratory site. The scope of this survey included meetings with the Alabama Department of Environmental Management (ADEM) and various local agencies. Meetings were also held with representatives of the health departments and sanitation departments for the city of Mobile, and Mobile, Baldwin, Washington, and Clarke counties. As you are aware, the mobile laboratory objective was not met with a great deal of optimism or enthusiasm by ADEM. As a result, no potential site information was obtained from ADEM. The "areas of concern", primarily landfills, identified during this assessment were provided by the local health departments and sanitation departments.

During the survey of the Mobile area it was noted that, once outside of the immediate vicinity of the city of Mobile, the areas become very rural. Most of the industry is located near the city or just north of the city along some of the major highways. As a result, areas of concern were identified only in Mobile county and adjacent Baldwin county. Discussions with representatives in Washington and Clarke counties indicated that there is very little industry in the two counties, and that the few landfills in the counties only receive domestic waste. As part of the evaluation, FIT has compiled a list of the "areas of concern" identified in Mobile and Baldwin counties. Each list provides the site name, brief description, and approximate location. In conjunction with the list, maps have been prepared for Mobile and Baldwin counties, locating the "areas of concern".

To reiterate, ADEM did not provide any assistance in identifying potential sites in the Mobile area. Only "areas of concern", many of which are municipal landfills, were identified through contact with the local health departments and sanitation departments. Therefore, the "areas of concern" presently identified are likely an inaccurate representation of the potential hazardous waste sites that are often characteristic of a highly industrialized port city such as Mobile. The list of "areas of concern" should not be considered as all inclusive. Moreover, with regard to the information collected on the "areas of concern", FIT does not feel that the information is comprehensive enough to generate a list of potential sites as was done with the Pensacola Mobile Laboratory Site Evaluation.

In conjunction with the survey, FIT visited numerous municipal water supply systems in an effort to identify potential target populations. Information concerning municipal water supply systems and associated target populations was obtained for each county. A list of the municipal water supply systems was prepared for Mobile and Baldwin counties. The location of wells for various utilities are shown on the accompanying maps. During the survey, time only permitted for the identification of the larger water supply systems. FIT is aware of numerous smaller private systems that may serve small communities, subdivisions, or trailer parks. Once again, due to time constraints, very little information was obtained on the private systems and thus, these smaller systems are not shown on the accompanying maps.

During the survey, water levels could only be obtained for a small number of domestic and municipal wells scattered throughout Baldwin and Mobile counties (Source: Groundwater Levels in Alabama - 1985 Water Year, Circular 112E, James D. Moore and et al., Alabama Geological Survey). As a result, a groundwater contour map of the area could not be prepared. Instead, the depths to groundwater obtained were plotted on the accompanying maps to provide some idea as to the varying depths to groundwater which may be expected in the counties. In general, groundwater occurs between 5 and 10 feet along the coastal areas or large freshwater bodies and increases in depth toward inland areas. As shown on the Mobile county map, the depth to groundwater in a well near Citronelle was recorded at a depth of 270 feet bls. This is the maximum depth observed among the wells in the two counties. Most of the groundwater depths range between 30 and 130 feet bls.

In summary, the results of this evaluation should not be the sole determining factor in selecting the Mobile, Alabama area as a future mobile laboratory site. FIT believes that the information collected is not indicative of the "areas of concern" or potential sites actually in the Mobile area. Additional information should be obtained from ADEM prior to conducting a final assessment of the Mobile area.

If you have any questions concerning this evaluation, or if I can be of further assistance, please contact me at NUS Corporation.

Very truly yours,

Bradley A. Jackson
Environmental Scientist

Approval

BAJ/gwn

Enclosures (6)

cc: Bob Jourdan
Bart Reedy

60 40

AREAS OF CONCERN IDENTIFIED IN MOBILE COUNTY, ALABAMA

Map No.	Name/Description	Approximate Location
1	Irvington Landfill - County owned; closed Sept. 1982; received rayon waste from Courtaulds and other putrescible, commercial, and industrial wastes; 80 acres; located near 1/2 mile road	T6S R2W S08
2	Kushla Landfill - closed in 1980; received rayon waste from Courtaulds; located near Kushla-McLeod Road	Exact location undetermined
3	Alabama Port Landfill - inactive; located near the intersection of State Route 188 and Dauphin Island Parkway	Exact location undetermined
4	Deakle Road Landfill - inactive; located in Bayou la Batre	Exact location undetermined
5	Hickory Street Landfill - inactive; open dump operated and permitted by City of Mobile since 1970; located on Davis Avenue in Mobile; accepted any type of waste without restrictions including electroplating sludges, solvents, organic and inorganic chemicals, heavy metals, cyanide, and reactive sulfide wastes	T4S R1W
6	Prichard Landfill - located on Conception Street in Prichard	Exact location undetermined
7	Shelton Beach Road Landfill - inactive; located in Prichard	Exact location undetermined
8	City of Mobile Airport Landfill - State and County permitted; city owned; opened in early 1970's; received variety of waste in earlier years; now just receives trash; located just west of Bates Field at dead end of Flave Pierce Road	T4S R3W S14
9	Bucks Landfill - County permitted; city owned; opened in 1976; still active; receives putrescible wastes; located on Hwy. 43 in Bucks	Exact location undetermined
10	Dirt Inc. Pit #1 - State permitted; owned by Lamar Harrison; began operating 1978; still active; receives non-putrescible industrial and commercial wastes; located off I-10 service road and Theodore Dawes Road	Exact location undetermined
11	Dirt Inc. Pit #4 - State permitted; owned by Lamar Harrison; began operating 1982; still active; receives 50,000 to 60,000 cubic yards/ month putrescible wastes; open to public; received drilling mud from Sanders Engineering; located off Cottage Hill Road and Leroy Stevens Road	T5S R3W S12

AREAS OF CONCERN IDENTIFIED IN
MOBILE COUNTY, ALABAMA
PAGE TWO

Map No.	Name/Description	Approximate Location
12	Lott Road Landfill - permitted by State and City of Prichard; owned by Mr. Jackson; wastes include: trash from general public, industries, and businesses, paper mill sludge from Scott and International, fly ash from Scott's cogeneration plant, drilling mud	T3S R2W S21
13	W.D. Brunson Landfill - permitted by State and City of Prichard; privately owned by W.D. Brunson; hauls demolition debris, vegetative trash, lime waste from Union Carbide, located on Jarrett Road in Prichard	T3S R2W S21
14	Brownlee Pit - permitted by State and City of Prichard; privately owned; began operating in 1985; receives demolition and vegetative wastes from the general public and hauled in by the owner; located on Henry Road in Prichard	T3S R2W S16
15	City of Prichard Landfill - permitted by State and City of Prichard; privately owned; receives only trash; located on Bellcase Road in Prichard	T3S R2W S23
16	Chunchula Landfill - State permitted; County operated; began operating in 1980; still active; wastes include putrescibles, industrial trash and drilling mud; problem with volatiles in monitoring well; no longer accepts liquids	T1S R3W S15
17	Alabama Power Company - company owned; not open to public; regulated by ADEM and Mobile County; wastes include industrial trash and fly ash; located at the Barry Stream Plant in Bucks	T1S R1E S05
18	Roberts Road Landfill - owned by James Phillips; leachate and erosion problem observed by County in 1985; now closed; received rayon waste from Courtaulds and other industrial waste; located north of Roberts Road between Chunchula and Turnerville	R2W T1S S28

AREAS OF CONCERN IDENTIFIED IN
MOBILE COUNTY, ALABAMA
PAGE THREE

Map No.	Name/Description	Approximate Location
19	Whites Pit - State permitted; now closed; owned by two attorneys; Tommy Marrow and Maurey Freilander; operated by Mr. Brownlee; problem with lack of vegetation and erosion; received non-putrescible wastes from Alabama Waste (SCA), Shell Chemical, Virginia Chemical, and Courtaulds; located on Celeste Road, 4 miles north of Turnerville	Exact location undetermined
20	M.C. Williams Contractor Landfill - not permitted; privately owned dirt pit; wastes include trash hauled by the owner and tree trimmings; located on Old Government Street off Schillinger Road	Exact location undetermined
21	John Maples Hauling Company Landfill - not permitted; privately owned; wastes include trash; located on Airport Boulevard one mile west of Airport	Exact location undetermined
22	J.S. Walton Construction Company, Site #1 - not permitted; privately owned; wastes include trash hauled by the owner; located on Howells Ferry Road	Approximate location undetermined (Not shown on map)
23	J.S. Walton Cosntruction Company, Site #2 - not permitted; privately owned; wastes include trash hauled by the owner; located on Todd Acres Road	Approximate location undetermined (Not shown on map)
24	City of Citronelle Landfill - State permitted; trashfill; located on Celeste Road in Citronelle	Exact location undetermined
25	City of Saraland Landfill - State and County permitted; receives trash and putrescible wastes from Saraland and Satsuma; located on Celeste Road	T2S R2W S25
26	City of Mobile Landfill - State and County permitted; receives putrescible wastes from the City of Mobile	T1N R1W S13

AREAS OF CONCERN IDENTIFIED IN
MOBILE COUNTY, ALABAMA
PAGE FOUR

Map No.	Name/Description	Approximate Location
	The following facilities are located in Theodore Industrial Park	
27	Kerr McGee - manufactures pigments and paint intermediates; discharges iron oxide, containing low level radiation, into open pit onsite; pit recently had leakage problem; located on Rangeline Road	Exact location undetermined
28	Degussa of Alabama - manufactures fertilizers, foodstuffs, filament for toothpaste; uses cyanide and chloride; discharges waste into two ponds which are pumped into a State-owned spoil area, then into the canal and then into Mobile Bay; located on Rangeline Road	Exact location undetermined
29	Kayfries - subsidiary of Degussa; located off Rangeline Road	Approximate location undetermined (Not shown on map)
30	Marion Oil - closed; located on Hamilton Boulevard	Approximate location undetermined (Not shown on map)
31	Ideal Cement - located on Hamilton Boulevard	Approximate location undetermined (Not shown on map)
32	Air Products - located on Hamilton Boulevard	Approximate location undetermined (Not shown on map)
33	Barnett Mill Works - located on Hamilton Boulevard	Approximate location undetermined (Not shown on map)
34	Autlan Manganese - located on Hamilton Boulevard	Approximate location undetermined (Not shown on map)

AREAS OF CONCERN IDENTIFIED IN
MOBILE COUNTY, ALABAMA
PAGE FIVE

Map No.	Name/Description	Approximate Location
	The following facilities are located along "Chemical Row" (hwy. 43) in Mobile County	
35	Scott	Approximate location undetermined (Not shown on map)
36	Union Carbide - operates a trashfill for their own waste; located near the city limits of Mobile and Chickasaw	T3S R1W S22
37	Shell Chemical	Approximate location undetermined (Not shown on map)
38	Virginia Chemical	Approximate location undetermined (Not shown on map)
39	M & T	Approximate location undetermined (Not shown on map)
40	International Paper - State and County permitted; company owned; not yet operating; offsite disposal area for sludges from IP's plant; includes ponds, pits, leachate control system, and filtering system; located off Hwy 45 near Silver Creek	Approximate location undetermined (Not shown on map)
41	Courtaulds, Inc. - State and County permitted; company owned and operated; wastes include industrial trash and flammable/explosive solid rayon waste; located in Creola	T1S R1E S18
42	Cold Creek	Approximate location undetermined (Not shown on map)
43	Stauffer Chemical	Approximate location undetermined (Not shown on map)

Mobile County, Alabama Water Systems

Map Location	Utility	Approximate Population Served
1	Saraland Water System, Well #1	15,000
2	Saraland Water System, Well #2	
3	Saraland Water System, Well #3	
4	Saraland Water System, Well #4	
5	Saraland Water System, Well #5	
6	Satsuma Water System, Well #1	4,000
7	Satsuma Water System, Well #2	
8	Satsuma Water System, Well #3	
9	Mobile County Water & Fire Protection Authority, well	6,200
10	Mobile County Water & Fire Protection Authority, well	
11	Mobile County Water & Fire Protection Authority, well	
12	Mobile County Water & Fire Protection Authority, well	
13	Mobile County Water & Fire Protection Authority, well	
14	City of Mobile Water Service - Surface Water Intake	220,000
15	Prichard Water Works & Sewer Board - Surface Water Intake	60,000

AREAS OF CONCERN IDENTIFIED IN BALDWIN COUNTY, ALABAMA

Map No.	Name/Description	Location
1	Uniroyal - Nitrophenol contamination from manufacture of pesticide intermediates by the former occupant, Alpine Chemical. Contamination occurred between 1975-1976. Domestic well contaminated in 1981-82.	T2S R2E S22
2	Baldwin Pole and Piling - RCRA TSD Wood preserving facility in the process of closing under RCRA.	T2S R3E S10
3	Perdido Groundwater Contaminaiton - Contamination from train derailment. Current NPL site.	T7S R4E S36
	Tensaco Fertilizer Company - Disposed of sulfuric acid into onsite pond. Low grade sulfuric acid was obtained from Alpine Chemical. Tree kill around pond has been documented.	T2S R2E S08
5	Walker Industrial Plastics - Foley, Alabama, waste type unknown.	Location undetermined.
6	Reichold Chemicals - Onsite settling ponds, treated waste discharged to city sewer system.	T2S R3E S10
7	Crosby Lumber Company - Wood preserver that uses the wolmanizing method.	T2S R3E S11
8	Elberton Area Pesticide Dump - Farmer created a several acre dump site for empty pesticide containers through years of personal use. ADEM reportedly conducted an emergency removal.	Location undetermined.
9	Spanish Fort - Received dredge material from a canal.	T4S R2E S32
10	8-mile Landfill - Received papermill sludge.	(Mobile County)
11	Fort Morganson Road Wastewater Treatment Plant - Treatment system is being bypassed allowing septic to percolate into the ground.	T9S R3E S14

AREAS OF CONCERN IDENTIFIED IN
BALDWIN COUNTY, ALABAMA
PAGE 2

Map No.	Name/Description	Location
12	Kaiser Farms - Stores low grade liquid nitrogen that is a byproduct from the production of acetylene.	T6S R5E S11
13	Joel Clark - Aerial applicator of pesticides, flies out of Bay Minette Airport.	T2S R3E S18
14	Bonner and Robertsdale - Aerial applicator of pesticides.	T6S R4E S03
15	Gulf Flying Services - Aerial applicator of pesticides, owner Sam Steine.	T7S R3E S25
16	Foley, City Landfill - Domestic waste, current methane problem.	Location undetermined.
17	Fairhope, City Landfill - Domestic waste, landfill closed.	T6S R2E S20
18	Bay Minette, City Landfill - Domestic waste.	T1S R3E S31
19	Redhill, County Landfill - Active domestic waste landfill, monitoring wells onsite. FIT 1985 Sampling Investigation.	T2S R2E S12
20	Magnolia, County Landfill - Active domestic waste landfill.	T7S R3E S09
21	Airport County Landfill - Domestic waste landfill closed. FIT 1985 Sampling Investigation.	T2S R3E S18

MUNICIPAL WELLS IDENTIFIED IN THE SHALLOW AQUIFER SYSTEM BALDWIN COUNTY, FLORIDA

Map No.	Utility	Population Served (People)
1	Bay Minette Water Utilities Board, well #1	15,000
2	Bay Minette Water Utilities Board, well #2	
3	Bay Minette Water Utilities Board, well #3	
4	Bay Minette Water Utilities Board, well #4	
5	Bay Minette Water Utilities Board, well #5	
6	Fairhope Water System, Well #1	14,000
7	Fairhope Water System, Well #2	
8	Fairhope Water System, Well #3	
9	Fairhope Water System, Well #4	
10	Riviera Utilities, Well #7	6,500
11	Riviera Utilities, Well #8	
12	Riviera Utilities, Well #9	
13	Alabama Gulf Utilities, Well #1	7,000
14	Alabama Gulf Utilities, Well #2	
15	Alabama Gulf Utilities, Well #3	
16	Alabama Gulf Utilities, Well #4	
17	Alabama Gulf Utilities, Well #6	
18	Alabama Gulf Utilities, Well #7	

OVERSIZED

DOCUMENT

Reference No. 9

"Rite in the Rain."
WEATHERPROOF

LEVEL

NOTEBOOK NO. 311

International Paper Co.
Mobile Alabama
Teresa Sawyer
TDD No. F4-8902 06

LOGBOOK REQUIREMENTS
REVISED - NOVEMBER 29, 1988

NOTE: ALL LANGUAGE SHOULD BE FACTUAL AND OBJECTIVE

1. Record on front cover of the Logbook: TDD No., Site Name, Site Location, Project Manager

2. All entries are made using ink. Draw a single line though errors. Initial and date corrections.

3. Statement of Work Plan, Study Plan, and Safety Plan discussion and distribution to field team with team member signatures.

5. Sign and date each page. Project Manager is to review and sign off on each logbook daily.

6. Document all calibration and pre-operational checks of equipment. Provide serial numbers of equipment used onsite.

7. Provide reference to Sampling Field Sheets for detailed sampling information.

8. Describe sampling locations in detail and document all changes from project planning documents.

9. Provide a site sketch with sample locations and photo locations.

10. Maintain photo log by completing the stamped information at the end of the logbook.

11. If no site representative is on hand to accept the receipt for samples an entry to that effect must be placed in the logbook.

12. Record I.D. numbers of COC and receipt for sample forms used. Also record numbers of destroyed documents.

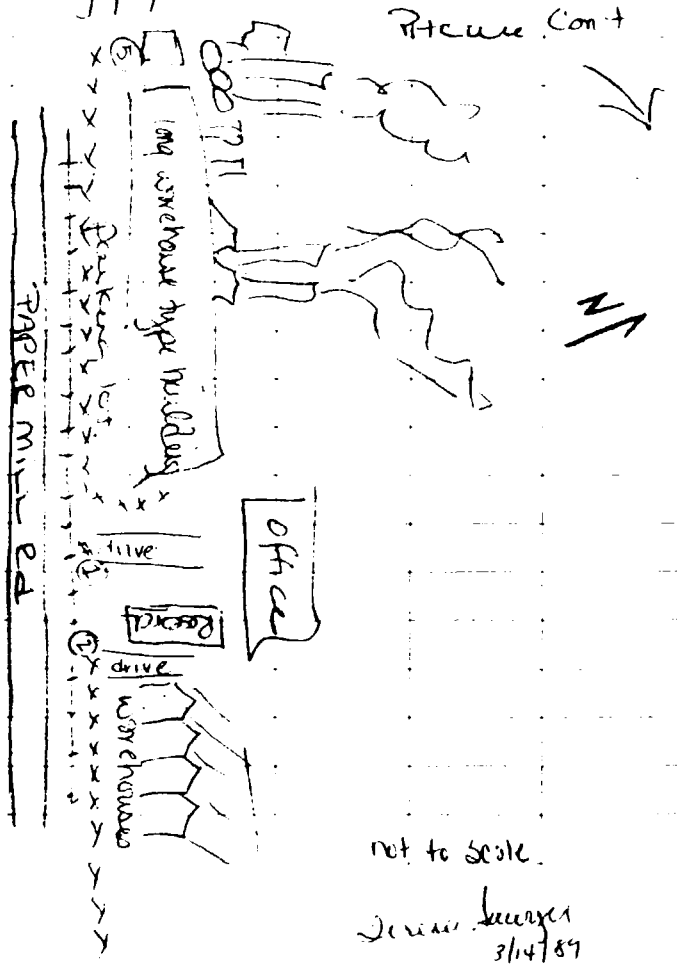
13. Complete SMO information in the space provided.

The work plan has been read and understood by the following persons:

Teresa Dreyer Teresa Rae Dreyer 3/14/89
K.D Pass K.D Pass 3-14-89

3/14/89

1330 Arrived at the site. The weather is sunny and warm. Approximately 75°C. The facility is large, covering approximately 1/4-1/3 mile along paper mill Rd.



not to scale.

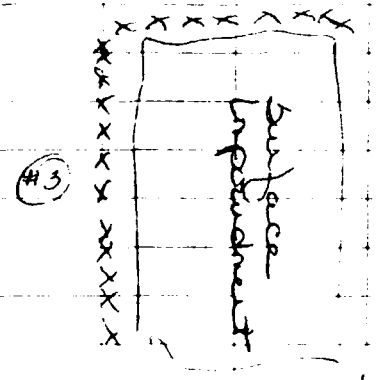
Jerem Sawyer 3/14/89

3/14/89

Access to the plant is limited. It looks as if the industrial areas are fenced in well.

Went to neighborhood across the street. All residences are on municipal water. There are fire hydrants and no signs of wells.

there are social customers into the plant.



not to scale

Jerem Sawyer 3/14/89

6

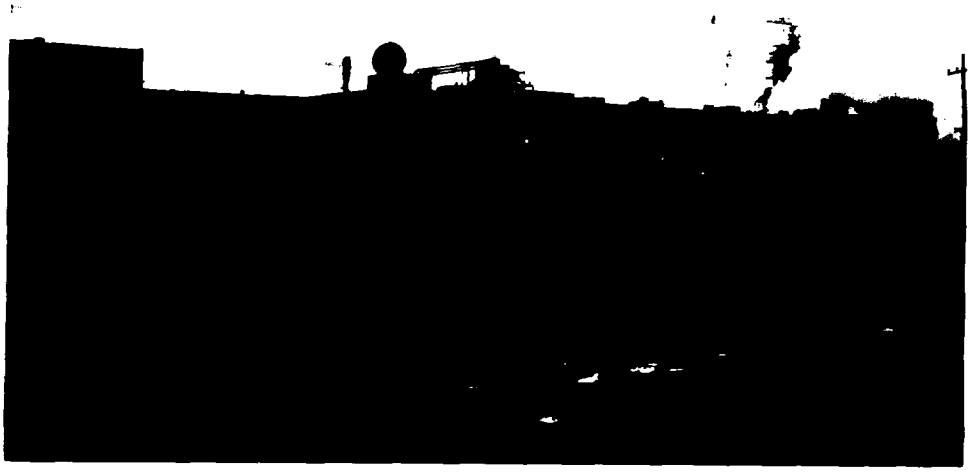
The area around the side is primarily industrial, but there are a few residences and small businesses around. The area seems to be served by municipal water.

The landfill of concern cannot be seen from the road

Cyanamid borders site on the north

TS 3/14 ~~25~~ .25 miles from telegraph road to side

Teresa Sawyer
3/14/89



International Paper Co.
Mobile, AL

INTERNATIONAL PAPER COMPANY

SUITE 108, 6075 THE CORNERS PARKWAY, NORCROSS, GA 30092
PHONE 404 447-1474

ENVIRONMENTAL SERVICES
EASTERN REGION

June 8, 1981

United States Environmental Protection Agency
Region IV
Sites Notification (CERCLA) Office
Atlanta, GA 30308

Gentlemen:

Enclosed are Environmental Protection Agency Notification of Hazardous Waste Site forms for the following sites previously owned and/or operated by International Paper Company:

Georgetown
P.O. Box 538
Georgetown, SC 29440

Mobile
P.O. Box 2448
Mobile, AL 36652

Moss Point
P.O. Drawer P
Moss Point, MS 39563

Natchez
P.O. Box 311
Natchez, MS 39120

Vicksburg
P.O. Box 950
Vicksburg, MS 39180

Adams County Lumber Mill
P.O. Box HH
Natchez, MS 39120

Morgan County Landfill
Greensboro Lumber Company TRACT (City Rd. 189)
Madison, GA

Sec. 19, T3S, R5W
George County, MS

Sec. 17 - 18, T3S, T6W
George County, MS

Sec. 34 - 35, T2S, R6W
George County, MS

Sec. 19, T6N, R9E
Lincoln County, MS

Sec. 11, T1S, R4W
Pearl River County, MS

Sec. 12, T2S, RZW
Baldwin County, AL

These notifications are made to comply with Sec. 103 (c) of the Comprehensive, Environmental, Response, Compensation and Liability Act of 1980.

Notification is being made only because of the possibility that very small quantities of hazardous waste may have accumulated during many years of operation at these sites. No significant quantities of hazardous waste are known to have been disposed at these facilities. Facilities were identified based on present knowledge, belief, recollection and reasonably available records.

International Paper Company reserves the right to withdraw any of these notifications or to modify or amend them in view of information which may become available in the future.

If further information is needed, please contact me at 404-447-1474.

Sincerely yours,

Oliver A. Fick

Oliver A. Fick
Manager, Environmental Services - East

OAF/mm

Attachments

INTERNATIONAL PAPER COMPANY

PRIMARY MILLS

Region IV

Mobile, AL - Industrial Landfill
Georgetown, SC - Industrial Landfill
Natchez, MS - Industrial Landfill
Moss Point, MS - Industrial Landfill
Vicksburg, MS - Industrial Landfill

LAND AND TIMBER

Region IV

South Central Region - Adams Lumber Mill - Natchez, MS

Eastern Region - Morgan County Landfill - Madison, GA

Sec. 19, T3S, R5W - George County, MS - Landfill

Sec. 17 - 18, T3S, R6W - George County, MS - Landfill

Sec. 34 - 35, T2S, R6W - George County, MS - Landfill

Sec. 19, T6N, R9E - Lincoln County, MS - Landfill

Sec. 11, T1S, R4W - Pearl River County, MS - Landfill

Sec. 12, T2S, RZW - Baldwin County, AL - Landfill

6/8/81

EPA Notification of Hazardous Waste Site

R

710609

United States Environmental Protection Agency
Washington DC 20460

This initial notification information is required by Section 103(c) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 and must be mailed by June 9, 1981.

Please type or print in ink. If you need additional space, use separate sheets of paper. Indicate the letter of the item which applies.

Sub

ALS000001125

A Person Required to Notify:

Enter the name and address of the person or organization required to notify.

Name International Paper Company - Mobile Mill

Street P.O. Box 2448

City Mobile State AL Zip Code 36652

B Site Location:

Enter the common name (if known) and actual location of the site.

ALD008161861

Name of Site International Paper Company Landfill

Street Papermill Rd.

City Mobile County Mobile State AL Zip Code 36652

C Person to Contact:

Enter the name, title (if applicable), and business telephone number of the person to contact regarding information submitted on this form.

Name (Last, First and Title) Redfern, Peter C. Mill Manager

Phone (205)457-8961

D Dates of Waste Handling:

Enter the years that you estimate waste treatment, storage, or disposal began and ended at the site.

From (Year) 1929 To (Year) Present

E Waste Type: Choose the option you prefer to complete

Option I: Select general waste types and source categories. If you do not know the general waste types or sources, you are encouraged to describe the site in Item I—Description of Site.

General Type of Waste:
Place an X in the appropriate boxes. The categories listed overlap. Check each applicable category.

1. ☐ Organics
2. ☐ Inorganics
3. ☐ Solvents
4. ☐ Pesticides
5. ☐ Heavy metals
6. ☐ Acids
7. ☐ Bases
8. ☐ PCBs
9. ☐ Mixed Municipal Waste
10. ☒ Unknown
11. ☐ Other (Specify)

Source of Waste:
Place an X in the appropriate boxes.

1. ☐ Mining
2. ☐ Construction
3. ☐ Textiles
4. ☐ Fertilizer
5. ☐ Paper/Printing
6. ☐ Leather Tanning
7. ☐ Iron/Steel Foundry
8. ☐ Chemical, General
9. ☐ Plating/Polishing
10. ☐ Military/Ammunition
11. ☐ Electrical Conductors
12. ☐ Transformers
13. ☐ Utility Companies
14. ☐ Sanitary/Refuse
15. ☐ Photofinish
16. ☐ Lab/Hospital
17. ☐ Unknown
18. ☒ Other (Specify) Pulp and Paper Mill Operations

Option 2: This option is available to persons familiar with the Resource Conservation and Recovery Act (RCRA) Section 3001 regulations (40 CFR Part 261).

Specific Type of Waste:
EPA has assigned a four-digit number to each hazardous waste listed in the regulations under Section 3001 of RCRA. Enter the appropriate four-digit number in the boxes provided. A copy of the list of hazardous wastes and codes can be obtained by contacting the EPA Region serving the State in which the site is located.

RECEIVED
EPA/REGION IV
JUN 13 [illegible]
[illegible]
DIVISION

090107

Form Approved
OMB No. 2000-0138

EPA Form 8900-1

F **Waste Quantity:**

Place an X in the appropriate boxes to indicate the facility types found at the site.

In the "total facility waste amount" space give the estimated combined quantity (volume) of hazardous wastes at the site using cubic feet or gallons.

In the "total facility area" space, give the estimated area size which the facilities occupy using square feet or acres.

Facility Type

1. ☐ Piles
2. ☐ Land Treatment
3. ☒ Landfill
4. ☐ Tanks
5. ☒ Impoundment
6. ☐ Underground Injection
7. ☐ Drums, Above Ground
8. ☐ Drums, Below Ground
9. ☐ Other (Specify) _____

Total Facility Waste Amount

cubic feet unknown *

gallons

Total Facility Area

square feet

acres approx. 75

G **Known, Suspected or Likely Releases to the Environment:**

Place an X in the appropriate boxes to indicate any known, suspected, or likely releases of wastes to the environment.

☐ Known ☐ Suspected ☐ Likely ☒ None

Note: Items H and I are optional. Completing these items will assist EPA and State and local governments in locating and assessing hazardous waste sites. Although completing the items is not required, you are encouraged to do so.

H **Sketch Map of Site Location:** (Optional)

Sketch a map showing streets, highways, routes or other prominent landmarks near the site. Place an X on the map to indicate the site location. Draw an arrow showing the direction north. You may substitute a publishing map showing the site location.

Description of Site: (Optional)

Describe the history and present conditions of the site. Give directions to the site and describe any nearby wells, springs, lakes, or housing. Include such information as how waste was disposed and where the waste came from. Provide any other information or comments which may help describe the site conditions.

* This notification is submitted only because of the possibility that very small quantities of hazardous waste may have accumulated to a total of 55 gallons over the 52 years of operation at this site. No significant quantities of hazardous waste are known to have been disposed at this facility.

Signature and Title:

The person or authorized representative such as plant managers, superintendents, trustees or attorneys) of persons required to notify must sign the form and provide a mailing address (if different than address in item A). For other persons providing notification, the signature is optional. Check the boxes which best describe the relationship to the site of the person required to notify. If you are not required to notify check "Other".

Name Peter C. Redfern, Mill Manager

Street P.O. Box 2448

City Mobile State AL Zip Code 36652

Signature Peter C. Redfern Date 6/15/81

☐ Owner, Present
☐ Owner, Past
☐ Transporter
☒ Operator, Present
☐ Operator, Past
☐ Other

EPA Notification of Hazardous Waste Site

R

United States Environmental Protection Agency
Washington, DC 20460

This initial notification information is required by Section 103(c) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 and must be mailed by June 9, 1981.

Please type or print in ink. If you need additional space, use separate sheets of paper. Indicate the letter of the item which applies.

810609

ALS 000001125

A Person Required to Notify:
Enter the name and address of the person or organization required to notify.

Name: International Paper Company - Mobile Mill
Street: P.O. Box 2448
City: Mobile State: AL Zip Code: 36652

B Site Location:
Enter the common name (if known) and actual location of the site.

Name of Site: International Paper Company Landfill
Street: Papermill Rd.
City: Mobile County: Mobile State: AL Zip Code: 36652

C Person to Contact:
Enter the name, title (if applicable), and business telephone number of the person to contact regarding information submitted on this form.

Name (Last, First and Title): Redfern, Peter C. Mill Manager
Phone:

D Dates of Waste Handling:
Enter the years that you estimate waste treatment, storage, or disposal began and ended at the site.

From (Year): 1929 To (Year): ~~Present~~ 1981

E Waste Type: Choose the option you prefer to complete

Option 1: Select general waste types and source categories. If you do not know the general waste types or sources, you are encouraged to describe the site in Item I—Description of Site.

General Type of Waste:
Place an X in the appropriate boxes. The categories listed overlap. Check each applicable category.

1. ☐ Organics
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3. ☐ Solvents
4. ☐ Pesticides
5. ☐ Heavy metals
6. ☐ Acids
7. ☐ Bases
8. ☐ PCBs
9. ☐ Mixed Municipal Waste
10. ☒ Unknown
11. ☐ Other (Specify)

Source of Waste:
Place an X in the appropriate boxes.

1. ☐ Mining
2. ☐ Construction
3. ☐ Textiles
4. ☐ Fertilizer
5. ☐ Paper/Printing
6. ☐ Leather Tanning
7. ☐ Iron/Steel Foundry
8. ☐ Chemical, General
9. ☐ Plating/Polishing
10. ☐ Military/Ammunition
11. ☐ Electrical Conductors
12. ☐ Transformers
13. ☐ Utility Companies
14. ☐ Sanitary/Refuse
15. ☐ Photofinish
16. ☐ Lab/Hospital
17. ☐ Unknown
18. ☒ Other (Specify) Pulp and Paper Mill Operations

Option 2: This option is available to persons familiar with the Resource Conservation and Recovery Act (RCRA) Section 3001 regulations (40 CFR Part 261).

Specific Type of Waste:
EPA has assigned a four-digit number to each hazardous waste listed in the regulations under Section 3001 of RCRA. Enter the appropriate four-digit number in the boxes provided. A copy of the list of hazardous wastes and codes can be obtained by contacting the EPA Region serving the State in which the site is located.

RECEIVED EPA/REGION IV JUN 5 12 41 PM '81 ENFORCEMENT DIVISION

00118

Form Approved
OMB No. 2000-0138

EPA Form 8900-1

F Waste Quantity:

Place an X in the appropriate boxes to indicate the facility types found at the site.

In the "total facility waste amount" space give the estimated combined quantity (volume) of hazardous wastes at the site using cubic feet or gallons.

In the "total facility area" space, give the estimated area size which the facilities occupy using square feet or acres.

Facility Type

1. ☐ Piles
2. ☐ Land Treatment
3. ☒ Landfill
4. ☐ Tanks
5. ☒ Impoundment
6. ☐ Underground Injection
7. ☐ Drums, Above Ground
8. ☐ Drums, Below Ground
9. ☐ Other (Specify) _____

Total Facility Waste Amount

cubic feet unknown *

gallons

Total Facility Area

square feet

acres approx. 75

G Known, Suspected or Likely Releases to the Environment:

Place an X in the appropriate boxes to indicate any known, suspected, or likely releases of wastes to the environment.

☐ Known ☐ Suspected ☐ Likely ☒ None

Note: Items H and I are optional. Completing these items will assist EPA and State and local governments in locating and assessing hazardous waste sites. Although completing the items is not required, you are encouraged to do so.

H Sketch Map of Site Location: (Optional)

Sketch a map showing streets, highways, routes or other prominent landmarks near the site. Place an X on the map to indicate the site location. Draw an arrow showing the direction north. You may substitute a publishing map showing the site location.

I Description of Site: (Optional)

Describe the history and present conditions of the site. Give directions to the site and describe any nearby wells, springs, lakes, or housing. Include such information as how waste was disposed and where the waste came from. Provide any other information or comments which may help describe the site conditions.

* over the 52 years

J Signature and Title:

The person or authorized representative (such as plant managers, superintendents, trustees or attorneys) of persons required to notify must sign the form and provide a mailing address (if different than address in item A). For other persons providing notification, the signature is optional. Check the boxes which best describe the relationship to the site of the person required to notify. If you are not required to notify check "Other".

Name Peter C. Redfern

Street P.O. Box 2448

City Mobile State AL Zip Code 36652

Signature Peter C. Redfern Date 6/8/81

☐ Owner, Present
☐ Owner, Past
☐ Transporter
☒ Operator, Present
☐ Operator, Past
☐ Other

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

COMPLETE
ENG. 10/2/89

C-586-7-9-58

July 11, 1989

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

Date: 10-2-89
Site Disposition: Phase II
EPA Project Manager: Gena Lawrence

SIBB/SAS
RECEIVED
JUL 13 1989
RECEIVED
EPA - REGION 4
ATLANTA, GA

Subject: Screening Site Inspection, Phase I
International Paper
Mobile, Mobile County, Alabama
EPA ID No. ALD008161861
TDD No. F4-8902-06

Dear Mr. Hanke:

FIT 4 was tasked to conduct a Screening Site Inspection at the International Paper Plant in Mobile, Mobile County, Alabama. Phase I of this inspection included a review of both EPA and state of Alabama file material, completion of a target survey, and an offsite reconnaissance of the facility and the surrounding area.

International Paper is located in north Mobile on Papermill Road. This active facility is approximately 75 acres in size and has been in operation since 1929 (Ref. 1). International Paper utilized a landfill for wood waste until 1981. This landfill may have received small quantities of hazardous waste. The waste that was deposited at this landfill is referred to as a "green liquor sludge" which was diluted by fiber and lime mud. The "sludge," may contain small quantities of solvents and sulfides, but does not appear to pose a threat to health or environment because of the large quantities of dilutants,. The landfill was sampled by International Paper and the test results did not indicate the presence of any hazardous waste (Ref. 2).

At present, a 50-acre surface impoundment is being used to contain the "green liquor sludge". This waste is also diluted by large amounts of fiber and lime. This impoundment is 10-12 feet deep and began being used in 1955. It is believed that it is dredged periodically and the waste could have possibly been deposited in the landfill (Ref. 2).

There is also evidence in the file material that solvents are used in the machine shop on site. These are used in small amounts and are recycled (Ref. 2). International Paper also uses crecylic acid tar as boiler fuel, but this compound is listed as a non-hazardous waste (Refs. 3, 4).

The population within 4 miles of International Paper Company obtains potable water from two different water companies. The Mobile Water Departments obtain water from a surface water intake on Big Creek Lake, roughly 20 miles west of International Paper Company (Refs. 5, 6). The Prichard Water Department obtains potable water from a surface water intake on Eightmile Creek located upstream of the facility. They provide the city of Prichard and Chickasaw with potable water (Ref. 7).

The landfill is believed to be located northeast of the International Paper plant (Ref. 2). The surface water pathway would flow across Hog Bayou, directly adjacent to the plant, into the Chickasaw Creek, which flows into Mobile River and on into Mobile Bay (Ref. 8). The surface impoundment lies on the west side of the plant and surface water drains north to the railroad tracks and is collected in the railroad ditch (Refs. 8, 9).

The Mobile delta is a highly productive fishery. Also, the delta supports an abundance of wildlife including the following federal or state endangered, threatened and rare species: Florida panther, American alligator, Alabama pot-bellied turtle, Alabama shad, blue sucker, brown pelican, and blue-spotted sunfish (Ref. 10).

Based on the above referenced materials, the enclosures, and the potential human food chain threat, it is recommended that a Phase II Screening Site Inspection be planned at the International Paper Company. If you have any questions, please contact me at NUS Corporation.

Very truly yours,

Teresa Sawyer

Teresa Sawyer
Project Manager

Approved:

TS/kw

Enclosures

cc: Gena Townsend

REFERENCES

1. EPA Notification of Hazardous Waste Site (Form 8900-1) for International Paper Company, Mobile, Alabama. Filed by Peter C. Redfern, Mill Manager, June 15, 1981.

2. Potential Hazardous Waste Site Preliminary Assessment (EPS Form 3012-III) for International Paper Company, Mobile, Alabama.

3. Charles Fleming, interoffice memorandum to Bernard E. Cox, Alabama Department of Environmental Management, June 12, 1984. Subject: Cresylic acid tar being used at International Paper Company.

4. Kirby L. Boston, General Counsel, Merichem Company, Houston, Texas, letter to Charles Fleming, Alabama Department of Environmental Management, June 13, 1984. Subject: Certification that Crecylic acid tar used at International Paper is not a hazardous waste.

5. Bradley A. Jackson, NUS Corporation, letter to Richard D. Green, U.S. Environmental Protection Agency, November 20, 1986. Subject: Mobile, Alabama.

6. Board of Water and Sewer Commissioners of the city of Mobile, Map of Fire Hydrant Location, February 1972.

7. Roy King, Prichard Water Department, telephone conversation with K. D. Pass, NUS Corporation, June 12, 1989. Subject: Water Distribution.

8. U.S. Geological Survey, 7.5 minute series Topographic Quadrangle Map of Alabama: Mobile 1953 (Photorevised 1967 and 1974), scale 1:24,000.

9. NUS Corporation Field Logbook No. F4-1303 for International Paper Company, TDD No. F4-8902-06. Documentation of facility reconnaissance, March 14, 1989.

10. U.S. Army Corps of Engineers, Mobile District, "Environmental Data Inventory, State of Alabama," January 1, 1981. Copy on file in NUS library.

RCRA/NPL POLICY QUESTIONNAIRE FOR INITIAL SCREENING

Site Name: International Paper Company

City: Mobile State: Alabama

EPA I.D. Number: ALD008161861

Type of Facility: Generator____ Transporter____ Disposal____
Treatment____ Storage (more than 90 days)____

I. RCRA APPLICABILITY	yes	no
Has this facility treated, stored or disposed of a RCRA hazardous waste since Nov. 19, 1980?	___	X
Has a RCRA Facility Assessment (RFA) been performed on this site?	___	X
Does the facility have a RCRA operating or post-closure permit? If so, date issued _____	___	X
Did the facility file a RCRA Part A application?	___	X
If so:		
1) Does the facility currently have interim status?	___	X
2) Did the facility withdraw its interim status?	___	X
3) Is the facility a known or possible protective filer?	___	X
Is the facility a late (after Nov. 19, 1980) or non-filer that has been identified by EPA or the State?	___	X

STOP HERE IF ALL ANSWERS TO QUESTIONS IN SECTION I ARE NO

II. FINANCIAL STATUS		
Is the facility owned by an entity that has filed for bankruptcy under federal or State laws?	___	___

III. RCRA ENFORCEMENT STATUS		
Has the facility lost authorization to operate or had its interim status revoked?	___	___
Has the facility been involved in any other RCRA enforcement action?	___	___

HAZARD RANKING SYSTEM SCORING SUMMARY

FOR

INTERNATIONAL PAPER COMPANY-MOBILE
EPA SITE NUMBER ALD008161551
MOBILE
MOBILE COUNTY AL
EPA REGION: 4

SCORE STATUS: IN PREPARATION

SCORED BY TERESA SAWYER
OF NUS CORPORATION
ON 06/22/89

DATE OF THIS REPORT: 06/22/89
DATE OF LAST MODIFICATION: 06/22/89

GROUND WATER ROUTE SCORE :	11.43
SURFACE WATER ROUTE SCORE:	0.00
AIR ROUTE SCORE :	0.00
MIGRATION SCORE :	6.61

HRS GROUND WATER ROUTE SCORE

CATEGORY/FACTOR	RAW DATA	ASN. VALUE	SCORE
1. OBSERVED RELEASE	NO	0	0
2. ROUTE CHARACTERISTICS			
DEPTH TO WATER TABLE	1. FEET		
DEPTH TO BOTTOM OF WASTE	1. FEET		
DEPTH TO AQUIFER OF CONCERN	0 FEET	1	
PRECIPITATION	50.0 INCHES		
EVAPORATION	49.0 INCHES		
NET PRECIPITATION	50.0 INCHES	0	
PERMEABILITY	1.0X10-6 CM/SEC	3	3
PHYSICAL STATE		2	2
TOTAL ROUTE CHARACTERISTICS SCORE:			4
3. CONTAINMENT		0	0
4. WASTE CHARACTERISTICS			
TOXICITY/PERSISTENCE:LEAD			1
WASTE QUANTITY CUBIC YDS	2501		
DRUMS	0		
GALLONS	0		
TONS	0		
TOTAL	2501 CU. YDS	8	
TOTAL WASTE CHARACTERISTICS SCORE:			9
5. TARGETS			
GROUND WATER USE		2	2
DISTANCE TO NEAREST WELL	0 FEET		
AND	N TRIX VALUE	0	
TOTAL POPULATION SERVED	0 PERSONS		
NUMBER OF HOUSES	0		
NUMBER OF PERSONS	0		
NUMBER OF CONNECTIONS	0		
NUMBER OF IRRIGATED ACRES	0		
TOTAL TARGETS SCORE:			

GROUND WATER ROUTE SCORE (Sgw) = 11.45

HRS SURFACE WATER ROUTE SCORE

CATEGORY/FACTOR	RAW DATA	ASN. VALUE	SCORE
1. OBSERVED RELEASE	ROUTE NOT SCORED		N/A
2. ROUTE CHARACTERISTICS			
SITE LOCATED IN SURFACE WATER			
SITE WITHIN CLOSED BASIN			
FACILITY SLOPE			
INTERVENING SLOPE			
24-HOUR RAINFALL			
DISTANCE TO DOWN-SLOPE WATER			
PHYSICAL STATE			
TOTAL ROUTE CHARACTERISTICS SCORE:			N/A
3. CONTAINMENT			N/A
4. WASTE CHARACTERISTICS			
TOXICITY/PERSISTENCE:			
WASTE QUANTITY CUBIC YDS			
DRUMS			
GALLONS			
TONS			
TOTAL			
TOTAL WASTE CHARACTERISTICS SCORE:			N/A
5. TARGETS			
SURFACE WATER USE			
DISTANCE TO SENSITIVE ENVIRONMENT			
COASTAL WETLANDS			
FRESHWATER WETLANDS			
CRITICAL HABITAT			
DISTANCE TO STATIC WATER			
DISTANCE TO WATER SUPPLY INTAKE AND		WITHIN VALUE	
TOTAL POPULATION SERVED			
NUMBER OF HOUSES			
NUMBER OF PERSONS			
NUMBER OF CONNECTIONS			
NUMBER OF IRRIGATED ACRES			
TOTAL TARGETS SCORE:			

SURFACE WATER ROUTE SCORE (Sw) = 0.00

HRS AIR ROUTE SCORE

CATEGORY/FACTOR	RAW DATA	ASSN. VALUE	SCORE
OBSERVED RELEASE	NO	0	0
SITE CHARACTERISTICS			
[illegible]		[illegible]	
[illegible]			
[illegible]	[illegible]		
	BASIC RANGE		
	DRUMS		
	ONLINE		
	TANK		
	TOTAL		
TOTAL WASTE CHARACTERISTICS SCORE:			N/A
TARGETS			
POPULATION WITHIN 4-MILE RADIUS			
[illegible]			
[illegible]			
[illegible]			
[illegible]			
DISTANCE TO SENSITIVE ENVIRONMENTS			
COASTAL WETLANDS			
FRESHWATER WETLANDS			
CRITICAL HABITAT			
DISTANCE TO LAND USES			
COMMERCIAL/INDUSTRIAL			
HIGH FOREST/RESIDENTIAL			
AGRICULTURAL LAND			
PRIME FARMLAND			
HISTORIC SITE WITHIN VIEW			
TOTAL TARGETS SCORE:			

AIR ROUTE S[illegible] = [illegible]

HAZARD RANKING SYSTEM SCORING CALCULATIONS
FOR
SITE: INTERNATIONAL PAPER COMPANY-MOBILE
AS OF 06/22/89

GROUND WATER ROUTE SCORE

ROUTE CHARACTERISTICS		14
CONTAINMENT	X	8
WASTE CHARACTERISTICS	X	24
TARGETS	X	8
	=	2052 /57,[illegible] X 100 = [illegible] = S_{gw}

SURFACE WATER ROUTE SCORE

ROUTE CHARACTERISTICS		0
CONTAINMENT	X	0
WASTE CHARACTERISTICS	X	0
TARGETS	X	0
	=	0 /64,350 X 100 = 0.[illegible] = S_{sw}

AIR ROUTE SCORE

OBSERVED RELEASE 0 /35,100 X 100 = 0.[illegible] = S_{air}

SUMMARY OF MIGRATION SCORE CALCULATIONS

	S	S^2
GROUND WATER ROUTE SCORE (S_{gw})	11.43	[illegible]
SURFACE WATER ROUTE SCORE (S_{sw})	0.00	[illegible]
AIR ROUTE SCORE (S_{air})	0.00	
$S^2_{gw} + S^2_{sw} + S^2_{air}$		[illegible]
$\sqrt{(S^2_{gw} + S^2_{sw} + S^2_{air})}$		[illegible]

$S_M = \sqrt{(S^2_{gw} + S^2_{sw} + S^2_{air})} / 1.73$

INTERNATIONAL PAPER

ENVIRONMENTAL SERVICES

April 23, 1990

Ms. Gena D. Townsend
U.S. Environmental Protection Agency
Waste Programs Branch/SAS
345 Courtland Street, N.E.
Atlanta, GA 30365

RE: International Paper Company
P.O. Box 2448
Mobile, Alabama
ALD008161861

Dear Ms. Townsend:

We are in receipt of your letter dated April 16 requesting permission for access to our property located on Paper Mill Road in Mobile, Alabama, for the purpose of conducting an investigation to determine if there is contamination at the site.

In this regard, enclosed is a signed document authorizing EPA and its contractor to enter our property and conduct the inspection. Also, it is the policy of International Paper to require that private contractors execute a Confidentiality and Hold harmless Agreement prior to conducting any inspection. Enclosed is a copy of the Confidentiality Agreement for your review and signature of NUS personnel assigned to conduct the inspection. Please return the executed Confidentiality Agreement to me at the address listed below:

Pablo J. Vasquez, Coordinator
Environmental Services
International Paper
Suite 108
6075 The Corners Parkway
Norcross, GA 30092

Also, this morning I met with Mr. Roger Franklin and Ms. Lori Conway with NUS Corporation and discussed the scope of the inspection scheduled to start at 8:00 am on May 2. Our understanding is that the inspection will be limited to the closed landfill and surface impoundments. Sediment, surface and

SUITE 108 • 6075 THE CORNERS PARKWAY • NORCROSS, GEORGIA 30092
(404) 246-4174 • FAX (404) 246-4176

subsurface soils samples will be collected and analyzed for extractable and purgeable organic compounds, pesticides, PCBs, cyanides, and metals included in the USEPA Target Compound List.

We request to split samples. I understand from Mr. Franklin that containers for split samples will be provided by EPA at no cost to International Paper. If you have any questions, please call me at 246-4171.

Sincerely,

Pablo J. Vasquez
Environmental Coordinator

Enclosure

cc: O. A. Fick
R. Funkhouser
R. G. Goins
A. M. Lindsey
G. A. Mabrey
W. W. Smith

04230104

INTERNATIONAL PAPER
CONFIDENTIALITY AGREEMENT

1. Pursuant to the provisions of Section 114 of the Clean Air Act, Section 308 of the Clean Water Act, Section 3007 of the Resource Conservation and Recovery Act, Section 104(e) of the Comprehensive Environmental Response Compensation and Liability Act, or Section 11 of the Toxic Substances Control Act, International Paper will provide, or give access to, information requested by the Environmental Protection Agency (EPA) in the course of carrying out its responsibilities. Such information and such access will be provided to EPA and to its duly authorized representative _____ (hereinafter "the contractor") designated by EPA to assist EPA in carrying out such responsibilities. The information requested may be either documentary (e.g., records, photographs or charts) or non-documentary (e.g., oral communications, taking of photographs, or visual observations). EPA and the contractor recognize that International Paper may consider the information so provided, or some part of it, to be confidential within the meaning of the sections identified above and 18 U.S.C. 1905. International Paper may assert a claim of confidentiality under the procedures established in Part 2 of Title 40 of the Code of Federal Regulations (40 CFR Part 2) by noting such claim on documentary material provided to the contractor or to EPA. The contractor will note such claim when submitting the information to EPA. Moreover, International Paper may notify the contractor or EPA that it considers the nondocumentary information provided to EPA or to the contractor to be confidential. The contractor will note said claim of confidentiality in any reports or documents submitted to EPA which utilize such non-documentary information. Any material or information claimed as confidential will be treated by the contractor as confidential.

2. a. The contractor and its employees will: (i) Use the information claimed to be confidential only for purposes of carrying out the work required by the contract; (ii) not disclose the information to anyone other than EPA employees without the prior written approval of the Assistant General Counsel for Contracts and General Administration; and (iii) return to the EPA Contracting officer all copies of the information, and any abstracts or excerpts therefrom, upon request by the Contracting Officer, whenever the information is no longer required by the contractor for the performance of the work or upon completion of the contract.

b. The contractor will obtain a written agreement to honor the provisions of paragraph 2(a) from each of its employees who will have access to the information before the employee is allowed access.

c. The contractor will not use any information claimed to be confidential to compete with International Paper.

3. It is intended that this agreement be consistent with and not exceed the provisions of 40 CFR Part 2. This agreement does not address information not obtained from International Paper. Nothing in this agreement relieves the contractor of any liability it may independently have to International Paper as a matter of statutory or common law from injury to International Paper arising from the contractor's release of information in a manner which exceeds its authority under 40 CFR Part 2.

International Paper

By: _____

Date: _____

Contractor

By: _____

Date: _____

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

345 COURTLAND STREET
ATLANTA, GEORGIA 30365

4WD-SISB

RECEIVED

APR 1 ? 1990

REGIONAL ENVIRONMENTAL
SERVICES - EAST

CERTIFIED MAIL
RETURN RECEIPT REQUEST

Mr. Pablo Vasquez
International Paper Company
Suite 108
6075 The Corners Parkway
Norcross, Georgia 30092

Re: International Paper Company
P.O. Box 2448
Mobile, Alabama
ALD008161861

Dear Mr. Vasquez

The United States Environmental Protection Agency (EPA), pursuant to the authority and requirements of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), 42 U.S.C. 9601 et seq., as amended by the Superfund Amendments and Reauthorization Act (SARA), Public Law 99-499, is planning to conduct an investigation of the above referenced site.

The site is located on Paper Mill Road in Mobile, Alabama. EPA has reason to believe that there may be a release or threat of a release of hazardous substances from the site into the surrounding environment. The purpose of the investigation is to determine the nature and extent of contamination at the site and to determine what, if any, further response action would be appropriate.

EPA is requesting permission for access to your property beginning on or about April 30, 1990, and continuing through the completion of the investigation around May 4, 1990. Activities to be conducted during the investigation include:

1. Inspect, sketch and photograph the premises;

2. Collect sediment samples;

3. Collect surface and subsurface soil samples;

4. Collect groundwater samples.

The above sampling activity will be conducted by personnel from EPA Region IV's Field Investigation Team (FIT). Roger Franklin of FIT will contact you prior to the actual site visit to make final arrangements and note any changes.

Split samples will be made available if requested. However, you will be required to furnish your own containers as well as your own laboratory analyses.

Please sign and return this letter to me at the address listed below. A copy is enclosed for your records. If you have any questions, please contact me at (404) 347-5065. Your cooperation in this matter is appreciated.

Ms. Gena D. Townsend
US Environmental Protection Agency
Waste Programs Branch/SAS
345 Courtland Street, NE
Atlanta, Georgia 30365

Sincerely,

Gena D. Townsend
EPA Project Manager

Enclosure

cc: Roger Franklin, NUS Corporation
Joe Downey, ADEM

I hereby grant permission for EPA and its contractors to enter the above-referenced site for purposes of carrying out the sampling activities described above.

Signature: Robert H. Harris

DATE: 4-24-90

EPA

POTENTIAL HAZARDOUS WASTE SITE
IDENTIFICATION AND PRELIMINARY ASSESSMENT

REGION	SITE NUMBER *(to be assigned by Hq)*

ALD008161861 MOBILE
INTERNATIONAL PAPER CO LANDFILL
PAPERMILL RD
MOBILE AL 36652

ite to help set priorities for site inspection. The information ated on subsequent forms as a result of additional inquiries

as completely as possible before Section II *(Preliminary* ile and submit a copy to: U.S. Environmental Protection Force *(EN-335)*; 401 M St., SW; Washington, DC 20460.

FICATION

STREET *(or other identifier)*

C. CITY	D. STATE	E. ZIP CODE	F. COUNTY NAME

G. OWNER/OPERATOR *(if known)*

1. NAME	2. TELEPHONE NUMBER

H. TYPE OF OWNERSHIP

☐ 1. FEDERAL ☐ 2. STATE ☐ 3. COUNTY ☐ 4 MUNICIPAL ☐ 5 PRIVATE ☐ 6 UNKNOWN

I. SITE DESCRIPTION

J. HOW IDENTIFIED *(i.e., citizen's complaints, OSHA citations, etc.)*	K. DATE IDENTIFIED *(mo., day, & yr.)*

L. PRINCIPAL STATE CONTACT

1. NAME	2. TELEPHONE NUMBER

II. PRELIMINARY ASSESSMENT *(complete this section last)*

A. APPARENT SERIOUSNESS OF PROBLEM

☐ 1. HIGH ☐ 2. MEDIUM ☐ 3. LOW ☐ 4 NONE ☐ 5. UNKNOWN

B. RECOMMENDATION

☐ 1. NO ACTION NEEDED *(no hazard)*

☐ 2. IMMEDIATE SITE INSPECTION NEEDED
a. TENTATIVELY SCHEDULED FOR: _____
b. WILL BE PERFORMED BY: _____

☐ 3. SITE INSPECTION NEEDED
a. TENTATIVELY SCHEDULED FOR: _____
b. WILL BE PERFORMED BY: _____

☐ 4. SITE INSPECTION NEEDED *(low priority)*

C. PREPARER INFORMATION

1. NAME	2. TELEPHONE NUMBER	3. DATE *(mo., day, & yr.)*

III. SITE INFORMATION

A. SITE STATUS

☐ 1. ACTIVE *(Those industrial or municipal sites which are being used for waste treatment, storage, or disposal on a continuing basis, even if infrequently.)*

☐ 2. INACTIVE *(Those sites which no longer receive wastes.)*

☐ 3. OTHER *(specify)*: _____ *(Those sites that include such incidents like "midnight dumping" where no regular or continuing use of the site for waste disposal has occurred.)*

B. IS GENERATOR ON SITE?

☐ 1. NO ☐ 2. YES *(specify generator's four-digit SIC Code)*: _____

C. AREA OF SITE *(in acres)*	D. IF APPARENT SERIOUSNESS OF SITE IS HIGH, SPECIFY COORDINATES	
	1. LATITUDE *(deg.—min.—sec.)*	2. LONGITUDE *(deg.—min.—sec.)*

E. ARE THERE BUILDINGS ON THE SITE?

☐ 1. NO ☐ 2. YES *(specify)*: _____

Continue On Reverse

Continued From Front

IV. CHARACTERIZATION OF SITE ACTIVITY

Indicate the major site activity(ies) and details relating to each activity by marking 'X' in the appropriate boxes.

'X'	A. TRANSPORTER	'X'	B. STORER	'X'	C. TREATER	'X'	D. DISPOSER
	1. RAIL		1. PILE		1. FILTRATION		1. LANDFILL
	2. SHIP		2. SURFACE IMPOUNDMENT		2. INCINERATION		2. LANDFARM
	3. BARGE		3. DRUMS		3. VOLUME REDUCTION		3. OPEN DUMP
	4. TRUCK		4. TANK, ABOVE GROUND		4. RECYCLING/RECOVERY		4. SURFACE IMPOUNDMENT
	5. PIPELINE		5. TANK, BELOW GROUND		5. CHEM./PHYS. TREATMENT		5. MIDNIGHT DUMPING
	6. OTHER *(specify)*:		6. OTHER *(specify)*:		6. BIOLOGICAL TREATMENT		6. INCINERATION
					7. WASTE OIL REPROCESSING		7. UNDERGROUND INJECTION
					8. SOLVENT RECOVERY		8. OTHER *(specify)*:
					9. OTHER *(specify)*:		

E. SPECIFY DETAILS OF SITE ACTIVITIES AS NEEDED

V. WASTE RELATED INFORMATION

A. WASTE TYPE

☐ 1 UNKNOWN ☐ 2. LIQUID ☐ 3. SOLID ☐ 4. SLUDGE ☐ 5. GAS

B. WASTE CHARACTERISTICS

☐ 1 UNKNOWN ☐ 2. CORROSIVE ☐ 3. IGNITABLE ☐ 4 RADIOACTIVE ☐ 5 HIGHLY VOLATILE
☐ 6. TOXIC ☐ 7 REACTIVE ☐ 8 INERT ☐ 9 FLAMMABLE

☐ 10. OTHER *(specify)*:

C. WASTE CATEGORIES

1. Are records of wastes available? Specify items such as manifests, inventories, etc. below.

2. Estimate the amount *(specify unit of measure)* of waste by category; mark 'X' to indicate which wastes are present.

a. SLUDGE	b. OIL	c. SOLVENTS	d. CHEMICALS	e. SOLIDS	f. OTHER
AMOUNT	AMOUNT	AMOUNT	AMOUNT	AMOUNT	AMOUNT
UNIT OF MEASURE	UNIT OF MEASURE	UNIT OF MEASURE	UNIT OF MEASURE	UNIT OF MEASURE	UNIT OF MEASURE
'X' (1) PAINT, PIGMENTS	'X' (1) OILY WASTES	'X' (1) HALOGENATED SOLVENTS	'X' (1) ACIDS	'X' (1) FLYASH	'X' (1) LABORATORY PHARMACEUT.
(2) METALS SLUDGES	(2) OTHER *(specify)*:	(2) NON-HALOGNTD. SOLVENTS	(2) PICKLING LIQUORS	(2) ASBESTOS	(2) HOSPITAL
(3) POTW		(3) OTHER *(specify)*:	(3) CAUSTICS	(3) MILLING/ MINE TAILINGS	(3) RADIOACTIVE
(4) ALUMINUM SLUDGE			(4) PESTICIDES	(4) FERROUS SMLTG. WASTES	(4) MUNICIPAL
(5) OTHER *(specify)*:			(5) DYES/INKS	(5) NON-FERROUS SMLTG. WASTES	(6) OTHER *(specify)*:
			(6) CYANIDE	(6) OTHER *(specify)*:	
			(7) PHENOLS		
			(8) HALOGENS		
			(9) PCB		
			(10) METALS		
			(11) OTHER *(specify)*		

V. WASTE RELATED INFORMATION *(continued)*

3. LIST SUBSTANCES OF GREATEST CONCERN WHICH MAY BE ON THE SITE *(place in descending order of hazard)*.

4. ADDITIONAL COMMENTS OR NARRATIVE DESCRIPTION OF SITUATION KNOWN OR REPORTED TO EXIST AT THE SITE.

VI. HAZARD DESCRIPTION

A. TYPE OF HAZARD	B. POTENTIAL HAZARD *(mark 'X')*	C. ALLEGED INCIDENT *(mark 'X')*	D. DATE OF INCIDENT *(mo., day, yr.)*	E. REMARKS
1. NO HAZARD				
2. HUMAN HEALTH				
3. NON-WORKER INJURY/EXPOSURE				
4. WORKER INJURY				
5. CONTAMINATION OF WATER SUPPLY				
6. CONTAMINATION OF FOOD CHAIN				
7. CONTAMINATION OF GROUND WATER				
8. CONTAMINATION OF SURFACE WATER				
9. DAMAGE TO FLORA/FAUNA				
10. FISH KILL				
11. CONTAMINATION OF AIR				
12. NOTICEABLE ODORS				
13. CONTAMINATION OF SOIL				
14. PROPERTY DAMAGE				
15. FIRE OR EXPLOSION				
16. SPILLS/LEAKING CONTAINERS/ RUNOFF/STANDING LIQUIDS				
17. SEWER, STORM DRAIN PROBLEMS				
18. EROSION PROBLEMS				
19. INADEQUATE SECURITY				
20. INCOMPATIBLE WASTES				
21. MIDNIGHT DUMPING				
22. OTHER *(specify)*:				

Continued From Front

VII. PERMIT INFORMATION

A. INDICATE ALL APPLICABLE PERMITS HELD BY THE SITE.

☐ 1. NPDES PERMIT ☐ 2. SPCC PLAN ☐ 3. STATE PERMIT (specify): _____

☐ 4. AIR PERMITS ☐ 5. LOCAL PERMIT ☐ 6. RCRA TRANSPORTER

☐ 7. RCRA STORER ☐ 8. RCRA TREATER ☐ 9. RCRA DISPOSER

☐ 10. OTHER (specify): _____

B. IN COMPLIANCE?

☐ 1. YES ☐ 2. NO ☐ 3. UNKNOWN

4. WITH RESPECT TO (list regulation name & number): _____

VIII. PAST REGULATORY ACTIONS

☐ A. NONE ☐ B. YES (summarize below)

IX. INSPECTION ACTIVITY (past or on-going)

☐ A. NONE ☐ B. YES (complete items 1, 2, 3, & 4 below)

1. TYPE OF ACTIVITY	2. DATE OF PAST ACTION (mo., day, & yr.)	3. PERFORMED BY: (EPA/State)	4. DESCRIPTION

X. REMEDIAL ACTIVITY (past or on-going)

☐ A. NONE ☐ B. YES (complete items 1, 2, 3, & 4 below)

1. TYPE OF ACTIVITY	2. DATE OF PAST ACTION (mo., day, & yr.)	3. PERFORMED BY: (EPA/State)	4. DESCRIPTION

NOTE: Based on the information in Sections III through X, fill out the Preliminary Assessment (Section II) information on the first page of this form.

30 '83

EPA

POTENTIAL HAZARDOUS WASTE SITE IDENTIFICATION AND PRELIMINARY ASSESSMENT

REGION | SITE NUMBER (to be assigned by Hq)

NOTE: This form is completed for each potential hazardous waste site to help set priorities for site inspection. The information submitted on this form is based on available records and may be updated on subsequent forms as a result of additional inquiries and on-site inspections.

GENERAL INSTRUCTIONS: Complete Sections I and III through X as completely as possible before Section II (*Preliminary Assessment*). File this form in the Regional Hazardous Waste Log File and submit a copy to: U.S. Environmental Protection Agency; Site Tracking System; Hazardous Waste Enforcement Task Force (EW-335); 401 M St., SW; Washington, DC 20460.

ALD008161861 MOBILE
INTERNATIONAL PAPER CO LANDFILL
PAPERMILL RD
MOBILE AL 36652
REDFERN, PETER C., MILL * 2054578961

ION
(or other identifier)

C. ZIP CODE | F. COUNTY NAME

2. TELEPHONE NUMBER

H. TYPE OF OWNERSHIP

☐ 1. FEDERAL ☐ 2. STATE ☐ 3. COUNTY ☐ 4. MUNICIPAL ☐ 5. PRIVATE ☐ 6. UNKNOWN

I. SIT

"103-C NOTIFICATION" DATE: 810609
DAN COOPER OR BUDDY COX
PHONE: 205-832-6728

Site inspection by State - Site Cleaned up.

J. HO

K. DATE IDENTIFIED (mo., day, & yr.)

L. PR
1.

2. TELEPHONE NUMBER

II. PRELIMINARY ASSESSMENT (complete this section last)

A. APPARENT SERIOUSNESS OF PROBLEM

☐ 1. HIGH ☐ 2. MEDIUM ☐ 3. LOW ☒ 4. NONE ☐ 5. UNKNOWN

B. RECOMMENDATION

☒ 1. NO ACTION NEEDED (*no hazard*)

☒ 3. SITE INSPECTION NEEDED
a. TENTATIVELY SCHEDULED FOR: 81
b. WILL BE PERFORMED BY:

☐ 2. IMMEDIATE SITE INSPECTION NEEDED
a. TENTATIVELY SCHEDULED FOR
b. WILL BE PERFORMED BY:

☐ 4. SITE INSPECTION NEEDED (*low priority*)

C. PREPARER INFORMATION

1. NAME VS/JV/HH | 2. TELEPHONE NUMBER | 3. DATE (mo., day, & yr.) 82/05/11

III. SITE INFORMATION

A. SITE STATUS

☐ 1. ACTIVE (*Those industrial or municipal sites which are being used for waste treatment, storage, or disposal on a continuing basis, even if infrequently.*)

☐ 2. INACTIVE (*Those sites which no longer receive wastes.*)

☐ 3. OTHER (*specify*) (*Those sites that include such incidents like "midnight dumping" where no regular or continuing use of the site for waste disposal has occurred.*)

B. IS GENERATOR ON SITE?

☐ 1. NO ☐ 2. YES (*specify generator's four-digit SIC Code*)

C. AREA OF SITE (*in acres*)

D. IF APPARENT SERIOUSNESS OF SITE IS HIGH, SPECIFY COORDINATES
1. LATITUDE (*deg.—min.—sec.*) | 2. LONGITUDE (*deg.—min.—sec.*)

E. ARE THERE BUILDINGS ON THE SITE?

☐ 1. NO ☐ 2. YES (*specify*):

T2070-2 (10-79)

Continue On Reverse

Continued From Front

IV. CHARACTERIZATION OF SITE ACTIVITY

Indicate the major site activity(*ies*) and details relating to each activity by marking **'X'** in the appropriate boxes.

'X'	A. TRANSPORTER	'X'	B. STORER	'X'	C. TREATER	'X'	D. DISPOSER
	1. RAIL		1. PILE		1. FILTRATION		1. LANDFILL
	2. SHIP		2. SURFACE IMPOUNDMENT		2. INCINERATION		2. LANDFARM
	3. BARGE		3. DRUMS		3. VOLUME REDUCTION		3. OPEN DUMP
	4. TRUCK		4. TANK, ABOVE GROUND		4. RECYCLING/RECOVERY		4. SURFACE IMPOUNDMENT
	5. PIPELINE		5. TANK, BELOW GROUND		5. CHEM./PHYS. TREATMENT		5. MIDNIGHT DUMPING
	6. OTHER *(specify)*:		6. OTHER *(specify)*:		6. BIOLOGICAL TREATMENT		6. INCINERATION
					7. WASTE OIL REPROCESSING		7. UNDERGROUND INJECTION
					8. SOLVENT RECOVERY		8. OTHER *(specify)*:
					9. OTHER *(specify)*:		

E. SPECIFY DETAILS OF SITE ACTIVITIES AS NEEDED

V. WASTE RELATED INFORMATION

A. WASTE TYPE

☐ 1 UNKNOWN ☐ 2 LIQUID ☐ 3. SOLID ☐ 4 SLUDGE ☐ 5. GAS

B. WASTE CHARACTERISTICS

☐ 1 UNKNOWN ☐ 2. CORROSIVE ☐ 3. IGNITABLE ☐ 4 RADIOACTIVE ☐ 5 HIGHLY VOLATILE
☐ 6 TOXIC ☐ 7 REACTIVE ☐ 8 INERT ☐ 9 FLAMMABLE

☐ 10. OTHER *(specify)*: _____

C. WASTE CATEGORIES

1. Are records of wastes available? Specify items such as manifests, inventories, etc. below.

2. Estimate the amount(*specify unit of measure*)of waste by category; mark **'X'** to indicate which wastes are present.

a. SLUDGE	b. OIL	c. SOLVENTS	d. CHEMICALS	e. SOLIDS	f. OTHER
AMOUNT	AMOUNT	AMOUNT	AMOUNT	AMOUNT	AMOUNT
UNIT OF MEASURE	UNIT OF MEASURE	UNIT OF MEASURE	UNIT OF MEASURE	UNIT OF MEASURE	UNIT OF MEASURE
'X' (1) PAINT, PIGMENTS	'X' (1) OILY WASTES	'X' (1) HALOGENATED SOLVENTS	'X' (1) ACIDS	'X' (1) FLYASH	'X' (1) LABORATORY PHARMACEUT.
(2) METALS SLUDGES	(2) OTHER *(specify)*:	(2) NON-HALOGNTD. SOLVENTS	(2) PICKLING LIQUORS	(2) ASBESTOS	(2) HOSPITAL
(3) POTW		(3) OTHER *(specify)*	(3) CAUSTICS	(3) MILLING/ MINE TAILINGS	(3) RADIOACTIVE
(4) ALUMINUM SLUDGE			(4) PESTICIDES	(4) FERROUS SMLTG. WASTES	(4) MUNICIPAL
(5) OTHER *(specify)*:			(5) DYES/INKS	(5) NON-FERROUS SMLTG. WASTES	(5) OTHER *(specify)*:
			(6) CYANIDE	(6) OTHER *(specify)*:	
			(7) PHENOLS		
			(8) HALOGENS		
			(9) PCB		
			(10) METALS		
			(11) OTHER *(specify)*		

 Continue On Page 3

Continued From Page 2

V. WASTE RELATED INFORMATION (continued)

3. LIST SUBSTANCES OF GREATEST CONCERN WHICH MAY BE ON THE SITE (place in descending order of hazard).

Non Haz. Chips & Bark
Removed by "Dirt Inc."

4. ADDITIONAL COMMENTS OR NARRATIVE DESCRIPTION OF SITUATION KNOWN OR REPORTED TO EXIST AT THE SITE.

VI. HAZARD DESCRIPTION

A. TYPE OF HAZARD	B. POTENTIAL HAZARD (mark 'X')	C. ALLEGED INCIDENT (mark 'X')	D. DATE OF INCIDENT (mo., day, yr.)	E. REMARKS
1. NO HAZARD				
2. HUMAN HEALTH				
3. NON-WORKER INJURY/EXPOSURE				
4. WORKER INJURY				
5. CONTAMINATION OF WATER SUPPLY				
6. CONTAMINATION OF FOOD CHAIN				
7. CONTAMINATION OF GROUND WATER				
8. CONTAMINATION OF SURFACE WATER				
9. DAMAGE TO FLORA/FAUNA				
10. FISH KILL				
11. CONTAMINATION OF AIR				
12. NOTICEABLE ODORS				
13. CONTAMINATION OF SOIL				
14. PROPERTY DAMAGE				
15. FIRE OR EXPLOSION				
16. SPILLS/LEAKING CONTAINERS/ RUNOFF/STANDING LIQUIDS				
17. SEWER, STORM DRAIN PROBLEMS				
18. EROSION PROBLEMS				
19. INADEQUATE SECURITY				
20. INCOMPATIBLE WASTES				
21. MIDNIGHT DUMPING				
22. OTHER (specify):				

 Continue On Reverse

Continued From Front

VII. PERMIT INFORMATION

A. INDICATE ALL APPLICABLE PERMITS HELD BY THE SITE.

☐ 1. NPDES PERMIT ☐ 2. SPCC PLAN ☐ 3. STATE PERMIT *(specify)*: _____

☐ 4. AIR PERMITS ☐ 5. LOCAL PERMIT ☐ 6. RCRA TRANSPORTER

☐ 7. RCRA STORER ☐ 8. RCRA TREATER ☐ 9. RCRA DISPOSER

☐ 10. OTHER *(specify)*: _____

B. IN COMPLIANCE?

☐ 1. YES ☐ 2. NO ☐ 3. UNKNOWN

4. WITH RESPECT TO *(list regulation name & number)*: _____

VIII. PAST REGULATORY ACTIONS

☐ A. NONE ☐ B. YES *(summarize below)*

IX. INSPECTION ACTIVITY *(past or on-going)*

☐ A. NONE ☐ B. YES *(complete items 1,2,3, & 4 below)*

1. TYPE OF ACTIVITY	2. DATE OF PAST ACTION *(mo., day, & yr.)*	3. PERFORMED BY: *(EPA/State)*	4. DESCRIPTION

X. REMEDIAL ACTIVITY *(past or on-going)*

☐ A. NONE ☐ B. YES *(complete items 1, 2, 3, & 4 below)*

1. TYPE OF ACTIVITY	2. DATE OF PAST ACTION *(mo., day, & yr.)*	3. PERFORMED BY: *(EPA/State)*	4. DESCRIPTION

NOTE: Based on the information in Sections III through X, fill out the Preliminary Assessment *(Section II)* information on the first page of this form.

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

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
AL	D008161861

II. SITE NAME AND LOCATION

01 SITE NAME (Legal, common, or descriptive name of site)	02 STREET, ROUTE NO., OR SPECIFIC LOCATION IDENTIFIER
INTERNATIONAL PAPER COMPANY - LANDFILL	PAPERMILL ROAD

03 CITY	04 STATE	05 ZIP CODE	06 COUNTY	07 COUNTY CODE	08 CONG DIST
MOBILE	AL	36652	MOBILE	097	01

09 COORDINATES LATITUDE	LONGITUDE
30 44 29._	088 04 48._

10 DIRECTIONS TO SITE (Starting from nearest public road) TAKE WATER ST. EXIT OFF I-10. TRAVEL NORTH ON WATER ST. TO TELEGRAPH RD. TURN RIGHT. TRAVEL TO BAY BRIDGE ROAD, TURN RIGHT. TURN LEFT ONTO PAPERMILL ROAD. I.P. IS SECOND MILL ON RIGHT.

III. RESPONSIBLE PARTIES

01 OWNER (If known)	02 STREET (Business, mailing, residential)
INTERNATIONAL PAPER COMPANY	P.O. BOX 2448

03 CITY	04 STATE	05 ZIP CODE	06 TELEPHONE NUMBER
MOBILE	AL	36652	(205) 470-3752

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

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

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

14 OWNER/OPERATOR NOTIFICATION ON FILE (Check all that apply)
☐ A. RCRA 3001 DATE RECEIVED: __/__/__ (MONTH DAY YEAR) ☒ B. UNCONTROLLED WASTE SITE (CERCLA 103 c) DATE RECEIVED: 6/19/81 (MONTH DAY YEAR) ☐ C. NONE

IV. CHARACTERIZATION OF POTENTIAL HAZARD

01 ON SITE INSPECTION
☒ YES DATE 6/1/84 (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
1929 (BEGINNING YEAR) ____ (ENDING YEAR) ☐ UNKNOWN

04 DESCRIPTION OF SUBSTANCES POSSIBLY PRESENT, KNOWN, OR ALLEGED
SMALL AMOUNT OF SOLVENTS USED IN MACHINE SHOP.
GREEN LIQUOR FILTER DREGS (SLUDGE)

05 DESCRIPTION OF POTENTIAL HAZARD TO ENVIRONMENT AND/OR POPULATION
SOLVENTS ARE RECYCLED AND ONLY SMALL AMOUNTS USED. NO BLACK ~~OR GREEN~~ LIQUOR SLUDGE DISPOSED. NO EVIDENCE OF HAZARDOUS SUBSTANCES, ENVIRONMENTAL THREAT FROM CLOSED ON-SITE LANDFILL. GREEN LIQUOR SLUDGE DISPOSED IN SURFACE IMPOUNDMENT WHERE IT IS MIXED WITH FIBER WASTE INFLUENT

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
STEVE MAURER SCM	ADEM	(205) 271-7728

04 PERSON RESPONSIBLE FOR ASSESSMENT	05 AGENCY	06 ORGANIZATION	07 TELEPHONE NUMBER	08 DATE
DONALEA DINSMORE		EPS	(601) 922-8242	7/29/85 (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
AL	D008161861

II. WASTE STATES, QUANTITIES, AND CHARACTERISTICS

01 PHYSICAL STATES (Check all that apply)

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

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

TONS _____

CUBIC YARDS _____

NO. OF DRUMS _____

03 WASTE CHARACTERISTICS (Check all that apply)

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

III. WASTE TYPE

CATEGORY	SUBSTANCE NAME	01 GROSS AMOUNT	02 UNIT OF MEASURE	03 COMMENTS
SLU	SLUDGE			
OLW	OILY WASTE			
SOL	SOLVENTS			
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)

ADEM FILES, CONVERSATION WITH SCOTT TAIT OF I.P.

EPA

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

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
AL	D008161861

II. HAZARDOUS CONDITIONS AND INCIDENTS

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

NONE OBSERVED

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

NONE OBSERVED

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

NA

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

NA

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

NA

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

NA

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

NA

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

NA

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

NA

EPA

POTENTIAL HAZARDOUS WASTE SITE PRELIMINARY ASSESSMENT

PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
AL	D 008161861

II. HAZARDOUS CONDITIONS AND INCIDENTS (Continued)

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

NA

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

NA

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

NA

01 ☐ M. UNSTABLE CONTAINMENT OF WASTES (Spills/runoff/standing liquids/leaking drums) — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION

NA

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

NA

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

NA

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

NA

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

III. TOTAL POPULATION POTENTIALLY AFFECTED: _____

IV. COMMENTS

No Known Hazardous Wastes on-site

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

ADEM Files, Conversation with Scott Tait.

Possible landfill area
International Paper Company
Summerville
Chickasaw Terrace
Turnerville Sch
Vigor Sch
PRICHARD
Prichard Homes Sch
Glendale Sch
Whitley Sch
Magazine
St Louis Point
Creek
Radio Towers
Branch
Allenville
MOBILE
RIVER
MOBILE QUADRANGLE 12
ALABAMA
7.5 MINUTE SERIES (TOPOGRAPHIC)
N

July 18, 1985

Mr. Scott Tait, Superintendent
Environmental Services
International Paper Company
P. O. Box 2448
Mobile, Alabama 36652

Dear Mr. Mr. Tait:

On March 31, 1985, the Alabama Department of Environmental Management (ADEM) received a grant from the U. S. Environmental Protection Agency (EPA) to conduct a CERCLA Hazardous Waste Site Inventory Program.

The purpose of the inventory program is to screen and evaluate potential hazardous waste sites and identify any public health or environmental problems these sites may pose.

The list of sites to be screened is determined by EPA, and includes primarily those companies that notified under Section 3005 of RCRA or Section 103(c) of CERCLA (the legislation establishing Superfund).

Since this is a one-time, nonrecurring appropriation, ADEM has elected to complete the inventory by use of a private contractor. Environmental Protection Systems, Inc. (EPS), Jackson, Mississippi, has been selected to perform the necessary work.

The first task of EPS will be to review information in ADEM files. However, in order to verify certain information and fill in data gaps, it will be necessary for EPS to contact each company on the inventory list, by telephone. Telephone contacts will be made within a nine-month period, beginning on July 23, 1985.

In some cases, an inspection will be necessary in order to complete the site assessment report. The inspection phase of the inventory is currently scheduled for October 1985 through March 1986.

In order to carry out this program in a reasonable and timely manner, with a minimum of inconvenience to you, I respectfully request your cooperation and assistance.

If you have any questions about the project, please contact me at (205) 271-7728.

Sincerely,

Stephen C. Maurer, Chief
Special Services Program
Land Division

SCM/bw

WINDSHIELD SURVEY FORM

1. NAME OF SITE ON ERRIS: International Paper Co. Landfill

2. EPA I.D. NUMBER OF SITE: ALD 008 161 861

3. STREET ADDRESS OR DIRECTIONS TO SITE: (See attached map): Paper Mill Road

4. CITY: Mobile

5. COUNTY: Mobile

6. STATE: Alabama ZIP CODE: 36652

7. TELEPHONE NUMBER: (205) 470-3752 (Scott Tait)

8. PERSON CONDUCTING SURVEY: Steve Maurer

9. DATE OF SURVEY: 7/9/85 TIME OF SURVEY: 6:00 A.M.

10. DESCRIPTION OF SITE AND SURROUNDING AREA: Large plant located along north side of Paper Mill Road. Site active, unable to gain access to back of plant

11. DESCRIPTION OF AREAS PHOTOGRAPHED: Several pictures of plant taken from Paper mill Road.

12. OTHER COMMENTS: 103(c) notification - Began operation 1929. This site is not the Chunchula landfill mentioned in the Industrial waste file. Believe landfill is located N.E. of Paper Mill Road plant. Scott Tait, Superintendent Environmental Services International Paper Company P.O. Box 2448 Mobile, Ala. 36652

Charles

INTERNATIONAL PAPER COMPANY

P. O. BOX 2448, MOBILE, ALABAMA 36652

June 29, 1984

MOBILE MILL

Mr. Charles Fleming
Alabama Department of Environmental Management
Land Division
1751 Federal Drive
Montgomery, Al 36130

Dear Mr. Fleming:

Attached is a copy of the hazardous waste testing results for the Cresylic Acid Tar sample we split with you on June 1, 1984. The analyses were performed by Thompson Engineering Testing of Mobile.

The results indicate Cresylic Acid Tar does not exhibit the characteristics of a hazardous waste.

Very truly yours,

Scott J Tait

Scott J. Tait
Superintendent
Environmental Services

SJT:ek

cc: O. A. Fick

Attach.

JUL 1984
RECEIVED
HEAD
Land Division

TABLE OF RESULTS
INTERNATIONAL PAPER COMPANY

Sample Identification: Cresylic Tar
Lab No.: 36848

ANALYSIS OF SAMPLE AS RECEIVED

Date of Analysis	Analyst	Parameter	Test Result	Hazardous Waste Criteria*
6/26/84	KM	pH (1:1 dilution)	10.1	≤2 or ≥12.5 (applicable to aqueous sample)
6/26/84	KM	Flash Point, PMCC	>104°C	<60°C
6/26/84	KM	Sulfide (Qual. check, Std. Methods, Proc. 4273c)	Negative	See discussion in reg. of haz. waste characteristics of reactivity

EXTRACTION PROCEDURE TESTS

Extraction Test Conditions

Date of Extraction:	6/6/84
Analyst:	P. Sims
% Solid Phase (w/w)	100
% Liquid Phase (w/w)	0
Weight of Solid Phase Extracted, gms	50
Initial pH of Mixture	9.4
Volume of Acetic Acid (0.5N) Required to Maintain Mixture at pH 5.0, mls	52.8
Final pH of Mixture (after 24 hours)	5.0
Wt. Recombined Liquid Phase, gms	0

Analysis of Extract

Date of Analysis	Analyst	Parameter	Test Result	Hazardous Waste Criteria*
6/10/84	PS	Total Arsenic as As, mg/l	0.006	5.0
6/14/84	PS	Total Barium as Ba, mg/l	0.076	100.0
6/13/84	PS	Total Cadmium as Cd, mg/l	<.002	1.0
6/13/84	PS	Total Chromium as Cr, mg/l	<.01	--
--	--	Hexavalent Chromium as Cr, mg/l**	<.01	5.0
6/12/84	PS	Total Lead as Pb, mg/l	0.058	5.0
6/8/84	PS	Total Mercury as Hg, mg/l	<.0002	0.2
6/10/84	PS	Total Selenium as Se, mg/l	<.002	1.0
6/12/84	PS	Total Silver as Ag, mg/l	<.01	5.0

*40 CFR 261 and State of Alabama Hazardous Waste Management Regulations Section 4-234.
**Hexavalent chromium concentrations based on determination of total chromium.

File International Paper Mobile

MERICHEM COMPANY
PHONE: A/C 713—224-3030 • 4800 TEXAS COMMERCE TOWER
TELEX 775-178 • HOUSTON, TEXAS 77002-3068

JUN 1984
RECEIVED
ADEM
Land Division

June 13, 1984

Mr. Charles Fleming
Alabama Department of
Environmental Management
State Capitol
Montgomery, Alabama 36130

Dear Mr. Fleming:

Pursuant to our previous conversation concerning the Cresylic Acid Tar we sell to International Paper Corporation at their Mobile, Alabama location, this letter shall serve as Merichem's certification that the Cresylic Acid Tar is not a hazardous waste as defined by the EPA regulations (40 CFR 261).

Our conclusion is based on the following:

- Cresylic Acid Tar does not exhibit any of the four specific characteristics set forth in 40 CFR 261, Subpart C; that is, Cresylic Acid Tar is not ignitable, corrosive, reactive, or EP toxic, as those terms are defined, based on our analyses of this material.

- Cresylic Acid Tar is <u>not</u> a listed waste as set forth in 40 CFR 261, Subpart D, specifically 40 CFR 261.31 and 261.32. We would point out that the material is <u>not</u> a spent nonhalogenated solvent, e.g. cresol or cresylic acid, <u>nor</u> is it a still bottoms obtained from the recovery of such solvents. Therefore, it is not properly classifiable under F-004 in Section 261.31.

- Cresylic Acid Tar is <u>not</u> a discarded commercial chemical product nor is it an off-spec species, container residue or spill residue of any of the chemicals listed in 40 CFR 261.33, specifically Paragraph (f). Note the comment contained in Paragraph (d) of this same 40 CFR 261.33, which I set forth below:

"[Comment: The phrase "commercial chemical product or manufacturing chemical intermediate having the generic name listed in ..." refers to a chemical substance which is manufactured or formulated for commercial or manufacturing use which consists of the commercially pure grade of the chemical, any technical grades of the chemical that are produced or marketed, and all formulations in which the chemical is the sole active ingredient. It does not refer to a material, such as a manufacturing process waste, that contains any of the substances listed in paragraphs (e) or (f). Where a manufacturing process waste is deemed to be a hazardous waste because it contains a substance listed in paragraphs (e) or (f), such waste will be listed in either §§261.31 or 261.32 or will be identified as a hazardous waste by the characteristics set forth in Subpart C of this part.]" (emphasis added)

We would additionally point out that our treatment of this material as a non-RCRA waste has not been challenged by Stae or federal environmental authorities in any of the RCRA inspections we had had at our Houston plant. Also, we confirm that this material has been sold to others as a fuel component.

Therefore, we are confident that although our Cresylic Acid Tar is to be treated as a hazardous material in the general sense of the term, it is <u>not</u> a hazardous waste under RCRA.

I am enclosing some data on the physical properties of this product and a typical laboratory analysis.

If you have any further questions concerning this product or the application of the above regulations, please feel free to contact me.

Very truly yours,

Kirby L. Boston
General Counsel

sb

cc: Mr. Scott Tait, Superintendent Environmental Services
IP-Mobile Mill
P. O. Box 2448
Mobile, AL 36652

MERICHEM COMPANY
PHONE: A/C 713—224-3030 • 4800 TEXAS COMMERCE TOWER
TELEX. 775-178 • HOUSTON, TEXAS 77002-3068

CRESYLIC ACID TAR

DESCRIPTION: This product is a distillate bottoms produced in Merichem's refining process while recovering pure phenol, cresols and xylenols from petroleum refinery spent caustic streams. Analysis of this stream indicates the occurrence of oxidatively coupled cresylic acid molecules as the major constituents. Physical properties will vary, but within predictable limits.

JUN 1984
RECEIVED
ADEM
Land Division

COMPOSITION (Chemical Assay)

Free Cresylic Acid	5-10%
Elemental Analysis (Typical)	
Carbon	76%
Hydrogen	7%
Oxygen	12%
Sulfur	2%
Sodium	3%
Average molecular Weight	320
Hydroxide Equivalent (i.e., Mol.Wt. per hydroxyl)	280

PHYSICAL PROPERTIES

Normal Physical State	Solid or Semi-solid
Specific Gravity 15.5°C	1.16 - 1.25
Freeze Point, °C	120 - 125 (Low Na 80 - 100°C)
Color	Black
Viscosity, 340°F	300 cps approx
300°F	1350 cps "
250°F	7400 cps "

Thermal Gravemetric Analysis (TGA)*

	Temp °C	% Wt Loss
Degradation	315-340	31.0-38.0
Ignition	500-520	56.0-58.0
Ashing Complete	650-670	99.0+

Cracking Point °C	
ASTM Distillation	198-206
*TGA	315-340
Volatility, % (3 hours at 149°C)	1.44-10.8

Solubility, %	With 3% Na Content	Na-nil
Water	[illegible]	nil
10% NaOH	40%	< 15%
Petroleum ether	[illegible]	< 16%
Toluene	[illegible]	94%
Creosote	[illegible]	99%
Methyl Ethyl Ketone	85%	39.8%
Black Liquor	100%	100%
Gross BTU pound	12,000	13,000

MERICHEM COMPANY
RESEARCH CENTER
1503 CENTRAL • HOUSTON, TEXAS 77012
A/C 713-928-5961

MERICHEM CRESYLIC ACID TAR - TYPICAL ANALYSIS

Density @ 70°F	9.33 lb/gal
Viscosity @ 100°F	5500 SUS
Flash point	>220°F
Water content	16.9%
pH	8.5
Cresylic acid content	18.3%
Heat of combustion (gross)	11,968 BTU/lb
Ash @ 1200°F	5.1%
Metals by Atomic Absorption:	
Na	1.5%
K	550 ppm
Fe	164 ppm
Metals by Plasma Emission:	
Na	1.23%
K	0.14%
Al	0.14%
Ca	310 ppm
Fe	220 ppm
Mg	61 ppm
Ti	38 ppm
Cr	21 ppm
Zn	16 ppm
Sn	10 ppm
Ba	9 ppm
Ni	9 ppm
Pb	8 ppm
Co	7 ppm
Cu	6 ppm
Mn	4 ppm
V	3 ppm
Ag	2 ppm
Be	0.2 ppm
B	<0.1 ppm
As	<0.1 ppm
Cd	<0.1 ppm
P	<0.1 ppm
Mo	<0.1 ppm
Pt	<0.1 ppm

MHS/LMW 6/7/83

ADEM

ALABAMA
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

Mailing Address:
State Capitol
Montgomery, AL
36130
205/834-1303

Field Offices:

P. O. Box 953
Decatur, AL
35602
205/353-1713

Unit 806, Building 8
225 Oxmoor Circle
Birmingham, AL
35209
205/942-6168

4358 Midmost Drive
Mobile, AL
36609
205/343-7841

June 12, 1984

MEMORANDUM

TO: Bernard E. Cox, Jr. BEC

FROM: Charles Fleming CF

Re: Telephone conversation with Clarence Johnson

On May 31, 1984, I spoke with Mr. Clarence Johnson (713-479-5981), Department of Water Resources in Houston, Texas. Mr. Johnson works in field enforcement. He told me that he was familiar with Merichem and the substance, cresylic acid tar. The material is stored in a pond on site at the companies Houston office. He went on to say that it is classified Class 1 - non-hazardous, the waste code being 180360. This means that it does not have to be manifested as a hazardous waste in Texas. I asked how the classification was arrived at and was told that Mr. Dick Martin at their Austin office had made the determination, (512-475-0943).

On June 7, 1984, I called Mr. Martin to discuss the classification of the material and was told that the reason it was classified as Class 1 - non-hazardous was because the company, Merichem, had failed to submit a criteria for classification questionaire. Mr. Martin said that when a company fails to submit the requested information relating to classification the computer automatically assigns Class 1 - non-hazardous as the designation.

Mr. Martin told me that no data had been submitted to his office concerning this substances.

CF/sjw

ADEM

ALABAMA
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

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State Capitol
Montgomery, AL
36130
205/834-1303

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205/353-1713

Unit 806, Building 8
225 Oxmoor Circle
Birmingham, AL
35209
205/942-6168

4358 Midmost Drive
Mobile, AL
36609
205/343-7841

June 12, 1984

MEMORANDUM

TO: Bernard Cox BEC

FROM: Charles Fleming CF

RE: Cresylic Acid Tar

One June 7, 1984, I spoke with Mr. Roger Bate, (713-224-3030), a chemical engineer with Merichem in Houston. I asked Mr. Bate to tell me about the process by which cresylic acid tar is produced.

The raw material used is a spent caustic solution. This caustic solution is composed of phenolites and sodium cresolates and is produced in the process of refining gasoline. First the caustic solution is treated to remove any sulfur present. It then goes through a neutralization process to remove undersirable phenols. At this point in the process what remains is an organic stream composed of certain phenoltic and cresoltic compounds. This stream of organic material is then put into a flash distillation column and raised to a temperature such that the heavy ends of the phenoltic and cresoltic constituents are removed. It is this process which produces cresylic acid tar. Cresylic acid tar is the heavy ends from the flashing of phenoltic and cresoltic compounds. The material that remains in the process is then fractionally distallated to isolate the particular product desired.

The waste, cresylic acid tar, as described is not a listed hazardous waste.

CF/sjw

ADEM

ALABAMA
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

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State Capitol
Montgomery, AL
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205/834-1303

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205/942-6168

4358 Midmost Drive
Mobile, AL
36609
205/343-7841

June 12, 1984

MEMORANDUM

TO: Bernard E. Cox BEC

FROM: Charles Fleming CF

Re: International Paper Company

On June 1, 1984 at 9:20 a.m., I met with Mr. Scott Tait and Mr. Steve Stauton to discuss the cresylic acid tar which is being used as boiler fuel and to sample some spillage of this material.

International Paper Company has been using this boiler fuel for 2 - 3 months. They pay 15¢ per gallon. It is shipped to them by railroad but it is their plan to use a barge.

I took a sample of some of the material which had leaked from the holding tank at 10:30 a.m.

CF/sjw

304

84-4708-LA-72

NT

STATE OF ALABAMA
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
MONTGOMERY, ALABAMA

LABORATORY: (✓) Montgomery ( ) Mobile ( ) Birmingham

Sample Type: Potable Water [ ] Landfill Leachate [✓] Toxic Extraction [✓] Composite [✓]
Surface Water [ ] Hazardous Wastesite [✓] Ignitability [✓] Grab [ ]
Soil/Sediment [ ] Groundwater [✓] Corrosivity [✓] Container P [ ]
Wastewater [ ] Waste (Special Handling) [✓] Reactivity [✓] G [✓]

Source International Paper Co.

Location Mobile, Ala

( ) Discharge from _____ (Point Source) to _____ (Receiving Water)

Comments _____ Preservative(s) iced

pH _____ D.O. _____ Sp. Cond. _____ Salinity _____ Turb. _____

PARAMETERS

Date	Value (mg/l)	Date	Value (mg/l)	Date	Value (mg/l)	Date	Value (mg/l)
	Acid		Phenol		Al		Mn
	ALK		PO_4-P	6/1	Ag <0.5		Na
	BOD_5		($S^=$)	6/6	As .03		Ni
	(Cl^-)		($SO_4^=$)	6/12	Ba <.5	6/11	Pb <.5
	COD		TSS	6/12	Ca 0.9		Pt
	CN^-		TDS	6/11	Cd <.05		Sb
	(F^-)		TFS	6/12	Cr^+ <.05	6/6	Se <.01
	Hard		TKN		~~Cr^{+6}~~ BR		Zn
	NH_3-N		TOC		Cu		Other
	NO_3-N		TON		Fe		Organic Scan
	NO_2-N		TS	6/7	Hg <.001	7/17	See attachment
	O & G		VSS		Mg		

Cannot determine flashpoint (to solid)

F. Coli. _____

Charles Fleming 6-1-84 10:30 AM — SAMPLE COLLECTED BY (Signature) DATE/TIME

Charles Fleming 6-1-84 3:50 pm — RELINQUISHED BY (Signature) DATE/TIME

RECEIVED BY (Signature) DATE/TIME — RELINQUISHED BY (Signature) DATE/TIME

RECEIVED BY (Signature) DATE/TIME — RELINQUISHED BY (Signature) DATE/TIME

B. Pountree 6/1/84

RECEIVED IN LAB BY (Signature) DATE/TIME — LABORATORY I.D. NO.

SEND REPORT TO: _____

ADEM Form 68 5/83

TSS = Total Non-Filtrable Residue
TDS = Total Filtrable Residue
TFS = Total Fixed Residue
TS = Total Residue
Volatile Residue

ALABAMA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
ENVIRONMENTAL LABORATORY SERVICES
ORGANIC SAMPLES REPORT

Sample Type:
- Water ☐
- Solids/Waste ☒
- Biological Tissue ☐

ADEM Laboratory # [illegible] Location [illegible]

rted [illegible]

Searched for and identified those phenols we do routinely. Two were found and quantitated. In addition, I identified several other phenols with the aid of the NBS library. These were not quantitated since, I do not have standards. They were however in the same concentration range as the others. Included among these were methylphenols, dimethylphenols, trimethylphenols, and ethylphenol. [illegible]

	parameters		
	hene		
	e		
	nzyl phthalate		
	etrachlorodibenzo-p-dioxin		
	anthracene		
	orobenzidine		
	ylhexyl) phthalate		
	phthalate		
	fluoranthene		
	fluoranthene		
	pyrene		
	2,3-cd) pyrene		
	(a,h) anthracene		
	Benzo (g,h,i,) perylene		
	N-nitrosodimethylamine		

	1,4-Trichlorobenzene		
	Naphthalene		
	Hexachlorobutadiene		
	Hexachlorocylopentadiene		
	2-Chloronaphthalene		
	Acenaphthylene		
	Dimethylphthalate		
	2,6-Dinitrotoluene		
	Acenaphthene		
	2,4-Dinitrotoluene		
	Fluorene		
	4-Chlorophenyl phenyl ether		
	Diethyl phthalate		
	N-nitrosodiphenylamine		
	1,2-Diphenylhydrazine		
	4-Bromophenyl phenyl ether		
	Hexachlorobenzene		
	Phenanthrene		
	Anthracene		
	Dibutyl phthalate		

☐ Acid Compounds

✓	Method 625	☐ GC ☒ GC/MS	DL[1] units ug/g	Conc[2] units ug/g
	Phenol			18659
	2-Chlorophenol			< D
	2-Nitrophenol			< D
	2-4-Dimethylphenol			9864
	2-4-Dichlorophenol			< D
	4-Chloro-3-methylphenol			< D
	2,4,6-Trichlorophenol			< D
	2,4-Dinitrophenol			< D
	4-Nitrophenol			< D
	2-Methyl-4,6-dinitrophenol			< D
	Pentachlorophenol			< D

concentration

December 5, 1983

Mr. Scott J. Tait
Superintendent - Environmental Services
International Paper Company
P. O. Box 2048
Mobile, Al 36552

Re: Closure of the Lower Impoundment Basin and Mill Dump, Mobile Mill

Dear Mr. Tait:

The Alabama Department of Environmental Management has completed review of the Proposed Closure for the Lower Impoundment Basin and Mill Dump sites at International Paper Company's Mobile Mill. The plan as presented is acceptable contingent upon the following:

(a) Point-source discharge into Chickasaw Creek from the Lower Impoundment Basin will consist soleyly of storm-water runoff. Other point-source discharges may require an NPDES Permit, which must be issued by Alabama Department of Environmental Management's Water Quality - Industrial Section. It is advised that you consult this Section prior to initiating any point-source discharges from the Mobile Mill.

(b) Provisions will be made to fill in and seal all ground-water monitoring wells which will no longer be used upon closure of these areas.

If you have any questions concerning the above, please contact this office at 205-834-1303.

Sincerely,

Bernard E. Cox Jr., Chief
Industrial and Hazardous Waste Section
Land Divison

cc: Sonia Massey
Jack Honeycutt

BEC/MM/slw

EPA Notification of Hazardous Waste Site

810609

United States Environmental Protection Agency Washington DC 20460

This initial notification information is required by Section 103(c) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 and must be mailed by June 9, 1981.

Please type or print in ink. If you need additional space, use separate sheets of paper. Indicate the letter of the item which applies.

Sub

ALS000001125

A Person Required to Notify:
Enter the name and address of the person or organization required to notify.

Name: International Paper Company - Mobile Mill
Street: P.O. Box 2448
City: Mobile State: AL Zip Code: 36652

B Site Location:
Enter the common name (if known) and actual location of the site.

ALD008161861

Name of Site: International Paper Company Landfill
Street: Papermill Rd.
City: Mobile County: Mobile State: AL Zip Code: 36652

C Person to Contact:
Enter the name, title (if applicable), and business telephone number of the person to contact regarding information submitted on this form.

Name (Last, First and Title): Redfern, Peter C. Mill Manager
Phone: (205)457-8961

D Dates of Waste Handling:
Enter the years that you estimate waste treatment, storage, or disposal began and ended at the site.

From (Year): 1929 To (Year): Present

E Waste Type: Choose the option you prefer to complete

Option I: Select general waste types and source categories. If you do not know the general waste types or sources, you are encouraged to describe the site in Item I—Description of Site.

General Type of Waste:
Place an X in the appropriate boxes. The categories listed overlap. Check each applicable category.

1. ☐ Organics
2. ☐ Inorganics
3. ☐ Solvents
4. ☐ Pesticides
5. ☐ Heavy metals
6. ☐ Acids
7. ☐ Bases
8. ☐ PCBs
9. ☐ Mixed Municipal Waste
10. ☒ Unknown
11. ☐ Other (Specify)

Source of Waste:
Place an X in the appropriate boxes.

1. ☐ Mining
2. ☐ Construction
3. ☐ Textiles
4. ☐ Fertilizer
5. ☐ Paper/Printing
6. ☐ Leather Tanning
7. ☐ Iron/Steel Foundry
8. ☐ Chemical, General
9. ☐ Plating/Polishing
10. ☐ Military/Ammunition
11. ☐ Electrical Conductors
12. ☐ Transformers
13. ☐ Utility Companies
14. ☐ Sanitary/Refuse
15. ☐ Photofinish
16. ☐ Lab/Hospital
17. ☐ Unknown
18. ☒ Other (Specify) Pulp and Paper Mill Operations

Option 2: This option is available to persons familiar with the Resource Conservation and Recovery Act (RCRA) Section 3001 regulations (40 CFR Part 261).

Specific Type of Waste:
EPA has assigned a four-digit number to each hazardous waste listed in the regulations under Section 3001 of RCRA. Enter the appropriate four-digit number in the boxes provided. A copy of the list of hazardous wastes and codes can be obtained by contacting the EPA Region serving the State in which the site is located.

RECEIVED EPA/REGION IV JUN 13 3 48 PM DIVISION

0 0 0 1 0 7

Form Approved
OMB No. 2000-0138

EPA Form 8900-1

...e appropriate boxes to ...s facility types found at the s...

...the "total facility waste amount" space give the estimated combined quantity (volume) of hazardous wastes at the site using cubic feet or gallons.

In the "total facility area" space, give the estimated area size which the facilities occupy using square feet or acres.

Facility Type

1. ☐ Piles
2. ☐ Land Treatment
3. ☒ Landfill
4. ☐ Tanks
5. ☒ Impoundment
6. ☐ Underground Injection
7. ☐ Drums, Above Ground
8. ☐ Drums, Below Ground
9. ☐ Other (Specify) _____

Total Facility Waste

cubic feet unknown *

gallons

Total Facility Area

square feet

acres approx. 75

Known, Suspected or Likely Releases to the Environment:

Place an X in the appropriate boxes to indicate any known, suspected, or likely releases of wastes to the environment.

☐ Known ☐ Suspected ☐ Likely ☒ None

Note: Items H and I are optional. Completing these items will assist EPA and State and local governments in locating and assessing hazardous waste sites. Although completing the items is not required, you are encouraged to do so.

Sketch Map of Site Location: (Optional)

Sketch a map showing streets, highways, routes or other prominent landmarks near the site. Place an X on the map to indicate the site location. Draw an arrow showing the direction north. You may substitute a publishing map showing the site location.

Description of Site: (Optional)

Describe the history and present conditions of the site. Give directions to the site and describe any nearby wells, springs, lakes, or housing. Include such information as how waste was disposed and where the waste came from. Provide any other information or comments which may help describe the site conditions.

* This notification is submitted only because of the possibility that very small quantities of hazardous waste may have accumulated to a total of 55 gallons over the 52 years of operation at this site. No significant quantities of hazardous waste are known to have been disposed at this facility.

Signature and Title:

The person or authorized representative (such as plant managers, superintendents, trustees or attorneys) of persons required to notify must sign the form and provide a mailing address (if different than address in item A). For other persons providing notification, the signature is optional. Check the boxes which best describe the relationship to the site of the person required to notify. If you are not required to notify check "Other".

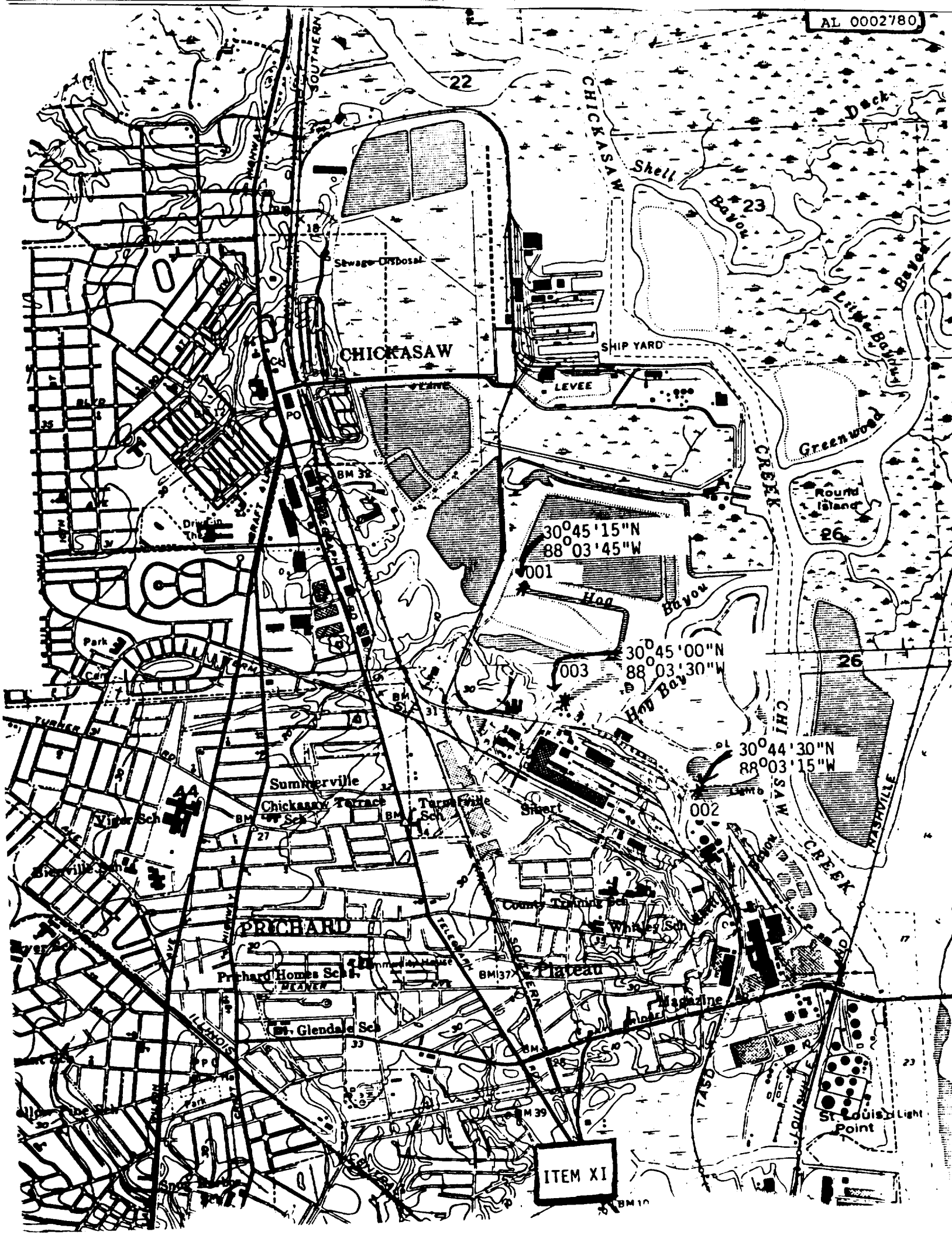
Name Peter C. Redfern, Mill Manager

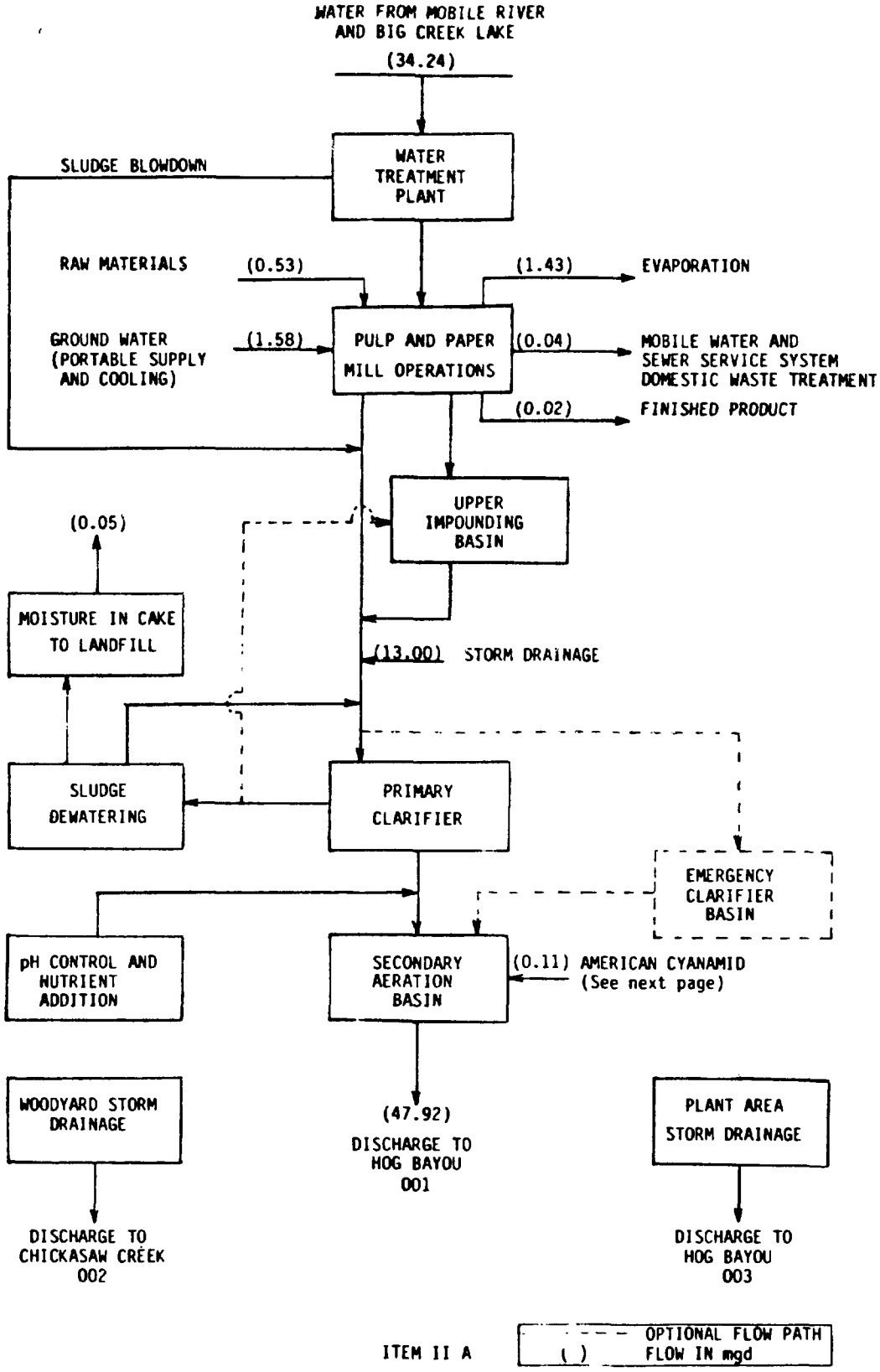
Street P.O. Box 2448

City Mobile State AL Zip Code 36652

Signature Peter C. Redfern Date 6/15/81

☐ Owner, Present
☐ Owner, Past
☐ Transporter
☒ Operator, Present
☐ Operator, Past
☐ Other


AL 0002780
CHICKASAW
SHIP YARD
LEVEE
Sewage Disposal
CHICKASAW CREEK
Shell Bayou
Little Bayou
Greenwood
Round Island
Hog Bayou
Hog Bay
30°45'15"N
88°03'45"W
001
30°45'00"N
88°03'30"W
003
30°44'30"N
88°03'15"W
002
Summerville
Chickasaw Terrace
Turnerville Sch
Sibert
Viger Sch
PRICHARD
Prichard Homes Sch
Plateau
County Training Sch
Whitley Sch
Magazine
Glendale Sch
St. Louis Point
ITEM XI


WATER FROM MOBILE RIVER AND BIG CREEK LAKE
(34.24)
WATER TREATMENT PLANT
SLUDGE BLOWDOWN
RAW MATERIALS
(0.53)
(1.43)
EVAPORATION
GROUND WATER (PORTABLE SUPPLY AND COOLING)
(1.58)
PULP AND PAPER MILL OPERATIONS
(0.04)
MOBILE WATER AND SEWER SERVICE SYSTEM DOMESTIC WASTE TREATMENT
(0.02)
FINISHED PRODUCT
UPPER IMPOUNDING BASIN
(0.05)
MOISTURE IN CAKE TO LANDFILL
(13.00)
STORM DRAINAGE
SLUDGE DEWATERING
PRIMARY CLARIFIER
EMERGENCY CLARIFIER BASIN
pH CONTROL AND NUTRIENT ADDITION
SECONDARY AERATION BASIN
(0.11) AMERICAN CYANAMID
(See next page)
WOODYARD STORM DRAINAGE
(47.92)
DISCHARGE TO HOG BAYOU 001
PLANT AREA STORM DRAINAGE
DISCHARGE TO CHICKASAW CREEK 002
DISCHARGE TO HOG BAYOU 003
OPTIONAL FLOW PATH
( ) FLOW IN mgd

ITEM II A

EPA

PO_ATIAL HAZARDOUS WASTE SITE
TENTATIVE DISPOSITION

REGION	SITE NUMBER
IV	ALD 008 161 861

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

I. SITE IDENTIFICATION

A. SITE NAME	B. STREET	
International Paper Co Ldfl	Papermill Rd	
C. CITY	**D. STATE**	**E. ZIP CODE**
Mobile	AL	36652

II. TENTATIVE DISPOSITION

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

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

E. RATIONALE FOR DISPOSITION

Green Liquor sludge impoundment on site
No hazardous substances.

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

H. PREPARER INFORMATION

1. NAME	2. TELEPHONE NUMBER	3. DATE *(mo., day, & yr.)*
Elizabeth M Shaver	(404) 881-2234	9-19-85

III. INVESTIGATIVE ACTIVITY NEEDED

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

B. PROPOSED INVESTIGATIVE ACTIVITY *(Detailed Information)*

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

2. PROJECT MANAGEMENT SUMMARY

Site Name: INTERNATIONAL PAPER COMPANY LANDFILL

Site Number: ALD008161861

Owner: INTERNATIONAL PAPER COMPANY

Operator: —

Site Status: [X] Active [ ] Inactive [ ] Unknown

Priority: [ ] High [ ] Medium [ ] Low [X] None

3. FINAL DISPOSITION

I. EPS Final Review - Date: 8/5/85

Comments:

Follow Up Required [ ] Yes [X] No

II. ADEM Review - Date: 8/28/85 SAW

Comments:

Follow-up Action Required [ ] Yes [X] No

III. Final Disposition:

Review & revise Date:

Edited & correct Date:

Transmitted Date:

File close-out Date:

Initiate site inspection Date:

4. ADDITIONAL COMMENTS (ONGOING & FINAL)

POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
EPS FORM 3012-III

INDUSTRIAL NARRATIVE SHEET

1. Site Identification:

Site number: ALD008161861

Site name: International Paper Company - Landfill

Site county: Mobile

2. Industrial Narrative Summary:

Company Name: International Paper Company - Mobile Mill

Address: Papermill Road
Mobile, AL 36652

Telephone No.: 205/470-3752

Contact: Scott Tait

Discussion: In 1981, International Paper (IP) reported under Superfund a landfill which potentially received a small quantity of hazardous waste. This landfill is wood waste from 1929-1981. IP investigated the landfill and collected samples from borings taken throughout. Test results did not indicate the presence of any hazardous waste. The complete report is on file under "Plans and Procedures" in the ADEM offices. Conversations with Scott Tait indicated that "green liquor sludge" may have been disposed in the landfill, however, greatly diluted by other plant wastes.

Presently the "green liquor sludge" (fifteen dregs) enters a 50 acre surface impoundment which also receives fiber and lime mud ($CaCo_3$) wastes. It is estimated that <15% of the solids in this impoundment are "green liquor." Solvents are used in the machine shop and are recycled.

3. Disposition:

Although the "green liquor sludge" may contain sulfides, this waste is greatly diluted by other plant wastes and is maintained in an alkaline ($CaCo_3$) environment. It does not appear to pose a threat to health or environment.

POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
EPS FORM 3012-II

TELEPHONE LOG SHEET

1. Site Identification:
   Site number: ALD 008161861
   Site name: INTERNATIONAL PAPER COMPANY - MOBILE MILL LANDFILL

2. Interview Data: (Party called)
   Name: SCOTT JAIT
   Position: PLANT MANAGER
   Firm: I.P.
   Address: PAPERMILL ROAD
   MOBILE, AL 36652
   Telephone No.: (205) 470-3752

3. EPS Analyst Data:
   Name: Donalea Dinmore
   Purpose of call: Determine landfill status

   Form 2070-12 (7-81) P.N.
   Date of call: 7-26-85

4. Interview Narrative Summary: Directions to site given - Do have both black and green liquor. When clean out tanks, goes into wastewater treatment system. Do not believe any has been hauled.

Green liquor dregs washer filtrant is sent to surface impoundment where it mixed with a couple tons per day filter. This may have been ~~[illegible]~~ dredged and sent to landfill. Impoundment begun in 1955. 50 acres 10-12' deep pH 10-11 Guess < 15% solids are from green liquor

Solvents used in machine shop. Small amount - recycled. Do not believe they are manifested

IP ran tests on landfill samples & didn't find anything.

5. Disposition/Comments:
Although sulfides may be present, quantity and dilution factor seem to reduce potential hazards.

6. Comments: Any additional sites used by this company?
   Location:
   Dates of use:
   Description of waste:

   Comments:

ENVIRONMENTAL PROTECTION SYSTEMS, INC.

Alabama RCRA 3012 Site Ranking Scheme
EPS Form 3012-V

Site Name I.P. - Mobile Mill

Site Number ALD 008161861

Preliminary Assessment Ranking Scheme to Determine Which Sites Merit Further Action.

(Select one answer for each of the following seven questions)

1. Are Hazardous Substances Present?		
A. Confirmed on site!	10 points	
B. Suspected at site!	5 points	
C. It is unknown!	2 points	
D. No hazardous substances	0 points	X
E. RCRA facility only!	0 points	
2. Is There a Pollution Dispersal Pathway?		
A. Direct to surface and/or groundwater.	5 points	
B. Indirect to surface and/or groundwater.	4 points	
C. Suspected to surface and/or groundwater.	3 points	
D. Not known for sure.	2 points	
E. No pathway.	0 points	
3. Characteristics of Human Population?		
A. High density.	5 points	
B. Medium density.	4 points	
C. Low density.	3 points	
D. No population.	2 points	
4. Characteristics of Natural Environment?		
A. Critical habitat including endangered species, etc.	5 points	
B. Sensitive habitat.	3 points	
C. Common less sensitive habitat.	2 points	
5. How is Human Population Affected By Site?		
A. Public utility of drinking water from site.	5 points	
B. Direct public access to site.	4 points	
C. Public access to affected surface water.	3 points	
D. Only potential for human population contact.	2 points	
E. Low or no potential for contact.	1 point	
6. Facility Management Practices at Site?		
A. Site actively supervised and managed currently with monitoring reports and other permit and report requirements.	1 point	
B. Site inadequately managed records not up-to-date.	3 points	

C. Site not currently managed or regulated. — 4 points _____

D. Abandon site. — 5 points _____

7. Potential Responsible Parties for Site Operations?

A. Controlling party identified and accepts responsibility for site. — 1 point _____

B. Suspected controlling party identified but does not accept responsibility for site. — 4 points _____

C. No responsible party available. — 5 points _____

Ranking Score =

$$\frac{0}{\#1}\left[\times \frac{\quad}{\#2} + \frac{\quad}{\#4} + \left(\frac{\quad}{\#3} \times \frac{\quad}{\#5}\right) + \frac{\quad}{\#6} + \frac{\quad}{\#7}\right]$$

TABLE 1. Ranking Assessment

NUMERICAL RANGE	PRIORITY ASSESSMENT
0-50	NONE
50-150	LOW
150-300	MEDIUM
300-450	HIGH

Ranking Score: 0

Priority Assessment: NONE

POTENTIAL HAZARDOUS WASTE SI
PRELIMINARY ASSESSMENT
EPS FORM 3012-1
EPS ANALYST/REVIEWER CHECKLIST

Site No. ALD008161861
Site Name IP-Mobile Mill

Instructions: To be used in conjunction with EPA Form 2070-12 (7-81). Attach on inside front of site folder. Initial and date for all assessment entries under appropriate part/subpart as completed. initial/date in black for final assessment; in red if higher level (additional) assessment is in order. Follow same procedure for review process.

Review Codes: 1-Toxicology Review; 2-Chemical Review; 3-Ecology Review; 4-Chemical Engineer Review; 5-Geotechnical Review; 6-Project Manager Review; 7-Final Review

1. ANALYST/REVIEW STATUS

Form 2070 Part Number	Analyst/ Date	Review Code 1	Review Code 2	Review Code 3	Review Code 4	Review Code 5	Review Code 6	Review Code 7
1.I.-VI.	7/26/85 DD							
							Jun 8/5	Jun 8/5
2.I.	DD							
2.II.	DD							
2.III.	DD							
2.IV.	DD							
2.V.	DD							
2.VI.	DD							
3.I.								
3.II.A								
3.II.B								
3.II.C								
3.II.D								
3.II.E								
3.II.F								
3.II.G								
3.II.H								
3.II.I								
3.II.J								
3.II.K								
3.II.L								
3.II.M								
3.II.N								
3.II.O								
3.II.P								
3.III.								
3.IV.								
3.V.								

*No further assessment/review required, enter NA

M.2 - SITE MAINTENANCE FORM

* ACTION: _ *

EPA ID: ALD008161861

SITE NAME: INTERNATIONAL PAPER CO LANDFILL SOURCE: N

STREET: PAPER MILL RD CONG DIST: 01

CITY: MOBILE ZIP: 36652

CNTY NAME: MOBILE CNTY CODE: 097

LATITUDE: 30/41/24.0 LONGITUDE: 088/02/48.0

SMSA: 5160 HYDRO UNIT: 03160204

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

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

APPROACH: SITE CLASS:

SITE/SPILL IDS:

RPM NAME: RPM PHONE: - -

DIOXIN TIER: REG FLD1: REG FLD2:

RESP TERM: PENDING (X) NO FURTHER ACTION ( ) * PENDING (_) NO FURTHER ACTION (_)

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

ENFORCED RESPONSE ( ) COST RECOVERY ( )

SITE DESCRIPTION:

M.2 - PROGRAM MAINTENANCE FORM

* ACTION: _ *

SITE: INTERNATIONAL PAPER CO LANDFILL

EPA ID: ALD008161861 PROGRAM CODE: H01 PROGRAM TYPE: * _ *

PROGRAM QUALIFIER: ALIAS LINK : * * *

PROGRAM NAME: SITE EVALUATION * *

DESCRIPTION:

* *
* *
* *
* *

M.2 - EVENT MAINTENANCE FORM

* ACTION: _ *

SITE: INTERNATIONAL PAPER CO LANDFILL
PROGRAM: SITE EVALUATION

EPA ID: ALD008161861 PROGRAM CODE: H01 EVENT TYPE: DS1

FMS CODE: EVENT QUALIFIER: EVENT LEAD: E * _ ___ _ *

EVENT NAME: DISCOVERY STATUS: * _____ _ *

DESCRIPTION:

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

ORIGINAL	CURRENT	ACTUAL			
START:	START:	START:	__/__/__	__/__/__	__/__/__
COMP :	COMP :	COMP : 80/08/01	__/__/__	__/__/__	__/__/__

HQ COMMENT:

* _____ *

RG COMMENT:

* _____ *

COOP AGR #	AMENDMENT #	STATUS	STATE %
_____	_____	__	___

M.2 - EVENT MAINTENANCE FORM

* ACTION: _ *

SITE: INTERNATIONAL PAPER CO LANDFILL
PROGRAM: SITE EVALUATION

EPA ID: ALD008161861 PROGRAM CODE: H01 EVENT TYPE: PA1

FMS CODE: EVENT QUALIFIER: EVENT LEAD: S * _ ___ _ *

EVENT NAME: PRELIMINARY ASSESSMENT STATUS: * _____ _ *

DESCRIPTION:

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

ORIGINAL	CURRENT	ACTUAL			
START:	START:	START: 85/09/12	__/__/__	__/__/__	__/__/__
COMP :	COMP :	COMP : 85/09/12	__/__/__	__/__/__	__/__/__

HQ COMMENT:

* _____ *

RG COMMENT:

* _____ *

COOP AGR #	AMENDMENT #	STATUS	STATE %
_____	_____	__	___

M.2 - COMMENT MAINTENANCE FORM

SITE: INTERNATIONAL PAPER CO LANDFILL

EPA ID: ALD008161861

COM NO	COMMENT	ACTION
001	ALS000001125 -NOTIFICATION SUBMITTE	
	D ONLY BECAUSE OF THE POSSIBILITY	
002	OF VERY SMALL QUANTITIES OF WASTE W	
	HICH MAY HAVE ACCUMALATED TO A	
003	TOTAL OF 55 GALS. OVER 52 YEARS OF	
	OPERATIONS AT SITE. NO SIGNIFICANT	
004	QUANTITIES OF HAZARDOUS WASTE KNOWN	
	DISPOSED AT FACILITY.	
005	CONTACT: PETER C. REDFERN - MILL MG	
	R. (205) 457-8961	
006	103 @ NOTIFICATION ON FILE	
007	SITE INSPECTION BY STATE. SITE CLEA	
	NED UP.	