Ref. 1-12

11039634

U.S. EPA REGION IV

SDMS

Unscannable Material Target Sheet

DocID: 11039634 Site ID: MSD000693176

Site Name: ENTERPRISE RECOVERY SYSTEM

Nature of Material:

Map:	☒	Computer Disks:	☐
Photos:	☐	CD-ROM:	☐
Blueprints:	☐	Oversized Report:	☐
Slides:	☐	Log Book:	☐

Other (describe): Reference 1 Reassessment Report

Amount of material: _____

* Please contact the appropriate Records Center to view the material *

Reference 2
Reassessment Report
Enterprise Recovery Systems
Byhalia, Marshall County, MS
EPA ID No. MSD000693176

Woodward-Clyde
Engineering & science applied to the earth & its environment

December 21, 1995

Enterprise Recovery Systems Site Group (ERSSG)
c/o Mr. Eugene Smary, Esquire
Warner, Norcross & Judd
900 Old Kent Building
111 Lyon Street, N.W.
Grand Rapids, Michigan 49503

Subject: Enterprise Recovery Systems Site
Final Report
WCC Project No. 93B477

Dear Mr. Smary:

Woodward-Clyde Consultants (WCC) is pleased to submit the enclosed final report. This report documents all removal activities as required by the Environmental Protection Agency (EPA) Administrative Order on Consent for Removal Action for the above referenced site. We have enjoyed working with you and the ERSSG on this important project. If we can be of further assistance to you or any member of the ERSSG, please do not hesitate to contact us.

Very truly yours,

Andrew C. Eversull
Senior Project Engineer

Charles B. Dartez, CHMM
Senior Consultant

AE:lrs

Enclosures

10300444

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1.0
CERTIFICATION

Under penalty of law, I certify that to the best of my knowledge, after appropriate inquiries of all relevant persons involved in the preparation of the report, the information submitted is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Andrew C. Eversull
ERS Project Coordinator

Charles B. Dartez
ERS Project Manager

2.0
INTRODUCTION

This is the Final Report of the Enterprise Recovery Systems Site Group ("ERSSG") to the U.S. Environmental Protection Agency (EPA) in fulfillment of the requirements of the Administrative Order on Consent for Removal Action (AOC) Docket No. 94-43-C. The AOC and a list of the companies comprising the ERSSG are included in this report as Appendix A. The substantive requirements of the AOC are as follows:

- "Arrange for a permanent alternative potable water supply to those residents listed in the Work Plan whose wells are or will be contaminated by releases at or from the Site, and conduct periodic sampling of residential wells listed in the Work Plan which may become contaminated."

- "Arrange for the ultimate disposal and/or treatment of hazardous waste materials stored in onsite drums, tanks, and other containers in a manner satisfactory to EPA."

- "Complete all preliminary site investigation activities required to define the nature and extent of soil contamination above the water table at the Site. This investigation shall cover, as set out in the Work Plan, all areas of the Site presently identified as contaminated by the past release of hazardous substances into the environment. In addition, Respondents shall collect and analyze an additional twenty (20) soil samples from other locations at the Site as chosen by EPA."

- "Control the source of existing releases or threatened releases of hazardous substances in the environment from the Site in such a manner and to the extent necessary to achieve compliance with the following cleanup standards." The cleanup standards ("cleanup standards") are presented in tabular form as follows:

PARAMETER	CLEANUP STANDARD (ppm)
Acetone	500
Ethylbenzene	500
Methyl Ethyl Ketone (MEK)	500
Toluene	500
Trichloroethylene	50
1,1,1- Trichloroethane	250
Xylene	500

"This may include, but not be limited to, the excavation of contaminated soil."

- "Arrange for the ultimate disposal and/or treatment of contaminated soil and debris impacted by the release of hazardous substances into the environment from the site in a manner satisfactory to EPA."

This final report documents that each of the requirements listed in the AOC has been completed.

Section 3.0 of this report provides a brief description of the environmental setting and background information on the ERS site. Site activities and materials removed as part of the AOC are described in Section 4.0 and the effectiveness of these actions are discussed in Section 5.0. All costs associated with the activities performed as part of the AOC, excluding legal fees, are summarized in Section 6.0. Section 7.0 reviews the difficulties encountered during the removal activities and Section 8.0 presents recommendations for the site. Copies of the EPA-approved Workplans, approved addenda thereto and associated documents are included in Appendix B. Sample results are presented in the tables and in Appendix C and waste disposal documents are included in Appendix D. Copies of contracts for removal services are included in Appendix E and copies of invoices and bills are included in Appendix F. Permits were not required for any of the removal activities, therefore no copies are included in this Final Report.

3.0 SUMMARY OF EVENTS

3.1 THE INITIAL SITUATION

The ERS site is located at Route 5 Box 287 on Cayce Road, approximately one quarter mile off U.S. Highway 72 just inside the Mississippi state line southeast of Collierville, Tennessee (Figure 1). The site consists of an 8 acre parcel located in the NW1/4, Section 22, Township 1 South, Range 4 West. The area around the site is rural. Several homes are located within 200 yards of the site. Nonconnah Creek headwaters flow alongside the northern and eastern boundaries of the site and the site is within the recharge area of the Kosciusko Aquifer.

ERS operated as a solvent recycling/recovery facility from 1978 to 1991. Figure 2 depicts the area layout during the facility operations. In 1988, ERS received a RCRA Part B permit (facility I.D. number MSD000693176). In July 1991, the Mississippi Department of Environmental Quality (MDEQ) issued ERS an order to provide drinking water to surrounding residents, and prepare a soil and groundwater investigation work plan to assess potential environmental impacts from the facility. ERS subsequently appealed this order and did not perform the required work. The MDEQ later withdrew its action. In October 1991, ERS reportedly ceased operations.

Tanks, drums, drum contents, and laboratory materials were left on site following ERS' cessation of operations. Subsequent investigations by EPA in August and September 1992, identified hazardous materials stored in tanks and drums.

3.2 CAUSE OF RELEASE AND LOCATION OF HAZARDOUS SUBSTANCES

Although past problems at the site were reported, all causes of the releases at the ERS site are not known. Soil staining near the storage area and pitting/scaling corrosion on numerous storage vessels indicated spills and/or leaks had occurred from these storage vessels. EPA also identified contaminants of concern in the soil in and around the processing and storage areas of the facility consisting of ethyl benzene, styrene, methylene chloride, toluene, trichloroethylene, xylene, acetone, methyl ethyl ketone, methyl isobutyl ketone and 1,1-

dichloroethane. The areas of concern at the site were identified by the EPA and designated as areas A, B, C, D, and E (Figure 3). Testing of nearby residential wells indicated the presence in some of those wells of trichloroethylene, 1,1,1-trichloroethane, and 1,1-dichloroethylene. The source of the contaminants in the residential drinking water wells was not verified. However, the EPA initially provided drinking water to the residents, and required the ERSSG to continue providing drinking water until the residents could be connected to a permanent drinking water supply.

3.3 EFFORTS TO OBTAIN RESPONSE BY POTENTIALLY RESPONSIBLE PARTIES

EPA identified potentially responsible companies through EPA Hazardous Waste Manifests for materials allegedly sent to the ERS facility. In June 1993 EPA sent a letter notifying 47 of these parties that they were potentially liable for cleanup costs at the site.

3.4 ORGANIZATION OF THE RESPONSE

Twenty-nine companies identified by EPA formed the ERSSG. These companies then executed the AOC and initiated their response as approved by EPA. In 1994, EPA notified over 300 additional parties of their potential liability for cleanup at the site as a result of their arranging for disposal of small quantities of hazardous substances at the ERS facility. As a result, the majority of these deminimus parties settled with EPA pursuant to a separate administrative order. All field activities required in the AOC were completed in July 1995. The following sections describe the activities associated with the completion of the AOC.

4.0 RESPONSE ACTIVITIES

The ERSSG response at the ERS site was conducted in two phases. Phase I addressed the potable water supply for the nearby residents and the removal of materials stored in drums, tanks, and other containers abandoned on the site. Phase II included a soil assessment and soil removal action at the facility. The following sections present the response activities associated with each of these phases of work.

4.1 PHASE I ACTIVITIES

4.1.1 Abatement of Threat to Residential Potable Water Supply

Phase I activities were initiated in September 1993 by continuing the bottled water supply to the Crum, Cook, and Watkins residents near the site. The EPA began supplying these residents with bottled water following detection of elevated organic volatile compounds in the groundwater wells in 1992. Bottled water was supplied by Continental Water Systems located in Memphis, Tennessee. In the summer/fall of 1994, the local water district in Marshall County installed a municipal water supply line in the area around the ERS facility. The ERSSG offered to connect the municipal water supply to each of the residents who had previously been supplied bottled water. In return, the residents were asked to disconnect their groundwater well and plug and abandon the well. All expenses for water well abandonment were to be paid for by the ERSSG. The groundwater well was disconnected and plugged and abandoned at the Crum residence and this residence was connected to the municipal water supply in November/December 1994. During this same time period, the Cook and Watkins residents also connected their homes to the municipal water supply; however, both of these residents refused to plug and abandon their groundwater well. In January 1995, the bottled water supplied to these residents was discontinued. The EPA On-Scene Coordinator (OSC) was notified of the water well status at the nearby residences in the December 1994 and January 1995 monthly status reports.

4.1.2 Abatement of Threat from Hazardous Waste Material In Drums, Tanks, and Other Containers; Disposal Approaches Pursued

The ERSSG contracted Rust Remedial Services (Rust) in Houston, Texas to remove the materials stored in the drums, tanks, and containers on the site. Service contracts with the ERSSG are included in Appendix F. Rust prepared a Draft Workplan on September 27, 1993 which described the Phase I activities to be performed at the site. This Draft Workplan was approved by the EPA OSC and a Final Workplan was approved on November 15, 1993 (Appendix B). Work began at the site on September 30, 1993 to remove the material stored in the tanks, drums and other containers as well as dismantling and disposing these storage vessels. Environmental and Safety Designs, Inc. (EnSafe) was contracted in October 1993 to oversee the site activities performed by Rust. Mr. Jeff Bennett of EnSafe was appointed by the ERSSG, and approved by the EPA OSC, as Project Coordinator. EnSafe subcontracted Business Environmental Consulting, Inc. also located in Memphis, Tennessee to assist in coordinating the site activities on a daily basis with Rust.

Rust identified 38 storage tanks and 216 drums present on the site. Materials stored in the tanks and drums were sampled and analyzed for waste stream classification/disposal profiling and to determine which materials could be bulked. All samples were submitted to Chemical Waste Management (CWM) Southern Region Laboratory located in Port Arthur, Texas for laboratory analysis (Appendix C-1). Based on the analytical results obtained by Rust and those previously obtained by the EPA, the stored material was segregated into three profiles: 1) fuel blending - low chlorides; 2) fuel blending - high chlorides; and 3) incineration. The waste classification was approved by the EPA OSC. All of these materials were sent to a CWM facility and the waste manifests and/or certificates of disposal are presented in Appendix D-1.

Stormwater which had accumulated inside the main tank farm containment area (approximately 40,000 gallons) was collected in three tanker trucks. A sample of the collected stormwater was submitted to the Laidlaw commercial wastewater treatment facility in Nashville, Tennessee for testing and profiling. Based on the sample results (Appendix C-2), the stormwater was shipped to the Laidlaw facility for treatment and disposal. All certificates of disposal for the stormwater are presented in Appendix D-2.

Following the stormwater removal from the main tank farm containment area, the empty waste storage tanks were dismantled and all resulting scrap metal was placed in roll-off boxes. All remaining waste storage tanks located on the site were also dismantled and placed in roll-off boxes. Accumulated sludge in the tanks ("tank bottoms") was removed, solidified, and placed in roll-off boxes for shipment to an approved disposal facility. Representative samples of the metal debris and tank bottoms were shipped to the CWM Southern Region Laboratory for analysis and profiling (Appendix C-3). The waste classification was approved by the EPA OSC. Waste manifests and certificates of destruction for this material are included in Appendix D-3.

In January 1994, Rust began shipping all waste material that had been staged on the site in roll-off boxes to the appropriate waste disposal facilities. The concrete containment structure in the main tank farm was dismantled and removed to prevent further accumulation of stormwater in this area. Concrete debris was placed in roll-off boxes and a representative sample was analyzed for toxicity characteristic leaching procedure (TCLP) volatile organic compounds (VOC) by Environmental Testing and Consulting, Inc. (ETC) located in Memphis, Tennessee (Appendix C-4). Due to the elevated trichloroethene concentration in the concrete sample, the concrete debris was characterized as a hazardous waste. All concrete debris was shipped to the CWM facility in Carlyss, Louisiana for proper disposal. All manifests and certificates of disposal are included in Appendix D-4.

Removal of the concrete from the former main tank farm area resulted in an estimated two foot depression in the soil. To prevent rain water from accumulating in this depressed area, visqueen was placed in the bottom of the depression and approximately two feet of clean backfill was placed on top of the visqueen. The visqueen was placed in the depression to separate the clean backfill from the potentially contaminated soil within the area of the main tank farm.

All drummed waste, including ERS laboratory chemicals which were placed in over packs, was shipped to an approved CWM disposal facility. The waste sample analysis/profile description and certificates of disposal are included in Appendixes C-5 and D-5, respectively.

Table 1 lists the profile number, type, material description, quantity, and disposal facility for all waste material removed from the site during the Phase I activities.

4.2 PHASE II ACTIVITIES

Phase II activities included developing and implementing a soil screening and sampling plan for the seven compounds for which cleanup standards were set for the AOC "constituents of concern". Investigation areas at the site were previously identified by EPA (Figure 3). The objective of the plan was to identify the horizontal and vertical extent of concentrations of the contaminants of concern in the soil above the groundwater table at the previously identified areas (designated "Areas A-E"). Phase II activities also included preparing and implementing a soil removal workplan for the identified areas which contained contaminants of concern at or above the AOC cleanup standards. Woodward-Clyde Consultants (Woodward-Clyde) was retained by the ERSSG to prepare and implement the soil sampling and analysis plan, and the soil removal workplan. All workplans were approved by the EPA OSC and are included in Appendix B.

4.2.1 Soil Sampling and Analysis

The soil sampling and analysis plan was implemented on March 1-6, 1994. Woodward-Clyde collected a total of 53 surfical soil samples at depths of 6 to 12 inches below land surface (bls) throughout Areas A through E. In addition, a total of 15 soil borings were completed throughout the designated areas to depths ranging from 8 to 9 feet bls. Soil samples were collected in each boring at one foot intervals. Although not provided for in the approved soil sampling and analysis plan, the EPA OSC unilaterally collected 13 surfical soil samples during the sampling activities. Splits of the surficial samples taken by the EPA OSC were not provided to the ERSSG or to Woodward-Clyde.

All soil samples collected by Woodward-Clyde were field screened for VOC response using an organic vapor analyzer (OVA). The OVA was used to measure the VOC concentrations emitted from the soil sample which had accumulated in the "head-space" of the sample collection container. In addition to soil screening, 14 surficial soil samples and 16 soil boring samples were selected for laboratory analysis by EPA Method SW-846 8240. Soil screening results are presented in Table 2 and analytical results are presented in Table 3. The

laboratory analytical reports are included as Appendix C-6. Figure 4 depicts the soil sample locations and Figure 5 shows the areas at the site with OVA readings exceeding 100 ppm and 1,000 ppm. All soil samples were analyzed by Analytical Technologies, Inc. located in Pensacola, FL and the sample results were presented to the EPA as part of the Soil Removal Workplan in May 1994.

4.2.2 Soil Removal Work Plan; Disposal Approaches

The Soil Removal Workplan presented the rationale and approach for dealing with the areas of concern identified by Woodward-Clyde. The test results indicated elevated concentrations of the constituents of concern were present at one sample location in Area A and one sample location in Area C. Due to the relatively low volume of soil estimated for cleanup (40.5 cubic yards), soil excavation was selected as the most appropriate response option. Alternative response options such as in-situ bio-venting and ex-situ vapor extraction were also reviewed as potential alternatives. However, the costs to implement these response options, which may have required from several months to several years in order to reduce the levels of constituent of concern below the cleanup standards, were estimated to be equal to or greater than excavation and disposal costs at an approved disposal facility.

Two of the 13 independent soil samples collected unilaterally by the EPA OSC were reported to contain elevated levels of the contaminants of concern. These samples were collected outside of the previously identified areas of concern at the site. One sample was collected approximately 75 feet east of Area A beneath the former main tank storage area by penetrating the backfill and visqueen which the ERSSG had placed in this area. The second sample was collected in the soil beneath the north tank storage area. The sample located near Area A was subsequently included as part of Area A and the second sample was designated as Area F. The areas around these two samples were subsequently included as part of the proposed soil removal areas; pursuant to the Soil Removal Workplan Addendum No. 1.

Prior to implementing the Soil Removal Workplan, the EPA informed the ERSSG that additional soil samples should be collected at the site and analyzed for compounds other than the seven constituents of concern listed in the AOC. Specifically, EPA requested analysis for semi-volatile compounds by EPA Method SW-846 8270 and RCRA metals (Barium, Cadmium, Chromium, Silver, Arsenic, Lead, Selenium, and Mercury) by EPA Methods 6010

and 7470. Analytical results for these additional samples would be used to document additional contaminants present at the site in elevated concentrations. The ERSSG agreed to collect five additional surface soil samples (one in Area A, three in Area C, and one in Area F) to determine if additional contaminants were present at the site in elevated concentrations. These five samples were collected in October 1994 by Woodward-Clyde. Sample locations for the five additional soil samples are illustrated in Figure 6. These sample locations were selected adjacent to the areas of proposed excavation to document the soil conditions at the site near the areas of concern. Table 4 presents the analytical results from this additional sampling activity. Semi-volatile organics and the RCRA metals were not detected in significant concentrations in these samples. Laboratory sample results for these samples are presented in Appendix C-7.

4.2.3 Soil Removal Activities

Following the completion of the soil sampling activities, soil removal activities began at the site on December 13, 1994. In preparation of the soil removal activities, on November 14, 1994, Andrew Eversull with Woodward-Clyde was approved by the ERSSG and approved by the EPA OSC to replace Jeff Bennett as the Project Coordinator for this phase of the response. The ERSSG contracted Rust to perform the soil excavation work and Woodward-Clyde provided oversight and field screening to determine the areal and vertical extent of the soil removal. This work was performed in accordance with the Soil Removal Workplan. The EPA OSC was also present during the removal activities to document the site conditions and work activities.

Approximately 1,310 cubic yards of soil from Areas A, C, and F were removed and shipped to the CWM facility in Carlyss, Louisiana. Prior to soil excavation and removal, a five-point composite soil sample was collected from each of the designated soil removal areas for waste profiling. These sample results are presented in Appendix C-8. The sample results indicated the soil was non-hazardous and the first 14 shipments leaving the site were designated as non-hazardous waste. However, the ERSSG voluntarily and with approval from the EPA OSC, decided that all soil shipped to the CWM facility would be designated as hazardous waste and appropriately manifested. Based on this modificaiton in the waste profile, the first 14 shipments to the CWM Carlyss, Louisiana facility were remanifested as hazardous waste and disposed of properly. The soil disposal manifests are included in Appendix D-6. The

soil disposal manifests have been signed by the receiving waste disposal facility; therefore, a certificate of disposal has not been included in Appendix D-6. Figure 7 depicts the areal extent of excavation in each area of the site. A description of the site activities in each of the soil removal areas is described in the following sections. All confirmation samples were submitted for analytical analysis to ETC located in Memphis, Tennessee.

Area A

Area A was excavated to a maximum depth of six feet bls and the total excavation volume was calculated to be approximately 1,006 cubic yards. Soil samples ERS1-S-A18 through ERS1-S-A33 were collected in Area A as confirmation samples (Appendix C-9). All post-excavation confirmation sample results in Area A were below the AOC cleanup standards. Table 5 and Figure 8 present the sample results and location of the confirmation samples.

Area C

The maximum depth of excavation in Area C was 15 feet bls and the total excavation volume was calculated to be approximately 250 cubic yards. During excavation activities in Area C, a metal pipe was identified approximately 1 to 1.5 feet bls. The metal pipe traveresed this area in an east to west orientation. Observation during the excavation activity showed that, before the ERSSG initiated any activities, 1) the west end of the pipe had been previously disconnected or severed near the oil/water separator prior to any soil removal in Area C, and 2) the east end of the metal pipe was previously inserted into a larger diameter PVC pipe which appears to continue in an easterly direction from Area C.

A total of 10 soil confirmation samples were collected in Area C. These results are reported in Table 6 and the sample locations are shown in Figure 9. Laboratory results are presented in Appendix C-10. Three confirmation soil samples in Area C (C22, C25, and C26) contained concentrations of the constituents of concern that exceed the AOC cleanup standards. Expansion excavation and sampling were performed in the vicinity of sample C22, and the subsequent verification samples in this area (C27, C28, and C29) were below the AOC cleanup standards (Table 7 and Figure 9). Soil removed during the expansion activity (approximately 80 tons) was stockpiled near Area A. Subsequent TCLP analysis of a composite sample taken from this pile indicated that the stockpiled soil was a non-hazardous

material (Table 8, Appendix C-11). After expansion excavation in the area of sample C22, only two samples remained which exceeded the AOC cleanup standards, samples C25 and C26 taken from the east end of the excavation.

Area F

The concrete pad and berm wall in Area F were removed using an excavator and stockpiled approximately 50 feet north of this area. TCLP analysis of the concrete revealed that this material was also non-hazardous (Table 9, Appendix C-12).

In order to supplement the available data on the lateral and vertical extent of constituents of concern in Area F, during and after excavation, 13 additional soil samples were collected. Figure 10 and Table 10 present the sample locations and results. The laboratory report of results are included in Appendix C-13. Addendum No. 2 of the Soil Removal Workplan was prepared, submitted and approved by the EPA OSC to include these sample results as part of the work at the site. Results obtained from these samples indicated that of the 13 samples analyzed, only one sample collected at six feet bls contained an elevated concentration of 1,1,1-trichloroethane. All remaining samples collected in this area, including the sample collected immediately above at three feet bls and below at nine feet bls were below the AOC cleanup standards.

Due to inclement weather conditions, the soils in and around Area F became saturated and quickly inhibited the use of the front-end loader to convey soil from the excavator to the transportation trucks. A temporary shell/dirt road was constructed between Cayce Road and Area F in an attempt to allow the excavator access to the transportation trucks and three truck loads of soil were removed (approximately 54 cubic yards) on December 18, 1994.

4.2.4 Post Excavation Activities

Following the soil removal activities from December 13 through 18, 1994, the ERSSG ceased soil excavation activities to determine the estimated volume of contaminated soil remaining on site and to address future treatment/disposal options. The volume of soil removed during the excavation activities was significantly greater than the estimated quantity determined during the soil screening and sampling activities. In addition, local storms in the area on December 21, 1994 resulted in considerable water accumulation in the Area A and C excavations.

Soil and concrete sample results from Area F and the sample results from the soil stockpiled near Area A were reviewed to determine the appropriate response for treatment and/or disposal options for these materials. Addendum No. 3 to the Soil Removal Workplan modified the soil sampling approach to further delineate potential soil contamination along the eastern portion of Area C using a geo-probe to collect the soil samples. This addendum was approved by the EPA OSC. The geo-probe samples collected on March 10, 1995 indicated no elevated concentrations of the constituents of concern approximately three feet from the perimeter of the excavation. Based on these results, the ERSSG determined that additional excavation was not warranted in this area. The EPA OSC subsequently concurred with this determination. These results are listed in Table 11 and the analytical report is included as Appendix C-14. The sample locations are shown on Figure 11.

A review of the data collected in Area F indicated that only one sample of 13 exceeded the AOC cleanup standards; therefore, this area was not an immediate soil contamination concern and further excavation in this area was not necessary. The EPA OSC concurred with this determination by approval of Addendum No. 3 which documented the Area F sample results and promulgated no further action in this area.

TCLP volatile, semi-volatile, herbicide and pesticide analyses were performed on the soil and concrete stockpiles to properly classify these materials. Results from these analyses confirmed that these materials were non-hazardous. Based on this classification, the ERSSG requested, and the EPA OSC approved, using these materials to backfill Areas A and C.

On March 9, 1995, Woodward-Clyde collected water samples from the Area A and C excavation pits. These samples were analyzed by EPA Method 8240, TCLP volatile organics, semi-volatile organics, metals, reactivity, ignitability, and pH to properly classify the water and determine the appropriate treatment/disposal option. The laboratory results presented in Table 12, Appendix C-15 indicated the water was a non-hazardous substance and could be properly treated by the Laidlaw industrial water treatment facility located in Nashville, Tennessee.

The ERSSG contracted OH Materials to perform the soil backfilling and Laidlaw to remove and treat the accumulated water in the excavation pits. Woodward-Clyde provided oversight in the field to complete these activities. A total of 60,000 gallons of water was removed from the Area A and C excavation pits with pumper trucks on June 27 and 28, 1995. The waste manifests and certificates of disposal for the water are included in Appendix D-7. Soil backfilling was initiated at the site on June 28, 1995 and completed on June 29, 1995. A sample of the soil backfill was analyzed prior to placing this material at the site to ensure the backfill was not contaminated (Appendix C-16). Analytical results indicate the soil backfill is clean and the results are presented in Table 13. The stockpiled soil and concrete were placed in the two excavation pits and approximately 1,178 cubic yards of clean soil was transported to the site to complete the backfilling in Areas A and C.

5.0
EFFECTIVENESS OF REMOVAL ACTION

The removal actions performed at the ERS site have effectively accomplished the five objectives listed in the AOC. These actions have been presented in previous sections of this report; however, a summary of these actions is presented below.

- A permanent alternative water supply is in place and in use by the residents listed in the Work Plan.

- All waste materials stored in onsite drums, tanks, and other containers have been properly removed and disposed.

- A soil assessment/investigation was completed in the areas previously identified by the EPA and in other locations. The soil assessment was significantly broadened in Area A, and a previously unidentified area, Area F, was included as part of the assessment/investigation.

- The identified areas of concern in which cleanup standards were exceeded were excavated to minimize the threatened release of hazardous substances into the environment. The excavation activities were performed with the oversight of the EPA OSC.

- All soil and debris removed from the site were shipped to permitted and approved disposal facilities for proper disposal.

Based on the results of the confirmation samples collected throughout Areas A, C, and F following the soil removal activities, the immediate soil contaminant threat to human health and the environment in these areas has been abated consistent with the removal action standards. These results indicate the removal action has been completed, and has accomplished each of the objectives listed in the AOC.

6.0
REMOVAL COSTS

Based on the invoices presented during the assessment and removal activities, the costs incurred to complete the AOC activities are presented below. These costs also include expenses previously incurred at the site by the EPA. Invoice copies for these costs are included in Appendix F.

ITEM	COSTS
EPA	$115,370.37
CONTRACTORS RUST Continental Water Supply Laidlaw OSCO EnSafe OH Materials Woodward-Clyde	$1,714,533.00
NON-LEGAL EXPENSES Technical expenses incurred by the ERSSG Technical Committee to fulfill the initial on-site supervision and liaison with EPA	$11,716.57
TRUST CHARGES FOR ACCOUNT MAINTENANCE	$3,090.14
TOTAL	$1,844,710.08

7.0
DIFFICULTIES ENCOUNTERED DURING REMOVAL ACTION

The major difficulty encountered during the removal action was the inclement weather conditions during the Phase II soil removal activities in December 1994. The soil in and around Area F became saturated and operation of the excavator in this area became prohibitive. In addition, rain water accumulated in the Area A and Area C excavations. This water had to be sampled, removed and properly disposed before these excavations could be backfilled.

8.0
RECOMMENDATIONS

The activities performed in accordance with the AOC have removed the designated on-site sources of hazardous waste materials and controlled the source of contaminants released in the upper soils as per the removal standards in the AOC. Accordingly, the ERSSG recommends that the removal action be certified as complete.

TABLES

TABLE 1

ENTERPRISE RECOVERY SYSTEMS - BYHALIA, MISSISSIPPI
MATERIAL DESCRIPTION AND QUANTITY REMOVED DURING
PHASE I ACTIVITIES

PROFILE NO.	TYPE	MATERIAL	QUANTITY		DISPOSAL FACILITY
50180	Bulk	Non-hazardous storm water	73,750.00	gal	Laidlaw - Nashville, TN
AN1804	Drum	Corrosive non-flammable liquid	1	drum	CWM - Emelle, AL
AN1805	Bulk	Chlorinated flammable solid	50	tons	CWM - Marrow, GA
AN1807	Bulk	Oil dry and used oil	32.4	tons	CWM - Carlyss, LA
AN1808	Bulk	Tank steel, crushed drums, etc.	184.27	tons	CWM - Carlyss, LA
BK3540	Drum	Corrosive flammable liquid	1	drum	CWM - Emelle, AL
BK3542	Drum	Chlorinated flammable liquid	8	drums	CWM - Emelle, AL
BK3543	Bulk	Fuels 2 to 5% chlorine	12,300	gal	CWM - Emelle, AL
BK3544	Bulk	Fuels 0 to 2% chlorine	24,488	gal	CWM - Emelle, AL
BK3545	Bulk	Incineration material	265,495	lbs	CWM - Emelle, AL
BK3546	Drum	Chlorinated non-flammable liquid	7	drums	CWM - Emelle, AL
BK3547	Drum	Chlorinated non-flammable liquid	7	drums	CWM - Emelle,AL
BK3548	Drum	Chlorinated non-flammable solid	2	drums	CWM - Emelle,AL
BK3549	Drum	Chlorinated non-flammable solid	19	drums	CWM - Emelle, AL
BK3550	Drum	Inert liquid	2	drums	CWM - Emelle, AL
BK5626	Drum	Lab Packs	19	drums	CWM - Emelle, AL
BO4211	Bulk	Contaminated concrete	264.52	tons	CWM - Carlyss, LA
BO4213	Bulk	Chlorinated tank bottoms	66.17	tons	CWM - Port Arthur, TX
BO4220	Bulk	Non-chlorinated tank bottoms	43.85	tons	CWM - Port Arthur, TX

TABLE 2

ENTERPRISE RECOVERY SYSTEMS - BYHALIA, MISSISSIPPI
SURFICIAL SOIL SAMPLE OVA RESULTS

Sample Date	Soil I.D. Number	Depth Collected Below Land Surface (feet)	OVA Reading (ppm)
AREA A			
3/2/94	ERS1-SS-A01-G	0.5-1.0	>1000
3/2/94	ERS1-SS-A02-G	0.5-1.0	470
3/2/94	ERS1-SS-A03-G	0.5-1.0	480
3/2/94	ERS1-SS-A04-G[1,2]	0.5-1.0	>1000
3/2/94	ERS1-SS-A05-G	0.5-1.0	>1000
3/2/94	ERS1-SS-A06-G	0.5-1.0	60
3/2/94	ERS1-SS-A07-G	0.5-1.0	100
3/2/94	ERS1-SS-A08-G[1]	0.5-1.0	440
3/2/94	ERS1-SS-A09-G[1]	0.5-1.0	<1
3/2/94	ERS1-SS-A10-G	0.5-1.0	42
3/2/94	ERS1-SS-A11-G	0.5-1.0	140
3/2/94	ERS1-SS-A12-G	0.5-1.0	34
3/2/94	ERS1-SS-A13-G[1]	0.5-1.0	72
3/2/94	ERS1-SS-A14-G	0.5-1.0	44
3/2/94	ERS1-SS-A15-G	0.5-1.0	1.4
AREA B			
3/1/94	ERS1-SS-B01-G	0.5-1.0	21
3/1/94	ERS1-SS-B02-G[1,2]	0.5-1.0	56
3/1/94	ERS1-SS-B03-G	0.5-1.0	18
3/1/94	ERS1-SS-B04-G	0.5-1.0	2.8
3/1/94	ERS1-SS-B05-G[1]	0.5-1.0	8.2
3/2/94	ERS1-SS-B06-G	0.5-1.0	<1
AREA C			
3/1/94	ERS1-SS-C01-G	0.5-1.0	280
3/1/94	ERS1-SS-C02-G	0.5-1.0	310
3/1/94	ERS1-SS-C03-G	0.5-1.0	20
3/1/94	ERS1-SS-C04-G	0.5-1.0	120
3/1/94	ERS1-SS-C05-G[1,2]	0.5-1.0	>1000
3/2/94	ERS1-SS-C06-G	0.5-1.0	26
3/2/94	ERS1-SS-C07-G	0.5-1.0	100
3/2/94	ERS1-SS-C08-G	0.5-1.0	36
3/2/94	ERS1-SS-C09-G	0.5-1.0	380
3/2/94	ERS1-SS-C10-G[1]	0.5-1.0	>1000
3/2/94	ERS1-SS-C11-G	0.5-1.0	350
3/2/94	ERS1-SS-C12-G	0.5-1.0	420
3/2/94	ERS1-SS-C13-G	0.5-1.0	2.6
3/3/94	ERS1-SS-C14-G	0.5-1.0	32
3/3/94	ERS1-SS-C15-G	0.5-1.0	14

TABLE 2

ENTERPRISE RECOVERY SYSTEMS - BYHALIA, MISSISSIPPI
SURFICIAL SOIL SAMPLE OVA RESULTS

Sample Date	Soil I.D. Number	Depth Collected Below Land Surface (feet)	OVA Reading (ppm)
AREA D			
3/1/94	ERS1-SS-D01-G	0.5-1.0	340
3/1/94	ERS1-SS-D02-G	0.5-1.0	100
3/1/94	ERS1-SS-D03-G	0.5-1.0	200
3/1/94	ERS1-SS-D04-G	0.5-1.0	5
3/1/94	ERS1-SS-D05-G	0.5-1.0	110
3/2/94	ERS1-SS-D06-G	0.5-1.0	<1
3/2/94	ERS1-SS-D07-G[1,2]	0.5-1.0	360
3/2/94	ERS1-SS-D08-G[1]	0.5-1.0	60
3/3/94	ERS1-SS-D09-G	0.5-1.0	240
3/3/94	ERS1-SS-D10-G	0.5-1.0	27
3/3/94	ERS1-SS-D11-G	0.5-1.0	9.6
AREA E			
3/1/94	ERS1-SS-E01-G	0.5-1.0	12
3/1/94	ERS1-SS-E02-G	0.5-1.0	8.6
3/1/94	ERS1-SS-E03-G[1,2]	0.5-1.0	500
3/1/94	ERS1-SS-E04-G	0.5-1.0	18
3/1/94	ERS1-SS-E05-G[1]	0.5-1.0	16
3/1/94	ERS1-SS-E06-G[1,3]	0.5-1.0	24

1 Sample submitted for laboratory analysis
2 Sample split with EPA
3 Duplicate Sample

TABLE 3

ENTERPRISE RECOVERY SYSTEMS - BYHALIA, MISSISSIPPI
SOIL ASSESSMENT RESULTS
SAMPLES COLLECTED ON MARCH 3 - 6, 1994

Soil Sample I.D. Number	Analytical Parameters						
	Acetone (ppm)	Ethyl-benzene (ppm)	MEK[1] (ppm)	Toluene (ppm)	Trichloro-ethylene[2] (ppm)	1,1,1-Tri-chloroethane (ppm)	Xylene (ppm)
Area A - Surface Samples							
ERS1-SS-A04-GS[3]	-[4]	470	-	1600	710	-	2400
ERS1-SS-A08-G[5]	.051	0940	.008	.211	.060	.018	4.2
ERS1-SS-A09-G	.036	.022	-	.100	.320	.090	.110
ERS1-SS-A13-G	-	-	-	.008	.220	.033	-
Area A - Boring Samples							
ERS1-SB-A01-GS-78	43	-	15	-	-	-	.600
ERS1-SB-A02-GS-23	-	-	-	-	.017	-	-
ERS1-SB-A03-G-56	.013	-	.009	-	.003	-	-
Area B - Surface Samples							
ERS1-SS-B02-GS	-	-	-	-	-	.034	-
ERS1-SS-B05-G	-	.003	-	.028	.163	.019	.016
EPA CLEANUP STANDARD	**500**	**500**	**500**	**500**	**50**	**250**	**500**

1. MEK = Methyl Ethyl Ketone
2. Trichloroethylene (Trichloroethene)
3. "GS" = Grab Sample Split With EPA
4. "-" = Non-detect
5. "G" = Grab Sample

TABLE 3

ENTERPRISE RECOVERY SYSTEMS - BYHALIA, MISSISSIPPI
SOIL ASSESSMENT RESULTS
SAMPLES COLLECTED ON MARCH 3 - 6, 1994

Soil Sample I.D. Number	Analytical Parameters						
	Acetone (ppm)	Ethyl-benzene (ppm)	MEK[1] (ppm)	Toluene (ppm)	Trichloro-ethylene[2] (ppm)	1,1,1-Tri-chloroethane (ppm)	Xylene (ppm)
Area B - Boring Samples							
ERS1-SB-B01-GS-23	-	1.5	-	5.2	.210	1.3	7.7
ERS1-SB-B01-GS-78	.013	.002	.015	.009	.100	.008	.016
ERS1-SB-B02-G-67	-	-	-	-	.033	-	-
ERS1-SB-B03-G-56	.020	-	.017	.019	.120	.019	.006
Area C - Surface Samples							
ERS1-SS-C05-GS	-	1.5	-	2.6	.120	-	10
ERS1-SS-C09-G	.013	.015	.029	.062	.110	.049	.075
ERS1-SS-C10-G	-	-	-	-	740	-	-
Area C - Boring Samples							
ERS1-SB-C01-GS-78	19	-	130	-	-	-	3.8
ERS1-SB-C02-GS-67	-	-	-	-	-	-	-
ERS1-SB-C03-G-01	.050	.006	.020	-	.012	-	0.54
EPA CLEANUP STANDARD	500	500	500	500	50	250	500

1. MEK = Methyl Ethyl Ketone
2. Trichloroethylene (Trichloroethene)
3. "GS" = Grab Sample Split With EPA
4. "-" = Non-detect
5. "G" = Grab Sample

TABLE 3

ENTERPRISE RECOVERY SYSTEMS - BYHALIA, MISSISSIPPI
SOIL ASSESSMENT RESULTS
SAMPLES COLLECTED ON MARCH 3 - 6, 1994

Soil Sample I.D. Number	Analytical Parameters						
	Acetone (ppm)	Ethyl-benzene (ppm)	MEK[1] (ppm)	Toluene (ppm)	Trichloro-ethylene[2] (ppm)	1,1,1-Tri-chloroethane (ppm)	Xylene (ppm)
ERS1-SB-C03-D-01	.130	.009	.037	-	.006	-	.076
Area D - Surface Samples							
ERS1-SS-D02-G	.076	-	-	.016	.200	.033	.005
ERS1-SS-D07-GS	.031	-	-	-	.090	.014	-
ERS1-SS-D08-G	.022	-	-	-	.062	.007	-
Area D - Boring Samples							
ERS1-SB-D01-G-12	.073	-	.016	.009	.038	.009	-
ERS1-SB-D02-G-78	-	-	-	-	.045	.011	-
ERS1-SB-D03-G-01	.044	-	-	-	.007	-	-
Area E - Surface Samples							
ERS1-SS-E03-GS	-	6	-	6	1.2	43	57
ERS1-SS-E05-G	-	-	-	-	.036	-	-
EPA CLEANUP STANDARD	500	500	500	500	50	250	500

1. MEK = Methyl Ethyl Ketone
2. Trichloroethylene (Trichloroethene)
3. "GS" = Grab Sample Split With EPA
4. "-" = Non-detect
5. "G" = Grab Sample

TABLE 3

ENTERPRISE RECOVERY SYSTEMS - BYHALIA, MISSISSIPPI
SOIL ASSESSMENT RESULTS
SAMPLES COLLECTED ON MARCH 3 - 6, 1994

Soil Sample I.D. Number	Analytical Parameters						
	Acetone (ppm)	Ethyl-benzene (ppm)	MEK[1] (ppm)	Toluene (ppm)	Trichloro-ethylene[2] (ppm)	1,1,1-Tri-chloroethane (ppm)	Xylene (ppm)
ERS1-SS-E05-D	-	-	-	-	.110	.061	-
Area E - Boring Samples							
ERS1-SB-E01-G-78	-	-	-	-	-	-	-
ERS1-SB-E02-G-01	-	-	-	-	.024	.024	-
ERS1-SB-E03-G-01	-	.004	-	.006	.072	.007	.038
EPA CLEANUP STANDARD	500	500	500	500	50	250	500

1. MEK = Methyl Ethyl Ketone
2. Trichloroethylene (Trichloroethene)
3. "GS" = Grab Sample Split With EPA
4. "-" = Non-detect
5. "G" = Grab Sample

TABLE 4

ENTERPRISE RECOVERY SYSTEMS - BYHALIA, MISSISSIPPI
SVOC AND RCRA TOTAL METAL SOIL SAMPLE RESULTS
SAMPLES COLLECTED ON NOVEMBER 3, 1994

Parameter	Results µg/l[1]				
	A16	C16	C17	C18	F1
Benzoic Acid	-[2]	-	-	-	-
4-Chloro-3-Methylphenol	-	-	-	-	-
2-Chlorophenol	-	-	-	-	-
2,4-Dichlorophenol	-	-	-	-	-
2,6-Dichlorophenol	-	-	-	-	-
2,4-Dimethylphenol	-	-	-	-	-
4,6-Dinitro-2-Methylphenol	-	-	-	-	-
2,4-Dinitrophenol	-	-	-	-	-
2-Methylphenol	-	-	-	-	-
4-Methylphenol	-	-	-	-	-
2-Nitrophenol	-	-	-	-	-
4-Nitrophenol	-	-	-	-	-
Pentachlorophenol	-	-	-	-	-
Phenol	-	-	-	-	-
2,3,4,6-Tetrachlorophenol	-	-	-	-	-
2,4,5-Trichlorophenol	-	-	-	-	-
2,4,6-Trichlorophenol	-	-	-	-	-
Acenaphthene	-	-	-	-	-
Acenaphthylene	-	-	-	-	-
Acetophenone	-	-	-	-	-
4-Aminobiphenyl	-	-	-	-	-
Aniline	-	-	-	-	-
Anthracene	-	-	-	-	-
Benzidine	-	-	-	-	-
Benzo (A) Anthracene	-	-	-	-	-
Benzo (A) Pyrene	-	-	-	-	-
Benzo (B) Fluoranthene	-	-	-	-	-
Benzo (G,H,I) Perylene	-	-	-	-	-
Benzo (K) Flouranthene	-	-	-	-	-
Benzyl Alcohol	-	-	-	-	-
Bis(2-Chlorethoxy) Methane	-	-	-	-	-
Bis(2-Chlorethyl) Ether	-	-	-	-	-
Bis(2-Chloroisopropyl) Ether	-	-	-	-	-
Bis(2-Ethylexyl) Phthalate	1,700	4,400	2,000	-	-
4-Bromophenyl Phenyl Ether	-	-	-	-	-
Butylbenzyl Phthalate	-	-	700	550	-
4-Chloroaniline	-	-	-	-	-
1-Chloronaphthalene	-	-	-	-	-
2-Chloronaphthalene	-	-	-	-	-
4-Chlorophenyl Phenyl Ether	-	-	-	-	-
Chrysene	-	-	-	-	-

1 µg/l is equivalent to parts per billion (ppb)
2 "-" Non-detect
3 mg/kg is equivalent to parts per million (ppm)

TABLE 4

ENTERPRISE RECOVERY SYSTEMS - BYHALIA, MISSISSIPPI
SVOC AND RCRA TOTAL METAL SOIL SAMPLE RESULTS
SAMPLES COLLECTED ON NOVEMBER 3, 1994

Parameter	Results µg/l[1]				
	A16	C16	C17	C18	F1
Dibenz (A,J) Acridine	-	-	-	-	-
Dibenzo (A,H) Anthracene	-	-	-	-	-
Dibenzofuran	-	-	-	-	-
1,2-Dichlorobenzene	-	-	-	-	-
1,3-Dichlorobenzene	-	-	-	-	-
1,4-Dichlorobenzene	-	-	-	-	-
3,3-Dichlorobenzidine	-	-	-	-	-
Diethylphthalate	-	-	-	-	-
P-Dimethylaminoazobenzene	-	-	-	-	-
7,12-Dimethylbenz(A) Anthracene	-	-	-	-	-
A-,A-Dimethylphenethylamine	-	-	-	-	-
Dimethylphthalate	-	-	-	-	-
DI-N-Butylphthalate	2,300	2,000	1,900	1,200	-
2,4-Dinitrotoluene	-	-	-	-	-
2,6-Dinitrotoluene	-	-	-	-	-
DI-N-Octylphthalate	-	-	-	-	-
Diphenylamine	-	-	-	-	-
1.2-Diphenylhydrazine	-	-	-	-	-
Fluoranthene	-	-	-	-	-
Fluorene	-	-	-	-	-
Hexachlorobenzene	-	-	-	-	-
Hexachlorobutadiene	-	-	-	-	-
Hexachlorocyclopentadiene	-	-	-	-	-
Hexachloroethane	-	-	-	-	-
Indeno (1,2,3-CD) Pyrene	-	-	-	-	-
Isophorone	-	-	-	-	-
3-Methylcholanthrene	-	-	-	-	-
2-Mehtylnaphthalene	-	-	-	-	-
Naphthalene	-	-	-	-	-
1-Naphthylamine	-	-	-	-	-
2-Naphthylamine	-	-	-	-	-
2-Nitroaniline	-	-	-	-	-
3-Nitroaniline	-	-	-	-	-
4-Nitroaniline	-	-	-	-	-
Nitrobenzene	-	-	-	-	-
N-Nitrosodimethylamine	-	-	-	-	-
N-Nitrosodi-N-Butylamine	-	-	-	-	-
N-Nitrosodiphenylamine	-	-	-	-	-
N-Nitroso-DI-N-Propylamine	-	-	-	-	-
N-Nitrosopiperidine	-	-	-	-	-
Penthachlorobenzene	-	-	-	-	-

1 µg/l is equivalent to parts per billion (ppb)
2 "-" Non-detect
3 mg/kg is equivalent to parts per million (ppm)

TABLE 4

ENTERPRISE RECOVERY SYSTEMS - BYHALIA, MISSISSIPPI
SVOC AND RCRA TOTAL METAL SOIL SAMPLE RESULTS
SAMPLES COLLECTED ON NOVEMBER 3, 1994

Parameter	Results µg/l[1]				
	A16	C16	C17	C18	F1
Pentachloronitrobenzene (PCNB)	-	-	-	-	-
Phenacetin	-	-	-	-	-
Phenanthrene	-	-	-	-	-
2-Picoline	-	-	-	-	-
Pronamide	-	-	-	-	-
Pyrene	-	-	-	-	-
1,2,4,5-Tetrachlorobenzene	-	-	-	-	-
1,2,4-Trichlorobenzene	-	-	-	-	-
RCRA Total Metals	**Results (mg/kg[3])**				
Silver	-	-	1	-	-
Arsenic	-	-	6	7	-
Barium	96	87	65	70	56
Cadmium	0.5	-	-	-	-
Chromium	24	20	17	15	10
Mercury	-	-	-	-	-
Lead	32	24	18	17	11
Selenium	-	-	-	-	-

1 µg/l is equivalent to parts per billion (ppb)
2 "-" Non-detect
3 mg/kg is equivalent to parts per million (ppm)

TABLE 5

ENTERPRISE RECOVERY SYSTEM - BYHALIA, MISSISSIPPI
VERIFICATION SOIL SAMPLE RESULTS
AREA A

Sample I.D	Date	Acetone (ppm)	Ethylbenzene (ppm)	MEK[1] (ppm)	Toluene (ppm)	Trichloroethylene[2] (ppm)	1,1,1-Trichloroethane (ppm)	Xylene (ppm)
ERS1-S-A18-C[3]	12/16/94	-[4]	-	-	-	0.27J[5]	-	-
ERS1-S-A19-G[6]	12/16/94	-	-	-	-	-	-	-
ERS1-S-A20-G	12/16/94	-	-	-	-	-	-	-
ERS1-S-A21-G	12/16/94	-	-	-	-	0.65	-	-
ERS1-S-A22-G	12/16/94	-	-	-	-	-	-	-
ERS1-S-A23-G	12/18/94	-	-	-	-	-	-	-
ERS1-S-A24-G	12/18/94	-	-	-	-	-	-	-
ERS1-S-A25-G	12/18/94	-	-	-	-	-	-	-
ERS1-S-A26-G	12/18/94	-	-	-	-	-	-	-
ERS1-S-A27-C	12/18/94	-	-	-	-	-	-	-
ERS1-S-A28-C	12/18/94	-	194	-	398	43.7	5.99	497
ERS1-S-A29-C	12/18/94	-	-	-	-	-	-	-
ERS1-S-A30-C	12/18/94	-	-	-	-	-	-	-
EPA CLEANUP STANDARD		500	500	500	500	50	250	500

1. MEK = Methyl Ethyl Ketone
2. Trichloroethylene (Trichloroethene)
3. "C" = Composit Soil Sample
4. "-" = Non-Detect
5. "J" = Estimate
6. "G" = Grab Soil Sample

TABLE 5

ENTERPRISE RECOVERY SYSTEM - BYHALIA, MISSISSIPPI
VERIFICATION SOIL SAMPLE RESULTS
AREA A

Sample I.D	Date	Acetone (ppm)	Ethylbenzene (ppm)	MEK[1] (ppm)	Toluene (ppm)	Trichloroethylene[2] (ppm)	1,1,1-Trichloroethane (ppm)	Xylene (ppm)
ERS1-S-A31-C	12/18/94	-	88.1	-	14.6	4.65J	-	58.4
ERS1-S-A32-C	12/18/94	-	-	-	-	-	0.26J	-
ERS1-S-A33-C	12/18/94	-	-	-	-	-	-	-
EPA CLEANUP STANDARD		500	500	500	500	50	250	500

1. MEK = Methyl Ethyl Ketone
2. Trichloroethylene (Trichloroethene)
3. "C" = Composit Soil Sample
4. "-" = Non-Detect
5. "J" = Estimate
6. "G" = Grab Soil Sample

TABLE 6

ENTERPRISE RECOVERY SYSTEM - BYHALIA, MISSISSIPPI
VERIFICATION SAMPLE RESULTS
AREA C

Sample I.D	Date	Acetone (ppm)	Ethylbenzene (ppm)	MEK[1] (ppm)	Toluene (ppm)	Trichloroethylene[2] (ppm)	1,1,1-Trichloroethane (ppm)	Xylene (ppm)
ERS1-S-C20-SWC[3]	12/15/94	-[4]	0.00891	-	0.0938	0.611	0.0779	0.0406
ERS1-S-C21-G[5]	12/15/94	-	0.00252J[6]	-	0.0133	3.86	0.157	0.00366
ERS1-S-C22-SWC	12/15/94	-	-	-	39.2	2,030	406	28.8
ERS1-S-C23-G	12/15/94	0.235	0.00456J	0.0561	0.0277	0.783E[7]	0.0382	0.0297
ERS1-S-C24-G	12/15/94	-	-	-	0.0109	8.21	2.27	0.00361J
ERS1-S-C25-SWC	12/15/94	-	0.0067	-	0.0282	98.9E	15.8	0.025
ERS1-S-C26-G	12/15/94	1.18E	0.665E	0.440	3.17	273E	9.9	3.04
ERS1-S-C27-G	12/20/94	-	-	-	-	-	-	-
ERS1-S-C28-G	12/20/94	-	-	-	-	-	-	-
ERS1-S-C29-G	12/20/94	-	-	-	-	0.104J	-	-
EPA CLEANUP STANDARD		500	500	500	500	50	250	500

1. MEK = Methyl Ethyl Ketone
2. Trichloroethylene (Trichloroethene)
3. "C" = Composit Soil Sample
4. "-" = Non-Detect
5. "G" = Grab Soil Sample
6. "J" = Estimate
7. "E" = Concentration exceeds the established calibration limit

TABLE 7

ENTERPRISE RECOVERY SYSTEM - BYHALIA, MISSISSIPPI
SECOND SOIL VERIFICATION SAMPLE RESULTS
AREA C

Sample I.D	Date	Acetone (ppm)	Ethylbenzene (ppm)	MEK[1] (ppm)	Toluene (ppm)	Trichloroethylene[2] (ppm)	1,1,1-Trichloroethane (ppm)	Xylene (ppm)
ERS1-S-C27-G[3]	12/20/94	-[4]	-	-	-	-	-	-
ERS1-S-C28-G	12/20/94	-	-	-	-	-	-	-
ERS1-S-C29-G	12/20/94	-	-	-	-	0.104J[5]	-	-
EPA CLEANUP STANDARD		500	500	500	500	50	250	500

1. MEK = Methyl Ethyl Ketone
2. Trichloroethylene (Trichloroethene)
3. "G" = Grab Soil Sample
4. "-" = Non-Detect
5. "J" = Estimate

TABLE 8

ENTERPRISE RECOVERY SYSTEM - BYHALIA, MISSISSIPPI
SOIL STOCKPILE TCLP RESULTS
SAMPLE (ERS1-S-SP-01C[1]) COLLECTED ON DECEMBER 19, 1994

COMPOUND	RESULTS (mg/l)
Benzene	-[2]
Carbon Tetrachloride	-
Chlorobenzene	-
Chloroform	-
1,4-Dichlorobenzene	-
1,2-Dichloroethane	-
1,1-Dichloroethene	-
Methyl Ethyl Ketone	-
Tetrachloroethene	0.138J[3]
Trichloroethene	0.267
Vinyl Chloride	-

1. Composit soil sample
2. "-" Non-detect
3. "J" Analytical results are estimated

TABLE 9

ENTERPRISE RECOVERY SYSTEM - BYHALIA, MISSISSIPPI
CONCRETE STOCKPILE (AREA F) TCLP RESULTS
SAMPLE COLLECTED ON DECEMBER 19, 1994

Sample No. ERS1-S-Concrete-01C[1]	
Volatile Compounds	**Results (mg/l)**
Benzene	-[2]
Carbon Tetrachloride	-
Chlorobenzene	-
Chloroform	-
1,4-Dichlorobenzene	-
1,2-Dichloroethane	-
1,1-Dichloroethene	-
Methyl Ethyl Ketone	-
Tetrachloroethene	-
Trichloroethene	-
Vinyl Chloride	-
Semi-Volatile Compounds	**Results (mg/l)**
2,4-Dinitrotoluene	-
Hexachlorobenzene	-
Hexachlorobutadiene	-
Hexachloroethane	-
2-Methylphenol	-
Nitrobenzene	-
Pentachlorophenol	-
2,4,5-Trichlorophenol	-
2,4,6-Trichlorophenol	-
Pyridine	-

1. Composit concrete sample
2. "-" Non-detect

TABLE 10

ENTERPRISE RECOVERY SYSTEM - BYHALIA, MISSISSIPPI
SOIL SAMPLE RESULTS
AREA F

Sample I.D	Sample Depth (ft)	Date	Acetone (ppm)	Ethylbenzene (ppm)	MEK[1] (ppm)	Toluene (ppm)	Trichloroethylene[2] (ppm)	1,1,1-Trichloroethane (ppm)	Xylene (ppm)
ERS1-S-TF10-G[3]	0.5-1.0	12/18/94	-[4]	19.2	2.55J[5]	12.5	0.87	16.6	23.3
ERS1-S-TF11-G	0.5-1.0	12/18/94	-	1.05	-	1.58	0.79	24.3	7.15
ERS1-S-TF12-G	3.0	12/19/94	-	-	-	-	5.04	27.7	-
ERS1-S-TF13-G	6.0	12/19/94	-	-	-	1.44J	36.4	296E[5]	-
ERS1-S-TF14-G	9.0	12/19/94	-	-	-	.800	3.51	3.51	-
ERS1-S-TF15-G	.12.0	12/19/94	-	-	1.49J	.185J	3.71	26.2E	.151J
ERS1-S-TF16-G	15.0	12/19/94	-	-	-	-	-	-	-
ERS1-S-TF17-G	0.5-1.0	12/19/94	-	-	-	-	.211J	-	-
ERS1-S-TF18-G	0.5-1.0	12/19/94	-	-	-	-	.144J	.779	-
ERS1-S-TF19-G	0.5-1.0	12/19/94	-	-	-	-	-	.241J	-
ERS1-S-TF20-G	0.5-1.0	12/19/94	-	-	-	-	.314J	1.76	-
ERS1-S-TF21-G	0.5-1.0	12/19/94	-	-	-	-	.510J	1.32	-
ERS1-S-TF22-G	0.5-1.0	12/19/94	-	-	-	-	.496J	.769	-

EPA CLEANUP STANDARD	500	500	500	500	50	250	500

1. MEK = Methyl Ethyl Ketone
2. Trichloroethylene (Trichloroethene)
3. "G" = Grab Soil Sample
4. "-" = Non-Detect
5. "J" = Estimate
6. "E" = Concentration exceeds the established calibration limit

TABLE 11

ENTERPRISE RECOVERY SYSTEMS - BYHALIA, MISSISSIPPI
AREA C GEO-PROBE SOIL SAMPLE RESULTS
SAMPLES COLLECTED ON MARCH 10, 1995

Sample No.	ERS-S-GP1	ERS-S-GP2	ERS-S-GP3	ERS-S-GP4	AOC Action Limits
Units	mg/kg[1]	mg/kg	mg/kg	mg/kg	mg/kg
Sample Depth	(10-12 ft.)	(10-12 ft.)	(4-6 ft.)	(4-6 ft.)	
ANALYTES					
Acetone	-[2]	-	-	-	500
Ethylbenzene	-	-	-	-	500
MEK[3]	-	-	-	-	500
Toluene	-	-	-	-	500
1,1,1-TCA[4]	0.160	-	0.26	-	250
TCE[5]	1.4	1.2	0.39	0.63	50
Xylenes (Total)	-	-	-	-	500

1 mg/kg is equivalent to parts per million (ppm)
2 "-" Below Reporting Limit
3 MEK = Methyl ethyl ketone
4 1,1,1-TCA = 1,1,1-Trichloroethane
5 TCE = Trichloroethlyene

TABLE 12

ENTERPRISE RECOVERY SYSTEMS - BYHALIA, MISSISSIPPI
AREA C WATER RESULTS
WATER SAMPLE COLLECTED ON MARCH 9, 1995

ANALYTES	RESULTS mg/l[1]	REGULATORY LEVEL mg/l
TCLP[2] Volatile Organics		
Benzene	-[3]	0.5
Carbon Tetrachloride	-	0.5
Chlorobenzene	-	100.0
Chloroform	-	6.0
1,4-Dichlorobenzene	-	7.5
1,2-Dichloroethane	-	0.5
1,1-Dichloroethene	-	0.7
Methyl Ethyl Ketone	-	200.0
Tetrachloroethene	-	0.7
Trichloroethene	0.395	0.5
Vinyl Chloride	-	0.2
TCLP Semi-Volatiles		
2,4-Dinitrotoluene	-	0.13
Hexachlorobenzene	-	0.13
Hexachlorobutadiene	-	0.5
Hexachloroethane	-	3.0
2-Methylphenol	-	200.0
3&4-Methylphenol	-	200.0
Nitrobenzene	-	2.0
Pentachlorophenol	-	100.0
2,4,5-Trichlorophenol	-	400.0
2,4,6-Trichlorophenol	-	2.0
Pyridine	-	5.0
Metals		
Arsenic	<0.5	5.0
Barium	0.370	100.0
Cadmium	<0.04	1.0
Chromium	<0.07	5.0
Lead	<0.45	5.0
Mercury	<0.001	0.2
Selenium	<0.75	1.0

1 mg/l is equivalent to parts per million (ppm)
2 TCLP - Toxicity Characteristic Leaching Procedure
3 "-" Non-detect

TABLE 12

ENTERPRISE RECOVERY SYSTEMS - BYHALIA, MISSISSIPPI
AREA C WATER RESULTS
WATER SAMPLE COLLECTED ON MARCH 9, 1995

ANALYTES	RESULTS mg/l[1]	REGULATORY LEVEL mg/l
Silver	<0.07	5.0
Reactive Cyanide	<0.005	
Reactive Sulfide	<0.005	
Ignitability/Flashpoint	>96(°C)	
pH	6.7 (SU)	

1 mg/l is equivalent to parts per million (ppm)
2 TCLP - Toxicity Characteristic Leaching Procedure
3 "-" Non-detect

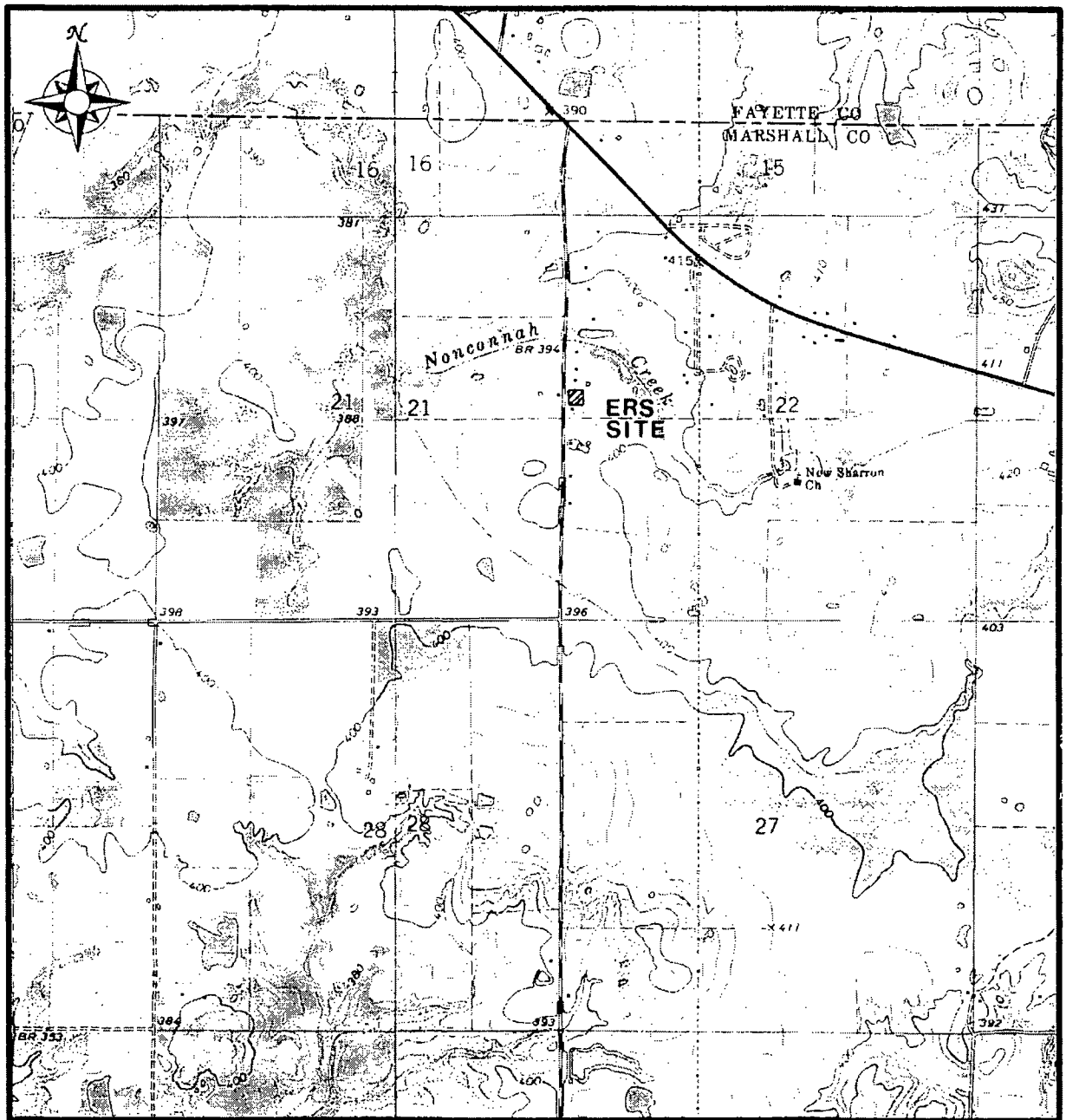
TABLE 13

ENTERPRISE RECOVERY SYSTEMS - BYHALIA, MISSISSIPPI
BACKFILL SOIL SAMPLE RESULTS

Sample ID	Date	Acetone (ppm)	Ethylbenzene (ppm)	MEK (ppm)	Toluene (ppm)	Trichloroethylene (ppm)	1,1,1-Trichloroethane (ppm)	Xylene (ppm)
ERS-S-BF-01C	12/19/94	ND[1]	ND	ND	ND	ND	ND	ND
EPA Cleanup Standard		500	500	500	500	50	250	500

1. "ND" = Non-Detect

FIGURES



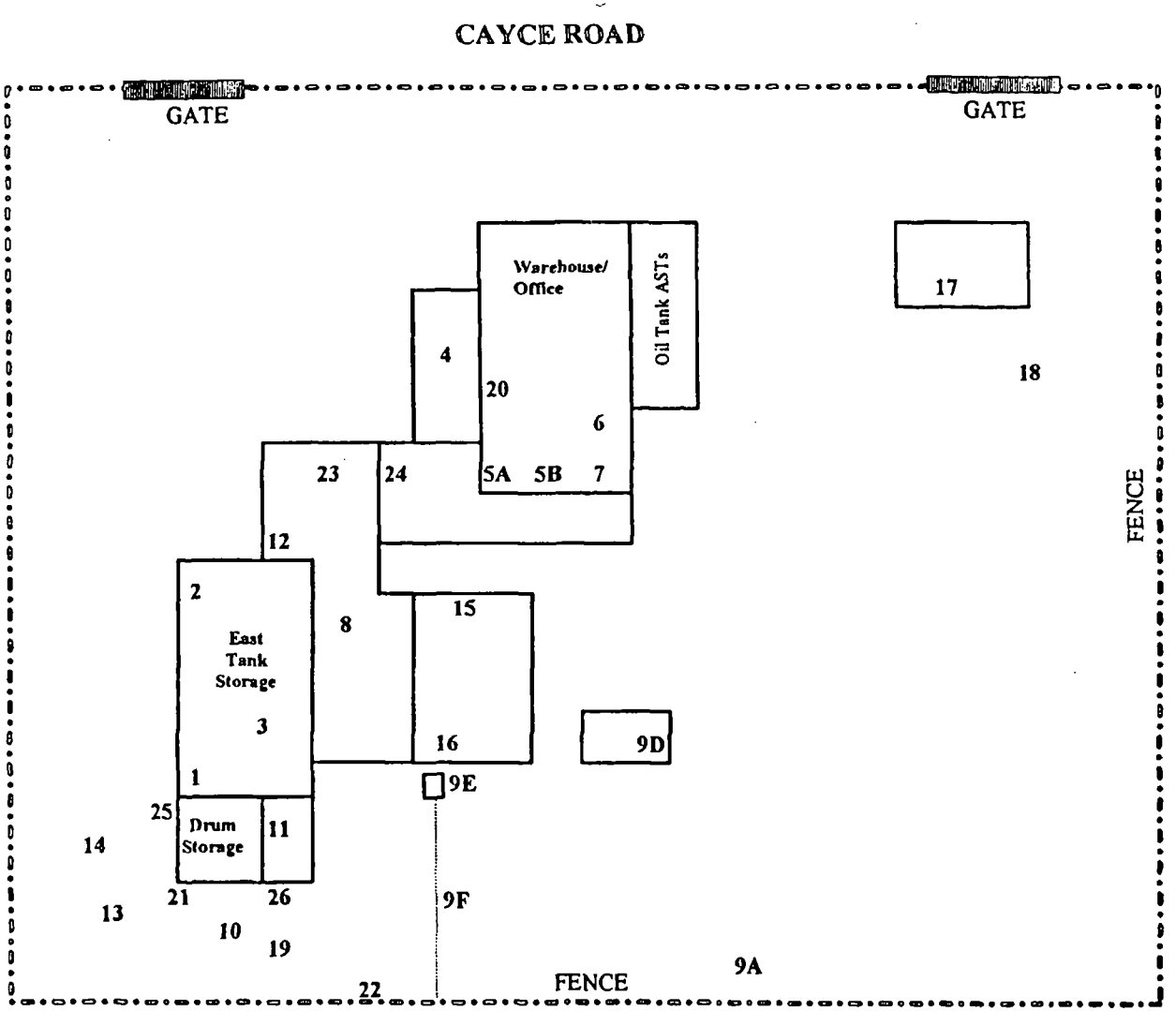
ENTERPRISE RECOVERY SYSTEMS
Route 5, Box 287
Cayce Road
Byhalia, Mississippi

MAP SOURCE
USGS 7.5 Minute Quadrangle Maps:
Mt. Pleasant, Miss - Tenn 1971
Byhalia NW, Miss - Tenn 1971

SITE LOCATION MAP

WOODWARD-CLYDE CONSULTANTS
Consulting Engineers, Geologist,
and Environmental Scientists
Jackson, Mississippi

DR. BY: ACE	SCALE: 1"=2,000'	PROJ. NO: 93B477
CHK. BY: ACE	DATE: 4/21/95	FIG. NO: 1



NOTE: 9b is located underground
9c is located throughout the facility

LEGEND

1 East Area Waste Solvent Tanks
   a) Tank #7
   b) Tank #9
   c) Tank #10
2 East Area Wastewater Tanks
   a: Tank #3
   b) Tank #4
   c) Tank #5
3 East Area Wastewater Tanks
   a) Tank #6
   b) Tank #16
4 Distillation Unit #1
5 Wastewater Distillation Units #2 and #3
   a) Still #2
   b) Still #3
6 Thin Film Evaporator
7 Former Distillation Unit
8 Unloading Area
9 Runoff System
   a) Clay Dike
   b) Runoff Ditches
   c) Runoff Pipes
   d) Retention Basin
   e) Oil/Water Separator
   f) Outfall Ditch
10 Former Empty Drum Storage Area
11 Present Empty Drum Storage Area
12 Truck Tankers
13 Van Trailers
14 Dump Trailer
15 Former Sludge Tank
16 Waste Container Storage Area
17 Concrete Pad
18 North Tank Scrap Area
19 East Scrap Metal Area
20 Portable Pumps
21 Drum Storage Area
22 East Grassy Area
23 Portable Tanks
24 East Area Waste Oil Tank
25 Dispenser
26 Drum Crusher

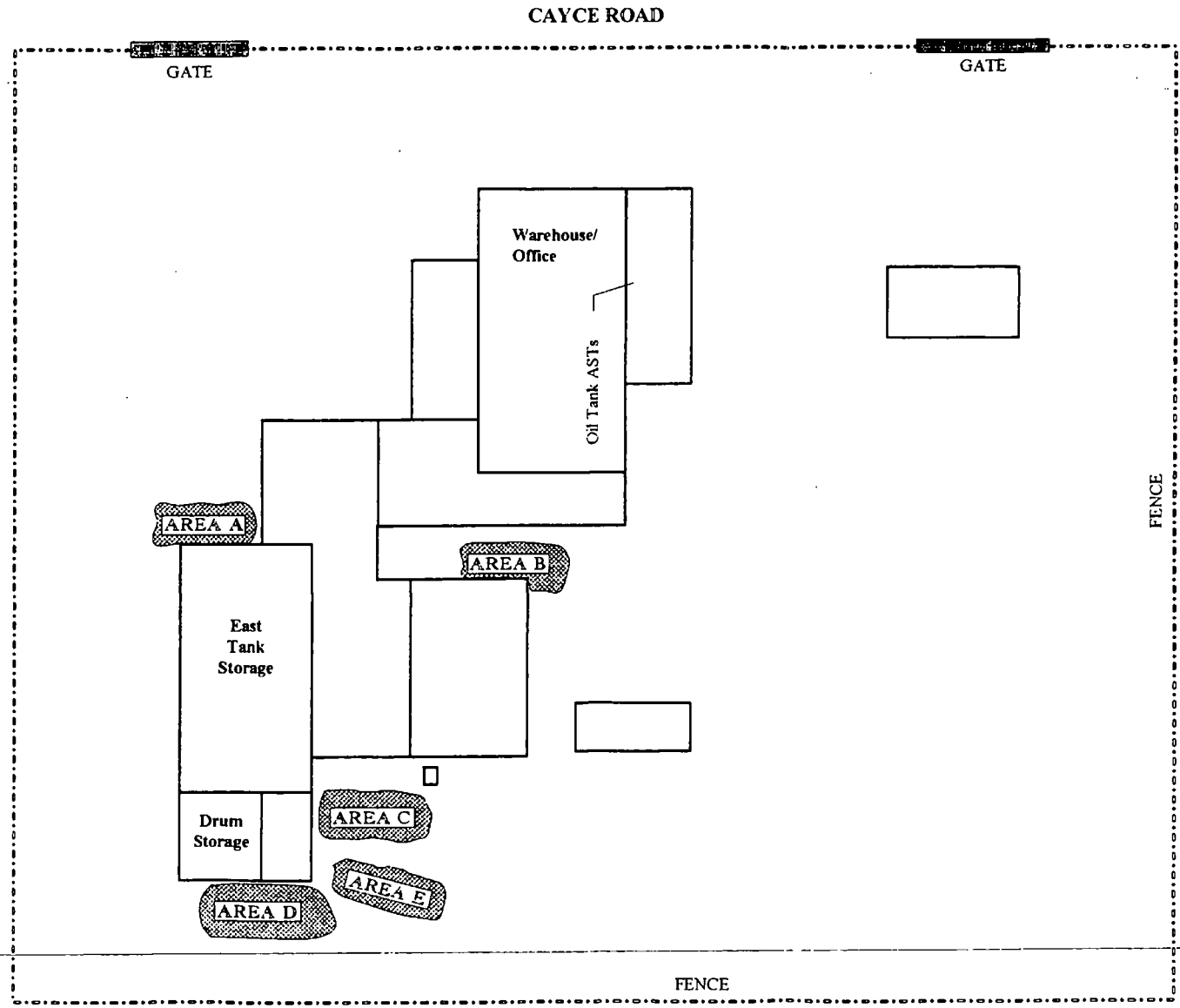
Enterprise Recovery Systems, Inc.
Byhalia, Mississippi

Woodward-Clyde Consultants
Engineering and sciences applied to the Earth and its environment
Jackson, Mississippi

SCALE:	DRW. BY: ACE	DATE: 9/27/95	PROJECT
1" = 50'	CHK. BY: ACE	DATE: 10/1/95	93B477

AREA LAYOUT DURING FACILITY OPERATIONS

FIGURE 2



LEGEND

EPA Designated Areas of Concern

30' 15' 0 30'

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Byhalia, Mississippi

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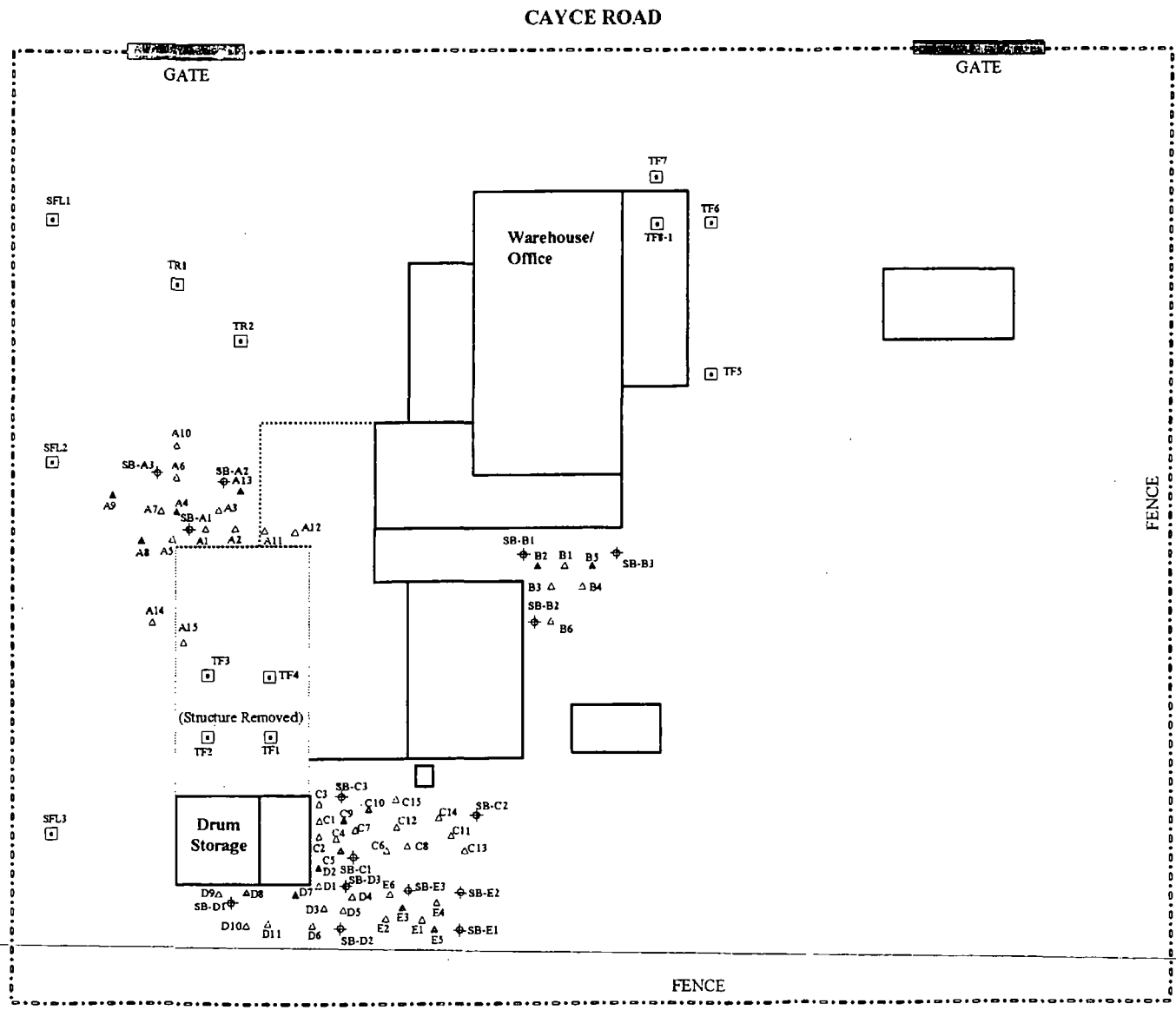
Jackson, Mississippi

SCALE:	DRW. BY:	DATE:	PROJECT
1" = 30'	ACE	10/25/95	93B477
	CHK. BY: ACE	DATE: 10/25/95	

EPA DESIGNATED AREAS OF CONCERN

FIGURE 3



LEGEND

- △ Surficial Soil Sample Headspace Only
- ▲ Surficial Soil Sample Headspace and VOC Analysis
- ⌖ Soil Boring
- ▫ EPA Headspace Sample

30' 15' 0 30'

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Byhalia, Mississippi

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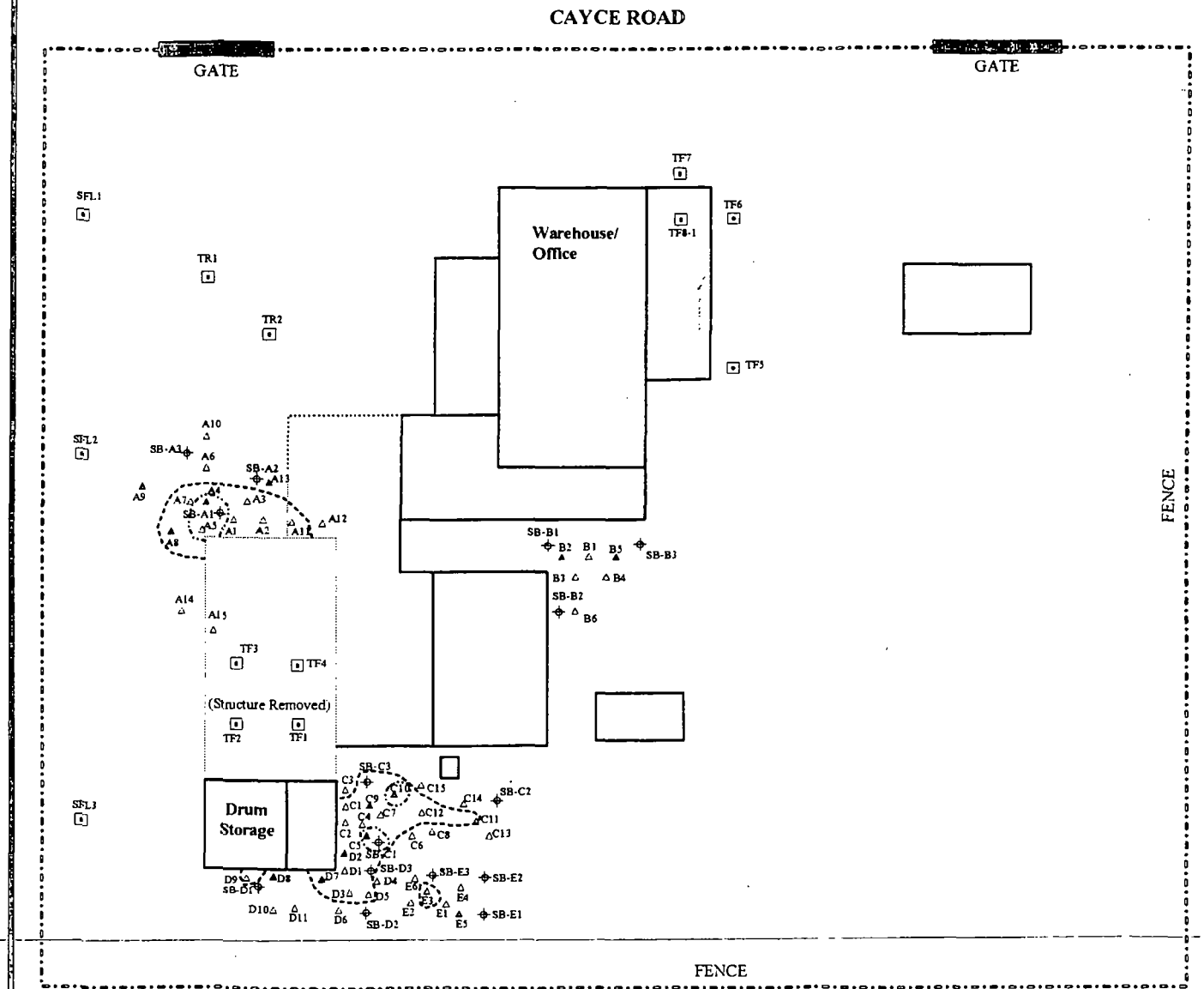
Jackson, Mississippi

SCALE:	DRW. BY: ACE	DATE: 10/25/95	PROJECT
AS SHOWN	CHK. BY: ACE	DATE: 10/25/95	93B477

SOIL ASSESSMENT SAMPLE LOCATIONS MARCH 1 - 6, 1994

FIGURE 4



LEGEND

- △ Surficial Soil Sample Headspace Only
- ▲ Surficial Soil Sample Headspace and VOC Analysis
- ⌖ Soil Boring
- ▣ EPA Headspace Sample
- ------ OVA Readings > 100 ppm
- ······ OVA Readings > 1,000 ppm

30' 15' 0 30'

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Byhalia, Mississippi

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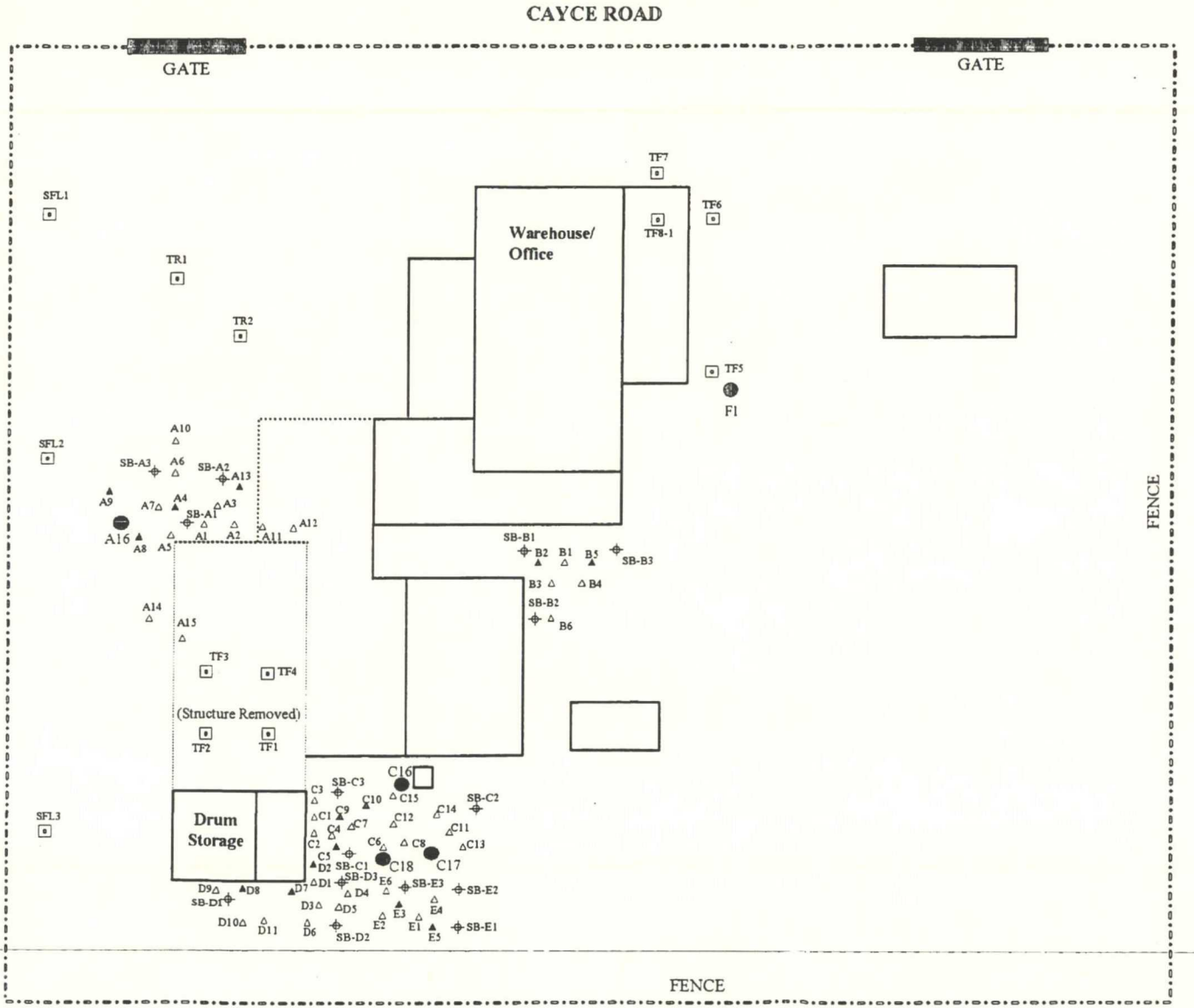
Jackson, Mississippi

SCALE:	DRW. BY: ACE	DATE: 10/25/95	PROJECT
AS SHOWN	CHK. BY: ACE	DATE: 10/25/95	93B477

SURFICIAL SOIL OVA READINGS (ppm)
MARCH 1 - 6, 1994

FIGURE 5



LEGEND

- △ Surficial Soil Sample Headspace Only
- ▲ Surficial Soil Sample Headspace and VOC Analysis
- ⊕ Soil Boring
- ▣ EPA Headspace Sample
- ● Soil Sample Location For SVOC and RCRA Metal Analysis

30' 15' 0 30'

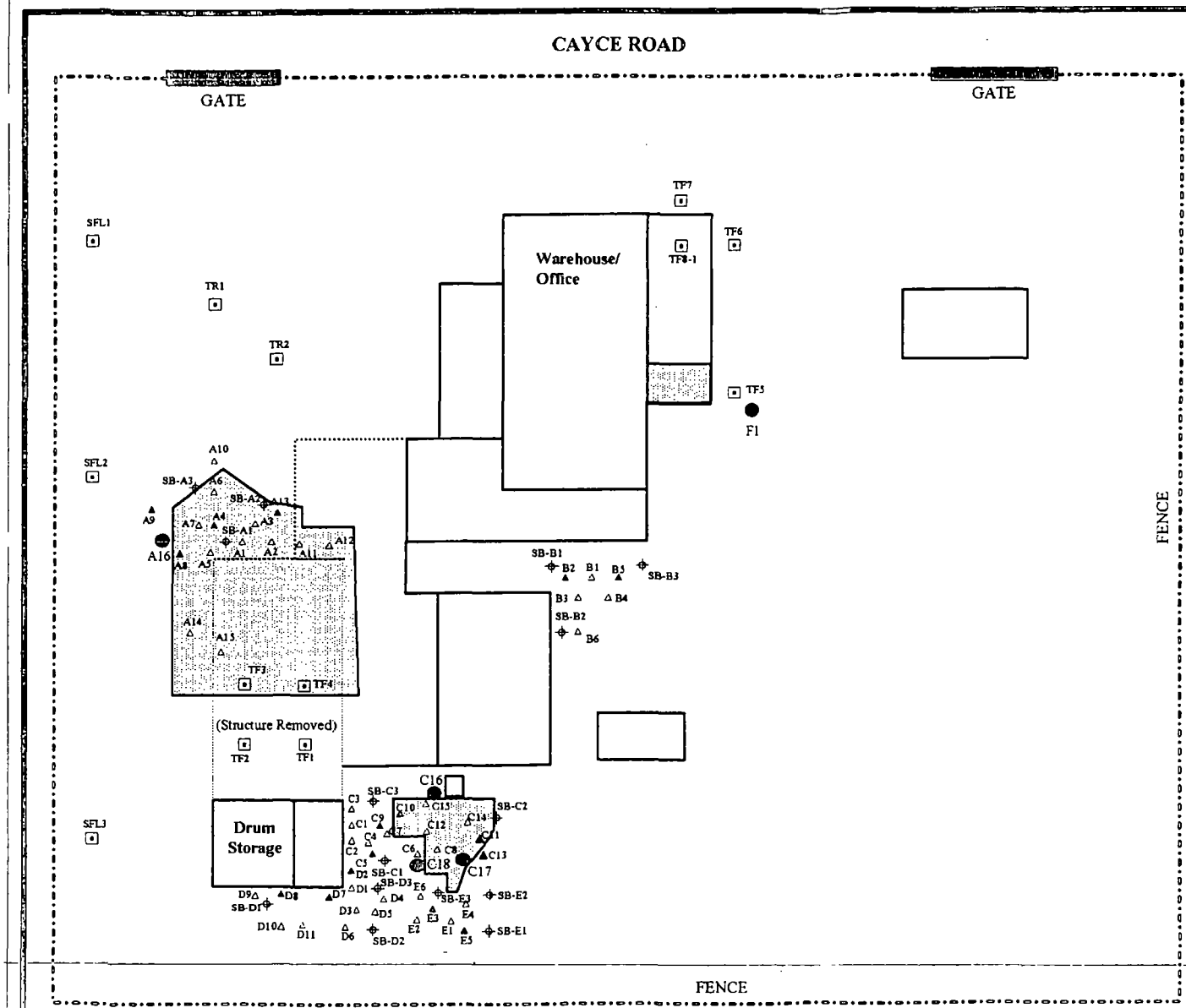
Enterprise Recovery Systems, Inc.
Byhalia, Mississippi

Woodward-Clyde Consultants
Engineering and sciences applied to the Earth and its environment
Jackson, Mississippi

SCALE:	DRW. BY:	DATE:	PROJECT
AS SHOWN	ACE	10/25/95	93B477
	CHK. BY: ACE	DATE: 10/25/95	

SVOC and RCRA Metal Soil Sample Locations
November 3, 1994

FIGURE 6



LEGEND

- △ Surficial Soil Sample Headspace Only
- ▲ Surficial Soil Sample Headspace and VOC Analysis
- ⊕ Soil Boring
- EPA Headspace Sample
- ● Soil Sample Location For SVOC and RCRA Metal Analysis
- Soil Removal Area

30' 15' 0 30'

Enterprise Recovery Systems, Inc.
Byhalia, Mississippi

Woodward-Clyde Consultants
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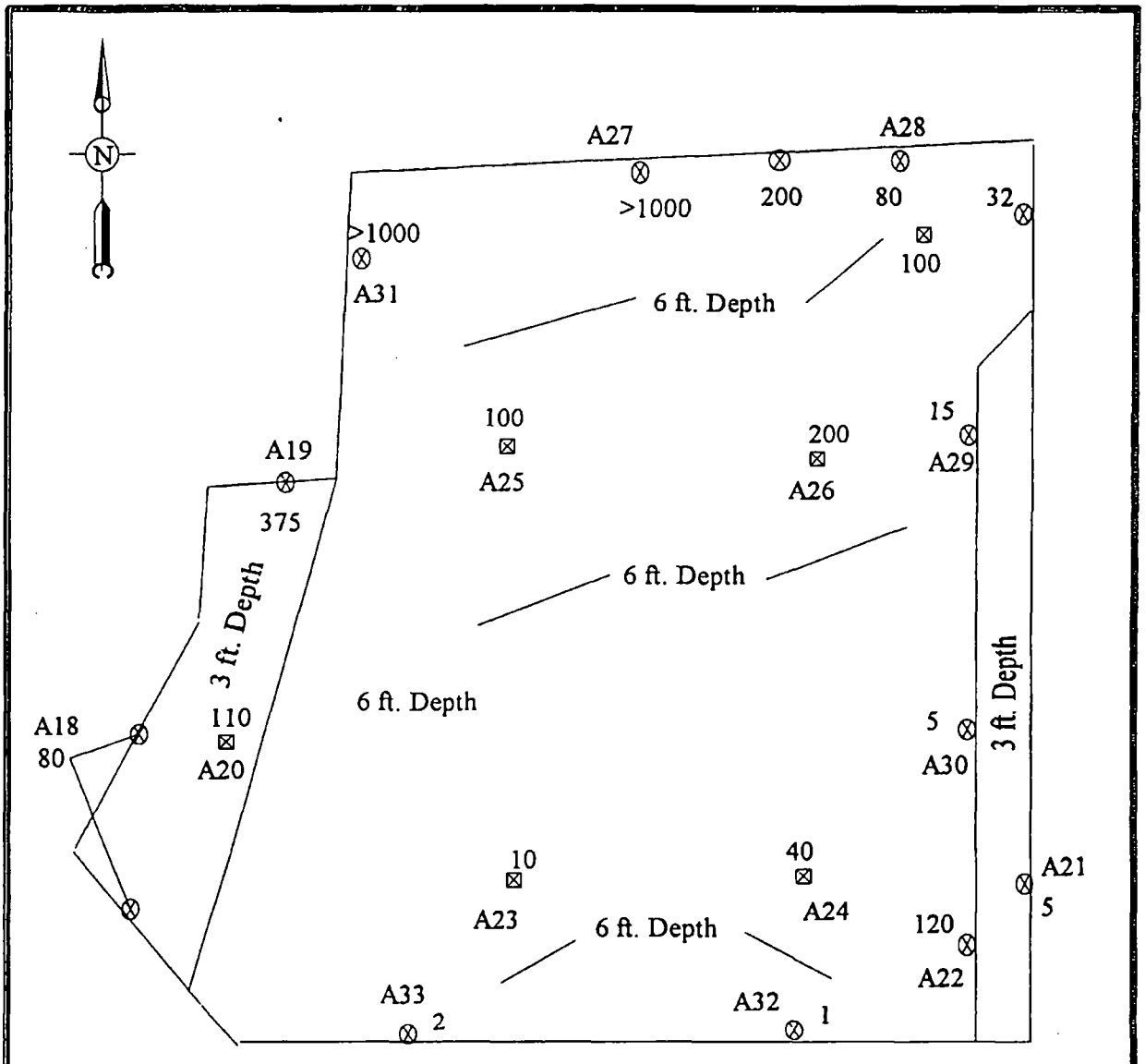
Jackson, Mississippi

SCALE:	DRW. BY: ACE	DATE: 10/25/95	PROJECT
AS SHOWN	CHK BY: ACE	DATE: 10/25/95	93B477

AREAL EXTENT OF SOIL EXCAVATION
December 13-19, 1994

FIGURE 7



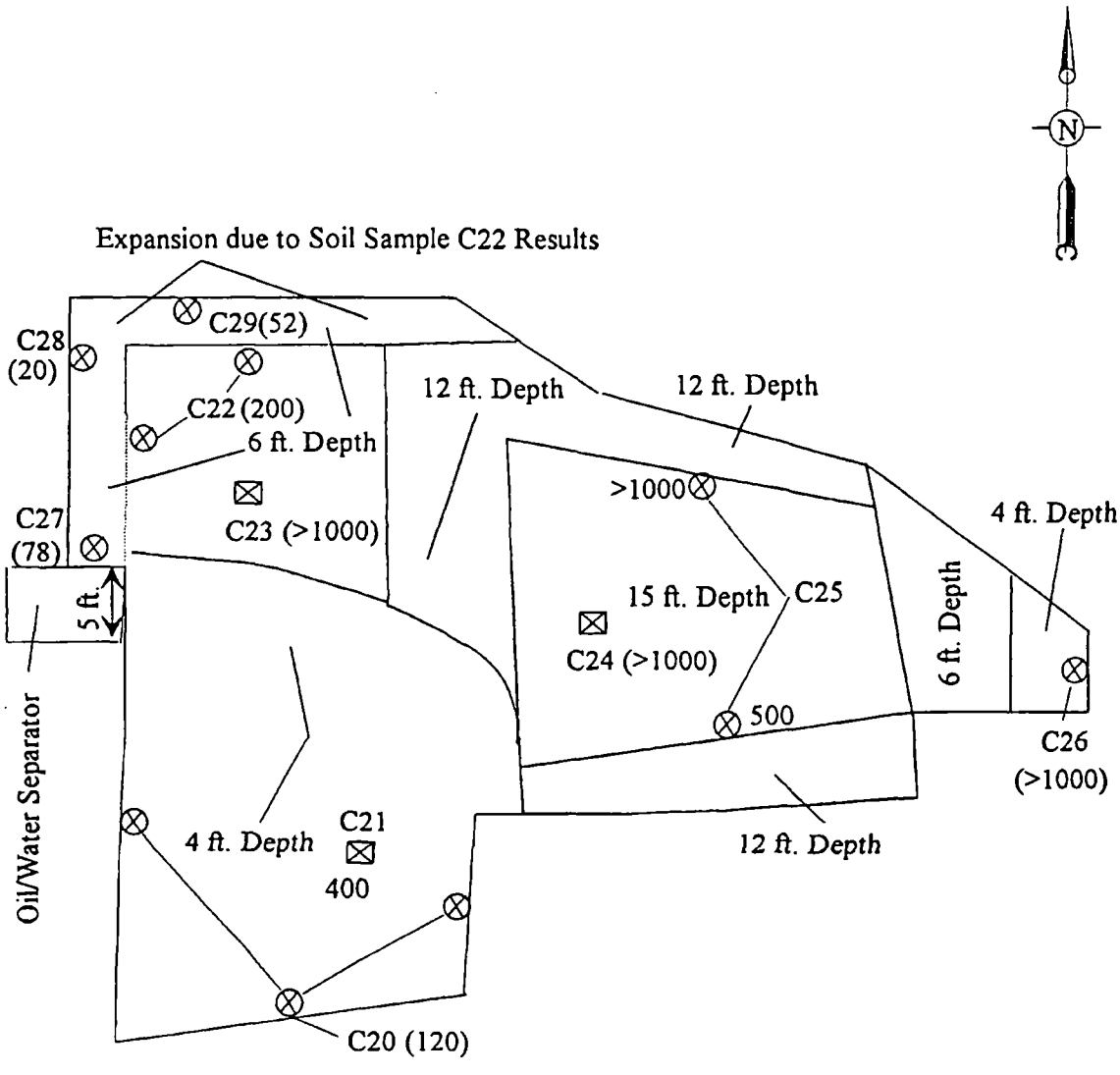
LEGEND

⊗ 980	OVA Wall Sample Location and Concentration (ppm)
⊠ 100	OVA Floor Sample Location and Concentration (ppm)
A23	Soil Sample Identification Number

AREA A
OVA READINGS AND SOIL VERIFICATION SAMPLE LOCATIONS
December 1994

WOODWARD-CLYDE CONSULTANTS
CONSULTING ENGINEERS, GEOLOGISTS AND ENVIRONMENTAL SCIENTISTS

DR. BY: ACE	SCALE: 1" = 15'	PROJ. NO: 93B477
CHK. BY: ACE	DATE: 1/7/95	FIG. NO: 8



LEGEND

⊗ 980	OVA Wall Sample Location and Concentration (ppm)
⊠ 100	OVA Floor Sample Location and Concentration (ppm)
C22	Soil Sample Identification Number

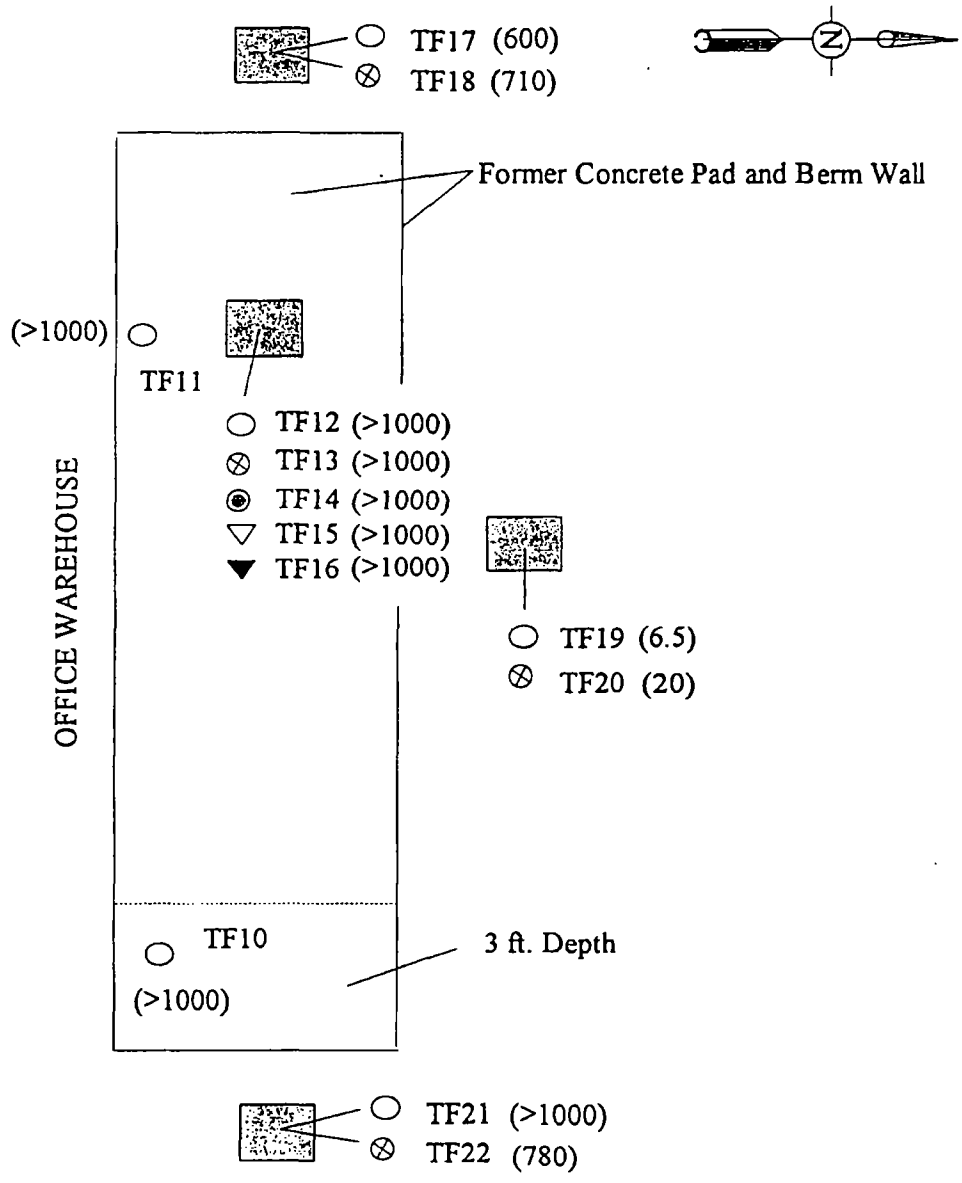
AREA C

OVA READINGS AND SOIL VERIFICATION SAMPLE LOCATIONS

WOODWARD-CLYDE CONSULTANTS

CONSULTING ENGINEERS, GEOLOGISTS AND ENVIRONMENTAL SCIENTISTS

DR. BY: ACE	SCALE: 1" = 7'	PROJ. NO: 93B477
CHK. BY: ACE	DATE: 1/7/95	FIG. NO: 9



LEGEND

- TF12 (>1000) 3 Foot Sample Depth, Sample I.D., OVA Reading
- TF13 (>1000) 6 Foot Sample Depth, Sample I.D., OVA Reading
- TF14 (>1000) 9 Foot Sample Depth, Sample I.D., OVA Reading
- TF15 (>1000) 12 Foot Sample Depth, Sample I.D., OVA Reading
- TF16 (>1000) 15 Foot Sample Depth, Sample I.D., OVA Reading

Sample Pit

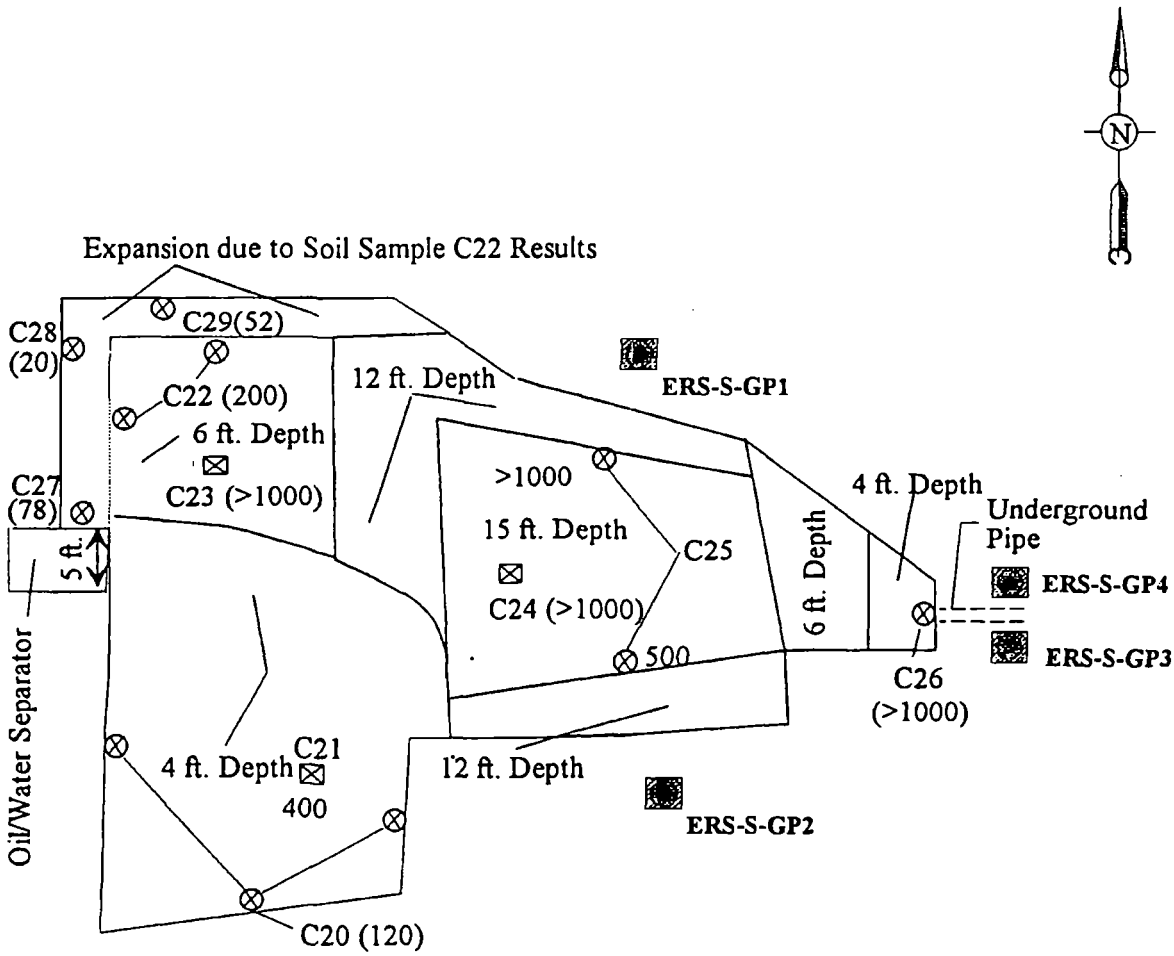
AREA F

OVA READINGS AND SOIL SAMPLE LOCATIONS

WOODWARD-CLYDE CONSULTANTS

CONSULTING ENGINEERS, GEOLOGISTS AND ENVIRONMENTAL SCIENTISTS

DR. BY: ACE	SCALE: 1" = 8'	PROJ. NO: 93B477
CHK. BY: KCC	DATE: 1/7/95	FIG. NO: 10



LEGEND

⊗ 980	OVA Wall Sample Location and Concentration (ppm)
⊠ 100	OVA Floor Sample Location and Concentration (ppm)
C22	Soil Sample Identification Number
■	Geo Probe Soil Sample Locations Samples Collected on March 10, 1995

AREA C

GEO PROBE SOIL SAMPLE LOCATIONS

WOODWARD-CLYDE CONSULTANTS

CONSULTING ENGINEERS, GEOLOGISTS AND ENVIRONMENTAL SCIENTISTS

DR. BY: ACE	SCALE: 1" = 7'	PROJ. NO: 93B477
CHK. BY: ACE	DATE: 3/18/95	FIG. NO: 11

APPENDIX C-6

SURFICIAL SOIL AND SOIL BORING SAMPLE RESULTS
MARCH 1994

Woodward-Clyde Consultants

DATE: April 1, 1994

TO: Andrew Eversull

FROM: DeJonnette Grantham-King DGK

SUBJECT: Analytical Data Review
Enterprise Recovery Systems (ERS)
Byhalia, Mississippi
Soil Sampling - Volatile Organics
WCC Project No. 92B477

The results of the laboratory analyses of thirty-two samples collected March 3, 1994 through March 6, 1994 at the ERS site located in Byhalia, Mississippi have been reviewed. Analytical Technologies, Inc. (ATI) provided the analytical results for the volatile organics. Detected compounds were present as outlined in Table 1. The following method was employed as outlined by the Environmental Protection Agency (EPA):

- Volatile Organics - EPA Method 8240, 3rd Edition, September 1986 and Rev. 1, July 1992.

The available Quality Assurance/Quality Control (QA/QC) information indicates that, the data met the requirements of Woodward-Clyde Consultants.

A. Holding Times

The soil samples were prepared and analyzed within the holding times outlined in the specified method.

B. Low Soil Blanks

Low soil blanks demonstrate the level of background (laboratory) contamination, and was analyzed at a frequency specified by the Contract Laboratory Program (CLP) protocols. Low soil blanks were analyzed, and the results were within acceptable limits.

C. High Soil Blanks

High soil blanks demonstrate the level of background (laboratory) contamination, and was analyzed at a frequency specified by the Contract Laboratory Program (CLP) protocols. High soil blanks were analyzed, and the results were within acceptable limits.

D. Low Soil Reagents

Low soil reagents were analyzed. The accuracy of the sample was determined by a measure of percent recovery. The percent recovery was within the regulatory control limits outlined by EPA.

E. High Soil Reagents

High soil reagents were analyzed. The accuracy of the sample was determined by a measure of percent recovery. The percent recovery was within the regulatory control limits outlined by EPA.

F. Low Soil Matrixs

Low soil matrixs were analyzed. The accuracy of the sample was determined by a measure of percent recovery. The percent recovery was within the regulatory control limits outlined by EPA.

G. Surrogate Spikes

Surrogate spikes were analyzed, and the results were within acceptable limits as outlined by EPA.

H. Rinsates

Four rinsates were collected and analyzed, and the results were contaminant-free of volatile organics.

I. Trip Blank

One trip blank was analyzed. Laboratory contaminants, acetone and 2-butanone (MEK) were detected at concentrations of 100 μg/l and 140 μg/l, respectively. The reporting limits for these compounds were 10 μg/l and 3 μg/l, respectively. Per my conversation with laboratory personnel, the trip blank was reanalyzed and the concentrations were confirmed. Additionally, the laboratory water was analyzed for the volatile organics, and the results were contaminant-free.

The concentration of acetone detected may be disqualified because the concentration in the sample is less than or equal to ten times (10X) the amount in the blank. A U will be associated with the concentration detected by the laboratory to denote the disqualification as undeteced. 2-butanone cannot be disqualified for the reasons stated above; however, since it was detected in the blank, it should be qualified as an estimated value as will be qualified in the table with a J to the right of the associated concentration.

TABLE 1
ENTERPRISE RECOVERY SYSTEMS
BYHALIA, MISSISSIPPI
SOIL SAMPLING -VOLATILE ORGANICS
SAMPLES COLLECTED MARCH 3-6, 1994
WCC PROJECT NO. 93B477

Sample Identification No.	Parameter	Concentration (ppb)[1]
ERS1-SS-B02-GS	Total 1,2-Dichloroethylene	69
	Tetrachloroethene	470
	1,1,1-Trichloroethane	34
	1,1,2-Trichloroethane	4,100
ERS1-SS-B05-G	Total 1,2-Dichloroethylene	36
	Ethylbenzene	3
	Methylene chloride	7U[2]
	4 Methyl-2-pentanone	8
	Styrene	13
	Tetrachloroethene	3
	Toluene	28
	1,1,1-Trichloroethane	19
	Trichloroethene	163
	Total xylenes	16
ERS1-SS-A04-GS	Ethylbenzene	470,000
	4-Methyl-2-pentanone	590,000
	Styrene	3,500,000
	Toluene	1,600,000
	Trichloroethene	710,000
	Total xylenes	2,400,000
ERS1-SS-A09-G	Acetone	36UB[2,3]
	1,1-Dichloroethane	11
	Total 1,2-Dichloroethylene	56
	Ethylbenzene	22

TABLE 1 (Continued)
ENTERPRISE RECOVERY SYSTEMS
BYHALIA, MISSISSIPPI
SOIL SAMPLING -VOLATILE ORGANICS
SAMPLES COLLECTED MARCH 3-6, 1994
WCC PROJECT NO. 93B477

Sample Identification No.	Parameter	Concentration (ppb)1
ERS1-SS-A09-G	Methylene chloride	19U[2]
	Styrene	120
	Tetrachloroethene	3
	Toluene	100
	1,1,1-Trichloroethane	90
	Trichloroethene	320
	Total xylenes	110
ERS1-SS-A08-G	Acetone	51UB[2,3]
	2-Butanone (MEK)	8UB[2,3]
	Total 1,2-Dichloroethylene	140
	Ethylbenzene	940
	4-Methyl-2-pentanone	16
	Tetrachloroethene	180
	Toluene	211
	1,1,1-Trichloroethane	18
	Trichloroethene	60
	Trichlorofluoromethane	5
	Total xylenes	4,200
ERS1-SS-A13-G	1,1-Dichloroethane	6
	Total 1,2-Dichloroethylene	170
	Methylene chloride	9U[2]
	Tetrachloroethene	65

TABLE 1 (Continued)
ENTERPRISE RECOVERY SYSTEMS
BYHALIA, MISSISSIPPI
SOIL SAMPLING -VOLATILE ORGANICS
SAMPLES COLLECTED MARCH 3-6, 1994
WCC PROJECT NO. 93B477

Sample Identification No.	Parameter	Concentration (ppb)1
ERS1-SS-A13-G	Toluene	8
	1,1,1-Trichloroethane	33
	Trichloroethene	220
ERS1-SS-C05-GS	Ethylbenzene	1,500
	4-Methyl-2-pentanone	8,000
	Toluene	2,600
	Trichloroethene	120
	Total xylenes	10,000
ERS1-SS-C09-G	Acetone	130UB[2,3]
	2-Butanone (MEK)	29UB[2,3]
	Carbon disulfide	2
	Chloroethane	5
	1,1-Dichloroethane	10
	1,1-Dichloroethene	64
	Total 1,2-Dichloroethylene	4,000
	Ethylbenzene	15
	Methylene chloride	9UB[2,3]
	4-Methyl-2-pentanone	16
	Styrene	49
	Tetrachloroethene	320
	Toluene	62
	1,1,1 Trichloroethane	49
	Trichloroethene	110
	Total xylenes	75

TABLE 1 (Continued)
ENTERPRISE RECOVERY SYSTEMS
BYHALIA, MISSISSIPPI
SOIL SAMPLING -VOLATILE ORGANICS
SAMPLES COLLECTED MARCH 3-6, 1994
WCC PROJECT NO. 93B477

Sample Identification No.	Parameter	Concentration (ppb)1
ERS1-SS-C10-G	Tetrachloroethene	38,000
	Trichloroethene	740,000
ERS1-SS-D02-G	Acetone	76UB[2,3]
	1,1-Dichloroethane	8
	Total 1,2-Dichloroethylene	120
	Methylene chloride	16UB[2,3]
	Tetrachloroethene	4
	Toluene	16
	1,1,1-Trichloroethane	33
	Trichloroethene	200
	Total xylenes	5
ERS1-D07-GS	Acetone	31UB[2,3]
	1,1-Dichloroethane	5
	Total 1,2-Dichloroethylene	41
	Methylene chloride	7UB[2,3]
	1,1,1-Trichloroethane	14
	Trichloroethene	90
ERS1-SS-D08-G	Acetone	22UB[2,3]
	Total 1,2-Dichloroethylene	38
	Methylene chloride	5UB[2,3]
	1,1,1-Trichloroethane	7
	Trichloroethene	62

TABLE 1 (Continued)
ENTERPRISE RECOVERY SYSTEMS
BYHALIA, MISSISSIPPI
SOIL SAMPLING -VOLATILE ORGANICS
SAMPLES COLLECTED MARCH 3-6, 1994
WCC PROJECT NO. 93B477

Sample Identification No.	Parameter	Concentration (ppb)1
ERS1-SS-E03-GS	Total 1,2-Dichloroethylene	21,000
	Ethylbenzene	6,000
	Tetrachloroethene	15,000
	Toluene	6,000
	1,1,1-Trichloroethane	43,000
	Trichloroethene	1,200
	Total xylenes	57,000
ERS1-SS-E05-G	Total 1,2-Dichloroethylene	14
	Methylene chloride	4U[2]
	Trichloroethene	36
	Trichlorofluoromethane	2
ERS1-SS-E05-D	1,1-Dichloroethane	18
	Total 1,2-Dichloroethylene	140
	Methylene chloride	7U[2]
	Tetrachloroethene	22
	1,1,1-Trichloroethane	61
	Trichloroethene	110
ERS1-SB-B01-GS-23	1,1-Dichloroethane	480
	Total 1,2-Dichloroethylene	13,000
	Ethylbenzene	1,500
	Tetrachloroethene	240
	Toluene	5,200
	1,1,1 Trichloroethane	1,300
	Trichloroethene	210

TABLE 1 (Continued)
ENTERPRISE RECOVERY SYSTEMS
BYHALIA, MISSISSIPPI
SOIL SAMPLING -VOLATILE ORGANICS
SAMPLES COLLECTED MARCH 3-6, 1994
WCC PROJECT NO. 93B477

Sample Identification No.	Parameter	Concentration (ppb)1
ERS1-SB-B01-GS-23	Total xylenes	7,700
ERS1-SB-B01-GS-78	Acetone	13UB[2,3]
	2-Butanone (MEK)	51UB[2,3]
	Total 1,2-Dichloroethylene	190
	Ethylbenzene	2
	Methylene chloride	9U[2]
	4-Methyl-2-pentanone	86
	1,1,2,2-Tetrachloroethane	4
	Tetrachloroethene	9
	Toluene	9
	1,1,1-Trichloroethane	8
	1,1,2-Trichloroethane	9
	Trichloroethene	100
	Total xylenes	16
ERS1-SB-B02-G-67	1,1-Dichloroethane	2
	Total 1,2-Dichloroethylene	37
	Methylene chloride	6U[2]
	4-Methyl-2-pentanone	8
	Tetrachloroethene	3
	Trichloroethene	33
ERS1-SB-B03-G-56	Acetone	20UB[2,3]
	2-Butanone (MEK)	17UB[2,3]

TABLE 1 (Continued)
ENTERPRISE RECOVERY SYSTEMS
BYHALIA, MISSISSIPPI
SOIL SAMPLING -VOLATILE ORGANICS
SAMPLES COLLECTED MARCH 3-6, 1994
WCC PROJECT NO. 93B477

Sample Identification No.	Parameter	Concentration (ppb)1
ERS1-SB-B03-G-56	1,1-Dichloroethane	7
	Total 1,2-Dichloroethylene	220
	Methylene chloride	20U[2]
	4-Methyl-2-pentanone	20
	Styrene	3
	Toluene	19
	1,1,1-Trichloroethane	19
	Trichloroethene	120
	Total xylenes	6
ERS1-RS-001-G	-[4]	ND[5]
ERS1-SB-A01-GS-78	Acetone	43,000UB[2,3,6]
	2-Butanone (MEK)	15,000UB[2,3,6]
	4-Methyl-2-pentanone	11,000
	Styrene	480
	Total xylenes	600
ERS1-SB-A02-GS-23	1,1-Dichloroethane	1
	Total 1,2-Dichloroethylene	43
	Tetrachloroethene	8
	Trichloroethene	17
ERS1-SB-A03-G-56	Acetone	13UB[2,3]
	2-Butanone (MEK)	9UB[2,3]
	Total 1,2-Dichloroethylene	37
	4-Methyl-2-pentanone	11
	Trichloroethene	3

TABLE 1 (Continued)
ENTERPRISE RECOVERY SYSTEMS
BYHALIA, MISSISSIPPI
SOIL SAMPLING -VOLATILE ORGANICS
SAMPLES COLLECTED MARCH 3-6, 1994
WCC PROJECT NO. 93B477

Sample Identification No.	Parameter	Concentration (ppb)1
ERS1-SB-D01-G-12	Acetone	73UB[2,3]
	2-Butanone (MEK)	16UB[2,3]
	1,1-Dichloroethane	7
	Total 1,2-Dichloroethylene	23
	Methylene chloride	14U[2]
	4-Methyl-2-pentanone	4
	Toluene	9
	1,1,1-Trichloroethane	9
	Trichloroethene	38
ERS1-RS-002-G	-[4]	ND[5]
ERS1-TB-001-G	Acetone	100U[3]
	2-Butanone (MEK)	140J[7]
ERS1-SB-D02-G-78	Total 1,2-Dichloroethylene	23
	Methylene chloride	9U[2]
	1,1,1-Trichloroethane	11
	Trichloroethene	45
ERS1-SB-D03-G-01	Acetone	44UB[2,3]
	Methylene chloride	5U[2]
	Trichloroethene	7
ERS1-SB-E01-G-78	Total 1,2-Dichloroethylene	7
	Methylene chloride	4U[2]
	Tetrachloroethene	39

TABLE 1 (Continued)
ENTERPRISE RECOVERY SYSTEMS
BYHALIA, MISSISSIPPI
SOIL SAMPLING -VOLATILE ORGANICS
SAMPLES COLLECTED MARCH 3-6, 1994
WCC PROJECT NO. 93B477

Sample Identification No.	Parameter	Concentration (ppb)1
ERS1-SB-E02-G-01	1,1-Dichloroethane	9
	Total 1,2-Dichloroethylene	130
	Methylene chloride	4U[2]
	Tetrachloroethene	14
	1,1,1-Trichloroethene	24
	Trichloroethene	24
ERS1-SB-E03-G-01	Total 1,2-Dichloroethylene	29
	Ethylbenzene	4
	Tetrachloroethene	16
	Toluene	6
	1,1,1-Trichloroethane	7
	1,1,2-Trichloroethane	5
	Trichloroethene	72
	Total xylenes	38
ERS1-SB-C01-GS-78	Acetone	19,000UB[2,3,6]
	2-Butanone (MEK)	130,000UB[2,3,6]
	4-Methyl-2-pentanone	85,000
	Total xylenes	3,800
ERS1-SB-C02-GS-67	Total 1,2-Dichloroethylene	12
	Methylene chloride	4U[2]
	Trichlorofluoromethane	41
ERS1-SB-C03-G-01	Acetone	50UB[2,3]
	2-Butanone (MEK)	20UB[2,3]

TABLE 1 (Continued)
ENTERPRISE RECOVERY SYSTEMS
BYHALIA, MISSISSIPPI
SOIL SAMPLING -VOLATILE ORGANICS
SAMPLES COLLECTED MARCH 3-6, 1994
WCC PROJECT NO. 93B477

Sample Identification No.	Parameter	Concentration (ppb)[1]
ERS1-SB-C03-G-01	Total 1,2-Dichloroethylene	7
	Ethylbenzene	6
	2-Hexanone	16
	Methylene chloride	5U[2]
	4-Methyl-2-pentanone	260
	Trichloroethene	12
	Total xylenes	54
ERS1-SB-C03-D-01	Acetone	130UB[2,3]
	2-Butanone (MEK)	37UB[2,3]
	Ethylbenzene	9
	2-Hexanone	11
	4-Methyl-2-pentanone	150
	Trichloroethene	6
	Total xylenes	76
ERS1-RS-004-G	-[4]	ND[5]
ERS1-RS-003-G	-	ND

Notes:

1 Concentrations are expressed in μg/kg for soil samples and 2μg/l for aqueous samples, which is equivalent to parts per billion (ppb).

2 Methylene chloride is a common laboratory contaminant. Positive sample results should not be reported when the concentration is less than or equal to ten times (10x) the amount in the blank.

3 Compound found in the blank and associated sample.

4 Volatile organics analyzed, but not detected. Numerical value is sample detection limit.

5 Concentrations not detected above the reporting limit.

6 When problems with any blanks exist, all associated data must be carefully evaluated to determine whether or not there is an inherent variability in the data, or if the problem is an isolated occurrence not affecting other data. Due to the high levels of acetone and 2-butanone (MEK) detected in the trip blank, the concentrations of these compounds detected in samples ERS1-SB-B01-GS-78 and ERS1-SB-A01-GS-78 may be disqualified. There is a formular that may be implemented to compare liquid results to soil: Reporting limit of compound X 125 (conversion factor for low to medium soil) X dilution factor X 10 (factor for conversion for laboratory contaminants)

7 Estimated quantity.

AnalyticalTechnologies,Inc. 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

March 18, 1994

INVOICE NUMBER 889317
LAB CODE 160

WOODWARD-CLYDE CONSULTANTS

460 BRIARWOOD DRIVE
JACKSON , MS 39206-0000

Accession #: 403231
Client Name: WOODWARD-CLYDE CONSULTANTS
Office: JACKSON, MISSISSIPPI
Project Name: ENTERPRISE RECOVERY SYSTEMS
Project Num: 93B477
Project Location: BYHALIA, MISSISSIPPI
Report Sent To: DEJONETTE KING
P. O. Number: CONTRACT NO. ATI-1
Billing Client: 22227

Samples	Test	Matrix	Description	Actual Price	Extended Price
	8240	AQ	VOLATILES (8240)	0.00	0.00
	8240	AQ	VOLATILES (8240)	160.00	160.00
1	8240	AQ	VOLATILES (8240)	220.00	220.00
23	8240	NA	VOLATILES (8240)	160.00	3,680.00
				Total:	$4,060.00

NET 30 DAYS

1 1/2 % Finance Charge on Balance Due over 30 Days

****
* REMIT PAYMENT TO: *
* Analytical Technologies, Inc. *
* P.O. Box 840436 *
* Dallas, TX 75284-0436 *
****

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AnalyticalTechnologies, Inc. 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

SIGNATURE PAGE

Reviewed by: _____
ATI Project Manager

Client:	WOODWARD-CLYDE CONSULTANTS JACKSON, MISSISSIPPI
Project Name:	ENTERPRISE RECOVERY SYSTEMS
Project Number:	93B477
Project Location:	BYHALIA, MISSISSIPPI
Accession Number:	403231
Project Manager:	DEJONETTE KING
Sampled By:	JIMMY RAYBURN

ANALYTICAL TECHNOLOGIES, INC. 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

Accession: 403231
Client: WOODWARD-CLYDE CONSULTANTS
Project Number: 93B477
Project Name: ENTERPRISE RECOVERY SYSTEMS
Project Location: BYHALIA, MISSISSIPPI
Test: VOLATILES (8240)
Analysis Method: 8240 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: N/A
Matrix: SOIL
QC Level: II

Lab Id: 001
Client Sample Id: ERS1-SS-B02-GS
Sample Date/Time: 03-MAR-94 1340
Received Date: 08-MAR-94

Batch: NAS025
Blank: A
Dry Weight %: 81
Extraction Date: N/A
Analysis Date: 12-MAR-94

Parameter:	Units:	Results:	Rpt Lmts:	Q:
ACETONE	UG/KG	ND	62	
ACROLEIN	UG/KG	ND	620	
ACRYLONITRILE	UG/KG	ND	620	
BENZENE	UG/KG	ND	6	
BROMODICHLOROMETHANE	UG/KG	ND	6	
BROMOFORM	UG/KG	ND	10	
BROMOMETHANE	UG/KG	ND	6	
2-BUTANONE (MEK)	UG/KG	ND	20	
CARBON DISULFIDE	UG/KG	ND	6	
CARBON TETRACHLORIDE	UG/KG	ND	10	
CHLOROBENZENE	UG/KG	ND	6	
CHLOROETHANE	UG/KG	ND	6	
2-CHLOROETHYLVINYL ETHER	UG/KG	ND	30	
CHLOROFORM	UG/KG	ND	10	
CHLOROMETHANE	UG/KG	ND	10	
CHLORODIBROMOMETHANE	UG/KG	ND	30	
DIBROMOMETHANE	UG/KG	ND	30	
DICHLORODIFLUOROMETHANE	UG/KG	ND	30	
1,1-DICHLOROETHANE	UG/KG	ND	6	
1,2-DICHLOROETHANE	UG/KG	ND	10	
1,1-DICHLOROETHENE	UG/KG	ND	6	
TOTAL 1,2-DICHLOROETHYLENE	UG/KG	69	30	
1,2-DICHLOROPROPANE	UG/KG	ND	10	
CIS-1,3-DICHLOROPROPENE	UG/KG	ND	6	
TRANS-1,3-DICHLOROPROPENE	UG/KG	ND	6	
1,4-DICHLORO-2-BUTENE	UG/KG	ND	30	
ETHYL BENZENE	UG/KG	ND	6	
ETHYL METHACRYLATE	UG/KG	ND	30	
2-HEXANONE	UG/KG	ND	20	
IODOMETHANE	UG/KG	ND	30	
METHYLENE CHLORIDE	UG/KG	ND	20	
4-METHYL-2-PENTANONE	UG/KG	ND	20	
STYRENE	UG/KG	ND	10	
1,1,2,2-TETRACHLOROETHANE	UG/KG	ND	10	
TETRACHLOROETHENE	UG/KG	470	6	
TOLUENE	UG/KG	ND	30	
1,1,1-TRICHLOROETHANE	UG/KG	34	30	
1,1,2-TRICHLOROETHANE	UG/KG	4100	120	
TRICHLOROETHENE	UG/KG	ND	6	
TRICHLOROFLUOROMETHANE	UG/KG	ND	6	

ANALYTICAL TECHNOLOGIES, INC. 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

Accession: 403231
Client: WOODWARD-CLYDE CONSULTANTS
Project Number: 93B477
Project Name: ENTERPRISE RECOVERY SYSTEMS
Project Location: BYHALIA, MISSISSIPPI
Test: VOLATILES (8240)
Analysis Method: 8240 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: N/A
Matrix: SOIL
QC Level: II

Lab Id: 001
Client Sample Id: ERS1-SS-B02-GS
Sample Date/Time: 03-MAR-94 1340
Received Date: 08-MAR-94

Parameter:	Units:	Results:	Rpt Lmts:	Q:
1,2,3 TRICHLOROPROPANE	UG/KG	ND	30	
VINYL ACETATE	UG/KG	ND	10	
VINYL CHLORIDE	UG/KG	ND	6	
TOTAL XYLENES	UG/KG	ND	10	
BROMOFLUOROBENZENE	%REC/SURR	111	74-121	
1,2-DICHLOROETHANE-D4	%REC/SURR	113	70-121	
TOLUENE-D8	%REC/SURR	105	81-117	
ANALYST	INITIALS	DWB		

Comments:

Accession: 403231
Client: WOODWARD-CLYDE CONSULTANTS
Project Number: 93B477
Project Name: ENTERPRISE RECOVERY SYSTEMS
Project Location: BYHALIA, MISSISSIPPI
Test: VOLATILES (8240)
Analysis Method: 8240 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: N/A
Matrix: SOIL
QC Level: II

Lab Id: 002
Client Sample Id: ERS1-SS-B05-G
Sample Date/Time: 03-MAR-94 1344
Received Date: 08-MAR-94

Batch: NAS024
Blank: C
Dry Weight %: 82
Extraction Date: N/A
Analysis Date: 10-MAR-94

Parameter:	Units:	Results:	Rpt Lmts:	Q:
ACETONE	UG/KG	ND	12	
ACROLEIN	UG/KG	ND	120	
ACRYLONITRILE	UG/KG	ND	120	
BENZENE	UG/KG	ND	1	
BROMODICHLOROMETHANE	UG/KG	ND	1	
BROMOFORM	UG/KG	ND	2	
BROMOMETHANE	UG/KG	ND	1	
2-BUTANONE (MEK)	UG/KG	ND	4	
CARBON DISULFIDE	UG/KG	ND	1	
CARBON TETRACHLORIDE	UG/KG	ND	2	
CHLOROBENZENE	UG/KG	ND	1	
CHLOROETHANE	UG/KG	ND	1	
2-CHLOROETHYLVINYL ETHER	UG/KG	ND	6	
CHLOROFORM	UG/KG	ND	2	
CHLOROMETHANE	UG/KG	ND	2	
CHLORODIBROMOMETHANE	UG/KG	ND	6	
DIBROMOMETHANE	UG/KG	ND	6	
DICHLORODIFLUOROMETHANE	UG/KG	ND	6	
1,1-DICHLOROETHANE	UG/KG	ND	1	
1,2-DICHLOROETHANE	UG/KG	ND	2	
1,1-DICHLOROETHENE	UG/KG	ND	1	
TOTAL 1,2-DICHLOROETHYLENE	UG/KG	36	6	
1,2-DICHLOROPROPANE	UG/KG	ND	2	
CIS-1,3-DICHLOROPROPENE	UG/KG	ND	1	
TRANS-1,3-DICHLOROPROPENE	UG/KG	ND	1	
1,4-DICHLORO-2-BUTENE	UG/KG	ND	6	
ETHYL BENZENE	UG/KG	3	1	
ETHYL METHACRYLATE	UG/KG	ND	6	
2-HEXANONE	UG/KG	ND	4	
IODOMETHANE	UG/KG	ND	6	
METHYLENE CHLORIDE	UG/KG	7	4	
4-METHYL-2-PENTANONE	UG/KG	8	4	
STYRENE	UG/KG	13	2	
1,1,2,2-TETRACHLOROETHANE	UG/KG	ND	2	
TETRACHLOROETHENE	UG/KG	3	1	
TOLUENE	UG/KG	28	6	
1,1,1-TRICHLOROETHANE	UG/KG	19	6	
1,1,2-TRICHLOROETHANE	UG/KG	ND	2	
TRICHLOROETHENE	UG/KG	163	1	
TRICHLOROFLUOROMETHANE	UG/KG	ND	1	

ANALYTICAL TECHNOLOGIES, INC. 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

Accession: 403231
Client: WOODWARD-CLYDE CONSULTANTS
Project Number: 93B477
Project Name: ENTERPRISE RECOVERY SYSTEMS
Project Location: BYHALIA, MISSISSIPPI
Test: VOLATILES (8240)
Analysis Method: 8240 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: N/A
Matrix: SOIL
QC Level: II

Lab Id: 002
Client Sample Id: ERS1-SS-B05-G
Sample Date/Time: 03-MAR-94 1344
Received Date: 08-MAR-94

Parameter:	Units:	Results:	Rpt Lmts:	Q:
1,2,3 TRICHLOROPROPANE	UG/KG	ND	6	
VINYL ACETATE	UG/KG	ND	2	
VINYL CHLORIDE	UG/KG	ND	1	
TOTAL XYLENES	UG/KG	16	2	
BROMOFLUOROBENZENE	%REC/SURR	101	74-121	
1,2-DICHLOROETHANE-D4	%REC/SURR	102	70-121	
TOLUENE-D8	%REC/SURR	112	81-117	
ANALYST	INITIALS	DWB		

Comments:

Accession: 403231
Client: WOODWARD-CLYDE CONSULTANTS
Project Number: 93B477
Project Name: ENTERPRISE RECOVERY SYSTEMS
Project Location: BYHALIA, MISSISSIPPI
Test: VOLATILES (8240)
Analysis Method: 8240 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: N/A
Matrix: SOIL
QC Level: II

Lab Id: 003
Client Sample Id: ERS1-SS-A04-GS
Sample Date/Time: 03-MAR-94 1355
Received Date: 08-MAR-94

Batch: VIS031
Blank: C
Dry Weight %: 85
Extraction Date: 10-MAR-94
Analysis Date: 11-MAR-94

Parameter:	Units:	Results:	Rpt Lmts:	Q:
ACETONE	UG/KG	ND	1200000	
ACROLEIN	UG/KG	ND	12000000	
ACRYLONITRILE	UG/KG	ND	12000000	
BENZENE	UG/KG	ND	120000	
BROMODICHLOROMETHANE	UG/KG	ND	120000	
BROMOFORM	UG/KG	ND	240000	
BROMOMETHANE	UG/KG	ND	120000	
2-BUTANONE (MEK)	UG/KG	ND	350000	
CARBON DISULFIDE	UG/KG	ND	120000	
CARBON TETRACHLORIDE	UG/KG	ND	240000	
CHLOROBENZENE	UG/KG	ND	120000	
CHLOROETHANE	UG/KG	ND	120000	
2-CHLOROETHYLVINYL ETHER	UG/KG	ND	590000	
CHLOROFORM	UG/KG	ND	240000	
CHLOROMETHANE	UG/KG	ND	240000	
CHLORODIBROMOMETHANE	UG/KG	ND	590000	
DIBROMOMETHANE	UG/KG	ND	590000	
DICHLORODIFLUOROMETHANE	UG/KG	ND	590000	
1,1-DICHLOROETHANE	UG/KG	ND	120000	
1,2-DICHLOROETHANE	UG/KG	ND	240000	
1,1-DICHLOROETHENE	UG/KG	ND	120000	
TOTAL 1,2-DICHLOROETHYLENE	UG/KG	ND	590000	
1,2-DICHLOROPROPANE	UG/KG	ND	240000	
CIS-1,3-DICHLOROPROPENE	UG/KG	ND	120000	
TRANS-1,3-DICHLOROPROPENE	UG/KG	ND	120000	
1,4-DICHLORO-2-BUTENE	UG/KG	ND	590000	
ETHYL BENZENE	UG/KG	470000	120000	
ETHYL METHACRYLATE	UG/KG	ND	590000	
2-HEXANONE	UG/KG	ND	350000	
IODOMETHANE	UG/KG	ND	590000	
METHYLENE CHLORIDE	UG/KG	ND	350000	
4-METHYL-2-PENTANONE	UG/KG	590000	350000	
STYRENE	UG/KG	3500000	240000	
1,1,2,2-TETRACHLOROETHANE	UG/KG	ND	240000	
TETRACHLOROETHENE	UG/KG	ND	120000	
TOLUENE	UG/KG	1600000	590000	
1,1,1-TRICHLOROETHANE	UG/KG	ND	590000	
1,1,2-TRICHLOROETHANE	UG/KG	ND	240000	
TRICHLOROETHENE	UG/KG	710000	120000	
TRICHLOROFLUOROMETHANE	UG/KG	ND	120000	

ANALYTICAL TECHNOLOGIES, INC. 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

Accession: 403231
Client: WOODWARD-CLYDE CONSULTANTS
Project Number: 93B477
Project Name: ENTERPRISE RECOVERY SYSTEMS
Project Location: BYHALIA, MISSISSIPPI
Test: VOLATILES (8240)
Analysis Method: 8240 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: N/A
Matrix: SOIL
QC Level: II

Lab Id: 003
Client Sample Id: ERS1-SS-A04-GS
Sample Date/Time: 03-MAR-94 1355
Received Date: 08-MAR-94

Parameter:	Units:	Results:	Rpt Lmts:	Q:
1,2,3 TRICHLOROPROPANE	UG/KG	ND	590000	
VINYL ACETATE	UG/KG	ND	240000	
VINYL CHLORIDE	UG/KG	ND	120000	
TOTAL XYLENES	UG/KG	2400000	240000	
BROMOFLUOROBENZENE	%REC/SURR	D*	74-121	
1,2-DICHLOROETHANE-D4	%REC/SURR	D*	70-121	
TOLUENE-D8	%REC/SURR	D*	81-117	
ANALYST	INITIALS	DWB		

Comments:
D* = DILUTED OUT.

Accession: 403231
Client: WOODWARD-CLYDE CONSULTANTS
Project Number: 93B477
Project Name: ENTERPRISE RECOVERY SYSTEMS
Project Location: BYHALIA, MISSISSIPPI
Test: VOLATILES (8240)
Analysis Method: 8240 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: N/A
Matrix: SOIL
QC Level: II

Lab Id: 004
Client Sample Id: ERS1-SS-A09-G
Sample Date/Time: 03-MAR-94 1403
Received Date: 08-MAR-94

Batch: NAS024
Blank: B
Dry Weight %: 78
Extraction Date: N/A
Analysis Date: 09-MAR-94

Parameter:	Units:	Results:	Rpt Lmts:	Q:
ACETONE	UG/KG	36	13	
ACROLEIN	UG/KG	ND	130	
ACRYLONITRILE	UG/KG	ND	130	
BENZENE	UG/KG	ND	1	
BROMODICHLOROMETHANE	UG/KG	ND	1	
BROMOFORM	UG/KG	ND	3	
BROMOMETHANE	UG/KG	ND	1	
2-BUTANONE (MEK)	UG/KG	ND	4	
CARBON DISULFIDE	UG/KG	ND	1	
CARBON TETRACHLORIDE	UG/KG	ND	3	
CHLOROBENZENE	UG/KG	ND	1	
CHLOROETHANE	UG/KG	ND	1	
2-CHLOROETHYLVINYL ETHER	UG/KG	ND	6	
CHLOROFORM	UG/KG	ND	3	
CHLOROMETHANE	UG/KG	ND	3	
CHLORODIBROMOMETHANE	UG/KG	ND	6	
DIBROMOMETHANE	UG/KG	ND	6	
DICHLORODIFLUOROMETHANE	UG/KG	ND	6	
1,1-DICHLOROETHANE	UG/KG	11	1	
1,2-DICHLOROETHANE	UG/KG	ND	3	
1,1-DICHLOROETHENE	UG/KG	ND	1	
TOTAL 1,2-DICHLOROETHYLENE	UG/KG	56	6	
1,2-DICHLOROPROPANE	UG/KG	ND	3	
CIS-1,3-DICHLOROPROPENE	UG/KG	ND	1	
TRANS-1,3-DICHLOROPROPENE	UG/KG	ND	1	
1,4-DICHLORO-2-BUTENE	UG/KG	ND	6	
ETHYL BENZENE	UG/KG	22	1	
ETHYL METHACRYLATE	UG/KG	ND	6	
2-HEXANONE	UG/KG	ND	4	
IODOMETHANE	UG/KG	ND	6	
METHYLENE CHLORIDE	UG/KG	19	4	
4-METHYL-2-PENTANONE	UG/KG	ND	4	
STYRENE	UG/KG	120	3	
1,1,2,2-TETRACHLOROETHANE	UG/KG	ND	3	
TETRACHLOROETHENE	UG/KG	3	1	
TOLUENE	UG/KG	100	6	
1,1,1-TRICHLOROETHANE	UG/KG	90	6	
1,1,2-TRICHLOROETHANE	UG/KG	ND	3	
TRICHLOROETHENE	UG/KG	320	1	
TRICHLOROFLUOROMETHANE	UG/KG	ND	1	

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Accession: 403231
Client: WOODWARD-CLYDE CONSULTANTS
Project Number: 93B477
Project Name: ENTERPRISE RECOVERY SYSTEMS
Project Location: BYHALIA, MISSISSIPPI
Test: VOLATILES (8240)
Analysis Method: 8240 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: N/A
Matrix: SOIL
QC Level: II

Lab Id: 004
Client Sample Id: ERS1-SS-A09-G
Sample Date/Time: 03-MAR-94 1403
Received Date: 08-MAR-94

Parameter:	Units:	Results:	Rpt Lmts:	Q:
1,2,3 TRICHLOROPROPANE	UG/KG	ND	6	
VINYL ACETATE	UG/KG	ND	3	
VINYL CHLORIDE	UG/KG	ND	1	
TOTAL XYLENES	UG/KG	110	3	
BROMOFLUOROBENZENE	%REC/SURR	96	74-121	
1,2-DICHLOROETHANE-D4	%REC/SURR	94	70-121	
TOLUENE-D8	%REC/SURR	108	81-117	
ANALYST	INITIALS	DWB		

Comments:

ANALYTICAL TECHNOLOGIES, INC. 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

Accession: 403231
Client: WOODWARD-CLYDE CONSULTANTS
Project Number: 93B477
Project Name: ENTERPRISE RECOVERY SYSTEMS
Project Location: BYHALIA, MISSISSIPPI
Test: VOLATILES (8240)
Analysis Method: 8240 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: N/A
Matrix: SOIL
QC Level: II

Lab Id: 005
Client Sample Id: ERS1-SS-A08-G
Sample Date/Time: 03-MAR-94 1407
Received Date: 08-MAR-94

Batch: NAS025
Blank: B
Dry Weight %: 82
Extraction Date: N/A
Analysis Date: 13-MAR-94

Parameter:	Units:	Results:	Rpt Lmts:	Q:
ACETONE	UG/KG	51	12	
ACROLEIN	UG/KG	ND	120	
ACRYLONITRILE	UG/KG	ND	120	
BENZENE	UG/KG	ND	1	
BROMODICHLOROMETHANE	UG/KG	ND	1	
BROMOFORM	UG/KG	ND	2	
BROMOMETHANE	UG/KG	ND	1	
2-BUTANONE (MEK)	UG/KG	8	4	
CARBON DISULFIDE	UG/KG	ND	1	
CARBON TETRACHLORIDE	UG/KG	ND	2	
CHLOROBENZENE	UG/KG	ND	1	
CHLOROETHANE	UG/KG	ND	1	
2-CHLOROETHYLVINYL ETHER	UG/KG	ND	6	
CHLOROFORM	UG/KG	ND	2	
CHLOROMETHANE	UG/KG	ND	2	
CHLORODIBROMOMETHANE	UG/KG	ND	6	
DIBROMOMETHANE	UG/KG	ND	6	
DICHLORODIFLUOROMETHANE	UG/KG	ND	6	
1,1-DICHLOROETHANE	UG/KG	ND	1	
1,2-DICHLOROETHANE	UG/KG	ND	2	
1,1-DICHLOROETHENE	UG/KG	ND	1	
TOTAL 1,2-DICHLOROETHYLENE	UG/KG	140	6	
1,2-DICHLOROPROPANE	UG/KG	ND	2	
CIS-1,3-DICHLOROPROPENE	UG/KG	ND	1	
TRANS-1,3-DICHLOROPROPENE	UG/KG	ND	1	
1,4-DICHLORO-2-BUTENE	UG/KG	ND	6	
ETHYL BENZENE	UG/KG	940	6	
ETHYL METHACRYLATE	UG/KG	ND	6	
2-HEXANONE	UG/KG	ND	4	
IODOMETHANE	UG/KG	ND	6	
METHYLENE CHLORIDE	UG/KG	ND	4	
4-METHYL-2-PENTANONE	UG/KG	16	4	
STYRENE	UG/KG	ND	2	
1,1,2,2-TETRACHLOROETHANE	UG/KG	ND	2	
TETRACHLOROETHENE	UG/KG	180	1	
TOLUENE	UG/KG	211	6	
1,1,1-TRICHLOROETHANE	UG/KG	18	6	
1,1,2-TRICHLOROETHANE	UG/KG	ND	2	
TRICHLOROETHENE	UG/KG	60	1	
TRICHLOROFLUOROMETHANE	UG/KG	5	1	

ANALYTICAL TECHNOLOGIES, INC. 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

Accession: 403231
Client: WOODWARD-CLYDE CONSULTANTS
Project Number: 93B477
Project Name: ENTERPRISE RECOVERY SYSTEMS
Project Location: BYHALIA, MISSISSIPPI
Test: VOLATILES (8240)
Analysis Method: 8240 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: N/A
Matrix: SOIL
QC Level: II

Lab Id: 005
Client Sample Id: ERS1-SS-A08-G
Sample Date/Time: 03-MAR-94 1407
Received Date: 08-MAR-94

Parameter:	Units:	Results:	Rpt Lmts:	Q:
1,2,3 TRICHLOROPROPANE	UG/KG	ND	6	
VINYL ACETATE	UG/KG	ND	2	
VINYL CHLORIDE	UG/KG	ND	1	
TOTAL XYLENES	UG/KG	4200	12	
BROMOFLUOROBENZENE	%REC/SURR	119	74-121	
1,2-DICHLOROETHANE-D4	%REC/SURR	96	70-121	
TOLUENE-D8	%REC/SURR	114	81-117	
ANALYST	INITIALS	DWB		

Comments:

Accession: 403231
Client: WOODWARD-CLYDE CONSULTANTS
Project Number: 93B477
Project Name: ENTERPRISE RECOVERY SYSTEMS
Project Location: BYHALIA, MISSISSIPPI
Test: VOLATILES (8240)
Analysis Method: 8240 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: N/A
Matrix: SOIL
QC Level: II

Lab Id: 006
Client Sample Id: ERS1-SS-A13-G
Sample Date/Time: 03-MAR-94 1412
Received Date: 08-MAR-94

Batch: NAS024
Blank: D
Dry Weight %: 73
Extraction Date: N/A
Analysis Date: 10-MAR-94

Parameter:	Units:	Results:	Rpt Lmts:	Q:
ACETONE	UG/KG	ND	14	
ACROLEIN	UG/KG	ND	140	
ACRYLONITRILE	UG/KG	ND	140	
BENZENE	UG/KG	ND	1	
BROMODICHLOROMETHANE	UG/KG	ND	1	
BROMOFORM	UG/KG	ND	3	
BROMOMETHANE	UG/KG	ND	1	
2-BUTANONE (MEK)	UG/KG	ND	4	
CARBON DISULFIDE	UG/KG	ND	1	
CARBON TETRACHLORIDE	UG/KG	ND	3	
CHLOROBENZENE	UG/KG	ND	1	
CHLOROETHANE	UG/KG	ND	1	
2-CHLOROETHYLVINYL ETHER	UG/KG	ND	7	
CHLOROFORM	UG/KG	ND	3	
CHLOROMETHANE	UG/KG	ND	3	
CHLORODIBROMOMETHANE	UG/KG	ND	7	
DIBROMOMETHANE	UG/KG	ND	7	
DICHLORODIFLUOROMETHANE	UG/KG	ND	7	
1,1-DICHLOROETHANE	UG/KG	6	1	
1,2-DICHLOROETHANE	UG/KG	ND	3	
1,1-DICHLOROETHENE	UG/KG	ND	1	
TOTAL 1,2-DICHLOROETHYLENE	UG/KG	170	7	
1,2-DICHLOROPROPANE	UG/KG	ND	3	
CIS-1,3-DICHLOROPROPENE	UG/KG	ND	1	
TRANS-1,3-DICHLOROPROPENE	UG/KG	ND	1	
1,4-DICHLORO-2-BUTENE	UG/KG	ND	7	
ETHYL BENZENE	UG/KG	ND	1	
ETHYL METHACRYLATE	UG/KG	ND	7	
2-HEXANONE	UG/KG	ND	4	
IODOMETHANE	UG/KG	ND	7	
METHYLENE CHLORIDE	UG/KG	9	4	
4-METHYL-2-PENTANONE	UG/KG	ND	4	
STYRENE	UG/KG	ND	3	
1,1,2,2-TETRACHLOROETHANE	UG/KG	ND	3	
TETRACHLOROETHENE	UG/KG	65	1	
TOLUENE	UG/KG	8	7	
1,1,1-TRICHLOROETHANE	UG/KG	33	7	
1,1,2-TRICHLOROETHANE	UG/KG	ND	3	
TRICHLOROETHENE	UG/KG	220	1	
TRICHLOROFLUOROMETHANE	UG/KG	ND	1	

ANALYTICAL TECHNOLOGIES, INC. 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

Accession: 403231
Client: WOODWARD-CLYDE CONSULTANTS
Project Number: 93B477
Project Name: ENTERPRISE RECOVERY SYSTEMS
Project Location: BYHALIA, MISSISSIPPI
Test: VOLATILES (8240)
Analysis Method: 8240 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: N/A
Matrix: SOIL
QC Level: II

Lab Id: 006
Client Sample Id: ERS1-SS-A13-G
Sample Date/Time: 03-MAR-94 1412
Received Date: 08-MAR-94

Parameter:	Units:	Results:	Rpt Lmts:	Q:
1,2,3 TRICHLOROPROPANE	UG/KG	ND	7	
VINYL ACETATE	UG/KG	ND	3	
VINYL CHLORIDE	UG/KG	ND	1	
TOTAL XYLENES	UG/KG	ND	3	
BROMOFLUOROBENZENE	%REC/SURR	91	74-121	
1,2-DICHLOROETHANE-D4	%REC/SURR	105	70-121	
TOLUENE-D8	%REC/SURR	117	81-117	
ANALYST	INITIALS	DWB		

Comments:

Accession: 403231
Client: WOODWARD-CLYDE CONSULTANTS
Project Number: 93B477
Project Name: ENTERPRISE RECOVERY SYSTEMS
Project Location: BYHALIA, MISSISSIPPI
Test: VOLATILES (8240)
Analysis Method: 8240 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: N/A
Matrix: SOIL
QC Level: II

Lab Id: 007
Client Sample Id: ERS1-SS-C05-GS
Sample Date/Time: 03-MAR-94 1418
Received Date: 08-MAR-94

Batch: VIS031
Blank: A
Dry Weight %: 81
Extraction Date: 10-MAR-94
Analysis Date: 11-MAR-94

Parameter:	Units:	Results:	Rpt Lmts:	Q:
ACETONE	UG/KG	ND	1200	
ACROLEIN	UG/KG	ND	12000	
ACRYLONITRILE	UG/KG	ND	12000	
BENZENE	UG/KG	ND	120	
BROMODICHLOROMETHANE	UG/KG	ND	120	
BROMOFORM	UG/KG	ND	250	
BROMOMETHANE	UG/KG	ND	120	
2-BUTANONE (MEK)	UG/KG	ND	370	
CARBON DISULFIDE	UG/KG	ND	120	
CARBON TETRACHLORIDE	UG/KG	ND	250	
CHLOROBENZENE	UG/KG	ND	120	
CHLOROETHANE	UG/KG	ND	120	
2-CHLOROETHYLVINYL ETHER	UG/KG	ND	620	
CHLOROFORM	UG/KG	ND	250	
CHLOROMETHANE	UG/KG	ND	250	
CHLORODIBROMOMETHANE	UG/KG	ND	620	
DIBROMOMETHANE	UG/KG	ND	620	
DICHLORODIFLUOROMETHANE	UG/KG	ND	620	
1,1-DICHLOROETHANE	UG/KG	ND	120	
1,2-DICHLOROETHANE	UG/KG	ND	250	
1,1-DICHLOROETHENE	UG/KG	ND	120	
TOTAL 1,2-DICHLOROETHYLENE	UG/KG	ND	620	
1,2-DICHLOROPROPANE	UG/KG	ND	250	
CIS-1,3-DICHLOROPROPENE	UG/KG	ND	120	
TRANS-1,3-DICHLOROPROPENE	UG/KG	ND	120	
1,4-DICHLORO-2-BUTENE	UG/KG	ND	620	
ETHYL BENZENE	UG/KG	1500	120	
ETHYL METHACRYLATE	UG/KG	ND	620	
2-HEXANONE	UG/KG	ND	370	
IODOMETHANE	UG/KG	ND	620	
METHYLENE CHLORIDE	UG/KG	ND	370	
4-METHYL-2-PENTANONE	UG/KG	8000	370	
STYRENE	UG/KG	ND	250	
1,1,2,2-TETRACHLOROETHANE	UG/KG	ND	250	
TETRACHLOROETHENE	UG/KG	ND	120	
TOLUENE	UG/KG	2600	620	
1,1,1-TRICHLOROETHANE	UG/KG	ND	620	
1,1,2-TRICHLOROETHANE	UG/KG	ND	250	
TRICHLOROETHENE	UG/KG	120	120	
TRICHLOROFLUOROMETHANE	UG/KG	ND	120	

ANALYTICAL TECHNOLOGIES, INC. 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

Accession: 403231
Client: WOODWARD-CLYDE CONSULTANTS
Project Number: 93B477
Project Name: ENTERPRISE RECOVERY SYSTEMS
Project Location: BYHALIA, MISSISSIPPI
Test: VOLATILES (8240)
Analysis Method: 8240 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: N/A
Matrix: SOIL
QC Level: II

Lab Id: 007
Client Sample Id: ERS1-SS-C05-GS
Sample Date/Time: 03-MAR-94 1418
Received Date: 08-MAR-94

Parameter:	Units:	Results:	Rpt Lmts:	Q:
1,2,3 TRICHLOROPROPANE	UG/KG	ND	620	
VINYL ACETATE	UG/KG	ND	250	
VINYL CHLORIDE	UG/KG	ND	120	
TOTAL XYLENES	UG/KG	10000	250	
BROMOFLUOROBENZENE	%REC/SURR	D*	74-121	
1,2-DICHLOROETHANE-D4	%REC/SURR	D*	70-121	
TOLUENE-D8	%REC/SURR	D*	81-117	
ANALYST	INITIALS	LP		

Comments:
D* = DILUTED OUT.

ANALYTICAL TECHNOLOGIES, INC. 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

Accession: 403231
Client: WOODWARD-CLYDE CONSULTANTS
Project Number: 93B477
Project Name: ENTERPRISE RECOVERY SYSTEMS
Project Location: BYHALIA, MISSISSIPPI
Test: VOLATILES (8240)
Analysis Method: 8240 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: N/A
Matrix: SOIL
QC Level: II

Lab Id: 008
Client Sample Id: ERS1-SS-C09-G
Sample Date/Time: 03-MAR-94 1435
Received Date: 08-MAR-94

Batch: NAS024
Blank: B
Dry Weight %: 75
Extraction Date: N/A
Analysis Date: 10-MAR-94

Parameter:	Units:	Results:	Rpt Lmts:	Q:
ACETONE	UG/KG	130	13	
ACROLEIN	UG/KG	ND	130	
ACRYLONITRILE	UG/KG	ND	130	
BENZENE	UG/KG	ND	1	
BROMODICHLOROMETHANE	UG/KG	ND	1	
BROMOFORM	UG/KG	ND	3	
BROMOMETHANE	UG/KG	ND	1	
2-BUTANONE (MEK)	UG/KG	29	4	
CARBON DISULFIDE	UG/KG	2	1	
CARBON TETRACHLORIDE	UG/KG	ND	3	
CHLOROBENZENE	UG/KG	ND	1	
CHLOROETHANE	UG/KG	5	1	
2-CHLOROETHYLVINYL ETHER	UG/KG	ND	7	
CHLOROFORM	UG/KG	ND	3	
CHLOROMETHANE	UG/KG	ND	3	
CHLORODIBROMOMETHANE	UG/KG	ND	7	
DIBROMOMETHANE	UG/KG	ND	7	
DICHLORODIFLUOROMETHANE	UG/KG	ND	7	
1,1-DICHLOROETHANE	UG/KG	10	1	
1,2-DICHLOROETHANE	UG/KG	ND	3	
1,1-DICHLOROETHENE	UG/KG	64	1	
TOTAL 1,2-DICHLOROETHYLENE	UG/KG	4000	666	
1,2-DICHLOROPROPANE	UG/KG	ND	3	
CIS-1,3-DICHLOROPROPENE	UG/KG	ND	1	
TRANS-1,3-DICHLOROPROPENE	UG/KG	ND	1	
1,4-DICHLORO-2-BUTENE	UG/KG	ND	7	
ETHYL BENZENE	UG/KG	15	1	
ETHYL METHACRYLATE	UG/KG	ND	7	
2-HEXANONE	UG/KG	ND	4	
IODOMETHANE	UG/KG	ND	7	
METHYLENE CHLORIDE	UG/KG	9	4	
4-METHYL-2-PENTANONE	UG/KG	16	4	
STYRENE	UG/KG	49	3	
1,1,2,2-TETRACHLOROETHANE	UG/KG	ND	3	
TETRACHLOROETHENE	UG/KG	320	1	
TOLUENE	UG/KG	62	7	
1,1,1-TRICHLOROETHANE	UG/KG	49	7	
1,1,2-TRICHLOROETHANE	UG/KG	ND	3	
TRICHLOROETHENE	UG/KG	110	1	
TRICHLOROFLUOROMETHANE	UG/KG	ND	1	

ANALYTICAL TECHNOLOGIES, INC. 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

Accession: 403231
Client: WOODWARD-CLYDE CONSULTANTS
Project Number: 93B477
Project Name: ENTERPRISE RECOVERY SYSTEMS
Project Location: BYHALIA, MISSISSIPPI
Test: VOLATILES (8240)
Analysis Method: 8240 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: N/A
Matrix: SOIL
QC Level: II

Lab Id: 008
Client Sample Id: ERS1-SS-C09-G
Sample Date/Time: 03-MAR-94 1435
Received Date: 08-MAR-94

Parameter:	Units:	Results:	Rpt Lmts:	Q:
1,2,3 TRICHLOROPROPANE	UG/KG	ND	7	
VINYL ACETATE	UG/KG	ND	3	
VINYL CHLORIDE	UG/KG	ND	1	
TOTAL XYLENES	UG/KG	75	3	
BROMOFLUOROBENZENE	%REC/SURR	100	74-121	
1,2-DICHLOROETHANE-D4	%REC/SURR	96	70-121	
TOLUENE-D8	%REC/SURR	109	81-117	
ANALYST	INITIALS	DWB		

Comments:

Accession: 403231
Client: WOODWARD-CLYDE CONSULTANTS
Project Number: 93B477
Project Name: ENTERPRISE RECOVERY SYSTEMS
Project Location: BYHALIA, MISSISSIPPI
Test: VOLATILES (8240)
Analysis Method: 8240 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: N/A
Matrix: SOIL
QC Level: II

Lab Id: 009
Client Sample Id: ERS1-SS-C10-G
Sample Date/Time: 03-MAR-94 1440
Received Date: 08-MAR-94

Batch: VIS031
Blank: C
Dry Weight %: 78
Extraction Date: 10-MAR-94
Analysis Date: 11-MAR-94

Parameter:	Units:	Results:	Rpt Lmts:	Q:
ACETONE	UG/KG	ND	130000	
ACROLEIN	UG/KG	ND	1300000	
ACRYLONITRILE	UG/KG	ND	1300000	
BENZENE	UG/KG	ND	13000	
BROMODICHLOROMETHANE	UG/KG	ND	13000	
BROMOFORM	UG/KG	ND	26000	
BROMOMETHANE	UG/KG	ND	13000	
2-BUTANONE (MEK)	UG/KG	ND	38000	
CARBON DISULFIDE	UG/KG	ND	13000	
CARBON TETRACHLORIDE	UG/KG	ND	26000	
CHLOROBENZENE	UG/KG	ND	13000	
CHLOROETHANE	UG/KG	ND	13000	
2-CHLOROETHYLVINYL ETHER	UG/KG	ND	64000	
CHLOROFORM	UG/KG	ND	26000	
CHLOROMETHANE	UG/KG	ND	26000	
CHLORODIBROMOMETHANE	UG/KG	ND	64000	
DIBROMOMETHANE	UG/KG	ND	64000	
DICHLORODIFLUOROMETHANE	UG/KG	ND	64000	
1,1-DICHLOROETHANE	UG/KG	ND	13000	
1,2-DICHLOROETHANE	UG/KG	ND	26000	
1,1-DICHLOROETHENE	UG/KG	ND	13000	
TOTAL 1,2-DICHLOROETHYLENE	UG/KG	ND	64000	
1,2-DICHLOROPROPANE	UG/KG	ND	26000	
CIS-1,3-DICHLOROPROPENE	UG/KG	ND	13000	
TRANS-1,3-DICHLOROPROPENE	UG/KG	ND	13000	
1,4-DICHLORO-2-BUTENE	UG/KG	ND	64000	
ETHYL BENZENE	UG/KG	ND	13000	
ETHYL METHACRYLATE	UG/KG	ND	64000	
2-HEXANONE	UG/KG	ND	38000	
IODOMETHANE	UG/KG	ND	64000	
METHYLENE CHLORIDE	UG/KG	ND	38000	
4-METHYL-2-PENTANONE	UG/KG	ND	38000	
STYRENE	UG/KG	ND	26000	
1,1,2,2-TETRACHLOROETHANE	UG/KG	ND	26000	
TETRACHLOROETHENE	UG/KG	38000	13000	
TOLUENE	UG/KG	ND	64000	
1,1,1-TRICHLOROETHANE	UG/KG	ND	64000	
1,1,2-TRICHLOROETHANE	UG/KG	ND	26000	
TRICHLOROETHENE	UG/KG	740000	13000	
TRICHLOROFLUOROMETHANE	UG/KG	ND	13000	

ANALYTICAL TECHNOLOGIES, INC. 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

Accession: 403231
Client: WOODWARD-CLYDE CONSULTANTS
Project Number: 93B477
Project Name: ENTERPRISE RECOVERY SYSTEMS
Project Location: BYHALIA, MISSISSIPPI
Test: VOLATILES (8240)
Analysis Method: 8240 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: N/A
Matrix: SOIL
QC Level: II

Lab Id: 009
Client Sample Id: ERS1-SS-C10-G
Sample Date/Time: 03-MAR-94 1440
Received Date: 08-MAR-94

Parameter:	Units:	Results:	Rpt Lmts:	Q:
1,2,3 TRICHLOROPROPANE	UG/KG	ND	64000	
VINYL ACETATE	UG/KG	ND	26000	
VINYL CHLORIDE	UG/KG	ND	13000	
TOTAL XYLENES	UG/KG	ND	26000	
BROMOFLUOROBENZENE	%REC/SURR	D*	74-121	
1,2-DICHLOROETHANE-D4	%REC/SURR	D*	70-121	
TOLUENE-D8	%REC/SURR	D*	81-117	
ANALYST	INITIALS	LP		

Comments:
D* = DILUTED OUT.

Accession: 403231
Client: WOODWARD-CLYDE CONSULTANTS
Project Number: 93B477
Project Name: ENTERPRISE RECOVERY SYSTEMS
Project Location: BYHALIA, MISSISSIPPI
Test: VOLATILES (8240)
Analysis Method: 8240 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: N/A
Matrix: SOIL
QC Level: II

Lab Id: 010
Client Sample Id: ERS1-SS-D02-G
Sample Date/Time: 03-MAR-94 1450
Received Date: 08-MAR-94

Batch: NAS024
Blank: D
Dry Weight %: 73
Extraction Date: N/A
Analysis Date: 11-MAR-94

Parameter:	Units:	Results:	Rpt Lmts:	Q:
ACETONE	UG/KG	76	14	
ACROLEIN	UG/KG	ND	140	
ACRYLONITRILE	UG/KG	ND	140	
BENZENE	UG/KG	ND	1	
BROMODICHLOROMETHANE	UG/KG	ND	1	
BROMOFORM	UG/KG	ND	3	
BROMOMETHANE	UG/KG	ND	1	
2-BUTANONE (MEK)	UG/KG	ND	4	
CARBON DISULFIDE	UG/KG	ND	1	
CARBON TETRACHLORIDE	UG/KG	ND	3	
CHLOROBENZENE	UG/KG	ND	1	
CHLOROETHANE	UG/KG	ND	1	
2-CHLOROETHYLVINYL ETHER	UG/KG	ND	7	
CHLOROFORM	UG/KG	ND	3	
CHLOROMETHANE	UG/KG	ND	3	
CHLORODIBROMOMETHANE	UG/KG	ND	7	
DIBROMOMETHANE	UG/KG	ND	7	
DICHLORODIFLUOROMETHANE	UG/KG	ND	7	
1,1-DICHLOROETHANE	UG/KG	8	1	
1,2-DICHLOROETHANE	UG/KG	ND	3	
1,1-DICHLOROETHENE	UG/KG	ND	1	
TOTAL 1,2-DICHLOROETHYLENE	UG/KG	120	7	
1,2-DICHLOROPROPANE	UG/KG	ND	3	
CIS-1,3-DICHLOROPROPENE	UG/KG	ND	1	
TRANS-1,3-DICHLOROPROPENE	UG/KG	ND	1	
1,4-DICHLORO-2-BUTENE	UG/KG	ND	7	
ETHYL BENZENE	UG/KG	ND	1	
ETHYL METHACRYLATE	UG/KG	ND	7	
2-HEXANONE	UG/KG	ND	4	
IODOMETHANE	UG/KG	ND	7	
METHYLENE CHLORIDE	UG/KG	16	4	
4-METHYL-2-PENTANONE	UG/KG	ND	4	
STYRENE	UG/KG	ND	3	
1,1,2,2-TETRACHLOROETHANE	UG/KG	ND	3	
TETRACHLOROETHENE	UG/KG	4	1	
TOLUENE	UG/KG	16	7	
1,1,1-TRICHLOROETHANE	UG/KG	33	7	
1,1,2-TRICHLOROETHANE	UG/KG	ND	3	
TRICHLOROETHENE	UG/KG	200	1	
TRICHLOROFLUOROMETHANE	UG/KG	ND	1	

ANALYTICAL TECHNOLOGIES, INC. 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

Accession: 403231
Client: WOODWARD-CLYDE CONSULTANTS
Project Number: 93B477
Project Name: ENTERPRISE RECOVERY SYSTEMS
Project Location: BYHALIA, MISSISSIPPI
Test: VOLATILES (8240)
Analysis Method: 8240 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: N/A
Matrix: SOIL
QC Level: II

Lab Id: 010
Client Sample Id: ERS1-SS-D02-G
Sample Date/Time: 03-MAR-94 1450
Received Date: 08-MAR-94

Parameter:	Units:	Results:	Rpt Lmts:	Q:
1,2,3 TRICHLOROPROPANE	UG/KG	ND	7	
VINYL ACETATE	UG/KG	ND	3	
VINYL CHLORIDE	UG/KG	ND	1	
TOTAL XYLENES	UG/KG	5	3	
BROMOFLUOROBENZENE	%REC/SURR	100	74-121	
1,2-DICHLOROETHANE-D4	%REC/SURR	109	70-121	
TOLUENE-D8	%REC/SURR	113	81-117	
ANALYST	INITIALS	DWB		

Comments:

Accession: 403231
Client: WOODWARD-CLYDE CONSULTANTS
Project Number: 93B477
Project Name: ENTERPRISE RECOVERY SYSTEMS
Project Location: BYHALIA, MISSISSIPPI
Test: VOLATILES (8240)
Analysis Method: 8240 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: N/A
Matrix: SOIL
QC Level: II

Lab Id: 011
Client Sample Id: ERS1-SS-D07-GS
Sample Date/Time: 03-MAR-94 1458
Received Date: 08-MAR-94

Batch: NAS024
Blank: D
Dry Weight %: 81
Extraction Date: N/A
Analysis Date: 11-MAR-94

Parameter:	Units:	Results:	Rpt Lmts:	Q:
ACETONE	UG/KG	31	12	
ACROLEIN	UG/KG	ND	120	
ACRYLONITRILE	UG/KG	ND	120	
BENZENE	UG/KG	ND	1	
BROMODICHLOROMETHANE	UG/KG	ND	1	
BROMOFORM	UG/KG	ND	2	
BROMOMETHANE	UG/KG	ND	1	
2-BUTANONE (MEK)	UG/KG	ND	4	
CARBON DISULFIDE	UG/KG	ND	1	
CARBON TETRACHLORIDE	UG/KG	ND	2	
CHLOROBENZENE	UG/KG	ND	1	
CHLOROETHANE	UG/KG	ND	1	
2-CHLOROETHYLVINYL ETHER	UG/KG	ND	6	
CHLOROFORM	UG/KG	ND	2	
CHLOROMETHANE	UG/KG	ND	2	
CHLORODIBROMOMETHANE	UG/KG	ND	6	
DIBROMOMETHANE	UG/KG	ND	6	
DICHLORODIFLUOROMETHANE	UG/KG	ND	6	
1,1-DICHLOROETHANE	UG/KG	5	1	
1,2-DICHLOROETHANE	UG/KG	ND	2	
1,1-DICHLOROETHENE	UG/KG	ND	1	
TOTAL 1,2-DICHLOROETHYLENE	UG/KG	41	6	
1,2-DICHLOROPROPANE	UG/KG	ND	2	
CIS-1,3-DICHLOROPROPENE	UG/KG	ND	1	
TRANS-1,3-DICHLOROPROPENE	UG/KG	ND	1	
1,4-DICHLORO-2-BUTENE	UG/KG	ND	6	
ETHYL BENZENE	UG/KG	ND	1	
ETHYL METHACRYLATE	UG/KG	ND	6	
2-HEXANONE	UG/KG	ND	4	
IODOMETHANE	UG/KG	ND	6	
METHYLENE CHLORIDE	UG/KG	7	4	
4-METHYL-2-PENTANONE	UG/KG	ND	4	
STYRENE	UG/KG	ND	2	
1,1,2,2-TETRACHLOROETHANE	UG/KG	ND	2	
TETRACHLOROETHENE	UG/KG	ND	1	
TOLUENE	UG/KG	ND	6	
1,1,1-TRICHLOROETHANE	UG/KG	14	6	
1,1,2-TRICHLOROETHANE	UG/KG	ND	2	
TRICHLOROETHENE	UG/KG	90	1	
TRICHLOROFLUOROMETHANE	UG/KG	ND	1	

ANALYTICAL TECHNOLOGIES, INC. 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

Accession: 403231
Client: WOODWARD-CLYDE CONSULTANTS
Project Number: 93B477
Project Name: ENTERPRISE RECOVERY SYSTEMS
Project Location: BYHALIA, MISSISSIPPI
Test: VOLATILES (8240)
Analysis Method: 8240 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: N/A
Matrix: SOIL
QC Level: II

Lab Id: 011
Client Sample Id: ERS1-SS-D07-GS
Sample Date/Time: 03-MAR-94 1458
Received Date: 08-MAR-94

Parameter:	Units:	Results:	Rpt Lmts:	Q:
1,2,3 TRICHLOROPROPANE	UG/KG	ND	6	
VINYL ACETATE	UG/KG	ND	2	
VINYL CHLORIDE	UG/KG	ND	1	
TOTAL XYLENES	UG/KG	ND	2	
BROMOFLUOROBENZENE	%REC/SURR	92	74-121	
1,2-DICHLOROETHANE-D4	%REC/SURR	104	70-121	
TOLUENE-D8	%REC/SURR	113	81-117	
ANALYST	INITIALS	DWB		

Comments:

Accession: 403231
Client: WOODWARD-CLYDE CONSULTANTS
Project Number: 93B477
Project Name: ENTERPRISE RECOVERY SYSTEMS
Project Location: BYHALIA, MISSISSIPPI
Test: VOLATILES (8240)
Analysis Method: 8240 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: N/A
Matrix: SOIL
QC Level: II

Lab Id: 012
Client Sample Id: ERS1-SS-D08-G
Sample Date/Time: 03-MAR-94 1527
Received Date: 08-MAR-94

Batch: NAS024
Blank: E
Dry Weight %: 76
Extraction Date: N/A
Analysis Date: 11-MAR-94

Parameter:	Units:	Results:	Rpt Lmts:	Q:
ACETONE	UG/KG	22	13	
ACROLEIN	UG/KG	ND	130	
ACRYLONITRILE	UG/KG	ND	130	
BENZENE	UG/KG	ND	1	
BROMODICHLOROMETHANE	UG/KG	ND	1	
BROMOFORM	UG/KG	ND	3	
BROMOMETHANE	UG/KG	ND	1	
2-BUTANONE (MEK)	UG/KG	ND	4	
CARBON DISULFIDE	UG/KG	ND	1	
CARBON TETRACHLORIDE	UG/KG	ND	3	
CHLOROBENZENE	UG/KG	ND	1	
CHLOROETHANE	UG/KG	ND	1	
2-CHLOROETHYLVINYL ETHER	UG/KG	ND	7	
CHLOROFORM	UG/KG	ND	3	
CHLOROMETHANE	UG/KG	ND	3	
CHLORODIBROMOMETHANE	UG/KG	ND	7	
DIBROMOMETHANE	UG/KG	ND	7	
DICHLORODIFLUOROMETHANE	UG/KG	ND	7	
1,1-DICHLOROETHANE	UG/KG	ND	1	
1,2-DICHLOROETHANE	UG/KG	ND	3	
1,1-DICHLOROETHENE	UG/KG	ND	1	
TOTAL 1,2-DICHLOROETHYLENE	UG/KG	38	7	
1,2-DICHLOROPROPANE	UG/KG	ND	3	
CIS-1,3-DICHLOROPROPENE	UG/KG	ND	1	
TRANS-1,3-DICHLOROPROPENE	UG/KG	ND	1	
1,4-DICHLORO-2-BUTENE	UG/KG	ND	7	
ETHYL BENZENE	UG/KG	ND	1	
ETHYL METHACRYLATE	UG/KG	ND	7	
2-HEXANONE	UG/KG	ND	4	
IODOMETHANE	UG/KG	ND	7	
METHYLENE CHLORIDE	UG/KG	5	4	
4-METHYL-2-PENTANONE	UG/KG	ND	4	
STYRENE	UG/KG	ND	3	
1,1,2,2-TETRACHLOROETHANE	UG/KG	ND	3	
TETRACHLOROETHENE	UG/KG	ND	1	
TOLUENE	UG/KG	ND	7	
1,1,1-TRICHLOROETHANE	UG/KG	7	7	
1,1,2-TRICHLOROETHANE	UG/KG	ND	3	
TRICHLOROETHENE	UG/KG	62	1	
TRICHLOROFLUOROMETHANE	UG/KG	ND	1	

ANALYTICAL TECHNOLOGIES, INC. 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

Accession: 403231
Client: WOODWARD-CLYDE CONSULTANTS
Project Number: 93B477
Project Name: ENTERPRISE RECOVERY SYSTEMS
Project Location: BYHALIA, MISSISSIPPI
Test: VOLATILES (8240)
Analysis Method: 8240 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: N/A
Matrix: SOIL
QC Level: II

Lab Id: 012
Client Sample Id: ERS1-SS-D08-G
Sample Date/Time: 03-MAR-94 1527
Received Date: 08-MAR-94

Parameter:	Units:	Results:	Rpt Lmts:	Q:
1,2,3 TRICHLOROPROPANE	UG/KG	ND	7	
VINYL ACETATE	UG/KG	ND	3	
VINYL CHLORIDE	UG/KG	ND	1	
TOTAL XYLENES	UG/KG	ND	3	
BROMOFLUOROBENZENE	%REC/SURR	106	74-121	
1,2-DICHLOROETHANE-D4	%REC/SURR	105	70-121	
TOLUENE-D8	%REC/SURR	107	81-117	
ANALYST	INITIALS	DWB		

Comments:

Accession: 403231
Client: WOODWARD-CLYDE CONSULTANTS
Project Number: 93B477
Project Name: ENTERPRISE RECOVERY SYSTEMS
Project Location: BYHALIA, MISSISSIPPI
Test: VOLATILES (8240)
Analysis Method: 8240 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: N/A
Matrix: SOIL
QC Level: II

Lab Id: 013 Sample Date/Time: 03-MAR-94 1540
Client Sample Id: ERS1-SS-E03-GS Received Date: 08-MAR-94

Batch: VIS031 Extraction Date: 10-MAR-94
Blank: C Dry Weight %: 84 Analysis Date: 11-MAR-94

Parameter:	Units:	Results:	Rpt Lmts:	Q:
ACETONE	UG/KG	ND	12000	
ACROLEIN	UG/KG	ND	120000	
ACRYLONITRILE	UG/KG	ND	120000	
BENZENE	UG/KG	ND	1200	
BROMODICHLOROMETHANE	UG/KG	ND	1200	
BROMOFORM	UG/KG	ND	2400	
BROMOMETHANE	UG/KG	ND	1200	
2-BUTANONE (MEK)	UG/KG	ND	3600	
CARBON DISULFIDE	UG/KG	ND	1200	
CARBON TETRACHLORIDE	UG/KG	ND	2400	
CHLOROBENZENE	UG/KG	ND	1200	
CHLOROETHANE	UG/KG	ND	1200	
2-CHLOROETHYLVINYL ETHER	UG/KG	ND	6000	
CHLOROFORM	UG/KG	ND	2400	
CHLOROMETHANE	UG/KG	ND	2400	
CHLORODIBROMOMETHANE	UG/KG	ND	6000	
DIBROMOMETHANE	UG/KG	ND	6000	
DICHLORODIFLUOROMETHANE	UG/KG	ND	6000	
1,1-DICHLOROETHANE	UG/KG	ND	1200	
1,2-DICHLOROETHANE	UG/KG	ND	2400	
1,1-DICHLOROETHENE	UG/KG	ND	1200	
TOTAL 1,2-DICHLOROETHYLENE	UG/KG	21000	6000	
1,2-DICHLOROPROPANE	UG/KG	ND	2400	
CIS-1,3-DICHLOROPROPENE	UG/KG	ND	1200	
TRANS-1,3-DICHLOROPROPENE	UG/KG	ND	1200	
1,4-DICHLORO-2-BUTENE	UG/KG	ND	6000	
ETHYL BENZENE	UG/KG	6000	1200	
ETHYL METHACRYLATE	UG/KG	ND	6000	
2-HEXANONE	UG/KG	ND	3600	
IODOMETHANE	UG/KG	ND	6000	
METHYLENE CHLORIDE	UG/KG	ND	3600	
4-METHYL-2-PENTANONE	UG/KG	ND	3600	
STYRENE	UG/KG	ND	2400	
1;1,2,2-TETRACHLOROETHANE	UG/KG	ND	2400	
TETRACHLOROETHENE	UG/KG	15000	1200	
TOLUENE	UG/KG	6000	6000	
1,1,1-TRICHLOROETHANE	UG/KG	43000	6000	
1,1,2-TRICHLOROETHANE	UG/KG	ND	2400	
TRICHLOROETHENE	UG/KG	1200	1200	
TRICHLOROFLUOROMETHANE	UG/KG	ND	1200	

Accession: 403231
Client: WOODWARD-CLYDE CONSULTANTS
Project Number: 93B477
Project Name: ENTERPRISE RECOVERY SYSTEMS
Project Location: BYHALIA, MISSISSIPPI
Test: VOLATILES (8240)
Analysis Method: 8240 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: N/A
Matrix: SOIL
QC Level: II

Lab Id: 013
Client Sample Id: ERS1-SS-E03-GS
Sample Date/Time: 03-MAR-94 1540
Received Date: 08-MAR-94

Parameter:	Units:	Results:	Rpt Lmts:	Q:
1,2,3 TRICHLOROPROPANE	UG/KG	ND	6000	
VINYL ACETATE	UG/KG	ND	2400	
VINYL CHLORIDE	UG/KG	ND	1200	
TOTAL XYLENES	UG/KG	57000	2400	
BROMOFLUOROBENZENE	%REC/SURR	D*	74-121	
1,2-DICHLOROETHANE-D4	%REC/SURR	D*	70-121	
TOLUENE-D8	%REC/SURR	D*	81-117	
ANALYST	INITIALS	LP		

Comments:
D* = DILUTED OUT.

Accession: 403231
Client: WOODWARD-CLYDE CONSULTANTS
Project Number: 93B477
Project Name: ENTERPRISE RECOVERY SYSTEMS
Project Location: BYHALIA, MISSISSIPPI
Test: VOLATILES (8240)
Analysis Method: 8240 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: N/A
Matrix: SOIL
QC Level: II

Lab Id: 014
Client Sample Id: ERS1-SS-E05-G
Sample Date/Time: 03-MAR-94 1545
Received Date: 08-MAR-94

Batch: NAS025
Blank: B
Dry Weight %: 82
Extraction Date: N/A
Analysis Date: 13-MAR-94

Parameter:	Units:	Results:	Rpt Lmts:	Q:
ACETONE	UG/KG	ND	12	
ACROLEIN	UG/KG	ND	120	
ACRYLONITRILE	UG/KG	ND	120	
BENZENE	UG/KG	ND	1	
BROMODICHLOROMETHANE	UG/KG	ND	1	
BROMOFORM	UG/KG	ND	2	
BROMOMETHANE	UG/KG	ND	1	
2-BUTANONE (MEK)	UG/KG	ND	4	
CARBON DISULFIDE	UG/KG	ND	1	
CARBON TETRACHLORIDE	UG/KG	ND	2	
CHLOROBENZENE	UG/KG	ND	1	
CHLOROETHANE	UG/KG	ND	1	
2-CHLOROETHYLVINYL ETHER	UG/KG	ND	6	
CHLOROFORM	UG/KG	ND	2	
CHLOROMETHANE	UG/KG	ND	2	
CHLORODIBROMOMETHANE	UG/KG	ND	6	
DIBROMOMETHANE	UG/KG	ND	6	
DICHLORODIFLUOROMETHANE	UG/KG	ND	6	
1,1-DICHLOROETHANE	UG/KG	ND	1	
1,2-DICHLOROETHANE	UG/KG	ND	2	
1,1-DICHLOROETHENE	UG/KG	ND	1	
TOTAL 1,2-DICHLOROETHYLENE	UG/KG	14	6	
1,2-DICHLOROPROPANE	UG/KG	ND	2	
CIS-1,3-DICHLOROPROPENE	UG/KG	ND	1	
TRANS-1,3-DICHLOROPROPENE	UG/KG	ND	1	
1,4-DICHLORO-2-BUTENE	UG/KG	ND	6	
ETHYL BENZENE	UG/KG	ND	1	
ETHYL METHACRYLATE	UG/KG	ND	6	
2-HEXANONE	UG/KG	ND	4	
IODOMETHANE	UG/KG	ND	6	
METHYLENE CHLORIDE	UG/KG	4	4	
4-METHYL-2-PENTANONE	UG/KG	ND	4	
STYRENE	UG/KG	ND	2	
1,1,2,2-TETRACHLOROETHANE	UG/KG	ND	2	
TETRACHLOROETHENE	UG/KG	ND	1	
TOLUENE	UG/KG	ND	6	
1,1,1-TRICHLOROETHANE	UG/KG	ND	6	
1,1,2-TRICHLOROETHANE	UG/KG	ND	2	
TRICHLOROETHENE	UG/KG	36	1	
TRICHLOROFLUOROMETHANE	UG/KG	2	1	

ANALYTICAL TECHNOLOGIES, INC. 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

Accession: 403231
Client: WOODWARD-CLYDE CONSULTANTS
Project Number: 93B477
Project Name: ENTERPRISE RECOVERY SYSTEMS
Project Location: BYHALIA, MISSISSIPPI
Test: VOLATILES (8240)
Analysis Method: 8240 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: N/A
Matrix: SOIL
QC Level: II

Lab Id: 014
Client Sample Id: ERS1-SS-E05-G
Sample Date/Time: 03-MAR-94 1545
Received Date: 08-MAR-94

Parameter:	Units:	Results:	Rpt Lmts:	Q:
1,2,3 TRICHLOROPROPANE	UG/KG	ND	6	
VINYL ACETATE	UG/KG	ND	2	
VINYL CHLORIDE	UG/KG	ND	1	
TOTAL XYLENES	UG/KG	ND	2	
BROMOFLUOROBENZENE	%REC/SURR	95	74-121	
1,2-DICHLOROETHANE-D4	%REC/SURR	104	70-121	
TOLUENE-D8	%REC/SURR	112	81-117	
ANALYST	INITIALS	DWB		

Comments:

Accession: 403231
Client: WOODWARD-CLYDE CONSULTANTS
Project Number: 93B477
Project Name: ENTERPRISE RECOVERY SYSTEMS
Project Location: BYHALIA, MISSISSIPPI
Test: VOLATILES (8240)
Analysis Method: 8240 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: N/A
Matrix: SOIL
QC Level: II

Lab Id: 015
Client Sample Id: ERS1-SS-E05-D
Sample Date/Time: 03-MAR-94 1545
Received Date: 08-MAR-94

Batch: NAS025
Blank: B
Dry Weight %: 79
Extraction Date: N/A
Analysis Date: 13-MAR-94

Parameter:	Units:	Results:	Rpt Lmts:	Q:
ACETONE	UG/KG	ND	13	
ACROLEIN	UG/KG	ND	130	
ACRYLONITRILE	UG/KG	ND	130	
BENZENE	UG/KG	ND	1	
BROMODICHLOROMETHANE	UG/KG	ND	1	
BROMOFORM	UG/KG	ND	3	
BROMOMETHANE	UG/KG	ND	1	
2-BUTANONE (MEK)	UG/KG	ND	4	
CARBON DISULFIDE	UG/KG	ND	1	
CARBON TETRACHLORIDE	UG/KG	ND	3	
CHLOROBENZENE	UG/KG	ND	1	
CHLOROETHANE	UG/KG	ND	1	
2-CHLOROETHYLVINYL ETHER	UG/KG	ND	6	
CHLOROFORM	UG/KG	ND	3	
CHLOROMETHANE	UG/KG	ND	3	
CHLORODIBROMOMETHANE	UG/KG	ND	6	
DIBROMOMETHANE	UG/KG	ND	6	
DICHLORODIFLUOROMETHANE	UG/KG	ND	6	
1,1-DICHLOROETHANE	UG/KG	18	1	
1,2-DICHLOROETHANE	UG/KG	ND	3	
1,1-DICHLOROETHENE	UG/KG	ND	1	
TOTAL 1,2-DICHLOROETHYLENE	UG/KG	140	6	
1,2-DICHLOROPROPANE	UG/KG	ND	3	
CIS-1,3-DICHLOROPROPENE	UG/KG	ND	1	
TRANS-1,3-DICHLOROPROPENE	UG/KG	ND	1	
1,4-DICHLORO-2-BUTENE	UG/KG	ND	6	
ETHYL BENZENE	UG/KG	ND	1	
ETHYL METHACRYLATE	UG/KG	ND	6	
2-HEXANONE	UG/KG	ND	4	
IODOMETHANE	UG/KG	ND	6	
METHYLENE CHLORIDE	UG/KG	7	4	
4-METHYL-2-PENTANONE	UG/KG	ND	4	
STYRENE	UG/KG	ND	3	
1,1,2,2-TETRACHLOROETHANE	UG/KG	ND	3	
TETRACHLOROETHENE	UG/KG	22	1	
TOLUENE	UG/KG	ND	6	
1,1,1-TRICHLOROETHANE	UG/KG	61	6	
1,1,2-TRICHLOROETHANE	UG/KG	ND	3	
TRICHLOROETHENE	UG/KG	110	1	
TRICHLOROFLUOROMETHANE	UG/KG	ND	1	

ANALYTICAL TECHNOLOGIES, INC. 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

Accession: 403231
Client: WOODWARD-CLYDE CONSULTANTS
Project Number: 93B477
Project Name: ENTERPRISE RECOVERY SYSTEMS
Project Location: BYHALIA, MISSISSIPPI
Test: VOLATILES (8240)
Analysis Method: 8240 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: N/A
Matrix: SOIL
QC Level: II

Lab Id: 015
Client Sample Id: ERS1-SS-E05-D
Sample Date/Time: 03-MAR-94 1545
Received Date: 08-MAR-94

Parameter:	Units:	Results:	Rpt Lmts:	Q:
1,2,3 TRICHLOROPROPANE	UG/KG	ND	6	
VINYL ACETATE	UG/KG	ND	3	
VINYL CHLORIDE	UG/KG	ND	1	
TOTAL XYLENES	UG/KG	ND	3	
BROMOFLUOROBENZENE	%REC/SURR	94	74-121	
1,2-DICHLOROETHANE-D4	%REC/SURR	104	70-121	
TOLUENE-D8	%REC/SURR	111	81-117	
ANALYST	INITIALS	DWB		

Comments:

Accession: 403231
Client: WOODWARD-CLYDE CONSULTANTS
Project Number: 93B477
Project Name: ENTERPRISE RECOVERY SYSTEMS
Project Location: BYHALIA, MISSISSIPPI
Test: VOLATILES (8240)
Analysis Method: 8240 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: N/A
Matrix: SOIL
QC Level: N

Lab Id: 016
Client Sample Id: ERS1-SB-B01-GS-23
Sample Date/Time: 03-MAR-94 1725
Received Date: 08-MAR-94

Batch: VIS031
Blank: C
Dry Weight %: 84
Extraction Date: 10-MAR-94
Analysis Date: 12-MAR-94

Parameter:	Units:	Results:	Rpt Lmts:	Q:
ACETONE	UG/KG	ND	1200	
ACROLEIN	UG/KG	ND	12000	
ACRYLONITRILE	UG/KG	ND	12000	
BENZENE	UG/KG	ND	120	
BROMODICHLOROMETHANE	UG/KG	ND	120	
BROMOFORM	UG/KG	ND	240	
BROMOMETHANE	UG/KG	ND	120	
2-BUTANONE (MEK)	UG/KG	ND	360	
CARBON DISULFIDE	UG/KG	ND	120	
CARBON TETRACHLORIDE	UG/KG	ND	240	
CHLOROBENZENE	UG/KG	ND	120	
CHLOROETHANE	UG/KG	ND	120	
2-CHLOROETHYLVINYL ETHER	UG/KG	ND	600	
CHLOROFORM	UG/KG	ND	240	
CHLOROMETHANE	UG/KG	ND	240	
CHLORODIBROMOMETHANE	UG/KG	ND	600	
DIBROMOMETHANE	UG/KG	ND	600	
DICHLORODIFLUOROMETHANE	UG/KG	ND	600	
1,1-DICHLOROETHANE	UG/KG	480	120	
1,2-DICHLOROETHANE	UG/KG	ND	240	
1,1-DICHLOROETHENE	UG/KG	ND	120	
TOTAL 1,2-DICHLOROETHYLENE	UG/KG	13000	600	
1,2-DICHLOROPROPANE	UG/KG	ND	240	
CIS-1,3-DICHLOROPROPENE	UG/KG	ND	120	
TRANS-1,3-DICHLOROPROPENE	UG/KG	ND	120	
1,4-DICHLORO-2-BUTENE	UG/KG	ND	600	
ETHYL BENZENE	UG/KG	1500	120	
ETHYL METHACRYLATE	UG/KG	ND	600	
2-HEXANONE	UG/KG	ND	360	
IODOMETHANE	UG/KG	ND	600	
METHYLENE CHLORIDE	UG/KG	ND	360	
4-METHYL-2-PENTANONE	UG/KG	ND	360	
STYRENE	UG/KG	ND	240	
1,1,2,2-TETRACHLOROETHANE	UG/KG	ND	240	
TETRACHLOROETHENE	UG/KG	240	120	
TOLUENE	UG/KG	5200	600	
1,1,1-TRICHLOROETHANE	UG/KG	1300	600	
1,1,2-TRICHLOROETHANE	UG/KG	ND	240	
TRICHLOROETHENE	UG/KG	210	120	
TRICHLOROFLUOROMETHANE	UG/KG	ND	120	

ANALYTICAL TECHNOLOGIES, INC. 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

Accession: 403231
Client: WOODWARD-CLYDE CONSULTANTS
Project Number: 93B477
Project Name: ENTERPRISE RECOVERY SYSTEMS
Project Location: BYHALIA, MISSISSIPPI
Test: VOLATILES (8240)
Analysis Method: 8240 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: N/A
Matrix: SOIL
QC Level: N

Lab Id: 016
Client Sample Id: ERS1-SB-B01-GS-23
Sample Date/Time: 03-MAR-94 1725
Received Date: 08-MAR-94

Parameter:	Units:	Results:	Rpt Lmts:	Q:
1,2,3 TRICHLOROPROPANE	UG/KG	ND	600	
VINYL ACETATE	UG/KG	ND	240	
VINYL CHLORIDE	UG/KG	ND	120	
TOTAL XYLENES	UG/KG	7700	240	
BROMOFLUOROBENZENE	%REC/SURR	D*	74-121	
1,2-DICHLOROETHANE-D4	%REC/SURR	D*	70-121	
TOLUENE-D8	%REC/SURR	D*	81-117	
ANALYST	INITIALS	LP		

Comments:
D* = DILUTED OUT.

Accession: 403231
Client: WOODWARD-CLYDE CONSULTANTS
Project Number: 93B477
Project Name: ENTERPRISE RECOVERY SYSTEMS
Project Location: BYHALIA, MISSISSIPPI
Test: VOLATILES (8240)
Analysis Method: 8240 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: N/A
Matrix: SOIL
QC Level: II

Lab Id: 017
Client Sample Id: ERS1-SB-B01-GS-78
Sample Date/Time: 03-MAR-94 1730
Received Date: 08-MAR-94

Batch: NAS025
Blank: A
Dry Weight %: 81
Extraction Date: N/A
Analysis Date: 12-MAR-94

Parameter:	Units:	Results:	Rpt Lmts:	Q:
ACETONE	UG/KG	13	12	
ACROLEIN	UG/KG	ND	120	
ACRYLONITRILE	UG/KG	ND	120	
BENZENE	UG/KG	ND	1	
BROMODICHLOROMETHANE	UG/KG	ND	1	
BROMOFORM	UG/KG	ND	2	
BROMOMETHANE	UG/KG	ND	1	
2-BUTANONE (MEK)	UG/KG	51	4	
CARBON DISULFIDE	UG/KG	ND	1	
CARBON TETRACHLORIDE	UG/KG	ND	2	
CHLOROBENZENE	UG/KG	ND	1	
CHLOROETHANE	UG/KG	ND	1	
2-CHLOROETHYLVINYL ETHER	UG/KG	ND	6	
CHLOROFORM	UG/KG	ND	2	
CHLOROMETHANE	UG/KG	ND	2	
CHLORODIBROMOMETHANE	UG/KG	ND	6	
DIBROMOMETHANE	UG/KG	ND	6	
DICHLORODIFLUOROMETHANE	UG/KG	ND	6	
1,1-DICHLOROETHANE	UG/KG	ND	1	
1,2-DICHLOROETHANE	UG/KG	ND	2	
1,1-DICHLOROETHENE	UG/KG	ND	1	
TOTAL 1,2-DICHLOROETHYLENE	UG/KG	190	6	
1,2-DICHLOROPROPANE	UG/KG	ND	2	
CIS-1,3-DICHLOROPROPENE	UG/KG	ND	1	
TRANS-1,3-DICHLOROPROPENE	UG/KG	ND	1	
1,4-DICHLORO-2-BUTENE	UG/KG	ND	6	
ETHYL BENZENE	UG/KG	2	1	
ETHYL METHACRYLATE	UG/KG	ND	6	
2-HEXANONE	UG/KG	ND	4	
IODOMETHANE	UG/KG	ND	6	
METHYLENE CHLORIDE	UG/KG	9	4	
4-METHYL-2-PENTANONE	UG/KG	86	4	
STYRENE	UG/KG	ND	2	
1,1,2,2-TETRACHLOROETHANE	UG/KG	4	2	
TETRACHLOROETHENE	UG/KG	9	1	
TOLUENE	UG/KG	9	6	
1,1,1-TRICHLOROETHANE	UG/KG	8	6	
1,1,2-TRICHLOROETHANE	UG/KG	9	2	
TRICHLOROETHENE	UG/KG	100	1	
TRICHLOROFLUOROMETHANE	UG/KG	ND	1	

ANALYTICAL TECHNOLOGIES, INC. 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

Accession: 403231
Client: WOODWARD-CLYDE CONSULTANTS
Project Number: 93B477
Project Name: ENTERPRISE RECOVERY SYSTEMS
Project Location: BYHALIA, MISSISSIPPI
Test: VOLATILES (8240)
Analysis Method: 8240 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: N/A
Matrix: SOIL
QC Level: II

Lab Id: 017
Client Sample Id: ERS1-SB-B01-GS-78
Sample Date/Time: 03-MAR-94 1730
Received Date: 08-MAR-94

Parameter:	Units:	Results:	Rpt Lmts:	Q:
1,2,3 TRICHLOROPROPANE	UG/KG	ND	6	
VINYL ACETATE	UG/KG	ND	2	
VINYL CHLORIDE	UG/KG	ND	1	
TOTAL XYLENES	UG/KG	16	2	
BROMOFLUOROBENZENE	%REC/SURR	113	74-121	
1,2-DICHLOROETHANE-D4	%REC/SURR	106	70-121	
TOLUENE-D8	%REC/SURR	101	81-117	
ANALYST	INITIALS	DWB		

Comments:

Accession: 403231
Client: WOODWARD-CLYDE CONSULTANTS
Project Number: 93B477
Project Name: ENTERPRISE RECOVERY SYSTEMS
Project Location: BYHALIA, MISSISSIPPI
Test: VOLATILES (8240)
Analysis Method: 8240 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: N/A
Matrix: SOIL
QC Level: II

Lab Id: 018
Client Sample Id: ERS1-SB-B02-G-67
Sample Date/Time: 04-MAR-94 1050
Received Date: 08-MAR-94

Batch: NAS025
Blank: B
Dry Weight %: 81
Extraction Date: N/A
Analysis Date: 13-MAR-94

Parameter:	Units:	Results:	Rpt Lmts:	Q:
ACETONE	UG/KG	ND	12	
ACROLEIN	UG/KG	ND	120	
ACRYLONITRILE	UG/KG	ND	120	
BENZENE	UG/KG	ND	1	
BROMODICHLOROMETHANE	UG/KG	ND	1	
BROMOFORM	UG/KG	ND	2	
BROMOMETHANE	UG/KG	ND	1	
2-BUTANONE (MEK)	UG/KG	ND	4	
CARBON DISULFIDE	UG/KG	ND	1	
CARBON TETRACHLORIDE	UG/KG	ND	2	
CHLOROBENZENE	UG/KG	ND	1	
CHLOROETHANE	UG/KG	ND	1	
2-CHLOROETHYLVINYL ETHER	UG/KG	ND	6	
CHLOROFORM	UG/KG	ND	2	
CHLOROMETHANE	UG/KG	ND	2	
CHLORODIBROMOMETHANE	UG/KG	ND	6	
DIBROMOMETHANE	UG/KG	ND	6	
DICHLORODIFLUOROMETHANE	UG/KG	ND	6	
1,1-DICHLOROETHANE	UG/KG	2	1	
1,2-DICHLOROETHANE	UG/KG	ND	2	
1,1-DICHLOROETHENE	UG/KG	ND	1	
TOTAL 1,2-DICHLOROETHYLENE	UG/KG	37	6	
1,2-DICHLOROPROPANE	UG/KG	ND	2	
CIS-1,3-DICHLOROPROPENE	UG/KG	ND	1	
TRANS-1,3-DICHLOROPROPENE	UG/KG	ND	1	
1,4-DICHLORO-2-BUTENE	UG/KG	ND	6	
ETHYL BENZENE	UG/KG	ND	1	
ETHYL METHACRYLATE	UG/KG	ND	6	
2-HEXANONE	UG/KG	ND	4	
IODOMETHANE	UG/KG	ND	6	
METHYLENE CHLORIDE	UG/KG	6	4	
4-METHYL-2-PENTANONE	UG/KG	8	4	
STYRENE	UG/KG	ND	2	
1,1,2,2-TETRACHLOROETHANE	UG/KG	ND	2	
TETRACHLOROETHENE	UG/KG	3	1	
TOLUENE	UG/KG	ND	6	
1,1,1-TRICHLOROETHANE	UG/KG	ND	6	
1,1,2-TRICHLOROETHANE	UG/KG	ND	2	
TRICHLOROETHENE	UG/KG	33	1	
TRICHLOROFLUOROMETHANE	UG/KG	ND	1	

ANALYTICAL TECHNOLOGIES, INC. 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

Accession: 403231
Client: WOODWARD-CLYDE CONSULTANTS
Project Number: 93B477
Project Name: ENTERPRISE RECOVERY SYSTEMS
Project Location: BYHALIA, MISSISSIPPI
Test: VOLATILES (8240)
Analysis Method: 8240 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: N/A
Matrix: SOIL
QC Level: II

Lab Id: 018
Client Sample Id: ERS1-SB-B02-G-67
Sample Date/Time: 04-MAR-94 1050
Received Date: 08-MAR-94

Parameter:	Units:	Results:	Rpt Lmts:	Q:
1,2,3 TRICHLOROPROPANE	UG/KG	ND	6	
VINYL ACETATE	UG/KG	ND	2	
VINYL CHLORIDE	UG/KG	ND	1	
TOTAL XYLENES	UG/KG	ND	2	
BROMOFLUOROBENZENE	%REC/SURR	97	74-121	
1,2-DICHLOROETHANE-D4	%REC/SURR	99	70-121	
TOLUENE-D8	%REC/SURR	106	81-117	
ANALYST	INITIALS	DWB		

Comments:

Accession: 403231
Client: WOODWARD-CLYDE CONSULTANTS
Project Number: 93B477
Project Name: ENTERPRISE RECOVERY SYSTEMS
Project Location: BYHALIA, MISSISSIPPI
Test: VOLATILES (8240)
Analysis Method: 8240 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: N/A
Matrix: SOIL
QC Level: II

Lab Id: 019
Client Sample Id: ERS1-SB-B03-G-56
Sample Date/Time: 04-MAR-94 1055
Received Date: 08-MAR-94

Batch: NAS025
Blank: B
Dry Weight %: 79
Extraction Date: N/A
Analysis Date: 13-MAR-94

Parameter:	Units:	Results:	Rpt Lmts:	Q:
ACETONE	UG/KG	20	13	
ACROLEIN	UG/KG	ND	130	
ACRYLONITRILE	UG/KG	ND	130	
BENZENE	UG/KG	ND	1	
BROMODICHLOROMETHANE	UG/KG	ND	1	
BROMOFORM	UG/KG	ND	3	
BROMOMETHANE	UG/KG	ND	1	
2-BUTANONE (MEK)	UG/KG	17	4	
CARBON DISULFIDE	UG/KG	ND	1	
CARBON TETRACHLORIDE	UG/KG	ND	3	
CHLOROBENZENE	UG/KG	ND	1	
CHLOROETHANE	UG/KG	ND	1	
2-CHLOROETHYLVINYL ETHER	UG/KG	ND	6	
CHLOROFORM	UG/KG	ND	3	
CHLOROMETHANE	UG/KG	ND	3	
CHLORODIBROMOMETHANE	UG/KG	ND	6	
DIBROMOMETHANE	UG/KG	ND	6	
DICHLORODIFLUOROMETHANE	UG/KG	ND	6	
1,1-DICHLOROETHANE	UG/KG	7	1	
1,2-DICHLOROETHANE	UG/KG	ND	3	
1,1-DICHLOROETHENE	UG/KG	ND	1	
TOTAL 1,2-DICHLOROETHYLENE	UG/KG	220	6	
1,2-DICHLOROPROPANE	UG/KG	ND	3	
CIS-1,3-DICHLOROPROPENE	UG/KG	ND	1	
TRANS-1,3-DICHLOROPROPENE	UG/KG	ND	1	
1,4-DICHLORO-2-BUTENE	UG/KG	ND	6	
ETHYL BENZENE	UG/KG	ND	1	
ETHYL METHACRYLATE	UG/KG	ND	6	
2-HEXANONE	UG/KG	ND	4	
IODOMETHANE	UG/KG	ND	6	
METHYLENE CHLORIDE	UG/KG	20	4	
4-METHYL-2-PENTANONE	UG/KG	20	4	
STYRENE	UG/KG	3	3	
1,1,2,2-TETRACHLOROETHANE	UG/KG	ND	3	
TETRACHLOROETHENE	UG/KG	ND	1	
TOLUENE	UG/KG	19	6	
1,1,1-TRICHLOROETHANE	UG/KG	19	6	
1,1,2-TRICHLOROETHANE	UG/KG	ND	3	
TRICHLOROETHENE	UG/KG	120	1	
TRICHLOROFLUOROMETHANE	UG/KG	ND	1	

ANALYTICAL TECHNOLOGIES, INC. 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

Accession: 403231
Client: WOODWARD-CLYDE CONSULTANTS
Project Number: 93B477
Project Name: ENTERPRISE RECOVERY SYSTEMS
Project Location: BYHALIA, MISSISSIPPI
Test: VOLATILES (8240)
Analysis Method: 8240 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: N/A
Matrix: SOIL
QC Level: II

Lab Id: 019
Client Sample Id: ERS1-SB-B03-G-56
Sample Date/Time: 04-MAR-94 1055
Received Date: 08-MAR-94

Parameter:	Units:	Results:	Rpt Lmts:	Q:
1,2,3 TRICHLOROPROPANE	UG/KG	ND	6	
VINYL ACETATE	UG/KG	ND	3	
VINYL CHLORIDE	UG/KG	ND	1	
TOTAL XYLENES	UG/KG	6	3	
BROMOFLUOROBENZENE	%REC/SURR	100	74-121	
1,2-DICHLOROETHANE-D4	%REC/SURR	100	70-121	
TOLUENE-D8	%REC/SURR	113	81-117	
ANALYST	INITIALS	DWB		

Comments:

Accession: 403231
Client: WOODWARD-CLYDE CONSULTANTS
Project Number: 93B477
Project Name: ENTERPRISE RECOVERY SYSTEMS
Project Location: BYHALIA, MISSISSIPPI
Test: VOLATILES (8240)
Analysis Method: 8240 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: N/A
Matrix: LIQUID
QC Level: II

Lab Id: 020
Client Sample Id: ERS1-RS-001-G
Sample Date/Time: 04-MAR-94 1220
Received Date: 08-MAR-94

Batch: NAS025
Blank: B
Dry Weight %: N/A
Extraction Date: N/A
Analysis Date: 13-MAR-94

Parameter:	Units:	Results:	Rpt Lmts:	Q:
ACETONE	UG/L	ND	10	
ACROLEIN	UG/L	ND	100	
ACRYLONITRILE	UG/L	ND	100	
BENZENE	UG/L	ND	1	
BROMODICHLOROMETHANE	UG/L	ND	1	
BROMOFORM	UG/L	ND	2	
BROMOMETHANE	UG/L	ND	1	
2-BUTANONE (MEK)	UG/L	ND	3	
CARBON DISULFIDE	UG/L	ND	1	
CARBON TETRACHLORIDE	UG/L	ND	2	
CHLOROBENZENE	UG/L	ND	1	
CHLOROETHANE	UG/L	ND	1	
2-CHLOROETHYLVINYL ETHER	UG/L	ND	5	
CHLOROFORM	UG/L	ND	2	
CHLOROMETHANE	UG/L	ND	2	
CHLORODIBROMOMETHANE	UG/L	ND	5	
DIBROMOMETHANE	UG/L	ND	5	
DICHLORODIFLUOROMETHANE	UG/L	ND	5	
1,1-DICHLOROETHANE	UG/L	ND	1	
1,2-DICHLOROETHANE	UG/L	ND	2	
1,1-DICHLOROETHENE	UG/L	ND	1	
TOTAL 1,2-DICHLOROETHYLENE	UG/L	ND	5	
1,2-DICHLOROPROPANE	UG/L	ND	2	
CIS-1,3-DICHLOROPROPENE	UG/L	ND	1	
TRANS-1,3-DICHLOROPROPENE	UG/L	ND	1	
1,4-DICHLORO-2-BUTENE	UG/L	ND	5	
ETHYL BENZENE	UG/L	ND	1	
ETHYL METHACRYLATE	UG/L	ND	5	
2-HEXANONE	UG/L	ND	3	
IODOMETHANE	UG/L	ND	5	
METHYLENE CHLORIDE	UG/L	ND	3	
4-METHYL-2-PENTANONE	UG/L	ND	3	
STYRENE	UG/L	ND	2	
1,1,2,2-TETRACHLOROETHANE	UG/L	ND	2	
TETRACHLOROETHENE	UG/L	ND	1	
TOLUENE	UG/L	ND	5	
1,1,1-TRICHLOROETHANE	UG/L	ND	5	
1,1,2-TRICHLOROETHANE	UG/L	ND	2	
TRICHLOROETHENE	UG/L	ND	1	
TRICHLOROFLUOROMETHANE	UG/L	ND	1	

ANALYTICAL TECHNOLOGIES, INC. 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

Accession: 403231
Client: WOODWARD-CLYDE CONSULTANTS
Project Number: 93B477
Project Name: ENTERPRISE RECOVERY SYSTEMS
Project Location: BYHALIA, MISSISSIPPI
Test: VOLATILES (8240)
Analysis Method: 8240 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: N/A
Matrix: LIQUID
QC Level: II

Lab Id: 020
Client Sample Id: ERS1-RS-001-G
Sample Date/Time: 04-MAR-94 1220
Received Date: 08-MAR-94

Parameter:	Units:	Results:	Rpt Lmts:	Q:
1,2,3 TRICHLOROPROPANE	UG/L	ND	5	
VINYL ACETATE	UG/L	ND	2	
VINYL CHLORIDE	UG/L	ND	1	
TOTAL XYLENES	UG/L	ND	2	
BROMOFLUOROBENZENE	%REC/SURR	98	86-115	
1,2-DICHLOROETHANE-D4	%REC/SURR	104	76-114	
TOLUENE-D8	%REC/SURR	111	88-115	
ANALYST	INITIALS	DWB		

Comments:

Accession: 403231
Client: WOODWARD-CLYDE CONSULTANTS
Project Number: 93B477
Project Name: ENTERPRISE RECOVERY SYSTEMS
Project Location: BYHALIA, MISSISSIPPI
Test: VOLATILES (8240)
Analysis Method: 8240 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: N/A
Matrix: SOIL
QC Level: II

Lab Id: 021
Client Sample Id: ERS1-SB-A01-GS-78
Sample Date/Time: 04-MAR-94 1455
Received Date: 08-MAR-94

Batch: VIS031
Blank: C
Dry Weight %: 83
Extraction Date: 10-MAR-94
Analysis Date: 12-MAR-94

Parameter:	Units:	Results:	Rpt Lmts:	Q:
ACETONE	UG/KG	43000	1200	
ACROLEIN	UG/KG	ND	12000	
ACRYLONITRILE	UG/KG	ND	12000	
BENZENE	UG/KG	ND	120	
BROMODICHLOROMETHANE	UG/KG	ND	120	
BROMOFORM	UG/KG	ND	240	
BROMOMETHANE	UG/KG	ND	120	
2-BUTANONE (MEK)	UG/KG	15000	360	
CARBON DISULFIDE	UG/KG	ND	120	
CARBON TETRACHLORIDE	UG/KG	ND	240	
CHLOROBENZENE	UG/KG	ND	120	
CHLOROETHANE	UG/KG	ND	120	
2-CHLOROETHYLVINYL ETHER	UG/KG	ND	600	
CHLOROFORM	UG/KG	ND	240	
CHLOROMETHANE	UG/KG	ND	240	
CHLORODIBROMOMETHANE	UG/KG	ND	600	
DIBROMOMETHANE	UG/KG	ND	600	
DICHLORODIFLUOROMETHANE	UG/KG	ND	600	
1,1-DICHLOROETHANE	UG/KG	ND	120	
1,2-DICHLOROETHANE	UG/KG	ND	240	
1,1-DICHLOROETHENE	UG/KG	ND	120	
TOTAL 1,2-DICHLOROETHYLENE	UG/KG	ND	600	
1,2-DICHLOROPROPANE	UG/KG	ND	240	
CIS-1,3-DICHLOROPROPENE	UG/KG	ND	120	
TRANS-1,3-DICHLOROPROPENE	UG/KG	ND	120	
1,4-DICHLORO-2-BUTENE	UG/KG	ND	600	
ETHYL BENZENE	UG/KG	ND	120	
ETHYL METHACRYLATE	UG/KG	ND	600	
2-HEXANONE	UG/KG	ND	360	
IODOMETHANE	UG/KG	ND	600	
METHYLENE CHLORIDE	UG/KG	ND	360	
4-METHYL-2-PENTANONE	UG/KG	11000	360	
STYRENE	UG/KG	480	240	
1,1,2,2-TETRACHLOROETHANE	UG/KG	ND	240	
TETRACHLOROETHENE	UG/KG	ND	120	
TOLUENE	UG/KG	ND	600	
1,1,1-TRICHLOROETHANE	UG/KG	ND	600	
1,1,2-TRICHLOROETHANE	UG/KG	ND	240	
TRICHLOROETHENE	UG/KG	ND	120	
TRICHLOROFLUOROMETHANE	UG/KG	ND	120	

ANALYTICAL TECHNOLOGIES, INC. 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

Accession: 403231
Client: WOODWARD-CLYDE CONSULTANTS
Project Number: 93B477
Project Name: ENTERPRISE RECOVERY SYSTEMS
Project Location: BYHALIA, MISSISSIPPI
Test: VOLATILES (8240)
Analysis Method: 8240 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: N/A
Matrix: SOIL
QC Level: II

Lab Id: 021
Client Sample Id: ERS1-SB-A01-GS-78
Sample Date/Time: 04-MAR-94 1455
Received Date: 08-MAR-94

Parameter:	Units:	Results:	Rpt Lmts:	Q:
1,2,3 TRICHLOROPROPANE	UG/KG	ND	600	
VINYL ACETATE	UG/KG	ND	240	
VINYL CHLORIDE	UG/KG	ND	120	
TOTAL XYLENES	UG/KG	600	240	
BROMOFLUOROBENZENE	%REC/SURR	D*	74-121	
1,2-DICHLOROETHANE-D4	%REC/SURR	D*	70-121	
TOLUENE-D8	%REC/SURR	D*	81-117	
ANALYST	INITIALS	LP		

Comments:
D* = DILUTED OUT.

Accession: 403231
Client: WOODWARD-CLYDE CONSULTANTS
Project Number: 93B477
Project Name: ENTERPRISE RECOVERY SYSTEMS
Project Location: BYHALIA, MISSISSIPPI
Test: VOLATILES (8240)
Analysis Method: 8240 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: N/A
Matrix: SOIL
QC Level: II

Lab Id: 022
Client Sample Id: ERS1-SB-A02-GS-23
Sample Date/Time: 04-MAR-94 1500
Received Date: 08-MAR-94

Batch: NAS025
Blank: B
Dry Weight %: 82
Extraction Date: N/A
Analysis Date: 13-MAR-94

Parameter:	Units:	Results:	Rpt Lmts:	Q:
ACETONE	UG/KG	ND	12	
ACROLEIN	UG/KG	ND	120	
ACRYLONITRILE	UG/KG	ND	120	
BENZENE	UG/KG	ND	1	
BROMODICHLOROMETHANE	UG/KG	ND	1	
BROMOFORM	UG/KG	ND	2	
BROMOMETHANE	UG/KG	ND	1	
2-BUTANONE (MEK)	UG/KG	ND	4	
CARBON DISULFIDE	UG/KG	ND	1	
CARBON TETRACHLORIDE	UG/KG	ND	2	
CHLOROBENZENE	UG/KG	ND	1	
CHLOROETHANE	UG/KG	ND	1	
2-CHLOROETHYLVINYL ETHER	UG/KG	ND	6	
CHLOROFORM	UG/KG	ND	2	
CHLOROMETHANE	UG/KG	ND	2	
CHLORODIBROMOMETHANE	UG/KG	ND	6	
DIBROMOMETHANE	UG/KG	ND	6	
DICHLORODIFLUOROMETHANE	UG/KG	ND	6	
1,1-DICHLOROETHANE	UG/KG	1	1	
1,2-DICHLOROETHANE	UG/KG	ND	2	
1,1-DICHLOROETHENE	UG/KG	ND	1	
TOTAL 1,2-DICHLOROETHYLENE	UG/KG	43	6	
1,2-DICHLOROPROPANE	UG/KG	ND	2	
CIS-1,3-DICHLOROPROPENE	UG/KG	ND	1	
TRANS-1,3-DICHLOROPROPENE	UG/KG	ND	1	
1,4-DICHLORO-2-BUTENE	UG/KG	ND	6	
ETHYL BENZENE	UG/KG	ND	1	
ETHYL METHACRYLATE	UG/KG	ND	6	
2-HEXANONE	UG/KG	ND	4	
IODOMETHANE	UG/KG	ND	6	
METHYLENE CHLORIDE	UG/KG	ND	4	
4-METHYL-2-PENTANONE	UG/KG	ND	4	
STYRENE	UG/KG	ND	2	
1,1,2,2-TETRACHLOROETHANE	UG/KG	ND	2	
TETRACHLOROETHENE	UG/KG	8	1	
TOLUENE	UG/KG	ND	6	
1,1,1-TRICHLOROETHANE	UG/KG	ND	6	
1,1,2-TRICHLOROETHANE	UG/KG	ND	2	
TRICHLOROETHENE	UG/KG	17	1	
TRICHLOROFLUOROMETHANE	UG/KG	ND	1	

ANALYTICAL TECHNOLOGIES, INC. 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

Accession: 403231
Client: WOODWARD-CLYDE CONSULTANTS
Project Number: 93B477
Project Name: ENTERPRISE RECOVERY SYSTEMS
Project Location: BYHALIA, MISSISSIPPI
Test: VOLATILES (8240)
Analysis Method: 8240 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: N/A
Matrix: SOIL
QC Level: II

Lab Id: 022 Sample Date/Time: 04-MAR-94 1500
Client Sample Id: ERS1-SB-A02-GS-23 Received Date: 08-MAR-94

Parameter:	Units:	Results:	Rpt Lmts:	Q:
1,2,3 TRICHLOROPROPANE	UG/KG	ND	6	
VINYL ACETATE	UG/KG	ND	2	
VINYL CHLORIDE	UG/KG	ND	1	
TOTAL XYLENES	UG/KG	ND	2	
BROMOFLUOROBENZENE	%REC/SURR	103	74-121	
1,2-DICHLOROETHANE-D4	%REC/SURR	104	70-121	
TOLUENE-D8	%REC/SURR	106	81-117	
ANALYST	INITIALS	DWB		

Comments:

Accession: 403231
Client: WOODWARD-CLYDE CONSULTANTS
Project Number: 93B477
Project Name: ENTERPRISE RECOVERY SYSTEMS
Project Location: BYHALIA, MISSISSIPPI
Test: VOLATILES (8240)
Analysis Method: 8240 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: N/A
Matrix: SOIL
QC Level: II

Lab Id: 023
Client Sample Id: ERS1-SB-A03-G-56
Sample Date/Time: 04-MAR-94 1725
Received Date: 08-MAR-94

Batch: NAS025
Blank: B
Dry Weight %: 81
Extraction Date: N/A
Analysis Date: 13-MAR-94

Parameter:	Units:	Results:	Rpt Lmts:	Q:
ACETONE	UG/KG	13	12	
ACROLEIN	UG/KG	ND	120	
ACRYLONITRILE	UG/KG	ND	120	
BENZENE	UG/KG	ND	1	
BROMODICHLOROMETHANE	UG/KG	ND	1	
BROMOFORM	UG/KG	ND	2	
BROMOMETHANE	UG/KG	ND	1	
2-BUTANONE (MEK)	UG/KG	9	4	
CARBON DISULFIDE	UG/KG	ND	1	
CARBON TETRACHLORIDE	UG/KG	ND	2	
CHLOROBENZENE	UG/KG	ND	1	
CHLOROETHANE	UG/KG	ND	1	
2-CHLOROETHYLVINYL ETHER	UG/KG	ND	6	
CHLOROFORM	UG/KG	ND	2	
CHLOROMETHANE	UG/KG	ND	2	
CHLORODIBROMOMETHANE	UG/KG	ND	6	
DIBROMOMETHANE	UG/KG	ND	6	
DICHLORODIFLUOROMETHANE	UG/KG	ND	6	
1,1-DICHLOROETHANE	UG/KG	ND	1	
1,2-DICHLOROETHANE	UG/KG	ND	2	
1,1-DICHLOROETHENE	UG/KG	ND	1	
TOTAL 1,2-DICHLOROETHYLENE	UG/KG	37	6	
1,2-DICHLOROPROPANE	UG/KG	ND	2	
CIS-1,3-DICHLOROPROPENE	UG/KG	ND	1	
TRANS-1,3-DICHLOROPROPENE	UG/KG	ND	1	
1,4-DICHLORO-2-BUTENE	UG/KG	ND	6	
ETHYL BENZENE	UG/KG	ND	1	
ETHYL METHACRYLATE	UG/KG	ND	6	
2-HEXANONE	UG/KG	ND	4	
IODOMETHANE	UG/KG	ND	6	
METHYLENE CHLORIDE	UG/KG	ND	4	
4-METHYL-2-PENTANONE	UG/KG	11	4	
STYRENE	UG/KG	ND	2	
1,1,2,2-TETRACHLOROETHANE	UG/KG	ND	2	
TETRACHLOROETHENE	UG/KG	ND	1	
TOLUENE	UG/KG	ND	6	
1,1,1-TRICHLOROETHANE	UG/KG	ND	6	
1,1,2-TRICHLOROETHANE	UG/KG	ND	2	
TRICHLOROETHENE	UG/KG	3	1	
TRICHLOROFLUOROMETHANE	UG/KG	ND	1	

ANALYTICAL TECHNOLOGIES, INC. 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

Accession: 403231
Client: WOODWARD-CLYDE CONSULTANTS
Project Number: 93B477
Project Name: ENTERPRISE RECOVERY SYSTEMS
Project Location: BYHALIA, MISSISSIPPI
Test: VOLATILES (8240)
Analysis Method: 8240 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: N/A
Matrix: SOIL
QC Level: II

Lab Id: 023
Client Sample Id: ERS1-SB-A03-G-56
Sample Date/Time: 04-MAR-94 1725
Received Date: 08-MAR-94

Parameter:	Units:	Results:	Rpt Lmts:	Q:
1,2,3 TRICHLOROPROPANE	UG/KG	ND	6	
VINYL ACETATE	UG/KG	ND	2	
VINYL CHLORIDE	UG/KG	ND	1	
TOTAL XYLENES	UG/KG	ND	2	
BROMOFLUOROBENZENE	%REC/SURR	94	74-121	
1,2-DICHLOROETHANE-D4	%REC/SURR	96	70-121	
TOLUENE-D8	%REC/SURR	117	81-117	
ANALYST	INITIALS	DWB		

Comments:

Accession: 403231
Client: WOODWARD-CLYDE CONSULTANTS
Project Number: 93B477
Project Name: ENTERPRISE RECOVERY SYSTEMS
Project Location: BYHALIA, MISSISSIPPI
Test: VOLATILES (8240)
Analysis Method: 8240 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: N/A
Matrix: SOIL
QC Level: II

Lab Id: 024
Client Sample Id: ERS1-SB-D01-G-12
Sample Date/Time: 04-MAR-94 1730
Received Date: 08-MAR-94

Batch: NAS026
Blank: A
Dry Weight %: 82
Extraction Date: N/A
Analysis Date: 14-MAR-94

Parameter:	Units:	Results:	Rpt Lmts:	Q:
ACETONE	UG/KG	73	12	
ACROLEIN	UG/KG	ND	120	
ACRYLONITRILE	UG/KG	ND	120	
BENZENE	UG/KG	ND	1	
BROMODICHLOROMETHANE	UG/KG	ND	1	
BROMOFORM	UG/KG	ND	2	
BROMOMETHANE	UG/KG	ND	1	
2-BUTANONE (MEK)	UG/KG	16	4	
CARBON DISULFIDE	UG/KG	ND	1	
CARBON TETRACHLORIDE	UG/KG	ND	2	
CHLOROBENZENE	UG/KG	ND	1	
CHLOROETHANE	UG/KG	ND	1	
2-CHLOROETHYLVINYL ETHER	UG/KG	ND	6	
CHLOROFORM	UG/KG	ND	2	
CHLOROMETHANE	UG/KG	ND	2	
CHLORODIBROMOMETHANE	UG/KG	ND	6	
DIBROMOMETHANE	UG/KG	ND	6	
DICHLORODIFLUOROMETHANE	UG/KG	ND	6	
1,1-DICHLOROETHANE	UG/KG	7	1	
1,2-DICHLOROETHANE	UG/KG	ND	2	
1,1-DICHLOROETHENE	UG/KG	ND	1	
TOTAL 1,2-DICHLOROETHYLENE	UG/KG	23	6	
1,2-DICHLOROPROPANE	UG/KG	ND	2	
CIS-1,3-DICHLOROPROPENE	UG/KG	ND	1	
TRANS-1,3-DICHLOROPROPENE	UG/KG	ND	1	
1,4-DICHLORO-2-BUTENE	UG/KG	ND	6	
ETHYL BENZENE	UG/KG	ND	1	
ETHYL METHACRYLATE	UG/KG	ND	6	
2-HEXANONE	UG/KG	ND	4	
IODOMETHANE	UG/KG	ND	6	
METHYLENE CHLORIDE	UG/KG	14	4	
4-METHYL-2-PENTANONE	UG/KG	4	4	
STYRENE	UG/KG	ND	2	
1,1,2,2-TETRACHLOROETHANE	UG/KG	ND	2	
TETRACHLOROETHENE	UG/KG	ND	1	
TOLUENE	UG/KG	9	6	
1,1,1-TRICHLOROETHANE	UG/KG	9	6	
1,1,2-TRICHLOROETHANE	UG/KG	ND	2	
TRICHLOROETHENE	UG/KG	38	1	
TRICHLOROFLUOROMETHANE	UG/KG	ND	1	

ANALYTICAL TECHNOLOGIES, INC. 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

Accession: 403231
Client: WOODWARD-CLYDE CONSULTANTS
Project Number: 93B477
Project Name: ENTERPRISE RECOVERY SYSTEMS
Project Location: BYHALIA, MISSISSIPPI
Test: VOLATILES (8240)
Analysis Method: 8240 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: N/A
Matrix: SOIL
QC Level: II

Lab Id: 024
Client Sample Id: ERS1-SB-D01-G-12
Sample Date/Time: 04-MAR-94 1730
Received Date: 08-MAR-94

Parameter:	Units:	Results:	Rpt Lmts:	Q:
1,2,3 TRICHLOROPROPANE	UG/KG	ND	6	
VINYL ACETATE	UG/KG	ND	2	
VINYL CHLORIDE	UG/KG	ND	1	
TOTAL XYLENES	UG/KG	ND	2	
BROMOFLUOROBENZENE	%REC/SURR	99	74-121	
1,2-DICHLOROETHANE-D4	%REC/SURR	108	70-121	
TOLUENE-D8	%REC/SURR	101	81-117	
ANALYST	INITIALS	DWB		

Comments:

Accession: 403231
Client: WOODWARD-CLYDE CONSULTANTS
Project Number: 93B477
Project Name: ENTERPRISE RECOVERY SYSTEMS
Project Location: BYHALIA, MISSISSIPPI
Test: VOLATILES (8240)
Analysis Method: 8240 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: N/A
Matrix: LIQUID
QC Level: II

Lab Id: 025
Client Sample Id: ERS1-RS-002-G
Sample Date/Time: 04-MAR-94 1755
Received Date: 08-MAR-94

Batch: NAS025
Blank: C
Dry Weight %: N/A
Extraction Date: N/A
Analysis Date: 14-MAR-94

Parameter:	Units:	Results:	Rpt Lmts:	Q:
ACETONE	UG/L	ND	10	
ACROLEIN	UG/L	ND	100	
ACRYLONITRILE	UG/L	ND	100	
BENZENE	UG/L	ND	1	
BROMODICHLOROMETHANE	UG/L	ND	1	
BROMOFORM	UG/L	ND	2	
BROMOMETHANE	UG/L	ND	1	
2-BUTANONE (MEK)	UG/L	ND	3	
CARBON DISULFIDE	UG/L	ND	1	
CARBON TETRACHLORIDE	UG/L	ND	2	
CHLOROBENZENE	UG/L	ND	1	
CHLOROETHANE	UG/L	ND	1	
2-CHLOROETHYLVINYL ETHER	UG/L	ND	5	
CHLOROFORM	UG/L	ND	2	
CHLOROMETHANE	UG/L	ND	2	
CHLORODIBROMOMETHANE	UG/L	ND	5	
DIBROMOMETHANE	UG/L	ND	5	
DICHLORODIFLUOROMETHANE	UG/L	ND	5	
1,1-DICHLOROETHANE	UG/L	ND	1	
1,2-DICHLOROETHANE	UG/L	ND	2	
1,1-DICHLOROETHENE	UG/L	ND	1	
TOTAL 1,2-DICHLOROETHYLENE	UG/L	ND	5	
1,2-DICHLOROPROPANE	UG/L	ND	2	
CIS-1,3-DICHLOROPROPENE	UG/L	ND	1	
TRANS-1,3-DICHLOROPROPENE	UG/L	ND	1	
1,4-DICHLORO-2-BUTENE	UG/L	ND	5	
ETHYL BENZENE	UG/L	ND	1	
ETHYL METHACRYLATE	UG/L	ND	5	
2-HEXANONE	UG/L	ND	3	
IODOMETHANE	UG/L	ND	5	
METHYLENE CHLORIDE	UG/L	ND	3	
4-METHYL-2-PENTANONE	UG/L	ND	3	
STYRENE	UG/L	ND	2	
1,1,2,2-TETRACHLOROETHANE	UG/L	ND	2	
TETRACHLOROETHENE	UG/L	ND	1	
TOLUENE	UG/L	ND	5	
1,1,1-TRICHLOROETHANE	UG/L	ND	5	
1,1,2-TRICHLOROETHANE	UG/L	ND	2	
TRICHLOROETHENE	UG/L	ND	1	
TRICHLOROFLUOROMETHANE	UG/L	ND	1	

ANALYTICAL TECHNOLOGIES, INC. 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

Accession: 403231
Client: WOODWARD-CLYDE CONSULTANTS
Project Number: 93B477
Project Name: ENTERPRISE RECOVERY SYSTEMS
Project Location: BYHALIA, MISSISSIPPI
Test: VOLATILES (8240)
Analysis Method: 8240 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: N/A
Matrix: LIQUID
QC Level: II

Lab Id: 025
Client Sample Id: ERS1-RS-002-G
Sample Date/Time: 04-MAR-94 1755
Received Date: 08-MAR-94

Parameter:	Units:	Results:	Rpt Lmts:	Q:
1,2,3 TRICHLOROPROPANE	UG/L	ND	5	
VINYL ACETATE	UG/L	ND	2	
VINYL CHLORIDE	UG/L	ND	1	
TOTAL XYLENES	UG/L	ND	2	
BROMOFLUOROBENZENE	%REC/SURR	106	86-115	
1,2-DICHLOROETHANE-D4	%REC/SURR	100	76-114	
TOLUENE-D8	%REC/SURR	113	88-115	
ANALYST	INITIALS	DWB		

Comments:

ANALYTICAL TECHNOLOGIES, INC. 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

Accession: 403231
Client: WOODWARD-CLYDE CONSULTANTS
Project Number: 93B477
Project Name: ENTERPRISE RECOVERY SYSTEMS
Project Location: BYHALIA, MISSISSIPPI
Test: VOLATILES (8240)
Analysis Method: 8240 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: N/A
Matrix: LIQUID
QC Level: II

Lab Id: 026
Client Sample Id: ERS1-TB-001-G
Sample Date/Time: 04-MAR-94 1810
Received Date: 08-MAR-94

Batch: NAS025
Blank: C
Dry Weight %: N/A
Extraction Date: N/A
Analysis Date: 14-MAR-94

Parameter:	Units:	Results:	Rpt Lmts:	Q:
ACETONE	UG/L	100	10	
ACROLEIN	UG/L	ND	100	
ACRYLONITRILE	UG/L	ND	100	
BENZENE	UG/L	ND	1	
BROMODICHLOROMETHANE	UG/L	ND	1	
BROMOFORM	UG/L	ND	2	
BROMOMETHANE	UG/L	ND	1	
2-BUTANONE (MEK)	UG/L	140	3	
CARBON DISULFIDE	UG/L	ND	1	
CARBON TETRACHLORIDE	UG/L	ND	2	
CHLOROBENZENE	UG/L	ND	1	
CHLOROETHANE	UG/L	ND	1	
2-CHLOROETHYLVINYL ETHER	UG/L	ND	5	
CHLOROFORM	UG/L	ND	2	
CHLOROMETHANE	UG/L	ND	2	
CHLORODIBROMOMETHANE	UG/L	ND	5	
DIBROMOMETHANE	UG/L	ND	5	
DICHLORODIFLUOROMETHANE	UG/L	ND	5	
1,1-DICHLOROETHANE	UG/L	ND	1	
1,2-DICHLOROETHANE	UG/L	ND	2	
1,1-DICHLOROETHENE	UG/L	ND	1	
TOTAL 1,2-DICHLOROETHYLENE	UG/L	ND	5	
1,2-DICHLOROPROPANE	UG/L	ND	2	
CIS-1,3-DICHLOROPROPENE	UG/L	ND	1	
TRANS-1,3-DICHLOROPROPENE	UG/L	ND	1	
1,4-DICHLORO-2-BUTENE	UG/L	ND	5	
ETHYL BENZENE	UG/L	ND	1	
ETHYL METHACRYLATE	UG/L	ND	5	
2-HEXANONE	UG/L	ND	3	
IODOMETHANE	UG/L	ND	5	
METHYLENE CHLORIDE	UG/L	ND	3	
4-METHYL-2-PENTANONE	UG/L	ND	3	
STYRENE	UG/L	ND	2	
1,1,2,2-TETRACHLOROETHANE	UG/L	ND	2	
TETRACHLOROETHENE	UG/L	ND	1	
TOLUENE	UG/L	ND	5	
1,1,1-TRICHLOROETHANE	UG/L	ND	5	
1,1,2-TRICHLOROETHANE	UG/L	ND	2	
TRICHLOROETHENE	UG/L	ND	1	
TRICHLOROFLUOROMETHANE	UG/L	ND	1	

ANALYTICAL TECHNOLOGIES, INC. 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

Accession: 403231
Client: WOODWARD-CLYDE CONSULTANTS
Project Number: 93B477
Project Name: ENTERPRISE RECOVERY SYSTEMS
Project Location: BYHALIA, MISSISSIPPI
Test: VOLATILES (8240)
Analysis Method: 8240 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: N/A
Matrix: LIQUID
QC Level: II

Lab Id: 026
Client Sample Id: ERS1-TB-001-G
Sample Date/Time: 04-MAR-94 1810
Received Date: 08-MAR-94

Parameter:	Units:	Results:	Rpt Lmts:	Q:
1,2,3 TRICHLOROPROPANE	UG/L	ND	5	
VINYL ACETATE	UG/L	ND	2	
VINYL CHLORIDE	UG/L	ND	1	
TOTAL XYLENES	UG/L	ND	2	
BROMOFLUOROBENZENE	%REC/SURR	96	86-115	
1,2-DICHLOROETHANE-D4	%REC/SURR	105	76-114	
TOLUENE-D8	%REC/SURR	108	88-115	
ANALYST	INITIALS	DWB		

Comments:

"Method Report Summary"

Accession Number: 403231
Client: WOODWARD-CLYDE CONSULTANTS
Project Number: 93B477
Project Name: ENTERPRISE RECOVERY SYSTEMS
Project Location: BYHALIA, MISSISSIPPI
Test: VOLATILES (8240)

Client Sample Id:	Parameter:	Unit:	Result:
ERS1-SS-B02-GS	TOTAL 1,2-DICHLOROETHYLENE	UG/KG	69
	TETRACHLOROETHENE	UG/KG	470
	1,1,1-TRICHLOROETHANE	UG/KG	34
	1,1,2-TRICHLOROETHANE	UG/KG	4100
ERS1-SS-B05-G	TOTAL 1,2-DICHLOROETHYLENE	UG/KG	36
	ETHYL BENZENE	UG/KG	3
	METHYLENE CHLORIDE	UG/KG	7
	4-METHYL-2-PENTANONE	UG/KG	8
	STYRENE	UG/KG	13
	TETRACHLOROETHENE	UG/KG	3
	TOLUENE	UG/KG	28
	1,1,1-TRICHLOROETHANE	UG/KG	19
	TRICHLOROETHENE	UG/KG	163
	TOTAL XYLENES	UG/KG	16
ERS1-SS-A04-GS	ETHYL BENZENE	UG/KG	470000
	4-METHYL-2-PENTANONE	UG/KG	590000
	STYRENE	UG/KG	3500000
	TOLUENE	UG/KG	1600000
	TRICHLOROETHENE	UG/KG	710000
	TOTAL XYLENES	UG/KG	2400000
ERS1-SS-A09-G	ACETONE	UG/KG	36
	1,1-DICHLOROETHANE	UG/KG	11
	TOTAL 1,2-DICHLOROETHYLENE	UG/KG	56
	ETHYL BENZENE	UG/KG	22
	METHYLENE CHLORIDE	UG/KG	19
	STYRENE	UG/KG	120
	TETRACHLOROETHENE	UG/KG	3
	TOLUENE	UG/KG	100
	1,1,1-TRICHLOROETHANE	UG/KG	90
	TRICHLOROETHENE	UG/KG	320
	TOTAL XYLENES	UG/KG	110
ERS1-SS-A08-G	ACETONE	UG/KG	51
	2-BUTANONE (MEK)	UG/KG	8
	TOTAL 1,2-DICHLOROETHYLENE	UG/KG	140
	ETHYL BENZENE	UG/KG	940
	4-METHYL-2-PENTANONE	UG/KG	16
	TETRACHLOROETHENE	UG/KG	180
	TOLUENE	UG/KG	211
	1,1,1-TRICHLOROETHANE	UG/KG	18
	TRICHLOROETHENE	UG/KG	60
	TRICHLOROFLUOROMETHANE	UG/KG	5
	TOTAL XYLENES	UG/KG	4200
ERS1-SS-A13-G	1,1-DICHLOROETHANE	UG/KG	6
	TOTAL 1,2-DICHLOROETHYLENE	UG/KG	170

"Method Report Summary"

Accession Number: 403231
Client: WOODWARD-CLYDE CONSULTANTS
Project Number: 93B477
Project Name: ENTERPRISE RECOVERY SYSTEMS
Project Location: BYHALIA, MISSISSIPPI
Test: VOLATILES (8240)

Client Sample Id:	Parameter:	Unit:	Result:
	METHYLENE CHLORIDE	UG/KG	9
	TETRACHLOROETHENE	UG/KG	65
	TOLUENE	UG/KG	8
	1,1,1-TRICHLOROETHANE	UG/KG	33
	TRICHLOROETHENE	UG/KG	220
ERS1-SS-C05-GS	ETHYL BENZENE	UG/KG	1500
	4-METHYL-2-PENTANONE	UG/KG	8000
	TOLUENE	UG/KG	2600
	TRICHLOROETHENE	UG/KG	120
	TOTAL XYLENES	UG/KG	10000
ERS1-SS-C09-G	ACETONE	UG/KG	130
	2-BUTANONE (MEK)	UG/KG	29
	CARBON DISULFIDE	UG/KG	2
	CHLOROETHANE	UG/KG	5
	1,1-DICHLOROETHANE	UG/KG	10
	1,1-DICHLOROETHENE	UG/KG	64
	TOTAL 1,2-DICHLOROETHYLENE	UG/KG	4000
	ETHYL BENZENE	UG/KG	15
	METHYLENE CHLORIDE	UG/KG	9
	4-METHYL-2-PENTANONE	UG/KG	16
	STYRENE	UG/KG	49
	TETRACHLOROETHENE	UG/KG	320
	TOLUENE	UG/KG	62
	1,1,1-TRICHLOROETHANE	UG/KG	49
	TRICHLOROETHENE	UG/KG	110
	TOTAL XYLENES	UG/KG	75
ERS1-SS-C10-G	TETRACHLOROETHENE	UG/KG	38000
	TRICHLOROETHENE	UG/KG	740000
ERS1-SS-D02-G	ACETONE	UG/KG	76
	1,1-DICHLOROETHANE	UG/KG	8
	TOTAL 1,2-DICHLOROETHYLENE	UG/KG	120
	METHYLENE CHLORIDE	UG/KG	16
	TETRACHLOROETHENE	UG/KG	4
	TOLUENE	UG/KG	16
	1,1,1-TRICHLOROETHANE	UG/KG	33
	TRICHLOROETHENE	UG/KG	200
	TOTAL XYLENES	UG/KG	5
ERS1-SS-D07-GS	ACETONE	UG/KG	31
	1,1-DICHLOROETHANE	UG/KG	5
	TOTAL 1,2-DICHLOROETHYLENE	UG/KG	41
	METHYLENE CHLORIDE	UG/KG	7
	1,1,1-TRICHLOROETHANE	UG/KG	14
	TRICHLOROETHENE	UG/KG	90
ERS1-SS-D08-G	ACETONE	UG/KG	22
	TOTAL 1,2-DICHLOROETHYLENE	UG/KG	38

"Method Report Summary"

Accession Number: 403231
Client: WOODWARD-CLYDE CONSULTANTS
Project Number: 93B477
Project Name: ENTERPRISE RECOVERY SYSTEMS
Project Location: BYHALIA, MISSISSIPPI
Test: VOLATILES (8240)

Client Sample Id:	Parameter:	Unit:	Result:
	METHYLENE CHLORIDE	UG/KG	5
	1,1,1-TRICHLOROETHANE	UG/KG	7
	TRICHLOROETHENE	UG/KG	62
ERS1-SS-E03-GS	TOTAL 1,2-DICHLOROETHYLENE	UG/KG	21000
	ETHYL BENZENE	UG/KG	6000
	TETRACHLOROETHENE	UG/KG	15000
	TOLUENE	UG/KG	6000
	1,1,1-TRICHLOROETHANE	UG/KG	43000
	TRICHLOROETHENE	UG/KG	1200
	TOTAL XYLENES	UG/KG	57000
ERS1-SS-E05-G	TOTAL 1,2-DICHLOROETHYLENE	UG/KG	14
	METHYLENE CHLORIDE	UG/KG	4
	TRICHLOROETHENE	UG/KG	36
	TRICHLOROFLUOROMETHANE	UG/KG	2
ERS1-SS-E05-D	1,1-DICHLOROETHANE	UG/KG	18
	TOTAL 1,2-DICHLOROETHYLENE	UG/KG	140
	METHYLENE CHLORIDE	UG/KG	7
	TETRACHLOROETHENE	UG/KG	22
	1,1,1-TRICHLOROETHANE	UG/KG	61
	TRICHLOROETHENE	UG/KG	110
ERS1-SB-B01-GS-23	1,1-DICHLOROETHANE	UG/KG	480
	TOTAL 1,2-DICHLOROETHYLENE	UG/KG	13000
	ETHYL BENZENE	UG/KG	1500
	TETRACHLOROETHENE	UG/KG	240
	TOLUENE	UG/KG	5200
	1,1,1-TRICHLOROETHANE	UG/KG	1300
	TRICHLOROETHENE	UG/KG	210
	TOTAL XYLENES	UG/KG	7700
ERS1-SB-B01-GS-78	ACETONE	UG/KG	13
	2-BUTANONE (MEK)	UG/KG	51
	TOTAL 1,2-DICHLOROETHYLENE	UG/KG	190
	ETHYL BENZENE	UG/KG	2
	METHYLENE CHLORIDE	UG/KG	9
	4-METHYL-2-PENTANONE	UG/KG	86
	1,1,2,2-TETRACHLOROETHANE	UG/KG	4
	TETRACHLOROETHENE	UG/KG	9
	TOLUENE	UG/KG	9
	1,1,1-TRICHLOROETHANE	UG/KG	8
	1,1,2-TRICHLOROETHANE	UG/KG	9
	TRICHLOROETHENE	UG/KG	100
	TOTAL XYLENES	UG/KG	16
ERS1-SB-B02-G-67	1,1-DICHLOROETHANE	UG/KG	2
	TOTAL 1,2-DICHLOROETHYLENE	UG/KG	37
	METHYLENE CHLORIDE	UG/KG	6
	4-METHYL-2-PENTANONE	UG/KG	8

ANALYTICAL TECHNOLOGIES, INC. 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

"Method Report Summary"

Accession Number: 403231
Client: WOODWARD-CLYDE CONSULTANTS
Project Number: 93B477
Project Name: ENTERPRISE RECOVERY SYSTEMS
Project Location: BYHALIA, MISSISSIPPI
Test: VOLATILES (8240)

Client Sample Id:	Parameter:	Unit:	Result:
	TETRACHLOROETHENE	UG/KG	3
	TRICHLOROETHENE	UG/KG	33
ERS1-SB-B03-G-56	ACETONE	UG/KG	20
	2-BUTANONE (MEK)	UG/KG	17
	1,1-DICHLOROETHANE	UG/KG	7
	TOTAL 1,2-DICHLOROETHYLENE	UG/KG	220
	METHYLENE CHLORIDE	UG/KG	20
	4-METHYL-2-PENTANONE	UG/KG	20
	STYRENE	UG/KG	3
	TOLUENE	UG/KG	19
	1,1,1-TRICHLOROETHANE	UG/KG	19
	TRICHLOROETHENE	UG/KG	120
	TOTAL XYLENES	UG/KG	6
ERS1-SB-A01-GS-78	ACETONE	UG/KG	43000
	2-BUTANONE (MEK)	UG/KG	15000
	4-METHYL-2-PENTANONE	UG/KG	11000
	STYRENE	UG/KG	480
	TOTAL XYLENES	UG/KG	600
ERS1-SB-A02-GS-23	1,1-DICHLOROETHANE	UG/KG	1
	TOTAL 1,2-DICHLOROETHYLENE	UG/KG	43
	TETRACHLOROETHENE	UG/KG	8
	TRICHLOROETHENE	UG/KG	17
ERS1-SB-A03-G-56	ACETONE	UG/KG	13
	2-BUTANONE (MEK)	UG/KG	9
	TOTAL 1,2-DICHLOROETHYLENE	UG/KG	37
	4-METHYL-2-PENTANONE	UG/KG	11
	TRICHLOROETHENE	UG/KG	3
ERS1-SB-D01-G-12	ACETONE	UG/KG	73
	2-BUTANONE (MEK)	UG/KG	16
	1,1-DICHLOROETHANE	UG/KG	7
	TOTAL 1,2-DICHLOROETHYLENE	UG/KG	23
	METHYLENE CHLORIDE	UG/KG	14
	4-METHYL-2-PENTANONE	UG/KG	4
	TOLUENE	UG/KG	9
	1,1,1-TRICHLOROETHANE	UG/KG	9
	TRICHLOROETHENE	UG/KG	38
ERS1-TB-001-G	ACETONE	UG/L	100
	2-BUTANONE (MEK)	UG/L	140

ANALYTICAL TECHNOLOGIES, INC. 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

Analysis Report

Analysis: VOLATILES (8240)

Accession:	403231
Client:	WOODWARD-CLYDE CONSULTANTS
Project Number:	93B477
Project Name:	ENTERPRISE RECOVERY SYSTEMS
Project Location:	BYHALIA, MISSISSIPPI
Department:	ORGANIC/MS

ANALYTICAL TECHNOLOGIES, INC. 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

Quality Control Report

Analysis: VOLATILES (8240)

Accession:	403231
Client:	WOODWARD-CLYDE CONSULTANTS
Project Number:	93B477
Project Name:	ENTERPRISE RECOVERY SYSTEMS
Project Location:	BYHALIA, MISSISSIPPI
Department:	ORGANIC/MS

ANALYTICAL TECHNOLOGIES, INC. 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

Date 17-Mar-94

"QC Report"

Title: Low Soil Blank
Batch: NAS025
Analysis Method: 8240 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: N/A

Blank Id: A Date Analyzed: 12-MAR-94 Date Extracted: N/A

Parameters:	Units:	Results:	Reporting Limits:
ACETONE	UG/KG	ND	10
ACROLEIN	UG/KG	ND	100
ACRYLONITRILE	UG/KG	ND	100
BENZENE	UG/KG	ND	1
BROMODICHLOROMETHANE	UG/KG	ND	1
BROMOFORM	UG/KG	ND	2
BROMOMETHANE	UG/KG	ND	1
2-BUTANONE (MEK)	UG/KG	ND	3
CARBON DISULFIDE	UG/KG	ND	1
CARBON TETRACHLORIDE	UG/KG	ND	2
CHLOROBENZENE	UG/KG	ND	1
CHLOROETHANE	UG/KG	ND	1
2-CHLOROETHYLVINYL ETHER	UG/KG	ND	5
CHLOROFORM	UG/KG	ND	2
CHLOROMETHANE	UG/KG	ND	2
CHLORODIBROMOMETHANE	UG/KG	ND	5
DIBROMOMETHANE	UG/KG	ND	5
DICHLORODIFLUOROMETHANE	UG/KG	ND	5
1,1-DICHLOROETHANE	UG/KG	ND	1
1,2-DICHLOROETHANE	UG/KG	ND	2
1,1-DICHLOROETHENE	UG/KG	ND	1
TOTAL 1,2-DICHLOROETHYLENE	UG/KG	ND	5
1,2-DICHLOROPROPANE	UG/KG	ND	2
CIS-1,3-DICHLOROPROPENE	UG/KG	ND	1
TRANS-1,3-DICHLOROPROPENE	UG/KG	ND	1
1,4-DICHLORO-2-BUTENE	UG/KG	ND	5
ETHYL BENZENE	UG/KG	ND	1
ETHYL METHACRYLATE	UG/KG	ND	5
2-HEXANONE	UG/KG	ND	3
IODOMETHANE	UG/KG	ND	5
METHYLENE CHLORIDE	UG/KG	ND	3
4-METHYL-2-PENTANONE	UG/KG	ND	3
STYRENE	UG/KG	ND	2
1,1,2,2-TETRACHLOROETHANE	UG/KG	ND	2
TETRACHLOROETHENE	UG/KG	ND	1
TOLUENE	UG/KG	ND	5
1,1,1-TRICHLOROETHANE	UG/KG	ND	5
1,1,2-TRICHLOROETHANE	UG/KG	ND	2
TRICHLOROETHENE	UG/KG	ND	1
TRICHLOROFLUOROMETHANE	UG/KG	ND	1
1,2,3 TRICHLOROPROPANE	UG/KG	ND	5
VINYL ACETATE	UG/KG	ND	2
VINYL CHLORIDE	UG/KG	ND	1
TOTAL XYLENES	UG/KG	ND	2
BROMOFLUOROBENZENE	%REC/SURR	107	74-121
1,2-DICHLOROETHANE-D4	%REC/SURR	97	70-121

ANALYTICAL TECHNOLOGIES, INC. 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

"QC Report"

Title: Low Soil Blank
Batch: NAS025
Analysis Method: 8240 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: N/A

Parameters:	Units:	Results:	Reporting Limits:
TOLUENE-D8	%REC/SURR	100	81-117
ANALYST	INITIALS	DWB	

Comments:

ANALYTICAL TECHNOLOGIES, INC. 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

"QC Report"

Title: Low Soil Blank
Batch: NAS024
Analysis Method: 8240 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: N/A

Blank Id: C Date Analyzed: 10-MAR-94 Date Extracted: N/A

Parameters:	Units:	Results:	Reporting Limits:
ACETONE	UG/KG	ND	10
ACROLEIN	UG/KG	ND	100
ACRYLONITRILE	UG/KG	ND	100
BENZENE	UG/KG	ND	1
BROMODICHLOROMETHANE	UG/KG	ND	1
BROMOFORM	UG/KG	ND	2
BROMOMETHANE	UG/KG	ND	1
2-BUTANONE (MEK)	UG/KG	ND	3
CARBON DISULFIDE	UG/KG	ND	1
CARBON TETRACHLORIDE	UG/KG	ND	2
CHLOROBENZENE	UG/KG	ND	1
CHLOROETHANE	UG/KG	ND	1
2-CHLOROETHYLVINYL ETHER	UG/KG	ND	5
CHLOROFORM	UG/KG	ND	2
CHLOROMETHANE	UG/KG	ND	2
CHLORODIBROMOMETHANE	UG/KG	ND	5
DIBROMOMETHANE	UG/KG	ND	5
DICHLORODIFLUOROMETHANE	UG/KG	ND	5
1,1-DICHLOROETHANE	UG/KG	ND	1
1,2-DICHLOROETHANE	UG/KG	ND	2
1,1-DICHLOROETHENE	UG/KG	ND	1
TOTAL 1,2-DICHLOROETHYLENE	UG/KG	ND	5
1,2-DICHLOROPROPANE	UG/KG	ND	2
CIS-1,3-DICHLOROPROPENE	UG/KG	ND	1
TRANS-1,3-DICHLOROPROPENE	UG/KG	ND	1
1,4-DICHLORO-2-BUTENE	UG/KG	ND	5
ETHYL BENZENE	UG/KG	ND	1
ETHYL METHACRYLATE	UG/KG	ND	5
2-HEXANONE	UG/KG	ND	3
IODOMETHANE	UG/KG	ND	5
METHYLENE CHLORIDE	UG/KG	ND	3
4-METHYL-2-PENTANONE	UG/KG	ND	3
STYRENE	UG/KG	ND	2
1,1,2,2-TETRACHLOROETHANE	UG/KG	ND	2
TETRACHLOROETHENE	UG/KG	ND	1
TOLUENE	UG/KG	ND	5
1,1,1-TRICHLOROETHANE	UG/KG	ND	5
1,1,2-TRICHLOROETHANE	UG/KG	ND	2
TRICHLOROETHENE	UG/KG	ND	1
TRICHLOROFLUOROMETHANE	UG/KG	ND	1
1,2,3 TRICHLOROPROPANE	UG/KG	ND	5
VINYL ACETATE	UG/KG	ND	2
VINYL CHLORIDE	UG/KG	ND	1
TOTAL XYLENES	UG/KG	ND	2
BROMOFLUOROBENZENE	%REC/SURR	97	74-121
1,2-DICHLOROETHANE-D4	%REC/SURR	98	70-121

ANALYTICAL TECHNOLOGIES, INC. 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

"QC Report"

Title: Low Soil Blank
Batch: NAS024
Analysis Method: 8240 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: N/A

Parameters:	Units:	Results:	Reporting Limits:
TOLUENE-D8	%REC/SURR	105	81-117
ANALYST	INITIALS	DWB	

Comments:

ANALYTICAL TECHNOLOGIES, INC. 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

"QC Report"

Title: High Soil Blank
Batch: VIS031
Analysis Method: 8240 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: N/A

Blank Id: C Date Analyzed: 11-MAR-94 Date Extracted: 10-MAR-94

Parameters:	Units:	Results:	Reporting Limits:
ACETONE	UG/KG	ND	100
ACROLEIN	UG/KG	ND	1000
ACRYLONITRILE	UG/KG	ND	1000
BENZENE	UG/KG	ND	10
BROMODICHLOROMETHANE	UG/KG	ND	10
BROMOFORM	UG/KG	ND	20
BROMOMETHANE	UG/KG	ND	10
2-BUTANONE (MEK)	UG/KG	ND	30
CARBON DISULFIDE	UG/KG	ND	10
CARBON TETRACHLORIDE	UG/KG	ND	20
CHLOROBENZENE	UG/KG	ND	10
CHLOROETHANE	UG/KG	ND	10
2-CHLOROETHYLVINYL ETHER	UG/KG	ND	50
CHLOROFORM	UG/KG	ND	20
CHLOROMETHANE	UG/KG	ND	20
CHLORODIBROMOMETHANE	UG/KG	ND	50
DIBROMOMETHANE	UG/KG	ND	50
DICHLORODIFLUOROMETHANE	UG/KG	ND	50
1,1-DICHLOROETHANE	UG/KG	ND	10
1,2-DICHLOROETHANE	UG/KG	ND	20
1,1-DICHLOROETHENE	UG/KG	ND	10
TOTAL 1,2-DICHLOROETHYLENE	UG/KG	ND	50
1,2-DICHLOROPROPANE	UG/KG	ND	20
CIS-1,3-DICHLOROPROPENE	UG/KG	ND	10
TRANS-1,3-DICHLOROPROPENE	UG/KG	ND	10
1,4-DICHLORO-2-BUTENE	UG/KG	ND	50
ETHANOL	UG/KG	ND	500
ETHYL BENZENE	UG/KG	ND	10
ETHYL METHACRYLATE	UG/KG	ND	50
2-HEXANONE	UG/KG	ND	30
IODOMETHANE	UG/KG	ND	50
METHYLENE CHLORIDE	UG/KG	ND	30
4-METHYL-2-PENTANONE	UG/KG	ND	30
STYRENE	UG/KG	ND	20
1,1,2,2-TETRACHLOROETHANE	UG/KG	ND	20
TETRACHLOROETHENE	UG/KG	ND	10
TOLUENE	UG/KG	ND	50
1,1,1-TRICHLOROETHANE	UG/KG	ND	50
1,1,2-TRICHLOROETHANE	UG/KG	ND	20
TRICHLOROETHENE	UG/KG	ND	10
TRICHLOROFLUOROMETHANE	UG/KG	ND	10
1,2,3 TRICHLOROPROPANE	UG/KG	ND	50
VINYL ACETATE	UG/KG	ND	20
VINYL CHLORIDE	UG/KG	ND	10
TOTAL XYLENES	UG/KG	ND	20
BROMOFLUOROBENZENE	%REC/SURR	100	74-121

ANALYTICAL TECHNOLOGIES, INC. 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

"QC Report"

Title: High Soil Blank
Batch: VIS031
Analysis Method: 8240 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: N/A

Parameters:	Units:	Results:	Reporting Limits:
1,2-DICHLOROETHANE-D4	%REC/SURR	106	70-121
TOLUENE-D8	%REC/SURR	103	81-117
ANALYST	INITIALS	LP	

Comments:

ANALYTICAL TECHNOLOGIES, INC. 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

"QC Report"

Title: Low Soil Blank
Batch: NAS024
Analysis Method: 8240 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: N/A

Blank Id: B Date Analyzed: 09-MAR-94 Date Extracted: N/A

Parameters:	Units:	Results:	Reporting Limits:
ACETONE	UG/KG	ND	10
ACROLEIN	UG/KG	ND	100
ACRYLONITRILE	UG/KG	ND	100
BENZENE	UG/KG	ND	1
BROMODICHLOROMETHANE	UG/KG	ND	1
BROMOFORM	UG/KG	ND	2
BROMOMETHANE	UG/KG	ND	1
2-BUTANONE (MEK)	UG/KG	ND	3
CARBON DISULFIDE	UG/KG	ND	1
CARBON TETRACHLORIDE	UG/KG	ND	2
CHLOROBENZENE	UG/KG	ND	1
CHLOROETHANE	UG/KG	ND	1
2-CHLOROETHYLVINYL ETHER	UG/KG	ND	5
CHLOROFORM	UG/KG	ND	2
CHLOROMETHANE	UG/KG	ND	2
CHLORODIBROMOMETHANE	UG/KG	ND	5
DIBROMOMETHANE	UG/KG	ND	5
DICHLORODIFLUOROMETHANE	UG/KG	ND	5
1,1-DICHLOROETHANE	UG/KG	ND	1
1,2-DICHLOROETHANE	UG/KG	ND	2
1,1-DICHLOROETHENE	UG/KG	ND	1
TOTAL 1,2-DICHLOROETHYLENE	UG/KG	ND	5
1,2-DICHLOROPROPANE	UG/KG	ND	2
CIS-1,3-DICHLOROPROPENE	UG/KG	ND	1
TRANS-1,3-DICHLOROPROPENE	UG/KG	ND	1
1,4-DICHLORO-2-BUTENE	UG/KG	ND	5
ETHYL BENZENE	UG/KG	ND	1
ETHYL METHACRYLATE	UG/KG	ND	5
2-HEXANONE	UG/KG	ND	3
IODOMETHANE	UG/KG	ND	5
METHYLENE CHLORIDE	UG/KG	ND	3
4-METHYL-2-PENTANONE	UG/KG	ND	3
STYRENE	UG/KG	ND	2
1,1,2,2-TETRACHLOROETHANE	UG/KG	ND	2
TETRACHLOROETHENE	UG/KG	ND	1
TOLUENE	UG/KG	ND	5
1,1,1-TRICHLOROETHANE	UG/KG	ND	5
1,1,2-TRICHLOROETHANE	UG/KG	ND	2
TRICHLOROETHENE	UG/KG	ND	1
TRICHLOROFLUOROMETHANE	UG/KG	ND	1
1,2,3 TRICHLOROPROPANE	UG/KG	ND	5
VINYL ACETATE	UG/KG	ND	2
VINYL CHLORIDE	UG/KG	ND	1
TOTAL XYLENES	UG/KG	ND	2
BROMOFLUOROBENZENE	%REC/SURR	99	74-121
1,2-DICHLOROETHANE-D4	%REC/SURR	92	70-121

ANALYTICAL TECHNOLOGIES, INC. 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

"QC Report"

Title: Low Soil Blank
Batch: NAS024
Analysis Method: 8240 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: N/A

Parameters:	Units:	Results:	Reporting Limits:
TOLUENE-D8	%REC/SURR	103	81-117
ANALYST	INITIALS	DWB	

Comments:

ANALYTICAL TECHNOLOGIES, INC. 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

"QC Report"

Title: Low Soil Blank
Batch: NAS025
Analysis Method: 8240 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: N/A

Blank Id: B Date Analyzed: 13-MAR-94 Date Extracted: N/A

Parameters:	Units:	Results:	Reporting Limits:
ACETONE	UG/KG	ND	10
ACROLEIN	UG/KG	ND	100
ACRYLONITRILE	UG/KG	ND	100
BENZENE	UG/KG	ND	1
BROMODICHLOROMETHANE	UG/KG	ND	1
BROMOFORM	UG/KG	ND	2
BROMOMETHANE	UG/KG	ND	1
2-BUTANONE (MEK)	UG/KG	ND	3
CARBON DISULFIDE	UG/KG	ND	1
CARBON TETRACHLORIDE	UG/KG	ND	2
CHLOROBENZENE	UG/KG	ND	1
CHLOROETHANE	UG/KG	ND	1
2-CHLOROETHYLVINYL ETHER	UG/KG	ND	5
CHLOROFORM	UG/KG	ND	2
CHLOROMETHANE	UG/KG	ND	2
CHLORODIBROMOMETHANE	UG/KG	ND	5
DIBROMOMETHANE	UG/KG	ND	5
DICHLORODIFLUOROMETHANE	UG/KG	ND	5
1,1-DICHLOROETHANE	UG/KG	ND	1
1,2-DICHLOROETHANE	UG/KG	ND	2
1,1-DICHLOROETHENE	UG/KG	ND	1
TOTAL 1,2-DICHLOROETHYLENE	UG/KG	ND	5
1,2-DICHLOROPROPANE	UG/KG	ND	2
CIS-1,3-DICHLOROPROPENE	UG/KG	ND	1
TRANS-1,3-DICHLOROPROPENE	UG/KG	ND	1
1,4-DICHLORO-2-BUTENE	UG/KG	ND	5
ETHYL BENZENE	UG/KG	ND	1
ETHYL METHACRYLATE	UG/KG	ND	5
2-HEXANONE	UG/KG	ND	3
IODOMETHANE	UG/KG	ND	5
METHYLENE CHLORIDE	UG/KG	ND	3
4-METHYL-2-PENTANONE	UG/KG	ND	3
STYRENE	UG/KG	ND	2
1,1,2,2-TETRACHLOROETHANE	UG/KG	ND	2
TETRACHLOROETHENE	UG/KG	ND	1
TOLUENE	UG/KG	ND	5
1,1,1-TRICHLOROETHANE	UG/KG	ND	5
1,1,2-TRICHLOROETHANE	UG/KG	ND	2
TRICHLOROETHENE	UG/KG	ND	1
TRICHLOROFLUOROMETHANE	UG/KG	ND	1
1,2,3 TRICHLOROPROPANE	UG/KG	ND	5
VINYL ACETATE	UG/KG	ND	2
VINYL CHLORIDE	UG/KG	ND	1
TOTAL XYLENES	UG/KG	ND	2
BROMOFLUOROBENZENE	%REC/SURR	99	74-121
1,2-DICHLOROETHANE-D4	%REC/SURR	92	70-121

ANALYTICAL TECHNOLOGIES, INC. 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

"QC Report"

Title: Low Soil Blank
Batch: NAS025
Analysis Method: 8240 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: N/A

Parameters:	Units:	Results:	Reporting Limits:
TOLUENE-D8	%REC/SURR	106	81-117
ANALYST	INITIALS	LP	

Comments:

ANALYTICAL TECHNOLOGIES, INC. 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

"QC Report"

Title: Low Soil Blank
Batch: NAS024
Analysis Method: 8240 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: N/A

Blank Id: D Date Analyzed: 10-MAR-94 Date Extracted: N/A

Parameters:	Units:	Results:	Reporting Limits:
ACETONE	UG/KG	ND	10
ACROLEIN	UG/KG	ND	100
ACRYLONITRILE	UG/KG	ND	100
BENZENE	UG/KG	ND	1
BROMODICHLOROMETHANE	UG/KG	ND	1
BROMOFORM	UG/KG	ND	2
BROMOMETHANE	UG/KG	ND	1
2-BUTANONE (MEK)	UG/KG	ND	3
CARBON DISULFIDE	UG/KG	ND	1
CARBON TETRACHLORIDE	UG/KG	ND	2
CHLOROBENZENE	UG/KG	ND	1
CHLOROETHANE	UG/KG	ND	1
2-CHLOROETHYLVINYL ETHER	UG/KG	ND	5
CHLOROFORM	UG/KG	ND	2
CHLOROMETHANE	UG/KG	ND	2
CHLORODIBROMOMETHANE	UG/KG	ND	5
DIBROMOMETHANE	UG/KG	ND	5
DICHLORODIFLUOROMETHANE	UG/KG	ND	5
1,1-DICHLOROETHANE	UG/KG	ND	1
1,2-DICHLOROETHANE	UG/KG	ND	2
1,1-DICHLOROETHENE	UG/KG	ND	1
TOTAL 1,2-DICHLOROETHYLENE	UG/KG	ND	5
1,2-DICHLOROPROPANE	UG/KG	ND	2
CIS-1,3-DICHLOROPROPENE	UG/KG	ND	1
TRANS-1,3-DICHLOROPROPENE	UG/KG	ND	1
1,4-DICHLORO-2-BUTENE	UG/KG	ND	5
ETHYL BENZENE	UG/KG	ND	1
ETHYL METHACRYLATE	UG/KG	ND	5
2-HEXANONE	UG/KG	ND	3
IODOMETHANE	UG/KG	ND	5
METHYLENE CHLORIDE	UG/KG	ND	3
4-METHYL-2-PENTANONE	UG/KG	ND	3
STYRENE	UG/KG	ND	2
1,1,2,2-TETRACHLOROETHANE	UG/KG	ND	2
TETRACHLOROETHENE	UG/KG	ND	1
TOLUENE	UG/KG	ND	5
1,1,1-TRICHLOROETHANE	UG/KG	ND	5
1,1,2-TRICHLOROETHANE	UG/KG	ND	2
TRICHLOROETHENE	UG/KG	ND	1
TRICHLOROFLUOROMETHANE	UG/KG	ND	1
1,2,3 TRICHLOROPROPANE	UG/KG	ND	5
VINYL ACETATE	UG/KG	ND	2
VINYL CHLORIDE	UG/KG	ND	1
TOTAL XYLENES	UG/KG	ND	2
BROMOFLUOROBENZENE	%REC/SURR	101	74-121
1,2-DICHLOROETHANE-D4	%REC/SURR	98	70-121

ANALYTICAL TECHNOLOGIES, INC. 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

"QC Report"

Title: Low Soil Blank
Batch: NAS024
Analysis Method: 8240 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: N/A

Parameters:	Units:	Results:	Reporting Limits:
TOLUENE-D8	%REC/SURR	98	81-117
ANALYST	INITIALS	DWB	

Comments:

"QC Report"

Title: High Soil Blank
Batch: VIS031
Analysis Method: 8240 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: N/A

Blank Id: A Date Analyzed: 11-MAR-94 Date Extracted: 10-MAR-94

Parameters:	Units:	Results:	Reporting Limits:
ACETONE	UG/KG	ND	100
ACROLEIN	UG/KG	ND	1000
ACRYLONITRILE	UG/KG	ND	1000
BENZENE	UG/KG	ND	10
BROMODICHLOROMETHANE	UG/KG	ND	10
BROMOFORM	UG/KG	ND	20
BROMOMETHANE	UG/KG	ND	10
2-BUTANONE (MEK)	UG/KG	ND	30
CARBON DISULFIDE	UG/KG	ND	10
CARBON TETRACHLORIDE	UG/KG	ND	20
CHLOROBENZENE	UG/KG	ND	10
CHLOROETHANE	UG/KG	ND	10
2-CHLOROETHYLVINYL ETHER	UG/KG	ND	50
CHLOROFORM	UG/KG	ND	20
CHLOROMETHANE	UG/KG	ND	20
CHLORODIBROMOMETHANE	UG/KG	ND	50
DIBROMOMETHANE	UG/KG	ND	50
DICHLORODIFLUOROMETHANE	UG/KG	ND	50
1,1-DICHLOROETHANE	UG/KG	ND	10
1,2-DICHLOROETHANE	UG/KG	ND	20
1,1-DICHLOROETHENE	UG/KG	ND	10
TOTAL 1,2-DICHLOROETHYLENE	UG/KG	ND	50
1,2-DICHLOROPROPANE	UG/KG	ND	20
CIS-1,3-DICHLOROPROPENE	UG/KG	ND	10
TRANS-1,3-DICHLOROPROPENE	UG/KG	ND	10
1,4-DICHLORO-2-BUTENE	UG/KG	ND	50
ETHANOL	UG/KG	ND	500
ETHYL BENZENE	UG/KG	ND	10
ETHYL METHACRYLATE	UG/KG	ND	50
2-HEXANONE	UG/KG	ND	30
IODOMETHANE	UG/KG	ND	50
METHYLENE CHLORIDE	UG/KG	ND	30
4-METHYL-2-PENTANONE	UG/KG	ND	30
STYRENE	UG/KG	ND	20
1,1,2,2-TETRACHLOROETHANE	UG/KG	ND	20
TETRACHLOROETHENE	UG/KG	ND	10
TOLUENE	UG/KG	ND	50
1,1,1-TRICHLOROETHANE	UG/KG	ND	50
1,1,2-TRICHLOROETHANE	UG/KG	ND	20
TRICHLOROETHENE	UG/KG	ND	10
TRICHLOROFLUOROMETHANE	UG/KG	ND	10
1,2,3 TRICHLOROPROPANE	UG/KG	ND	50
VINYL ACETATE	UG/KG	ND	20
VINYL CHLORIDE	UG/KG	ND	10
TOTAL XYLENES	UG/KG	ND	20
BROMOFLUOROBENZENE	%REC/SURR	93	74-121

ANALYTICAL TECHNOLOGIES, INC. 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

"QC Report"

Title: High Soil Blank
Batch: VIS031
Analysis Method: 8240 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: N/A

Parameters:	Units:	Results:	Reporting Limits:
1,2-DICHLOROETHANE-D4	%REC/SURR	101	70-121
TOLUENE-D8	%REC/SURR	101	81-117
ANALYST	INITIALS	LP	

Comments:

ANALYTICAL TECHNOLOGIES, INC. 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

"QC Report"

Title: Low Soil Blank
Batch: NAS024
Analysis Method: 8240 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: N/A

Blank Id: E Date Analyzed: 11-MAR-94 Date Extracted: N/A

Parameters:	Units:	Results:	Reporting Limits:
ACETONE	UG/KG	ND	10
ACROLEIN	UG/KG	ND	100
ACRYLONITRILE	UG/KG	ND	100
BENZENE	UG/KG	ND	1
BROMODICHLOROMETHANE	UG/KG	ND	1
BROMOFORM	UG/KG	ND	2
BROMOMETHANE	UG/KG	ND	1
2-BUTANONE (MEK)	UG/KG	ND	3
CARBON DISULFIDE	UG/KG	ND	1
CARBON TETRACHLORIDE	UG/KG	ND	2
CHLOROBENZENE	UG/KG	ND	1
CHLOROETHANE	UG/KG	ND	1
2-CHLOROETHYLVINYL ETHER	UG/KG	ND	5
CHLOROFORM	UG/KG	ND	2
CHLOROMETHANE	UG/KG	ND	2
CHLORODIBROMOMETHANE	UG/KG	ND	5
DIBROMOMETHANE	UG/KG	ND	5
DICHLORODIFLUOROMETHANE	UG/KG	ND	5
1,1-DICHLOROETHANE	UG/KG	ND	1
1,2-DICHLOROETHANE	UG/KG	ND	2
1,1-DICHLOROETHENE	UG/KG	ND	1
TOTAL 1,2-DICHLOROETHYLENE	UG/KG	ND	5
1,2-DICHLOROPROPANE	UG/KG	ND	2
CIS-1,3-DICHLOROPROPENE	UG/KG	ND	1
TRANS-1,3-DICHLOROPROPENE	UG/KG	ND	1
1,4-DICHLORO-2-BUTENE	UG/KG	ND	5
ETHYL BENZENE	UG/KG	ND	1
ETHYL METHACRYLATE	UG/KG	ND	5
2-HEXANONE	UG/KG	ND	3
IODOMETHANE	UG/KG	ND	5
METHYLENE CHLORIDE	UG/KG	ND	3
4-METHYL-2-PENTANONE	UG/KG	ND	3
STYRENE	UG/KG	ND	2
1,1,2,2-TETRACHLOROETHANE	UG/KG	ND	2
TETRACHLOROETHENE	UG/KG	ND	1
TOLUENE	UG/KG	ND	5
1,1,1-TRICHLOROETHANE	UG/KG	ND	5
1,1,2-TRICHLOROETHANE	UG/KG	ND	2
TRICHLOROETHENE	UG/KG	ND	1
TRICHLOROFLUOROMETHANE	UG/KG	ND	1
1,2,3 TRICHLOROPROPANE	UG/KG	ND	5
VINYL ACETATE	UG/KG	ND	2
VINYL CHLORIDE	UG/KG	ND	1
TOTAL XYLENES	UG/KG	ND	2
BROMOFLUOROBENZENE	%REC/SURR	107	74-121
1,2-DICHLOROETHANE-D4	%REC/SURR	102	70-121

ANALYTICAL TECHNOLOGIES, INC. 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

"QC Report"

Title: Low Soil Blank
Batch: NAS024
Analysis Method: 8240 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: N/A

Parameters:	Units:	Results:	Reporting Limits:
TOLUENE-D8	%REC/SURR	102	81-117
ANALYST	INITIALS	DWB	

Comments:

ANALYTICAL TECHNOLOGIES, INC. 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

"QC Report"

Title: Low Soil Blank
Batch: NAS026
Analysis Method: 8240 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: N/A

Blank Id: A Date Analyzed: 14-MAR-94 Date Extracted: N/A

Parameters:	Units:	Results:	Reporting Limits:
ACETONE	UG/KG	ND	10
ACROLEIN	UG/KG	ND	100
ACRYLONITRILE	UG/KG	ND	100
BENZENE	UG/KG	ND	1
BROMODICHLOROMETHANE	UG/KG	ND	1
BROMOFORM	UG/KG	ND	2
BROMOMETHANE	UG/KG	ND	1
2-BUTANONE (MEK)	UG/KG	ND	3
CARBON DISULFIDE	UG/KG	ND	1
CARBON TETRACHLORIDE	UG/KG	ND	2
CHLOROBENZENE	UG/KG	ND	1
CHLOROETHANE	UG/KG	ND	1
2-CHLOROETHYLVINYL ETHER	UG/KG	ND	5
CHLOROFORM	UG/KG	ND	2
CHLOROMETHANE	UG/KG	ND	2
CHLORODIBROMOMETHANE	UG/KG	ND	5
DIBROMOMETHANE	UG/KG	ND	5
DICHLORODIFLUOROMETHANE	UG/KG	ND	5
1,1-DICHLOROETHANE	UG/KG	ND	1
1,2-DICHLOROETHANE	UG/KG	ND	2
1,1-DICHLOROETHENE	UG/KG	ND	1
TOTAL 1,2-DICHLOROETHYLENE	UG/KG	ND	5
1,2-DICHLOROPROPANE	UG/KG	ND	2
CIS-1,3-DICHLOROPROPENE	UG/KG	ND	1
TRANS-1,3-DICHLOROPROPENE	UG/KG	ND	1
1,4-DICHLORO-2-BUTENE	UG/KG	ND	5
ETHYL BENZENE	UG/KG	ND	1
ETHYL METHACRYLATE	UG/KG	ND	5
2-HEXANONE	UG/KG	ND	3
IODOMETHANE	UG/KG	ND	5
METHYLENE CHLORIDE	UG/KG	ND	3
4-METHYL-2-PENTANONE	UG/KG	ND	3
STYRENE	UG/KG	ND	2
1,1,2,2-TETRACHLOROETHANE	UG/KG	ND	2
TETRACHLOROETHENE	UG/KG	ND	1
TOLUENE	UG/KG	ND	5
1,1,1-TRICHLOROETHANE	UG/KG	ND	5
1,1,2-TRICHLOROETHANE	UG/KG	ND	2
TRICHLOROETHENE	UG/KG	ND	1
TRICHLOROFLUOROMETHANE	UG/KG	ND	1
1,2,3 TRICHLOROPROPANE	UG/KG	ND	5
VINYL ACETATE	UG/KG	ND	2
VINYL CHLORIDE	UG/KG	ND	1
TOTAL XYLENES	UG/KG	ND	2
BROMOFLUOROBENZENE	%REC/SURR	97	74-121
1,2-DICHLOROETHANE-D4	%REC/SURR	99	70-121

ANALYTICAL TECHNOLOGIES, INC. 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

"QC Report"

Title: Low Soil Blank
Batch: NAS026
Analysis Method: 8240 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: N/A

Parameters:	Units:	Results:	Reporting Limits:
TOLUENE-D8	%REC/SURR	97	81-117
ANALYST	INITIALS	DWB	

Comments:

ANALYTICAL TECHNOLOGIES, INC. 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

"QC Report"

Title: Low Soil Blank
Batch: NAS025
Analysis Method: 8240 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: N/A

Blank Id: C Date Analyzed: 14-MAR-94 Date Extracted: N/A

Parameters:	Units:	Results:	Reporting Limits:
ACETONE	UG/KG	ND	10
ACROLEIN	UG/KG	ND	100
ACRYLONITRILE	UG/KG	ND	100
BENZENE	UG/KG	ND	1
BROMODICHLOROMETHANE	UG/KG	ND	1
BROMOFORM	UG/KG	ND	2
BROMOMETHANE	UG/KG	ND	1
2-BUTANONE (MEK)	UG/KG	ND	3
CARBON DISULFIDE	UG/KG	ND	1
CARBON TETRACHLORIDE	UG/KG	ND	2
CHLOROBENZENE	UG/KG	ND	1
CHLOROETHANE	UG/KG	ND	1
2-CHLOROETHYLVINYL ETHER	UG/KG	ND	5
CHLOROFORM	UG/KG	ND	2
CHLOROMETHANE	UG/KG	ND	2
CHLORODIBROMOMETHANE	UG/KG	ND	5
DIBROMOMETHANE	UG/KG	ND	5
DICHLORODIFLUOROMETHANE	UG/KG	ND	5
1,1-DICHLOROETHANE	UG/KG	ND	1
1,2-DICHLOROETHANE	UG/KG	ND	2
1,1-DICHLOROETHENE	UG/KG	ND	1
TOTAL 1,2-DICHLOROETHYLENE	UG/KG	ND	5
1,2-DICHLOROPROPANE	UG/KG	ND	2
CIS-1,3-DICHLOROPROPENE	UG/KG	ND	1
TRANS-1,3-DICHLOROPROPENE	UG/KG	ND	1
1,4-DICHLORO-2-BUTENE	UG/KG	ND	5
ETHYL BENZENE	UG/KG	ND	1
ETHYL METHACRYLATE	UG/KG	ND	5
2-HEXANONE	UG/KG	ND	3
IODOMETHANE	UG/KG	ND	5
METHYLENE CHLORIDE	UG/KG	ND	3
4-METHYL-2-PENTANONE	UG/KG	ND	3
STYRENE	UG/KG	ND	2
1,1,2,2-TETRACHLOROETHANE	UG/KG	ND	2
TETRACHLOROETHENE	UG/KG	ND	1
TOLUENE	UG/KG	ND	5
1,1,1-TRICHLOROETHANE	UG/KG	ND	5
1,1,2-TRICHLOROETHANE	UG/KG	ND	2
TRICHLOROETHENE	UG/KG	ND	1
TRICHLOROFLUOROMETHANE	UG/KG	ND	1
1,2,3 TRICHLOROPROPANE	UG/KG	ND	5
VINYL ACETATE	UG/KG	ND	2
VINYL CHLORIDE	UG/KG	ND	1
TOTAL XYLENES	UG/KG	ND	2
BROMOFLUOROBENZENE	%REC/SURR	98	74-121
1,2-DICHLOROETHANE-D4	%REC/SURR	91	70-121

ANALYTICAL TECHNOLOGIES, INC. 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

"QC Report"

Title: Low Soil Blank
Batch: NAS025
Analysis Method: 8240 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: N/A

Parameters:	Units:	Results:	Reporting Limits:
TOLUENE-D8	%REC/SURR	105	81-117
ANALYST	INITIALS	DWB	

Comments:

ANALYTICAL TECHNOLOGIES, INC. 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

"QC Report"

Title: Low Soil Reagent
Batch: NAS025
Analysis Method: 8240 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: N/A

RS Date Analyzed: 12-MAR-94
RSD Date Analyzed: 12-MAR-94

RS Date Extracted: N/A
RSD Date Extracted: N/A

Parameters:	Spike Added	Sample Conc	RS Conc	RS %Rec	RSD Conc	RSD %Rec	RPD	RPD Lmts	Rec Lmts
1,1-DICHLOROETHENE	50	<1	46	92	44	88	4	22	70-141
TRICHLOROETHENE	50	<1	40	80	46	92	14	24	71-157
BENZENE	50	<1	48	96	53	106	10	21	74-128
TOLUENE	50	<5	43	86	46	92	7	21	80-127
CHLOROBENZENE	50	<1	44	88	48	96	9	21	78-127
Surrogates:									
1,2-DICHLOROETHANE-D4				98		106			70-121
TOLUENE-D8				98		95			81-117
BROMOFLUOROBENZENE				103		107			74-121

Comments:

Notes:
N/S = NOT SUBMITTED N/A = NOT APPLICABLE D = DILUTED OUT
UG/KG = PARTS PER BILLION. < = LESS THAN REPORTING LIMIT.
* = VALUES OUTSIDE OF QUALITY CONTROL LIMITS.
SOURCES FOR CONTROL LIMITS ARE INTERNAL LABORATORY QUALITY ASSURANCE PROGRAM AND REFERENCED METHOD.

ANALYTICAL TECHNOLOGIES, INC. 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

"QC Report"

Title: Low Soil Reagent
Batch: NAS024
Analysis Method: 8240 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: N/A

RS Date Analyzed: 09-MAR-94
RSD Date Analyzed: 09-MAR-94

RS Date Extracted: N/A
RSD Date Extracted: N/A

Parameters:	Spike Added	Sample Conc	RS Conc	RS %Rec	RSD Conc	RSD %Rec	RPD	RPD Lmts	Rec Lmts
1,1-DICHLOROETHENE	50	<1	49	98	49	98	0	22	70-141
TRICHLOROETHENE	50	<1	49	98	51	102	4	24	71-157
BENZENE	50	<1	55	110	57	114	4	21	74-128
TOLUENE	50	<5	50	100	53	106	6	21	80-127
CHLOROBENZENE	50	<1	50	100	55	110	10	21	78-127
Surrogates:									
1,2-DICHLOROETHANE-D4				99		97			70-121
TOLUENE-D8				104		106			81-117
BROMOFLUOROBENZENE				98		99			74-121

Comments:

Notes:
N/S = NOT SUBMITTED N/A = NOT APPLICABLE D = DILUTED OUT
UG/KG = PARTS PER BILLION. < = LESS THAN REPORTING LIMIT.
* = VALUES OUTSIDE OF QUALITY CONTROL LIMITS.
SOURCES FOR CONTROL LIMITS ARE INTERNAL LABORATORY QUALITY ASSURANCE PROGRAM AND REFERENCED METHOD.

ANALYTICAL TECHNOLOGIES, INC. 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

"QC Report"

Title: High Soil Reagent
Batch: VIS031
Analysis Method: 8240 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: N/A

RS Date Analyzed: 11-MAR-94
RSD Date Analyzed: 11-MAR-94

RS Date Extracted: 10-MAR-94
RSD Date Extracted: 10-MAR-94

Parameters:	Spike Added	Sample Conc	RS Conc	RS %Rec	RSD Conc	RSD %Rec	RPD	RPD Lmts	Rec Lmts
1,1-DICHLOROETHENE	500	<10	370	74	360	72	3	22	70-141
TRICHLOROETHENE	500	<10	380	76	380	76	0	24	71-157
BENZENE	500	<10	380	76	380	76	0	21	74-128
TOLUENE	500	<50	490	98	480	96	2	21	80-127
CHLOROBENZENE	500	<10	470	94	460	92	2	21	78-127
Surrogates:									
1,2-DICHLOROETHANE-D4				97		93			70-121
TOLUENE-D8				104		102			81-117
BROMOFLUOROBENZENE				100		95			74-121

Comments:

Notes:
N/S = NOT SUBMITTED N/A = NOT APPLICABLE D = DILUTED OUT
UG/KG = PARTS PER BILLION. < = LESS THAN REPORTING LIMIT.
* = VALUES OUTSIDE OF QUALITY CONTROL LIMITS.
SOURCES FOR CONTROL LIMITS ARE INTERNAL LABORATORY QUALITY ASSURANCE PROGRAM AND REFERENCED METHOD.

ANALYTICAL TECHNOLOGIES, INC. 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

"QC Report"

Title: Low Soil Reagent
Batch: NAS026
Analysis Method: 8240 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: N/A

RS Date Analyzed: 14-MAR-94
RSD Date Analyzed: 14-MAR-94

RS Date Extracted: N/A
RSD Date Extracted: N/A

Parameters:	Spike Added	Sample Conc	RS Conc	RS %Rec	RSD Conc	RSD %Rec	RPD	RPD Lmts	Rec Lmts
1,1-DICHLOROETHENE	50	<1	47	94	47	94	0	22	70-141
TRICHLOROETHENE	50	<1	45	90	47	94	4	24	71-157
BENZENE	50	<1	52	104	53	106	2	21	74-128
TOLUENE	50	<5	49	98	52	104	6	21	80-127
CHLOROBENZENE	50	<1	50	100	53	106	6	21	78-127
Surrogates:									
1,2-DICHLOROETHANE-D4				97		104			70-121
TOLUENE-D8				97		98			81-117
BROMOFLUOROBENZENE				87		98			74-121

Comments:

Notes:
N/S = NOT SUBMITTED N/A = NOT APPLICABLE D = DILUTED OUT
UG/KG = PARTS PER BILLION. < = LESS THAN REPORTING LIMIT.
* = VALUES OUTSIDE OF QUALITY CONTROL LIMITS.
SOURCES FOR CONTROL LIMITS ARE INTERNAL LABORATORY QUALITY ASSURANCE PROGRAM AND REFERENCED METHOD.

ANALYTICAL TECHNOLOGIES, INC. 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

"QC Report"

Title: Low Soil Matrix
Batch: NAS025
Analysis Method: 8240 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: N/A

Dry Weight %: 81
Sample Spiked: 403231-23

MS Date Analyzed: 14-MAR-94
MSD Date Analyzed: 14-MAR-94

MS Date Extracted: N/A
MSD Date Extracted: N/A

Parameters:	Spike Added	Sample Conc	MS Conc	MS %Rec	MSD Conc	MSD %Rec	RPD	RPD Lmts	Rec Lmts
1,1-DICHLOROETHENE	62	<1.2	58	94	58	94	0	22	70-141
TRICHLOROETHENE	62	3.7	52	78	59	89	13	24	71-157
BENZENE	62	<1.2	60	97	69	111	13	21	74-128
TOLUENE	62	<6.2	63	102	68	110	8	21	80-127
CHLOROBENZENE	62	<1.2	60	97	67	108	11	21	78-127
Surrogates:									
1,2-DICHLOROETHANE-D4				103		98			70-121
TOLUENE-D8				104		105			81-117
BROMOFLUOROBENZENE				98		102			74-121

Comments:

Notes:
N/S = NOT SUBMITTED N/A = NOT APPLICABLE D = DILUTED OUT
UG/KG = PARTS PER BILLION. < = LESS THAN REPORTING LIMIT.
* = VALUES OUTSIDE OF QUALITY CONTROL LIMITS.
SOURCES FOR CONTROL LIMITS ARE INTERNAL LABORATORY QUALITY ASSURANCE PROGRAM AND REFERENCED METHOD.

ANALYTICAL TECHNOLOGIES, INC. 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

"QC Report"

Title: Low Soil Matrix
Batch: NAS024
Analysis Method: 8240 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: N/A

Dry Weight %: 81
Sample Spiked: 403231-1

MS Date Analyzed: 11-MAR-94
MSD Date Analyzed: 11-MAR-94

MS Date Extracted: N/A
MSD Date Extracted: N/A

Parameters:	Spike Added	Sample Conc	MS Conc	MS %Rec	MSD Conc	MSD %Rec	RPD	RPD Lmts	Rec Lmts
1,1-DICHLOROETHENE	62	<1.2	59	95	59	95	0	22	70-141
TRICHLOROETHENE	62	90	130	65*	120	48*	30*	24	71-157
BENZENE	62	<1.2	63	102	62	100	2	21	74-128
TOLUENE	62	<6.2	62	100	64	103	3	21	80-127
CHLOROBENZENE	62	<1.2	60	97	59	95	2	21	78-127
Surrogates:									
1,2-DICHLOROETHANE-D4				106		106			70-121
TOLUENE-D8				105		109			81-117
BROMOFLUOROBENZENE				96		92			74-121

Comments:
* RECOVERY(S) AND RPD(S) OUTSIDE ACCEPTANCE LIMITS DUE TO MATRIX INTERFERENCE.

Notes:
N/S = NOT SUBMITTED N/A = NOT APPLICABLE D = DILUTED OUT
UG/KG = PARTS PER BILLION. < = LESS THAN REPORTING LIMIT.
* = VALUES OUTSIDE OF QUALITY CONTROL LIMITS.
SOURCES FOR CONTROL LIMITS ARE INTERNAL LABORATORY QUALITY ASSURANCE PROGRAM AND REFERENCED METHOD.

ANALYTICAL TECHNOLOGIES, INC. 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

"QC Report"

Title: Low Soil Matrix
Batch: VIS031
Analysis Method: 8240 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: N/A

Dry Weight %: MS Date Analyzed: MS Date Extracted:
Sample Spiked: MSD Date Analyzed: MSD Date Extracted:

Parameters:	Spike Added	Sample Conc	MS Conc	MS %Rec	MSD Conc	MSD %Rec	RPD	RPD Lmts	Rec Lmts
1,1-DICHLOROETHENE								22	70-141
TRICHLOROETHENE								24	71-157
BENZENE								21	74-128
TOLUENE								21	80-127
CHLOROBENZENE								21	78-127
Surrogates:									
1,2-DICHLOROETHANE-D4									70-121
TOLUENE-D8									81-117
BROMOFLUOROBENZENE									74-121

Comments:
* NO MATRIX SPIKE/MATRIX SPIKE DUPLICATE AVALIABLE DUE TO HIGH DILUTION.

es:
N/S = NOT SUBMITTED N/A = NOT APPLICABLE D = DILUTED OUT
UG/KG = PARTS PER BILLION. < = LESS THAN REPORTING LIMIT.
* = VALUES OUTSIDE OF QUALITY CONTROL LIMITS.
SOURCES FOR CONTROL LIMITS ARE INTERNAL LABORATORY QUALITY ASSURANCE PROGRAM AND REFERENCED METHOD.

ANALYTICAL TECHNOLOGIES, INC. 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

"QC Report"

Title: Low Soil Matrix
Batch: NAS026
Analysis Method: 8240 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: N/A

Dry Weight %: 80
Sample Spiked: 403232-2

MS Date Analyzed: 15-MAR-94
MSD Date Analyzed: 15-MAR-94

MS Date Extracted: N/A
MSD Date Extracted: N/A

Parameters:	Spike Added	Sample Conc	MS Conc	MS %Rec	MSD Conc	MSD %Rec	RPD	RPD Lmts	Rec Lmts
1,1-DICHLOROETHENE	63	<1.3	63	100	61	97	3	22	70-141
TRICHLOROETHENE	63	8.8	66	91	66	91	0	24	71-157
BENZENE	63	<1.3	66	105	66	105	0	21	74-128
TOLUENE	63	<6.3	69	110	70	111	1	21	80-127
CHLOROBENZENE	63	<1.3	65	103	64	102	1	21	78-127
Surrogates:									
1,2-DICHLOROETHANE-D4				93		96			70-121
TOLUENE-D8				100		101			81-117
BROMOFLUOROBENZENE				100		100			74-121

Comments:

Notes:
N/S = NOT SUBMITTED N/A = NOT APPLICABLE D = DILUTED OUT
UG/KG = PARTS PER BILLION. < = LESS THAN REPORTING LIMIT.
* = VALUES OUTSIDE OF QUALITY CONTROL LIMITS.
SOURCES FOR CONTROL LIMITS ARE INTERNAL LABORATORY QUALITY ASSURANCE PROGRAM AND REFERENCED METHOD.

Common notation for Organic reporting

N/S = NOT SUBMITTED
N/A = NOT APPLICABLE
D = DILUTED OUT
UG/L = PARTS PER BILLION.
UG/KG = PARTS PER BILLION.
MG/KG = PARTS PER MILLION.
MG/L = PARTS PER MILLION.
MG/M3 = MILLIGRAMS PER CUBIC METER.
NG = NANOGRAMS.
UG = MICROGRAMS.
PPBV = PARTS PER BILLION/VOLUME.
< = LESS THAN DETECTION LIMIT.
* = VALUES OUTSIDE OF QUALITY CONTROL LIMITS
J = THE REPORTED VALUE IS EITHER LESS THAN THE REPORTING LIMIT BUT GREATER THAN ZERO, OR QUANTITATED AS A TIC; THEREFORE, IT IS ESTIMATED.
JJ = REPORTED VALUE IS ESTIMATED DUE TO MATRIX INTERFERENCE.
ND = NOT DETECTED ABOVE REPORT LIMIT.
RPT LIMIT = REPORTING LIMITS BASED ON METHOD DETECTION LIMIT STUDIES.
RPD = RELATIVE PERCENT DIFFERENCE (OR DEVIATION)

SOURCES FOR CONTROL LIMITS ARE INTERNAL LABORATORY QUALITY ASSURANCE PROGRAM AND REFERENCED METHOD.

ORGANIC SOILS ARE REPORTED ON A DRY WEIGHT BASIS.

DUE TO THE NATURE OF THE SAMPLE MATRIX, MATRIX SPIKE/MATRIX SPIKE DUPLICATE ANALYSIS CANNOT BE PERFORMED FOR AIR ANALYSIS.

LP = LEVERNE PETERSON	RW = RITA WINGO
DWB = DAVID BOWERS	LD = LARRY DILMORE
DB = DENNIS BESON	DC = DAVID CELESTIAL
LL = LANCE LARSON	RB = RAFAEL BARRAZA

PROJECT SAMPLE INSPECTION FORM

Accession #: 403231 Date received: 08-MAR-94

1.	Was there a Chain of Custody?	YES NO	7.	Are samples correctly preserved for analysis required?	YES NO
2.	Was Chain of Custody properly relinquished?	YES NO	8.	Is there sufficient volume for analysis requested?	YES NO
3.	Were samples received cold? (At 4° or on ice)	YES NO	9.	Were samples received within holding time?	YES NO
4.	Were all containers properly labeled and identified?	YES NO *	10.	Was there headspace greater than ¼" in diameter in volatile bottles?	YES NO N/A
5.	Were samples received in proper containers for analysis requested?	YES NO	11.	If sent, were matrix spike bottles returned?	YES NO N/A
6.	Were all sample containers received intact?	YES NO			

Tracking Number: 5384553204 Shipped By: FEDEX

Cooler Number: N/S

Out of Control Events and Inspection Comments:

*SAMPLE ERS1-SB-F01-G-78 IS MISLABELLED ERS1-SB01-G-78. I WILL FOLLOW THE CHAIN OF CUSTODY. SAMPLE TIMES MATCH THIS SAMPLE ON C.O.C.

Inspected By: af Date: 3/8/94 Logged By: af Date: 3/8/94

WOODWARD-CLYDE CONSULTANTS

CHAIN-OF-CUSTODY RECORD

403231

	Sample No.	Matrix	YR:94 DATE MM/DD	Time	Sample Depth From	Sample Depth To	Station Location	Total No. Containers	VOC					
-	ERS1-SS-B02-GS	So	3/3	1340	0	1	ERS	1	✓					1
-	ERS1-SS-B05-G	So	3/3	1344	0	1	ERS	1	✓					2
-	ERS1-SS-A04-GS	So	3/3	1355	0	1	ERS	1	✓					3
-	ERS1-SS-A09-G	So	3/3	1403	0	1	ERS	1	✓					4
-	ERS1-SS-A08-G	So	3/3	1407 ~~1403~~	0	1	ERS	1	✓					5
-	ERS1-SS-A13-G	So	3/3	1412	0	1	ERS	1	✓					6
-	ERS1-SS-C05-GS	So	3/3	1418	0	1	ERS	1	✓					7
-	ERS1-SS-C09-G	So	3/3	1435	0	1	ERS	1	✓					8
-	ERS1-SS-C10-G	So	3/3	1440	0	1	ERS	1	✓					9
-	ERS1-SS-D02-G	So	3/3	1450	0	1	ERS	1	✓					10
-	ERS1-SS-D07-GS	So	3/3	1458	0	1	ERS	1	✓					11
-	ERS1-SS-D08-G	So	3/3	1527	0	1	ERS	1	✓					12
-	ERS1-SS-E03-GS	So	3/3	1540	0	1	ERS	1	✓					13
-	ERS1-SS-E05-G	So	3/3	1545	0	1	ERS	1	✓					14
-	ERS1-SS-E05-D	So	3/3	1545	0	1	ERS	1	✓					15

SAMPLE COLLECTION

PROJECT NO. AND NAME: 93B477 ENTERPRISE RECOVERY SYSTEMS
LOCATION OF SAMPLE: BYHALIA, MISSISSIPPI
TEAM LEADER: S. KRUL TELEPHONE: (504) 751-1873
COMPANY NAME: WOODWARD-CLYDE CONSULTANTS (WCC)
ADDRESS: 2822 ONEAL LANE, BATON ROUGE, LOUISIANA
WITNESS: Jimmy Kaufman COMPANY NAME: WCC

FIELD INFORMATION

TYPES OF SAMPLES: (MATRIX) LIQUID (LI) WIPE (WI) FISH (FI) SEDIMENT (SE) SLUDGE (SL) OTHER (SPECIFY) SOIL (SO)
FIELD NOTES: Samples stored + shipped on ice
TRANSPORTER: Fed Ex AIRBILL/INVOICE: 5384553204 DESTINATION: ATI Lab, Pensacola, FL

SAMPLE TRANSFER (Original must be retained with sample at all times)

		RELINQUISHED BY	DATE/TIME	RECEIVED BY	DATE/TIME
1	NAME:	Steve Krul	3/7/94	Pirita Johnson	3/8/94 1223
	COMPANY:	WCC	1200	ATI Pensacola	
2	NAME:				
	COMPANY:				
3	NAME:				
	COMPANY:				

TERMINATION OF CHAIN-OF-CUSTODY

AUTHORIZED BY: _____ DATE: _____ TIME: _____
COMPANY NAME: _____
SAMPLE DISPOSITION: STORAGE _____ DISPOSAL _____ OTHER _____

2 of 2

WOODWARD-CLYDE CONSULTANTS

CHAIN-OF-CUSTODY RECORD

403231

Sample No.	Matrix	YR:94 DATE MM/DD	Time	Sample Depth From	Sample Depth To	Station Location	Total No. Containers	VOC					
ERS1-SB-B01-GS-23	So	3/3	1725	2	3	ERS	1	✓					1
ERS1-SB-B01-GS-78	So	3/3	1730	7	8	ERS	1	✓					1
ERS1-SB-B02-G-67	So	3/4	1050	6	7	ERS	1	✓					1
ERS1-SB-B03-G-56	So	3/4	1055	5	6	ERS	1	✓					1
ERS1-RS-001-G	Li	3/4	1220	–	–	ERS	2	✓					2
ERS1-SB-A01-GS-78	So	3/4	1455	7	8	ERS	1	✓					2
ERS1-SB-A02-GS-23	So	3/4	1500	2	3	ERS	1	✓					2
ERS1-SB-A03-G-56	So	3/4	1725	5	6	ERS	1	✓					2
ERS1-SB-D01-G-12	So	3/4	1730	1	2	ERS	1	✓					2
ERS1-RS-002-G	Li	3/4	1755	–	–	ERS	2	✓					2
ERS1-TB-001-G	Li	3/4	1810	–	–	ERS	2	✓					2

SAMPLE COLLECTION

PROJECT NO. AND NAME: 93B477 ENTERPRISE RECOVERY SYSTEMS
LOCATION OF SAMPLE: BYHALIA, MISSISSIPPI
TEAM LEADER: S. KRUL TELEPHONE: (504) 751-1873
COMPANY NAME: WOODWARD-CLYDE CONSULTANTS (WCC)
ADDRESS: 2822 ONEAL LANE, BATON ROUGE, LOUISIANA
WITNESS: Jimmy Rayfu COMPANY NAME: WCC

FIELD INFORMATION

TYPES OF SAMPLES: (MATRIX) LIQUID (LI) WIPE (WI) FISH (FI) SEDIMENT (SE) SLUDGE (SL) OTHER (SPECIFY) SOIL (SO)
FIELD NOTES: Samples stored - shipped on ice
TRANSPORTER: Fed Ex AIRBILL/INVOICE: 5284553204 DESTINATION: ATI Lab. Pensacola, FL

SAMPLE TRANSFER (Original must be retained with sample at all times)

		RELINQUISHED BY	DATE/TIME	RECEIVED BY	DATE/TIME
1	NAME:	[illegible]	3/7/94	[illegible]	3/8/94 1223
	COMPANY:	WCC	1200		
2	NAME:				
	COMPANY:				
3	NAME:				
	COMPANY:				

TERMINATION OF CHAIN-OF-CUSTODY

AUTHORIZED BY: _____ DATE: _____ TIME: _____
COMPANY NAME: _____
SAMPLE DISPOSITION: STORAGE _____ DISPOSAL _____ OTHER _____

AnalyticalTechnologies,Inc. 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

March 21, 1994

INVOICE NUMBER 889343
LAB CODE 160

WOODWARD-CLYDE CONSULTANTS

460 BRIARWOOD DRIVE
JACKSON , MS 39206-0000

Accession #: 403232
Client Name: WOODWARD-CLYDE CONSULTANTS
Office: JACKSON, MISSISSIPPI
Project Name: ENTERPRISE RECOVERY SYSTEMS
Project Num: 93B477
Project Location: BYHALIA, MISSISSIPPI
Report Sent To: DEJONETTE KING
P. O. Number: CONTRACT NO. ATI-1
Billing Client: 22227

Samples	Test	Matrix	Description	Actual Price	Extended Price
	8240	AQ	VOLATILES (8240)	160.00	320.00
	8240	NA	VOLATILES (8240)	160.00	1,440.00
				Total:	$1,760.00

NET 30 DAYS

1/2 % Finance Charge on Balance Due over 30 Days

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*********************************
* REMIT PAYMENT TO:             *
* Analytical Technologies, Inc. *
* P.O. Box 840436               *
* Dallas, TX  75284-0436        *
*********************************
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AnalyticalTechnologies, Inc. 11 East Olive Road · Pensacola, Florida 32514 (904) 474-1001

SIGNATURE PAGE

Reviewed by: _____
ATI Project Manager

Client: WOODWARD-CLYDE CONSULTANTS
JACKSON, MISSISSIPPI

Project Name: ENTERPRISE RECOVERY SYSTEMS
Project Number: 93B477
Project Location: BYHALIA, MISSISSIPPI
Accession Number: 403232

Project Manager: DEJONETTE KING
Sampled By: ANNA SAUCIER

ANALYTICAL TECHNOLOGIES, INC. 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

Analysis Report

Analysis: VOLATILES (8240)

Accession:	403232
Client:	WOODWARD-CLYDE CONSULTANTS
Project Number:	93B477
Project Name:	ENTERPRISE RECOVERY SYSTEMS
Project Location:	BYHALIA, MISSISSIPPI
Department:	ORGANIC/MS

ANALYTICAL TECHNOLOGIES, INC. 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

Date 16-Mar-94

Accession: 403232
Client: WOODWARD-CLYDE CONSULTANTS
Project Number: 93B477
Project Name: ENTERPRISE RECOVERY SYSTEMS
Project Location: BYHALIA, MISSISSIPPI
Test: VOLATILES (8240)
Analysis Method: 8240 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: N/A
Matrix: SOIL
QC Level: II

Lab Id: 001
Client Sample Id: ERS1-SB-D02-G-78
Sample Date/Time: 05-MAR-94 1030
Received Date: 08-MAR-94

Batch: NAS026
Blank: A
Dry Weight %: 80
Extraction Date: N/A
Analysis Date: 14-MAR-94

Parameter:	Units:	Results:	Rpt Lmts:	Q:
ACETONE	UG/KG	ND	13	
ACROLEIN	UG/KG	ND	130	
ACRYLONITRILE	UG/KG	ND	130	
BENZENE	UG/KG	ND	1	
BROMODICHLOROMETHANE	UG/KG	ND	1	
BROMOFORM	UG/KG	ND	3	
BROMOMETHANE	UG/KG	ND	1	
2-BUTANONE (MEK)	UG/KG	ND	4	
CARBON DISULFIDE	UG/KG	ND	1	
CARBON TETRACHLORIDE	UG/KG	ND	3	
CHLOROBENZENE	UG/KG	ND	1	
CHLOROETHANE	UG/KG	ND	1	
2-CHLOROETHYLVINYL ETHER	UG/KG	ND	6	
CHLOROFORM	UG/KG	ND	3	
CHLOROMETHANE	UG/KG	ND	3	
CHLORODIBROMOMETHANE	UG/KG	ND	6	
DIBROMOMETHANE	UG/KG	ND	6	
DICHLORODIFLUOROMETHANE	UG/KG	ND	6	
1,1-DICHLOROETHANE	UG/KG	ND	1	
1,2-DICHLOROETHANE	UG/KG	ND	3	
1,1-DICHLOROETHENE	UG/KG	ND	1	
TOTAL 1,2-DICHLOROETHYLENE	UG/KG	23	6	
1,2-DICHLOROPROPANE	UG/KG	ND	3	
CIS-1,3-DICHLOROPROPENE	UG/KG	ND	1	
TRANS-1,3-DICHLOROPROPENE	UG/KG	ND	1	
1,4-DICHLORO-2-BUTENE	UG/KG	ND	6	
ETHYL BENZENE	UG/KG	ND	1	
ETHYL METHACRYLATE	UG/KG	ND	6	
2-HEXANONE	UG/KG	ND	4	
IODOMETHANE	UG/KG	ND	6	
METHYLENE CHLORIDE	UG/KG	9	4	
4-METHYL-2-PENTANONE	UG/KG	ND	4	
STYRENE	UG/KG	ND	3	
1,1,2,2-TETRACHLOROETHANE	UG/KG	ND	3	
TETRACHLOROETHENE	UG/KG	ND	1	
TOLUENE	UG/KG	ND	6	
1,1,1-TRICHLOROETHANE	UG/KG	11	6	
1,1,2-TRICHLOROETHANE	UG/KG	ND	3	
TRICHLOROETHENE	UG/KG	45	1	
TRICHLOROFLUOROMETHANE	UG/KG	ND	1	

ANALYTICAL TECHNOLOGIES, INC. 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

Accession: 403232
Client: WOODWARD-CLYDE CONSULTANTS
Project Number: 93B477
Project Name: ENTERPRISE RECOVERY SYSTEMS
Project Location: BYHALIA, MISSISSIPPI
Test: VOLATILES (8240)
Analysis Method: 8240 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: N/A
Matrix: SOIL
QC Level: II

Lab Id: 001
Client Sample Id: ERS1-SB-D02-G-78
Sample Date/Time: 05-MAR-94 1030
Received Date: 08-MAR-94

Parameter:	Units:	Results:	Rpt Lmts:	Q:
1,2,3 TRICHLOROPROPANE	UG/KG	ND	6	
VINYL ACETATE	UG/KG	ND	3	
VINYL CHLORIDE	UG/KG	ND	1	
TOTAL XYLENES	UG/KG	ND	3	
BROMOFLUOROBENZENE	%REC/SURR	91	74-121	
1,2-DICHLOROETHANE-D4	%REC/SURR	102	70-121	
TOLUENE-D8	%REC/SURR	99	81-117	
ANALYST	INITIALS	DWB		

Comments:

ANALYTICAL TECHNOLOGIES, INC. 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

Accession: 403232
Client: WOODWARD-CLYDE CONSULTANTS
Project Number: 93B477
Project Name: ENTERPRISE RECOVERY SYSTEMS
Project Location: BYHALIA, MISSISSIPPI
Test: VOLATILES (8240)
Analysis Method: 8240 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: N/A
Matrix: SOIL
QC Level: II

Lab Id: 002
Client Sample Id: ERS1-SB-D03-G-01
Sample Date/Time: 05-MAR-94 1035
Received Date: 08-MAR-94

Batch: NAS026
Blank: A
Dry Weight %: 80
Extraction Date: N/A
Analysis Date: 15-MAR-94

Parameter:	Units:	Results:	Rpt Lmts:	Q:
ACETONE	UG/KG	44	13	
ACROLEIN	UG/KG	ND	130	
ACRYLONITRILE	UG/KG	ND	130	
BENZENE	UG/KG	ND	1	
BROMODICHLOROMETHANE	UG/KG	ND	1	
BROMOFORM	UG/KG	ND	3	
BROMOMETHANE	UG/KG	ND	1	
2-BUTANONE (MEK)	UG/KG	ND	4	
CARBON DISULFIDE	UG/KG	ND	1	
CARBON TETRACHLORIDE	UG/KG	ND	3	
CHLOROBENZENE	UG/KG	ND	1	
CHLOROETHANE	UG/KG	ND	1	
2-CHLOROETHYLVINYL ETHER	UG/KG	ND	6	
CHLOROFORM	UG/KG	ND	3	
CHLOROMETHANE	UG/KG	ND	3	
CHLORODIBROMOMETHANE	UG/KG	ND	6	
DIBROMOMETHANE	UG/KG	ND	6	
DICHLORODIFLUOROMETHANE	UG/KG	ND	6	
1,1-DICHLOROETHANE	UG/KG	ND	1	
1,2-DICHLOROETHANE	UG/KG	ND	3	
1,1-DICHLOROETHENE	UG/KG	ND	1	
TOTAL 1,2-DICHLOROETHYLENE	UG/KG	ND	6	
1,2-DICHLOROPROPANE	UG/KG	ND	3	
CIS-1,3-DICHLOROPROPENE	UG/KG	ND	1	
TRANS-1,3-DICHLOROPROPENE	UG/KG	ND	1	
1,4-DICHLORO-2-BUTENE	UG/KG	ND	6	
ETHYL BENZENE	UG/KG	ND	1	
ETHYL METHACRYLATE	UG/KG	ND	6	
2-HEXANONE	UG/KG	ND	4	
IODOMETHANE	UG/KG	ND	6	
METHYLENE CHLORIDE	UG/KG	5	4	
4-METHYL-2-PENTANONE	UG/KG	ND	4	
STYRENE	UG/KG	ND	3	
1,1,2,2-TETRACHLOROETHANE	UG/KG	ND	3	
TETRACHLOROETHENE	UG/KG	ND	1	
TOLUENE	UG/KG	ND	6	
1,1,1-TRICHLOROETHANE	UG/KG	ND	6	
1,1,2-TRICHLOROETHANE	UG/KG	ND	3	
TRICHLOROETHENE	UG/KG	7	1	
TRICHLOROFLUOROMETHANE	UG/KG	ND	1	

ANALYTICAL TECHNOLOGIES, INC. 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

Accession: 403232
Client: WOODWARD-CLYDE CONSULTANTS
Project Number: 93B477
Project Name: ENTERPRISE RECOVERY SYSTEMS
Project Location: BYHALIA, MISSISSIPPI
Test: VOLATILES (8240)
Analysis Method: 8240 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: N/A
Matrix: SOIL
QC Level: II

Lab Id: 002
Client Sample Id: ERS1-SB-D03-G-01
Sample Date/Time: 05-MAR-94 1035
Received Date: 08-MAR-94

Parameter:	Units:	Results:	Rpt Lmts:	Q:
1,2,3 TRICHLOROPROPANE	UG/KG	ND	6	
VINYL ACETATE	UG/KG	ND	3	
VINYL CHLORIDE	UG/KG	ND	1	
TOTAL XYLENES	UG/KG	ND	3	
BROMOFLUOROBENZENE	%REC/SURR	102	74-121	
1,2-DICHLOROETHANE-D4	%REC/SURR	108	70-121	
TOLUENE-D8	%REC/SURR	98	81-117	
ANALYST	INITIALS	DWB		

Comments:

Accession: 403232
Client: WOODWARD-CLYDE CONSULTANTS
Project Number: 93B477
Project Name: ENTERPRISE RECOVERY SYSTEMS
Project Location: BYHALIA, MISSISSIPPI
Test: VOLATILES (8240)
Analysis Method: 8240 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: N/A
Matrix: SOIL
QC Level: II

Lab Id: 003
Client Sample Id: ERS1-SB-E01-G-78
Sample Date/Time: 05-MAR-94 1345
Received Date: 08-MAR-94

Batch: NAS026
Blank: B
Dry Weight %: 82
Extraction Date: N/A
Analysis Date: 15-MAR-94

Parameter:	Units:	Results:	Rpt Lmts:	Q:
ACETONE	UG/KG	ND	12	
ACROLEIN	UG/KG	ND	120	
ACRYLONITRILE	UG/KG	ND	120	
BENZENE	UG/KG	ND	1	
BROMODICHLOROMETHANE	UG/KG	ND	1	
BROMOFORM	UG/KG	ND	2	
BROMOMETHANE	UG/KG	ND	1	
2-BUTANONE (MEK)	UG/KG	ND	4	
CARBON DISULFIDE	UG/KG	ND	1	
CARBON TETRACHLORIDE	UG/KG	ND	2	
CHLOROBENZENE	UG/KG	ND	1	
CHLOROETHANE	UG/KG	ND	1	
2-CHLOROETHYLVINYL ETHER	UG/KG	ND	6	
CHLOROFORM	UG/KG	ND	2	
CHLOROMETHANE	UG/KG	ND	2	
CHLORODIBROMOMETHANE	UG/KG	ND	6	
DIBROMOMETHANE	UG/KG	ND	6	
DICHLORODIFLUOROMETHANE	UG/KG	ND	6	
1,1-DICHLOROETHANE	UG/KG	ND	1	
1,2-DICHLOROETHANE	UG/KG	ND	2	
1,1-DICHLOROETHENE	UG/KG	ND	1	
TOTAL 1,2-DICHLOROETHYLENE	UG/KG	7	6	
1,2-DICHLOROPROPANE	UG/KG	ND	2	
CIS-1,3-DICHLOROPROPENE	UG/KG	ND	1	
TRANS-1,3-DICHLOROPROPENE	UG/KG	ND	1	
1,4-DICHLORO-2-BUTENE	UG/KG	ND	6	
ETHYL BENZENE	UG/KG	ND	1	
ETHYL METHACRYLATE	UG/KG	ND	6	
2-HEXANONE	UG/KG	ND	4	
IODOMETHANE	UG/KG	ND	6	
METHYLENE CHLORIDE	UG/KG	4	4	
4-METHYL-2-PENTANONE	UG/KG	ND	4	
STYRENE	UG/KG	ND	2	
1,1,2,2-TETRACHLOROETHANE	UG/KG	ND	2	
TETRACHLOROETHENE	UG/KG	39	1	
TOLUENE	UG/KG	ND	6	
1,1,1-TRICHLOROETHANE	UG/KG	ND	6	
1,1,2-TRICHLOROETHANE	UG/KG	ND	2	
TRICHLOROETHENE	UG/KG	ND	1	
TRICHLOROFLUOROMETHANE	UG/KG	ND	1	

ANALYTICAL TECHNOLOGIES, INC. 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

Accession: 403232
Client: WOODWARD-CLYDE CONSULTANTS
Project Number: 93B477
Project Name: ENTERPRISE RECOVERY SYSTEMS
Project Location: BYHALIA, MISSISSIPPI
Test: VOLATILES (8240)
Analysis Method: 8240 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: N/A
Matrix: SOIL
QC Level: II

Lab Id: 003
Client Sample Id: ERS1-SB-E01-G-78
Sample Date/Time: 05-MAR-94 1345
Received Date: 08-MAR-94

Parameter:	Units:	Results:	Rpt Lmts:	Q:
1,2,3 TRICHLOROPROPANE	UG/KG	ND	6	
VINYL ACETATE	UG/KG	ND	2	
VINYL CHLORIDE	UG/KG	ND	1	
TOTAL XYLENES	UG/KG	ND	2	
BROMOFLUOROBENZENE	%REC/SURR	109	74-121	
1,2-DICHLOROETHANE-D4	%REC/SURR	99	70-121	
TOLUENE-D8	%REC/SURR	100	81-117	
ANALYST	INITIALS	DWB		

Comments:

Accession: 403232
Client: WOODWARD-CLYDE CONSULTANTS
Project Number: 93B477
Project Name: ENTERPRISE RECOVERY SYSTEMS
Project Location: BYHALIA, MISSISSIPPI
Test: VOLATILES (8240)
Analysis Method: 8240 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: N/A
Matrix: SOIL
QC Level: II

Lab Id: 004
Client Sample Id: ERS1-SB-E02-G-01
Sample Date/Time: 05-MAR-94 1350
Received Date: 08-MAR-94

Batch: NAS026
Blank: A
Dry Weight %: 84
Extraction Date: N/A
Analysis Date: 15-MAR-94

Parameter:	Units:	Results:	Rpt Lmts:	Q:
ACETONE	UG/KG	ND	12	
ACROLEIN	UG/KG	ND	120	
ACRYLONITRILE	UG/KG	ND	120	
BENZENE	UG/KG	ND	1	
BROMODICHLOROMETHANE	UG/KG	ND	1	
BROMOFORM	UG/KG	ND	2	
BROMOMETHANE	UG/KG	ND	1	
2-BUTANONE (MEK)	UG/KG	ND	4	
CARBON DISULFIDE	UG/KG	ND	1	
CARBON TETRACHLORIDE	UG/KG	ND	2	
CHLOROBENZENE	UG/KG	ND	1	
CHLOROETHANE	UG/KG	ND	1	
2-CHLOROETHYLVINYL ETHER	UG/KG	ND	6	
CHLOROFORM	UG/KG	ND	2	
CHLOROMETHANE	UG/KG	ND	2	
CHLORODIBROMOMETHANE	UG/KG	ND	6	
DIBROMOMETHANE	UG/KG	ND	6	
DICHLORODIFLUOROMETHANE	UG/KG	ND	6	
1,1-DICHLOROETHANE	UG/KG	9	1	
1,2-DICHLOROETHANE	UG/KG	ND	2	
1,1-DICHLOROETHENE	UG/KG	ND	1	
TOTAL 1,2-DICHLOROETHYLENE	UG/KG	130	6	
1,2-DICHLOROPROPANE	UG/KG	ND	2	
CIS-1,3-DICHLOROPROPENE	UG/KG	ND	1	
TRANS-1,3-DICHLOROPROPENE	UG/KG	ND	1	
1,4-DICHLORO-2-BUTENE	UG/KG	ND	6	
ETHYL BENZENE	UG/KG	ND	1	
ETHYL METHACRYLATE	UG/KG	ND	6	
2-HEXANONE	UG/KG	ND	4	
IODOMETHANE	UG/KG	ND	6	
METHYLENE CHLORIDE	UG/KG	4	4	
4-METHYL-2-PENTANONE	UG/KG	ND	4	
STYRENE	UG/KG	ND	2	
1,1,2,2-TETRACHLOROETHANE	UG/KG	ND	2	
TETRACHLOROETHENE	UG/KG	14	1	
TOLUENE	UG/KG	ND	6	
1,1,1-TRICHLOROETHANE	UG/KG	24	6	
1,1,2-TRICHLOROETHANE	UG/KG	ND	2	
TRICHLOROETHENE	UG/KG	24	1	
TRICHLOROFLUOROMETHANE	UG/KG	ND	1	

ANALYTICAL TECHNOLOGIES, INC. 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

Accession: 403232
Client: WOODWARD-CLYDE CONSULTANTS
Project Number: 93B477
Project Name: ENTERPRISE RECOVERY SYSTEMS
Project Location: BYHALIA, MISSISSIPPI
Test: VOLATILES (8240)
Analysis Method: 8240 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: N/A
Matrix: SOIL
QC Level: II

Lab Id: 004
Client Sample Id: ERS1-SB-E02-G-01
Sample Date/Time: 05-MAR-94 1350
Received Date: 08-MAR-94

Parameter:	Units:	Results:	Rpt Lmts:	Q:
1,2,3 TRICHLOROPROPANE	UG/KG	ND	6	
VINYL ACETATE	UG/KG	ND	2	
VINYL CHLORIDE	UG/KG	ND	1	
TOTAL XYLENES	UG/KG	ND	2	
BROMOFLUOROBENZENE	%REC/SURR	96	74-121	
1,2-DICHLOROETHANE-D4	%REC/SURR	101	70-121	
TOLUENE-D8	%REC/SURR	102	81-117	
ANALYST	INITIALS	DWB		

Comments:

Accession: 403232
Client: WOODWARD-CLYDE CONSULTANTS
Project Number: 93B477
Project Name: ENTERPRISE RECOVERY SYSTEMS
Project Location: BYHALIA, MISSISSIPPI
Test: VOLATILES (8240)
Analysis Method: 8240 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: N/A
Matrix: SOIL
QC Level: II

Lab Id: 005
Client Sample Id: ERS1-SB-E03-G-01
Sample Date/Time: 05-MAR-94 1600
Received Date: 08-MAR-94

Batch: NAS026
Blank: B
Dry Weight %: 86
Extraction Date: N/A
Analysis Date: 15-MAR-94

Parameter:	Units:	Results:	Rpt Lmts:	Q:
ACETONE	UG/KG	ND	12	
ACROLEIN	UG/KG	ND	120	
ACRYLONITRILE	UG/KG	ND	120	
BENZENE	UG/KG	ND	1	
BROMODICHLOROMETHANE	UG/KG	ND	1	
BROMOFORM	UG/KG	ND	2	
BROMOMETHANE	UG/KG	ND	1	
2-BUTANONE (MEK)	UG/KG	ND	3	
CARBON DISULFIDE	UG/KG	ND	1	
CARBON TETRACHLORIDE	UG/KG	ND	2	
CHLOROBENZENE	UG/KG	ND	1	
CHLOROETHANE	UG/KG	ND	1	
2-CHLOROETHYLVINYL ETHER	UG/KG	ND	6	
CHLOROFORM	UG/KG	ND	2	
CHLOROMETHANE	UG/KG	ND	2	
CHLORODIBROMOMETHANE	UG/KG	ND	6	
DIBROMOMETHANE	UG/KG	ND	6	
DICHLORODIFLUOROMETHANE	UG/KG	ND	6	
1,1-DICHLOROETHANE	UG/KG	ND	1	
1,2-DICHLOROETHANE	UG/KG	ND	2	
1,1-DICHLOROETHENE	UG/KG	ND	1	
TOTAL 1,2-DICHLOROETHYLENE	UG/KG	29	6	
1,2-DICHLOROPROPANE	UG/KG	ND	2	
CIS-1,3-DICHLOROPROPENE	UG/KG	ND	1	
TRANS-1,3-DICHLOROPROPENE	UG/KG	ND	1	
1,4-DICHLORO-2-BUTENE	UG/KG	ND	6	
ETHYL BENZENE	UG/KG	4	1	
ETHYL METHACRYLATE	UG/KG	ND	6	
2-HEXANONE	UG/KG	ND	3	
IODOMETHANE	UG/KG	ND	6	
METHYLENE CHLORIDE	UG/KG	ND	3	
4-METHYL-2-PENTANONE	UG/KG	ND	3	
STYRENE	UG/KG	ND	2	
1,1,2,2-TETRACHLOROETHANE	UG/KG	ND	2	
TETRACHLOROETHENE	UG/KG	16	1	
TOLUENE	UG/KG	6	6	
1,1,1-TRICHLOROETHANE	UG/KG	7	6	
1,1,2-TRICHLOROETHANE	UG/KG	5	2	
TRICHLOROETHENE	UG/KG	72	1	
TRICHLOROFLUOROMETHANE	UG/KG	ND	1	

ANALYTICAL TECHNOLOGIES, INC. 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

Accession: 403232
Client: WOODWARD-CLYDE CONSULTANTS
Project Number: 93B477
Project Name: ENTERPRISE RECOVERY SYSTEMS
Project Location: BYHALIA, MISSISSIPPI
Test: VOLATILES (8240)
Analysis Method: 8240 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: N/A
Matrix: SOIL
QC Level: II

Lab Id: 005
Client Sample Id: ERS1-SB-E03-G-01
Sample Date/Time: 05-MAR-94 1600
Received Date: 08-MAR-94

Parameter:	Units:	Results:	Rpt Lmts:	Q:
1,2,3 TRICHLOROPROPANE	UG/KG	ND	6	
VINYL ACETATE	UG/KG	ND	2	
VINYL CHLORIDE	UG/KG	ND	1	
TOTAL XYLENES	UG/KG	38	2	
BROMOFLUOROBENZENE	%REC/SURR	114	74-121	
1,2-DICHLOROETHANE-D4	%REC/SURR	100	70-121	
TOLUENE-D8	%REC/SURR	102	81-117	
ANALYST	INITIALS	DWB		

Comments:

Accession: 403232
Client: WOODWARD-CLYDE CONSULTANTS
Project Number: 93B477
Project Name: ENTERPRISE RECOVERY SYSTEMS
Project Location: BYHALIA, MISSISSIPPI
Test: VOLATILES (8240)
Analysis Method: 8240 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: N/A
Matrix: SOIL
QC Level: II

Lab Id: 006
Client Sample Id: ERS1-SB-C01-GS-78
Sample Date/Time: 05-MAR-94 1605
Received Date: 08-MAR-94

Batch: VIS031
Blank: B
Dry Weight %: 80
Extraction Date: 10-MAR-94
Analysis Date: 11-MAR-94

Parameter:	Units:	Results:	Rpt Lmts:	Q:
ACETONE	UG/KG	19000	13000	
ACROLEIN	UG/KG	ND	130000	
ACRYLONITRILE	UG/KG	ND	130000	
BENZENE	UG/KG	ND	1300	
BROMODICHLOROMETHANE	UG/KG	ND	1300	
BROMOFORM	UG/KG	ND	2500	
BROMOMETHANE	UG/KG	ND	1300	
2-BUTANONE (MEK)	UG/KG	130000	3800	
CARBON DISULFIDE	UG/KG	ND	1300	
CARBON TETRACHLORIDE	UG/KG	ND	2500	
CHLOROBENZENE	UG/KG	ND	1300	
CHLOROETHANE	UG/KG	ND	1300	
2-CHLOROETHYLVINYL ETHER	UG/KG	ND	6300	
CHLOROFORM	UG/KG	ND	2500	
CHLOROMETHANE	UG/KG	ND	2500	
CHLORODIBROMOMETHANE	UG/KG	ND	6300	
DIBROMOMETHANE	UG/KG	ND	6300	
DICHLORODIFLUOROMETHANE	UG/KG	ND	6300	
1,1-DICHLOROETHANE	UG/KG	ND	1300	
1,2-DICHLOROETHANE	UG/KG	ND	2500	
1,1-DICHLOROETHENE	UG/KG	ND	1300	
TOTAL 1,2-DICHLOROETHYLENE	UG/KG	ND	6300	
1,2-DICHLOROPROPANE	UG/KG	ND	2500	
CIS-1,3-DICHLOROPROPENE	UG/KG	ND	1300	
TRANS-1,3-DICHLOROPROPENE	UG/KG	ND	1300	
1,4-DICHLORO-2-BUTENE	UG/KG	ND	6300	
ETHYL BENZENE	UG/KG	ND	1300	
ETHYL METHACRYLATE	UG/KG	ND	6300	
2-HEXANONE	UG/KG	ND	3800	
IODOMETHANE	UG/KG	ND	6300	
METHYLENE CHLORIDE	UG/KG	ND	3800	
4-METHYL-2-PENTANONE	UG/KG	85000	3800	
STYRENE	UG/KG	ND	2500	
1,1,2,2-TETRACHLOROETHANE	UG/KG	ND	2500	
TETRACHLOROETHENE	UG/KG	ND	1300	
TOLUENE	UG/KG	ND	6300	
1,1,1-TRICHLOROETHANE	UG/KG	ND	6300	
1,1,2-TRICHLOROETHANE	UG/KG	ND	2500	
TRICHLOROETHENE	UG/KG	ND	1300	
TRICHLOROFLUOROMETHANE	UG/KG	ND	1300	

ANALYTICAL TECHNOLOGIES, INC. 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

Accession: 403232
Client: WOODWARD-CLYDE CONSULTANTS
Project Number: 93B477
Project Name: ENTERPRISE RECOVERY SYSTEMS
Project Location: BYHALIA, MISSISSIPPI
Test: VOLATILES (8240)
Analysis Method: 8240 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: N/A
Matrix: SOIL
QC Level: II

Lab Id: 006
Client Sample Id: ERS1-SB-C01-GS-78
Sample Date/Time: 05-MAR-94 1605
Received Date: 08-MAR-94

Parameter:	Units:	Results:	Rpt Lmts:	Q:
1,2,3 TRICHLOROPROPANE	UG/KG	ND	6300	
VINYL ACETATE	UG/KG	ND	2500	
VINYL CHLORIDE	UG/KG	ND	1300	
TOTAL XYLENES	UG/KG	3800	2500	
BROMOFLUOROBENZENE	%REC/SURR	D*	74-121	
1,2-DICHLOROETHANE-D4	%REC/SURR	D*	70-121	
TOLUENE-D8	%REC/SURR	D*	81-117	
ANALYST	INITIALS	LP		

Comments:

Accession: 403232
Client: WOODWARD-CLYDE CONSULTANTS
Project Number: 93B477
Project Name: ENTERPRISE RECOVERY SYSTEMS
Project Location: BYHALIA, MISSISSIPPI
Test: VOLATILES (8240)
Analysis Method: 8240 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: N/A
Matrix: SOIL
QC Level: II

Lab Id: 007 Sample Date/Time: 06-MAR-94 1035
Client Sample Id: ERS1-SB-C02-GS-67 Received Date: 08-MAR-94

Batch: NAS026 Extraction Date: N/A
Blank: C Dry Weight %: 82 Analysis Date: 16-MAR-94

Parameter:	Units:	Results:	Rpt Lmts:	Q:
ACETONE	UG/KG	ND	12	
ACROLEIN	UG/KG	ND	120	
ACRYLONITRILE	UG/KG	ND	120	
BENZENE	UG/KG	ND	1	
BROMODICHLOROMETHANE	UG/KG	ND	1	
BROMOFORM	UG/KG	ND	2	
BROMOMETHANE	UG/KG	ND	1	
2-BUTANONE (MEK)	UG/KG	ND	4	
CARBON DISULFIDE	UG/KG	ND	1	
CARBON TETRACHLORIDE	UG/KG	ND	2	
CHLOROBENZENE	UG/KG	ND	1	
CHLOROETHANE	UG/KG	ND	1	
2-CHLOROETHYLVINYL ETHER	UG/KG	ND	6	
CHLOROFORM	UG/KG	ND	2	
CHLOROMETHANE	UG/KG	ND	2	
CHLORODIBROMOMETHANE	UG/KG	ND	6	
DIBROMOMETHANE	UG/KG	ND	6	
DICHLORODIFLUOROMETHANE	UG/KG	ND	6	
1,1-DICHLOROETHANE	UG/KG	ND	1	
1,2-DICHLOROETHANE	UG/KG	ND	2	
1,1-DICHLOROETHENE	UG/KG	ND	1	
TOTAL 1,2-DICHLOROETHYLENE	UG/KG	12	6	
1,2-DICHLOROPROPANE	UG/KG	ND	2	
CIS-1,3-DICHLOROPROPENE	UG/KG	ND	1	
TRANS-1,3-DICHLOROPROPENE	UG/KG	ND	1	
1,4-DICHLORO-2-BUTENE	UG/KG	ND	6	
ETHYL BENZENE	UG/KG	ND	1	
ETHYL METHACRYLATE	UG/KG	ND	6	
2-HEXANONE	UG/KG	ND	4	
IODOMETHANE	UG/KG	ND	6	
METHYLENE CHLORIDE	UG/KG	4	4	
4-METHYL-2-PENTANONE	UG/KG	ND	4	
STYRENE	UG/KG	ND	2	
1,1,2,2-TETRACHLOROETHANE	UG/KG	ND	2	
TETRACHLOROETHENE	UG/KG	ND	1	
TOLUENE	UG/KG	ND	6	
1,1,1-TRICHLOROETHANE	UG/KG	ND	6	
1,1,2-TRICHLOROETHANE	UG/KG	ND	2	
TRICHLOROETHENE	UG/KG	ND	1	
TRICHLOROFLUOROMETHANE	UG/KG	41	1	

ANALYTICAL TECHNOLOGIES, INC. 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

Accession: 403232
Client: WOODWARD-CLYDE CONSULTANTS
Project Number: 93B477
Project Name: ENTERPRISE RECOVERY SYSTEMS
Project Location: BYHALIA, MISSISSIPPI
Test: VOLATILES (8240)
Analysis Method: 8240 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: N/A
Matrix: SOIL
QC Level: II

Lab Id: 007
Client Sample Id: ERS1-SB-C02-GS-67
Sample Date/Time: 06-MAR-94 1035
Received Date: 08-MAR-94

Parameter:	Units:	Results:	Rpt Lmts:	Q:
1,2,3 TRICHLOROPROPANE	UG/KG	ND	6	
VINYL ACETATE	UG/KG	ND	2	
VINYL CHLORIDE	UG/KG	ND	1	
TOTAL XYLENES	UG/KG	ND	2	
BROMOFLUOROBENZENE	%REC/SURR	105	74-121	
1,2-DICHLOROETHANE-D4	%REC/SURR	101	70-121	
TOLUENE-D8	%REC/SURR	99	81-117	
ANALYST	INITIALS	DWB		

Comments:

Accession: 403232
Client: WOODWARD-CLYDE CONSULTANTS
Project Number: 93B477
Project Name: ENTERPRISE RECOVERY SYSTEMS
Project Location: BYHALIA, MISSISSIPPI
Test: VOLATILES (8240)
Analysis Method: 8240 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: N/A
Matrix: SOIL
QC Level: II

Lab Id: 008
Client Sample Id: ERS1-SB-C03-G-01
Sample Date/Time: 06-MAR-94 1040
Received Date: 08-MAR-94

Batch: NAS026
Blank: C
Dry Weight %: 84
Extraction Date: N/A
Analysis Date: 16-MAR-94

Parameter:	Units:	Results:	Rpt Lmts:	Q:
ACETONE	UG/KG	50	12	
ACROLEIN	UG/KG	ND	120	
ACRYLONITRILE	UG/KG	ND	120	
BENZENE	UG/KG	ND	1	
BROMODICHLOROMETHANE	UG/KG	ND	1	
BROMOFORM	UG/KG	ND	2	
BROMOMETHANE	UG/KG	ND	1	
2-BUTANONE (MEK)	UG/KG	20	4	
CARBON DISULFIDE	UG/KG	ND	1	
CARBON TETRACHLORIDE	UG/KG	ND	2	
CHLOROBENZENE	UG/KG	ND	1	
CHLOROETHANE	UG/KG	ND	1	
2-CHLOROETHYLVINYL ETHER	UG/KG	ND	6	
CHLOROFORM	UG/KG	ND	2	
CHLOROMETHANE	UG/KG	ND	2	
CHLORODIBROMOMETHANE	UG/KG	ND	6	
DIBROMOMETHANE	UG/KG	ND	6	
DICHLORODIFLUOROMETHANE	UG/KG	ND	6	
1,1-DICHLOROETHANE	UG/KG	ND	1	
1,2-DICHLOROETHANE	UG/KG	ND	2	
1,1-DICHLOROETHENE	UG/KG	ND	1	
TOTAL 1,2-DICHLOROETHYLENE	UG/KG	7	6	
1,2-DICHLOROPROPANE	UG/KG	ND	2	
CIS-1,3-DICHLOROPROPENE	UG/KG	ND	1	
TRANS-1,3-DICHLOROPROPENE	UG/KG	ND	1	
1,4-DICHLORO-2-BUTENE	UG/KG	ND	6	
ETHYL BENZENE	UG/KG	6	1	
ETHYL METHACRYLATE	UG/KG	ND	6	
2-HEXANONE	UG/KG	16	4	
IODOMETHANE	UG/KG	ND	6	
METHYLENE CHLORIDE	UG/KG	5	4	
4-METHYL-2-PENTANONE	UG/KG	260	4	
STYRENE	UG/KG	ND	2	
1,1,2,2-TETRACHLOROETHANE	UG/KG	ND	2	
TETRACHLOROETHENE	UG/KG	ND	1	
TOLUENE	UG/KG	ND	6	
1,1,1-TRICHLOROETHANE	UG/KG	ND	6	
1,1,2-TRICHLOROETHANE	UG/KG	ND	2	
TRICHLOROETHENE	UG/KG	12	1	
TRICHLOROFLUOROMETHANE	UG/KG	ND	1	

ANALYTICAL TECHNOLOGIES, INC. 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

Accession: 403232
Client: WOODWARD-CLYDE CONSULTANTS
Project Number: 93B477
Project Name: ENTERPRISE RECOVERY SYSTEMS
Project Location: BYHALIA, MISSISSIPPI
Test: VOLATILES (8240)
Analysis Method: 8240 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: N/A
Matrix: SOIL
QC Level: II

Lab Id: 008
Client Sample Id: ERS1-SB-C03-G-01
Sample Date/Time: 06-MAR-94 1040
Received Date: 08-MAR-94

Parameter:	Units:	Results:	Rpt Lmts:	Q:
1,2,3 TRICHLOROPROPANE	UG/KG	ND	6	
VINYL ACETATE	UG/KG	ND	2	
VINYL CHLORIDE	UG/KG	ND	1	
TOTAL XYLENES	UG/KG	54	2	
BROMOFLUOROBENZENE	%REC/SURR	108	74-121	
1,2-DICHLOROETHANE-D4	%REC/SURR	102	70-121	
TOLUENE-D8	%REC/SURR	102	81-117	
ANALYST	INITIALS	DWB		

Comments:

ANALYTICAL TECHNOLOGIES, INC. 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

Accession: 403232
Client: WOODWARD-CLYDE CONSULTANTS
Project Number: 93B477
Project Name: ENTERPRISE RECOVERY SYSTEMS
Project Location: BYHALIA, MISSISSIPPI
Test: VOLATILES (8240)
Analysis Method: 8240 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: N/A
Matrix: SOIL
QC Level: II

Lab Id: 009
Client Sample Id: ERS1-SB-C03-D-01
Sample Date/Time: 06-MAR-94 1040
Received Date: 08-MAR-94

Batch: NAS026
Blank: C
Dry Weight %: 82
Extraction Date: N/A
Analysis Date: 16-MAR-94

Parameter:	Units:	Results:	Rpt Lmts:	Q:
ACETONE	UG/KG	130	12	
ACROLEIN	UG/KG	ND	120	
ACRYLONITRILE	UG/KG	ND	120	
BENZENE	UG/KG	ND	1	
BROMODICHLOROMETHANE	UG/KG	ND	1	
BROMOFORM	UG/KG	ND	2	
BROMOMETHANE	UG/KG	ND	1	
2-BUTANONE (MEK)	UG/KG	37	4	
CARBON DISULFIDE	UG/KG	ND	1	
CARBON TETRACHLORIDE	UG/KG	ND	2	
CHLOROBENZENE	UG/KG	ND	1	
CHLOROETHANE	UG/KG	ND	1	
2-CHLOROETHYLVINYL ETHER	UG/KG	ND	6	
CHLOROFORM	UG/KG	ND	2	
CHLOROMETHANE	UG/KG	ND	2	
CHLORODIBROMOMETHANE	UG/KG	ND	6	
DIBROMOMETHANE	UG/KG	ND	6	
DICHLORODIFLUOROMETHANE	UG/KG	ND	6	
1,1-DICHLOROETHANE	UG/KG	ND	1	
1,2-DICHLOROETHANE	UG/KG	ND	2	
1,1-DICHLOROETHENE	UG/KG	ND	1	
TOTAL 1,2-DICHLOROETHYLENE	UG/KG	ND	6	
1,2-DICHLOROPROPANE	UG/KG	ND	2	
CIS-1,3-DICHLOROPROPENE	UG/KG	ND	1	
TRANS-1,3-DICHLOROPROPENE	UG/KG	ND	1	
1,4-DICHLORO-2-BUTENE	UG/KG	ND	6	
ETHYL BENZENE	UG/KG	9	1	
ETHYL METHACRYLATE	UG/KG	ND	6	
2-HEXANONE	UG/KG	11	4	
IODOMETHANE	UG/KG	ND	6	
METHYLENE CHLORIDE	UG/KG	ND	4	
4-METHYL-2-PENTANONE	UG/KG	150	4	
STYRENE	UG/KG	ND	2	
1,1,2,2-TETRACHLOROETHANE	UG/KG	ND	2	
TETRACHLOROETHENE	UG/KG	ND	1	
TOLUENE	UG/KG	ND	6	
1,1,1-TRICHLOROETHANE	UG/KG	ND	6	
1,1,2-TRICHLOROETHANE	UG/KG	ND	2	
TRICHLOROETHENE	UG/KG	6	1	
TRICHLOROFLUOROMETHANE	UG/KG	ND	1	

ANALYTICAL TECHNOLOGIES, INC. 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

Accession: 403232
Client: WOODWARD-CLYDE CONSULTANTS
Project Number: 93B477
Project Name: ENTERPRISE RECOVERY SYSTEMS
Project Location: BYHALIA, MISSISSIPPI
Test: VOLATILES (8240)
Analysis Method: 8240 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: N/A
Matrix: SOIL
QC Level: II

Lab Id: 009
Client Sample Id: ERS1-SB-C03-D-01
Sample Date/Time: 06-MAR-94 1040
Received Date: 08-MAR-94

Parameter:	Units:	Results:	Rpt Lmts:	Q:
1,2,3 TRICHLOROPROPANE	UG/KG	ND	6	
VINYL ACETATE	UG/KG	ND	2	
VINYL CHLORIDE	UG/KG	ND	1	
TOTAL XYLENES	UG/KG	76	2	
BROMOFLUOROBENZENE	%REC/SURR	111	74-121	
1,2-DICHLOROETHANE-D4	%REC/SURR	96	70-121	
TOLUENE-D8	%REC/SURR	99	81-117	
ANALYST	INITIALS	DWB		

Comments:

Accession: 403232
Client: WOODWARD-CLYDE CONSULTANTS
Project Number: 93B477
Project Name: ENTERPRISE RECOVERY SYSTEMS
Project Location: BYHALIA, MISSISSIPPI
Test: VOLATILES (8240)
Analysis Method: 8240 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: N/A
Matrix: LIQUID
QC Level: II

Lab Id: 010
Client Sample Id: ERS1-RS-004-G
Sample Date/Time: 06-MAR-94 1115
Received Date: 08-MAR-94

Batch: NAS026
Blank: C
Dry Weight %: N/A
Extraction Date: N/A
Analysis Date: 16-MAR-94

Parameter:	Units:	Results:	Rpt Lmts:	Q:
ACETONE	UG/L	ND	10	
ACROLEIN	UG/L	ND	100	
ACRYLONITRILE	UG/L	ND	100	
BENZENE	UG/L	ND	1	
BROMODICHLOROMETHANE	UG/L	ND	1	
BROMOFORM	UG/L	ND	2	
BROMOMETHANE	UG/L	ND	1	
2-BUTANONE (MEK)	UG/L	ND	3	
CARBON DISULFIDE	UG/L	ND	1	
CARBON TETRACHLORIDE	UG/L	ND	2	
CHLOROBENZENE	UG/L	ND	1	
CHLOROETHANE	UG/L	ND	1	
2-CHLOROETHYLVINYL ETHER	UG/L	ND	5	
CHLOROFORM	UG/L	ND	2	
CHLOROMETHANE	UG/L	ND	2	
CHLORODIBROMOMETHANE	UG/L	ND	5	
DIBROMOMETHANE	UG/L	ND	5	
DICHLORODIFLUOROMETHANE	UG/L	ND	5	
1,1-DICHLOROETHANE	UG/L	ND	1	
1,2-DICHLOROETHANE	UG/L	ND	2	
1,1-DICHLOROETHENE	UG/L	ND	1	
TOTAL 1,2-DICHLOROETHYLENE	UG/L	ND	5	
1,2-DICHLOROPROPANE	UG/L	ND	2	
CIS-1,3-DICHLOROPROPENE	UG/L	ND	1	
TRANS-1,3-DICHLOROPROPENE	UG/L	ND	1	
1,4-DICHLORO-2-BUTENE	UG/L	ND	5	
ETHYL BENZENE	UG/L	ND	1	
ETHYL METHACRYLATE	UG/L	ND	5	
2-HEXANONE	UG/L	ND	3	
IODOMETHANE	UG/L	ND	5	
METHYLENE CHLORIDE	UG/L	ND	3	
4-METHYL-2-PENTANONE	UG/L	ND	3	
STYRENE	UG/L	ND	2	
1,1,2,2-TETRACHLOROETHANE	UG/L	ND	2	
TETRACHLOROETHENE	UG/L	ND	1	
TOLUENE	UG/L	ND	5	
1,1,1-TRICHLOROETHANE	UG/L	ND	5	
1,1,2-TRICHLOROETHANE	UG/L	ND	2	
TRICHLOROETHENE	UG/L	ND	1	
TRICHLOROFLUOROMETHANE	UG/L	ND	1	

ANALYTICAL TECHNOLOGIES, INC. 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

Accession: 403232
Client: WOODWARD-CLYDE CONSULTANTS
Project Number: 93B477
Project Name: ENTERPRISE RECOVERY SYSTEMS
Project Location: BYHALIA, MISSISSIPPI
Test: VOLATILES (8240)
Analysis Method: 8240 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: N/A
Matrix: LIQUID
QC Level: II

Lab Id: 010
Client Sample Id: ERS1-RS-004-G
Sample Date/Time: 06-MAR-94 1115
Received Date: 08-MAR-94

Parameter:	Units:	Results:	Rpt Lmts:	Q:
1,2,3 TRICHLOROPROPANE	UG/L	ND	5	
VINYL ACETATE	UG/L	ND	2	
VINYL CHLORIDE	UG/L	ND	1	
TOTAL XYLENES	UG/L	ND	2	
BROMOFLUOROBENZENE	%REC/SURR	106	86-115	
1,2-DICHLOROETHANE-D4	%REC/SURR	92	76-114	
TOLUENE-D8	%REC/SURR	101	88-115	
ANALYST	INITIALS	DWB		

Comments:

ANALYTICAL TECHNOLOGIES, INC. 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

Accession: 403232
Client: WOODWARD-CLYDE CONSULTANTS
Project Number: 93B477
Project Name: ENTERPRISE RECOVERY SYSTEMS
Project Location: BYHALIA, MISSISSIPPI
Test: VOLATILES (8240)
Analysis Method: 8240 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: N/A
Matrix: LIQUID
QC Level: II

Lab Id: 011
Client Sample Id: ERS1-RS-003-G
Sample Date/Time: 05-MAR-94 1625
Received Date: 08-MAR-94

Batch: NAS026
Blank: C
Dry Weight %: N/A
Extraction Date: N/A
Analysis Date: 16-MAR-94

Parameter:	Units:	Results:	Rpt Lmts:	Q:
ACETONE	UG/L	ND	10	
ACROLEIN	UG/L	ND	100	
ACRYLONITRILE	UG/L	ND	100	
BENZENE	UG/L	ND	1	
BROMODICHLOROMETHANE	UG/L	ND	1	
BROMOFORM	UG/L	ND	2	
BROMOMETHANE	UG/L	ND	1	
2-BUTANONE (MEK)	UG/L	ND	3	
CARBON DISULFIDE	UG/L	ND	1	
CARBON TETRACHLORIDE	UG/L	ND	2	
CHLOROBENZENE	UG/L	ND	1	
CHLOROETHANE	UG/L	ND	1	
2-CHLOROETHYLVINYL ETHER	UG/L	ND	5	
CHLOROFORM	UG/L	ND	2	
CHLOROMETHANE	UG/L	ND	2	
CHLORODIBROMOMETHANE	UG/L	ND	5	
DIBROMOMETHANE	UG/L	ND	5	
DICHLORODIFLUOROMETHANE	UG/L	ND	5	
1,1-DICHLOROETHANE	UG/L	ND	1	
1,2-DICHLOROETHANE	UG/L	ND	2	
1,1-DICHLOROETHENE	UG/L	ND	1	
TOTAL 1,2-DICHLOROETHYLENE	UG/L	ND	5	
1,2-DICHLOROPROPANE	UG/L	ND	2	
CIS-1,3-DICHLOROPROPENE	UG/L	ND	1	
TRANS-1,3-DICHLOROPROPENE	UG/L	ND	1	
1,4-DICHLORO-2-BUTENE	UG/L	ND	5	
ETHYL BENZENE	UG/L	ND	1	
ETHYL METHACRYLATE	UG/L	ND	5	
2-HEXANONE	UG/L	ND	3	
IODOMETHANE	UG/L	ND	5	
METHYLENE CHLORIDE	UG/L	ND	3	
4-METHYL-2-PENTANONE	UG/L	ND	3	
STYRENE	UG/L	ND	2	
1,1,2,2-TETRACHLOROETHANE	UG/L	ND	2	
TETRACHLOROETHENE	UG/L	ND	1	
TOLUENE	UG/L	ND	5	
1,1,1-TRICHLOROETHANE	UG/L	ND	5	
1,1,2-TRICHLOROETHANE	UG/L	ND	2	
TRICHLOROETHENE	UG/L	ND	1	
TRICHLOROFLUOROMETHANE	UG/L	ND	1	

ANALYTICAL TECHNOLOGIES, INC. 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

Accession: 403232
Client: WOODWARD-CLYDE CONSULTANTS
Project Number: 93B477
Project Name: ENTERPRISE RECOVERY SYSTEMS
Project Location: BYHALIA, MISSISSIPPI
Test: VOLATILES (8240)
Analysis Method: 8240 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: N/A
Matrix: LIQUID
QC Level: II

Lab Id: 011
Client Sample Id: ERS1-RS-003-G
Sample Date/Time: 05-MAR-94 1625
Received Date: 08-MAR-94

Parameter:	Units:	Results:	Rpt Lmts:	Q:
1,2,3 TRICHLOROPROPANE	UG/L	ND	5	
VINYL ACETATE	UG/L	ND	2	
VINYL CHLORIDE	UG/L	ND	1	
TOTAL XYLENES	UG/L	ND	2	
BROMOFLUOROBENZENE	%REC/SURR	113	86-115	
1,2-DICHLOROETHANE-D4	%REC/SURR	97	76-114	
TOLUENE-D8	%REC/SURR	100	88-115	
ANALYST	INITIALS	DWB		

Comments:

"Method Report Summary"

Accession Number: 403232
Client: WOODWARD-CLYDE CONSULTANTS
Project Number: 93B477
Project Name: ENTERPRISE RECOVERY SYSTEMS
Project Location: BYHALIA, MISSISSIPPI
Test: VOLATILES (8240)

Client Sample Id:	Parameter:	Unit:	Result:
ERS1-SB-D02-G-78	TOTAL 1,2-DICHLOROETHYLENE	UG/KG	23
	METHYLENE CHLORIDE	UG/KG	9
	1,1,1-TRICHLOROETHANE	UG/KG	11
	TRICHLOROETHENE	UG/KG	45
ERS1-SB-D03-G-01	ACETONE	UG/KG	44
	METHYLENE CHLORIDE	UG/KG	5
	TRICHLOROETHENE	UG/KG	7
ERS1-SB-E01-G-78	TOTAL 1,2-DICHLOROETHYLENE	UG/KG	7
	METHYLENE CHLORIDE	UG/KG	4
	TETRACHLOROETHENE	UG/KG	39
ERS1-SB-E02-G-01	1,1-DICHLOROETHANE	UG/KG	9
	TOTAL 1,2-DICHLOROETHYLENE	UG/KG	130
	METHYLENE CHLORIDE	UG/KG	4
	TETRACHLOROETHENE	UG/KG	14
	1,1,1-TRICHLOROETHANE	UG/KG	24
	TRICHLOROETHENE	UG/KG	24
ERS1-SB-E03-G-01	TOTAL 1,2-DICHLOROETHYLENE	UG/KG	29
	ETHYL BENZENE	UG/KG	4
	TETRACHLOROETHENE	UG/KG	16
	TOLUENE	UG/KG	6
	1,1,1-TRICHLOROETHANE	UG/KG	7
	1,1,2-TRICHLOROETHANE	UG/KG	5
	TRICHLOROETHENE	UG/KG	72
	TOTAL XYLENES	UG/KG	38
ERS1-SB-C01-GS-78	ACETONE	UG/KG	19000
	2-BUTANONE (MEK)	UG/KG	130000
	4-METHYL-2-PENTANONE	UG/KG	85000
	TOTAL XYLENES	UG/KG	3800
ERS1-SB-C02-GS-67	TOTAL 1,2-DICHLOROETHYLENE	UG/KG	12
	METHYLENE CHLORIDE	UG/KG	4
	TRICHLOROFLUOROMETHANE	UG/KG	41
ERS1-SB-C03-G-01	ACETONE	UG/KG	50
	2-BUTANONE (MEK)	UG/KG	20
	TOTAL 1,2-DICHLOROETHYLENE	UG/KG	7
	ETHYL BENZENE	UG/KG	6
	2-HEXANONE	UG/KG	16
	METHYLENE CHLORIDE	UG/KG	5
	4-METHYL-2-PENTANONE	UG/KG	260
	TRICHLOROETHENE	UG/KG	12
	TOTAL XYLENES	UG/KG	54
ERS1-SB-C03-D-01	ACETONE	UG/KG	130
	2-BUTANONE (MEK)	UG/KG	37
	ETHYL BENZENE	UG/KG	9
	2-HEXANONE	UG/KG	11

ANALYTICAL TECHNOLOGIES, INC. 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

"Method Report Summary"

Accession Number: 403232
Client: WOODWARD-CLYDE CONSULTANTS
Project Number: 93B477
Project Name: ENTERPRISE RECOVERY SYSTEMS
Project Location: BYHALIA, MISSISSIPPI
Test: VOLATILES (8240)

Client Sample Id:	Parameter:	Unit:	Result:
	4-METHYL-2-PENTANONE	UG/KG	150
	TRICHLOROETHENE	UG/KG	6
	TOTAL XYLENES	UG/KG	76

ANALYTICAL TECHNOLOGIES, INC. 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

Quality Control Report

Analysis: VOLATILES (8240)

Accession:	403232
Client:	WOODWARD-CLYDE CONSULTANTS
Project Number:	93B477
Project Name:	ENTERPRISE RECOVERY SYSTEMS
Project Location:	BYHALIA, MISSISSIPPI
Department:	ORGANIC/MS

ANALYTICAL TECHNOLOGIES, INC. 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

Date 16-Mar-94

"QC Report"

Title: Low Soil Blank
Batch: NAS026
Analysis Method: 8240 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: N/A

Blank Id: A Date Analyzed: 14-MAR-94 Date Extracted: N/A

Parameters:	Units:	Results:	Reporting Limits:
ACETONE	UG/KG	ND	10
ACROLEIN	UG/KG	ND	100
ACRYLONITRILE	UG/KG	ND	100
BENZENE	UG/KG	ND	1
BROMODICHLOROMETHANE	UG/KG	ND	1
BROMOFORM	UG/KG	ND	2
BROMOMETHANE	UG/KG	ND	1
2-BUTANONE (MEK)	UG/KG	ND	3
CARBON DISULFIDE	UG/KG	ND	1
CARBON TETRACHLORIDE	UG/KG	ND	2
CHLOROBENZENE	UG/KG	ND	1
CHLOROETHANE	UG/KG	ND	1
2-CHLOROETHYLVINYL ETHER	UG/KG	ND	5
CHLOROFORM	UG/KG	ND	2
CHLOROMETHANE	UG/KG	ND	2
CHLORODIBROMOMETHANE	UG/KG	ND	5
DIBROMOMETHANE	UG/KG	ND	5
DICHLORODIFLUOROMETHANE	UG/KG	ND	5
1,1-DICHLOROETHANE	UG/KG	ND	1
1,2-DICHLOROETHANE	UG/KG	ND	2
1,1-DICHLOROETHENE	UG/KG	ND	1
TOTAL 1,2-DICHLOROETHYLENE	UG/KG	ND	5
1,2-DICHLOROPROPANE	UG/KG	ND	2
CIS-1,3-DICHLOROPROPENE	UG/KG	ND	1
TRANS-1,3-DICHLOROPROPENE	UG/KG	ND	1
1,4-DICHLORO-2-BUTENE	UG/KG	ND	5
ETHYL BENZENE	UG/KG	ND	1
ETHYL METHACRYLATE	UG/KG	ND	5
2-HEXANONE	UG/KG	ND	3
IODOMETHANE	UG/KG	ND	5
METHYLENE CHLORIDE	UG/KG	ND	3
4-METHYL-2-PENTANONE	UG/KG	ND	3
STYRENE	UG/KG	ND	2
1,1,2,2-TETRACHLOROETHANE	UG/KG	ND	2
TETRACHLOROETHENE	UG/KG	ND	1
TOLUENE	UG/KG	ND	5
1,1,1-TRICHLOROETHANE	UG/KG	ND	5
1,1,2-TRICHLOROETHANE	UG/KG	ND	2
TRICHLOROETHENE	UG/KG	ND	1
TRICHLOROFLUOROMETHANE	UG/KG	ND	1
1,2,3 TRICHLOROPROPANE	UG/KG	ND	5
VINYL ACETATE	UG/KG	ND	2
VINYL CHLORIDE	UG/KG	ND	1
TOTAL XYLENES	UG/KG	ND	2
BROMOFLUOROBENZENE	%REC/SURR	97	74-121
1,2-DICHLOROETHANE-D4	%REC/SURR	99	70-121

ANALYTICAL TECHNOLOGIES, INC. 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

"QC Report"

Title: Low Soil Blank
Batch: NAS026
Analysis Method: 8240 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: N/A

Parameters:	Units:	Results:	Reporting Limits:
TOLUENE-D8	%REC/SURR	97	81-117
ANALYST	INITIALS	DWB	

Comments:

ANALYTICAL TECHNOLOGIES, INC. 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

"QC Report"

Title: Low Soil Blank
Batch: NAS026
Analysis Method: 8240 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: N/A

Blank Id: B Date Analyzed: 15-MAR-94 Date Extracted: N/A

Parameters:	Units:	Results:	Reporting Limits:
ACETONE	UG/KG	ND	10
ACROLEIN	UG/KG	ND	100
ACRYLONITRILE	UG/KG	ND	100
BENZENE	UG/KG	ND	1
BROMODICHLOROMETHANE	UG/KG	ND	1
BROMOFORM	UG/KG	ND	2
BROMOMETHANE	UG/KG	ND	1
2-BUTANONE (MEK)	UG/KG	ND	3
CARBON DISULFIDE	UG/KG	ND	1
CARBON TETRACHLORIDE	UG/KG	ND	2
CHLOROBENZENE	UG/KG	ND	1
CHLOROETHANE	UG/KG	ND	1
2-CHLOROETHYLVINYL ETHER	UG/KG	ND	5
CHLOROFORM	UG/KG	ND	2
CHLOROMETHANE	UG/KG	ND	2
CHLORODIBROMOMETHANE	UG/KG	ND	5
DIBROMOMETHANE	UG/KG	ND	5
DICHLORODIFLUOROMETHANE	UG/KG	ND	5
1,1-DICHLOROETHANE	UG/KG	ND	1
1,2-DICHLOROETHANE	UG/KG	ND	2
1,1-DICHLOROETHENE	UG/KG	ND	1
TOTAL 1,2-DICHLOROETHYLENE	UG/KG	ND	5
1,2-DICHLOROPROPANE	UG/KG	ND	2
CIS-1,3-DICHLOROPROPENE	UG/KG	ND	1
TRANS-1,3-DICHLOROPROPENE	UG/KG	ND	1
1,4-DICHLORO-2-BUTENE	UG/KG	ND	5
ETHYL BENZENE	UG/KG	ND	1
ETHYL METHACRYLATE	UG/KG	ND	5
2-HEXANONE	UG/KG	ND	3
IODOMETHANE	UG/KG	ND	5
METHYLENE CHLORIDE	UG/KG	ND	3
4-METHYL-2-PENTANONE	UG/KG	ND	3
STYRENE	UG/KG	ND	2
1,1,2,2-TETRACHLOROETHANE	UG/KG	ND	2
TETRACHLOROETHENE	UG/KG	ND	1
TOLUENE	UG/KG	ND	5
1,1,1-TRICHLOROETHANE	UG/KG	ND	5
1,1,2-TRICHLOROETHANE	UG/KG	ND	2
TRICHLOROETHENE	UG/KG	ND	1
TRICHLOROFLUOROMETHANE	UG/KG	ND	1
1,2,3 TRICHLOROPROPANE	UG/KG	ND	5
VINYL ACETATE	UG/KG	ND	2
VINYL CHLORIDE	UG/KG	ND	1
TOTAL XYLENES	UG/KG	ND	2
BROMOFLUOROBENZENE	%REC/SURR	106	74-121
1,2-DICHLOROETHANE-D4	%REC/SURR	96	70-121

ANALYTICAL TECHNOLOGIES, INC. 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

"QC Report"

Title: Low Soil Blank
Batch: NAS026
Analysis Method: 8240 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: N/A

Parameters:	Units:	Results:	Reporting Limits:
TOLUENE-D8	%REC/SURR	100	81-117
ANALYST	INITIALS	DWB	

Comments:

ANALYTICAL TECHNOLOGIES, INC. 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

"QC Report"

Title: High Soil Blank
Batch: VIS031
Analysis Method: 8240 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: N/A

Blank Id: B Date Analyzed: 11-MAR-94 Date Extracted: 10-MAR-94

Parameters:	Units:	Results:	Reporting Limits:
ACETONE	UG/KG	ND	100
ACROLEIN	UG/KG	ND	1000
ACRYLONITRILE	UG/KG	ND	1000
BENZENE	UG/KG	ND	10
BROMODICHLOROMETHANE	UG/KG	ND	10
BROMOFORM	UG/KG	ND	20
BROMOMETHANE	UG/KG	ND	10
2-BUTANONE (MEK)	UG/KG	ND	30
CARBON DISULFIDE	UG/KG	ND	10
CARBON TETRACHLORIDE	UG/KG	ND	20
CHLOROBENZENE	UG/KG	ND	10
CHLOROETHANE	UG/KG	ND	10
2-CHLOROETHYLVINYL ETHER	UG/KG	ND	50
CHLOROFORM	UG/KG	ND	20
CHLOROMETHANE	UG/KG	ND	20
CHLORODIBROMOMETHANE	UG/KG	ND	50
DIBROMOMETHANE	UG/KG	ND	50
DICHLORODIFLUOROMETHANE	UG/KG	ND	50
1,1-DICHLOROETHANE	UG/KG	ND	10
1,2-DICHLOROETHANE	UG/KG	ND	20
1,1-DICHLOROETHENE	UG/KG	ND	10
TOTAL 1,2-DICHLOROETHYLENE	UG/KG	ND	50
1,2-DICHLOROPROPANE	UG/KG	ND	20
CIS-1,3-DICHLOROPROPENE	UG/KG	ND	10
TRANS-1,3-DICHLOROPROPENE	UG/KG	ND	10
1,4-DICHLORO-2-BUTENE	UG/KG	ND	50
ETHANOL	UG/KG	ND	500
ETHYL BENZENE	UG/KG	ND	10
ETHYL METHACRYLATE	UG/KG	ND	50
2-HEXANONE	UG/KG	ND	30
IODOMETHANE	UG/KG	ND	50
METHYLENE CHLORIDE	UG/KG	ND	30
4-METHYL-2-PENTANONE	UG/KG	ND	30
STYRENE	UG/KG	ND	20
1,1,2,2-TETRACHLOROETHANE	UG/KG	ND	20
TETRACHLOROETHENE	UG/KG	ND	10
TOLUENE	UG/KG	ND	50
1,1,1-TRICHLOROETHANE	UG/KG	ND	50
1,1,2-TRICHLOROETHANE	UG/KG	ND	20
TRICHLOROETHENE	UG/KG	ND	10
TRICHLOROFLUOROMETHANE	UG/KG	ND	10
1,2,3 TRICHLOROPROPANE	UG/KG	ND	50
VINYL ACETATE	UG/KG	ND	20
VINYL CHLORIDE	UG/KG	ND	10
TOTAL XYLENES	UG/KG	ND	20
BROMOFLUOROBENZENE	%REC/SURR	95	74-121

ANALYTICAL TECHNOLOGIES, INC. 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

"QC Report"

Title: High Soil Blank
Batch: VIS031
Analysis Method: 8240 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: N/A

Parameters:	Units:	Results:	Reporting Limits:
1,2-DICHLOROETHANE-D4	%REC/SURR	105	70-121
TOLUENE-D8	%REC/SURR	97	81-117
ANALYST	INITIALS	LP	

Comments:

ANALYTICAL TECHNOLOGIES, INC. 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

"QC Report"

Title: Low Soil Blank
Batch: NAS026
Analysis Method: 8240 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: N/A

Blank Id: C Date Analyzed: 15-MAR-94 Date Extracted: N/A

Parameters:	Units:	Results:	Reporting Limits:
ACETONE	UG/KG	ND	10
ACROLEIN	UG/KG	ND	100
ACRYLONITRILE	UG/KG	ND	100
BENZENE	UG/KG	ND	1
BROMODICHLOROMETHANE	UG/KG	ND	1
BROMOFORM	UG/KG	ND	2
BROMOMETHANE	UG/KG	ND	1
2-BUTANONE (MEK)	UG/KG	ND	3
CARBON DISULFIDE	UG/KG	ND	1
CARBON TETRACHLORIDE	UG/KG	ND	2
CHLOROBENZENE	UG/KG	ND	1
CHLOROETHANE	UG/KG	ND	1
2-CHLOROETHYLVINYL ETHER	UG/KG	ND	5
CHLOROFORM	UG/KG	ND	2
CHLOROMETHANE	UG/KG	ND	2
CHLORODIBROMOMETHANE	UG/KG	ND	5
DIBROMOMETHANE	UG/KG	ND	5
DICHLORODIFLUOROMETHANE	UG/KG	ND	5
1,1-DICHLOROETHANE	UG/KG	ND	1
1,2-DICHLOROETHANE	UG/KG	ND	2
1,1-DICHLOROETHENE	UG/KG	ND	1
TOTAL 1,2-DICHLOROETHYLENE	UG/KG	ND	5
1,2-DICHLOROPROPANE	UG/KG	ND	2
CIS-1,3-DICHLOROPROPENE	UG/KG	ND	1
TRANS-1,3-DICHLOROPROPENE	UG/KG	ND	1
1,4-DICHLORO-2-BUTENE	UG/KG	ND	5
ETHYL BENZENE	UG/KG	ND	1
ETHYL METHACRYLATE	UG/KG	ND	5
2-HEXANONE	UG/KG	ND	3
IODOMETHANE	UG/KG	ND	5
METHYLENE CHLORIDE	UG/KG	ND	3
4-METHYL-2-PENTANONE	UG/KG	ND	3
STYRENE	UG/KG	ND	2
1,1,2,2-TETRACHLOROETHANE	UG/KG	ND	2
TETRACHLOROETHENE	UG/KG	ND	1
TOLUENE	UG/KG	ND	5
1,1,1-TRICHLOROETHANE	UG/KG	ND	5
1,1,2-TRICHLOROETHANE	UG/KG	ND	2
TRICHLOROETHENE	UG/KG	ND	1
TRICHLOROFLUOROMETHANE	UG/KG	ND	1
1,2,3 TRICHLOROPROPANE	UG/KG	ND	5
VINYL ACETATE	UG/KG	ND	2
VINYL CHLORIDE	UG/KG	ND	1
TOTAL XYLENES	UG/KG	ND	2
BROMOFLUOROBENZENE	%REC/SURR	106	74-121
1,2-DICHLOROETHANE-D4	%REC/SURR	91	70-121

ANALYTICAL TECHNOLOGIES, INC. 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

"QC Report"

Title: Low Soil Blank
Batch: NAS026
Analysis Method: 8240 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: N/A

Parameters:	Units:	Results:	Reporting Limits:
TOLUENE-D8	%REC/SURR	99	81-117
ANALYST	INITIALS	DWB	

Comments:

ANALYTICAL TECHNOLOGIES, INC. 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

"QC Report"

Title: Low Soil Reagent
Batch: NAS026
Analysis Method: 8240 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: N/A

RS Date Analyzed: 14-MAR-94
RSD Date Analyzed: 14-MAR-94

RS Date Extracted: N/A
RSD Date Extracted: N/A

Parameters:	Spike Added	Sample Conc	RS Conc	RS %Rec	RSD Conc	RSD %Rec	RPD	RPD Lmts	Rec Lmts
1,1-DICHLOROETHENE	50	<1	47	94	47	94	0	22	70-141
TRICHLOROETHENE	50	<1	45	90	47	94	4	24	71-157
BENZENE	50	<1	52	104	53	106	2	21	74-128
TOLUENE	50	<5	49	98	52	104	6	21	80-127
CHLOROBENZENE	50	<1	50	100	53	106	6	21	78-127
Surrogates:									
1,2-DICHLOROETHANE-D4				97		104			70-121
TOLUENE-D8				97		98			81-117
BROMOFLUOROBENZENE				87		98			74-121

Comments:

Notes:
N/S = NOT SUBMITTED N/A = NOT APPLICABLE D = DILUTED OUT
UG/KG = PARTS PER BILLION. < = LESS THAN REPORTING LIMIT.
* = VALUES OUTSIDE OF QUALITY CONTROL LIMITS.
SOURCES FOR CONTROL LIMITS ARE INTERNAL LABORATORY QUALITY ASSURANCE PROGRAM AND REFERENCED METHOD.

ANALYTICAL TECHNOLOGIES, INC. 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

"QC Report"

Title: High Soil Reagent
Batch: VIS031
Analysis Method: 8240 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: N/A

RS Date Analyzed: 11-MAR-94
RSD Date Analyzed: 11-MAR-94

RS Date Extracted: 10-MAR-94
RSD Date Extracted: 10-MAR-94

Parameters:	Spike Added	Sample Conc	RS Conc	RS %Rec	RSD Conc	RSD %Rec	RPD	RPD Lmts	Rec Lmts
1,1-DICHLOROETHENE	500	<10	370	74	360	72	3	22	70-141
TRICHLOROETHENE	500	<10	380	76	380	76	0	24	71-157
BENZENE	500	<10	380	76	380	76	0	21	74-128
TOLUENE	500	<50	490	98	480	96	2	21	80-127
CHLOROBENZENE	500	<10	470	94	460	92	2	21	78-127
Surrogates:									
1,2-DICHLOROETHANE-D4				97		93			70-121
TOLUENE-D8				104		102			81-117
BROMOFLUOROBENZENE				100		95			74-121

Comments:

Notes:
N/S = NOT SUBMITTED N/A = NOT APPLICABLE D = DILUTED OUT
UG/KG = PARTS PER BILLION. < = LESS THAN REPORTING LIMIT.
* = VALUES OUTSIDE OF QUALITY CONTROL LIMITS.
SOURCES FOR CONTROL LIMITS ARE INTERNAL LABORATORY QUALITY ASSURANCE PROGRAM AND REFERENCED METHOD.

ANALYTICAL TECHNOLOGIES, INC. 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

"QC Report"

Title: Low Soil Matrix
Batch: NAS026
Analysis Method: 8240 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: N/A

Dry Weight %: 80
Sample Spiked: 403232-2

MS Date Analyzed: 15-MAR-94
MSD Date Analyzed: 15-MAR-94

MS Date Extracted: N/A
MSD Date Extracted: N/A

Parameters:	Spike Added	Sample Conc	MS Conc	MS %Rec	MSD Conc	MSD %Rec	RPD	RPD Lmts	Rec Lmts
1,1-DICHLOROETHENE	63	<1.3	63	100	61	97	3	22	70-141
TRICHLOROETHENE	63	8.8	66	91	66	91	0	24	71-157
BENZENE	63	<1.3	66	105	66	105	0	21	74-128
TOLUENE	63	<6.3	69	110	70	111	1	21	80-127
CHLOROBENZENE	63	<1.3	65	103	64	102	1	21	78-127
Surrogates:									
1,2-DICHLOROETHANE-D4				93		96			70-121
TOLUENE-D8				100		101			81-117
BROMOFLUOROBENZENE				100		100			74-121

Comments:

Notes:
N/S = NOT SUBMITTED N/A = NOT APPLICABLE D = DILUTED OUT
UG/KG = PARTS PER BILLION. < = LESS THAN REPORTING LIMIT.
* = VALUES OUTSIDE OF QUALITY CONTROL LIMITS.
SOURCES FOR CONTROL LIMITS ARE INTERNAL LABORATORY QUALITY ASSURANCE PROGRAM AND REFERENCED METHOD.

ANALYTICAL TECHNOLOGIES, INC. 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

"QC Report"

Title: Low Soil Matrix
Batch: VIS031
Analysis Method: 8240 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: N/A

Dry Weight %: MS Date Analyzed: MS Date Extracted:
Sample Spiked: MSD Date Analyzed: MSD Date Extracted:

Parameters:	Spike Added	Sample Conc	MS Conc	MS %Rec	MSD Conc	MSD %Rec	RPD	RPD Lmts	Rec Lmts
1,1-DICHLOROETHENE								22	70-141
TRICHLOROETHENE								24	71-157
BENZENE								21	74-128
TOLUENE								21	80-127
CHLOROBENZENE								21	78-127
Surrogates:									
1,2-DICHLOROETHANE-D4									70-121
TOLUENE-D8									81-117
BROMOFLUOROBENZENE									74-121

Comments:
* NO MATRIX SPIKE/MATRIX SPIKE DUPLICATE AVALIABLE DUE TO HIGH DILUTION.

Notes:
N/S = NOT SUBMITTED N/A = NOT APPLICABLE D = DILUTED OUT
UG/KG = PARTS PER BILLION. < = LESS THAN REPORTING LIMIT.
* = VALUES OUTSIDE OF QUALITY CONTROL LIMITS.
SOURCES FOR CONTROL LIMITS ARE INTERNAL LABORATORY QUALITY ASSURANCE PROGRAM AND REFERENCED METHOD.

Common notation for Organic reporting

N/S = NOT SUBMITTED
N/A = NOT APPLICABLE
D = DILUTED OUT
UG/L = PARTS PER BILLION.
UG/KG = PARTS PER BILLION.
MG/KG = PARTS PER MILLION.
MG/L = PARTS PER MILLION.
MG/M3 = MILLIGRAMS PER CUBIC METER.
NG = NANOGRAMS.
UG = MICROGRAMS.
PPBV = PARTS PER BILLION/VOLUME.
< = LESS THAN DETECTION LIMIT.
* = VALUES OUTSIDE OF QUALITY CONTROL LIMITS
J = THE REPORTED VALUE IS EITHER LESS THAN THE REPORTING LIMIT BUT GREATER THAN ZERO, OR QUANTITATED AS A TIC; THEREFORE, IT IS ESTIMATED.
JJ = REPORTED VALUE IS ESTIMATED DUE TO MATRIX INTERFERENCE.
ND = NOT DETECTED ABOVE REPORT LIMIT.
RPT LIMIT = REPORTING LIMITS BASED ON METHOD DETECTION LIMIT STUDIES.
RPD = RELATIVE PERCENT DIFFERENCE (OR DEVIATION)

SOURCES FOR CONTROL LIMITS ARE INTERNAL LABORATORY QUALITY ASSURANCE PROGRAM AND REFERENCED METHOD.

ORGANIC SOILS ARE REPORTED ON A DRY WEIGHT BASIS.

DUE TO THE NATURE OF THE SAMPLE MATRIX, MATRIX SPIKE/MATRIX SPIKE DUPLICATE ANALYSIS CANNOT BE PERFORMED FOR AIR ANALYSIS.

LP = LEVERNE PETERSON	RW = RITA WINGO
DWB = DAVID BOWERS	LD = LARRY DILMORE
DB = DENNIS BESON	DC = DAVID CELESTIAL
LL = LANCE LARSON	RB = RAFAEL BARRAZA

PROJECT SAMPLE INSPECTION FORM

Accession #: 403232 Date received: 08-MAR-94

1.	Was there a Chain of Custody?	YES	NO	7.	Are samples correctly preserved for analysis required?	YES	NO
2.	Was Chain of Custody properly relinquished?	YES	NO	8.	Is there sufficient volume for analysis requested?	YES	NO
3.	Were samples received cold? (At 4° or on ice)	YES	NO	9.	Were samples received within holding time?	YES	NO
4.	Were all containers properly labeled and identified?	YES	NO	10.	Was there headspace greater than ¼" in diameter in volatile bottles?	YES	NO	N/A
5.	Were samples received in proper containers for analysis requested?	YES	NO	11.	If sent, were matrix spike bottles returned?	YES	NO	N/A
6.	Were all sample containers received intact?	YES	NO				

Tracking Number: 5384553204 Shipped By: FED EX

Cooler Number: N/S

Out of Control Events and Inspection Comments:

COC says client is WWC Baton Rouge, A. Eversull of WWC Jackson is project manager, report will go there per Andy Eversull, 3/9/94, PM. INFORMATION ON C.O.C. SUPPLIED BY PM.

Inspected By: AG Date: 3/8/94 Logged By: AG Date: 3/8/94

WOODWARD-CLYDE CONSULTANTS

CHAIN-OF-CUSTODY RECORD

403232 1 of 1

Sample No.	Matrix	YR:94 DATE MM/DD	Time	Sample Depth From	Sample Depth To	Station Location	Total No. Containers	VOC Method 8240					
ERS1-SB-D02-G-78	So	3/5	1030	7	8	ERS	1	✓					1
ERS1-SB-D03-G-01	So	3/5	1035	0	1	ERS	1	✓					2
ERS1-SB-E01-G-78	So	3/5	1345	7	8	ERS	1	✓					3
ERS1-SB-E02-G-01	So	3/5	1350	0	1	ERS	1	✓					4
ERS1-SB-E03-G-01	So	3/5	1600	0	1	ERS	1	✓					5
ERS1-SB-C01-GS-78	So	3/5	1605	7	8	ERS	1	✓					6
ERS1-SB-C02-GS-67	So	3/6	1035	6	7	ERS	1	✓					7
ERS1-SB-C03-G-01	So	3/6	1040	0	1	ERS	1	✓					8
ERS1-SB-C03-D-01	So	3/6	1040	0	1	ERS	1	✓					9
ERS1-RS-004-G	Li	3/6	1115	–	–	ERS	2	✓					10
ERS1-RS-003-G	Li	3/5	1625	–	–	ERS	2	✓					11

SAMPLE COLLECTION

PROJECT NO. AND NAME: 93B477 ENTERPRISE RECOVERY SYSTEMS
LOCATION OF SAMPLE: BYHALIA, MISSISSIPPI
TEAM LEADER: S. KRUL TELEPHONE: (504) 751-1873
COMPANY NAME: WOODWARD-CLYDE CONSULTANTS (WCC)
ADDRESS: 2822 ONEAL LANE, BATON ROUGE, LOUISIANA
WITNESS: Anna Saucier COMPANY NAME: WCC

FIELD INFORMATION

TYPES OF SAMPLES: (MATRIX) LIQUID (LI) WIPE (WI) FISH (FI) SEDIMENT (SE) SLUDGE (SL) OTHER (SPECIFY) SOIL (SO)
FIELD NOTES: Samples stored + shipped on ice
TRANSPORTER: Fed Ex AIRBILL/INVOICE: 5384553204 DESTINATION: ATI Lab. Pensacola, FL

SAMPLE TRANSFER (Original must be retained with sample at all times)

		RELINQUISHED BY	DATE/TIME	RECEIVED BY	DATE/TIME
1	NAME:	[illegible]	3/7/94	[illegible]	3/8/94 1223
	COMPANY:	WCC	1200	ATI-Pensacola	
2	NAME:				
	COMPANY:				
3	NAME:				
	COMPANY:				

TERMINATION OF CHAIN-OF-CUSTODY

AUTHORIZED BY: _____ DATE: _____ TIME: _____
COMPANY NAME: _____
SAMPLE DISPOSITION: STORAGE _____ DISPOSAL _____ OTHER _____

APPENDIX C-7

SEMI-VOLATILE AND RCRA TOTAL METAL SOIL SAMPLE RESULTS

AnalyticalTechnologies, Inc. 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

SIGNATURE PAGE

Reviewed by: _____
ATI Project Manager

Client:	WOODWARD-CLYDE CONSULTANTS JACKSON, MISSISSIPPI
Project Name:	ERS-BAHAYLIA
Project Number:	93B477 TASK P
Project Location:	N/S
Accession Number:	411153
Project Manager:	DEJONETTE KING, ANDY EVERSULL
Sampled By:	JIMMY RAYBURN

ANALYTICAL TECHNOLOGIES, INC. 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

Analysis Report

Analysis: RCRA METALS

Accession:	411153
Client:	WOODWARD-CLYDE CONSULTANTS
Project Number:	93B477 TASK P
Project Name:	ERS-BAHAYLIA
Project Location:	N/S
Department:	METALS

ANALYTICAL TECHNOLOGIES, INC. 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

"FINAL REPORT FORMAT - MULTIPLE"

Accession: 411153
Client: WOODWARD-CLYDE CONSULTANTS
Project Number: 93B477 TASK P
Project Name: ERS-BAHAYLIA
Project Location: N/S
Test: RCRA METALS
QcLevel: I

Parameter:	Unit:	Result:	R.L:	Batch:	Q:
Client ID: ERS1-SS-A16-GS	Lab ID:001				
SILVER (6010)	MG/KG	ND	1	A6S237	
ARSENIC (6010)	MG/KG	ND	5	R6S237	
BARIUM (6010)	MG/KG	96	1	B6S237	
CADMIUM (6010)	MG/KG	0.5	0.5	C6S237	
CHROMIUM (6010)	MG/KG	24	1	H6S237	
MERCURY (7471)	MG/KG	ND	0.1	M4S108	
LEAD (6010)	MG/KG	32	5	P6S237	
SELENIUM (6010)	MG/KG	ND	10	S6S237	
Comments:					
Client ID: ERS1-SS-C16-GS	Lab ID:002				
SILVER (6010)	MG/KG	ND	1	A6S237	
ARSENIC (6010)	MG/KG	ND	5	R6S237	
BARIUM (6010)	MG/KG	87	1	B6S237	
CADMIUM (6010)	MG/KG	ND	0.5	C6S237	
CHROMIUM (6010)	MG/KG	20	1	H6S237	
MERCURY (7471)	MG/KG	ND	0.1	M4S108	
LEAD (6010)	MG/KG	24	5	P6S237	
SELENIUM (6010)	MG/KG	ND	10	S6S237	
Comments:					
Client ID: ERS1-SS-C17-GS	Lab ID:003				
SILVER (6010)	MG/KG	1	1	A6S237	
ARSENIC (6010)	MG/KG	6	5	R6S237	
BARIUM (6010)	MG/KG	65	1	B6S237	
CADMIUM (6010)	MG/KG	ND	0.5	C6S237	
CHROMIUM (6010)	MG/KG	17	1	H6S237	
MERCURY (7471)	MG/KG	ND	0.1	M4S108	
LEAD (6010)	MG/KG	18	5	P6S237	
SELENIUM (6010)	MG/KG	ND	10	S6S237	
Comments:					
Client ID: ERS1-SS-C18-GS	Lab ID:004				
SILVER (6010)	MG/KG	ND	1	A6S237	
ARSENIC (6010)	MG/KG	7	5	R6S237	
BARIUM (6010)	MG/KG	70	1	B6S237	
CADMIUM (6010)	MG/KG	ND	0.5	C6S237	
CHROMIUM (6010)	MG/KG	15	1	H6S237	
MERCURY (7471)	MG/KG	ND	0.1	M4S108	
LEAD (6010)	MG/KG	17	5	P6S237	
SELENIUM (6010)	MG/KG	ND	10	S6S237	
Comments:					

ANALYTICAL TECHNOLOGIES, INC. 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

"FINAL REPORT FORMAT - MULTIPLE"

Accession: 411153
Client: WOODWARD-CLYDE CONSULTANTS
Project Number: 93B477 TASK P
Project Name: ERS-BAHAYLIA
Project Location: N/S
Test: RCRA METALS
QcLevel: I

Parameter:	Unit:	Result:	R.L:	Batch:	Q:
Client ID: ERS1-SS-F1-GS	Lab ID:005				
SILVER (6010)	MG/KG	ND	1	A6S237	
ARSENIC (6010)	MG/KG	ND	5	R6S237	
BARIUM (6010)	MG/KG	56	1	B6S237	
CADMIUM (6010)	MG/KG	ND	0.5	C6S237	
CHROMIUM (6010)	MG/KG	10	1	H6S237	
MERCURY (7471)	MG/KG	ND	0.1	M4S108	
LEAD (6010)	MG/KG	11	5	P6S237	
SELENIUM (6010)	MG/KG	ND	10	S6S237	

Comments:

ANALYTICAL TECHNOLOGIES, INC. 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

"FINAL REPORT FORMAT - MULTIPLE"

Accession: 411153
Client: WOODWARD-CLYDE CONSULTANTS
Project Number: 93B477 TASK P
Project Name: ERS-BAHAYLIA
Project Location: N/S
Test: RCRA METALS

Client Id:	Lab Id:	Matrix:	Date/Time Sampled:	Date Received:
ERS1-SS-A16-GS	001	SOIL	03-NOV-94 0910	04-NOV-94
ERS1-SS-C16-GS	002	SOIL	03-NOV-94 1010	04-NOV-94
ERS1-SS-C17-GS	003	SOIL	03-NOV-94 0945	04-NOV-94
ERS1-SS-C18-GS	004	SOIL	03-NOV-94 0920	04-NOV-94
ERS1-SS-F1-GS	005	SOIL	03-NOV-94 1025	04-NOV-94

ANALYTICAL TECHNOLOGIES, INC. 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

"Method Report Summary"

Accession Number: 411153
Client: WOODWARD-CLYDE CONSULTANTS
Project Number: 93B477 TASK P
Project Name: ERS-BAHAYLIA
Project Location: N/S
Test: RCRA METALS

Client Sample Id:	Parameter:	Unit:	Result:
ERS1-SS-A16-GS	BARIUM (6010)	MG/KG	96
	CADMIUM (6010)	MG/KG	0.5
	CHROMIUM (6010)	MG/KG	24
	LEAD (6010)	MG/KG	32
ERS1-SS-C16-GS	BARIUM (6010)	MG/KG	87
	CHROMIUM (6010)	MG/KG	20
	LEAD (6010)	MG/KG	24
ERS1-SS-C17-GS	SILVER (6010)	MG/KG	1
	ARSENIC (6010)	MG/KG	6
	BARIUM (6010)	MG/KG	65
	CHROMIUM (6010)	MG/KG	17
	LEAD (6010)	MG/KG	18
ERS1-SS-C18-GS	ARSENIC (6010)	MG/KG	7
	BARIUM (6010)	MG/KG	70
	CHROMIUM (6010)	MG/KG	15
	LEAD (6010)	MG/KG	17
ERS1-SS-F1-GS	BARIUM (6010)	MG/KG	56
	CHROMIUM (6010)	MG/KG	10
	LEAD (6010)	MG/KG	11

ANALYTICAL TECHNOLOGIES, INC. 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

Analysis Report

Analysis: ACID & BASE EXTRACTABLES (8270)

Accession:	411153
Client:	WOODWARD-CLYDE CONSULTANTS
Project Number:	93B477 TASK P
Project Name:	ERS-BAHAYLIA
Project Location:	N/S
Department:	ORGANIC/MS

ANALYTICAL TECHNOLOGIES, INC. 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

"FINAL REPORT FORMAT - SINGLE"

Accession: 411153
Client: WOODWARD-CLYDE CONSULTANTS
Project Number: 93B477 TASK P
Project Name: ERS-BAHAYLIA
Project Location: N/S
Test: ACID & BASE EXTRACTABLES (8270)
Analysis Method: 8270 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: 3550 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Matrix: SOIL
QC Level: I

Lab Id: 001
Client Sample Id: ERS1-SS-A16-GS
Sample Date/Time: 03-NOV-94 0910
Received Date: 04-NOV-94

Batch: ALS215
Blank: B
Dry Weight %: 82
Extraction Date: 07-NOV-94
Analysis Date: 14-NOV-94

Parameter:	Units:	Results:	Rpt Lmts:	Q:
BENZOIC ACID	UG/KG	ND	2000	
4-CHLORO-3-METHYLPHENOL	UG/KG	ND	410	
2-CHLOROPHENOL	UG/KG	ND	410	
2,4-DICHLOROPHENOL	UG/KG	ND	410	
2,6-DICHLOROPHENOL	UG/KG	ND	410	
2,4-DIMETHYLPHENOL	UG/KG	ND	410	
4,6-DINITRO-2-METHYLPHENOL	UG/KG	ND	2000	
2,4-DINITROPHENOL	UG/KG	ND	2000	
2-METHYLPHENOL	UG/KG	ND	410	
4-METHYLPHENOL	UG/KG	ND	410	
2-NITROPHENOL	UG/KG	ND	410	
4-NITROPHENOL	UG/KG	ND	2000	
PENTACHLOROPHENOL	UG/KG	ND	2000	
PHENOL	UG/KG	ND	410	
2,3,4,6-TETRACHLOROPHENOL	UG/KG	ND	410	
2,4,5-TRICHLOROPHENOL	UG/KG	ND	2000	
2,4,6-TRICHLOROPHENOL	UG/KG	ND	410	
ACENAPHTHENE	UG/KG	ND	410	
ACENAPHTHYLENE	UG/KG	ND	410	
ACETOPHENONE	UG/KG	ND	410	
4-AMINOBIPHENYL	UG/KG	ND	410	
ANILINE	UG/KG	ND	410	
ANTHRACENE	UG/KG	ND	410	
BENZIDINE	UG/KG	ND	410	
BENZO (A) ANTHRACENE	UG/KG	ND	410	
BENZO (A) PYRENE	UG/KG	ND	410	
BENZO (B) FLUORANTHENE	UG/KG	ND	410	
BENZO (G,H,I) PERYLENE	UG/KG	ND	410	
BENZO (K) FLUORANTHENE	UG/KG	ND	410	
BENZYL ALCOHOL	UG/KG	ND	410	
BIS(2-CHLOROETHOXY)METHANE	UG/KG	ND	410	
BIS(2-CHLOROETHYL)ETHER	UG/KG	ND	410	
BIS(2-CHLOROISOPROPYL)ETHER	UG/KG	ND	410	
BIS(2-ETHYLHEXYL)PHTHALATE	UG/KG	1700	410	
4-BROMOPHENYL PHENYL ETHER	UG/KG	ND	410	
BUTYLBENZYL PHTHALATE	UG/KG	ND	410	
4-CHLOROANILINE	UG/KG	ND	410	
1-CHLORONAPHTHALENE	UG/KG	ND	410	
2-CHLORONAPHTHALENE	UG/KG	ND	410	
4-CHLOROPHENYL PHENYL ETHER	UG/KG	ND	410	

"FINAL REPORT FORMAT - SINGLE"

Accession: 411153
Client: WOODWARD-CLYDE CONSULTANTS
Project Number: 93B477 TASK P
Project Name: ERS-BAHAYLIA
Project Location: N/S
Test: ACID & BASE EXTRACTABLES (8270)
Analysis Method: 8270 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: 3550 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Matrix: SOIL
QC Level: I

Lab Id: 001 Sample Date/Time: 03-NOV-94 0910
Client Sample Id: ERS1-SS-A16-GS Received Date: 04-NOV-94

Parameter:	Units:	Results:	Rpt Lmts:	Q:
CHRYSENE	UG/KG	ND	410	
DIBENZ(A,J)ACRIDINE	UG/KG	ND	410	
DIBENZO (A,H) ANTHRACENE	UG/KG	ND	410	
DIBENZOFURAN	UG/KG	ND	410	
1,2-DICHLOROBENZENE	UG/KG	ND	410	
1,3-DICHLOROBENZENE	UG/KG	ND	410	
1,4-DICHLOROBENZENE	UG/KG	ND	410	
3,3'-DICHLOROBENZIDINE	UG/KG	ND	2000	
DIETHYLPHTHALATE	UG/KG	ND	410	
P-DIMETHYLAMINOAZOBENZENE	UG/KG	ND	410	
7,12-DIMETHYLBENZ(A)ANTHRACENE	UG/KG	ND	410	
A-,A-DIMETHYLPHENETHYLAMINE	UG/KG	ND	410	
DIMETHYLPHTHALATE	UG/KG	ND	410	
DI-N-BUTYLPHTHALATE	UG/KG	2300	410	
2,4-DINITROTOLUENE	UG/KG	ND	410	
2,6-DINITROTOLUENE	UG/KG	ND	410	
DI-N-OCTYLPHTHALATE	UG/KG	ND	410	
DIPHENYLAMINE	UG/KG	ND	410	
1,2-DIPHENYLHYDRAZINE	UG/KG	ND	410	
FLUORANTHENE	UG/KG	ND	410	
FLUORENE	UG/KG	ND	410	
HEXACHLOROBENZENE	UG/KG	ND	410	
HEXACHLOROBUTADIENE	UG/KG	ND	410	
HEXACHLOROCYCLOPENTADIENE	UG/KG	ND	410	
HEXACHLOROETHANE	UG/KG	ND	410	
INDENO (1,2,3-CD) PYRENE	UG/KG	ND	410	
ISOPHORONE	UG/KG	ND	410	
3-METHYLCHOLANTHRENE	UG/KG	ND	410	
2-METHYLNAPHTHALENE	UG/KG	ND	410	
NAPHTHALENE	UG/KG	ND	410	
1-NAPHTHYLAMINE	UG/KG	ND	410	
2-NAPHTHYLAMINE	UG/KG	ND	410	
2-NITROANILINE	UG/KG	ND	410	
3-NITROANILINE	UG/KG	ND	410	
4-NITROANILINE	UG/KG	ND	410	
NITROBENZENE	UG/KG	ND	410	
N-NITROSODIMETHYLAMINE	UG/KG	ND	410	
N-NITROSODI-N-BUTYLAMINE	UG/KG	ND	410	
N-NITROSODIPHENYLAMINE	UG/KG	ND	410	
N-NITROSO-DI-N-PROPYLAMINE	UG/KG	ND	410	
N-NITROSOPIPERIDINE	UG/KG	ND	410	
PENTACHLOROBENZENE	UG/KG	ND	410	
PENTACHLORONITROBENZENE (PCNB)	UG/KG	ND	410	
PHENACETIN	UG/KG	ND	410	
PHENANTHRENE	UG/KG	ND	410	

"FINAL REPORT FORMAT - SINGLE"

Accession: 411153
Client: WOODWARD-CLYDE CONSULTANTS
Project Number: 93B477 TASK P
Project Name: ERS-BAHAYLIA
Project Location: N/S
Test: ACID & BASE EXTRACTABLES (8270)
Analysis Method: 8270 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: 3550 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Matrix: SOIL
QC Level: I

Lab Id: 001
Client Sample Id: ERS1-SS-A16-GS
Sample Date/Time: 03-NOV-94 0910
Received Date: 04-NOV-94

Parameter:	Units:	Results:	Rpt Lmts:	Q:
2-PICOLINE	UG/KG	ND	410	
PRONAMIDE	UG/KG	ND	410	
PYRENE	UG/KG	ND	410	
1,2,4,5-TETRACHLOROBENZENE	UG/KG	ND	410	
1,2,4 TRICHLOROBENZENE	UG/KG	ND	410	
2-FLUOROPHENOL	%REC/SURR	57	25-121	
PHENOL-D6	%REC/SURR	58	24-113	
2,4,6-TRIBROMOPHENOL	%REC/SURR	69	19-122	
2-FLUOROBIPHENYL	%REC/SURR	82	30-109	
NITROBENZENE-D5	%REC/SURR	69	39-108	
TERPHENYL-D14	%REC/SURR	86	36-118	
ANALYST	INITIALS	RB		

Comments:

"FINAL REPORT FORMAT - SINGLE"

Accession: 411153
Client: WOODWARD-CLYDE CONSULTANTS
Project Number: 93B477 TASK P
Project Name: ERS-BAHAYLIA
Project Location: N/S
Test: ACID & BASE EXTRACTABLES (8270)
Analysis Method: 8270 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: 3550 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Matrix: SOIL
QC Level: I

Lab Id: 002
Client Sample Id: ERS1-SS-C16-GS
Sample Date/Time: 03-NOV-94 1010
Received Date: 04-NOV-94

Batch: ALS215
Blank: B
Dry Weight %: 86
Extraction Date: 07-NOV-94
Analysis Date: 14-NOV-94

Parameter:	Units:	Results:	Rpt Lmts:	Q:
BENZOIC ACID	UG/KG	ND	1900	
4-CHLORO-3-METHYLPHENOL	UG/KG	ND	390	
2-CHLOROPHENOL	UG/KG	ND	390	
2,4-DICHLOROPHENOL	UG/KG	ND	390	
2,6-DICHLOROPHENOL	UG/KG	ND	390	
2,4-DIMETHYLPHENOL	UG/KG	ND	390	
4,6-DINITRO-2-METHYLPHENOL	UG/KG	ND	1900	
2,4-DINITROPHENOL	UG/KG	ND	1900	
2-METHYLPHENOL	UG/KG	ND	390	
4-METHYLPHENOL	UG/KG	ND	390	
2-NITROPHENOL	UG/KG	ND	390	
4-NITROPHENOL	UG/KG	ND	1900	
PENTACHLOROPHENOL	UG/KG	ND	1900	
PHENOL	UG/KG	ND	390	
2,3,4,6-TETRACHLOROPHENOL	UG/KG	ND	390	
2,4,5-TRICHLOROPHENOL	UG/KG	ND	1900	
2,4,6-TRICHLOROPHENOL	UG/KG	ND	390	
ACENAPHTHENE	UG/KG	ND	390	
ACENAPHTHYLENE	UG/KG	ND	390	
ACETOPHENONE	UG/KG	ND	390	
4-AMINOBIPHENYL	UG/KG	ND	390	
ANILINE	UG/KG	ND	390	
ANTHRACENE	UG/KG	ND	390	
BENZIDINE	UG/KG	ND	390	
BENZO (A) ANTHRACENE	UG/KG	ND	390	
BENZO (A) PYRENE	UG/KG	ND	390	
BENZO (B) FLUORANTHENE	UG/KG	ND	390	
BENZO (G,H,I) PERYLENE	UG/KG	ND	390	
BENZO (K) FLUORANTHENE	UG/KG	ND	390	
BENZYL ALCOHOL	UG/KG	ND	390	
BIS(2-CHLOROETHOXY)METHANE	UG/KG	ND	390	
BIS(2-CHLOROETHYL)ETHER	UG/KG	ND	390	
BIS(2-CHLOROISOPROPYL)ETHER	UG/KG	ND	390	
BIS(2-ETHYLHEXYL)PHTHALATE	UG/KG	4400	390	
4-BROMOPHENYL PHENYL ETHER	UG/KG	ND	390	
BUTYLBENZYL PHTHALATE	UG/KG	ND	390	
4-CHLOROANILINE	UG/KG	ND	390	
1-CHLORONAPHTHALENE	UG/KG	ND	390	
2-CHLORONAPHTHALENE	UG/KG	ND	390	
4-CHLOROPHENYL PHENYL ETHER	UG/KG	ND	390	

"FINAL REPORT FORMAT - SINGLE"

Accession: 411153
Client: WOODWARD-CLYDE CONSULTANTS
Project Number: 93B477 TASK P
Project Name: ERS-BAHAYLIA
Project Location: N/S
Test: ACID & BASE EXTRACTABLES (8270)
Analysis Method: 8270 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: 3550 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Matrix: SOIL
QC Level: I

Lab Id: 002
Client Sample Id: ERS1-SS-C16-GS
Sample Date/Time: 03-NOV-94 1010
Received Date: 04-NOV-94

Parameter:	Units:	Results:	Rpt Lmts:	Q:
CHRYSENE	UG/KG	ND	390	
DIBENZ(A,J)ACRIDINE	UG/KG	ND	390	
DIBENZO (A,H) ANTHRACENE	UG/KG	ND	390	
DIBENZOFURAN	UG/KG	ND	390	
1,2-DICHLOROBENZENE	UG/KG	ND	390	
1,3-DICHLOROBENZENE	UG/KG	ND	390	
1,4-DICHLOROBENZENE	UG/KG	ND	390	
3,3'-DICHLOROBENZIDINE	UG/KG	ND	1900	
DIETHYLPHTHALATE	UG/KG	ND	390	
P-DIMETHYLAMINOAZOBENZENE	UG/KG	ND	390	
7,12-DIMETHYLBENZ(A)ANTHRACENE	UG/KG	ND	390	
A-,A-DIMETHYLPHENETHYLAMINE	UG/KG	ND	390	
DIMETHYLPHTHALATE	UG/KG	ND	390	
DI-N-BUTYLPHTHALATE	UG/KG	2000	390	
2,4-DINITROTOLUENE	UG/KG	ND	390	
2,6-DINITROTOLUENE	UG/KG	ND	390	
DI-N-OCTYLPHTHALATE	UG/KG	ND	390	
DIPHENYLAMINE	UG/KG	ND	390	
1,2-DIPHENYLHYDRAZINE	UG/KG	ND	390	
FLUORANTHENE	UG/KG	ND	390	
FLUORENE	UG/KG	ND	390	
HEXACHLOROBENZENE	UG/KG	ND	390	
HEXACHLOROBUTADIENE	UG/KG	ND	390	
HEXACHLOROCYCLOPENTADIENE	UG/KG	ND	390	
HEXACHLOROETHANE	UG/KG	ND	390	
INDENO (1,2,3-CD) PYRENE	UG/KG	ND	390	
ISOPHORONE	UG/KG	ND	390	
3-METHYLCHOLANTHRENE	UG/KG	ND	390	
2-METHYLNAPHTHALENE	UG/KG	ND	390	
NAPHTHALENE	UG/KG	ND	390	
1-NAPHTHYLAMINE	UG/KG	ND	390	
2-NAPHTHYLAMINE	UG/KG	ND	390	
2-NITROANILINE	UG/KG	ND	390	
3-NITROANILINE	UG/KG	ND	390	
4-NITROANILINE	UG/KG	ND	390	
NITROBENZENE	UG/KG	ND	390	
N-NITROSODIMETHYLAMINE	UG/KG	ND	390	
N-NITROSODI-N-BUTYLAMINE	UG/KG	ND	390	
N-NITROSODIPHENYLAMINE	UG/KG	ND	390	
N-NITROSO-DI-N-PROPYLAMINE	UG/KG	ND	390	
N-NITROSOPIPERIDINE	UG/KG	ND	390	
PENTACHLOROBENZENE	UG/KG	ND	390	
PENTACHLORONITROBENZENE (PCNB)	UG/KG	ND	390	
PHENACETIN	UG/KG	ND	390	
PHENANTHRENE	UG/KG	ND	390	

"FINAL REPORT FORMAT - SINGLE"

Accession: 411153
Client: WOODWARD-CLYDE CONSULTANTS
Project Number: 93B477 TASK P
Project Name: ERS-BAHAYLIA
Project Location: N/S
Test: ACID & BASE EXTRACTABLES (8270)
Analysis Method: 8270 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: 3550 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Matrix: SOIL
QC Level: I

Lab Id: 002
Client Sample Id: ERS1-SS-C16-GS
Sample Date/Time: 03-NOV-94 1010
Received Date: 04-NOV-94

Parameter:	Units:	Results:	Rpt Lmts:	Q:
2-PICOLINE	UG/KG	ND	390	
PRONAMIDE	UG/KG	ND	390	
PYRENE	UG/KG	ND	390	
1,2,4,5-TETRACHLOROBENZENE	UG/KG	ND	390	
1,2,4 TRICHLOROBENZENE	UG/KG	ND	390	
2-FLUOROPHENOL	%REC/SURR	62	25-121	
PHENOL-D6	%REC/SURR	64	24-113	
2,4,6-TRIBROMOPHENOL	%REC/SURR	67	19-122	
2-FLUOROBIPHENYL	%REC/SURR	86	30-109	
NITROBENZENE-D5	%REC/SURR	71	39-108	
TERPHENYL-D14	%REC/SURR	85	36-118	
ANALYST	INITIALS	RB		

Comments:

"FINAL REPORT FORMAT - SINGLE"

Accession: 411153
Client: WOODWARD-CLYDE CONSULTANTS
Project Number: 93B477 TASK P
Project Name: ERS-BAHAYLIA
Project Location: N/S
Test: ACID & BASE EXTRACTABLES (8270)
Analysis Method: 8270 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: 3550 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Matrix: SOIL
QC Level: I

Lab Id: 003
Client Sample Id: ERS1-SS-C17-GS
Sample Date/Time: 03-NOV-94 0945
Received Date: 04-NOV-94

Batch: ALS215
Blank: B
Dry Weight %: 87
Extraction Date: 07-NOV-94
Analysis Date: 14-NOV-94

Parameter:	Units:	Results:	Rpt Lmts:	Q:
BENZOIC ACID	UG/KG	ND	1900	
4-CHLORO-3-METHYLPHENOL	UG/KG	ND	380	
2-CHLOROPHENOL	UG/KG	ND	380	
2,4-DICHLOROPHENOL	UG/KG	ND	380	
2,6-DICHLOROPHENOL	UG/KG	ND	380	
2,4-DIMETHYLPHENOL	UG/KG	ND	380	
4,6-DINITRO-2-METHYLPHENOL	UG/KG	ND	1900	
2,4-DINITROPHENOL	UG/KG	ND	1900	
2-METHYLPHENOL	UG/KG	ND	380	
4-METHYLPHENOL	UG/KG	ND	380	
2-NITROPHENOL	UG/KG	ND	380	
4-NITROPHENOL	UG/KG	ND	1900	
PENTACHLOROPHENOL	UG/KG	ND	1900	
PHENOL	UG/KG	ND	380	
2,3,4,6-TETRACHLOROPHENOL	UG/KG	ND	380	
2,4,5-TRICHLOROPHENOL	UG/KG	ND	1900	
2,4,6-TRICHLOROPHENOL	UG/KG	ND	380	
ACENAPHTHENE	UG/KG	ND	380	
ACENAPHTHYLENE	UG/KG	ND	380	
ACETOPHENONE	UG/KG	ND	380	
4-AMINOBIPHENYL	UG/KG	ND	380	
ANILINE	UG/KG	ND	380	
ANTHRACENE	UG/KG	ND	380	
BENZIDINE	UG/KG	ND	380	
BENZO (A) ANTHRACENE	UG/KG	ND	380	
BENZO (A) PYRENE	UG/KG	ND	380	
BENZO (B) FLUORANTHENE	UG/KG	ND	380	
BENZO (G,H,I) PERYLENE	UG/KG	ND	380	
BENZO (K) FLUORANTHENE	UG/KG	ND	380	
BENZYL ALCOHOL	UG/KG	ND	380	
BIS(2-CHLOROETHOXY)METHANE	UG/KG	ND	380	
BIS(2-CHLOROETHYL)ETHER	UG/KG	ND	380	
BIS(2-CHLOROISOPROPYL)ETHER	UG/KG	ND	380	
BIS(2-ETHYLHEXYL)PHTHALATE	UG/KG	2000	380	
4-BROMOPHENYL PHENYL ETHER	UG/KG	ND	380	
BUTYLBENZYL PHTHALATE	UG/KG	700	380	
4-CHLOROANILINE	UG/KG	ND	380	
1-CHLORONAPHTHALENE	UG/KG	ND	380	
2-CHLORONAPHTHALENE	UG/KG	ND	380	
4-CHLOROPHENYL PHENYL ETHER	UG/KG	ND	380	

"FINAL REPORT FORMAT - SINGLE"

Accession: 411153
Client: WOODWARD-CLYDE CONSULTANTS
Project Number: 93B477 TASK P
Project Name: ERS-BAHAYLIA
Project Location: N/S
Test: ACID & BASE EXTRACTABLES (8270)
Analysis Method: 8270 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: 3550 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Matrix: SOIL
QC Level: I

Lab Id: 003 Sample Date/Time: 03-NOV-94 0945
Client Sample Id: ERS1-SS-C17-GS Received Date: 04-NOV-94

Parameter:	Units:	Results:	Rpt Lmts:	Q:
CHRYSENE	UG/KG	ND	380	
DIBENZ(A,J)ACRIDINE	UG/KG	ND	380	
DIBENZO (A,H) ANTHRACENE	UG/KG	ND	380	
DIBENZOFURAN	UG/KG	ND	380	
1,2-DICHLOROBENZENE	UG/KG	ND	380	
1,3-DICHLOROBENZENE	UG/KG	ND	380	
1,4-DICHLOROBENZENE	UG/KG	ND	380	
3,3'-DICHLOROBENZIDINE	UG/KG	ND	1900	
DIETHYLPHTHALATE	UG/KG	ND	380	
P-DIMETHYLAMINOAZOBENZENE	UG/KG	ND	380	
7,12-DIMETHYLBENZ(A)ANTHRACENE	UG/KG	ND	380	
A-,A-DIMETHYLPHENETHYLAMINE	UG/KG	ND	380	
DIMETHYLPHTHALATE	UG/KG	ND	380	
DI-N-BUTYLPHTHALATE	UG/KG	1900	380	
2,4-DINITROTOLUENE	UG/KG	ND	380	
2,6-DINITROTOLUENE	UG/KG	ND	380	
DI-N-OCTYLPHTHALATE	UG/KG	ND	380	
DIPHENYLAMINE	UG/KG	ND	380	
1,2-DIPHENYLHYDRAZINE	UG/KG	ND	380	
FLUORANTHENE	UG/KG	ND	380	
FLUORENE	UG/KG	ND	380	
HEXACHLOROBENZENE	UG/KG	ND	380	
HEXACHLOROBUTADIENE	UG/KG	ND	380	
HEXACHLOROCYCLOPENTADIENE	UG/KG	ND	380	
HEXACHLOROETHANE	UG/KG	ND	380	
INDENO (1,2,3-CD) PYRENE	UG/KG	ND	380	
ISOPHORONE	UG/KG	ND	380	
3-METHYLCHOLANTHRENE	UG/KG	ND	380	
2-METHYLNAPHTHALENE	UG/KG	ND	380	
NAPHTHALENE	UG/KG	ND	380	
1-NAPHTHYLAMINE	UG/KG	ND	380	
2-NAPHTHYLAMINE	UG/KG	ND	380	
2-NITROANILINE	UG/KG	ND	380	
3-NITROANILINE	UG/KG	ND	380	
4-NITROANILINE	UG/KG	ND	380	
NITROBENZENE	UG/KG	ND	380	
N-NITROSODIMETHYLAMINE	UG/KG	ND	380	
N-NITROSODI-N-BUTYLAMINE	UG/KG	ND	380	
N-NITROSODIPHENYLAMINE	UG/KG	ND	380	
N-NITROSO-DI-N-PROPYLAMINE	UG/KG	ND	380	
N-NITROSOPIPERIDINE	UG/KG	ND	380	
PENTACHLOROBENZENE	UG/KG	ND	380	
PENTACHLORONITROBENZENE (PCNB)	UG/KG	ND	380	
PHENACETIN	UG/KG	ND	380	
PHENANTHRENE	UG/KG	ND	380	

ANALYTICAL TECHNOLOGIES, INC. 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

"FINAL REPORT FORMAT - SINGLE"

Accession: 411153
Client: WOODWARD-CLYDE CONSULTANTS
Project Number: 93B477 TASK P
Project Name: ERS-BAHAYLIA
Project Location: N/S
Test: ACID & BASE EXTRACTABLES (8270)
Analysis Method: 8270 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: 3550 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Matrix: SOIL
QC Level: I

Lab Id: 003
Client Sample Id: ERS1-SS-C17-GS
Sample Date/Time: 03-NOV-94 0945
Received Date: 04-NOV-94

Parameter:	Units:	Results:	Rpt Lmts:	Q:
2-PICOLINE	UG/KG	ND	380	
PRONAMIDE	UG/KG	ND	380	
PYRENE	UG/KG	ND	380	
1,2,4,5-TETRACHLOROBENZENE	UG/KG	ND	380	
1,2,4 TRICHLOROBENZENE	UG/KG	ND	380	
2-FLUOROPHENOL	%REC/SURR	41	25-121	
PHENOL-D6	%REC/SURR	49	24-113	
2,4,6-TRIBROMOPHENOL	%REC/SURR	49	19-122	
2-FLUOROBIPHENYL	%REC/SURR	92	30-109	
NITROBENZENE-D5	%REC/SURR	74	39-108	
TERPHENYL-D14	%REC/SURR	99	36-118	
ANALYST	INITIALS	RB		

Comments:

"FINAL REPORT FORMAT - SINGLE"

Accession: 411153
Client: WOODWARD-CLYDE CONSULTANTS
Project Number: 93B477 TASK P
Project Name: ERS-BAHAYLIA
Project Location: N/S
Test: ACID & BASE EXTRACTABLES (8270)
Analysis Method: 8270 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: 3550 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Matrix: SOIL
QC Level: I

Lab Id: 004
Client Sample Id: ERS1-SS-C18-GS
Sample Date/Time: 03-NOV-94 0920
Received Date: 04-NOV-94

Batch: ALS215
Blank: B
Dry Weight %: 82
Extraction Date: 07-NOV-94
Analysis Date: 15-NOV-94

Parameter:	Units:	Results:	Rpt Lmts:	Q:
BENZOIC ACID	UG/KG	ND	2000	
4-CHLORO-3-METHYLPHENOL	UG/KG	ND	400	
2-CHLOROPHENOL	UG/KG	ND	400	
2,4-DICHLOROPHENOL	UG/KG	ND	400	
2,6-DICHLOROPHENOL	UG/KG	ND	400	
2,4-DIMETHYLPHENOL	UG/KG	ND	400	
4,6-DINITRO-2-METHYLPHENOL	UG/KG	ND	2000	
2,4-DINITROPHENOL	UG/KG	ND	2000	
2-METHYLPHENOL	UG/KG	ND	400	
4-METHYLPHENOL	UG/KG	ND	400	
2-NITROPHENOL	UG/KG	ND	400	
4-NITROPHENOL	UG/KG	ND	2000	
PENTACHLOROPHENOL	UG/KG	ND	2000	
PHENOL	UG/KG	ND	400	
2,3,4,6-TETRACHLOROPHENOL	UG/KG	ND	400	
2,4,5-TRICHLOROPHENOL	UG/KG	ND	2000	
2,4,6-TRICHLOROPHENOL	UG/KG	ND	400	
ACENAPHTHENE	UG/KG	ND	400	
ACENAPHTHYLENE	UG/KG	ND	400	
ACETOPHENONE	UG/KG	ND	400	
4-AMINOBIPHENYL	UG/KG	ND	400	
ANILINE	UG/KG	ND	400	
ANTHRACENE	UG/KG	ND	400	
BENZIDINE	UG/KG	ND	400	
BENZO (A) ANTHRACENE	UG/KG	ND	400	
BENZO (A) PYRENE	UG/KG	ND	400	
BENZO (B) FLUORANTHENE	UG/KG	ND	400	
BENZO (G,H,I) PERYLENE	UG/KG	ND	400	
BENZO (K) FLUORANTHENE	UG/KG	ND	400	
BENZYL ALCOHOL	UG/KG	ND	400	
BIS(2-CHLOROETHOXY)METHANE	UG/KG	ND	400	
BIS(2-CHLOROETHYL)ETHER	UG/KG	ND	400	
BIS(2-CHLOROISOPROPYL)ETHER	UG/KG	ND	400	
BIS(2-ETHYLHEXYL)PHTHALATE	UG/KG	ND	400	
4-BROMOPHENYL PHENYL ETHER	UG/KG	ND	400	
BUTYLBENZYL PHTHALATE	UG/KG	550	400	
4-CHLOROANILINE	UG/KG	ND	400	
1-CHLORONAPHTHALENE	UG/KG	ND	400	
2-CHLORONAPHTHALENE	UG/KG	ND	400	
4-CHLOROPHENYL PHENYL ETHER	UG/KG	ND	400	

"FINAL REPORT FORMAT - SINGLE"

Accession: 411153
Client: WOODWARD-CLYDE CONSULTANTS
Project Number: 93B477 TASK P
Project Name: ERS-BAHAYLIA
Project Location: N/S
Test: ACID & BASE EXTRACTABLES (8270)
Analysis Method: 8270 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: 3550 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Matrix: SOIL
QC Level: I

Lab Id: 004
Client Sample Id: ERS1-SS-C18-GS
Sample Date/Time: 03-NOV-94 0920
Received Date: 04-NOV-94

Parameter:	Units:	Results:	Rpt Lmts:	Q:
CHRYSENE	UG/KG	ND	400	
DIBENZ(A,J)ACRIDINE	UG/KG	ND	400	
DIBENZO (A,H) ANTHRACENE	UG/KG	ND	400	
DIBENZOFURAN	UG/KG	ND	400	
1,2-DICHLOROBENZENE	UG/KG	ND	400	
1,3-DICHLOROBENZENE	UG/KG	ND	400	
1,4-DICHLOROBENZENE	UG/KG	ND	400	
3,3'-DICHLOROBENZIDINE	UG/KG	ND	2000	
DIETHYLPHTHALATE	UG/KG	ND	400	
P-DIMETHYLAMINOAZOBENZENE	UG/KG	ND	400	
7,12-DIMETHYLBENZ(A)ANTHRACENE	UG/KG	ND	400	
A-,A-DIMETHYLPHENETHYLAMINE	UG/KG	ND	400	
DIMETHYLPHTHALATE	UG/KG	ND	400	
DI-N-BUTYLPHTHALATE	UG/KG	1200	400	
2,4-DINITROTOLUENE	UG/KG	ND	400	
2,6-DINITROTOLUENE	UG/KG	ND	400	
DI-N-OCTYLPHTHALATE	UG/KG	ND	400	
DIPHENYLAMINE	UG/KG	ND	400	
1,2-DIPHENYLHYDRAZINE	UG/KG	ND	400	
FLUORANTHENE	UG/KG	ND	400	
FLUORENE	UG/KG	ND	400	
HEXACHLOROBENZENE	UG/KG	ND	400	
HEXACHLOROBUTADIENE	UG/KG	ND	400	
HEXACHLOROCYCLOPENTADIENE	UG/KG	ND	400	
HEXACHLOROETHANE	UG/KG	ND	400	
INDENO (1,2,3-CD) PYRENE	UG/KG	ND	400	
ISOPHORONE	UG/KG	ND	400	
3-METHYLCHOLANTHRENE	UG/KG	ND	400	
2-METHYLNAPHTHALENE	UG/KG	ND	400	
NAPHTHALENE	UG/KG	ND	400	
1-NAPHTHYLAMINE	UG/KG	ND	400	
2-NAPHTHYLAMINE	UG/KG	ND	400	
2-NITROANILINE	UG/KG	ND	400	
3-NITROANILINE	UG/KG	ND	400	
4-NITROANILINE	UG/KG	ND	400	
NITROBENZENE	UG/KG	ND	400	
N-NITROSODIMETHYLAMINE	UG/KG	ND	400	
N-NITROSODI-N-BUTYLAMINE	UG/KG	ND	400	
N-NITROSODIPHENYLAMINE	UG/KG	ND	400	
N-NITROSO-DI-N-PROPYLAMINE	UG/KG	ND	400	
N-NITROSOPIPERIDINE	UG/KG	ND	400	
PENTACHLOROBENZENE	UG/KG	ND	400	
PENTACHLORONITROBENZENE (PCNB)	UG/KG	ND	400	
PHENACETIN	UG/KG	ND	400	
PHENANTHRENE	UG/KG	ND	400	

"FINAL REPORT FORMAT - SINGLE"

Accession: 411153
Client: WOODWARD-CLYDE CONSULTANTS
Project Number: 93B477 TASK P
Project Name: ERS-BAHAYLIA
Project Location: N/S
Test: ACID & BASE EXTRACTABLES (8270)
Analysis Method: 8270 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: 3550 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Matrix: SOIL
QC Level: I

Lab Id: 004
Client Sample Id: ERS1-SS-C18-GS
Sample Date/Time: 03-NOV-94 0920
Received Date: 04-NOV-94

Parameter:	Units:	Results:	Rpt Lmts:	Q:
2-PICOLINE	UG/KG	ND	400	
PRONAMIDE	UG/KG	ND	400	
PYRENE	UG/KG	ND	400	
1,2,4,5-TETRACHLOROBENZENE	UG/KG	ND	400	
1,2,4 TRICHLOROBENZENE	UG/KG	ND	400	
2-FLUOROPHENOL	%REC/SURR	74	25-121	
PHENOL-D6	%REC/SURR	74	24-113	
2,4,6-TRIBROMOPHENOL	%REC/SURR	89	19-122	
2-FLUOROBIPHENYL	%REC/SURR	77	30-109	
NITROBENZENE-D5	%REC/SURR	68	39-108	
TERPHENYL-D14	%REC/SURR	81	36-118	
ANALYST	INITIALS	RB		

Comments:

"FINAL REPORT FORMAT - SINGLE"

Accession: 411153
Client: WOODWARD-CLYDE CONSULTANTS
Project Number: 93B477 TASK P
Project Name: ERS-BAHAYLIA
Project Location: N/S
Test: ACID & BASE EXTRACTABLES (8270)
Analysis Method: 8270 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: 3550 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Matrix: SOIL
QC Level: I

Lab Id: 005 Sample Date/Time: 03-NOV-94 1025
Client Sample Id: ERS1-SS-F1-GS Received Date: 04-NOV-94

Batch: ALS215 Extraction Date: 07-NOV-94
Blank: B Dry Weight %: 87 Analysis Date: 15-NOV-94

Parameter:	Units:	Results:	Rpt Lmts:	Q:
BENZOIC ACID	UG/KG	ND	1900	
4-CHLORO-3-METHYLPHENOL	UG/KG	ND	380	
2-CHLOROPHENOL	UG/KG	ND	380	
2,4-DICHLOROPHENOL	UG/KG	ND	380	
2,6-DICHLOROPHENOL	UG/KG	ND	380	
2,4-DIMETHYLPHENOL	UG/KG	ND	380	
4,6-DINITRO-2-METHYLPHENOL	UG/KG	ND	1900	
2,4-DINITROPHENOL	UG/KG	ND	1900	
2-METHYLPHENOL	UG/KG	ND	380	
4-METHYLPHENOL	UG/KG	ND	380	
2-NITROPHENOL	UG/KG	ND	380	
4-NITROPHENOL	UG/KG	ND	1900	
PENTACHLOROPHENOL	UG/KG	ND	1900	
PHENOL	UG/KG	ND	380	
2,3,4,6-TETRACHLOROPHENOL	UG/KG	ND	380	
2,4,5-TRICHLOROPHENOL	UG/KG	ND	1900	
2,4,6-TRICHLOROPHENOL	UG/KG	ND	380	
ACENAPHTHENE	UG/KG	ND	380	
ACENAPHTHYLENE	UG/KG	ND	380	
ACETOPHENONE	UG/KG	ND	380	
4-AMINOBIPHENYL	UG/KG	ND	380	
ANILINE	UG/KG	ND	380	
ANTHRACENE	UG/KG	ND	380	
BENZIDINE	UG/KG	ND	380	
BENZO (A) ANTHRACENE	UG/KG	ND	380	
BENZO (A) PYRENE	UG/KG	ND	380	
BENZO (B) FLUORANTHENE	UG/KG	ND	380	
BENZO (G,H,I) PERYLENE	UG/KG	ND	380	
BENZO (K) FLUORANTHENE	UG/KG	ND	380	
BENZYL ALCOHOL	UG/KG	ND	380	
BIS(2-CHLOROETHOXY)METHANE	UG/KG	ND	380	
BIS(2-CHLOROETHYL)ETHER	UG/KG	ND	380	
BIS(2-CHLOROISOPROPYL)ETHER	UG/KG	ND	380	
BIS(2-ETHYLHEXYL)PHTHALATE	UG/KG	ND	380	
4-BROMOPHENYL PHENYL ETHER	UG/KG	ND	380	
BUTYLBENZYL PHTHALATE	UG/KG	ND	380	
4-CHLOROANILINE	UG/KG	ND	380	
1-CHLORONAPHTHALENE	UG/KG	ND	380	
2-CHLORONAPHTHALENE	UG/KG	ND	380	
4-CHLOROPHENYL PHENYL ETHER	UG/KG	ND	380	

"FINAL REPORT FORMAT - SINGLE"

Accession: 411153
Client: WOODWARD-CLYDE CONSULTANTS
Project Number: 93B477 TASK P
Project Name: ERS-BAHAYLIA
Project Location: N/S
Test: ACID & BASE EXTRACTABLES (8270)
Analysis Method: 8270 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: 3550 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Matrix: SOIL
QC Level: I

Lab Id: 005
Client Sample Id: ERS1-SS-F1-GS
Sample Date/Time: 03-NOV-94 1025
Received Date: 04-NOV-94

Parameter:	Units:	Results:	Rpt Lmts:	Q:
CHRYSENE	UG/KG	ND	380	
DIBENZ(A,J)ACRIDINE	UG/KG	ND	380	
DIBENZO (A,H) ANTHRACENE	UG/KG	ND	380	
DIBENZOFURAN	UG/KG	ND	380	
1,2-DICHLOROBENZENE	UG/KG	ND	380	
1,3-DICHLOROBENZENE	UG/KG	ND	380	
1,4-DICHLOROBENZENE	UG/KG	ND	380	
3,3'-DICHLOROBENZIDINE	UG/KG	ND	1900	
DIETHYLPHTHALATE	UG/KG	ND	380	
P-DIMETHYLAMINOAZOBENZENE	UG/KG	ND	380	
7,12-DIMETHYLBENZ(A)ANTHRACENE	UG/KG	ND	380	
A-,A-DIMETHYLPHENETHYLAMINE	UG/KG	ND	380	
DIMETHYLPHTHALATE	UG/KG	ND	380	
DI-N-BUTYLPHTHALATE	UG/KG	ND	380	
2,4-DINITROTOLUENE	UG/KG	ND	380	
2,6-DINITROTOLUENE	UG/KG	ND	380	
DI-N-OCTYLPHTHALATE	UG/KG	ND	380	
DIPHENYLAMINE	UG/KG	ND	380	
1,2-DIPHENYLHYDRAZINE	UG/KG	ND	380	
FLUORANTHENE	UG/KG	ND	380	
FLUORENE	UG/KG	ND	380	
HEXACHLOROBENZENE	UG/KG	ND	380	
HEXACHLOROBUTADIENE	UG/KG	ND	380	
HEXACHLOROCYCLOPENTADIENE	UG/KG	ND	380	
HEXACHLOROETHANE	UG/KG	ND	380	
INDENO (1,2,3-CD) PYRENE	UG/KG	ND	380	
ISOPHORONE	UG/KG	ND	380	
3-METHYLCHOLANTHRENE	UG/KG	ND	380	
2-METHYLNAPHTHALENE	UG/KG	ND	380	
NAPHTHALENE	UG/KG	ND	380	
1-NAPHTHYLAMINE	UG/KG	ND	380	
2-NAPHTHYLAMINE	UG/KG	ND	380	
2-NITROANILINE	UG/KG	ND	380	
3-NITROANILINE	UG/KG	ND	380	
4-NITROANILINE	UG/KG	ND	380	
NITROBENZENE	UG/KG	ND	380	
N-NITROSODIMETHYLAMINE	UG/KG	ND	380	
N-NITROSODI-N-BUTYLAMINE	UG/KG	ND	380	
N-NITROSODIPHENYLAMINE	UG/KG	ND	380	
N-NITROSO-DI-N-PROPYLAMINE	UG/KG	ND	380	
N-NITROSOPIPERIDINE	UG/KG	ND	380	
PENTACHLOROBENZENE	UG/KG	ND	380	
PENTACHLORONITROBENZENE (PCNB)	UG/KG	ND	380	
PHENACETIN	UG/KG	ND	380	
PHENANTHRENE	UG/KG	ND	380	

ANALYTICAL TECHNOLOGIES, INC. 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

"FINAL REPORT FORMAT - SINGLE"

Accession: 411153
Client: WOODWARD-CLYDE CONSULTANTS
Project Number: 93B477 TASK P
Project Name: ERS-BAHAYLIA
Project Location: N/S
Test: ACID & BASE EXTRACTABLES (8270)
Analysis Method: 8270 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: 3550 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Matrix: SOIL
QC Level: I

Lab Id: 005
Client Sample Id: ERS1-SS-F1-GS
Sample Date/Time: 03-NOV-94 1025
Received Date: 04-NOV-94

Parameter:	Units:	Results:	Rpt Lmts:	Q:
2-PICOLINE	UG/KG	ND	380	
PRONAMIDE	UG/KG	ND	380	
PYRENE	UG/KG	ND	380	
1,2,4,5-TETRACHLOROBENZENE	UG/KG	ND	380	
1,2,4 TRICHLOROBENZENE	UG/KG	ND	380	
2-FLUOROPHENOL	%REC/SURR	53	25-121	
PHENOL-D6	%REC/SURR	62	24-113	
2,4,6-TRIBROMOPHENOL	%REC/SURR	54	19-122	
2-FLUOROBIPHENYL	%REC/SURR	80	30-109	
NITROBENZENE-D5	%REC/SURR	69	39-108	
TERPHENYL-D14	%REC/SURR	84	36-118	
ANALYST	INITIALS	RB		

Comments:

ANALYTICAL TECHNOLOGIES, INC. 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

"Method Report Summary"

Accession Number: 411153
Client: WOODWARD-CLYDE CONSULTANTS
Project Number: 93B477 TASK P
Project Name: ERS-BAHAYLIA
Project Location: N/S
Test: ACID & BASE EXTRACTABLES (8270)

Client Sample Id:	Parameter:	Unit:	Result:
ERS1-SS-A16-GS	BIS(2-ETHYLHEXYL)PHTHALATE	UG/KG	1700
	DI-N-BUTYLPHTHALATE	UG/KG	2300
ERS1-SS-C16-GS	BIS(2-ETHYLHEXYL)PHTHALATE	UG/KG	4400
	DI-N-BUTYLPHTHALATE	UG/KG	2000
ERS1-SS-C17-GS	BIS(2-ETHYLHEXYL)PHTHALATE	UG/KG	2000
	BUTYLBENZYL PHTHALATE	UG/KG	700
	DI-N-BUTYLPHTHALATE	UG/KG	1900
ERS1-SS-C18-GS	BUTYLBENZYL PHTHALATE	UG/KG	550
	DI-N-BUTYLPHTHALATE	UG/KG	1200

ANALYTICAL TECHNOLOGIES, INC. 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

Quality Control Report

Analysis: RCRA METALS

Accession:	411153
Client:	WOODWARD-CLYDE CONSULTANTS
Project Number:	93B477 TASK P
Project Name:	ERS-BAHAYLIA
Project Location:	N/S
Department:	METALS

ANALYTICAL TECHNOLOGIES, INC. 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

"Metals Quality Control Report"

Parameter:	SILVER	ARSENIC	BARIUM	CADMIUM	CHROMIUM	MERCURY
Batch Id:	A6S237	R6S237	B6S237	C6S237	H6S237	M4S108
Blank Result:	<1	<5	<1	<0.5	<1	<0.1
Anal. Method:	6010	6010	6010	6010	6010	7471
Prep. Method:	3050	3050	3050	3050	3050	7471
Analysis Date:	07-NOV-94	07-NOV-94	07-NOV-94	07-NOV-94	07-NOV-94	08-NOV-94
Prep. Date:	07-NOV-94	07-NOV-94	07-NOV-94	07-NOV-94	07-NOV-94	08-NOV-94
Sample Duplication						
Sample Dup:	411153-3	411153-3	411153-3	411153-3	411153-3	411171-1
Rept Limit:	<1	<5	<1	<0.5	<1	<0.1
Sample Result:	1	6	65	<0.5	17	<0.1
Dup Result:	<1	8	69	<0.5	15	<0.1
Sample RPD:	N/C	2G	6	N/C	13	N/C
Max RPD:	1	5	20	0.5	20	0.1
Dry Weight%	N/A	N/A	N/A	N/A	N/A	N/A
Matrix Spike						
Sample Spiked:	411153-3	411153-3	411153-3	411153-3	411153-3	411171-1
Rept Limit:	<1	<5	<1	<0.5	<1	<0.1
Sample Result:	1	6	65	<0.5	17	<0.1
Spiked Result:	220	210	280	200	230	2.6
Spike Added:	200	200	200	200	200	2.5
% Recovery:	110	102	108	100	107	104
% Rec Limits:	75-125	75-125	75-125	75-125	75-125	75-125
Dry Weight%	N/A	N/A	N/A	N/A	N/A	N/A
ICV						
ICV Result:	5.2	4.7	4.8	4.9	5.1	0.0043
True Result:	5.0	5.0	5.0	5.0	5.0	0.0040
% Recovery:	104	94	96	98	102	108
% Rec Limits:	90-110	90-110	90-110	90-110	90-110	80-120
LCS						
LCS Result:	87	59	300	73	52	22.6
True Result:	85	65.1	319	81.5	57.4	23.7
% Recovery:	102	91	94	90	91	95
% Rec Limits:	40-147	49-149	67-130	50-140	59-140	42-155

ANALYTICAL TECHNOLOGIES, INC. 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

"Metals Quality Control Report"

Parameter:	LEAD	SELENIUM
Batch Id:	P6S237	S6S237
Blank Result:	<5	<10
Anal. Method:	6010	6010
Prep. Method:	3050	3050
Analysis Date:	07-NOV-94	07-NOV-94
Prep. Date:	07-NOV-94	07-NOV-94

Sample Duplication

Sample Dup:	411153-3	411153-3
Rept Limit:	<5	<10
Sample Result:	18	<10
Dup Result:	17	<10
Sample RPD:	1G	N/C
Max RPD:	5	10
Dry Weight%	N/A	N/A

Matrix Spike

Sample Spiked:	411153-3	411153-3
Rept Limit:	<5	<10
Sample Result:	18	<10
Spiked Result:	250	200
Spike Added:	200	200
% Recovery:	116	100
% Rec Limits:	75-125	75-125
Dry Weight%	N/A	N/A

ICV

ICV Result:	5.0	5.0
True Result:	5.0	5.0
% Recovery:	100	100
% Rec Limits:	90-110	90-110

LCS

LCS Result:	110	42
True Result:	128	47.6
% Recovery:	86	88
% Rec Limits:	54-140	51-146

ANALYTICAL TECHNOLOGIES, INC. 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

"Quality Control Comments"

Batch Id:	Comments:
A6S237	ANALYST: JR
A6S237	Spike Source: Plasma Chem, Lot # A4J470121 for Silver.
A6S237	LCS Source: Environmental Resource Association, Lot # 221 for Silver.
R6S237	ANALYST: JR
R6S237	Spike Source: Plasma Chem, Lot # J3M33N10D for Arsenic.
R6S237	LCS Source: Environmental Resource Association, Lot # 221 for Arsenic.
B6S237	ANALYST: JR
B6S237	Spike Source: Plasma Chem, Lot # M3M5610C for Barium.
B6S237	LCS Source: Environmental Resource Association, Lot # 221 for Barium.
C6S237	ANALYST: JR
C6S237	Spike Source: Plasma Chem, Lot # Y3M48N10D for Cadmium.
C6S237	LCS Source: Environmental Resource Association, Lot # 221 for Cadmium.
H6S237	ANALYST: JR
H6S237	Spike Source: Plasma Chem, Lot # Y2M24L10P8 for Chromium.
H6S237	LCS Source: Environmental Resource Association, Lot # 221 for Chromium.
M4S108	ANALYST: JP
M4S108	Spike Source: Spex Industries, Lot # 3-88HG for Mercury.
M4S108	LCS Source: Environmental Resource Association, Lot # 219 for Mercury.
P6S237	ANALYST: JR
P6S237	Spike Source: Plasma Chem, Lot # D3J82N10F for Lead.
P6S237	LCS Source: Environmental Resource Association, Lot # 221 for Lead.
S6S237	ANALYST: JR
S6S237	Spike Source: Plasma Chem, Lot # Y3M34N10D for Selenium.
S6S237	LCS Source: Environmental Resource Association, Lot # 221 for Selenium.

----- Common Footnotes Metals -----

N/A = NOT APPLICABLE.
N/S = NOT SUBMITTED.
N/C = SAMPLE AND DUPLICATE RESULTS ARE AT OR BELOW ATI REPORTING LIMIT; THEREFORE, THE RPD IS "NOT CALCULABLE" AND NO CONTROL LIMITS APPLY.
N/D = NOT DETECTED.
DISS. OR D = DISSOLVED
T & D = TOTAL AND DISSOLVED
R = REACTIVE
T = TOTAL
G = SAMPLE AND/OR DUPLICATE RESULT IS BELOW 5 X ATI REPORTING LIMIT AND THE ABSOLUTE DIFFERENCE BETWEEN THE SAMPLE AND DUPLICATE RESULT IS AT OR BELOW ATI REPORTING LIMIT; THEREFORE, THE RESULTS ARE "IN CONTROL".
Q = THE ANALYTICAL (POST-DIGESTION) SPIKE IS REPORTED DUE TO PERCENT RECOVERY BEING OUTSIDE ACCEPTANCE LIMITS ON THE MATRIX (PRE-DIGESTION) SPIKE.
# = ELEVATED REPORTING LIMIT DUE TO INSUFFICIENT SAMPLE.
+ = ELEVATED REPORTING LIMIT DUE TO DILUTION INTO CALIBRATION RANGE.
* = ELEVATED REPORTING LIMIT DUE TO MATRIX INTERFERENCE. (DILUTION PRIOR TO ANALYSIS)
@ = ADJUSTED REPORTING LIMIT DUE TO SAMPLE MATRIX. (DILUTION PRIOR TO DIGESTION)
P = ANALYTICAL (POST DIGESTION) SPIKE.
I = DUPLICATE INJECTION.
& = AUTOMATED
F = SAMPLE SPIKED > 4 X SPIKE CONCENTRATION.
N/C+ = NOT CALCULABLE
N/C* = NOT CALCULABLE; SAMPLE SPIKED > 4 X SPIKE CONCENTRATION.
H = SAMPLE AND/OR DUPLICATE RESULT IS BELOW 5 X ATI REPORTING LIMIT AND THE ABSOLUTE DIFFERENCE BETWEEN THE RESULTS EXCEEDS THE ATI REPORTING LIMIT; THEREFORE, THE RESULTS ARE "OUT OF CONTROL".
A = SAMPLE AND DUPLICATE RESULTS ARE "OUT OF CONTROL".
Z = THE SAMPLE RESULT FOR THE SPIKE IS BELOW THE REPORTING LIMIT. HOWEVER, THIS RESULT IS REPORTED FOR ACCURATE QC CALCULATIONS.
NH= SAMPLE AND / OR DUPLICATE RESULT IS BELOW 5 X ATI REPORTING LIMIT AND THE ABSOLUTE DIFFERENCE BETWEEN THE RESULTS EXCEEDS THE ATI REPORTING LIMIT; THEREFORE, THE RESULTS ARE "OUT OF CONTROL". SAMPLE IS NON-HOMOGENEOUS.
J = (FLORIDA DEP 'J' FLAG) - MATRIX SPIKE AND POST SPIKE RECOVERY IS OUT OF THE ACCEPTABLE RANGE. SEE OUT OF CONTROL EVENTS FORM.

FROM ANALYSIS REPORT:
RL= REPORTING LIMIT BASED ON METHOD DETECTION LIMIT STUDIES.
Q= QUALIFIER (FOOTNOTE)

FROM QUALITY CONTROL REPORT:
RPD= RELATIVE PERCENT DEVIATION.
RPT LIMIT= REPORTING LIMIT BASED ON METHOD DETECTION LIMIT STUDIES.

NOTE: THE UNITS REPORTED ON THE QUALITY CONTROL REPORT ARE EQUAL TO THOSE ON THE ANALYSIS REPORT.

SW-846, 3rd Edition, September 1986 and Revision 1, July 1992.
EPA 600/4-79-020, Revised March 1983.
NIOSH Manual of Analytical Methods, 3rd Edition.

JP = JAY PEREZ
GJ = GARY JACOBS
JLH = JAMES L. HERED
CD = CHRISTY DRAPER
JRR = JOHN R. ROWE
JR = JOHN REED
SL = STEPHANIE LOWRY

ANALYTICAL TECHNOLOGIES, INC. 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

Quality Control Report

Analysis: ACID & BASE EXTRACTABLES (8270)

Accession:	411153
Client:	WOODWARD-CLYDE CONSULTANTS
Project Number:	93B477 TASK P
Project Name:	ERS-BAHAYLIA
Project Location:	N/S
Department:	ORGANIC/MS

ANALYTICAL TECHNOLOGIES, INC. 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

"QC Report"

Title: Soil Blank
Batch: ALS215
Analysis Method: 8270 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: 3550 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.

Blank Id: B Date Analyzed: 15-NOV-94 Date Extracted: 07-NOV-94

Parameters:	Units:	Results:	Reporting Limits:
BENZOIC ACID	UG/KG	ND	10
4-CHLORO-3-METHYLPHENOL	UG/KG	ND	10
2-CHLOROPHENOL	UG/KG	ND	10
2,4-DICHLOROPHENOL	UG/KG	ND	10
2,6-DICHLOROPHENOL	UG/KG	ND	10
2,4-DIMETHYLPHENOL	UG/KG	ND	10
4,6-DINITRO-2-METHYLPHENOL	UG/KG	ND	10
2,4-DINITROPHENOL	UG/KG	ND	10
2-METHYLPHENOL	UG/KG	ND	10
4-METHYLPHENOL	UG/KG	ND	10
2-NITROPHENOL	UG/KG	ND	10
4-NITROPHENOL	UG/KG	ND	10
PENTACHLOROPHENOL	UG/KG	ND	10
PHENOL	UG/KG	ND	10
2,3,4,6-TETRACHLOROPHENOL	UG/KG	ND	10
2,4,5-TRICHLOROPHENOL	UG/KG	ND	10
2,4,6-TRICHLOROPHENOL	UG/KG	ND	10
ACENAPHTHENE	UG/KG	ND	10
ACENAPHTHYLENE	UG/KG	ND	10
ACETOPHENONE	UG/KG	ND	10
4-AMINOBIPHENYL	UG/KG	ND	10
ANILINE	UG/KG	ND	10
ANTHRACENE	UG/KG	ND	10
BENZIDINE	UG/KG	ND	10
BENZO (A) ANTHRACENE	UG/KG	ND	10
BENZO (A) PYRENE	UG/KG	ND	10
BENZO (B) FLUORANTHENE	UG/KG	ND	10
BENZO (G,H,I) PERYLENE	UG/KG	ND	10
BENZO (K) FLUORANTHENE	UG/KG	ND	10
BENZYL ALCOHOL	UG/KG	ND	10
BIS(2-CHLOROETHOXY)METHANE	UG/KG	ND	10
BIS(2-CHLOROETHYL)ETHER	UG/KG	ND	10
BIS(2-CHLOROISOPROPYL)ETHER	UG/KG	ND	10
BIS(2-ETHYLHEXYL)PHTHALATE	UG/KG	ND	10
4-BROMOPHENYL PHENYL ETHER	UG/KG	ND	10
BUTYLBENZYL PHTHALATE	UG/KG	ND	10
4-CHLOROANILINE	UG/KG	ND	10
1-CHLORONAPHTHALENE	UG/KG	ND	10
2-CHLORONAPHTHALENE	UG/KG	ND	10
4-CHLOROPHENYL PHENYL ETHER	UG/KG	ND	10
CHRYSENE	UG/KG	ND	10
DIBENZ(A,J)ACRIDINE	UG/KG	ND	10
DIBENZO (A,H) ANTHRACENE	UG/KG	ND	10
DIBENZOFURAN	UG/KG	ND	10
1,2-DICHLOROBENZENE	UG/KG	ND	10
1,3-DICHLOROBENZENE	UG/KG	ND	10

ANALYTICAL TECHNOLOGIES, INC. 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

"QC Report"

Title: Soil Blank
Batch: ALS215
Analysis Method: 8270 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: 3550 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.

Parameters:	Units:	Results:	Reporting Limits:
1,4-DICHLOROBENZENE	UG/KG	ND	10
3,3'-DICHLOROBENZIDINE	UG/KG	ND	10
DIETHYLPHTHALATE	UG/KG	ND	10
P-DIMETHYLAMINOAZOBENZENE	UG/KG	ND	10
7,12-DIMETHYLBENZ(A)ANTHRACENE	UG/KG	ND	10
A-,A-DIMETHYLPHENETHYLAMINE	UG/KG	ND	10
DIMETHYLPHTHALATE	UG/KG	ND	10
DI-N-BUTYLPHTHALATE	UG/KG	ND	10
2,4-DINITROTOLUENE	UG/KG	ND	10
2,6-DINITROTOLUENE	UG/KG	ND	10
DI-N-OCTYLPHTHALATE	UG/KG	ND	10
DIPHENYLAMINE	UG/KG	ND	10
1,2-DIPHENYLHYDRAZINE	UG/KG	ND	10
FLUORANTHENE	UG/KG	ND	10
FLUORENE	UG/KG	ND	10
HEXACHLOROBENZENE	UG/KG	ND	10
HEXACHLOROBUTADIENE	UG/KG	ND	10
HEXACHLOROCYCLOPENTADIENE	UG/KG	ND	10
HEXACHLOROETHANE	UG/KG	ND	10
INDENO (1,2,3-CD) PYRENE	UG/KG	ND	10
ISOPHORONE	UG/KG	ND	10
3-METHYLCHOLANTHRENE	UG/KG	ND	10
2-METHYLNAPHTHALENE	UG/KG	ND	10
NAPHTHALENE	UG/KG	ND	10
1-NAPHTHYLAMINE	UG/KG	ND	10
2-NAPHTHYLAMINE	UG/KG	ND	10
2-NITROANILINE	UG/KG	ND	10
3-NITROANILINE	UG/KG	ND	10
4-NITROANILINE	UG/KG	ND	10
NITROBENZENE	UG/KG	ND	10
N-NITROSODIMETHYLAMINE	UG/KG	ND	10
N-NITROSODI-N-BUTYLAMINE	UG/KG	ND	10
N-NITROSODIPHENYLAMINE	UG/KG	ND	10
N-NITROSO-DI-N-PROPYLAMINE	UG/KG	ND	10
N-NITROSOPIPERIDINE	UG/KG	ND	10
PENTACHLOROBENZENE	UG/KG	ND	10
PENTACHLORONITROBENZENE (PCNB)	UG/KG	ND	10
PHENACETIN	UG/KG	ND	10
PHENANTHRENE	UG/KG	ND	10
2-PICOLINE	UG/KG	ND	10
PRONAMIDE	UG/KG	ND	10
PYRENE	UG/KG	ND	10
1,2,4,5-TETRACHLOROBENZENE	UG/KG	ND	10
1,2,4 TRICHLOROBENZENE	UG/KG	ND	10
2-FLUOROPHENOL	%REC/SURR	80	25-121
PHENOL-D6	%REC/SURR	78	24-113
2,4,6-TRIBROMOPHENOL	%REC/SURR	95	19-122

ANALYTICAL TECHNOLOGIES, INC. 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

"QC Report"

Title: Soil Blank
Batch: ALS215
Analysis Method: 8270 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: 3550 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.

Parameters:	Units:	Results:	Reporting Limits:
2-FLUOROBIPHENYL	%REC/SURR	81	30-109
NITROBENZENE-D5	%REC/SURR	71	39-108
TERPHENYL-D14	%REC/SURR	92	36-118
ANALYST	INITIALS	RB	

Comments:

ANALYTICAL TECHNOLOGIES, INC. 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

"QC Report"

Title: Soil Reagent
Batch: ALS215
Analysis Method: 8270 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.
Extraction Method: 3550 / SW-846, 3rd Edition, September 1986 and Rev. 1, July 1992.

RS Date Analyzed: 08-NOV-94
RSD Date Analyzed: 08-NOV-94

RS Date Extracted: 05-NOV-94
RSD Date Extracted: 05-NOV-94

Parameters:	Spike Added	Sample Conc	RS Conc	RS %Rec	RSD Conc	RSD %Rec	RPD	RPD Lmts	Rec Lmts
PHENOL	3333	<10	2400	72	2567	77	7	35	5-112
2-CHLOROPHENOL	3333	<10	2533	76	2633	79	4	50	35-110
1,4-DICHLOROBENZENE	1667	<10	1333	80	1367	82	2	27	33-112
N-NITRO-DI-N-PROPYLAMINE	1667	<10	1233	74	1300	78	5	38	30-118
1,2,4 TRICHLOROBENZENE	1667	<10	1267	76	1333	80	5	23	44-142
4-CHLORO-3-METHYLPHENOL	3333	<10	2433	73	2500	75	3	33	37-114
ACENAPHTHENE	1667	<10	1333	80	1433	86	7	19	47-145
4-NITROPHENOL	3333	<50	2033	61	2467	74	19	50	6-132
2,4-DINITROTOLUENE	1667	<10	1300	78	1400	84	7	47	43-116
PENTACHLOROPHENOL	3333	<50	2367	71	2533	76	7	47	30-121
PYRENE	1667	<10	1300	78	1400	84	7	36	52-115
Surrogates:									
NITROBENZENE-D5				75		80			39-108
2-FLUOROBIPHENYL				82		88			30-109
TERPHENYL-D14				89		91			36-118
PHENOL-D6				87		90			24-113
2-FLUOROPHENOL				80		84			25-121
2,4,6-TRIBROMOPHENOL				83		84			19-122

Comments:

Notes:
N/S = NOT SUBMITTED N/A = NOT APPLICABLE D = DILUTED OUT
UG/KG = PARTS PER BILLION. <RL = LESS THAN REPORTING LIMIT.
* = VALUES OUTSIDE OF QUALITY CONTROL LIMITS.
SOURCES FOR CONTROL LIMITS ARE INTERNAL LABORATORY QUALITY ASSURANCE PROGRAM AND REFERENCED METHOD.

Common notation for Organic reporting

N/S = NOT SUBMITTED
N/A = NOT APPLICABLE
D = DILUTED OUT
UG/L = PARTS PER BILLION.
UG/KG = PARTS PER BILLION.
MG/KG = PARTS PER MILLION.
MG/L = PARTS PER MILLION.
MG/M3 = MILLIGRAMS PER CUBIC METER.
NG = NANOGRAMS.
UG = MICROGRAMS.
PPBV = PARTS PER BILLION/VOLUME.
< = LESS THAN DETECTION LIMIT.
* = VALUES OUTSIDE OF QUALITY CONTROL LIMITS
J = THE REPORTED VALUE IS EITHER LESS THAN THE REPORTING LIMIT BUT GREATER THAN ZERO, OR QUANTITATED AS A TIC; THEREFORE, IT IS ESTIMATED.
JJ = REPORTED VALUE IS ESTIMATED DUE TO MATRIX INTERFERENCE.
ND = NOT DETECTED ABOVE REPORT LIMIT.
RPT LIMIT = REPORTING LIMITS BASED ON METHOD DETECTION LIMIT STUDIES.
RPD = RELATIVE PERCENT DIFFERENCE (OR DEVIATION)

SOURCES FOR CONTROL LIMITS ARE INTERNAL LABORATORY QUALITY ASSURANCE PROGRAM AND REFERENCED METHOD.

ORGANIC SOILS ARE REPORTED ON A DRY WEIGHT BASIS.

DUE TO THE NATURE OF THE SAMPLE MATRIX, MATRIX SPIKE/MATRIX SPIKE DUPLICATE ANALYSIS CANNOT BE PERFORMED FOR AIR ANALYSIS.

LP = LEVERNE PETERSON
DWB = DAVID BOWERS
DB = DENNIS BESON
RB = RAFAEL BARRAZA
PL = PAUL LESCHENSKY
RW = RITA WINGO
LD = LARRY DILMORE
LL = LANCE LARSON
JA = JENNIFER ALEXANDER

AnalyticalTechnologies,Inc.

PROJECT SAMPLE INSPECTION FORM

Accession #: 411153 Date received: 04-NOV-94

1.	Was there a Chain of Custody?	YES	NO		7.	Are samples correctly preserved for analysis required?	YES	NO	
2.	Was Chain of Custody properly relinquished?	YES	NO		8.	Is there sufficient volume for analysis requested?	YES	NO	
3.	Were samples received cold? (At 4° or on ice)	YES	NO	N/A	9.	Were samples received within holding time?	YES	NO	
4.	Were all containers properly labeled and identified?	YES	NO		10.	Was there headspace greater than ¼" in diameter in volatile bottles?	YES	NO	N/A
5.	Were samples received in proper containers for analysis requested?	YES	NO		11.	If sent, were matrix spike bottles returned?	YES	NO	N/A
6.	Were all sample containers received intact?	YES	NO						

Tracking Number: 0217150592 Shipped By: FEDEX

Cooler Number: N/S

Out of Control Events and Inspection Comments:

Inspected By: AJ Date: 11/4/94 Logged By: AJ Date: 11/4/94

BLR WPDOCS/SAMPLECO/INSPECT.FRM August 11, 1994

Analytical**Technologies**, Inc.
11 East Olive Road • Pensacola, Florida 32514 • (904) 474-1001

CHAIN OF CUSTODY

ART 1 - Bottle Shipment Information ATI ACCESSION #: 41153

CLIENT: **CLIENT PROJECT NUMBER:**

QUANTITY OF SAMPLE CONTAINERS SHIPPED	PRESERVATIVE							PLASTIC CONTAINERS							GLASS CONTAINERS									NOTES
	H_2SO_4	HNO3	HCL	Zn Acetate	$Na_2S_2O_3$	Unpreserved	NaOH	8 oz.	16 oz.	32 oz.	½ gallon	1 gallon	Whirl-pak	100-ML Cup	120 ml (A)	1 liter (A)	1 liter (C)	40 ml Vial	4 oz. wm	8 oz. wm	16 oz. wm	32 oz. wm	D.I. Trip Blank	
16						✓													✓					

Relinquished By:	Time	Date	Received By:	Time	Date
Dorothy B. Sutton	16:30	10/26			

PART 2 - Sample/Project Information

SAMPLE MATRIX CODES

DW DRINKING WATER — AI AIR — SW SURFACE WATER
WW WASTEWATER — SO SOIL — SL SLUDGE
GW GROUNDWATER — OI OIL — ST STORMWATER

PARAMETERS AND PRESERVATIVES REQUESTED

SAMPLE I.D.	SAMPLE DATE	SAMPLE TIME	MATRIX	RCRA Metals	SVOC											TOTAL # OF BOTTLES
ERS1-SS-A16-GS	11-03-94	0910	SO	✓	✓											2
ERS1-SS-C16-GS	↓	1010	SO	✓	✓											2
ERS1-SS-C17-GS		0945	SO	✓	✓											2
ERS1-SS-C18-GS	↓	0930	SO	✓	✓											2
ERS1-SS-E1-GS	11-03-94	1025	SO	✓	✓											2

Total Number of Bottles/Containers:

Relinquished By	Date	Time	Received By	Date	Time
Jimmy Rayburn	11-03-94	1645	[illegible]	11/4/94	0930

Client	Woodward-Clyde Consultants		Purchase Order Number
Address	1553 E. County Line Rd.		Project Number 93E477 Task F
City	Jackson	State MS Zip 39211	Project Name ERS-Batayliz
Phone Number	(601) 957-7666	Fax Number (601) 957-7692	Project Location
Project Manager	Linda Eversull		Sampled By Jimmy Rayburn

TURNAROUND TIMES	check below	SPECIAL INSTRUCTIONS
Standard - 14-21 days	X	
RUSH (must be approved in advance)		
8 hours - 2x standard price		
3-7 days - 1.5x standard price		
TCLP - 1 week rush 1.5x standard price		
QC Level none I II III IV (circle one)		Copies of report needed _____

FORM # 12694 — METRO PRINTING, INC., HUNTSVILLE, ALABAMA 35801 WHITE — LAB CANARY — REPORT PINK — CLIENT

Reference 3
Reassessment Report
Enterprise Recovery Systems
Byhalia, Marshall County, MS
EPA ID No. MSD000693176

Booz | Allen | Hamilton

Booz Allen Hamilton Inc.
230 Peachtree Street, NW
Suite 2100
Atlanta, Georgia 30303

Tel (404) 659-3600
Fax (404) 589-7050

www.boozallen.com

September 26, 2005
B-09075-0143-2408
REPA3-2408-025v1

Mrs. Rowena Sheffield
U.S. EPA Region 4
61 Forsyth Street, SW
Atlanta, Georgia 30303

Subject: EPA Contract No. 68-W-02-018, Work Assignment R04808-2, Task 03, Revised RCRAinfo Corrective Action Environmental Indicator Event Codes (CA725 and CA750) Status Evaluation for the Enterprise Recovery Systems Site (MSD000693176), Byhalia, Mississippi.

Dear Mrs. Sheffield:

In response to Work Assignment R04808-2, Task 03, under EPA Contract No. 68-W-02-018, Booz Allen Hamilton (Booz Allen) is submitting the attached final memorandum that addresses the RCRAinfo Corrective Action Environmental Indicator Event Codes (CA725 and CA750) Status Evaluation for the Enterprise Recovery Systems (ERS) site (MSD000693176) located in Byhalia, Mississippi. Revisions to the draft memorandum submitted on September 16, 2005, were made based on comments provided by the EPA Work Assignment Manager in a telephone conversation on September 23, 2005.

Please feel free to contact me at (404) 658-8054 if you have any questions regarding this deliverable.

Sincerely,

John Belin
Work Assignment Manager

BOOZ ALLEN HAMILTON

Enclosure

cc: Robert Morris, Work Assignment Manager
Thomas Valentino, Contracting Officer (cover letter only)
LaShawn Smith, Contract Specialist (cover letter only)
Ed Baker, Booz Allen Regional Manager
Booz Allen EPMT QA/QC Coordinator

QUICK REFERENCE FOR STATUS OF ENVIRONMENTAL INDICATORS					
Name and EPA I.D. Number	Location (City or Town)	Current CA725 Decision	Current CA750 Decision	If Current Decision is Negative, Projected Date for Positive EI	
				CA725	CA750
Enterprise Recovery Systems MSD000693176	Byhalia, Mississippi	YE	NO	NA	TBD

4WD-RPB

SUBJ: Evaluation of the Enterprise Recovery Systems' status under the RCRAInfo Corrective Action Environmental Indicator Event Codes (CA725 and CA750) EPA I.D. Number: MSD000693176

FROM: Robert Morris
Corrective Action Specialist

THRU: Lael Butler, Chief
South Programs Section

TO: Jon D. Johnston, Chief
RCRA Programs Branch

I. PURPOSE OF MEMO

This memo is written to formalize an evaluation of the Enterprise Recovery System (ERS) facility's status in relation to the following corrective action event codes defined in the Resource Conservation and Recovery Act (RCRA) Information (RCRAInfo):

1) Current Human Exposures Under Control (CA725),

2) Migration of Contaminated Groundwater Under Control (CA750).

Concurrence by the RCRA Programs Branch Chief is required prior to entering these event codes into RCRAInfo. Your concurrence with the interpretations provided in the following paragraphs and the subsequent recommendations is satisfied by dating and signing at the appropriate location within Attachments 1 and 2.

II. HISTORY OF ENVIRONMENTAL INDICATOR EVALUATIONS AT THE FACILITY AND REFERENCE DOCUMENTS

This evaluation is the first evaluation for the ERS facility.

III. FACILITY SUMMARY

The ERS site is located southeast of Collierville, Tennessee at Route 5, Box 287 on Cayce Road, approximately one-quarter mile south of U.S. Highway 72, just inside the Mississippi state line. The site consists of an eight-acre parcel located in NW1/4, Section 22, Township 1 South, Range 4 West. The site is bounded to the west by Cayce Road and to the east, north and south by residential property. Figure 1 in Appendix A illustrates the location of the ERS facility.

ERS operated as a solvent recycling and recovery facility from 1978 to 1991. Prior to ERS operations, a portion of the site was used by C&R Products, beginning in 1971, to produce blended oil products. When the ERS facility was operational, the site included a single story sheet metal office and storage building, two distinct storage tank areas, a small retention pond, and several outdoor drum storage areas.

In 1984, ERS became a RCRA interim status facility and the State of Mississippi issued a Hazardous Waste Management Permit on August 12, 1986. In 1990, EPA completed a RCRA Facility Assessment (RFA) that identified 37 solid waste management units (SWMUs), of which no further action was recommended for 26 SWMUs and additional investigation and sampling was recommended for 11 SWMUs. Limited investigation and sampling was performed by ERS between 1990 and 1991, when the facility ceased operations. After the ERS facility declared bankruptcy in 1992, the site was referred to EPA's Superfund Branch because the State of Mississippi did not have the financial resources to address contamination at the site. The permit issued for the ERS facility expired in December 1994 without being renewed. A removal action to address on-site soil contamination was completed, with oversight by the Emergency Response and Removal Branch (ERRB), in July 1995. As a result, in 1996, the ERRB indicated that no further site work for the soil removal action was anticipated at the ERS site. In addition, based on domestic water well sampling performed in 1992 and 1993, residences located downgradient of the ERS facility with wells that had been impacted above the Federal Maximum Contaminant Level (MCL) were provided with an alternative drinking water source until they could be connected to the Marshall County Water Association (MCWA).

No site investigation or corrective action activities were performed at the ERS site from 1995 until 2004, when EPA Region 4's contractor, Booz Allen Hamilton, performed a site reconnaissance visit, in an effort to obtain updated information on the facility status and the surrounding land use.

Observations made during the May 2004 site visit indicated that the ERS property is currently used to store trailers from a concession business operated by the current property owner Mr. Ronald Maxwell. According to the current property owner, the site is accessed by workers only to retrieve or deposit trailers and is accessed infrequently (i.e., less than once a week) for short periods of time.

The warehouse building, a portion of the former east drum storage building, and an abandoned residential trailer located on a concrete pad in the northwest are the only structures remaining on

the site property. The site property was covered with waist-high grasses in most areas. A six-foot high chain-link fence was observed surrounding the western half of the property, around the portion of the property closest to Cayce Road where the majority of the waste management activities occurred. Two gates were located on both the eastern and western fence. However, the fence was partially damaged in two locations and the gate in the southeastern corner of the fence was open. The site reconnaissance visit confirmed that the area surrounding the ERS property is rural with some low-density residential areas located across Cayce Road to the northwest of the site.

IV. CONCLUSION FOR CA725

It is recommended that the status code YE be entered into RCRAInfo for CA725, current human exposures under control, for the ERS facility. Recent sampling of soil, surface water and sediment outside of the fence that surrounds the ERS property did not detect significant concentrations of contaminants. In addition, although groundwater contaminated with volatile organic compounds (VOCs), such as trichloroethylene (TCE) and 1,1,1-trichloroethane (TCA), has been detected in off-site residential wells, no human exposure to contaminated groundwater currently exists. Interim measures, consisting of connecting impacted residences to the municipal drinking water system, were implemented to prevent current exposure to contaminated groundwater by off-site residents.

Following completion of the removal action at the ERS property in 1995, soil contaminated with VOCs (e.g., TCE) was left in place; however, several factors combine to support the conclusion that current exposure to contaminants in soils is insignificant. First, while the site is accessed occasionally by workers retrieving and storing trailers, exposure to contaminated soils is likely to be limited because of the short amount of time the workers spend on site and the minimal contact they have with soil. Second, as part of the removal action, the excavation pits were filled with clean soil. As a result, the vast majority of soil contamination that was left at the site is covered with clean fill. Third, in the case of the remaining surface soil contamination, it is important to note that volatilization and natural attenuation has most likely occurred between 1995 and the present, which would significantly reduced the contaminant concentrations that remain in surface soil at the ERS site. Finally, a fence topped with barbed wire surrounds the area where contaminated soil is located and restricts access to the site. Therefore, exposure to contaminated soils at the ERS site is likely to be insignificant.

V. CONCLUSION FOR CA750

It is recommended that the status code of NO be entered into RCRAInfo for CA750, migration of contaminated groundwater under control, for the ERS facility. As mentioned above, samples collected from residential drinking water wells in 1992 and 1993 indicated that off-site residential drinking water wells had been contaminated with VOCs, such as TCE and TCA, at concentrations exceeding the MCLs. These impacted wells were located across Cayce Road a short distance downgradient of the ERS facility. Data gap sampling performed in 2004 identified additional impacted residential drinking water wells located further downgradient of the ERS

property in areas that were not impacted in 1992 and 1993. As a result, based on the available information, it appears that contaminated groundwater is migrating downgradient of the ERS site and cannot be considered under control.

VI. SUMMARY OF FOLLOW-UP ACTIONS

A. CA725

No additional work is required to achieve a positive (e.g., YE) determination for the CA725. However, contaminated groundwater has moved off site and has impacted several wells in the residential area west of the ERS property. While all currently impacted wells have been connected to a municipal water source, additional domestic water wells are located in the area downgradient of the ERS property. Because off-site groundwater contamination has not been characterized and no monitoring well network is in place, it is unclear if migrating contaminated groundwater will eventually impact additional downgradient wells or if groundwater plume migration will stabilize. As a result, characterization of the groundwater plume associated with the ERS property is recommended in the short-term and groundwater monitoring is recommended over the long-term.

B. CA750

A complete characterization of the groundwater plume emanating from the ERS site is needed before a CA750 Environmental Indicator determination can be completed. This characterization should include a complete horizontal and vertical delineation of the groundwater plume.

VII. LEVEL OF CONFIDENCE IN REACHING A POSITIVE EI EVALUATION AND MAJOR ISSUES

The level of confidence in the completing the recommendations for the CA750 EI Determination outlined in Section VI is moderate, given the fact that obtaining sufficient data to allow for a positive CA750 EI determination will require a substantial effort. Numerous groundwater monitoring wells, both on site and off site, will need to be installed, from which several rounds of groundwater samples should be collected and analyzed. In addition, investigation of the groundwater plume is likely to be an iterative process that would require multiple phases of well installation and sampling. Over the long term, full delineation and potential remediation of the plume should be undertaken to ensure protection of area residents.

Attachments:	1. CA725:	Current Human Exposures Under Control
	2. CA750:	Migration of Contaminated Groundwater Under Control

Version: Interim Final
2/5/99

ATTACHMENT 1

DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION
RCRA Corrective Action
Environmental Indicator (EI) RCRAInfo Code (CA725)
Current Human Exposures Under Control

Facility Name: Enterprise Recovery Systems
Facility Address: Route 5, Box 287, Cayce Road, Byhalia, Mississippi, 38611
Facility EPA ID #: MSD000693176

1. Has **all** available relevant/significant information on known and reasonably suspected releases to soil, groundwater, surface water/sediments, and air, subject to RCRA Corrective Action (e.g., from Solid Waste Management Units (SWMU), Regulated Units (RU), and Areas of Concern (AOC)), been **considered** in this EI determination?

   _X_ If yes - check here and continue with #2 below,

   ____ If no - re-evaluate existing data, or

   ____ If data are not available skip to #6 and enter "IN" (more information needed) status code.

BACKGROUND

The Enterprise Recovery Systems (ERS) site is located southeast of Collierville, Tennessee at Route 5, Box 287 on Cayce Road, approximately one-quarter mile south of U.S. Highway 72, just inside the Mississippi state line. The site consists of an eight-acre parcel located in NW1/4, Section 22, Township 1 South, Range 4 West. The site is bounded to the west by Cayce Road and to the east, north, and south by residential property. Figure 1 in Appendix A illustrates the location of the ERS site.

ERS operated as a solvent recycling and recovery facility from 1978 to 1991. Prior to ERS operations, a portion of the site was used by C&R Products, beginning in 1971, to produce blended oil products. When ERS was operational, the site included a single story sheet metal office and storage building, two distinct storage tank areas, a small retention pond, and several outdoor drum storage areas. All of these structures, with the exception of the office and storage building, have been demolished (Ref. 1).

In 1984, ERS became a RCRA interim status facility and the State of Mississippi issued a Hazardous Waste Management Permit on August 12, 1986. In 1990, EPA completed a RCRA Facility Assessment (RFA) that identified 37 solid waste management units (SWMUs), of which no further action was recommended for 26 SWMUs and additional investigation and sampling was recommended for 11 SWMUs. It should be noted, however, that neither the Mississippi Department of Environmental Quality (MDEQ) nor the Environmental Protection Agency (EPA) have issued an official no further action approval for these units. As identified in the 1990 RFA, the 11 units requiring additional investigation and sampling are:

SWMU 4	Distillation Unit #1	SWMU 9	Runoff System

b)	Runoff Ditches	SWMU 10	Former Empty Drum Storage
c)	Runoff Pipes		Area
d)	Retention Basin	SWMU 15	Former Sludge Tank
e)	Oil/Water Separator	SWMU 16	Waste Container Storage Area
f)	Outfall Ditch	SWMU 21	Drum Storage Area
		SWMU 22	East Grassy Area

Limited investigation and sampling was performed by ERS to address the recommendations of the RFA between 1990 and 1991, when the facility ceased operations. In July 1991, based on initial investigation of soil and groundwater contamination, MDEQ issued ERS an Order to provide drinking water to surrounding residents and to prepare a soil and groundwater investigation work plan to assess potential impacts to the environment by facility operations. ERS ceased operations in October 1991, when their insurer canceled their liability insurance coverage because MDEQ inspectors identified significant soil and groundwater contamination (Ref. 1, 4).

In December 1991, eight groundwater monitoring wells (MW-1 through MW-8) were installed on the ERS site. MW-1, MW-6, and MW-7 were installed upgradient of the contaminated areas, and MW-2 through MW-5 and MW-8 were installed along the western and northwestern boundary of the property, downgradient of the contaminated areas. Water level measurements from these wells indicate that the top of the water table at the ERS site is at approximately 80 feet below ground surface (bgs) (Ref. 1, 2).

Numerous tanks, drums, drum contents, and laboratory materials were left on site when ERS ceased operations. Subsequent investigations by EPA in August and September 1992 identified hazardous materials stored in tanks and drums and, in some cases, released to the environment. After the ERS facility went bankrupt in 1992, the ERS site was referred to EPA's Superfund Branch because the State of Mississippi did not have the financial resources to address contamination at the site. EPA identified and contacted potentially responsible parties (PRPs) based on EPA Hazardous Waste Manifests for materials sent to the ERS facility. A group of these PRPs formed the Enterprise Recovery Systems Site Group (ERSSG) and executed a Administrative Order on Consent (Order) with EPA in 1993. The Order included five substantive requirements, including 1) arranging for nearby residents to be provided with a permanent alternative drinking water source, 2) arranging for removal and disposal of all hazardous waste materials stored on the site, 3) defining the nature and extent of soil contamination above the water table at the site, 4) controlling the source of existing releases of hazardous substances by achieving compliance with soil cleanup standards, and 5) arranging for disposal of contaminated soil and debris from the site. The RCRA permit issued for the ERS facility expired in December 1994 without being renewed. A removal action to address soil contamination located on site was completed by the ERSSG, with oversight by 's Emergency Response and Removal Branch (ERRB), in July 1995. As a result, in 1996, ERRB indicated that no further site work for the soil removal action was anticipated at the ERS site (Ref. 1). In addition, based on domestic water well sampling performed in 1992 and 1993, residences located downgradient of the ERS facility with wells that had been impacted above the Federal Maximum Contaminant Level (MCL) were provided with an alternative drinking water source until they could be connected to the Marshall County Water Association (MCWA).

No site investigation or corrective action activities were performed at the ERS site from 1995 until 2004, when EPA Region 4's contractor Booz Allen Hamilton performed a site reconnaissance visit in an effort to obtain updated information on the facility status and the surrounding land use (Ref. 7).

Observations made during the May 2004 site visit indicated that the ERS property is currently used to store trailers from a concession business operated by the current property owner, Mr. Ronald Maxwell. At the time of the site reconnaissance visit, more than a dozen trailers were stored in the area between the warehouse building and the east drum storage area. According to the current property owner, the site is accessed by workers only to retrieve or deposit trailers and is accessed infrequently (i.e., less than once a week) for short periods of time (i.e., usually the amount of time it takes to unhook one trailer and attach a new trailer) (Ref. 5).

The warehouse building, a portion of the former east drum storage building, and an abandoned residential trailer located on a concrete pad in the northwest portion of the site are the only structures remaining on the property. A six-foot high chain-link fence was observed surrounding the western half of the property, around the portion of the property closest to Cayce Road where the majority of the waste management activities occurred. Two gates were located on both the eastern and western fence. However, the fence was partially damaged in two locations and the gate in the southeastern corner of the fence was open. The site reconnaissance visit confirmed that the area surrounding the ERS property is rural with some low-density residential areas located across Cayce Road to the west and northwest of the site (Ref. 5).

It was also determined that the monitoring wells previously installed in the western portion of the site had been demolished. The eastern or back half of the site property was not accessible due to the presence of standing water. However, it appeared that the two upgradient wells remained locked and in good condition. Booz Allen prepared and submitted a data gap assessment report to EPA on June 23, 2004. (Ref. 5).

Because no site investigation activities had been performed since 1995, EPA data gap sampling was performed in August 2004. During this sampling event, on-site surface soil samples were collected in the East Grassy Area (SWMU 22) and the Outfall Ditch (SWMU 9f), surface water and sediment samples were collected off site from the discharge point from the Outfall Ditch (SWMU 9f), and tap water samples were collected from eight domestic drinking water wells located in the residential areas located west and northwest of the ERS property. Surface soil samples were also collected from one location in the residential area located west of the ERS property. Results of all soil, surface water, and sediment samples indicated no significant concentrations of contaminants. Results of the tap water sampling indicated that two private water wells located west of the ERS property had been impacted by contaminants released from the ERS property. Figures 2 and 3 in Appendix A identify the August 2004 data gap soil, surface water, and sediment sample locations and domestic well sample locations, respectively (Ref. 7).

As a result of the contaminant concentrations detected in the two private water wells located immediately west of the ERS property, these homes were connected to a municipal water source. In June and September of 2005, the homes located at 5049 Cayce Road and 63 Matthew Lane were connected to the Marshall County Water Association. Figure 3 identifies the location of these homes.

Definition of Environmental Indicators (for the RCRA Corrective Action)

Environmental Indicators (EI) are measures being used by the RCRA Corrective Action program to go beyond programmatic activity measures (e.g., reports received and approved, etc.) to track changes in the quality of the environment. The two EIs developed to date indicate the quality of the environment in relation to current human exposures to contamination and the migration of contaminated groundwater. An

EI for non-human (ecological) receptors is intended to be developed in the future.

Definition of "Current Human Exposures Under Control" EI

A positive "Current Human Exposures Under Control" EI determination ("YE" status code) indicates that there are no "unacceptable" human exposures to "contamination" (i.e., contaminants in concentrations in excess of appropriate risk-based levels) that can be reasonably expected under current land- and groundwater-use conditions (for all "contamination" subject to RCRA corrective action at or from the identified facility (i.e., site-wide)).

Relationship of EI to Final Remedies

While Final remedies remain the long-term objective of the RCRA Corrective Action program, the EIs are near-term objectives which are currently being used as Program measures for the Government Performance and Results Act of 1993 (GPRA). The "Current Human Exposures Under Control" EI is for reasonably expected human exposures under current land- and groundwater-use conditions ONLY, and does not consider potential future land- or groundwater-use conditions or ecological receptors. The RCRA Corrective Action program's overall mission to protect human health and the environment requires that Final remedies address these issues (i.e., potential future human exposure scenarios, future land and groundwater uses, and ecological receptors).

Duration / Applicability of EI Determinations

EI Determination status codes should remain in RCRAInfo national database ONLY as long as they remain true (i.e., RCRAInfo status codes must be changed when the regulatory authorities become aware of contrary information).

2. Are groundwater, soil, surface water, sediments, or air **media** known or reasonably suspected to be **"contaminated"**[1] above appropriately protective risk-based "levels" (applicable promulgated standards, as well as other appropriate standards, guidelines, guidance, or criteria) from releases subject to RCRA Corrective Action (from SWMUs, RUs or AOCs)?

Media	Yes	No	?	Rationale/Key Contaminants
Groundwater	X			VOCs
Air (indoors)[2]		X		
Surface Soil (e.g., <2 ft)	X			VOCs
Surface Water		X		
Sediment		X		
Subsurface Soil (e.g., >2 ft)	X			VOCs
Air (outdoors)		X		

_____ If no (for all media) - skip to #6, and enter "YE," status code after providing or citing appropriate "levels," and referencing sufficient supporting documentation demonstrating that these "levels" are not exceeded.

---

1 "Contamination" and "contaminated" describes media containing contaminants (in any form, NAPL and/or dissolved, vapors, or solids, that are subject to RCRA) in concentrations in excess of appropriately protective risk-based "levels" (for the media, that identify risks within the acceptable risk range).

2 Recent evidence (from the Colorado Dept. of Public Health and Environment, and others) suggest that unacceptable indoor air concentrations are more common in structures above groundwater with volatile contaminants than previously believed. This is a rapidly developing field and reviewers are encouraged to look to the latest guidance for the appropriate methods and scale of demonstration necessary to be reasonably certain that indoor air (in structures located above (and adjacent to) groundwater with volatile contaminants) does not present unacceptable risks.

_X_ If yes (for any media) - continue after identifying key contaminants in each "contaminated" medium, citing appropriate "levels" (or provide an explanation for the determination that the medium could pose an unacceptable risk), and referencing supporting documentation.

____ If unknown (for any media) - skip to #6 and enter "IN" status code.

RATIONALE

At various times between 1978 and 2004, groundwater, soil, surface water, and sediment have been investigated at the ERS site. A brief outline of the impacts of contaminant releases at the ERS site on each media, including indoor and outdoor air, is presented below.

Groundwater: Two groundwater sampling events were conducted in 1992 and 1993 by the EPA's Superfund Branch. Samples collected from seven on-site groundwater monitoring wells and nearby residential drinking water wells in 1992 indicated the presence of several VOCs in on-site and off-site groundwater, including trichloroethylene, cis-1,2-dichloroethene 1,1,1-trichloroethane, and 1,1-dichloroethane. Results of this sampling event indicated the presence of moderate concentrations of VOCs in on-site wells. The maximum concentration of trichloroethylene (518.4 micrograms per liter [µg/L] in MW-8) was detected in a well located in the northwestern portion of the ERS property. No maps identifying the exact location of the well were found in the available file material. In addition, concentrations in residential drinking water wells continued to exceed drinking water standards. The maximum concentration of trichloroethylene (358.6 µg/L) was detected in a residential well located across Cayce Road on the north side of Matthew Lane, which was previously identified as the Watkins well (Ref. 1, 2, 6, 7).

Based on the 1992 groundwater data, additional groundwater sampling was conducted in 1993. Drinking water wells at nine nearby residences and three on-site monitoring wells (MW-3, MW-4, and MW-8) were sampled. Results of this sampling event indicated the presence of substantial concentrations of VOCs in on-site wells. The maximum concentration of trichloroethylene (138,000 µg/L) was detected in a well located in the northwestern portion of the ERS property. No maps identifying the exact location of the well were found in the available file material. In addition, concentrations in residential drinking water wells continued to exceed drinking water standards. The maximum concentration of trichloroethylene (77 µg/L) was detected in the residential previously identified as the Watkins well (Ref. 1, 2, 6, 7).

As a result, it was concluded that unacceptable concentrations of groundwater contamination extended off site, beneath the residential properties located to the northwest of the site. To prevent exposure to contaminants by nearby residents, alternative water sources were provided and, as part of the 1995 removal action, all of the residences with private wells that contained unacceptable concentrations of groundwater were connected to the municipal water system in November/December 1994. As a result, the pathway for exposure to contaminated groundwater was rendered incomplete at the time (Ref. 1, 2, 5, 6, 7).

However, no additional monitoring was performed from 1995 until 2004, during which time contaminated groundwater migrated further downgradient. To clarify the extent of migration, additional samples were

collected in August 2004 from eight residential drinking water wells located downgradient (i.e., west and northwest) of the ERS property (See Figure 3 in Appendix A). Concentrations of trichloroethylene and 1,1-dichloroethylene in Well 1.01/1.02 (located at 63 Matthew Lane) and trichloroethylene in Well 21 (located at 5049 Cayce Road) exceeded the maximum contaminant level (MCL). Table 1 identifies all contaminants detected in these two wells and provides a comparison with the respective MCLs (Refs. 7, 8, 9).

Table 1: Contaminants Detected in Residential Wells with MCL Exceedances in August 2004

Contaminant	Well 1.01/1.02	Well 21	MCL
1,1-Dichloroethylene	**18**	2.3	7
1,1,1-Trichloroethane	13	2.9	200
Trichloroethylene	**100**	**14**	5
Tetrachlorothylene	0.78	BDL	5

All concentrations are in µg/L BDL - below detection limit Bolded concentrations exceed MCLs

Air: No indoor or outdoor air sampling data were identified in the available file material.

Outdoor Air

The site property is currently inactive and is only used to store trailers. Therefore, on-site exposure to outdoor air is an insignificant exposure pathway.

While several historical complaints of noxious odors emanating from the ERS site were previously investigated, it is important to note that these emissions to air occurred while the facility was active, and facility operations ceased in 1991. No recent assessment of the impacts to outdoor air has been conducted at the site. However, migration of contaminants into outdoor air from subsurface soils and groundwater is unlikely for several reasons. The removal action completed in 1995 resulted in the excavation and off-site removal of a significant amount of the contaminated soils. While some VOCs remain in site soils, these VOCs are low in concentration, and have been covered with clean fill in most cases. VOCs in groundwater are unlikely to volatilize to outdoor air due to the substantial depth of groundwater (approximate minimum depth to top of aquifer is 80 feet bgs) at the site (Ref. 1, 5).

Indoor Air

The site property is currently inactive, with only very limited use by workers who access the site to retrieve trailers. Currently, the on-site buildings are not occupied for any purpose. Therefore, on-site exposure to

indoor air is an incomplete exposure pathway.

Based on the most recent groundwater sampling data from 2004, a contaminated groundwater plume from the site has migrated off site in a west-northwesterly direction. Samples collected from drinking water wells at several residences downgradient of the site indicated the presence of trichloroethylene, 1,1,1-trichloroethane, and 1,1-dichloroethane in well water. While these residences were connected to municipal water to prevent exposure to contaminants via ingestion of groundwater, the potential exists for intrusion of volatiles from the groundwater plume into indoor air.

To address this potential exposure pathway, an evaluation of the potential for vapor intrusion to indoor air pathway was completed using the approach outlined in EPA's *Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils* (EPA, November 29, 2002) using the maximum concentrations of VOCs in groundwater beneath off-site residences from 2004. The following section presents a question-by-question summary of this evaluation (Ref. 1, 2).

Tier 1 - Primary Screening

Question 1: Are chemicals of sufficient volatility and toxicity known or reasonably suspected to be present in subsurface soil, soil gas, or groundwater; the presence of these chemicals having resulted from releases subject to RCRA Corrective Action?

Contaminants of sufficient toxicity and volatility (i.e., including trichloroethylene, 1,1,1-trichloroethane, and 1,1-dichloroethane), which were released from the ERS site, are present beneath off-site residences .

Question 2: Are inhabited buildings located near subsurface contaminants having sufficient volatility and toxicity?

Residences are located directly above the contaminated groundwater plume. The top of the water table is located at approximately 80 feet bgs. These residences include homes located across Cayce Road from the ERS site and on Matthew Lane. As a result, inhabited buildings with enclosed air spaces that are designed for human occupancy are located near subsurface contaminants identified in Question 1.

Question 3: Is immediate action warranted to mitigate risks to residents to those buildings identified in Question 2 to be located within the area of concern?

Based on the large vertical distance between contaminated groundwater and the residences and the relatively low concentrations of VOCs in groundwater, the evidence does not suggest that immediate action is warranted to mitigate current risks.

Results of the Tier 1 - Primary Screening indicates that the vapor intrusion pathway is potentially complete and should be evaluated further with a Tier 2 - Secondary Screening.

Tier 2 - Secondary Screening

Question 4: Do measured or reasonably estimated indoor air, soil gas, or groundwater concentrations

exceed the target media-specific concentrations give in Table 2?

Indoor air data are not available. Contamination in the unsaturated zone soil beneath the residences is unlikely because contaminants were released on the ERS property and have been carried off-site by groundwater migration. As a result, a comparison of concentrations in groundwater is most relevant. See Table 2 below for a comparison with indoor air screening values. The maximum concentration of trichloroethylene detected in residential wells exceeded the Tier 2 screening values.

Table 2: Comparison of Off-Site Groundwater Contaminant Concentrations with Indoor Air Screening Levels

Contaminant	Maximum Concentration in Residential Well	Generic Screening Level for 1×10^{-6} Risk
Trichloroethylene	**100**	5.0
1,1,1-Trichloroethane	18	3,100
cis-1,2-Dichloroethylene	13	21

All concentrations are in µg/l
Bolded concentrations exceed the generic screening criteria

Tier 3 - Site-Specific Pathway Assessment

Because concentrations of trichloroethylene exceeded the generic screening criteria, the maximum concentration in off-site groundwater samples collected in 2004 was used to calculate an incremental risk value (IRV) and hazard quotient (HQ) associated with the potential migration of volatiles into indoor air using the Johnson-Ettinger (J-E) Model. Default values were used in the J-E model except for the depth below grade to water table, for which a value of 2500 cm or 80 feet was selected. The calculated IRV and HQ for trichloroethylene are 4.0×10^{-6} and 0.0021, respectively. The calculated HQ is substantially less than EPA's target hazard quotient of 1.0. The IRV is within EPA's acceptable risk range of $1.0E^{-4}$ to $1.0E^{-6}$ and is very close to the lower end of the range, suggesting that indoor air risks are minimal. Therefore, it is unlikely that indoor air has been impacted significantly by volatile contaminants in off-site groundwater.

Surface/Subsurface Soil: A table providing the maximum concentrations of contaminants in surface and subsurface soils was not prepared for two reasons. First, data from the 2004 data gap sampling event indicated that no significant contaminant concentrations were present; however, these data are limited and do not address the entire ERS site. Second, by contrast, data from the 1995 removal action indicate that significant concentrations of contaminants were left in place; however, these data are more than ten years old. As a result of these discrepancies, specific concentrations of surface and subsurface soil contaminants are unknown. Nevertheless, for the purpose of this CA725 evaluation, it was assumed that significant

concentrations of contaminants remain in surface and subsurface soils to ensure a conservative evaluation of the risks posed to potential receptors. A summary of the available data for surface and subsurface soils is provided below for background purposes (Refs. 1, 4, 5, 6, 7).

A removal action completed in 1995 resulted in the excavation of a significant amount of the on-site soil contamination present at the ERS site. Figure 4 in Appendix A identifies the excavation areas from the removal action. As part of the removal action, EPA approved cleanup goals (CGs) for the ERS site soils. The CGs and the respective EPA Region 9 Preliminary Remediation Goal (PRG) for industrial soil are identified in Table 3:

Table 3: 1995 Removal Action Soil Cleanup Goals and Screening Levels for the ERS Site

Contaminant	EPA-Approved Cleanup Goal	Region 9 PRG for Industrial Soil
Acetone	500	6,000
Ethylbenzene	500	20
Methyl Ethyl Ketone	500	27,000
Toluene	500	520
Trichloroethylene	50	0.11
1,1,1-Trichloroethane	250	1,200
Xylene	500	420

All concentrations in milligrams per kilogram (mg/kg)

Confirmatory sampling data from the 1995 removal action indicate that all on-site soil contamination above the EPA-approved CGs was excavated and removed from the site. However, some of the concentrations of contaminants left in place exceeded the PRGs for industrial soil.

Area A - Soil was excavated to a maximum depth of six feet bgs and 17 confirmation samples were collected from the sidewalls and floor of the excavation. While all contaminant concentrations were below the CGs, concentrations of trichloroethylene, ethylbenzene, tolunene, and xylene remain at six feet bgs exceeded the PRGs for industrial soil. The excavation was filled with clean backfill. Figure 4 in Appendix A identifies the extent of excavation at Area A (Ref. 1, 6).

Area B - Contaminant concentrations in surface and subsurface soil were all less than the PRGs for industrial soil and the CGs, with one exception. The maximum concentration of trichloroethylene (0.21 mg/kg) slightly exceeded the PRGs for industrial soil (0.11 mg/kg) in one surface soil sampling location. Because no contaminant concentrations exceeded the CGs, Area B was not addressed during the removal action (Ref. 1, 6).

Area C - Soil was excavated to a maximum depth of 15 feet bgs, ten confirmation samples were collected

from the sidewalls and floor of the excavation, and four subsurface soil samples were collected from the area just outside the extent of the excavation. Results from the confirmation soil samples indicate that two confirmation sampling locations in the eastern portion of the excavation floor (four feet bgs) contained concentrations of trichloroethylene (98.9 mg/kg and 273 mg/kg), which exceeded the CG of 50 mg/kg and the PRG for industrial soil of 0.11 mg/kg. No additional excavation was completed due to the presence of an abandoned pipe located approximately 1.5 feet bgs. The excavation was filled with clean backfill. Figure 4 in Appendix A identifies the extent of excavation at Area C (Ref. 1, 6).

Area D - The concentration of trichloroethylene (0.20 mg/kg) in one surface soil sample slightly exceeded the PRG for industrial soil (0.11 mg/kg). Based on the sampling result, Area D was not addressed during the removal action (Ref. 1, 6).

Area E - The concentration of trichloroethylene (1.2 mg/kg) in one surface soil sample exceeded the PRG for industrial soil (0.11 mg/kg). Based on the sampling result, Area E was not addressed during the removal action (Ref. 1, 6).

Area F - The concentration of trichloroethylene (36.4 mg/kg) in one subsurface soil sample exceeded the PRG for industrial soil (0.11 mg/kg). All remaining samples collected in this area, including the one collected immediately above and below the impacted location were below the cleanup standards. Approximately 54 cubic yards of soil were removed from Area F and, based on the limited extent of contamination, EPA determined that no additional excavation was needed (Ref. 1, 6).

No off-site soil contamination was identified or suspected during the ERS site assessment completed prior to the removal action. However, to address a claim that contamination from the ERS site was causing the health problems experienced by off-site residents, MDEQ collected and analyzed three surface soil samples from 127 Matthew Lane, in May 2004. Metals were detected; however, all concentrations were less than the PRGs for residential soil. Toluene (1,201 µg/kg), 4-methylphenol (1.64 µg/kg), and phenol (0.38 µg/kg) were also detected in one soil sample; however, concentrations were several orders of magnitude less than their respective PRG for residential soil. No other contaminants were detected. Two additional surface soil samples were collected from the Kirk property during the August 2004 data gap sampling event. Results also did not identify significant contaminant concentrations when compared with the PRGs for residential soil (Ref. 3).

In addition, during the August 2004 data gap sampling event, surface soil samples were collected from East Grassy Area (SWMU 22) located east of the fenced portion of the ERS property. No contaminants were detected at concentrations greater than the PRGs for residential soil.

Surface Water/Sediment: Currently, there are no surface water bodies present on the ERS site. The Retention Basin (SWMU 9d) was sampled, drained, and backfilled during the 1995 removal action activities (Ref. 1, 6, 7, 8).

To address the claim that contamination from the ERS site was causing the health problems experienced by the off-site residents, MDEQ collected and analyzed one surface water sample from a small standing water body from a residential property located at 127 Matthew lane west of the ERS property. Acetone (56.6 µg/L), benzoic acid (5.57 µg/L), and toluene (2.69 µg/L) were detected; however, concentrations were significantly less than their MDEQ Tier 1 Target Remediation Goal (TRG) values for groundwater, which

were 608 µg/L, 146,000 µg/L ,and 1,000 µg/L, respectively. No other contaminants were detected. The contaminants that were detected are most likely attributable to a source other than the ERS site because no migration pathway exists for transport of contaminants from the site to surface water on this property (Ref. 3).

In addition, during the August 2004 data gap sampling event, surface water and sediment samples were collected from the area located east of the ERS property that received discharges from the area of discharge for the Outfall Ditch (SWMU 9f), which is located east of the site, outside the fenced boundary. No contaminants were detected in sediment samples at concentrations greater than the PRGs for residential soil and no contaminants were detected in surface water samples at concentrations greater than the PRGs for tap water.

3. Are there **complete pathways** between "contamination" and human receptors such that exposures can be reasonably expected under the current (land- and groundwater-use) conditions?

Summary Exposure Pathway Evaluation Table
Potential **Human Receptors** (Under Current Conditions)

Contaminated Media	**Residents**	**Workers**	~~**Day-Care**~~	**Construction**	**Trespassers**	**Recreation**	~~**Food**~~[3]
Groundwater	No	No	-	N/L	N/L	N/L	-
~~Air (indoors)~~	~~-~~	~~-~~	~~-~~	~~-~~	~~-~~	~~-~~	~~-~~
Soil (surface, e.g., <2 ft)	No	Yes	-	No	Yes	N/L	-
~~Surface Water~~	~~-~~	~~-~~	~~-~~	~~-~~	~~-~~	~~-~~	~~-~~
~~Sediment~~	~~-~~	~~-~~	~~-~~	~~-~~	~~-~~	~~-~~	~~-~~
Soil (subsurface, e.g., >2 ft)	N/L	N/L	-	No	N/L	N/L	-
~~Air (outdoors)~~	~~-~~	~~-~~	~~-~~	~~-~~	~~-~~	~~-~~	~~-~~

Instructions for Summary Exposure Pathway Evaluation Table:

1. For Media which are not "contaminated" as identified in #2, please strike-out specific Media, including Human Receptors' spaces, or enter "N/C" for not contaminated.

2. Enter "yes" or "no" for potential "completeness" under each "Contaminated" Media -- Human Receptor combination (Pathway).

Note: In order to focus the evaluation to the most probable combinations, some potential "Contaminated" Media - Human Receptor combinations (Pathways) are not assigned spaces in the above table (i.e, **N/L - not likely**). While these combinations may not be probable in most situations, they may be possible in some settings and **should be added as necessary**.

_____ If no (pathways are not complete for any contaminated media-receptor combination) - skip to #6, and enter "YE" status code, after explaining and/or referencing condition(s) in-place, whether natural or man-made, preventing a complete exposure pathway from each contaminated medium (e.g., use optional Pathway Evaluation Work Sheet to analyze major pathways).

_X_ If yes (pathways are complete for any "Contaminated" Media - Human Receptor combination) - continue after providing supporting explanation.

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3 Indirect Pathway/Receptor (e.g., vegetables, fruits, crops, meat and dairy products, fish, shellfish, etc.)

_____ If unknown (for any "Contaminated" Media - Human Receptor combination) - skip to #6 and enter "IN" status code

RATIONALE

Groundwater and surface and subsurface soils were the only media identified as impacted above appropriate screening criteria at the ERS site. No daycare facilities, crops, or livestock are located on or adjacent to the property. In addition, recreational use is highly unlikely due to the small size and unattractive nature of the property.

Contaminated groundwater has been identified on site and off site under residences located downgradient of the ERS site. Direct contact with contaminated groundwater is not possible due to the significant depth to groundwater (i.e., approximately 80 feet bgs). Workers accessing the site cannot be exposed via the ingestion, inhalation, or direct contact pathways because groundwater is not used as a water source for the ERS property. Based on sampling data from August 2004, two residential drinking water wells were determined to be impacted with trichloroethylene at concentrations greater than the MCLs. As a result, these homes were connected to the Marshall County Water Association in June and September 2005. Thus, because off-site residents are now supplied with a clean drinking water source, no complete pathways currently exist for exposure to groundwater impacted by the ERS site (Refs. 1, 2, 5, 7, 8).

Based on a discussion with the current owner of the ERS property, no intrusive or construction-related activities occur currently nor are any planned at the site in the near future (Ref. 5). Thus, exposure to contaminated subsurface soils is expected to be highly unlikely and is an incomplete exposure pathway.

As discussed in response to Question 2, surface soils samples collected off site did not identify contaminants at concentrations greater than appropriate screening criteria. Impacted surface soils have been identified on site during historic sampling event in the early 1990s. Therefore, only workers involved in storing and collecting concession trailers and trespassers could potentially be exposed to contaminated surface soils (Refs. 1, 2, 5, 6, 7).

4 Can the **exposures** from any of the complete pathways identified in #3 be reasonably expected to be **"significant"**[4] (i.e., potentially "unacceptable" because exposures can be reasonably expected to be: 1) greater in magnitude (intensity, frequency and/or duration) than assumed in the derivation of the acceptable "levels" (used to identify the "contamination"); or 2) the combination of exposure magnitude (perhaps even though low) and contaminant concentrations (which may be substantially above the acceptable "levels") could result in greater than acceptable risks)?

_X_ If no (exposures can not be reasonably expected to be significant (i.e., potentially "unacceptable") for any complete exposure pathway) - skip to #6 and enter "YE" status code after explaining and/or referencing documentation justifying why the exposures (from each of the complete pathways) to "contamination" (identified in #3) are not expected to be "significant."

____ If yes (exposures could be reasonably expected to be "significant" (i.e., potentially "unacceptable") for any complete exposure pathway) - continue after providing a description (of each potentially "unacceptable" exposure pathway) and explaining and/or referencing documentation justifying why the exposures (from each of the remaining complete pathways) to "contamination" (identified in #3) are not expected to be "significant."

____ If unknown (for any complete pathway) - skip to #6 and enter "IN" status code

RATIONALE

It is unlikely that exposure to contaminated surface soil at the ERS site by on-site workers will be significant for several reasons. First, while the site is accessed occasionally by workers retrieving and storing trailers, exposure to contaminated soils is likely to be limited because of the short amount of time the workers spend on site and the minimal contact they have with the soil. According to discussions with the current property owner, Mr. Ronald Maxwell, the length of time spent on the site by workers is usually limited to the time needed to unhook a trailer and collect a different trailer. This usually requires less than an hour and occurs fairly infrequently (e.g., usually less than once a week) (Ref. 5). Second, in the case of the remaining surface soil contamination, it is important to note that volatilization and natural attenuation have likely occurred between 1995 and the present, thus potentially reducing remaining contaminant

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4 If there is any question on whether the identified exposures are "significant" (i.e., potentially "unacceptable") consult a human health Risk Assessment specialist with appropriate education, training and experience.

concentrations in on-site surface soil to a significant degree. Finally, the areas where surface soil contamination was identified are currently overgrown with grasses and brush, making contact difficult and even more unlikely to occur on a routine basis (Ref. 5).

All of the factors cited as justification for preventing surface soil exposure by on-site workers are equally relevant for a trespasser receptor. In addition, a barbed-wire topped chain-link fence surrounds much of the ERS site, which is likely to discourage trespassers from accessing the property. Areas of the site not surrounded by fencing are surrounded by heavily wooded areas that would also limit access to the property. Even if the site were accessed, contaminant concentrations have likely been reduced in the past ten years and a trespasser would be unlikely to have significant contact with the areas of historically impacted soil due to the dense vegetation (Ref. 5).

Therefore, exposure to contaminated surface soil at the ERS site is not likely to be significant for any receptor.

5 Can the "significant" **exposures** (identified in #4) be shown to be within **acceptable** limits?

_____ If yes (all "significant" exposures have been shown to be within acceptable limits) - continue and enter "YE" after summarizing and referencing documentation justifying why all "significant" exposures to "contamination" are within acceptable limits (e.g., a site-specific Human Health Risk Assessment).

_____ If no (there are current exposures that can be reasonably expected to be "unacceptable")- continue and enter "NO" status code after providing a description of each potentially "unacceptable" exposure.

_____ If unknown (for any potentially "unacceptable" exposure) - continue and enter "IN" status code

Rationale and Reference(s):

This question is not applicable. See the response to Question No. 4.

6. Check the appropriate RCRAInfo status codes for the Current Human Exposures Under Control EI event code (CA725), and obtain Supervisor (or appropriate Manager) signature and date on the EI determination below (and attach appropriate supporting documentation as well as a map of the facility):

_X_ YE - Yes, "Current Human Exposures Under Control" has been verified. Based on a review of the information contained in this EI Determination, "Current Human Exposures" are expected to be "Under Control" at the **Enterprise Recovery Systems** facility, EPA ID #**MSD000693176**, located at **Route 5, Box 287, Cayce Road, Byhalia, Mississippi, 38611** under current and reasonably expected conditions. This determination will be re-evaluated when the Agency/State becomes aware of significant changes at the facility.

____ NO - "Current Human Exposures" are NOT "Under Control."

____ IN - More information is needed to make a determination.

Completed by (signature)_____ Date
(print) Robert Morris
(title)

Supervisor (signature)_____ Date
(print) Lael Butler
(title)
EPA Region 4

Branch Chief (signature)_____ Date _____[5]
(print) Jon D. Johnston
(title)
EPA Region 4

Locations where References may be found:

U.S. EPA Region 4
RCRA Programs Branch File Room
61 Forsyth Street, SW
Atlanta, Georgia 30303

Contact telephone and e-mail numbers

(name) Robert Morris

[5] FINAL NOTE: THE HUMAN EXPOSURES EI IS A QUALITATIVE SCREENING OF EXPOSURES AND THE DETERMINATIONS WITHIN THIS DOCUMENT SHOULD NOT BE USED AS THE SOLE BASIS FOR RESTRICTING THE SCOPE OF MORE DETAILED (E.G., SITE-SPECIFIC) ASSESSMENTS OF RISK.

(phone #)__404-562-8470
(e-mail)__Morris.robert@epa.gov

ATTACHMENT 2

DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION
RCRA Corrective Action
Environmental Indicator (EI) RCRAInfo Event Code (CA750)
Migration of Contaminated Groundwater Under Control

Facility Name: Enterprise Recovery Systems
Facility Address: Route 5, Box 287, Cayce Road, Byhalia, Mississippi, 38611
Facility EPA ID #: MSD000693176

1. Has **all** available relevant/significant information on known and reasonably suspected releases to the groundwater media, subject to RCRA Corrective Action (e.g., from Solid Waste Management Units (SWMU), Regulated Units (RU), and Areas of Concern (AOC)), been **considered** in this EI determination?

   _X_ If yes - check here and continue with #2 below,

   _____ If no - re-evaluate existing data, or

   _____ If data are not available, skip to #8 and enter"IN" (more information needed) status code.

BACKGROUND

The Enterprise Recovery Systems (ERS) site is located at Route 5, Box 287 on Cayce Road, approximately one-quarter mile south of U.S. Highway 72, just inside the Mississippi state line, and southeast of Collierville, Tennessee. The site consists of an eight-acre parcel located in NW1/4, Section 22, Township 1 South, Range 4 West. The site is bounded to the west by Cayce Road and to the east, north and south by residential property. Figure 1 in Appendix A illustrates the location of the ERS site.

ERS operated as a solvent recycling and recovery facility from 1978 to 1991. Prior to ERS operations, a portion of the site was used by C&R Products, beginning in 1971, to produce blended oil products. When ERS was operational, the site included a single story sheet metal office and storage building, two distinct storage tank areas, a small retention pond, and several outdoor drum storage areas (Ref. 5).

In 1984, the ERS facility became a RCRA interim status facility and the State of Mississippi issued a Hazardous Waste Management Permit to ERS on August 12, 1986. The expiration date for the ERS permit was December 27, 1994. In 1990, EPA completed a RCRA Facility Assessment (RFA) for the ERS facility, which identified 37 solid waste management units (SWMUs) and no areas of concern (AOCs). Of these 37 SWMUs, no further action was recommended for 26 units and additional investigation and sampling was recommended for 11 units. It should be noted, however, that neither the Mississippi Department of Environmental Quality (MDEQ) nor the Environmental Protection Agency (EPA) have issued an official no further action approval for these units. As identified in the 1990 RFA, the 11 units requiring additional investigation and sampling are:

SWMU 4	Distillation Unit #1	SWMU 10	Former Empty Drum Storage Area
SWMU 9	Runoff System	SWMU 15	Former Sludge Tank
	b) Runoff Ditches	SWMU 16	Waste Container Storage Area
	c) Runoff Pipes	SWMU 21	Drum Storage Area
	d) Retention Basin	SWMU 22	East Grassy Area
	e) Oil/Water Separator		
	f) Outfall Ditch		

Limited investigation and sampling was performed by ERS to address the recommendations of the RFA between 1990 and 1991, when the facility ceased operations. In July 1991, based on initial investigation of soil and groundwater contamination, MDEQ issued ERS an Order to provide drinking water to surrounding residents and to prepare a soil and groundwater investigation work plan to assess potential impacts to the environment by facility operations. ERS ceased operations in October 1991, when their insurer canceled their liability insurance coverage because MDEQ inspectors identified significant soil and groundwater contamination (Refs. 1, 4).

In December 1991, eight groundwater monitoring wells (MW-1 through MW-8) were installed on the ERS site. MW-1, MW-6, and MW-7 were installed upgradient of the contaminated areas, and MW-2 through MW-5 and MW-8 were installed along the western and northwestern boundary of the property, downgradient of the contaminated areas. Water level measurements from these wells indicate that the top of the water table at the ERS site is at approximately 80 feet below ground surface (bgs) (Ref. 1, 2).

Numerous tanks, drums, drum contents, and laboratory materials were left on site when ERS ceased operations. Subsequent investigations by EPA in August and September 1992 identified hazardous materials stored in tanks and drums and, in some cases, released to the environment. After the ERS facility went bankrupt in 1992, the ERS site was referred to the Superfund Branch because the State of Mississippi did not have the financial resources to address contamination at the site. EPA identified and contacted potentially responsible parties (PRPs) based on EPA Hazardous Waste Manifests for materials sent to the ERS facility. A group of these PRPs formed the Enterprise Recovery Systems Site Group (ERSSG) and executed a Administrative Order on Consent (Order) with EPA in 1993. The Order included five substantive requirements, including 1) arranging for nearby residents to be provided with a permanent alternative drinking water source, 2) arranging for removal and disposal of all hazardous waste materials stored on the site, 3) defining the nature and extent of soil contamination above the water table at the site, 4) controlling the source of existing releases of hazardous substances by achieving compliance with soil cleanup standards, and 5) arranging for disposal of contaminated soil and debris from the site. Two groundwater sampling events were conducted in 1992 and 1993 by the EPA Superfund Branch. The RCRA permit issued for the ERS facility expired in December 1994 without being renewed. A removal action to address soil contamination located on site was completed by the ERSSG, with oversight by EPA's Emergency Response and Removal Branch (ERRB), in July 1995. As a result, in 1996, ERRB indicated that no further site work for the soil removal action was anticipated at the ERS site. It should be noted that no work to address groundwater contamination was performed by ERRB (Ref. 1). In addition, based on domestic water well sampling performed in 1992 and 1993, residences located downgradient of the ERS facility with wells that had been impacted above the Federal Maximum Contaminant Level (MCL) were provided with an alternative drinking water source until they could be connected to the Marshall County Water Association (MCWA).

No site investigation or corrective action activities were performed at the ERS site from 1993 until 2004, when EPA performed a site reconnaissance visit, in an effort to obtain updated information on the facility status and surrounding land use (Ref. 5).
During the site visit, it was determined that the several of the monitoring wells that had previously been

installed in the western portion of the site in 1991 had been demolished. The eastern or back half of the site property was not accessible due to the presence of standing water; however, it appeared that the two upgradient wells remained locked and in good condition (Ref. 5). Booz Allen prepared and submitted a data gap assessment report to EPA on June 23, 2004.

Because no groundwater investigation activities had been performed since 1993, data gap sampling was performed in August 2004. During this sampling event, tap water samples were collected from eight domestic drinking water wells in the residential areas located west and northwest of the ERS property. Figure 3 in Appendix A identifies the location of residential drinking water wells situated downgradient of the ERS property that were sampled in August 2004. Results of the tap water sampling indicated that two private water wells located west of the ERS property had been impacted by contaminants released from the ERS property (Ref. 7).

Definition of Environmental Indicators (for the RCRA Corrective Action)

Environmental Indicators (EI) are measures being used by the RCRA Corrective Action program to go beyond programmatic activity measures (e.g., reports received and approved, etc.) to track changes in the quality of the environment. The two EIs developed to-date indicate the quality of the environment in relation to current human exposures to contamination and the migration of contaminated groundwater. An EI for non-human (ecological) receptors is intended to be developed in the future.

Definition of "Migration of Contaminated Groundwater Under Control" EI

A positive "Migration of Contaminated Groundwater Under Control" EI determination ("YE" status code) indicates that the migration of "contaminated" groundwater has stabilized, and that monitoring will be conducted to confirm that contaminated groundwater remains within the original "area of contaminated groundwater" (for all groundwater "contamination" subject to RCRA corrective action at or from the identified facility (i.e., site-wide)).

Relationship of EI to Final Remedies

While Final remedies remain the long-term objective of the RCRA Corrective Action program the EI are near-term objectives which are currently being used as Program measures for the Government Performance and Results Act of 1993 (GPRA). The "Migration of Contaminated Groundwater Under Control" EI pertains ONLY to the physical migration (i.e., further spread) of contaminated ground water and contaminants within groundwater (e.g., non-aqueous phase liquids [NAPLs]). Achieving this EI does not substitute for achieving other stabilization or final remedy requirements and expectations associated with sources of contamination and the need to restore, wherever practicable, contaminated groundwater to be suitable for its designated current and future uses.

Duration / Applicability of EI Determinations

EI Determination status codes should remain in RCRAInfo national database ONLY as long as they remain true (i.e., RCRAInfo status codes must be changed when the regulatory authorities become aware of contrary information).

RCRA Corrective Action
Environmental Indicator (EI) RCRAInfo Event Code (CA750)

2. Is **groundwater** known or reasonably suspected to be **"contaminated"**[1] above appropriately protective "levels" (i.e., applicable promulgated standards, as well as other appropriate standards, guidelines, guidance, or criteria) from releases subject to RCRA Corrective Action, anywhere at, or from, the facility?

   _X_ If yes - continue after identifying key contaminants, citing appropriate "levels," and referencing supporting documentation.

   ____ If no - skip to #8 and enter "YE" status code, after citing appropriate "levels," and referencing supporting documentation to demonstrate that groundwater is not "contaminated."

   ____ If unknown - skip to #8 and enter "IN" status code.

RATIONALE

Two groundwater sampling events were conducted in 1992 and 1993 by the EPA's Superfund Branch. Samples collected from seven on-site groundwater monitoring wells and nearby residential drinking water wells in 1992 indicated the presence of several VOCs in on-site and off-site groundwater, including trichloroethylene, cis-1,2-dichloroethene 1,1,1-trichloroethane, and 1,1-dichloroethane. Results of this sampling event indicated the presence of moderate concentrations of VOCs in on-site wells. The maximum concentration of trichloroethylene (518.4 micrograms per liter [µg/L] in MW-8) was detected in a well located in the northwestern portion of the ERS property. No maps identifying the exact location of the well were found in the available file material. In addition, concentrations in residential drinking water wells continued to exceed drinking water standards. The maximum concentration of trichloroethylene (358.6 µg/L) was detected in a residential well located across Cayce Road on the north side of Matthew Lane, which was previously identified as the Watkins well (Ref. 1, 2, 6, 7).

Based on the 1992 groundwater data, additional groundwater sampling was conducted in 1993. Drinking water wells at nine nearby residences and three on-site monitoring wells (MW-3, MW-4, and MW-8) were sampled. Results of this sampling event indicated the presence of substantial concentrations of VOCs in on-site wells. The maximum concentration of trichloroethylene (138,000 µg/L) was detected in a well located in the northwestern portion of the ERS property. No maps identifying the exact location of the well were found in the available file material. In addition, concentrations in residential drinking water wells continued to exceed drinking water standards. The maximum concentration of trichloroethylene (77

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1 "Contamination" and "contaminated" describes media containing contaminants (in any form, NAPL and/or dissolved, vapors, or solids, that are subject to RCRA) in concentrations in excess of appropriate "levels" (appropriate for the protection of the groundwater resource and its beneficial uses).

µg/L) was detected in the residential previously identified as the Watkins well (Ref. 1, 2, 6, 7).

No additional monitoring was performed from 1995 until 2004, during which time contaminated groundwater was suspected to have migrated farther downgradient and off site of the ERS property. To clarify the extent of migration, additional samples were collected in August 2004 from eight residential drinking water wells located west and northwest of the ERS property. Concentrations of trichloroethylene and 1,1-dichloroethylene in Well 1.01/1.02 (located at 63 Matthew Lane) and trichloroethylene in Well 21 (located at 5049 Cayce Road) exceeded the maximum contaminant level (MCL). Table 1 identifies all contaminants detected in these two wells and provides a comparison with the respective MCLs (Refs. 7, 8, 9).

Table 1: Contaminants Detected in Residential Wells with MCL Exceedances in August 2004

Contaminant	Well 1.01/1.02	Well 21	MCL
1,1-Dichloroethylene	**18**	2.3	7
1,1,1-Trichloroethane	13	2.9	200
Trichloroethylene	**100**	**14**	5
Tetrachlorothylene	0.78	BDL	5

All concentrations are in µg/L
BDL - below detection limit
Bolded concentrations exceed MCLs

3. Has the **migration** of contaminated groundwater **stabilized** such that contaminated groundwater is expected to remain within "existing area of contaminated groundwater"[7] as defined by the monitoring locations designated at the time of this determination?

_____ If yes - continue, after presenting or referencing the physical evidence (e.g., groundwater sampling/measurement/migration barrier data) and rationale why contaminated groundwater is expected to remain within the (horizontal or vertical) dimensions of the "existing area of groundwater contamination"[7]).

__NO__ If no (contaminated groundwater is observed or expected to migrate beyond the designated locations defining the "existing area of groundwater contamination"[2]) - skip to #8 and enter "NO" status code, after providing an explanation.

_____ If unknown - skip to #8 and enter "IN" status code.

RATIONALE

Limited on-site groundwater monitoring was performed in 1992 and results of this sampling indicated the presence of substantial concentrations of VOCs (e.g., maximum trichloroethylene concentration of 138,000 ug/l in MW-8) in on-site wells. Off-site domestic drinking water wells were also sampled in 1992 and 1993. Results of this sampling indicated that off-site residential drinking water wells had also been contaminated with VOCs, such as TCE and TCA, at concentrations exceeding the MCLs. These impacted wells were located across Cayce Road a short distance downgradient of the ERS facility. Data gap sampling performed in 2004 identified additional impacted residential drinking water wells located further downgradient of the ERS property in areas that were not impacted in 1993 and 1994. As a result, based on the available information, it appears that contaminated groundwater is migrating downgradient of the ERS site

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2 "existing area of contaminated groundwater" is an area (with horizontal and vertical dimensions) that has been verifiably demonstrated to contain all relevant groundwater contamination for this determination, and is defined by designated (monitoring) locations proximate to the outer perimeter of "contamination" that can and will be sampled/tested in the future to physically verify that all "contaminated" groundwater remains within this area, and that the further migration of "contaminated" groundwater is not occurring. Reasonable allowances in the proximity of the monitoring locations are permissible to incorporate formal remedy decisions (i.e., including public participation) allowing a limited area for natural attenuation.

and cannot be considered stabilized.

RCRA Corrective Action
Environmental Indicator (EI) RCRAInfo Event Code (CA750)

4. Does "contaminated" groundwater **discharge** into **surface water** bodies?

_____ If yes - continue after identifying potentially affected surface water bodies.

_____ If no - skip to #7 (and enter a "YE" status code in #8, if #7 = yes) after providing an explanation and/or referencing documentation supporting that groundwater "contamination" does not enter surface water bodies.

_____ If unknown - skip to #8 and enter "IN" status code.

Rationale and Reference(s):

This question is not applicable. See the response to Question No. 3.

5. Is the **discharge** of "contaminated" groundwater into surface water likely to be **"insignificant"** (i.e., the maximum concentration[11] of each contaminant discharging into surface water is less than 10 times their appropriate groundwater "level," and there are no other conditions (e.g., the nature and number of discharging contaminants, or environmental setting) which significantly increase the potential for unacceptable impacts to surface water, sediments, or eco-systems at these concentrations)?

_____ If yes - skip to #7 (and enter "YE" status code in #8 if #7 = yes), after documenting: 1) the maximum known or reasonably suspected concentration[8] of key contaminants discharged above their groundwater "level," the value of the appropriate "level(s)," and if there is evidence that the concentrations are increasing; and 2) providing a statement of professional judgement/explanation (or reference documentation) supporting that the discharge of groundwater contaminants into the surface water is not anticipated to have unacceptable impacts to the receiving surface water, sediments, or eco-system.

_____ If no - (the discharge of "contaminated" groundwater into surface water is potentially significant) - continue after documenting: 1) the maximum known or reasonably suspected concentration[8] of each contaminant discharged above its groundwater "level," the value of the appropriate "level(s)," and if there is evidence that the concentrations are increasing; and 2) for any contaminants discharging into surface water in concentrations[3] greater than 100 times their appropriate groundwater "levels," providing the estimated total amount (mass in kg/yr) of each of these contaminants that are being discharged (loaded) into the surface water body (at the time of the determination), and identifying if there is evidence that the amount of discharging contaminants is increasing.

_____ If unknown - enter "IN" status code in #8.

Rationale and Reference(s):

This question is not applicable. See the response to Question No. 3.

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3 As measured in groundwater prior to entry to the groundwater-surface water/sediment interaction (e.g., hyporheic) zone.

6. Can the **discharge** of "contaminated" groundwater into surface water be shown to be "**currently acceptable**" (i.e., not cause impacts to surface water, sediments or eco-systems that should not be allowed to continue until a final remedy decision can be made and implemented[4])?

_____ If yes - continue after either: 1) identifying the Final Remedy decision incorporating these conditions, or other site-specific criteria (developed for the protection of the site's surface water, sediments, and eco-systems), and referencing supporting documentation demonstrating that these criteria are not exceeded by the discharging groundwater; OR
2) providing or referencing an interim-assessment,[5] appropriate to the potential for impact, that shows the discharge of groundwater contaminants into the surface water is (in the opinion of a trained specialists, including ecologist) adequately protective of receiving surface water, sediments, and eco-systems, until such time when a full assessment and final remedy decision can be made. Factors which should be considered in the interim-assessment (where appropriate to help identify the impact associated with discharging groundwater) include: surface water body size, flow, use/classification/habitats and contaminant loading limits, other sources of surface water/sediment contamination, surface water and sediment sample results and comparisons to available and appropriate surface water and sediment "levels," as well as any other factors, such as effects on ecological receptors (e.g., via bio-assays/benthic surveys or site-specific ecological Risk Assessments), that the overseeing regulatory agency would deem appropriate for making the EI determination.

_____ If no - (the discharge of "contaminated" groundwater can not be shown to be "**currently acceptable**") - skip to #8 and enter "NO" status code, after

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4 Note, because areas of inflowing groundwater can be critical habitats (e.g., nurseries or thermal refugia) for many species, appropriate specialist (e.g., ecologist) should be included in management decisions that could eliminate these areas by significantly altering or reversing groundwater flow pathways near surface water bodies.

5 The understanding of the impacts of contaminated groundwater discharges into surface water bodies is a rapidly developing field and reviewers are encouraged to look to the latest guidance for the appropriate methods and scale of demonstration to be reasonably certain that discharges are not causing currently unacceptable impacts to the surface waters, sediments or eco-systems.

documenting the currently unacceptable impacts to the surface water body, sediments, and/or eco-systems.

_____ If unknown - skip to 8 and enter "IN" status code.

Rationale and Reference(s):

This question is not applicable. See the response to Question No. 3.

7. Will groundwater **monitoring** / measurement data (and surface water/sediment/ecological data, as necessary) be collected in the future to verify that contaminated groundwater has remained within the horizontal (or vertical, as necessary) dimensions of the "existing area of contaminated groundwater?"

   _____ If yes - continue after providing or citing documentation for planned activities or future sampling/measurement events. Specifically identify the well/measurement locations which will be tested in the future to verify the expectation (identified in #3) that groundwater contamination will not be migrating horizontally (or vertically, as necessary) beyond the "existing area of groundwater contamination."

   _____ If no - enter "NO" status code in #8.

   _____ If unknown - enter "IN" status code in #8.

Rationale and Reference(s):

This question is not applicable. See the response to Question No. 3.

8. Check the appropriate RCRAInfo status codes for the Migration of Contaminated Groundwater Under Control EI (event code CA750), and obtain Supervisor (or appropriate Manager) signature and date on the EI determination below (attach appropriate supporting documentation as well as a map of the facility).

_____ YE - Yes, "Migration of Contaminated Groundwater Under Control" has been verified. Based on a review of the information contained in this EI determination, it has been determined that the "Migration of Contaminated Groundwater" is "Under Control" at the_____facility , EPA ID # _____ , located at _____. Specifically, this determination indicates that the migration of "contaminated" groundwater is under control, and that monitoring will be conducted to confirm that contaminated groundwater remains within the "existing area of contaminated groundwater" This determination will be re-evaluated when the Agency becomes aware of significant changes at the facility.

__NO__ NO - Unacceptable migration of contaminated groundwater is observed or expected at the **Enterprise Recovery Systems** facility, EPA ID **#MSD000693176**, located at **Route 5, Box 287, Cayce Road, Byhalia, Mississippi, 38611** ..

_____ IN - More information is needed to make a determination.

Completed by (signature)_____ Date
(print) Robert Morris
(title)

Supervisor (signature)_____ Date
(print) Lael Butler
(title)
EPA Region 4

Branch Chief (signature)_____ Date _____ [6]

[6] FINAL NOTE: THE HUMAN EXPOSURES EI IS A QUALITATIVE SCREENING OF EXPOSURES AND THE DETERMINATIONS WITHIN THIS DOCUMENT SHOULD NOT BE USED AS THE SOLE BASIS FOR RESTRICTING THE SCOPE OF MORE DETAILED (E.G., SITE-SPECIFIC) ASSESSMENTS OF RISK.

RCRA Corrective Action
Environmental Indicator (EI) RCRAInfo Event Code (CA750)

(print) Jon D. Johnston
(title)
EPA Region 4

Locations where References may be found:

U.S. EPA Region 4
RCRA Programs Branch File Room
61 Forsyth Street, SW
Atlanta, Georgia 30303

Contact telephone and e-mail numbers

(name) Robert Morris
(phone #) 404-562-8470
(e-mail) Morris.robert@epa.gov

References:

1. Woodward-Clyde Consultants. Enterprise Recovery Systems Site Assessment and Removal Activities Report, Byhalia, Mississippi. January, 1996.

2. MDEQ. ERS Groundwater Contamination Summary. July 7, 1993.

3. MDEQ. Letter to Booz Allen Hamilton Re: MDEQ investigation of the Kirk Property. June 1, 2004.

4. AT Kearney. Interim RCRA Facility Assessment Report for ERS. July 12, 1990.

5. Booz Allen Hamilton Site Reconnaissance Logbooks. May 18, 2004.

6. EPA Region 4 TAT Memorandum Re: Interim Report, ERS. April 10, 1993.

7. Booz Allen Hamilton, Sampling and Analysis Plan for the Enterprise Recovery Systems Facility. June 25, 2004.

8. Booz Allen Hamilton, Letter to Mrs. Rowena Sheffield re: Data Gap Sampling Event Results. October 13, 2004.

9. USEPA, 2003. National Primary Drinking Water Regulations, Maximum Contaminant Levels. June 2003.

APPENDIX A

FIGURES

Memo

To: Robert Morris, EPA WAM

From: John Belin, Booz Allen Hamilton
Date: September 16, 2005
Subject: Enterprise Recovery Systems, EI Determination Figures

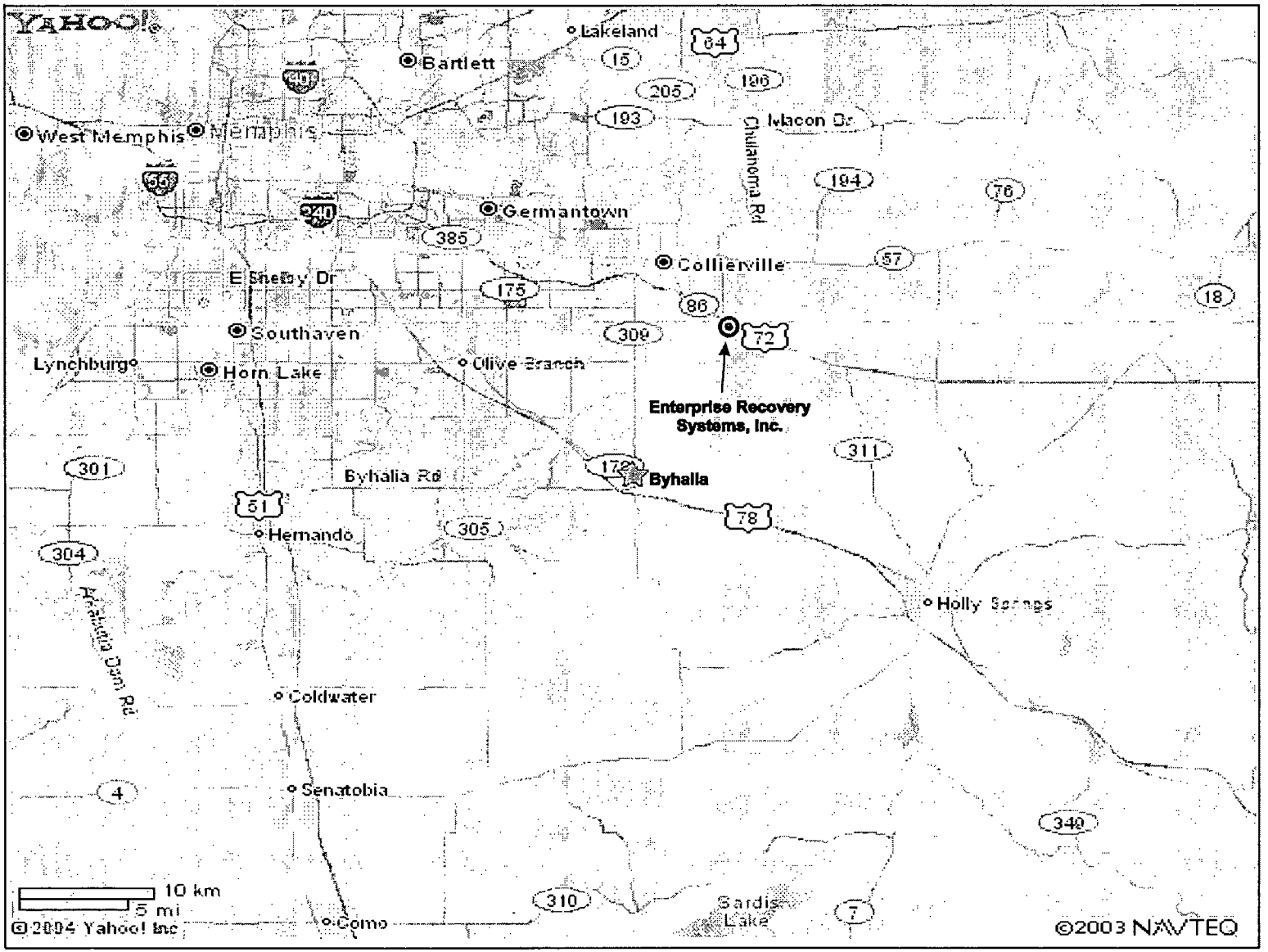
Attached are courtesy copies of the figures referenced in the Enterprise Recovery Systems (ERS) CA725 and CA750 EI Evaluation submitted on September 16, 2005. Figure 1 identifies the site location and was prepared by Booz Allen Hamilton (Booz Allen). Figure 2 is from the August 2004 Sampling and Analysis Plan prepared by Booz Allen and illustrates the ERS site, the surrounding area, and data gap sampling locations. Figure 3 identifies domestic water well locations in the area downgradient of the ERS site and was prepared by Booz Allen. Figure 4 is from the January 1996 Enterprise Recovery Systems Site Assessment and Removal Activities Report prepared by Woodward-Clyde Consultants. This figure identifies the site layout and removal action sampling locations and excavation locations.

FIGURE 1

Site Location Map

EPA Contract: 68-W-02-018
WA Number: R04808
Task 5

Adapted from www.yahoomaps.com.



N

NOT TO SCALE

Figure 1

Site Location Map

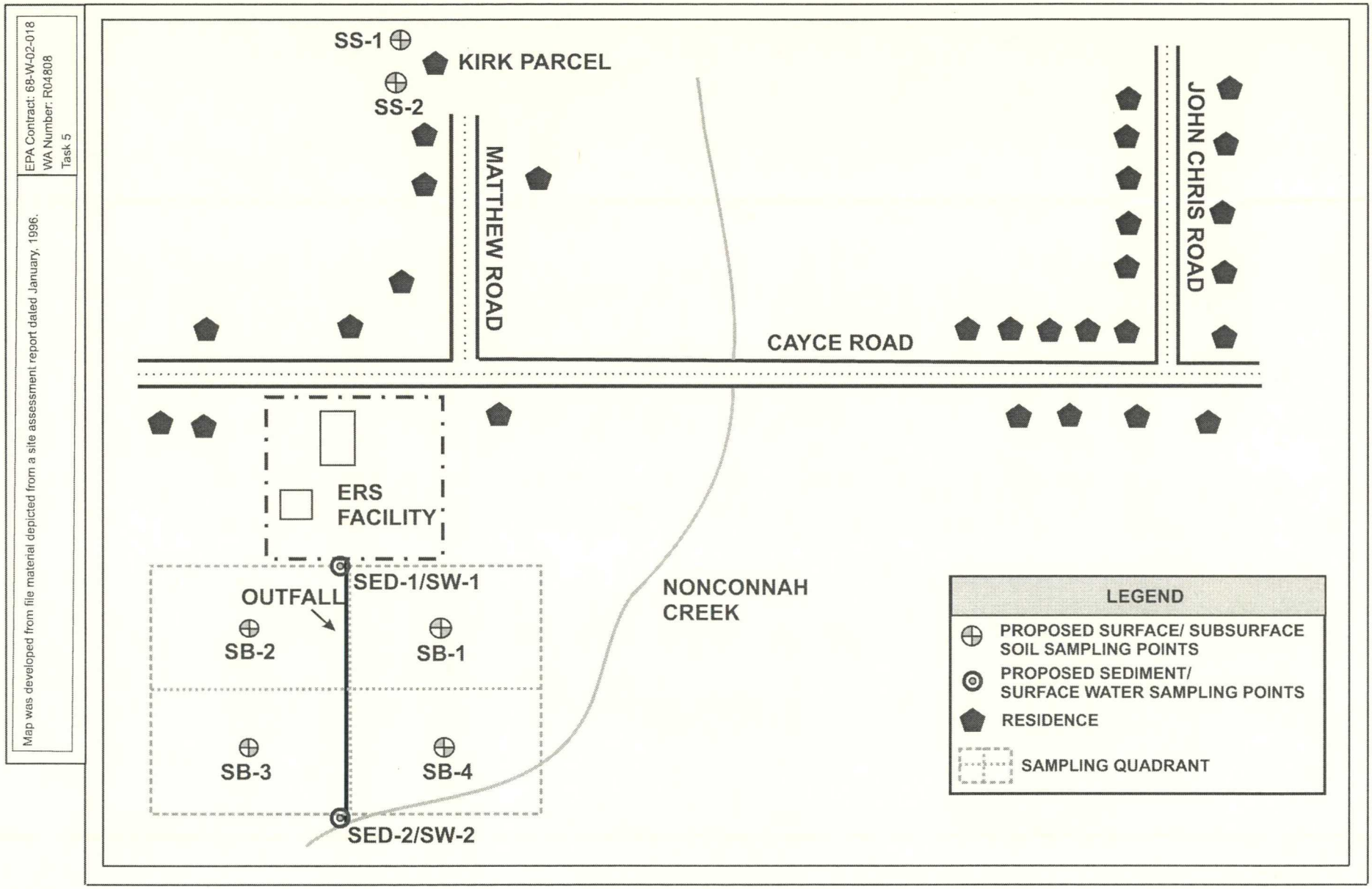
Enterprise Recovery Systems, Inc.

Byhalia, Mississippi

Prepared by:
Booz | Allen | Hamilton

FIGURE 2

Data Gap Sampling Locations Map



44

Figure 2

Proposed Sampling Location Map

Enterprise Recovery Systems, Inc.

Byhalia, Mississippi

N

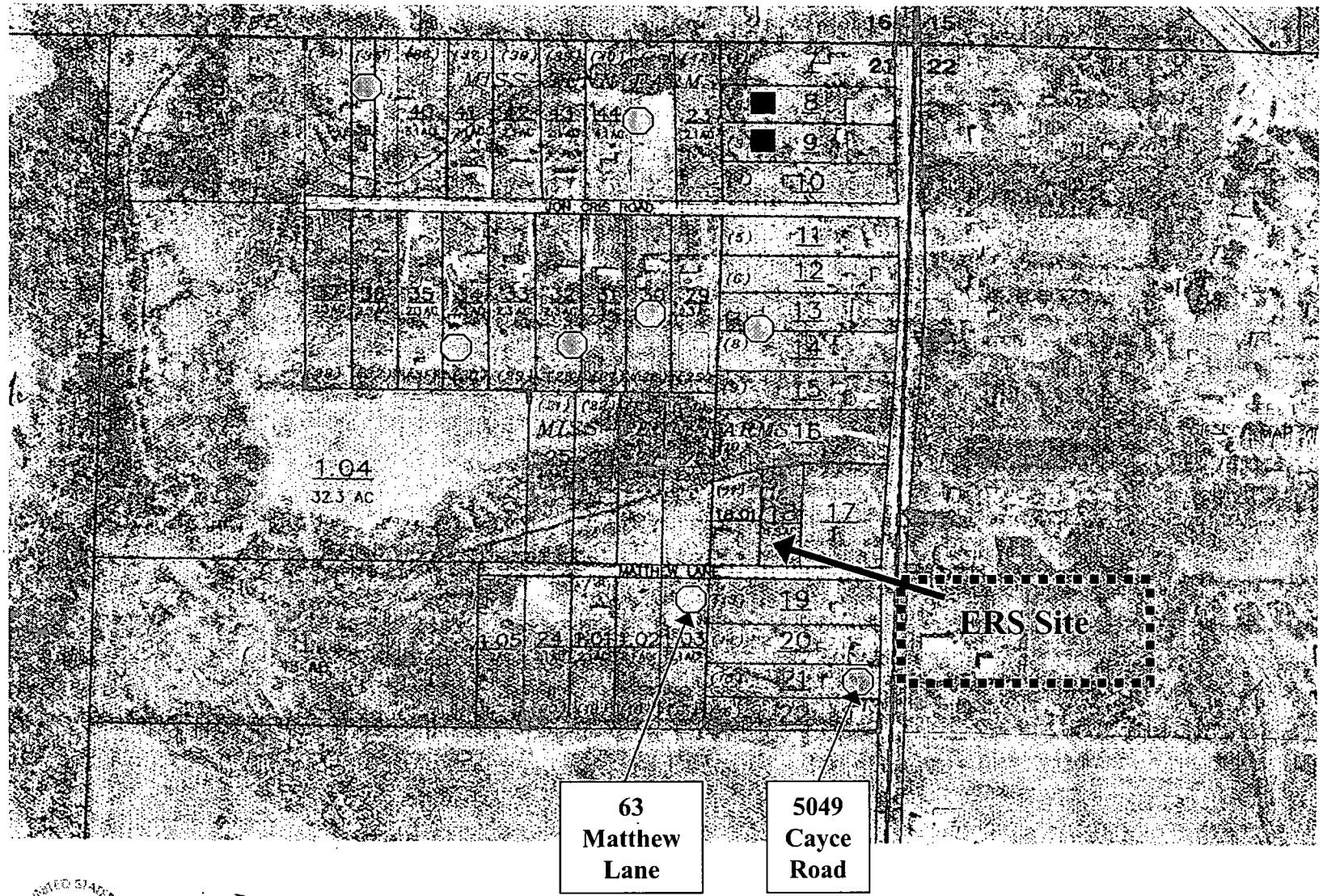
NOT TO SCALE

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Prepared by:
Booz | Allen | Hamilton

FIGURE 3

Domestic Water Well Location Map



- Domestic Water Well Location
- Domestic Water Well Sampling Location
- ERS Property Boundary
- Approximate Groundwater Flow Direction

Figure 3

Domestic Water Well Location Map

Enterprise Recovery Systems, Inc.

FIGURE 4

Areal Extent of Soil Excavation from 1995 Removal Action

(Reference: Enterprise Recovery Systems Site Assessment and Removal Activities Report, Byhalia, Mississippi. Woodward-Clyde Consultants. January, 1996.)

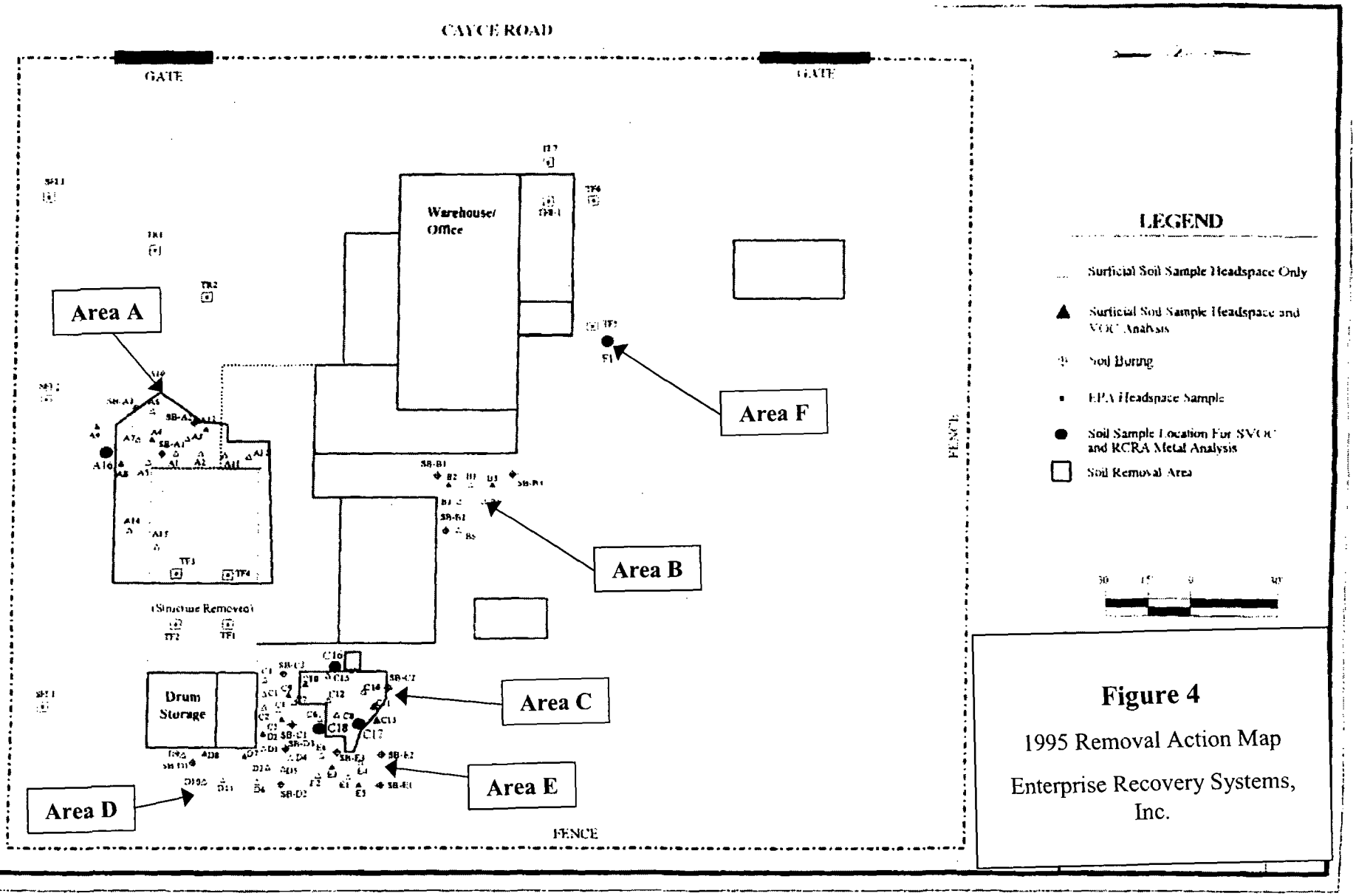


Figure 4

1995 Removal Action Map

Enterprise Recovery Systems, Inc.

#10 1 of 20

Reference 4
Reassessment Report
Enterprise Recovery Systems
Byhalia, Marshall County, MS
EPA ID No. MSD000693176

PILKO & ASSOCIATES, INC.

Risk Management/Industrial Development/Environmental Consulting

ENVIRONMENTAL RISK ASSESSMENT

OF

ENTERPRISE RECOVERY SYSTEMS, INC.

BYHALIA, MISSISSIPPI

Prepared For

ENTERPRISE RECOVERY SYSTEMS, INC.

For PILKO & ASSOCIATES, INC.

W. Mackey Skinner

W. Mackey Skinner

John W. Luton

John W. Luton

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December 1986

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#10

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8. American Interplex Corporation, Water Analysis
9. Contingency Plan - Excerpt
10. Tank List
11. MDE Examination Report-Ultrasonic Thickness
12. State of Mississippi, Air Pollution Control Permit
13. Daily Inspection Logs-Process Units and Miscellaneous

#10

A.

INTRODUCTION

Pilko & Associates, Inc. conducted an Environmental Risk Assessment (ERA) during October and November of 1986 to determine the general environmental condition of Enterprise Recovery Systems, Inc. in support of an application for environmental impairment liability (EIL) insurance.

Enterprise Recovery Systems, Inc. (ERSI), a privately held Corporation, operates a permitted hazardous waste treatment and storage facility as designated under the Resource Conservation and Recovery Act (RCRA). The Company processes waste chlorinated hydrocarbon solvents for resale. Also, ERSI accumulates various non-chlorinated hydrocarbon solvents for transport to a commercial incinerator permitted in the State of Louisiana. Lubricating oil blending is also conducted onsite; however, this business is separate from the ERSI operation. The operation has been included in the report for information, but is not included as part of the assessment.

The following people were interviewed during the site visit and by telephone after the site visit.

- R. C. "Bob" Thompson - President, ERSI
- L. R. "Joe" Spilka - Vice President, ERSI
- Jim Hardage - Project Officer, Hazardous Waste Section, Mississippi Bureau of Pollution Control, Jackson, Mississippi
- Larry Hamil - Environmental Project Engineer, Water Section, Mississippi Bureau of Pollution Control, Jackson, Mississippi
- Danny Jackson - Environmental Engineer, Air Section, Mississippi Bureau of Pollution Control, Jackson, Mississippi

#10

B.

SUMMARY

GENERAL

A review of the environmental areas at the Byhalia plant did not reveal any exposure that has not been addressed by Enterprise Recovery Systems, Inc. (ERSI). The Company has been issued a final RCRA Permit for the operation of a hazardous waste treatment and storage facility. Management appeared knowledgeable about regulations affecting the operation and committed toward operating the facility in compliance with applicable regulations and reducing environmental exposure. The most significant environmental exposures at the facility presently are due to the absence of suitable containment around the solvent recovery processing equipment and the truck loading and unloading areas. The concern is mitigated by the relatively impermeable clays overlying the area drinking water aquifers. ERSI has submitted a plan to the Mississippi Department of Natural Resources for the installation of additional containment around the processing equipment. They are awaiting State approval to proceed with the installation.

ERSI recovers chlorinated solvents for resale. Presently, the Company processes approximately 100,000 gallons per year of chlorinated solvents. They also accumulate approximately 150,000 gallons per year of non-chlorinated hydrocarbon solvents for transport to a State-permitted incinerator for disposal. Solvents are received mainly in 55-gallon drums. Recovered chlorinated solvents are shipped in bulk tank trucks. However, there are a small number of drum shipments. Non-chlorinated solvents are shipped in tank trucks exclusively.

The facility is situated in a rural setting with five single-family dwellings located on three sides of the property's perimeter. Subsurface soils are composed of interbedded layers of relatively impermeable clay, sand and gravel layers. The area water supply is drawn mainly from the Memphis Sand, situated 200 feet below ground surface. The area drains into an unnamed tributary of the Noncannah Creek, which flows 20 miles west to the Mississippi River at Memphis, Tennessee. The Noncannah Creek is designated for fish and wildlife habitation, but is not used as a drinking water source.

Onsite chlorinated solvent recovery is conducted outdoors on concrete-paved areas; however, there is no containment curbing around the processing equipment to prevent leaks and spills from flowing off the paved areas. This creates a concern for potential soil and groundwater contamination. Also, the bulk truck loading and unloading areas do not have containment curbing and present

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the same concerns. Pilko & Associates recommends installing suitable containment with chemical-resistent paving to reduce the exposure.

All hazardous and non-hazardous wastes are disposed offsite. Hazardous waste residues from the chlorinated solvent recovery stills are solidified with lime and transported to a State-permitted hazardous waste incinerator in Louisiana for disposal.

ERSI does not generate any process wastewater; however, rainwater falling on the site flows into an onsite holding pond lined with compacted clay. The water is pumped through an oil/water separator and discharged to the unnamed tributary of Noncannah Creek. Water separated from solvents received for processing is presently mixed with lime and still residues for disposal offsite at the hazardous waste incinerator.

All storage tanks are situated aboveground on concrete foundations within concrete containment walls. Also, the area inside the containment walls is paved with concrete. There are no underground storage tanks or underground transfer pipelines on the property.

The Company has developed a contingency plan for the solvent operations as required by RCRA regulations; however, the oil storage tanks are not included in this plan since they are not a part of the hazardous waste processing operation. These tanks may require an oil Spill Prevention Control and Countermeasure (SPCC) Plan as regulated in 40 CFR Part 112. Pilko & Associates recommends preparing an SPCC Plan or placing a letter in the file documenting that no plan is required.

There are no known inactive waste sites on the plant property.

Air permits have been obtained for the chlorinated solvent processing operation. The recovery stills are equipped with dual overhead condensers to reduce the potential for solvent emissions to the atmosphere. Also, the storage tanks are equipped with safety vents to reduce air emissions and protect the tanks, further reducing exposure from gradual and sudden & accidental occurrences.

RISK ASSESSMENT RATINGS

Gradual

Enterprise Recovery Systems, Inc. is considered to be an average-to-slightly below average exposure for gradual occurrences based on 1) the offsite disposal of all hazardous and non-hazardous waste, 2) the concrete containment walls and paving inside containment areas for the storage tanks, 3) the absence of underground storage tanks and pipelines, 4) the absence of any

#10

inactive waste sites, and 5) the presence of relatively impervious clays protecting groundwaters used for drinking.

There is some concern for the lack of containment around the processing equipment and truck loading and unloading areas. However, the Company has submitted a plan to install containment curbing in these areas and is waiting for State approval to proceed.

Sudden & Accidental

The facility is considered to be a slightly below average exposure from sudden & accidental occurrences based on 1) the containment provided for all aboveground storage tanks and 2) the very sparse population around the plant. There is some concern for the handling of hazardous substances; however, with the controls and procedures in-place at the plant this does not appear to represent an unusual exposure.

#10

ENTERPRISE RECOVERY SYSTEMS, INC.

FACILITY OVERVIEW

Location	Risk Ratings	Issues of Concern	Mitigating Factors
Dynelle, Mississippi EPA ID#: MSD000693175 Zip Code: 38611	Gradual: Average to slightly below average	o No containment around process equipment o No containment around truck loading and unloading areas	o Offsite disposal of all waste o No underground tanks or pipelines o Concrete containment walls and paving inside containment of aboveground storage tanks o No inactive waste site o Relatively impervious clay protecting groundwaters
	Sudden & Accidental: Slightly below average	o Processing of hazardous substances	o Secondary containment around aboveground storage tanks o Sparse population around plant property o Dual overhead condensation on stills o Safety vents on storage tanks

EF10

RECOMMENDATIONS

The following recommendations, with suggested time intervals for completion, are made as a condition of the risk ratings assigned.

86-1 Install suitable containment around process equipment and bulk truck loading and unloading areas to reduce the potential for soil and groundwater contamination. (6 months)

86-2 Prepare an SPCC Plan for oil storage tanks to comply with Federal regulations or place a letter in the file documenting why a plan is not required. (3 months)

#10

C.

ORGANIZATION

ENVIRONMENTAL AFFAIRS MANAGEMENT

At ERSI, the President is directly responsible for environmental management. Daily coordination of the environmental effort is delegated to the Vice President. Both persons are located at the processing plant. Personnel appeared to be keenly aware of regulations affecting the operations of the hazardous waste treatment and storage facility. Management appears committed toward operating the facility in compliance with applicable regulations and reducing environmental exposure. A RCRA Operating Permit has been secured for the facility. Additional plant improvements to the facility are awaiting State approval.

The Company retains a consultant for environmental and engineering support. With the limited staff at the operation, this appears to be an effective supplement to the environmental management effort.

#10

D.

BYHALIA PLANT ASSESSMENT

DESCRIPTION OF FACILITY

Enterprise Recovery Systems, Inc. is situated near Byhalia, Mississippi, on 8 acres on Cayce Road, which is one-quarter mile west of U. S. Highway 72 and 5.5 miles southeast of Collierville, Tennessee (Attachment 1, Site Map). Collierville is located approximately 20 miles east of Memphis, Tennessee. The plant property is located just inside the Mississippi State line. The property is bound on the north, east, and south by single-family dwellings on each perimeter and on the west by Cayce Road, beyond which is a single-family dwelling (Attachment 2, Area Plot).

The facility was built in 1971 on undeveloped land and operated exclusively as a lubricating oil blending operation. The solvent recovery operation began as C & R Products Company in 1975 (Attachment 3, ERSI Plant Layout). The name change to Enterprise Recovery Systems, Inc. occurred in 1978. The same people have been involved with this plant since the inception in 1971. A 5,000-square foot building on the property houses the office, maintenance area, and warehouse. The facility employs 12 people. Operations are conducted five days per week, around the clock.

Four acres of the land, the building, and the four lubricating oil blending tanks are owned by Mrs. R. C. Thompson, wife of the President. ERSI owns the other four acres of land, the boiler inside the building, and leases 75 percent of the building. Approximately 6.5 acres are developed. ERSI also owns all the processing equipment for the solvent recovery and the storage tanks for solvent.

The plant site is situated on a relatively flat area at an elevation of 400 feet above mean sea level. The property is underlain by approximately 40 feet of a non-expansive clay, having a permeability of approximately 1×10^{-6} centimeters per second (cm/sec). A sand-gravel layer, ranging from 0 to 10 feet thick, underlies this clay. There is water in this layer, but not sufficient to provide large quantities of water. Under the sand layer is the relatively impervious Jackson Clay which has a permeability of 1×10^{-6} cm/sec. Below the Jackson Clay is the sand strata known as the Memphis Sand, situated 200 feet below ground, which is a large volume water producer supplying most of the area's water needs. Below the Memphis Sand is an unnamed clay layer ranging up to 80 feet thick, also a relatively impervious clay. Below this is a 200 to 300-foot layer of sand known as the 1,400-Foot Sand. Water in this lower aquifer is being reserved for future area use and has not been widely exploited.

Area drainage flows into an unnamed tributary of the Noncannah Creek, which flows west approximately 20 miles before entering McKellar Lake in Memphis, Tennessee. McKellar Lake flows into the Mississippi River. Noncannah Creek is designated as a fish and wildlife habitat, but not as a drinking water source.

OPERATIONS

ERSI processes approximately 100,000 gallons per year of waste chlorinated solvents. Recovered solvents are then sold. The Company also receives and stores approximately 150,000 gallons per year of non-chlorinated hydrocarbon solvents. These solvents are manifested and shipped for disposal to a hazardous waste incinerator. Lubricating oils are also blended onsite by C & R Products, which is a privately owned Corporation, whose principal owners also own ERSI. Approximately 4,000 gallons of lubricating oils are blended annually. ERSI has received a hazardous waste permit to store waste solvents and treat with distillation. The Company provides a pickup service for drummed waste solvent and is licensed in 11 States.

The Part A of the Hazardous Waste Permit Application was submitted to the EPA in 1978. The original Part B was submitted on January 31, 1983, and revised seven times to reflect modifications. The latest revision of the final permit was issued August 12, 1986 (Attachment 4, State of Mississippi, Hazardous Waste Management Permit - Excerpt).

ERSI has two operations excluding the lubricating oil blending.

Chlorinated Solvents

Waste chlorinated solvents are received almost entirely in drums; however, the plant has the capability of receiving waste solvent in bulk tank trucks. The Company presently processes trichloroethylene; 1,1,1 trichloroethane; methylene chloride; perchloroethylene; and Freon. Approximately 70 percent of the waste solvents are received from generators as hazardous wastes. The remaining 30 percent is toll processed for the generator/customer. Upon arrival, the drums are unloaded immediately into a 250-gallon portable skid-mounted steel open-top tank which has a steel secondary containment wall. The different types of chlorinated solvents are pumped from the portable tank into designated storage tanks. All grades of Freon are placed in the same tank.

The waste solvent is transferred from a storage tank into a batch pot still. At the time of the assessment, the Company had three batch stills in operation. The Company is installing a thin-film

#10

evaporator which may be used for chlorinated or non-chlorinated hydrocarbons. Management anticipates that the thin-film evaporator will idle one of the pot stills. However, the pot still will be kept in standby service. The waste solvent in the still is heated using non-contact 150-pound per square inch (psi) steam. The solvent is distilled and condensed in two overhead condensers cooled by non-contact recirculating cooling water. The condensed solvent then enters a stainless steel storage tank. After the distillation is complete, the recovered solvent is tested for quality and then transferred to a final storage tank. The recovered solvent is shipped to customers in 5,000-gallon bulk tank trucks. Approximately 90 percent of the recovered solvent is shipped in tank trucks. The remaining 10 percent is shipped in 55-gallon drums. Common carriers provide the tank truck shipping and drum shipments....

Non-chlorinated Hydrocarbon Solvent

Hydrocarbon solvents and paint sludges are received almost exclusively in 55-gallon drums. Approximately 10 percent of all drums are sampled and tested at the plant to confirm contents included on the hazardous waste manifest. The drums are then unloaded into a portable, skid-mounted tank equipped with secondary containment. The liquids are pumped from the portable tank into a storage tank. There is no segregation of hydrocarbon solvents. Solvents presently handled by ERSI are acetone, methyl ethyl ketone, methyl isobutyl ketone, xylenes and toluene. Water removed from the waste solvent storage tank presently is mixed with lime and disposed of offsite. However, the Company is planning to accumulate and distill these contaminated waters for use as the boiler feedwater makeup or use as firewater. The storage tank contents are then mixed to ensure a uniform mixture and to reduce solids settling. The waste solvents are then shipped in a common carrier, bulk tank truck, under manifest to Marine Shale Processors in Morgan City, Louisiana, for disposal in a State-approved hazardous waste incinerator (Attachment 5, State of Louisiana, Uniform Hazardous Waste Manifest).

Paint sludges are removed from the drums, combined with still residues and solidified with lime. The solid waste is disposed offsite in a State-permitted hazardous waste incinerator in Morgan City, Louisiana, operated by Marine Shale Processors.

Lubricating Oil Blending

Lubricating oil blendstock is purchased in bulk quantities and stored in an aboveground tank. The additives are normally received in 55-gallon drums which are stored in the warehouse portion of the building. To make the specific blends, a predetermined quantity of

#20

the lubricating base oil is transferred to a blend tank. The required amounts of additives are then added to the base oil and the blended oil is mixed in the tank to provide a homogenous dispersion of the additives. The lube oils are then packaged in 55-gallon drums or in a bulk tank truck for transport to the customer.

ERSI operates two tractor-trailers (covered van) for the pickup and transport of waste solvent drums. One truck is owned by the Company and one is leased. The trucks are serviced offsite. There is no incinerator or flare onsite. The Company has one boiler which generates 150 psi steam used for heat in the distillation pots. The primary fuel for the boiler is propane. Alternate fuels are No. 2 Fuel Oil and diesel. Water requirements for the plant are provided by an onsite water well. Electric power is purchased from North Central Mississippi Electric Power Supply Company.

SOLID & HAZARDOUS WASTE AND WATER MANAGEMENT

ERSI generates hazardous waste, has been issued a RCRA Part B Permit, and operates under EPA Permit Number MSD000693176. As discussed in the Operations section, the Company is permitted for the treatment and storage of hazardous waste. All hazardous and non-hazardous wastes generated by ERSI are shipped offsite for disposal in a State-permitted facility. Wastes generated at the site are chlorinated solvent still residues, paint sludges, contact water removed from the waste solvents received, oil removed from the oil/water separator, empty drums and plant trash. Water, provided from an onsite water well, is used for boiler feedwater makeup, cooling tower makeup, fire protection, drinking and sanitary purposes. Wastewaters and storm water falling on the site are discharged offsite under an NPDES Permit. Sanitary wastewater is discharged onsite.

Chlorinated hydrocarbon residues from the still cleanout and paint sludges removed from 55-gallon drums are transferred to an above grade, steel open-top tank. The residues are solidified using lime and placed into a Company dump truck which transports the waste, under a manifest, to Marine Shale Processors in Morgan City, Louisiana, for incineration (Attachment 6, State of Louisiana, Uniform Hazardous Waste Manifest). The open-top mixing tank is situated in a covered enclosure on a concrete foundation which has a concrete berm around the tank to contain any leaks or spills. A cover over the tank prevents rainwater from diluting the solidified wastes.

Contaminated contact water, drawn off the waste solvent storage tanks, is placed in the rectangular sludge tank and mixed with lime. These wastes are mixed with the still residues and transported to Marine Shale Processors for disposal in the hazardous waste incinerator.

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Oils recovered from the oil/water separator are combined with the non-chlorinated solvents and disposed of in a hazardous waste incinerator at Marine Shale Processors in Morgan City, Louisiana.

The empty drums, which contained waste solvents, are picked up by Evans Cooperage who transports the drums to their drum reconditioning plant in Harvey, Louisiana. ERSI contacted the Louisiana Department of Environmental Quality who stated that the Evans Cooperage operation is very well run.

Plant trash is hauled by ERSI personnel to the Marshall County, Mississippi landfill for disposal.

Water used for boiler feedwater make-up is not treated prior to use. The condensate from the boiler is recycled back to the boiler. Presently, the water in the recirculating cooling tower is not treated with any corrosion-inhibitor chemicals. Boiler blowdown, cooling tower blowdown, and stormwater falling onsite flow to a clay-lined holding pond that has a nominal capacity of 10,000 gallons. The water from the pond is pumped through an oil/water separator, to remove any residual oil, and then to an unnamed ditch which flows northwest to Noncannah Creek, which flows west approximately 20 miles into the McKellar Lake and then to the Mississippi River at Memphis, Tennessee. The discharge is permitted under NPDES Permit No. MS0038202 (Attachment 7, State of Mississippi, Water Pollution Control Permit). This permit was recently renewed; however, the official permit has not been received by ERSI. Analysis conducted in April of 1986 showed no significant contamination of the wastewaters from plant operations (Attachment 8, American Interplex Corporation, Water Analysis).

Sanitary wastewater flows to an onsite septic tank which discharges into an onsite drain field.

Solid waste and water management practices do not appear to represent a significant exposure because of the equipment and handling for the hazardous waste and the very low volume of wastewater generated at the site.

INACTIVE WASTE SITE IDENTIFICATION

No inactive waste sites have been identified on the plant property.

SPILL CONTAINMENT AND CONTINGENCY PLANNING

Lubricating oils and solvents are stored in aboveground tanks. There are no underground storage tanks or underground transfer piping at the ERSI facility. A spill contingency plan that has been

#120

waste permit does not include the lubricating oil storage tanks.

The spill contingency plan for the waste solvent storage tanks was included as a part of the Part B developed for the hazardous waste storage and treatment facilities (Attachment 9, Contingency Plan - Excerpt). The plan appears to adequately cover items for the solvent storage; however, there is no plan covering the lubricating oil storage tanks. Consequently, Pilko & Associates recommends preparing a spill contingency plan to conform with the oil Spill Prevention Control and Countermeasure (SPCC) regulations found in 40 CFR Part 112, or to place a letter in the file documenting why a contingency plan is not required.

ERSI has 20 storage tanks ranging in size from 2,000 gallons to 25,380 gallons, with a total capacity of approximately 184,000 gallons (Attachment 10, Tank List). The storage tanks are situated in the east storage tank area on concrete foundations within a concrete containment wall. The area inside the containment wall is also paved with concrete. The solvent storage tanks are located in the east storage tank area and the lubricating oil tanks are located in the north storage tank area (Attachment 4).

The solvent processing stills are situated outdoors on the south and east side of the building (Attachment 4). The still and the overhead receivers are situated on concrete foundations; however, no containment curbing is in-place around this equipment creating a concern for potential soil and groundwater contamination. ERSI reported that a plan has been submitted to the Mississippi Department of Natural Resources for approval to install additional containment around the processing equipment. The Company is awaiting approval of this plan to proceed with the installation. Pilko & Associates recommends installing suitable containment around the processing equipment in a timely fashion to reduce the environmental exposure.

The bulk truck loading and unloading areas do not have adequate containment to prevent potential soil and shallow groundwater contamination in the event of a large spill. Pilko & Associates recommends installing suitable containment for these areas to lower the environmental exposure.

Tank metal thickness is checked annually to insure the tank wall thickness meets minimum requirements for hazardous waste storage tanks (Attachment 11, NDE Examination Report - Ultrasonic Thickness).

Lubricating oil additives stored in 55-gallon drums are located inside the warehouse portion of the building on a concrete floor. Approximately ten drums are stored in this area at any given time. Even though there is no containment curbing around these drums, it does not appear to represent a significant exposure because of the

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does not appear to represent a significant exposure because of the small number of drums and the central location in the warehouse. Empty drums are stored outdoors in an area that has a compacted clay liner and a compacted clay berm. Since these drums are empty, this does not appear to represent a significant exposure.

Upon completion of the containment curbing around the process areas and the truck loading and unloading areas, the spill containment at ERSI will be able to effectively control the environmental exposure.

AIR

The facility has been permitted by the State of Mississippi, Department of Natural Resources (Attachment 12, State of Mississippi, Air Pollution Control Permit). As required by this permit, the company conducts daily inspections to ensure the equipment is operating properly (Attachment 13, Daily Inspection Logs-Process Units and Miscellaneous).

Storage tanks are equipped with safety vents to reduce air emissions and to protect the tanks. Two overhead condensers on the solvent stills are used to reduce the potential for air emissions from uncondensed solvents.

With the equipment and procedures in-place, management of air emissions appears to present a low exposure from gradual or sudden & accidental occurrences.

OTHER AREAS

Asbestos

No asbestos is used for insulation at the ERSI facility.

Polychlorinated Biphenyls (PCBs)

ERSI does not handle any PCBs in their operation. The Company has no onsite transformers. The transformer providing power to the facility is a pole-mounted transformer which is owned and operated by the power company. The transformer is located off the plant property.

Fire Protection

The Company maintains a 25,000-gallon firewater tank inside the east storage tank area. The water well pumping capacity can be increased to 300 gallons per minute to provide water to a fire

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hydrant on the street just outside the plant property. Dry powder and CO_2 fire extinguishers are positioned at each entrance of the maintenance shop portion of the building. Plant personnel are trained to use the fire extinguishers. The Cayce Volunteer Fire Department provides primary firefighting support. The Company reports that members of the volunteer fire department visit the plant monthly.

Security

A security fence is in-place around the 6.5 acres of the plant property which have been developed. Access is controlled through a gate at the front of the property. The fence is posted alerting outsiders to the use of security dogs who provide surveillance on weekends when the plant is not operating. Also, security lights are positioned on top of the storage tanks in the east storage tank area to light the plant area.

Safety

Safety procedures were set up and included as a part of the Part B Application for the TSD Permit. The safety procedures appear adequate to address emergency situations and promote accident prevention.

Department of Transportation (DOT)

The Company truck drivers are all DOT certified. Management reported excellent driving records. Drivers are also tested for drug abuse. No accidents have been recorded in the last three years. The last speeding violation was recorded in 1984.

Housekeeping

Housekeeping at the facility was very good. Process equipment and storage tanks appear to be well maintained.

Regulatory Agency Contact

Representatives of the Air and Water Sections reported that the ERSI facility is in compliance with existing permits. There have been complaints of odors emanating from the ERSI property. These complaints have been judged by the agency to be more of a nuisance problem rather than an environmental concern. The Hazardous Waste Section representative indicated that the only non-compliance issue was the financial assurance of the permit. ERSI management

#70

was complimented for their timely response to correcting deficiencies and their willingness to make any necessary modification to ensure compliance.

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E.

REPORT LIMITATIONS

The scope of this report is limited to the matters expressly covered. This report is prepared for the sole benefit of **Enterprise Recovery Systems, Inc.**, and may not be relied upon by any other person or entity without the written authorization of Pilko & Associates, Inc.

In preparing this report, Pilko & Associates, Inc. has relied on information derived from secondary sources and personal interviews. Except as set forth in this report, Pilko & Associates, Inc. has made no independent investigation as to the accuracy or completeness of the information derived from the secondary sources and personal interviews and has assumed that such information was accurate and complete.

All recommendations, findings, and conclusions stated in this report are based upon facts and circumstances as they existed at the time that this report was prepared (e.g., Federal, State and local laws, rules, regulations, market conditions, energy costs, wage rates, political climate, and other matters that Pilko & Associates, Inc. deemed relevant). A change in any fact or circumstance upon which this report is based may adversely affect the recommendations, findings, and conclusions expressed in this report.

NO IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE SHALL APPLY. PILKO & ASSOCIATES, INC. MAKES NO REPRESENTATION OR WARRANTY THAT THE IMPLEMENTATION OR USE OF THE RECOMMENDATIONS, FINDINGS, OR CONCLUSIONS OF THIS REPORT WILL RESULT IN COMPLIANCE WITH APPLICABLE LAW.

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F.

ATTACHMENTS

1. Site Map
2. Area Plot
3. ERSI Plant Layout
4. State of Mississippi, Hazardous Waste Management Permit-Excerpt
5. State of Louisiana, Uniform Hazardous Waste Manifest
6. State of Louisiana, Uniform Hazardous Waste Manifest
7. State of Mississippi, Water Pollution Control Permit
8. American Interplex Corporation, Water Analysis
9. Contingency Plan - Excerpt
10. Tank List
11. NDE Examination Report-Ultrasonic Thickness
12. State of Mississippi, Air Pollution Control Permit
13. Daily Inspection Logs-Process Units and Miscellaneous

Air & W er Pollution Control C mission

STATE OF MISSISSIPPI

Reference 5
Reassessment Report
Enterprise Recovery Systems
Byhalia, Marshall County, MS
EPA ID No. MSD000693176

FILE NO.: W-P

REPORT OF FIELD INVESTIGATION

DATE: June 21, 1978

10300674

SUBJECT: Chemical & Oil Drainage Complaint
Marshall County, C&R Products

PERSON REPORTING: Jerry Banks

On June 20, 1978, while investigating another complaint with Jann Henley, we were refered to the above complaint site by a lawyer for the Marshall County Board of Supervisors.

Mr. E. L. Griffin, who lives north of Cayce, Ms., had complained of chemicals running out of barrels, and at one time, a line from large storage tanks wasting chemicals. These chemicals allegedly killed a lot of Mr. Griffin's grass, all of his strawberry plants except two, and most of the other things in his garden. He showed us where two elm trees had been, but were also killed. Mr. Griffin also stated that all of his neighbor's fruit trees had been killed by the run-off.

Mr. Griffin then showed us a pipe going under the fence in front of this facility, from which a substance smelling like diesel oil is discharged. The pipe is approximately ten inches in diameter. There was much discoloration leading from the pipe drain into a roadside ditch, where oil was visible in large amounts in some areas. This ditch has been purposely blocked off and holds some of the oily water, but this washes on down the ditch when it rains.

All run-off from the ditch in front and the chemical area in back goes into the Nonconnah Creek about 1.5 miles from this location. The run-off is coming from C&R Products, located 2.5 miles north of Cayce, Ms. on Cayce Road. C&R is owned by Mr. Robert Thompson of Memphis, Tenn. Complaintant was Mr. E. L. Griffin, Route 2, Box 481, Collierville, Tenn. 38017 Phone number (601) 851-7834.

Mr. Jimmy Warren, attorney acting for the Marshall County Board of Supervisors, said for us to consider this a formal request from the Board of Supervisors, and that the board, and he as attorney, would do all they could to assist you in accomplishing relief from this problem.

If you have any further questions, please call.

Respectfully,

Earl W. Richard

Earl W. Richard

EWR:bc

Reference 6
Reassessment Report
Enterprise Recovery Systems
Byhalia, Marshall County, MS
EPA ID No. MSD000693176

JWS & ASSOCIATES
Engineering Consultants

JOHN W. SMITH, Ph.D., P.E.
President

1550 W. Churchill Downs
Germantown, TN. 38138
754-2129

ENVIRONMENTAL MANAGEMENT PHILOSOPHY

Prepared for

Enterprise Recovery Systems, Inc.

by

John W. Smith, Ph.D., P.E.

March 1981

10300676

ENVIRONMENTAL MANAGEMENT PHILOSOPHY

ENTERPRISE RECOVERY SYSTEMS, INC.

Since its initial operation two years ago, Enterprise Recovery Systems has provided a valuable recycling/disposal option to Mid-South industries. Located on Cayce Road in Northern Mississippi, ERS is engaged primarily in recycling spent solvents, degreasers, and paint/lacquer thinners. The present operation and facilities as well as those modifications to render ERS in compliance with all local, state, and federal environmental regulations are described in the following paragraphs.

EXISTING OPERATION/FACILITIES

As shown in Figure 1, the ERS facility is located on a ridge dividing the Nonconnah drainage basin in Tennessee from the Yazoo drainage basin in Mississippi. The four-acre site is presently used as shown in Figure 2.

Surface water which runs off the process area is directed to a large grassy area immediately east of the processing area. All drainage and process/cooling water which would leave the site will eventually reach a small unnamed tributary of the Nonconnah Creek which flows northward along ERS's property and crosses Cayce Road.

Operation Procedures: Liquids to be processed are delivered to the ERS site in either bulk or 55-gallon containers. Several storage areas are presently utilized to keep different deliveries separate until the material can be processed. The entire processing/storage area is secured with a six-foot high chain link

fence. Access is limited during operating hours to those who have a reason for entering. During non-operating hours, the fenced area is protected by guard dogs.

Products received at the ERS site for processing are kept separate depending on the product to be received. Reclamation products are limited by the capacity of the distillation system. At the present time, only products with boiling points less than 248° F can be recovered due to the availability of 15-18 pound saturated steam. Residues from the distillation step are presently air dried with the residue placed in drums and hauled to a landfill. Pressurized steam is employed as a heat source with all the steam condensate returned to a 300 gallon accumulator tank for reuse in the boiler. The contaminated solvent vaporizes in the atmosphere still, condenses and is collected as a 98% or better pure solvent. Cooling water used in this process consists of once through cooling water drawn from a shallow well. Since the cooling water never contacts the raw material or the product, it is discharged to a drainage ditch to the east of the ERS facility. Typical products secured in this manner include Methylene Chloride, Acetone, Ethyl Acetate, Methyl Ethyl Ketone, Toluene, Nitro Cellulose lacquer thinners and combinations of paint thinners.

A slight variation to the above procedure is employed for tri-chloro ethylene/oil mixtures which require the injection of

live steam to prevent stratification and to assure complete volitilization of the tri-chloroethylene. The distillation residue thus consists of water, oil, and solids. The oil is recovered for resale. The contaminated water is drained to the grassy area to the east of the processing area. The solids are air dried and hauled to a landfill. All of the recycled products (solvents, degreasers, paint/lacquer thinners, and oils) are sold to manufacturers who can either use the product in lieu of virgin materials or who generated the material originally. Typical operating schedules over the past two years show through puts run as high as 800 gallons per day to zero gallons when still cleaning was taking place. Water usage is 9,600 gallons per day maximum with 200 for sanitary use, 300 for boiler feed water, 100 gallons for process use and the balance being used for cooling water. The domestic waste water goes to a septic tank facility.

Assume total

Facilities: As shown in Figure 2, the facilities available at the ERS site consist of a (1) receiving area, (2) bulk storage area, (3) barrel storage area, (4) vacuum and atmospheric distillation areas, and (5) support facilities building. Materials to be processed are off loaded to bulk storage containers at the receiving area and stored until processed through the distillation units. Barrelled stored materials are pumped from the individual barrels to the still. The distillation unit is then operated on a batch basis until all the product

has been recovered. The recovered product is stored in designated containers until shipped to consumers. The individual facilities are identified in Figure 2.

Utilities/Discharges: The primary utilities at ERS are the water supply and the fuel for the boiler. Water is supplied by a shallow well located on the west side of the administration building. A 20-gallon per minute pump supplies the flow for domestic and process water. The process boiler is fired by propane. Atmospheric emissions from the boiler are non-existent.

Discharges from the process site are limited to cooling water and contaminated process water. Domestic waste water is discharged to a septic tank system located to the south of the administration building. Contaminated process water from the steam stripping process in the stills and from rainwater runoff from the process/storage areas are conveyed to the grassy area to the east of the processing area. This flow migrates across the grassy area and may discharge to the unnamed stream bordering the ERS site. Under most circumstances, all the process water percolates into the soil or evaporates.

FACILITY MODIFICATIONS

To comply with all local, state, and federal controls on its operation, ERS will implement the following alterations to its present facilities. A projected time frame for achieving these alterations is presented in the following paragraphs.

MISSISSIPPI DEPARTMENT OF NATURAL RESOURCES
Bureau of Pollution Control
P. O. Box 10385
Jackson, Mississippi 39209
(601) 354-2550

TO: File

FROM: Larry Hamil

SUBJECT: Visit to C & R Products (Enterprise Recovery System), Cayce, MS

DATE: March 12, 1981

On March 10, 1981, 9:30 a.m., Jerry Banks, Bill Barnett and Larry Hamil arrived at the subject industry. We were received by Mr. Bob Thompson, owner and operator of C & R Products, and Mr. John Smith, an engineer contracted by Mr. Thompson to design and recommend a system to improve the handling of wastes produced by C & R Products. This visit materialized as a result of complaints by neighboring residents concerning odorous air originating from C & R Products and wastewater discharges flowing onto their property. Additionally, in early February there had been an explosion at C & R Products which resulted in the discharge of an estimated 50 gallons of #2 fuel oil. This spill was investigated by Bob Rogers from Jackson, Department of Natural Resources, and Kenny Hill from the North Regional Office in Oxford.

During our visit on March 10, 1981, we found that C & R Products had a discharge consisting primarily of cooling water with lesser amounts of boiler blowdown and process water. The discharge was flowing in a ditch in an easterly direction for about 300 yards before leaving the property of C & R Products and entering an unnamed slough. This discharge is presently not permitted by the MBPC. No provisions were present to contain the accidental spillage of products. No dikes were present around any of the process and storage tanks. Very little concrete existed in the process and storage area which would deter ground contamination as well as prevent rainwater runoff from going in all directions onto neighboring residential property.

C & R Products reclaims solvents and paint thinners. Acetone & trichloroethylene are constituents of the products cleaned up by C & R Products.

Mr. Thompson's consultant, John Smith, is preparing recommendations which include concreting much of the storage and process area, erecting dikes around all process and storage tanks, installing an oil separator for wastewater treatment, and constructing a holding pond in the event of a spill such that the spill may be contained and cleaned up. Mr. Smith also is preparing the application forms 1 and 2C in order that the MBPC may initiate the issuance of an NPDES Permit to C & R Products. This application along with the engineering report prepared by Mr. Smith is to be ready for the Bureau's review during the first part of April.

Mr. Thompson recognizes that he must improve his waste handling significantly and agrees to do so at this point. However, he has been in business for quite some time and has made little effort to implement satisfactory waste handling practices.

Following our visit at C & R, we visited Mike Davis who lives next to C & R on the north side. There was evidence on his property of discharge residue from C & R. The grass had an oily wet appearance along the fence line extending several feet from the fence. His water well is also located only 40-50 feet from C & R Products. We told him that arrangements would be made to sample his well water to determine if contamination existed. Additionally, Mr. Davis stated that normally there was a strong solvent like odor in the air, although none was present during our visit.

We also visited with Mr. and Mrs. Paul Biseglia who reside on the south side of C & R. Their complaints were similar to those of Mr. Davis.

There was also water leaving from the west side of C & R which Mr. Thompson indicated was due to a bursted water line which apparently did exist. Mr. Davis stated that it was always flowing, however.

BEFORE THE MISSISSIPPI COMMISSION
ON ENVIRONMENTAL QUALITY

MISSISSIPPI COMMISSION ON
ENVIRONMENTAL QUALITY

COMPLAINANT

VS. ORDER NO. 2153-91

ENTERPRISE RECOVERY SYSTEMS, INC.
MSD000693176
CAYCE, MISSISSIPPI

RESPONDENT

ORDER

The above captioned cause came before the Executive Director of the Mississippi Department of Environmental Quality this day for ex parte consideration under the authority of Section 49-2-13 of the Mississippi Code Annotated (Supp. 1990), and the Executive Director, having heard and considered the evidence therein, and having determined that an Administrative Order should issue prefatory to any evidentiary hearing and without making any final adjudication of fact or law, finds as follows:

1.

The Respondent, Enterprise Recovery Systems, Inc., owns and operates a solvent recovery facility that includes hazardous waste storage in Cayce, Marshall County, Mississippi. The facility was issued a Mississippi Hazardous Waste Management Permit on November 27, 1984, and is subject to Section 17-17-27 of the Mississippi Code Annotated (Supp. 1990) and the rules and regulations of the Mississippi Commission on Environmental Quality (Commission).

2.

On June 14, 1991, the Mississippi Department of Environmental Quality received a Preliminary Environmental Survey performed by E. F. Williams and Associates, Inc., during November and December of 1989 on Respondent's Cayce facility. The survey was certified by a Professional Engineer and the results indicated groundwater and soil contamination. Specifically, elevated levels of ethyl benzene,

EXHIBIT
A

styrene, methylene chloride, toluene, trichloroethene, xylene, acetone, methyl ethyl ketone, methyl isobutyl ketone, 1,1-dichloroethene, and total petroleum hydrocarbons were found.

3.

Respondent's Mississippi Hazardous Waste Management Permit allows for storage of the following types of hazardous wastes:

(a) F001 - Spent halogenated solvents used in degreasing including: tetrachloroethylene, trichloroethylene, methylene chloride, 1,1,1-trichloroethane, carbon tetrachloride and chlorinated fluorocarbons.

(b) F002 - Spent halogenated solvents including: tetrachloroethylene, methylene chloride, trichloroethylene, 1,1,1-trichloroethane, chlorobenzene, 1,1,2-trichloro-1,2,2-trifluoroethane, orthodichlorobenzene, trichlorofluoromethane, and 1,1,2-trichloroethane.

(c) F003 - Spent non-halogenated solvents: xylene, acetone, ethyl acetate, ethylbenzene, ethyl ether, methyl isobutyl ketone, n-butyl alcohol, cyclohexanone, and methanol.

(d) F005 - Spent non-halogenated solvents: toluene, methyl ethyl ketone, carbon disulfide, isobutanol, pyridine, benzene, 2-ethoryethanol, and 2-nitropropane.

(e) D001 - Ignitable wastes.

4.

Respondent's Mississippi Hazardous Waste Management Permit Module IV.B. allows for tank storage of hazardous wastes solely for the following designated tanks and wastes:

Tank	Waste to be Stored
5	D001, F003, F005
7	D001, F003, F005
8	F001, F002
9	F001, F002, 1,1,1-trichloroethane
10A	D001, F003, F005

On July 23, 1991 a Compliance Evaluation Inspection (CEI) conducted by the Office of Pollution Control revealed that hazardous wastes were stored in three unpermitted tanks. Specifically, Tank 6 contained "blanket wash," a mixture of solvents and inks that tested hazardous for tetrachloroethylene, Tank 16 contained hazardous contact water, and the West C & R tank contained ignitible hazardous "mixed lube oils boiler fuel."

5.

Sampling by the Office of Pollution Control during the months of July through November, 1991 have detected contamination in private drinking water wells in close proximity to Respondent's facility. Specifically, the following hazardous constituents were detected: 1,1 dichloroethylene, 1,1,1 trichloroethane, and trichloroethylene. The Office of Pollution Control has recommended to Mr. Grady Crum, Mr. George Cook, and Settles residences that they not utilize their well water for purposes of drinking or cooking since the trichloroethylene was found to be above the recommended drinking water standard.

6.

Mississippi Hazardous Waste Management Regulations (MHWMR) 264.147 and Respondent's MHWM Permit Condition Module I.H(g) require the facility to maintain liability coverage for sudden accidental occurrences. As of October 31, 1991, Respondent has failed to demonstrate the required liability coverage by having liability insurance as specified by MHWMR 264.147(a)1. Complainant was notified on September 3, 1991 by Commerce and Industry Insurance Company, that Respondent's liability policy would be cancelled effective October 31, 1991 for "failure to provide adequate environmental and safety controls at the facility resulting in an increased hazard to the surrounding environment." Since cancellation, Respondent has not secured required coverage.

He does not want to comply w/ closure. He does not want to comply w/ staying open

7.

Premises considered, the Executive Director finds that the Respondent shall delineate the extent of hazardous constituents in the soil and groundwater emanating from Respondent's facility, provide alternative water supplies to those residences which have contaminated water wells, and comply with closure requirements for all RCRA regulated units.

IT IS, THEREFORE, ORDERED as follows:

A. Within 30 days of the effective date of this Order Respondent shall submit a workplan and schedule sufficient to determine the nature and extent of contamination emanating from the site. The workplan shall address surface water, groundwater, and soil media. All sampling and analyses shall be conducted in accordance with SW-846 and the Technical Enforcement Guidance Document (TEGD).

B. Respondent shall implement the workplan upon written approval by the Office of Pollution Control.

C. Within 30 days of completion of workplan activities, Respondent shall submit a final report of Remedial Investigation findings to the Department. Within 60 days of completion of workplan activities, Respondent shall submit a plan for corrective action for any soil and groundwater contamination found at the site.

D. Within 10 days of receipt of this Order Respondent shall provide water supplies to the Crum, Cook and Settles residences sufficient to meet their demands for drinking and cooking. Likewise, Respondent shall provide water supplies for any other residences found by the Office of Pollution Control after the effective date of this Order to have contaminated wells in the vicinity of Respondent's facility.

E. Within 60 days of the effective date of this Order, Respondent shall submit a closure plan in accordance with MHWMR 264.111 for Tanks 6, 16, and West C & R, as well as the disposal or decontamination of all facility equipment.

F. Upon effective date of this Order, Respondent shall cease all operations and submit schedule for the implementation of closure activities specified in the Respondent's RCRA Permit and MHWMR 264 Subpart G. Respondent shall comply with all requirements of Mississippi Hazardous Waste Management Permit and MHWMR until such time as closure of all RCRA units are certified closed.

If aggrieved by this Order, Respondent may request a hearing before the Commission by filing a sworn petition with the Commission in the manner provided by Section 49-17-41 of the Mississippi Code Annotated (Supp. 1990).

ORDERED, this the 23rd day of Dec, 1991.

Reference 8
Reassessment Report
Enterprise Recovery Systems
Byhalia, Marshall County, MS
EPA ID No. MSD000693176

Enterprise Recovery Systems

ACO1 - 9/27/93

#25383

UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY
REGION IV

IN THE MATTER OF: Enterprise Recovery Systems, Inc. Byhalia, Marshall County, Mississippi, Respondents.	ADMINISTRATIVE ORDER ON CONSENT FOR REMOVAL ACTION Proceeding Under Sections 104, 106(a), 107 and 122 of the Comprehensive Environmental Response, Compensation, and Liability Act, as amended, 42 U.S.C. §§ 9604, 9606(a), 9607 and 9622 Docket No.: 93-43-C

I. JURISDICTION AND GENERAL PROVISIONS

This Administrative Order on Consent (Order) is entered into voluntarily by the EPA and Respondents listed in Attachment A (Respondents). This Order provides for the performance of the removal action by Respondents and the reimbursement of response costs incurred by the United States in connection with the property located at Route 5, Box 287 Cayce Road, Byhalia, Marshall County, Mississippi (the Site). This Order requires Respondents to conduct the removal action described herein to abate an imminent and substantial endangerment to the public health, welfare or the environment that may be presented by the actual or threatened release of hazardous substances at or from the Site.

This Order is issued pursuant to the authority vested in the President of the United States by sections 104, 106(a), 107 and 122 of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, 42 U.S.C. §§ 9604, 9606(a), 9607 and 9622, as amended (CERCLA), and delegated to the Administrator of the United States Environmental Protection Agency (EPA) by Executive Order No. 12580, January 23, 1987, 52 Federal Register 2923, and further delegated to the EPA Regional Administrators by EPA Delegation Nos. 14-14-A and 14-14-C and 14-14-D, and further to the Director, Waste Management Division.

EPA has notified the State of Mississippi of this action pursuant to section 106(a) of CERCLA, 42 U.S.C. § 9606(a).

Respondents' participation in this Order shall not constitute or be construed as an admission of liability or of EPA's findings or

determinations contained in this Order except in a proceeding to enforce the terms of this Order. Respondents agree to comply with and be bound by the terms of this Order. Respondents further agree that they will not contest the basis or validity of this Order or its terms.

II. PARTIES BOUND

This Order applies to and is binding upon EPA, and upon Respondents and Respondents' heirs, successors and assigns. Any change in ownership or corporate status of Respondents including, but not limited to, any transfer of assets or real or personal property shall not alter Respondents' responsibilities under this Order. Respondents are jointly and severally liable for carrying out all activities required by this Order. Compliance or noncompliance by one or more Respondent with any provision of this Order shall not excuse or justify noncompliance by any other Respondents.

Respondents shall ensure that their contractors, subcontractors, and representatives receive a copy of this Order and comply with this Order. Respondents shall be responsible for any noncompliance with this Order.

III. FINDINGS OF FACT

For the purpose of this Order, EPA makes the following Findings of Fact:

1. The Site is situated on an eight acre wooded parcel. A single story sheet metal building houses an office, warehouse and processing area. The Site also includes two distinct storage tank areas, a small retention pond, and several outdoor drum storage areas. Access to the building is controlled by locked doors and windows and the property is fenced.

2. The Site is located between Byhalia, Mississippi and Collierville, Tennessee on rural Cayce Road between U.S. Highways 72 and 78. Although the land surrounding the Site is primarily farm and fields with a small residential population, several homes are located within 200 yards of the Site. Nonconnah Creek headwaters flow alongside the northern and eastern boundaries of the Site, and the Site is within the recharge area for the Kosciusko Aquifer.

3. Enterprise Recovery Systems, Inc., facility ID number MSD000693176, (Enterprise) is the owner and operator of an abandoned solvent recycling facility which operated on the Site. Enterprise was in the solvent recycling business and operated under a permit issued in accordance with the Resource Conservation and Recovery Act, 42 U.S.C. § 6901 et seq.,

as amended (RCRA). Enterprise conducted related business activities as early as 1978. Enterprise ceased operations in October 1991 when its insurer canceled insurance coverage after discovering significant soil and groundwater contamination at the Site.

4. The Mississippi Department of Environmental Quality (MDEQ) conducted a facility inspection on July 23, 1991 and subsequently issued an order to Enterprise in December 1991. The order required Enterprise to provide drinking water to affected residents, submit a work plan to assess and remediate soil and groundwater contamination, implement the work plan, submit a closure plan and schedule, and to cease all operations. Enterprise appealed the MDEQ order, and the appeal is currently pending.

5. MDEQ conducted further inspections and assessments at the Site and verified the existence of significant soil and groundwater contamination. The hazardous substances identified include 1,1,1-trichloroethane, trichloroethylene, acetone, methylene chloride, methyl ethyl ketone, perchloroethylene, toluene, xylene, ethyl acetate, blended solvents and mineral spirits.

6. In August and September 1992, EPA conducted a removal assessment of the Site, hazard category testing and residential well sampling. Results indicate that hazardous substances were staged in drums and tanks and in laboratory containers in the building. Numerous drums show signs of past leakage and ongoing deterioration, and there are significant areas of staining on the concrete surrounding the two drum storage areas. The storage tanks show evidence of pitting and scaling corrosion and past leaks.

7. Residential well tests reveal trichloroethylene to 100 parts per billion (ppb), 1,1,1-trichloroethane to 17 ppb, and 1,1-dichloroethylene to 7.8 ppb at three private residential wells located adjacent to the Enterprise facility and on facility grounds.

8. Sampling reveals soils contamination at the Site. Contaminants of concern in the soils include: ethyl benzene, styrene, methylene chloride, toluene, trichloroethylene, xylene, acetone, methyl ethyl ketone, methyl isobutyl ketone and 1,1-dichloroethane. Levels of contamination documented include: acetone - 37,000 ppb; methyl ethyl ketone - 13,000 ppb; ethyl benzene - 13,650 ppb; toluene - 35,000 ppb; and xylene - 51,900 ppb.

9. In November 1992, EPA arranged to inventory, sample, and segregate into waste categories all tanks, drums and small quantity containers at the Site. EPA also arranged to provide a

temporary, alternative water supply to those residents with contaminated well water. Analytical results showed that drums and tanks contained hazardous substances, including: benzene, xylene, toluene, tetrachloroethylene, trichloroethylene, naphthalene, acetone, 1,1,1-trichloroethane, bis(2-ethylhexyl)phthalate, methyl ethyl ketone, ethanol, methanol, isopropyl alcohol, oils, perchloroethylene, methylene chloride, and chlorinated waste water.

10. Enterprise produced to EPA Hazardous Waste Manifests reflecting hazardous substances which Respondents sent to Enterprise while Enterprise was an operating facility.

IV. CONCLUSIONS OF LAW AND DETERMINATIONS

Based on the Findings of Fact set forth above and the Administrative Record supporting this removal action, EPA has determined that:

1. The Site is a "facility" as defined by section 101(9) of CERCLA, 42 U.S.C. § 9601(9).

2. The contaminants found at the Site, as identified in the Findings of Fact above, include "hazardous substances" as defined by section 101(14) of CERCLA, 42 U.S.C. § 9601(14).

3. Each Respondent is a "person" as defined by section 101(21) of CERCLA, 42 U.S.C. § 9601(21).

4. Each Respondent may be liable under section 107(a) of CERCLA, 42 U.S.C. § 9607(a).

5. The conditions described in the Findings of Fact above constitute an actual or threatened "release" of a hazardous substance from the facility as defined by Sections 101(22) of CERCLA, 42 U.S.C.§ 9601(22).

6. The conditions present at the Site constitute an imminent and substantial endangerment to public health, welfare, or the environment. Factors that may be considered are set forth in Section 300.415(b)(2) of the National Oil and Hazardous Substances Pollution Contingency Plan, as amended, 40 CFR Part 300 (NCP).

7. The actual or threatened release of hazardous substances from the Site may present an imminent and substantial endangerment to the public health, welfare, or the environment within the meaning of Section 106(a) of CERCLA, 42 U.S.C. § 9606(a).

8. The removal actions taken by Respondents and required by this Order are necessary to protect the public health, welfare, or the environment, and are not inconsistent with the NCP or CERCLA.

9. The removal actions taken by Respondents and required by this Order are necessary to protect the public health, welfare, or the environment, and are consistent with the NCP or CERCLA.

V. ORDER

Based upon the foregoing Findings of Fact, Conclusions of Law, Determinations, and the Administrative Record for this Site, it is hereby ordered and agreed that Respondents shall comply with the following provisions, including but not limited to all attachments to this Order, and all documents incorporated by reference into this Order, and perform the following actions:

1. Designation of Contractor, Project Coordinator, and On-Scene Coordinator

Respondents shall perform the removal action required by this Order themselves or retain contractors to perform the removal action. Respondents shall notify EPA of Respondents' qualifications or the names and qualifications of such contractors on or before September 27, 1993. Respondents shall also notify EPA of the names and qualifications of any other contractors or subcontractors retained to perform the removal action under this Order at least ten (10) days prior to commencement of such removal action. EPA retains the right to disapprove of any, or all, of the contractors and/or subcontractors retained by the Respondents, or of Respondents' choice of themselves to do the removal action. If EPA disapproves of a selected contractor or the Respondents, Respondents shall retain a different contractor or notify EPA that it will perform the removal action itself within ten (10) business days following receipt of EPA's disapproval and shall notify EPA of that contractor's name or Respondents and qualifications within ten (10) days of receipt of EPA's disapproval.

On or before September 27, 1993, the Respondents shall designate a Project Coordinator who shall be responsible for administration of all the Respondents' actions required by the Order. Respondents shall submit the designated coordinator's name, address, telephone number, and qualifications to EPA. To the greatest extent possible, the Project Coordinator shall be present on site or readily available during site work. EPA retains the right to disapprove of any Project Coordinator named by Respondents. If EPA disapproves of a selected Project Coordinator, Respondents shall retain a different Project Coordinator and shall notify EPA of that person's name, address, telephone number, and qualifications within ten (10) days following receipt of EPA's disapproval. Receipt by Respondents' Project Coordinator of any notice or communication from EPA relating to this Order shall constitute receipt by all Respondents.

EPA and Respondents shall have the right, subject to the immediately proceeding paragraph, to change their designated OSC or Project Coordinator. Respondents shall notify EPA ten (10) days before such a change is made. The initial notification may be orally made but it shall be promptly followed by a written notice.

Respondents shall direct all submissions required by this Consent Order via Certified Mail, in triplicate, to the OSC addressed as follows:

Robert N. Rosen
On-Scene Coordinator
U.S. EPA, Region IV
345 Courtland Street, N.E.
Atlanta, Georgia 30365

Documents to be submitted to Respondents' Project Coordinator should be sent to:

[TO BE DESIGNATED]

2. Work to Be Performed

Respondents shall perform the following removal action:

(A) Arrange for a permanent alternative potable water supply to those residents listed in the Work Plan whose wells are or will be contaminated by releases at or from the Site, and conduct periodic sampling of residential wells listed in the Work Plan which may become contaminated.

(B) Arrange for the ultimate disposal and/or treatment of hazardous waste materials stored in onsite drums, tanks, and other containers in a manner satisfactory to EPA.

(C) Complete all preliminary site investigation activities required to define the nature and extent of soil contamination above the water table at the Site. This investigation shall cover, as set out in the Work Plan, all areas of the Site presently identified as contaminated by the past release of hazardous substances into the environment. In addition, Respondents shall collect and analyze an additional twenty (20) soil samples from other locations at the Site as chosen by EPA.

(D) Control the source of existing releases or threatened releases of hazardous substances into the environment from the Site in such a manner and to the extent necessary to achieve compliance with the following cleanup standards: Acetone (500 ppm); Ethylbenzene (500 ppm); Methyl Ethyl Ketone (MEK) (500 ppm); Toluene (500 ppm); Trichloroethylene (50 ppm); 1,1,1-Trichloroethane (250 ppm); Xylene (500 ppm). This may include, but not be limited to, the excavation of contaminated soil.

(E) Arrange for the ultimate disposal and/or treatment of contaminated soil and debris impacted by the release of hazardous substances into the environment from the Site in a manner satisfactory to EPA.

2.1. Work Plan and Implementation

On or before September 27, 1993, Respondents shall submit to EPA for approval a draft Work Plan for performing the Removal Activities set forth in Paragraphs V(2)(A), (B) and (C) of this Order. The draft Work Plan shall provide a description of, and an expeditious schedule for, the actions required by Paragraphs VI(2)(A), (B) and (C) of this Order.

A draft Work Plan for performing the work identified in Paragraphs V(2)(D) and (E) of this Order shall be prepared and submitted to EPA for approval within sixty (60) days after Respondents receive analytical results of soil sampling. The draft Work Plan shall provide a description of, and an expeditious schedule for, the actions required by Paragraphs V(2)(D) and (E) of this Order.

EPA may approve, disapprove, require revisions to, or modify the draft Work Plans. If EPA requires revisions, Respondents shall submit a revised draft Work Plan within thirty (30) days of receipt of EPA's notification of the required revisions. Respondents shall implement each Work Plan as finally approved in writing by EPA in accordance with the schedule approved by EPA. Once approved, or approved with modifications, each Work Plan, schedule, and any subsequent modifications shall be fully enforceable under this Order. Respondents shall notify EPA at least 48 hours prior to performing any on-site work pursuant to the EPA-approved Work Plans. Respondents shall not commence or undertake any removal action on-the site without prior EPA approval.

2.2. Health and Safety Plan

On or before September 27, 1993, Respondents shall submit for EPA review and comment a plan that ensures the protection of the

public health and safety during performance of on-site work under this Order. The plan shall be prepared in accordance with EPA's current Standard Operating Safety Guide, dated November 1984, and currently updated July 1988 and most current update. In addition, the plan shall comply with all current applicable Occupational Safety and Health Administration (OSHA) regulations found at 29 CFR Part 1910.

2.3. Quality Assurance and Sampling

All sampling and analyses performed pursuant to this Order shall conform to EPA direction, approval, and guidance regarding sampling, quality assurance/quality control (QA/QC), data validation, and chain of custody procedures. Respondents shall ensure that the laboratory used to perform the analyses participates in a QA/QC program that complies with the appropriate EPA guidance. Respondents shall follow the following documents, as appropriate, as guidance for QA/QC and sampling: "Quality Assurance/Quality Control Guidance for Removal Activities: Sampling QA/QC Plan and Data Validation Procedures," OSWER Directive Number 9360.4-01; "Environmental Response Team Standard Operating Procedures," OSWER Directive Numbers 9360.4-02 through 9360.4-08.

Upon request by EPA, Respondents shall have such a laboratory analyze samples submitted by EPA for quality-assurance monitoring. Respondents shall provide to EPA the quality assurance/quality control procedures followed by all sampling teams and laboratories performing data collection and/or analysis.

Upon request by EPA, Respondents shall allow EPA or its authorized representatives to take split and/or duplicate samples of any samples collected by Respondents while performing work under this Order. Respondents shall notify EPA not less than ten (10) days in advance of any sample collection activity. EPA shall have the right to take any additional samples that it deems necessary.

2.4. Reporting

Respondents shall submit a written progress report to EPA concerning actions undertaken pursuant to this Order every thirtieth (30th) day after the date of receipt of EPA's approval of the Work Plan until termination of this Order, unless otherwise directed by the OSC. These reports shall describe all significant developments during the preceding period, including the actions performed and any problems encountered, analytical data received during the reporting period, and the developments anticipated during the next reporting period, including a schedule of actions to be performed, anticipated problems, and planned resolutions of past or anticipated problems.

Any Respondents that own any portion of the Site shall, at least thirty (30) days prior to the conveyance of any interest in real property at the Site, give written notice that the property is subject to this Order to the transferee and written notice to EPA and the State of the proposed conveyance, including the name and address of the transferee. Respondents agree to require that their successors comply with the immediately preceding sentence and Section Three - Access to Property and Information.

2.5. Final Report

Within sixty (60) days after completion of all removal actions required under this Order, Respondents shall submit for EPA review and approval a final report summarizing the actions taken to comply with this Order. The final report shall conform with the requirements set forth in section 300.165 of the NCP entitled "OSC Reports". The final report shall include a good faith estimate of total costs or a statement of actual costs incurred in complying with the Order, a listing of quantities and types of materials removed off-site or handled on-site, a discussion of removal and disposal options considered for those materials, a listing of the ultimate destination of those materials, a presentation of the analytical results of all sampling and analyses performed, and accompanying appendices containing all relevant documentation generated during the removal action (e.g., manifests, invoices, bills, contracts, and permits). The final report shall also include the following certification signed by a person who supervised or directed the preparation of that report:

> Under penalty of law, I certify that to the best of my knowledge, after appropriate inquiries of all relevant persons involved in the preparation of the report, the information submitted is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

3. Access to Property and Information

Respondents shall provide, and/or obtain access to the Site and any off-site areas to which access is necessary to implement this Order, and provide access to all records and documentation related to the conditions at the Site and the actions conducted pursuant to this Order.[1] Such access shall be provided to EPA employees, contractors, agents, consultants, designees,

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[1] Attached to the Order and incorporated herein by reference is the access authorization in effect at the time of execution of the Order.

representatives, and State of Mississippi representatives. These individuals shall be permitted to move freely at the Site and appropriate off-site areas in order to conduct actions which EPA determines to be necessary. Respondents shall submit to EPA, upon receipt, a summary of the results of all sampling or tests and all other data generated by Respondents or their contractors, or on the Respondents' behalf during implementation of this Order.

Where action under this Order is to be performed in areas owned by or in possession of someone other than Respondents, Respondents shall use their best efforts to obtain all necessary access agreements within forty-five (45) days after the effective date of this Order, or as otherwise specified in writing by the OSC. Respondents shall immediately notify EPA if after using their best efforts they are unable to obtain such agreements. Respondents shall describe in writing their efforts to obtain access. EPA may then assist Respondents in gaining access, to the extent necessary to effectuate the response actions described herein, using such means as EPA deems appropriate. Respondents shall reimburse EPA for all costs and attorneys' fees incurred by the United States in obtaining such access.

4. Record Retention, Documentation, Availability of Information

Respondents shall preserve all documents and information relating to work performed under this Order, or relating to the hazardous substances found on or released from the Site, for six years following completion of the removal actions required by this Order. At the end of this six year period and thirty (30) days before any document or information is destroyed, Respondents shall notify EPA that such documents and information are available to EPA for inspection, and upon request, shall provide the originals or copies of such documents and information to EPA. In addition, Respondents shall provide documents and information retained under this section at any time before expiration of the six year period at the written request of EPA.

Respondents may assert a business confidentiality claim pursuant to 40 CFR § 2.203(b) with respect to part or all of any information submitted to EPA pursuant to this Order, provided such claim is allowed by section 104(e)(7) of CERCLA, 42 U.S.C. § 9604(e)(7). Analytical and other data specified in Section 104(e)(7)(F) of CERCLA shall not be claimed as confidential by Respondents. EPA shall disclose information covered by a business confidentiality claim only to the extent permitted by, and by means of the procedures set forth at, 40 CFR Part 2, Subpart B. If no such claim accompanies the information when it is received by EPA, EPA may make it available to the public without further notice to Respondents.

5. Off-Site Shipments

All hazardous substances, pollutants or contaminants removed off-site pursuant to this Order for treatment, storage, or disposal shall be treated, stored, or disposed of at a facility in compliance, as determined by EPA, 42 U.S.C. § 9621(d)(3), and the "Revised Procedures for Implementing Off-Site Response Actions," OSWER Directive Number 9834.11, November 13, 1987. Regional Offices will provide information on the acceptability of a facility under Section 121(d)(3) of CERCLA and the above directive.

6. Compliance With Other Laws

Respondents shall perform all actions required pursuant to this Order in accordance with all applicable local, state, and federal laws and regulations except as provided in Section 121(e) of CERCLA and 40 CFR § 300.415(i). In accordance with 40 CFR § 300.415(i), all on-site actions required pursuant to this Order shall, to the extent practicable, as determined by EPA, considering the exigencies of the situation, attain applicable or relevant and appropriate requirements (ARARs) under federal environmental or state environmental or facility siting laws. (See, "The Superfund Removal Procedures: Guidance on the Consideration of ARARs During Removal Actions," OSWER Directive No. 9360.3-02, August 1991).

7. Emergency Response and Notification of Releases

If any incident or change in site conditions during the actions conducted pursuant to this Order causes or threatens to cause an additional release of hazardous substances from the Site or an endangerment to the public health, welfare, or the environment, Respondents shall immediately take all appropriate action. The Respondents shall take these actions in accordance with all applicable provisions of this Order, including but not limited to the Health and Safety Plan, in order to prevent, abate or minimize such release or endangerment caused or threatened by the release. Respondents also shall immediately notify the OSC or, in the event of his/her unavailability, shall notify the EPA Regional Emergency 24-hour telephone Duty Officer at 404-347-4062 of the incident or Site conditions. If Respondents fail to respond, EPA may respond to the release or endangerment and reserve the right to pursue cost recovery.

In addition, in the event of any such additional release of a hazardous substance from the Site, Respondents shall immediately notify EPA's OSC at 404-347-4062 and the National Response Center at telephone number (800) 424-8802. Respondents shall submit a written report to EPA within seven (7) days after each release, setting forth the events that occurred and the measures taken or to be taken to mitigate any release or endangerment caused or

threatened by the release and to prevent the reoccurrence of such a release. This reporting requirement is in addition to, not in lieu of, reporting under Section 103(c) of CERCLA and Section 304 of the Emergency Planning and Community Right-To-Know Act of 1986, 42 U.S.C. §§ 11001 et seq.

8. Efforts To Coordinate With Non-Parties To The Order

(A) Respondents shall make best efforts to coordinate in the performance of the work required by this Order with any person not a party to this Order who offers to perform or, in lieu of performance to pay for, in whole or in part, the work required by this Order. Best efforts to coordinate shall include, at a minimum:

(i) Replying in writing within a reasonable period of time to any offer to perform or pay for the work required by this Order;

(ii) Engaging in good-faith negotiations with any person not a party to this Order who offers to perform or to pay for the work required by this Order; and

(iii) good-faith consideration of a good-faith offer to perform or pay for the work required by this Order.

(B) On request of EPA and subject to any applicable claims of privilege(s), Respondents shall submit to EPA all documents in their possession, custody, or control relating to (i) any offer to perform or pay for, or (ii) the performance of or payment for, the work required by this Order of any party or non-party to this Order.

VI. AUTHORITY OF THE EPA ON-SCENE COORDINATOR

The OSC shall be responsible for overseeing Respondents' implementation of this Order. The OSC shall have the authority vested in an OSC by the NCP, including the authority to halt, conduct, or direct any work required by this Order, or to direct any other removal action undertaken at the Site. Absence of the OSC from the Site shall not be cause for stoppage of work unless specifically directed by the OSC.

VII. REIMBURSEMENT OF COSTS

Within sixty (60) days after the effective date of the Order, Respondents shall pay $ 115,370.37, in the manner detailed below, for reimbursement of past costs paid by the United States. EPA will submit to Respondents a bill for the past costs including a cost summary and will make available for review any available cost documentation not protected from disclosure by privilege(s). Past response costs are all costs, including but not limited to,

direct and indirect costs and interest, that the United States, its employees, agents, contractors, consultants, and other authorized representatives incurred and paid with regard to the Site prior to September 14, 1993. In addition, Respondents shall reimburse EPA for all future response costs, not inconsistent with the NCP, incurred by the United States.

Future response costs are all costs, including, but not limited to, direct and indirect costs, that the United States incurs in implementing or enforcing this Order. Future response costs shall also include all costs, including direct and indirect costs, paid by the United States in connection with the Site between September 14, 1993 and the effective date of this Order, and all interest on the Past Response Costs.

On an annual basis, EPA shall submit to Respondents a bill for future response costs that includes a cost summary. EPA will make available for review any available cost documentation not protected from disclosure by privilege(s). Respondents shall, within sixty (60) days of receipt of the bill, remit a cashier's or certified check for the amount of those costs made payable to the "Hazardous Substance Superfund" to Superfund Accounting, Attention: Superfund Collection Officer, P.O. Box 100142, Atlanta, Georgia 30384. If EPA receives funds from a settlement with de minimis parties, a portion of those funds shall be reimbursed or otherwise made available to Respondents for payment of future costs.

Respondents shall simultaneously transmit a copy of the check to Carolyn McCall, EPA Region IV, Waste Programs Branch, Waste Management Division, 345 Courtland Street, N.E., Atlanta, Georgia 30365. Payments shall be designated as "Response Costs - Enterprise Recovery Systems Site" and shall reference the payor's name and address, the EPA site identification number, and the docket number of this Order.

Interest at the rate established under Section 107(a) of CERCLA shall begin to accrue on the unpaid balance from the day after the expiration of the sixty (60) day period, notwithstanding any dispute or an objection to any portion of the costs.

Respondents may dispute all or part of a bill submitted under this Order, if Respondents determine that EPA has made an accounting error, or if Respondents allege that a cost item that is included represents costs that are inconsistent with the NCP.

If any dispute over costs is resolved before payment is due, the amount due will be adjusted as necessary. If the dispute is not resolved before payment is due, Respondents shall pay the full amount of the uncontested costs into the Hazardous Substance Fund as specified above on or before the due date. Within the same time period, Respondents shall pay the full amount of the

contested costs into an interest-bearing escrow account. Respondents shall simultaneously transmit a copy of both checks to the OSC. Respondents shall ensure that the prevailing party or parties in the dispute shall receive the amount upon which they prevailed from the escrow funds plus interest within sixty (60) days after the dispute is resolved.

VIII. DISPUTE RESOLUTION

The parties to this Order shall attempt to resolve, expeditiously and informally, any disagreements concerning this Order.

If Respondents object to any EPA action taken pursuant to this Order, including billings for future response costs, Respondents shall notify EPA in writing of their objections within fourteen (14) days of such action, unless the objections have been resolved informally.

EPA and Respondents shall have fourteen (14) days from EPA's receipt of Respondents' written objections to attempt to resolve the dispute through formal negotiations (Negotiation Period). The negotiation period may be extended at the sole discretion of EPA. EPA's decision regarding an extension of the Negotiation Period shall not constitute an EPA action subject to dispute resolution or a final agency action giving rise to judicial review.

Any agreement reached by the parties pursuant to this section shall be in writing, signed by both parties, and shall upon signature by both parties be incorporated into and become an enforceable element of this Order. If the parties are unable to reach an agreement within the Negotiation Period, an EPA management official at the Division Director level or higher will issue a written decision on the dispute to Respondents. The decision of EPA shall be incorporated into and become and enforceable element of this Order upon Respondents' receipt of the EPA decision regarding the dispute. Respondents' obligations under this Order shall not be tolled by submission of any objection for dispute resolution under this section.

Following resolution of the dispute, as provided by this section, Respondents shall fulfill the requirement that was the subject of the dispute in accordance with the agreement reached or with EPA's decision, whichever occurs. No EPA decision made pursuant to this section shall constitute a final agency action giving rise to judicial review.

IX. FORCE MAJEURE

Respondents agree to perform all requirements under this Order within the time limits established under this Order, unless the performance is delayed by a force majeure. For purposes of this

Order, a force majeure is defined as any event arising from causes beyond the control of Respondents or of any entity controlled by or contractually related to Respondents, including but not limited to their contractors and subcontractors, that delays or prevents performance of any obligation under this Order despite Respondents' best efforts to fulfill the obligation. Force majeure does not include financial inability to complete the work or increased cost of performance.

Respondents shall notify EPA orally within forty-eight (48) hours after the event, and in writing within five (5) days after Respondents become or should have become aware of events which constitute a force majeure. Such notice shall: identify the event causing the delay or anticipated delay; estimate the anticipated length of delay, including necessary demobilization and re-mobilization; state the measures taken or to be taken to minimize the delay; and estimate the timetable for implementation of the measures. Respondents shall take all reasonable measures to avoid and minimize the delay. Failure to comply with the notice provision of this section shall waive any claim of force majeure by the Respondents.

If EPA determines a delay in performance of a requirement under this Order is or was attributable to a force majeure, the time period for performance of that requirement shall be extended as deemed necessary by EPA. Such an extension shall not alter Respondents' obligation to perform or complete other tasks required by the Order which are not directly affected by the force majeure.

X. STIPULATED AND STATUTORY PENALTIES

For each day, or portion thereof, that Respondents fail to perform fully any requirement of the Order in accordance with the schedule set forth hereunder, Respondents shall be liable as follows:

A. For each day during which Respondents fail to perform in accordance with the schedules contained in the Order and the various plans and reports required under the Order, any of the following activities:

i. commencement of work as prescribed in the Order, including submittal of any Work Plans as described in Paragraph V(2.1);

ii. submittal and, if necessary, modification of the final report;

Respondents shall be jointly and severally liable to EPA for stipulated penalties in the following amounts:

Period of Failure to Comply	Penalty Per Violation Per Day
1st through 14th day	$500
15th through 30th day	$1000
31st day and beyond	$2000

B. Respondents shall be jointly and severally liable to EPA for stipulated penalties in the amount of $100 per violation each day during which Respondents fail to comply with all other requirements of this Order.

Upon receipt of written demand by EPA, Respondents shall make payment to EPA within sixty (60) days. Interest shall accrue on late payments as of the date the payment is due which is the date of the violation or act of non-compliance triggering the stipulated penalties.

Even if violations are simultaneous, separate penalties shall accrue for separate violations of this Order. Penalties accrue and are assessed per violation per day. Penalties shall accrue regardless of whether EPA has notified Respondents of a violation or act of noncompliance. The payment of penalties shall not alter in any way Respondents' obligations to complete the performance of the work required under this Order.

Should Respondents violate this Order or any portion hereof, EPA may carry out the required actions unilaterally, pursuant to Section 104 of CERCLA, 42 U.S.C. § 9604, and/or may seek judicial enforcement of this Order pursuant to Section 106 of CERCLA, 42 U.S.C. § 9606.

XI. RESERVATION OF RIGHTS

Except as specifically provided in this Order, nothing herein shall limit the power and authority of EPA or the United States to take, direct, or order all actions necessary to protect public health, welfare, or the environment or to prevent, abate, or minimize an actual or threatened release of hazardous substances, pollutants or contaminants, or hazardous or solid waste on, at, or from the Site. Further, nothing herein shall prevent EPA from seeking legal or equitable relief to enforce the terms of this Order, from taking other legal or equitable action as it deems appropriate and necessary, or from requiring the Respondents in the future to perform additional activities pursuant to CERCLA or any other applicable law. EPA reserves the right to bring an action against Respondents under Section 107 of CERCLA, 42 U.S.C. § 9607, for recovery of any response costs incurred by the United States related to this Order or the Site and not reimbursed by Respondents. Respondents expressly reserve any and all rights

(including, but not limited to, any right to contribution), defenses, claims, demands, causes of action which Respondents may have with respect to any matter, transaction or occurrence relating in any way to the Site against any persons not parties to this Order.

XII. OTHER CLAIMS

By issuance of this Order, the United States and EPA assume no liability for injuries or damages to persons or property resulting from any acts or omissions of Respondents. The United States or EPA shall not be deemed a party to any contract entered into by the Respondents or their directors, officers, employees, agents, successors, representatives, assigns, contractors, or consultants in carrying out actions pursuant to this Order.

Except as expressly provided in Section XIV - Covenant Not To Sue, nothing in this Order constitutes a satisfaction of or release from any claim or cause of action against the Respondents or any person not a party to this Order, for any liability such person may have under CERCLA, other statutes, or the common law, including but not limited to any claims of the United States for costs, damages and interest under Sections 106(a) and 107(a) of CERCLA, 42 U.S.C. §§ 9606(a) and 9607(a).

This Order does not constitute a preauthorization of funds under Section 111(a)(2) of CERCLA, 42 U.S.C. § 9611(a)(2). Respondents waive any claim to payment under Sections 106(b), 111, and 112 of CERCLA, 42 U.S.C. §§ 9606(b), 9611, and 9612, against the United States or the Hazardous Substance Superfund arising out of any action performed under this Order.

No action or decision by EPA pursuant to this Order shall give rise to any right to judicial review except as set forth in Section 113(h) of CERCLA, 42 U.S.C. § 9613(h).

XIII. COVENANT NOT TO SUE

Except as otherwise specifically provided in this Order, upon issuance of the EPA notice referred to in Section XVII - Notice of Completion, EPA covenants not to sue Respondents for judicial imposition of damages or civil penalties or to take judicial or administrative action against Respondents for any failure to perform response actions agreed to in this Order except as otherwise reserved herein.

Except as otherwise specifically provided in this Order, in consideration and upon Respondents' payment of the response costs specified in Section VIII of this Order, EPA covenants not to sue or to take administrative action against Respondents under Section 107(a) of CERCLA for recovery of past and future response costs incurred by the United States in connection with this

removal action or this Order. This covenant not to sue shall take effect upon the receipt by EPA of the payments required by Section VIII - Reimbursement of Costs.

These covenants not to sue are conditioned upon the complete and satisfactory performance by Respondents of their obligations under this Order. These covenants not to sue extend only to the Respondents and do not extend to any other person.

XIV. CONTRIBUTION PROTECTION

With regard to claims for contribution against Respondents for matters addressed in this Order, the Parties hereto agree that Respondents are entitled to protection from contribution actions or claims to the extent provided by Sections 113(f)(2) and 122(h)(4) of CERCLA, 42 U.S.C. §§ 9613(f)(2) and 9622(h)(4). Nothing in this Order precludes the United States or Respondents from asserting any claims, causes of action or demands against any persons not parties to this Order for indemnification, contribution, or cost recovery.

XV. INDEMNIFICATION

Respondents agree to indemnify, save and hold harmless the United States, its officials, agents, contractors, subcontractors, employees and representatives from any and all claims or causes of action: (A) arising from, or on account of, acts or omissions of Respondents, Respondents' officers, heirs, directors, employees, agents, contractors, subcontractors, receivers, trustees, successors or assigns, in carrying out actions pursuant to this Order; and (B) for damages or reimbursement arising from or on account of any contract, agreement, or arrangement between any one or more of Respondents, and any persons for performance of work on or relating to the Site, including claims on account of construction delays. In addition, Respondents agree to pay the United States all costs incurred by the United States, including litigation costs arising from or on account of claims made against the United States based on any of the acts or omissions referred to in the preceding paragraph.

XVI. INSURANCE

At least seven (7) days prior to commencing any on-site work under this Order, Respondents shall secure, and shall maintain for the duration of this Order, comprehensive general liability insurance and automobile insurance with limits of five hundred thousand ($500,000) dollars, combined single limit. Within the same time period, Respondents shall provide EPA with certificates of such insurance and a copy of each insurance policy. If Respondents demonstrate by evidence satisfactory to EPA that any contractor or subcontractor maintains insurance equivalent to that described above, or insurance covering some or all of the

same risks but in an equal or lesser amount, then the Respondents need provide only that portion of the insurance described above which is not maintained by such contractor or subcontractor.

XVII. MODIFICATIONS

Modifications to any plan, schedule or Statement of Work may be made in writing by the OSC or at the OSC's oral direction subject to the provisions of Section VIII - Dispute Resolution. However, modifications or other actions directed by the OSC consistent with his or her emergency response authority are not subject to Section VIII - Dispute Resolution. If the OSC makes an oral modification, he or she will memorialize it in writing within seven (7) days; provided, however, that the effective date of the modification shall be the date of the OSC's oral direction. Any other requirements of the Order may be modified in writing by mutual agreement of the parties.

If Respondents seek permission to deviate from any approved Work Plan, schedule or Statement of Work, Respondents' Project Coordinator shall submit a written request to EPA for approval outlining the proposed Work Plan modification and its basis.

No informal advice, guidance, suggestion, or comment by EPA regarding reports, plans, specifications, schedules, or any other writing submitted by the Respondents shall relieve the Respondents of their obligations to obtain such formal approval as may be required by this Order, and to comply with all requirements of this Order unless it is formally modified.

XVII. NOTICE OF COMPLETION

When EPA determines, after EPA's review of the Final Report, that all removal actions have been fully performed in accordance with this Order, with the exception of any continuing obligations required by this Order, EPA will provide notice to the Respondents. If EPA determines that any removal actions have not been completed in accordance with this Order, EPA will notify the Respondents, provide a list of the deficiencies, and require that Respondents modify the Work Plan if appropriate in order to correct such deficiencies. The Respondents shall implement the modified and approved Work Plan and shall submit a modified Final Report in accordance with the EPA notice. Failure by Respondents to implement the approved modified Work Plan shall be a violation of this Order.

XVIII. PUBLIC COMMENT

Final acceptance by EPA of Section VII of this Order shall be subject to Section 122(i) of CERCLA, 42 U.S.C. § 9622(i), which requires EPA to publish notice of the proposed settlement in the Federal Register, to provide persons who are not parties to the

proposed settlement an opportunity to comment, solely, on the cost recovery component of the settlement, and to consider comments filed in determining whether to consent to the proposed settlement. After consideration of any comments submitted during the thirty (30) day public comment period held pursuant to Section 122(i) of CERCLA, EPA may withhold consent to all or part of Section VII of this Order if comments received disclose facts or considerations which indicate that Section VII of this Order is inappropriate, improper or inadequate. Otherwise, Section VII shall become effective when EPA issues notice to Respondents that the former is not withdrawing from this section of the Order.

XIX. SEVERABILITY

If a court issues an order that invalidates any provision of this Order or finds that Respondents have sufficient cause not to comply with one or more provisions of this Order, Respondents shall remain bound to comply with all provisions of this Order not invalidated or determined to be subject to a sufficient cause defense by the court's order.

XX. EFFECTIVE DATE

This Order shall be effective upon signature by the Director, Waste Management Division.

The undersigned representatives of Respondents certify that they are fully authorized to enter into the terms and conditions of this Order and to bind the parties they represent to this Order.

BY_____
FOR_____
Title_____
Date_____

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XX. EFFECTIVE DATE

This Order shall be effective upon signature by the Director, Waste Management Division.

The undersigned representatives of Respondents certify that they are fully authorized to enter into the terms and conditions of this Order and to bind the parties they represent to this Order.

BY Thomas A. Show
Title Environmental Affairs Manager (Alpha Carpet, TN.)
Date 9-22-93

proposed settlement an opportunity to comment, solely, on the cost recovery component of the settlement, and to consider comments filed in determining whether to consent to the proposed settlement. After consideration of any comments submitted during the thirty (30) day public comment period held pursuant to Section 122(i) of CERCLA, EPA may withhold consent to all or part of Section VIII of this Order if comments received disclose facts or considerations which indicate that Section VIII of this Order is inappropriate, improper or inadequate. Otherwise, Section VII shall become effective when EPA issues notice to Respondents that the former is not withdrawing from this section of the Order.

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XX. EFFECTIVE DATE

This Order shall be effective upon signature by the Director, Waste Management Division.

The undersigned representatives of Respondents certify that they are fully authorized to enter into the terms and conditions of this Order and to bind the parties they represent to this Order.

BY C R Knowles
Title MANAGER, ENVIRONMENTAL REMEDIATION, ATLANTIC RICHFIELD CO.
Date 9/22/93

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XX. EFFECTIVE DATE

This Order shall be effective upon signature by the Director, Waste Management Division.

The undersigned representatives of Respondents certify that they are fully authorized to enter into the terms and conditions of this Order and to bind the parties they represent to this Order.

Blazon Flexible Flyer & Flexible Flyer Co.,
Divisions of Par Industries, Inc.

BY [signature]
Title VICE PRESIDENT
Date 9-22-93

proposed settlement an opportunity to comment, solely, on the cost recovery component of the settlement, and to consider comments filed in determining whether to consent to the proposed settlement. After consideration of any comments submitted during the thirty (30) day public comment period held pursuant to Section 122(i) of CERCLA, EPA may withhold consent to all or part of Section VIII of this Order if comments received disclose facts or considerations which indicate that Section VIII of this Order is inappropriate, improper or inadequate. Otherwise, Section VII shall become effective when EPA issues notice to Respondents that the former is not withdrawing from this section of the Order.

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XX. EFFECTIVE DATE

This Order shall be effective upon signature by the Director, Waste Management Division.

The undersigned representatives of Respondents certify that they are fully authorized to enter into the terms and conditions of this Order and to bind the parties they represent to this Order.

Borg-Warner Automotive Electronic & Mechanical Systems Corporation
(formerly a second tier subsidiary of Borg-Warner Corporation)

BY _____
Title Vice President & Treasurer
Date September 22, 1993

proposed settlement an opportunity to comment, solely, on the cost recovery component of the settlement, and to consider comments filed in determining whether to consent to the proposed settlement. After consideration of any comments submitted during the thirty (30) day public comment period held pursuant to Section 122(i) of CERCLA, EPA may withhold consent to all or part of Section VIII of this Order if comments received disclose facts or considerations which indicate that Section VIII of this Order is inappropriate, improper or inadequate. Otherwise, Section VII shall become effective when EPA issues notice to Respondents that the former is not withdrawing from this section of the Order.

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XX. EFFECTIVE DATE

This Order shall be effective upon signature by the Director, Waste Management Division.

The undersigned representatives of Respondents certify that they are fully authorized to enter into the terms and conditions of this Order and to bind the parties they represent to this Order.

CARRIER CORPORATION

BY Robert E. Galli, Robert E. Galli
Title Vice President and General Counsel
Date September 20, 1993

proposed settlement an opportunity to comment, solely, on the cost recovery component of the settlement, and to consider comments filed in determining whether to consent to the proposed settlement. After consideration of any comments submitted during the thirty (30) day public comment period held pursuant to Section 122(i) of CERCLA, EPA may withhold consent to all or part of Section VIII of this Order if comments received disclose facts or considerations which indicate that Section VIII of this Order is inappropriate, improper or inadequate. Otherwise, Section VII shall become effective when EPA issues notice to Respondents that the former is not withdrawing from this section of the Order.

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XX. EFFECTIVE DATE

This Order shall be effective upon signature by the Director, Waste Management Division.

The undersigned representatives of Respondents certify that they are fully authorized to enter into the terms and conditions of this Order and to bind the parties they represent to this Order.

BY James A. Chokey
Title Vice President and General Counsel
Date September 27, 1993

COOPER INDUSTRIES

proposed settlement an opportunity to comment, solely, on the cost recovery component of the settlement, and to consider comments filed in determining whether to consent to the proposed settlement. After consideration of any comments submitted during the thirty (30) day public comment period held pursuant to Section 122(i) of CERCLA, EPA may withhold consent to all or part of Section VIII of this Order if comments received disclose facts or considerations which indicate that Section VIII of this Order is inappropriate, improper or inadequate. Otherwise, Section VII shall become effective when EPA issues notice to Respondents that the former is not withdrawing from this section of the Order.

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XX. EFFECTIVE DATE

This Order shall be effective upon signature by the Director, Waste Management Division.

The undersigned representatives of Respondents certify that they are fully authorized to enter into the terms and conditions of this Order and to bind the parties they represent to this Order.

BY _____
Title President
Date 9/20/93

Environmental Enterprises

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XX. EFFECTIVE DATE

This Order shall be effective upon signature by the Director, Waste Management Division.

The undersigned representatives of Respondents certify that they are fully authorized to enter into the terms and conditions of this Order and to bind the parties they represent to this Order.

BY M. E. Flynn
Title Southeastern Division Manager, Exxon Company, U.S.A., a Division of Exxon Corp.
Date 9/21/93

proposed settlement an opportunity to comment, solely, on the cost recovery component of the settlement, and to consider comments filed in determining whether to consent to the proposed settlement. After consideration of any comments submitted during the thirty (30) day public comment period held pursuant to Section 122(i) of CERCLA, EPA may withhold consent to all or part of Section VIII of this Order if comments received disclose facts or considerations which indicate that Section VIII of this Order is inappropriate, improper or inadequate. Otherwise, Section VII shall become effective when EPA issues notice to Respondents that the former is not withdrawing from this section of the Order.

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This Order shall be effective upon signature by the Director, Waste Management Division.

The undersigned representatives of Respondents certify that they are fully authorized to enter into the terms and conditions of this Order and to bind the parties they represent to this Order.

BY _____
Title Vice President of Operations
Date 9/17/93

Hatcraft

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XX. EFFECTIVE DATE

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The undersigned representatives of Respondents certify that they are fully authorized to enter into the terms and conditions of this Order and to bind the parties they represent to this Order.

BY Grant J. Ostrom
Title CEO and President - Heckethorn Mfg. Co.
Date September 17, 1993

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XX. EFFECTIVE DATE

This Order shall be effective upon signature by the Director, Waste Management Division.

The undersigned representatives of Respondents certify that they are fully authorized to enter into the terms and conditions of this Order and to bind the parties they represent to this Order.

BY _____

Title President: ICI Acrylics, Inc. (Formerly ICI-KSH)

Date September 21, 1993

proposed settlement an opportunity to comment, solely, on the cost recovery component of the settlement, and to consider comments filed in determining whether to consent to the proposed settlement. After consideration of any comments submitted during the thirty (30) day public comment period held pursuant to Section 122(i) of CERCLA, EPA may withhold consent to all or part of Section VIII of this Order if comments received disclose facts or considerations which indicate that Section VIII of this Order is inappropriate, improper or inadequate. Otherwise, Section VII shall become effective when EPA issues notice to Respondents that the former is not withdrawing from this section of the Order.

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XX. EFFECTIVE DATE

This Order shall be effective upon signature by the Director, Waste Management Division.

The undersigned representatives of Respondents certify that they are fully authorized to enter into the terms and conditions of this Order and to bind the parties they represent to this Order.

ITW SHAKEPROOF SPECIALTY PRODUCTS

BY Patrick J. Wilson

Title HUMAN RESOURCE + ENVIRONMENTAL DIRECTOR

Date Sept 27, 1993

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XX. EFFECTIVE DATE

This Order shall be effective upon signature by the Director, Waste Management Division.

The undersigned representatives of Respondents certify that they are fully authorized to enter into the terms and conditions of this Order and to bind the parties they represent to this Order.

KUHLMAN ELECTRIC CORPORATION

BY Bud J. Hook Bud J. Hook
Title V. P. Operations, Power Transformer Division
Date September 23, 1993

~~proposed settlement an opportunity to comment, solely, on the cost recovery component of the settlement, and to consider comments filed in determining whether to consent to the proposed settlement. After consideration of any comments submitted during the thirty (30) day public comment period held pursuant to Section 122(i) of CERCLA, EPA may withhold consent to all or part of Section VIII of this Order if comments received disclose facts or considerations which indicate that Section VIII of this Order is inappropriate, improper or inadequate. Otherwise, Section VII shall become effective when EPA issues notice to Respondents that the former is not withdrawing from this section of the Order.~~

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XX. EFFECTIVE DATE

This Order shall be effective upon signature by the Director, Waste Management Division.

The undersigned representative~~s~~ of Lincoln Brass Works, Inc. certifies ~~Respondents certify~~ that ~~they are~~ he is fully authorized to enter into the terms and conditions of this Order and to bind the ~~parties they represent~~ party he represents to this Order.

BY William L. Perlin
Title VICE PRESIDENT ENGINEERING
Date September 21, 1993

proposed settlement an opportunity to comment, solely, on the cost recovery component of the settlement, and to consider comments filed in determining whether to consent to the proposed settlement. After consideration of any comments submitted during the thirty (30) day public comment period held pursuant to Section 122(i) of CERCLA, EPA may withhold consent to all or part of Section VIII of this Order if comments received disclose facts or considerations which indicate that Section VIII of this Order is inappropriate, improper or inadequate. Otherwise, Section VII shall become effective when EPA issues notice to Respondents that the former is not withdrawing from this section of the Order.

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XX. EFFECTIVE DATE

This Order shall be effective upon signature by the Director, Waste Management Division.

The undersigned representatives of Respondents certify that they are fully authorized to enter into the terms and conditions of this Order and to bind the parties they represent to this Order.

LUDLOW CORPORATION

BY _____

Title President

Date September 22, 1993

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XX. EFFECTIVE DATE

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The undersigned representatives of Respondents certify that they are fully authorized to enter into the terms and conditions of this Order and to bind the parties they represent to this Order.

BY Dennis J. Nagfield
Title Corp. Asst. VP, Facilities & Environmental
Date Sept. 24, 1993

MAGNETEK

FROM:7137395882220 TO: 202 408 6404 SEP 24, 1993 11:11AM #928 P.21

is inappropriate, improper or inadequate. Otherwise, Section VII shall become effective when EPA issues notice to Respondents that the former is not withdrawing from this section of the Order.

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XX. EFFECTIVE DATE

This Order shall be effective upon signature by the Director, Waste Management Division.

The undersigned representatives of Respondents certify that they are fully authorized to enter into the terms and conditions of this Order and to bind the parties they represent to this Order.

Manchester Tank & Equip Co

BY [signature]
Title Corporate Environmental Director
Date 8-24-93

BY _____
Title _____
Date _____

It is so ORDERED and AGREED this ____ day of _____, 1993.

_____ Date _____
Joseph R. Franzmathes
Director
Waste Management Division
U.S. EPA, Region IV
345 Courtland Street, N.E.
Atlanta, Georgia 30365

FROM:7137395882 20 TO: 615 370 6150 AUG 24, 1993 4:10PM #482 P.22

proposed settlement an opportunity to comment, solely, on the cost recovery component of the settlement, and to consider comments filed in determining whether to consent to the proposed settlement. After consideration of any comments submitted during the thirty (30) day public comment period held pursuant to Section 122(i) of CERCLA, EPA may withhold consent to all or part of Section VIII of this Order if comments received disclose facts or considerations which indicate that Section VIII of this Order is inappropriate, improper or inadequate. Otherwise, Section VII shall become effective when EPA issues notice to Respondents that the former is not withdrawing from this section of the Order.

XIX. SEVERABILITY

If a court issues an order that invalidates any provision of this Order or finds that Respondents have sufficient cause not to comply with one or more provisions of this Order, Respondents shall remain bound to comply with all provisions of this Order not invalidated or determined to be subject to a sufficient cause defense by the court's order.

XX. EFFECTIVE DATE

This Order shall be effective upon signature by the Director, Waste Management Division.

The undersigned representatives of Respondents certify that they are fully authorized to enter into the terms and conditions of this Order and to bind the parties they represent to this Order.

BY Thomas R. Hess
Title Director, Livingston
Date September 20, 1993

OCF

proposed settlement an opportunity to comment, solely, on the cost recovery component of the settlement, and to consider comments filed in determining whether to consent to the proposed settlement. After consideration of any comments submitted during the thirty (30) day public comment period held pursuant to Section 122(i) of CERCLA, EPA may withhold consent to all or part of Section VIII of this Order if comments received disclose facts or considerations which indicate that Section VIII of this Order is inappropriate, improper or inadequate. Otherwise, Section VII shall become effective when EPA issues notice to Respondents that the former is not withdrawing from this section of the Order.

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XX. EFFECTIVE DATE

This Order shall be effective upon signature by the Director, Waste Management Division.

The undersigned representatives of Respondents certify that they are fully authorized to enter into the terms and conditions of this Order and to bind the parties they represent to this Order.

BY _____
Title Corporate Counsel
Date September 22, 1993

SCI

The undersigned representative of Scovill, Inc. on behalf of Schrader Automotive certifies that he is fully authorized to enter into the terms and conditions of this Order and bind the party he represents to this Order.

By _____

Title EVP

Date 9-23-93

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TECUMSEH PRODUCTS COMPANY

BY JOHN H. FOSS

Title VICE PRESIDENT, TREASURER AND CHIEF FINANCIAL OFFICER

Date

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XX. EFFECTIVE DATE

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The undersigned representatives of Respondents certify that they are fully authorized to enter into the terms and conditions of this Order and to bind the parties they represent to this Order.

TELEDYNE LEWISBURG

BY _____ (Carl H. Helmstetter)
Title Attorney
Date September 23, 1993

TELEDYNE STILL-MAN

By _____ (Carl H. Helmstetter)
Title Attorney
Date September 23, 1993

TELEDYNE FIRTH STERLING

By _____ (Carl H. Helmstetter)
Title Attorney
Date September 23, 1993

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XX. EFFECTIVE DATE

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The undersigned representatives of Respondents certify that they are fully authorized to enter into the terms and conditions of this Order and to bind the parties they represent to this Order.

BY Ronald D. Schneider
Title Vice President, Thomas Industries Inc.
Date 09/21/93

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XX. EFFECTIVE DATE

This Order shall be effective upon signature by the Director, Waste Management Division.

The undersigned representatives of Respondents certify that they are fully authorized to enter into the terms and conditions of this Order and to bind the parties they represent to this Order.

BY Carle R Bornson Jr.
Title SENIOR VICE PRESIDENT
Date SEPTEMBER 20, 1993

Thompson; Irmby

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XX. EFFECTIVE DATE

This Order shall be effective upon signature by the Director, Waste Management Division.

The undersigned representatives of Respondents certify that they are fully authorized to enter into the terms and conditions of this Order and to bind the parties they represent to this Order.

BY Victoria L
Title Group Counsel, The Trane Company, a Division of American Standard Inc.
Date 9-21-93

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XX. EFFECTIVE DATE

This Order shall be effective upon signature by the Director, Waste Management Division.

The undersigned representatives of Respondents certify that they are fully authorized to enter into the terms and conditions of this Order and to bind the parties they represent to this Order.

BY James McKee
Title President - Vickers, Incorporated
Date September 24, 1993

proposed settlement an opportunity to comment, solely, on the cost recovery component of the settlement, and to consider comments filed in determining whether to consent to the proposed settlement. After consideration of any comments submitted during the thirty (30) day public comment period held pursuant to Section 122(i) of CERCLA, EPA may withhold consent to all or part of Section VIII of this Order if comments received disclose facts or considerations which indicate that Section VIII of this Order is inappropriate, improper or inadequate. Otherwise, Section VII shall become effective when EPA issues notice to Respondents that the former is not withdrawing from this section of the Order.

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XX. EFFECTIVE DATE

This Order shall be effective upon signature by the Director, Waste Management Division.

The undersigned representatives of Respondents certify that they are fully authorized to enter into the terms and conditions of this Order and to bind the parties they represent to this Order.

BY The Wurlitzer Company C. R. Luenghing
Title Vice President
Date September 21, 1993

proposed settlement an opportunity to comment, solely, on the cost recovery component of the settlement, and to consider comments filed in determining whether to consent to the proposed settlement. After consideration of any comments submitted during the thirty (30) day public comment period held pursuant to Section 122(i) of CERCLA, EPA may withhold consent to all or part of Section VIII of this Order if comments received disclose facts or considerations which indicate that Section VIII of this Order is inappropriate, improper or inadequate. Otherwise, Section VII shall become effective when EPA issues notice to Respondents that the former is not withdrawing from this section of the Order.

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XX. EFFECTIVE DATE

This Order shall be effective upon signature by the Director, Waste Management Division.

The undersigned representatives of Respondents certify that they are fully authorized to enter into the terms and conditions of this Order and to bind the parties they represent to this Order.

OR/CANS Furniture, Inc

BY [signature]

Title Counsel

Date 9/28/93

It is so ORDERED and AGREED this 27TH day of September, 1993.

Joseph R. Franzmathes
Director
Waste Management Division
U.S. EPA, Region IV
345 Courtland Street, N.E.
Atlanta, Georgia 30365

Date 27 SEP 93

Enterprise Recovery Systems Site
Administrative Order on Consent for Removal Action

ATTACHMENT "A"
RESPONDENTS

Alpha Resins

Atlantic Richfield Co.

Blazon Flexible Flyer & Flexible Flyer Co.

Borg-Warner Automotive

Carrier Corporation

Cooper Industries

Environmental Enterprises Incorporated

Exxon Company, U.S.A.

Heatcraft Inc.

Heckethorn Manufacturing Co.

ICI Acrylics Inc.

ITW Shakeproof Specialty Products

Kuhlman Electric Corporation

Lincoln Brass Works, Inc.

Ludlow Corporation

Magnetek

Manchester Tank & Equipment Co.

Orleans Furniture, Inc.

Owens-Corning Fiberglas Corp.

SCI Systems, Inc.

Scovill, Inc. (Schrader Automotive)

Sunbeam-Oster Company, Inc.

Tecumseh Products Company

Teledyne

Thomas Industries Inc. (Day-Brite)

Thompson & Formby

The Trane Company

Vickers Incorporated

The Wurlitzer Company

UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY
REGION IV

IN THE MATTER OF:	)	
Enterprise Recovery Systems Site Byhalia, Marshall County, Mississippi,	)	ADMINISTRATIVE ORDER ON CONSENT
Proceeding Under Section 122(g)(4) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended, 42 U.S.C. § 9622(g)(4)	)	Docket No.: 94-14-C

I. JURISDICTION

This Administrative Order on Consent ("Consent Order") is issued pursuant to the authority vested in the President of the United States by Section 122(g)(4) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended by the Superfund Amendments and Reauthorization Act of 1986 ("CERCLA"), Pub. L. No. 99-499, 42 U.S.C. § 9622(g)(4), to reach settlements in actions under Sections 106(a) and 107(a) of CERCLA, 42 U.S.C. §§ 9606(a) and 9607(a). The authority vested in the President has been delegated to the Administrator of the United States Environmental Protection Agency ("EPA") by Executive Order 12580, 52 Fed. Reg. 2923 (January 29, 1987) and delegated to the Regional Administrators of the EPA by EPA Delegation No. 14-14-E (issued September 13, 1987, amended by memorandum June 17, 1988), and further re-delegated to the Director, Waste Management Division, EPA, Region IV.

This Consent Order is issued to the Respondents identified in Appendix A and Settling Federal Agencies. Respondents and Settling Federal Agencies agree to undertake all actions required

by the terms and conditions of this Consent Order. Respondents and Settling Federal Agencies further consent to and will not contest EPA's jurisdiction to issue this Consent Order or to implement or enforce its terms.

II. DEFINITIONS

A. "Site" shall mean the Enterprise Recovery Systems Site, located in Marshall County, Mississippi on Cayce Road between Byhalia, Mississippi and Collierville, Tennessee.

B. "Respondents" shall mean those parties identified in Appendix A.

C. "Settling Federal Agencies" shall mean the United States Department of Interior - Bureau of Reclamation; the United States Department of Agriculture; the United States Department of Agriculture - United States Forest Service; and the United States Department of Veterans Affairs.

D. "United States" shall mean the United States of America, its departments, agencies and instrumentalities.

E. "Matters Addressed" shall mean all removal response activities at the Site, authorized pursuant to CERCLA, 42 U.S.C. § 9601 et seq., resulting from existing releases or threatened releases at the Site and addressed in the executed Administrative Order on Consent for Removal Action at the Site, Docket Number 93-43-C.

III. STATEMENT OF FACTS

1. The Site is located in Mississippi on Cayce Road between Byhalia, Mississippi and Collierville, Tennessee. The land

surrounding the Site has a small residential population, but several homes are located within 200 yards of the Site. The Site includes a single story sheet metal building, two distinct storage tank areas, a small retention pond, and several outdoor drum storage areas.

2. Enterprise Recovery Systems, Inc., facility ID number MSD000693176, ("Enterprise") is the owner and operator of an abandoned solvent recycling facility which operated on the Site. Enterprise recycled solvents and operated under a permit issued in accordance with the Resource Conservation and Recovery Act, 42 U.S.C. § 6901 et seq., as amended ("RCRA"). Enterprise began operations as early as 1978; Enterprise closed in October 1991 when its insurer discovered significant soil and groundwater contamination at the Site and canceled insurance coverage.

3. Hazardous substances found on or about the Site include benzene, xylene, toluene, tetrachloroethylene, trichloroethylene, 1,1,1-trichloroethane, perchloroethylene, naphthalene, acetone, ethanol, methanol, bis(2-ethylhexyl)phthalate, methyl ethyl ketone, isopropyl alcohol, oils, methylene chloride, and chlorinated waste water.

4. Hazardous substances within the definition of Section 101(14) of CERCLA, 42 U.S.C. § 9601(14), have been or are threatened to be released into the environment at or from the Site.

5. As a result of the release or threatened release of hazardous substances into the environment, EPA has undertaken

response actions at the Site under Section 104 of CERCLA, 42 U.S.C. § 9604, and may undertake additional response actions in the future. On September 27, 1993, EPA entered into an Administrative Order on Consent for Removal Action at the Site, Docket Number 93-43-C, with a number of potentially responsible parties.

6. In performing these response actions, EPA has incurred response costs at or in connection with the Site. For purposes of this Consent Order, the estimate of past costs incurred by EPA at the Site, prior to August 31, 1993, are $115,370.37.

7. Information currently known to EPA indicates that each Respondent and Settling Federal Agency arranged for disposal or treatment, or arranged with a transporter for disposal or treatment, of a hazardous substance owned or possessed by such Respondent and Settling Federal Agency at the Site, or accepted a hazardous substance for transport to the Site.

8. Information currently known to EPA indicates that the amount of hazardous substances contributed to the Site by each Respondent and Settling Federal Agency does not exceed 10,000 gallons, or 0.45 percent of the hazardous substances at the Site, and that the hazardous substances contributed to the Site by each Respondent and Settling Federal Agency are not significantly more toxic or of significantly greater hazardous effect than other hazardous substances at the Site.

9. In evaluating the settlement embodied in this Consent Order, EPA has considered the potential costs of the removal

action at or in connection with the Site taking into account possible cost overruns.

10. Payments required to be made by each Respondent and Settling Federal Agency pursuant to this Consent Order are a minor portion of the total response costs at the Site which EPA, based upon currently available information, estimates to be approximately $1,340,000.00.

IV. DETERMINATIONS

Based upon the Findings of Fact set forth above and on the administrative record for this Settlement, EPA has determined that:

1. The Enterprise Recovery Systems Site is a "facility" as defined in Section 101(9) of CERCLA, 42 U.S.C. § 9601(9).

2. Each Respondent and Settling Federal Agency is a "person" as defined in Section 101(21) of CERCLA, 42 U.S.C. § 9601(21).

3. Each Respondent and Settling Federal Agency is a "potentially responsible party" under Sections 107(a) and 122(g)(1) of CERCLA, 42 U.S.C. §§ 9607(a) and 9622(g)(1).

4. There has been an actual or threatened "release" of a hazardous substance from the Site as that term is defined in Section 101(22) of CERCLA, 42 U.S.C. § 9601(22).

5. Prompt settlement with the Respondents and Settling Federal Agencies is practicable and in the public interest in accordance with Section 122(g)(1) of CERCLA, 42 U.S.C. § 9622(g)(1).

6. This Consent Order involves at most only a minor portion of the response costs at the Site in accordance to Section 122(g)(1) of CERCLA, 42 U.S.C. § 9622(g)(1).

7. The amount of hazardous substances contributed to the Site by each Respondent and Settling Federal Agency and the toxic or other hazardous effects of the hazardous substances contributed to the Site by each Respondent and Settling Federal Agency are minimal in comparison to other hazardous substances at the Site in accordance with Section 122(g)(1)(A) of CERCLA, 42 U.S.C. § 9622(g)(1)(A).

V. ORDER

Based upon the administrative record for this Settlement and the Findings of Fact and Determinations set forth above, and in consideration of the promises and covenants set forth herein, it is hereby AGREED TO AND ORDERED:

PAYMENT

1(a). Each Respondent shall pay the amount set forth in Appendix B to this Consent Order, which is incorporated herein by reference, in accordance with Section V of this Consent Order, within thirty (30) days of the effective date of this Consent Order.

1(b). Each Settling Federal Agency shall pay the amount set forth in Appendix B to this Consent Order, which is incorporated herein by reference, in accordance with Section V of this Consent Order, within one hundred twenty (120) days of the effective date of this Consent Order.

2. The total amount to be paid by each Respondent and Settling Federal Agency includes a payment for: (a) past response costs incurred at or in connection with the Site; (b) projected future response costs to be incurred at or in connection with the Site; and (c) a premium to cover the risk that response costs to be incurred at or in connection with the Site will exceed $1,340,000.00.

3. Each payment shall be made by certified or cashier's check and paid to:

Enterprise Recovery Systems Site Group
C/O Eugene E. Smary, Esquire
Warner, Norcross & Judd
900 Old Kent Building
111 Lyon Street, N.W.
Grand Rapids, Michigan 49503-2489

4. Each Respondent and Settling Federal Agency shall simultaneously transmit a copy of its check to:

Carolyn McCall
Waste Programs Branch
Waste Management Division
U.S. Environmental Protection Agency
Region IV
345 Courtland Street, N.E.
Atlanta, Georgia 30365

5. Payments by or on behalf of Settling Federal Agencies are subject to availability of appropriated funds. Nothing in this Consent Order shall be interpreted as or constitute a commitment or requirement that the Settling Federal Agencies obligate or pay funds in contravention of the Anti-Deficiency Act, 31 U.S.C. § 1341.

CIVIL PENALTIES

6. In addition to any other remedies or sanctions available to EPA, any Respondent who fails or refuses to comply with any term or condition of this Consent Order shall be subject to a civil penalty of up to $25,000 per day for each failure or refusal to comply pursuant to Section 122(l) of CERCLA, 42 U.S.C. $ 9622(l).

CERTIFICATION OF RESPONDENTS AND SETTLING FEDERAL AGENCIES

7. Each Respondent and Settling Federal Agency certifies individually that, to the best of its knowledge and belief, it has conducted a thorough, comprehensive, good faith search for information and for any evidence of destruction of or tampering with information or documents, and has fully and accurately disclosed to EPA all information currently in its possession, or in the possession of its officers, directors, employees, contractors or agents, which relates in any way to the ownership or control of the Site, or to the ownership, operation, generation, treatment, transportation, storage or disposal of hazardous substances, pollutants or contaminants at or in connection with the Site. Each Respondent further certifies, individually, that it has disclosed to EPA any and all evidence of destruction or tampering with any documents or other information relating to its potential liability or the filing of a suit against Respondent regarding the Site and that it has fully and accurately complied with any and all EPA requests for information pursuant to Sections 104(e) and 122(e) of CERCLA, 42

U.S.C. §§ 9604(e) and 9622(e), and Section 3007 of RCRA, 42 U.S.C. § 6927. Provision of false, fictitious, or fraudulent statements or representations to the United States may subject a Respondent to criminal penalties pursuant to 18 U.S.C. § 1001.

COVENANTS BY EPA

8. In consideration of the payments that will be made by the Respondents and Settling Federal Agencies under the terms of this Consent Order, and except as specifically provided in Section V, Paragraphs 10 and 11, of this Consent Order, EPA covenants not to sue any Respondent or take administrative action against any Respondent or Settling Federal Agency pursuant to Sections 106(a) or 107(a) of CERCLA, 42 U.S.C. §§ 9606(a) or 9607(a), and Section 7003 of RCRA, 42 U.S.C. § 6973, relating to the Matters Addressed. With respect to present and future liability, these covenants shall take effect with respect to each Respondent and Settling Federal Agency upon the receipt of the payment from that Respondent or Settling Federal Agency required by Section V, Paragraph 1, of this Consent Order. With respect to each Respondent and Settling Federal Agency, these covenants are conditioned upon the complete and satisfactory performance by that Respondent of its obligations under this Consent Order. These covenants extend only to the Respondents and Settling Federal Agencies and do not extend to any other person.

COVENANTS BY RESPONDENTS AND SETTLING FEDERAL AGENCIES

9. The Respondents and Settling Federal Agencies covenant and agree not to assert any claims or causes of action against

the United States or any of its agencies or its contractors or employees with respect to the Matters Addressed or this Consent Order, including, but not limited to, any direct or indirect claim for reimbursement from the Hazardous Substance Superfund (established pursuant to the Internal Revenue Code, 26 U.S.C. § 9507) through Sections 106(b)(2), 111, 112 or 113 of CERCLA, 42 U.S.C. §§ 9606(b)(2), 9611, 9612 or 9613, or any other provision of law, or any claims arising out of response activities at the Site. Nothing in this Consent Order shall be deemed to constitute preauthorization of a claim within the meaning of Section 111 of CERCLA, 42 U.S.C. § 9611, or 40 C.F.R. § 300.700(d).

RESERVATIONS OF RIGHTS

10. The covenants by EPA set forth in Section V, Paragraph 8, of this Consent Order, do not pertain to any matters other than those expressly specified in Paragraph 8. The United States, including EPA, reserves, and this Consent Order is without prejudice to, all rights against Respondents and Settling Federal Agencies with respect to all other matters, including but not limited to the following:

a) claims based on a failure to make the payments required by Section V, Paragraph 1, of this Consent Order;

b) criminal liability; or

c) liability for damages for injury to, destruction of, or loss of natural resources.

11. Notwithstanding any other provision of this Consent Order, the United States, including EPA, reserves, and this Consent Order is without prejudice to, the right to institute judicial proceedings or to issue an administrative order seeking to compel the Respondents and Settling Federal Agencies 1) to perform response actions relating to the Site, or 2) to reimburse the United States, including EPA, for additional costs of response if:

a) information not currently known to EPA is discovered which indicates that any Respondent or Settling Federal Agency contributed hazardous substances to the Site in such greater amount or of such greater toxic or other hazardous effects that the Respondent or Settling Federal Agency no longer qualifies as a de minimis party at the Site because the Respondent or Settling Federal Agency contributed greater than 10,000 gallons, or 0.45 percent of the hazardous substances at the Site, or contributed hazardous substances which are significantly more toxic than or are of significantly greater hazardous effect than other hazardous substances at the Site; or

b)(i) conditions at the Site, previously unknown to EPA, are discovered, or ii) information, previously unknown to EPA, is received, in whole or in part, and the previously unknown conditions or information together with other information indicates that the removal action consistent with the Administrative Order in Consent for Removal Action,

Docket Number 93-43-C, is not protective of human health or the environment.

c) For purposes of Section V, paragraph 11(b), of this Consent Order, the information and the conditions known to EPA shall include only that information and those conditions set forth in the Administrative Order in Consent for Removal Action, Docket Number 93-43-C, and the administrative record supporting the removal action.

EFFECT OF SETTLEMENT: CONTRIBUTION PROTECTION

12. Nothing in this Consent Order shall be construed to create any rights in, or grant any cause of action to, any person not a party to this Consent Order. The preceding sentence shall not be construed to waive or nullify any rights that any person not a signatory to this Consent Order may have under applicable law. The United States, including EPA and Settling Federal Agencies, and the Respondents each reserve any and all rights (including, but not limited to, any right to contribution), defenses, claims, demands, and causes of action which each party may have with respect to any matter, transaction, or occurrence relating in any way to the Site against any person not a party hereto.

13. EPA and the Respondents and Settling Federal Agencies agree that the actions undertaken by the Respondents and Settling Federal Agencies in accordance with this Consent Order do not constitute an admission of any liability by any Respondent or Settling Federal Agency. The Respondents and Settling Federal

Agencies do not admit and retain the right to controvert in any subsequent proceedings, other than proceedings to implement or enforce this Consent Order, the validity of the Statement of Facts or Determinations contained in this Consent Order.

14. With regard to claims for contribution against each Respondent and Settling Federal Agency for Matters Addressed by this Consent Order, EPA and Respondents and Settling Federal Agencies agree that each Respondent and Settling Federal Agency is entitled, as of the date of this Consent Order, to such protection from contribution actions or claims as is provided by Sections 113(f)(2) and 122(g)(5) of CERCLA, 42 U.S.C. §§ 9613(f)(2) and 9622(g)(5). Such protection with respect to each Respondent and Settling Federal Agency is conditioned upon that Respondent's or Settling Federal Agency's compliance with the requirements of this Consent Order.

PARTIES BOUND

15. This Consent Order shall apply to and be binding upon EPA, the Settling Federal Agencies, and the Respondents and their heirs, successors and assigns. Any change in ownership or corporate status of a Respondent including, but not limited to, any transfer of assets or real or personal property, shall in no way alter each Respondent's responsibilities under this Consent Order. Each signatory to this Consent Order represents that he or she is fully authorized to enter into the terms and conditions of this Consent Order and to bind legally the Respondent or Settling Federal Agency which he or she represents.

PUBLIC COMMENT

16. This Consent Order shall be subject to a thirty-day public comment period pursuant to Section 122(i) of CERCLA, 42 U.S.C. § 9622(i). In accordance with Section 122(i)(3) of CERCLA, 42 U.S.C. § 9622(i)(3), EPA may withdraw or modify consent to this Consent Order if comments received disclose facts or considerations which indicate that this Consent Order is inappropriate, improper, or inadequate.

ATTORNEY GENERAL APPROVAL

17. The Attorney General or her designee has issued prior written approval of the settlement embodied in this Consent Order in accordance with Section 122(g)(4) of CERCLA, 42 U.S.C. § 9622(g)(4).

EFFECTIVE DATE

18. The effective date of this Consent Order shall be the date upon which EPA issues written notice to the Respondents and Settling Federal Agencies that the public comment period pursuant to Section V, Paragraph 16, of this Consent Order has closed and that comments received if any, do not require modification of or EPA withdrawal from this Consent Order.

IT IS SO AGREED AND ORDERED:

Respondent: _____
(Typed)

By: _____ _____
Name (Typed): Date
Title (Typed):

Enterprise Recovery Systems Site
Administrative Order on Consent
EPA Docket No.:

U.S. Environmental Protection Agency

By: Michael D. Green, Deputy for 3/23/94
Joseph R. Franzmathes
Director, Waste Management Division
Date

ENTERPRISE RECOVERY SYSTEMS SITE
RESPONDENTS TO DE MINIMIS AOC
APPENDIX "A"

1. 4/Flight Industries
2. 22nd District Agricultural Association
3. ABC Industries, Inc. (a/k/a Peabody ABC Corporation)
4. A/C Fuel Cells Worldwide
5. ACF Industries, Inc.
6. A.S. Martin & Sons, Inc.
7. Abtrex Industries, Inc.
8. Adgraphics Group Pacific, Inc.
9. Aero Tanks and Floats, Inc. (f/k/a Aviation Fuel Cells International, Inc.)
10. Aircap Industries
11. Aircraft Contours Limited Partnership
12. Airtex Products
13. Alamogordo Public Schools
14. Alcoa Fujikura Ltd. (a/k/a PEP Industries)
15. Amana Refrigeration, Inc.
16. American Bank Note Company (f/k/a Jeffries Banknote Company)
17. American & Import Collision Repair
18. Amtrol, Inc.
19. Angus Biotech, Inc.
20. Apache Products Company
21. Aqua Yacht Harbor Corporation
22. Arco Industries Corporation
23. Artisan Frame & Moulding Company
24. B & B Custom Automotive
25. Barth, Inc.
26. Benchmark Graphics, Inc.
27. Biloxi Regional Medical Center
28. Boulevard Printing & Graphics
29. Brunswick Corporation
30. California Coast Color, Inc.
31. California Litho Company
32. Calsonic Miura Graphics, Inc.
33. Capitol Press
34. Carey's Body Shop
35. The Castle Press
36. Central News-Wave Publications, Inc.
37. Challenge Door Company
38. Charles Martin Inspection and Controls, Inc. (d/b/a Inspectorate)
39. Chromatic Ink Lithographers
40. Chrysler Corporation
41. Chuck Hutton Chevrolet Company
42. City of Kansas City, Missouri (f/k/a Missouri Public Works Dept.)
43. City of Los Angeles, California (on behalf of General Services Department)
44. City of Natchitoches, Louisiana
45. City of Newport Beach, California
46. City of Norwalk
47. Cleaver Brooks, a Division of Aqua-Chem
48. Coca-Cola Foods, a Division of the Coca-Cola Company
49. Colourcraft Printing, Inc.
50. Commercial Clear Print
51. Compuartist
52. Con Pac, Inc.
53. Constar Plastics, Inc. (f/k/a Sewell Plastics)
54. Continental PET Technologies, Inc.
55. Costello Brothers Lithographers, Inc.
56. Coyne Cylinder Company
57. Cray, Inc.
58. Crest Graphics, Inc.
59. Croft Metals, Inc.
60. Crown Printing
61. Cyclear, Inc.
62. Delta Industrial Coatings, Inc.
63. Deluxe Corporation (a/k/a Deluxe Check Printers)
64. Desert Printing Company, Inc.
65. Dick Diggon's Body Works, Inc.
66. Dimensional Designs, Inc.
67. Dixcee Wire Cloth Products
68. Dixie Rubber Stamp & Seal Company of Mississippi, Inc.
69. Dover Elevator Systems, Inc.
70. Dual Graphics, Inc.
71. Duplex Products, Inc.
72. Durand-Raute Corporation
73. EAC Corporation (d/b/a EckAdams)
74. Eaton Corporation (f/k/a King Seeley Corporation)
75. Economy Printing & Mailing Services, Inc.

76. Electra Corporation (Dennis Foster)
77. Electro Painters, Inc.
78. Eljer Corporation
79. Engineered Cooling Systems, Inc.
80. Engraph, Inc.
81. Engstrom-Smith Lithography (a/k/a The Workshop)
82. Environmental Resource Associates, Inc.
83. Eureka Lithograph Company
84. ffi Corporation (a/k/a Farm Fans)
85. FKI Industries, Inc. (f/k/a Babcock Industries, Inc.)
86. FMC Corporation
87. FM Pathology Laboratory
88. Faust Printing, Inc.
89. Federal Express Corporation
90. Flinns Lithograph Company
91. Friction Materials Company
92. GE Appliances
93. The Gates Rubber Company
94. Gem, Inc.
95. General Printing Ink Division
    Sun Chemical Corporation
    Sequa Corporation
96. Genesco, Inc.
97. Gerwin Corporation
98. Gossett Body Shop
99. Greens, Inc.
100. Grenada Lake Medical Center
101. Griffin Printing & Lithograph Company, Inc.
102. Hager Hinge Company
103. Halstead Industries, Inc.
104. Hamilton Displays, Inc. (f/k/a Dimensional Designs, Inc.)
105. Hansberger Precision Golf (a/k/a Ram Golf)
106. The Harman Press
107. Hart's Manufacturing Company
108. Hartzell Fan, Inc.
109. Hi-Lo Oil - #811, #662, #663
110. Hoffinger Industries, Inc.
111. The Hoosier Company, Inc.
112. Hospital Corporation of America
113. Hunter Fan Company
114. Hurco Manufacturing Company
115. IMC-Agrico Company
116. IPC Corinth Division, Inc. a/k/a Intex Plastics Corporation
117. IPS Corporation
118. I.R. Construction Products Company, Inc. (f/k/a Inryco, Inc.)
119. ITT Automotive
120. Indiana Bell Telephone Company, Inc.
121. Indiana Michigan Power Company
122. Industrial Printers of California
123. Inland Steel Flat Products Company
124. Intergraph Corporation
125. J & A Enterprises
126. J & D Litho, Inc.
127. J.T. Parsons Cabinet Company, Inc.
128. Jim's Auto Body Shop, Inc.
129. Joamca Chemical Products Company, Inc.
130. Jomac Products, Inc.
131. Josten's, Inc.
132. KCL Corporation
133. K&W Products
134. Kater Litho, Inc.
135. Kauffman Engineering, Inc.
136. Kentucky Mountain Industries, Inc.
137. Lake City Heat Treating Corporation
138. Larry Brown Lithographers, Inc.
139. Laycook Products Company, Inc.
140. Leggett & Platt, Inc.
141. Lincoln County Sheriff's Department
142. Lithographix, Inc.
143. Lockheed - Georgia Company
144. London Press, Inc.
145. Long Beach City College
146. Louisiana Department of Wildlife and Fisheries
147. Lydall, Inc. - Composite Materials Division
148. Marley Electric Heating Company (a/k/a Berko Electric)
149. Masonite Corporation
    Reynolds and Reynolds (f/k/a Shumate Business Forms)
    International Paper Company

150. Media Lithographics
151. Memorial Hospital of Holly Springs, Inc.
152. Memphis Light, Gas and Water Division
153. Methodist Haywood Park Hospital, Inc.
154. Methodist Hospital of Indiana, Inc.
155. Metropolitan School District of Washington Township, Marion County, Indiana
156. Midway Ford, Inc.
157. Mid-West Spring Manufacturing Company
158. Mike Shad Ford - Memphis, Inc.
159. Mississippi Crime Laboratory
160. Mississippi Department of Environmental Quality
161. Mississippi Department of Transportation
162. Mobile Drilling Company, Inc.
163. Modine Manufacturing Company
164. Moeller Marine Products, a Division of the Moore Company
165. Monarch Litho, Inc.
166. Monticello Spring Corporation
167. Moore & Sons, Inc.
168. Morris Machine Company, Inc.
169. Mueller Brass Company
170. Mulay Plastics, Inc.
171. Naegele Outdoor Advertising (a/k/a Morris Communications)
172. National Industrial Constructors, Inc.
173. Navistar International Transportation Corporation
174. News-Type Service, Inc.
175. Neyenesch Printers, Inc.
176. Northern Consulting Communications & Equipment, Inc.
177. Northern Electric Company
178. Northern Telecom, Inc.
179. North Hollywood Printing Company, Inc.
180. PSP Graphics
181. Pacific Rim Printers/Mailers
182. Pathologists' Laboratory, P.C.
183. Paul and Beekman Company, Inc.
184. Peavey Electronics Corporation
185. Penn Lithographics
186. Peterbilt of Memphis, Inc.
187. Plumley Companies
188. Potter Company
189. Precision Propeller, Inc. (f/k/a Indiana Precision Casting, Inc.)
190. Premier Printing Corporation
191. Presentation Media, Inc.
192. Printing Plus
193. Process Engineering Co., Inc.
194. The Quaker Oats Company
195. R.B. Graphics
196. R.R. Donnelley & Sons Company
197. Rayloc Company
198. Reichhold Chemicals, Inc.
199. Reliance Comm/Tec Corporation
200. Republic Environmental Systems (f/k/a ECOLOTEC, Inc.)
201. Research Solvents & Chemicals
202. Rheem Manufacturing Company
203. Rinehart Research
204. Ripley Industries, Inc.
205. Robertshaw - Tennessee
206. Ron Ink Company, Inc.
207. Rose Hill, Inc.
208. Rotan Independent School District
209. Russell & Miller, Inc.
210. Rust College
211. S.K. Wellman Corporation
212. St. Dominic-Jackson Memorial Hospital
213. St. Tammany Parish Hospital
214. San Fernando Valley Board of Realtors, Inc.
215. Scienco, Inc.
216. Scoles Cadillac of Nashville, Inc.
217. Selmer Company, Inc.
218. The Shannon Group, Inc. (a/k/a Kolpak Industries)
219. Shelby Williams Industries, Inc. (a/k/a Madison Furniture Ind.)
220. Sinclair Printing
221. Sir Speedy Printing
222. SmithKline Beecham
223. Smith Lithographic Arts, Inc.
224. Smoker-Craft Division, Goshen Sash & Door Company, Inc.
225. Snell & Sons Investment, Inc. (a/k/a The Paint Shop)
226. Southern California Graphics
227. Southern California Lithographics

228. Spectro Chem, Inc.
229. The Stackpole Corporation (a/k/a Pure Industries)
230. Stow Davis Furniture, Inc. (f/k/a Interior Woodworking Corporation)
231. Sundance Litho, Inc.
232. Sunland Associates
233. Sun Litho, Inc.
234. Teleflora, a Division of Roll International Corporation
235. Texas Boot Company
236. Textron, Inc. (a/k/a Avco Electronics)
237. Thomas & Betts Corporation
238. Tom Martin's, Inc.
239. Trimm Industries, Inc.
240. Tube Processing Corporation
    CTP Corporation
    Commercial Tube Processing
241. Union Oil Company of California (d/b/a Unocal)
242. The Union Tool Corporation
243. United Technologies Automotive, Inc. (for Harding Machine)
244. United Technologies Automotive Systems, Inc. (f/k/a Sheller Globe Corporation)
245. Universal-Rundle Corporation for Ingress Plastene
246. University of Mississippi Medical Center
247. University of Notre Dame
248. Vanguard Manufacturing Co., Inc.
249. Vanier Business Forms & Services
250. Vaughn Printing
251. The Vendo Company
252. Ventra Corporation
253. Viking Lithograph, Inc.
254. WHC, Inc.
255. W&M Realty (d/b/a Kansas Avenue Industrial Park)
256. W&M Manufacturing Company, Inc.
257. Walker Manufacturing Company
258. Warsaw Chemical Company, Inc.
259. Weber Printing Company, Inc.
260. Western Kentucky University
261. Westform Industries
262. Westland Graphics
263. West Point Casket Company
264. Williams Cabinet Shop, Inc.
265. Wilmoth Color
266. Woodridge Press, Inc.
267. Woodshaft, Inc. (a/k/a True Temper Sports)
268. Yoder Kitchen Corporation
269. Z Graphics
270. Z.H. Indiana (f/k/a Mobile Drilling Company, Inc.)
271. Zimmer Paper Products, Inc.

SETTLING FEDERAL AGENCIES

1. United States Department of Agriculture
2. United States Department of Agriculture - United States Forest Service
3. United States Department of Interior - Bureau of Reclamation
4. United States Department of Veterans Affairs

Appendix B

ENTERPRISE RECOVERY SYSTEMS SITE/BYHALIA, MISSISSIPPI
DE MINIMIS PRP COST MATRIX

PRP NAME	VOLUME (GALLONS)	PERCENT	PAST COSTS $115,370.37	FUT. COSTS $1,225,000.00	PREMIUM 100% FUT. COSTS	ORPHAN SHARE $17,580.10	TOTAL
22ND DISTRICT AGRICULTURAL ASSOC.	55.00	0.0025	2.86	30.41	30.41	2.35	66.03
A. S. MARTIN & SONS	110.00	0.0050	5.73	60.83	60.83	4.69	132.08
A.C. FUEL CELLS WORLDWIDE, INC	440.00	0.0199	22.91	243.31	243.31	18.77	528.30
ABSTRACTA DESIGNS	55.00	0.0025	2.86	30.41	30.41	2.35	66.03
ABTREX INDUSTRIES, INC	441.97	0.0200	23.02	244.40	244.40	18.85	530.67
ACCO BABCOCK, INC	660.00	0.0298	34.37	364.96	364.96	28.15	792.44
ACF SHIPPERS CAR LINE INC	2860.00	0.1291	148.95	1581.51	1581.51	121.99	3433.96
ADGRAPHICS GROUP PACIFIC, INC	187.50	0.0085	9.76	103.68	103.68	8.00	225.12
AGRICO CHEM. CO.	155.00	0.0070	8.07	85.71	85.71	6.61	186.10
AIRCAP INDUSTRIES	2555.00	0.1153	133.06	1412.85	1412.85	108.98	3067.74
AIRCRAFT CONTOURS	500.00	0.0226	26.04	276.49	276.49	21.33	600.35
AIRTEX PRODUCTS	605.00	0.0273	31.51	334.55	334.55	25.80	726.41
ALAMOGORDO PUBLIC SCHOOLS	20.00	0.0009	1.04	11.06	11.06	0.85	24.01
ALLIED ELECTROPLATING, INC.	7425.00	0.3352	386.69	4105.85	4105.85	316.70	8915.09
AMANA REFRIGERATION, INC.	8000.00	0.3611	416.63	4423.81	4423.81	341.22	9605.47
AMERI-KAN	187.50	0.0085	9.76	103.68	103.68	8.00	225.12
AMERICAN & IMPORT COLLISION REPAIR	55.00	0.0025	2.86	30.41	30.41	2.35	66.03
AMTROL, INC.	605.00	0.0273	31.51	334.55	334.55	25.80	726.41
ANGUS BIOTECH, INC.	4855.00	0.2192	252.84	2684.70	2684.70	207.08	5829.32
ANZA GRAPHIC	375.00	0.0169	19.53	207.37	207.37	15.99	450.26
APACHE PRODUCTS CO.	55.00	0.0025	2.86	30.41	30.41	2.35	66.03
AQUA YACHT HARBOR	940.00	0.0424	48.95	519.80	519.80	40.09	1128.64
ARCO INDUSTRIES CORPORATION	935.00	0.0422	48.69	517.03	517.03	39.88	1122.63
ARTISAN FRAME & MOULDING CO.	220.00	0.0099	11.46	121.65	121.65	9.38	264.14
AUSTIN PRINTING CO.	665.00	0.0300	34.63	367.73	367.73	28.36	798.45
AVCO ELECTRONICS DIVISION	4586.26	0.2070	238.85	2536.09	2536.09	195.62	5506.65
AVIATION FUEL CELLS INTERNATIONAL, INC.	5940.00	0.2681	309.35	3284.68	3284.68	253.36	7132.07
B&B AUTO CUSTOM REPAIR SHOP	440.00	0.0199	22.91	243.31	243.31	18.77	528.30
BARTH, INC.	1040.98	0.0470	54.21	575.64	575.64	44.40	1249.89
BATH GENIE	110.00	0.0050	5.73	60.83	60.83	4.69	132.08
BENCHMARK GRAPHICS	265.63	0.0120	13.83	146.89	146.89	11.33	318.94
BERCO ELECTRIC CO.	2050.51	0.0926	106.79	1133.88	1133.88	87.46	2462.01
BILOXI REGIONAL MEDICAL CENTER	125.00	0.0056	6.51	69.12	69.12	5.33	150.08
BOULEVARD PRINTING	12.25	0.0006	0.64	6.77	6.77	0.52	14.70
BRUNSWICK MARINE	2505.00	0.1131	130.46	1385.21	1385.21	106.85	3007.73
CALIFORNIA COAST COLOR	250.00	0.0113	13.02	138.24	138.24	10.66	300.16
CALIFORNIA LITHO CO.	630.00	0.0284	32.81	348.38	348.38	26.87	756.44
CALSONIC GRAPHICS, INC.	150.00	0.0068	7.81	82.95	82.95	6.40	180.11
CAPITOL PRESS	200.00	0.0090	10.42	110.60	110.60	8.53	240.15
CAREY'S BODY SHOP	530.00	0.0239	27.60	293.08	293.08	22.61	636.37
CASTLE PRESS	465.00	0.0210	24.22	257.13	257.13	19.83	558.31
CBI-SYSTEMS	55.00	0.0025	2.86	30.41	30.41	2.35	66.03
CENTRAL NEWS WAVE PUBLICATIONS, INC.	300.00	0.0135	15.62	165.89	165.89	12.80	360.20
CHALLANGE DOOR COMPANY	150.00	0.0068	7.81	82.95	82.95	6.40	180.11
CHROMATIC INC. LITHOGRAPHERS	200.00	0.0090	10.42	110.60	110.60	8.53	240.15
CHRYSLER ELECTRONICS	6490.00	0.2930	337.99	3588.82	3588.82	276.82	7792.45
CHUCK HUTTON CHEVROLET	770.00	0.0348	40.10	425.79	425.79	32.84	924.52

ENTERPRISE RECOVERY SYSTEMS SITE/BYHALIA, MISSISSIPPI
DE MINIMIS PRP COST MATRIX

PRP NAME	VOLUME (GALLONS)	PERCENT	PAST COSTS $115,370.37	FUT. COSTS $1,225,000.00	PREMIUM 100% FUT. COSTS	ORPHAN SHARE $17,580.10	TOTAL
CLEAVER BROOKS CO.	7975.00	0.3600	415.33	4409.99	4409.99	340.16	9575.47
COCA COLA FOOD PRODUCTS	150.00	0.0068	7.81	82.95	82.95	6.40	180.11
COLOR LITHO	155.00	0.0070	8.07	85.71	85.71	6.61	186.10
COLOURCRAFT PRINTING, INC.	50.00	0.0023	2.60	27.65	27.65	2.13	60.03
COMMERCIAL CLEAR PRINT, INC.	260.00	0.0117	13.54	143.77	143.77	11.09	312.17
COMMERCIAL FILTERS	275.00	0.0124	14.32	152.07	152.07	11.73	330.19
COMPUARTIST	160.00	0.0072	8.33	88.48	88.48	6.82	192.11
CON PAC INC.	2035.00	0.0919	105.98	1125.31	1125.31	86.80	2443.40
CONTINENTAL PET TECHNOLOGIES	6480.00	0.2925	337.47	3583.29	3583.29	276.39	7780.44
COPPES INC.	1100.00	0.0497	57.29	608.27	608.27	46.92	1320.75
COSTELLO BROTHERS LITHOGRAPHER	125.00	0.0056	6.51	69.12	69.12	5.33	150.08
COYNE CYLINDER	1155.00	0.0521	60.15	638.69	638.69	49.26	1386.79
CRAY, INC.	165.00	0.0074	8.59	91.24	91.24	7.04	198.11
CREST GRAPHICS INC.	50.00	0.0023	2.60	27.65	27.65	2.13	60.03
CROFT METALS, INC.	1709.75	0.0772	89.04	945.45	945.45	72.93	2052.87
CROWN PRINTING	725.00	0.0327	37.76	400.91	400.91	30.92	870.50
CYCLEAR, INC.	1066.00	0.0481	55.52	589.47	589.47	45.47	1279.93
DALE POE DEVELOPMENT CORPORATION	80.00	0.0036	4.17	44.24	44.24	3.41	96.06
DELTA INDUSTRIAL COATINGS	5335.00	0.2408	277.84	2950.13	2950.13	227.55	6405.65
DELUXE CHECK PRINTERS	919.38	0.0415	47.88	508.40	508.40	39.21	1103.89
DESERT PRINTING CO., INC.	55.88	0.0025	2.91	30.90	30.90	2.38	67.09
DIAMOND LITHO	50.00	0.0023	2.60	27.65	27.65	2.13	60.03
DIGGON'S BODY SHOP	210.00	0.0095	10.94	116.13	116.13	8.96	252.16
DIMENSIONAL DESIGNS	110.00	0.0050	5.73	60.83	60.83	4.69	132.08
DIXCEE WIRE CLOTH PRODUCTS	135.00	0.0061	7.03	74.65	74.65	5.76	162.09
DIXIE RUBBER CO.	720.00	0.0325	37.50	398.14	398.14	30.71	864.49
DOVER ELEVATOR SYSTEMS, INC.	1705.00	0.0770	88.80	942.82	942.82	72.72	2047.16
DUAL GRAPHICS, INC.	855.00	0.0386	44.53	472.79	472.79	36.47	1026.58
DUPLEX PRODUCTS, INC.	780.00	0.0352	40.62	431.32	431.32	33.27	936.53
DURAND-RAUTE CORP	110.00	0.0050	5.73	60.83	60.83	4.69	132.08
EATON CORP.	50.00	0.0023	2.60	27.65	27.65	2.13	60.03
ECK ADAMS, INC.	440.00	0.0199	22.91	243.31	243.31	18.77	528.30
ECOLOTEC, INC.	1485.00	0.0670	77.34	821.17	821.17	63.34	1783.02
ECONOMY PRINTING & MAILING SERVICE	19.50	0.0009	1.02	10.78	10.78	0.83	23.41
ELECTRA CORP.	1430.00	0.0646	74.47	790.76	790.76	60.99	1716.98
ELECTRO-PAINTERS, INC.	220.00	0.0099	11.46	121.65	121.65	9.38	264.14
ELJER CORP.	165.00	0.0074	8.59	91.24	91.24	7.04	198.11
ENGINEERED COOLING SYSTEMS, INC.	307.00	0.0139	15.99	169.76	169.76	13.09	368.60
ENVIRONMENTAL RESEARCH ASSOCIATES	10.00	0.0005	0.52	5.53	5.53	0.43	12.01
EUREKA LITHOGRAPH	155.00	0.0070	8.07	85.71	85.71	6.61	186.10
FARM FANS	110.00	0.0050	5.73	60.83	60.83	4.69	132.08
FAUST PRINTING	365.00	0.0165	19.01	201.84	201.84	15.57	438.26
FEDERAL EXPRESS CORP.	550.00	0.0248	28.64	304.14	304.14	23.46	660.38
FLINNS LITHOGRAPH COMPANY	150.00	0.0068	7.81	82.95	82.95	6.40	180.11
FM PATHOLOGY	145.00	0.0065	7.55	80.18	80.18	6.18	174.09
FMC CORP.	287.50	0.0130	14.97	158.98	158.98	12.26	345.19
FOUR FLIGHT INDUSTRIES	440.00	0.0199	22.91	243.31	243.31	18.77	528.30

ENTERPRISE RECOVERY SYSTEMS SITE/BYHALIA, MISSISSIPPI
DE MINIMIS PRP COST MATRIX

PRP NAME	VOLUME (GALLONS)	PERCENT	PAST COSTS $115,370.37	FUT. COSTS $1,225,000.00	PREMIUM 100% FUT. COSTS	ORPHAN SHARE $17,580.10	TOTAL
FRICTION MATERIALS	270.00	0.0122	14.06	149.30	149.30	11.52	324.18
GARD GRAPHICS	450.00	0.0203	23.44	248.84	248.84	19.19	540.31
GATES RUBBER COMPANY	845.07	0.0381	44.01	467.30	467.30	36.04	1014.65
GEM, INC.	4792.54	0.2163	249.59	2650.16	2650.16	204.42	5754.33
GENERAL ELECTRIC CO.	1375.00	0.0621	71.61	760.34	760.34	58.65	1650.94
GENERAL PRINTING INK	2805.00	0.1266	146.08	1551.10	1551.10	119.64	3367.92
GENERAL SERVICES DEPARTMENT - LOS ANGELES	350.00	0.0158	18.23	193.54	193.54	14.93	420.24
GENESCO INC.	2396.88	0.1082	124.83	1325.42	1325.42	102.23	2877.90
GERWIN VANS, INC.	1312.50	0.0592	68.35	725.78	725.78	55.98	1575.89
GOSSETT BODY SHOP	385.00	0.0174	20.05	212.90	212.90	16.42	462.27
GREENS, INC.	325.00	0.0147	16.93	179.72	179.72	13.86	390.23
GRENADA LAKES MEDICAL CENTER	220.00	0.0099	11.46	121.65	121.65	9.38	264.14
GRIFFIN PRINTING	240.00	0.0108	12.50	132.71	132.71	10.24	288.16
HAGER HINGE COMPANY	2573.59	0.1162	134.03	1423.13	1423.13	109.77	3090.06
HALSTEAD INDUSTRIES	6932.84	0.3130	361.06	3833.70	3833.70	295.71	8324.17
HARMAN PRESS, THE	62.50	0.0028	3.25	34.56	34.56	2.67	75.04
HART'S MANUFACTURING COMPANY	7750.50	0.3499	403.64	4285.84	4285.84	330.58	9305.90
HARTZELL FAN	110.00	0.0050	5.73	60.83	60.83	4.69	132.08
HI-MARK COMPANY	11.25	0.0005	0.59	6.22	6.22	0.48	13.51
HILO OIL	495.00	0.0223	25.78	273.72	273.72	21.11	594.33
HOFFINGER INDUSTRIES, INC.	5170.00	0.2334	269.25	2858.89	2858.89	220.52	6207.55
HOLLY SPRINGS MEMORIAL	30.00	0.0014	1.56	16.59	16.59	1.28	36.02
HOOSIER COMPANY, THE	1130.00	0.0510	58.85	624.86	624.86	48.20	1356.77
HOSPITAL CORPORATION OF AMERICA	6320.00	0.2853	329.14	3494.81	3494.81	269.57	7588.33
HUNTER FAN COMPANY	4950.00	0.2234	257.74	2736.65	2736.65	211.50	5942.54
HURCO MANUFACTURING CO., INC.	227.50	0.0103	11.85	125.80	125.80	9.70	273.15
INDIANA AND MICHIGAN ELECTRIC COMPANY	1400.00	0.0632	72.91	774.17	774.17	59.71	1680.96
INDIANA BELL TELEPHONE CO.	5.00	0.0002	0.26	2.76	2.76	0.21	5.99
INDIANA PRECISION CASTINGS, INC.	361.76	0.0163	18.84	200.04	200.04	15.43	434.35
INDUSTRIAL PRINTERS OF CALIFORNIA	187.50	0.0085	9.76	103.68	103.68	8.00	225.12
INGRESS-PLASTENE	2546.63	0.1150	132.63	1408.23	1408.23	108.62	3057.71
INLAND STEEL CONTAINER	1265.00	0.0571	65.88	699.51	699.51	53.96	1518.86
INRYCO, INC.	660.00	0.0298	34.37	364.96	364.96	28.15	792.44
INSPECTORATE	275.00	0.0124	14.32	152.07	152.07	11.73	330.19
INTERGRAPH	5385.00	0.2431	280.45	2977.78	2977.78	229.69	6465.70
INTERIOR WOODWORKING CORP.	1751.88	0.0791	91.24	968.75	968.75	74.72	2103.46
INTERNATIONAL PAPER CO.	350.00	0.0158	18.23	193.54	193.54	14.93	420.24
INTEX PLASTICS CORP.	1320.00	0.0596	68.74	729.93	729.93	56.30	1584.90
IPS	715.00	0.0323	37.24	395.38	395.38	30.50	858.50
ITT BAYLOCK	1450.00	0.0655	75.51	801.82	801.82	61.85	1741.00
J & D LITHO, INC.	112.13	0.0051	5.84	62.01	62.01	4.78	134.64
J AND A ENTERPRISES	770.00	0.0348	40.10	425.79	425.79	32.84	924.52
JEFFRIES BANKNOTE COMPANY	8205.00	0.3704	427.31	4537.17	4537.17	349.97	9851.62
JIM'S AUTO BODY	275.00	0.0124	14.32	152.07	152.07	11.73	330.19
JOANCA CHEMICAL PRODUCTS, INC.	5720.00	0.2582	297.89	3163.02	3163.02	243.97	6867.90
JONAC PRODUCTS, INC.	825.00	0.0372	42.97	456.21	456.21	35.19	990.58
JOSTEN'S INC.	715.00	0.0323	37.24	395.38	395.38	30.50	858.50

ENTERPRISE RECOVERY SYSTEMS SITE/BYHALIA, MISSISSIPPI
DE MINIMIS PRP COST MATRIX

PRP NAME	VOLUME (GALLONS)	PERCENT	PAST COSTS $115,370.37	FUT. COSTS $1,225,000.00	PREMIUM 100% FUT. COSTS	ORPHAN SHARE $17,580.10	TOTAL
JT PARSONS CABINET CO.	110.00	0.0050	5.73	60.83	60.83	4.69	132.08
K & W PRODUCTS	1468.27	0.0663	76.47	811.92	811.92	62.63	1762.94
KANSAS AVENUE INDUSTRIAL PARK	25.00	0.0011	1.30	13.82	13.82	1.07	30.01
KATER LITHO	110.00	0.0050	5.73	60.83	60.83	4.69	132.08
KAUFFMAN ENGINEERING	147.50	0.0067	7.68	81.56	81.56	6.29	177.09
KCL CORP.	725.00	0.0327	37.76	400.91	400.91	30.92	870.50
KENTUCKY MOUNTAIN INDUSTRIES	6640.00	0.2997	345.81	3671.76	3671.76	283.21	7972.54
KING SEELEY	788.89	0.0356	41.08	436.24	436.24	33.65	947.21
KITCHEN INNOVATIONS/M.N. GRAHAM CORP.	3960.00	0.1788	206.23	2189.79	2189.79	168.91	4754.72
KOGER'S INC.	205.00	0.0093	10.68	113.36	113.36	8.74	246.14
KOLPAK INDUSTRIES	9075.00	0.4097	472.62	5018.26	5018.26	387.07	10896.21
L.A. LITHOGRAPHICS	100.00	0.0045	5.21	55.30	55.30	4.27	120.08
LAKE CITY HEAT TREATING CORP.	1708.00	0.0771	88.95	944.48	944.48	72.85	2050.76
LARRY BROWN LITHO	1195.00	0.0539	62.23	660.81	660.81	50.97	1434.82
LAYCOOK PRODUCTS	1265.00	0.0571	65.88	699.51	699.51	53.96	1518.86
LEGGETT AND PLATT INC.	220.00	0.0099	11.46	121.65	121.65	9.38	264.14
LINCOLN CO. SHERIFF'S DEPT.	55.00	0.0025	2.86	30.41	30.41	2.35	66.03
LITHOGRAPHIX, INC.	2800.00	0.1264	145.82	1548.33	1548.33	119.43	3361.91
LOCKHEED-GEORGIA CO.	880.00	0.0397	45.83	486.62	486.62	37.53	1056.60
LOGO 7	587.50	0.0265	30.60	324.87	324.87	25.06	705.40
LONDON PRESS	725.00	0.0327	37.76	400.91	400.91	30.92	870.50
LONG BEACH CITY COLLEGE	87.50	0.0039	4.56	48.39	48.39	3.73	105.07
LOUISIANA DEPARTMENT OF WILDLIFE AND FISHERIES	350.00	0.0158	18.23	193.54	193.54	14.93	420.24
LYDALL COMPOSITE MATERIALS	4675.00	0.2110	243.47	2585.16	2585.16	199.40	5613.19
MADISON FURNITURE IND.	275.00	0.0124	14.32	152.07	152.07	11.73	330.19
MASONITE CORPORATION	8195.00	0.3699	426.79	4531.64	4531.64	349.54	9839.61
MEDART, INC.	4400.00	0.1986	229.15	2433.10	2433.10	187.67	5283.02
MEDIA LITHOGRAPHICS	105.00	0.0047	5.47	58.06	58.06	4.48	126.07
MEMPHIS LIGHT, GAS & WATER - CENTRAL SHOPS	5349.71	0.2415	278.61	2958.27	2958.27	228.17	6423.32
METHODIST MAYWOOD	15.00	0.0007	0.78	8.29	8.29	0.64	18.00
METHODIST HOSPITAL	388.68	0.0175	20.24	214.93	214.93	16.58	466.68
METROPOLITAN SCHOOL DISTRICT OF WASHINGTON TOWNSHIP	61.00	0.0028	3.18	33.73	33.73	2.60	73.24
MID WEST SPRING MFG. CO.	337.48	0.0152	17.58	186.62	186.62	14.39	405.21
MID-SOUTH ELECTRIC	3190.00	0.1440	166.13	1763.99	1763.99	136.06	3830.17
MIDWAY FORD	330.00	0.0149	17.19	182.48	182.48	14.08	396.23
MISSISSIPPI BUREAU OF POLLUTION CONTROL	55.00	0.0025	2.86	30.41	30.41	2.35	66.03
MISSISSIPPI CRIME LABS	55.00	0.0025	2.86	30.41	30.41	2.35	66.03
MISSISSIPPI STATE HIGHWAY DEPARTMENT	715.00	0.0323	37.24	395.38	395.38	30.50	858.50
MISSOURI PUBLIC WORKS DEPARTMENT	605.00	0.0273	31.51	334.55	334.55	25.80	726.41
MOBILE DRILLING CO.	542.87	0.0245	28.27	300.19	300.19	23.15	651.80
MODINE MANUFACTURING CO.	4272.00	0.1928	222.48	2362.31	2362.31	182.21	5129.31
MOELLER MANUFACTURING CO., INC.	495.00	0.0223	25.78	273.72	273.72	21.11	594.33
MONARCH LITHO INC.	420.00	0.0190	21.87	232.25	232.25	17.91	504.28
MONTICELLO SPRING	598.00	0.0270	31.14	330.68	330.68	25.51	718.01
MOORE AND SON	4345.00	0.1961	226.28	2402.68	2402.68	185.33	5216.97
MORRIS MACHINE COMPANY	875.00	0.0395	45.57	483.85	483.85	37.32	1050.59
MUELLER BRASS CO.	7377.00	0.3330	384.19	4079.31	4079.31	314.65	8857.46

ENTERPRISE RECOVERY SYSTEMS SITE/BYHALIA, MISSISSIPPI
DE MINIMIS PRP COST MATRIX

PRP NAME	VOLUME (GALLONS)	PERCENT	PAST COSTS $115,370.37	FUT. COSTS $1,225,000.00	PREMIUM 100% FUT. COSTS	ORPHAN SHARE $17,580.10	TOTAL
MULAY PLASTICS, INC.	5675.00	0.2562	295.55	3138.14	3138.14	242.05	6813.88
NAEGELE OUTDOOR ADVERTISING	880.00	0.0397	45.83	486.62	486.62	37.53	1056.60
NATCHITOCHES CITY POLICE DEPARTMENT	5.00	0.0002	0.26	2.76	2.76	0.21	5.99
NATIONAL INDUSTRIAL CONTRACTORS	3960.00	0.1788	206.23	2189.79	2189.79	168.91	4754.72
NAVISTAR	2675.00	0.1208	139.31	1479.21	1479.21	114.10	3211.83
NEWPORT BEACH, CITY OF	275.00	0.0124	14.32	152.07	152.07	11.73	330.19
NEWS TYPE SERVICE	45.00	0.0020	2.34	24.88	24.88	1.92	54.02
NEYENESCH PRINTERS	790.00	0.0357	41.14	436.85	436.85	33.70	948.54
NORTH HOLLYWOOD PRINTING CO.	850.00	0.0384	44.27	470.03	470.03	36.25	1020.58
NORTHERN CONSULTING COMMUNICATION & EQUIPMENT	330.00	0.0149	17.19	182.48	182.48	14.08	396.23
NORTHERN ELECTRIC	4990.00	0.2253	259.88	2759.35	2759.35	212.84	5991.42
NORTHERN TELECOM	550.00	0.0248	28.64	304.14	304.14	23.46	660.38
NORWALK, CITY OF	100.00	0.0045	5.21	55.30	55.30	4.27	120.08
PACIFIC RIM PRINTERS AND MAILERS	25.00	0.0011	1.30	13.82	13.82	1.07	30.01
PAINT SHOP, THE (SNELL & SONS INVESTMENT, INC.)	990.00	0.0447	51.56	547.45	547.45	42.23	1188.69
PATHOLOGISTS' LABORATORY, P.C.	277.00	0.0125	14.43	153.17	153.17	11.81	332.58
PATTON DIVISION	550.00	0.0248	28.64	304.14	304.14	23.46	660.38
PAUL & BEEKMAN CO.	295.00	0.0133	15.36	163.13	163.13	12.58	354.20
PEABODY ABC CORP	5500.00	0.2483	286.44	3041.37	3041.37	234.59	6603.77
PEAVEY ELECTRONICS	2035.00	0.0919	105.98	1125.31	1125.31	86.80	2443.40
PENN LITHOGRAPHICS	540.00	0.0244	28.12	298.61	298.61	23.03	648.37
PEP INDUSTRIES, INC.	485.00	0.0219	25.26	268.19	268.19	20.69	582.33
PETERBILT OF MEMPHIS, INC.	165.00	0.0074	8.59	91.24	91.24	7.04	198.11
PLUMLEY COMPANIES	6490.00	0.2930	337.99	3588.82	3588.82	276.82	7792.45
POTTER CO.	440.00	0.0199	22.91	243.31	243.31	18.77	528.30
PREMIER PRINTING CO.	330.00	0.0149	17.19	182.48	182.48	14.08	396.23
PRESENTATION MEDIA, INC.	265.00	0.0120	13.80	146.54	146.54	11.30	318.18
PRINTING PLUS	6.75	0.0003	0.35	3.73	3.73	0.29	8.10
PRO LITHOGRAPHICS	155.00	0.0070	8.07	85.71	85.71	6.61	186.10
PROCESS ENGINEERING CO.	4148.65	0.1873	216.06	2294.10	2294.10	176.95	4981.21
PSP GRAPHICS	1610.00	0.0727	83.85	890.29	890.29	68.67	1933.10
PURE INDUSTRIES	3160.00	0.1426	164.57	1747.40	1747.40	134.78	3794.15
QUAKER OATS CO.	7068.63	0.3191	368.13	3908.78	3908.78	301.50	8487.19
R.B. GRAPHICS	490.00	0.0221	25.52	270.96	270.96	20.90	588.34
R.R. DONNELLEY & SONS	478.84	0.0216	24.94	264.79	264.79	20.42	574.94
RALEIGH BODY SHOP	55.00	0.0025	2.86	30.41	30.41	2.35	66.03
RAM GOLF	440.00	0.0199	22.91	243.31	243.31	18.77	528.30
RAYLOC	1320.00	0.0596	68.74	729.93	729.93	56.30	1584.90
RDM INC.	825.00	0.0372	42.97	456.21	456.21	35.19	990.58
RESEARCH SOLVENTS	2200.00	0.0993	114.57	1216.55	1216.55	93.84	2641.51
RHEEM MANUFACTURING COMPANY	3700.00	0.1670	192.69	2046.01	2046.01	157.82	4442.53
RIECHOLD CHEMICAL, INC.	440.00	0.0199	22.91	243.31	243.31	18.77	528.30
RINEHART RESEARCH	55.00	0.0025	2.86	30.41	30.41	2.35	66.03
RIPLEY INDUSTRIES	1265.00	0.0571	65.88	699.51	699.51	53.96	1518.86
ROBERTSHAW CONTROLS CO.	7427.60	0.3353	386.82	4107.29	4107.29	316.81	8918.21
RON INK CO.	265.00	0.0120	13.80	146.54	146.54	11.30	318.18
ROSE HILL COMPANY, THE	2515.00	0.1135	130.98	1390.74	1390.74	107.27	3019.73

ENTERPRISE RECOVERY SYSTEMS SITE/BYHALIA, MISSISSIPPI
DE MINIMIS PRP COST MATRIX

PRP NAME	VOLUME (GALLONS)	PERCENT	PAST COSTS $115,370.37	FUT. COSTS $1,225,000.00	PREMIUM 100% FUT. COSTS	ORPHAN SHARE $17,580.10	TOTAL	OTAL
ROTAN HIGH SCHOOL	10.00	0.0005	0.52	5.53	5.53	0.43	12.01	7.20
RUSSELL & MILLER INC.	250.00	0.0113	13.02	138.24	138.24	10.66	300.16	0.11
RUST COLLEGE	10.00	0.0005	0.52	5.53	5.53	0.43	12.01	5.65
S.F. VALLEY BOARD OF REALTORS	12.25	0.0006	0.64	6.77	6.77	0.52	14.70	5.19
S.K. WELLMAN CORPORATION	2687.00	0.1213	139.94	1485.85	1485.85	114.61	3226.25	0.08
SCIENCO, INC.	660.00	0.0298	34.37	364.96	364.96	28.15	792.44	0.38
SCOLES CADILLAC	250.00	0.0113	13.02	138.24	138.24	10.66	300.16	0.19
SELMER CO., THE, VINCENT BACH DIVISION	700.00	0.0316	36.46	387.08	387.08	29.86	840.48	5.45
SEWELL PLASTICS	5987.00	0.2703	311.80	3310.67	3310.67	255.36	7188.50	5.32
SHELLER GLOBE	9295.00	0.4196	484.08	5139.91	5139.91	396.46	11160.36	0.75
SHUMATE BUSINESS FORMS COMPANY	500.00	0.0226	26.04	276.49	276.49	21.33	600.35	3.86
SINCLAIR PRINTING	2610.00	0.1178	135.93	1443.27	1443.27	111.32	3133.79	5.27
SIR SPEEDY PRINTING CENTER	15.00	0.0007	0.78	8.29	8.29	0.64	18.00	3.37
SKBL-METRO	1750.00	0.0790	91.14	967.71	967.71	74.64	2101.20	0.15
SMITH LITHOGRAPHIC ARTS INC.	455.00	0.0205	23.70	251.60	251.60	19.41	546.31	5.03
SMOKERCRAFT	900.00	0.0406	46.87	497.68	497.68	38.39	1080.62	0.15
SOUTHERN CALIFORNIA GRAPHICS	1535.00	0.0693	79.94	848.82	848.82	65.47	1843.05	0.67
SOUTHERN CALIFORNIA LITHOGRAPHERS	1310.00	0.0591	68.22	724.40	724.40	55.88	1572.90	
SPECTRO CHEM.	55.00	0.0025	2.86	30.41	30.41	2.35	66.03	.28
ST. DOMINIC JACKSON MEMORIAL HOSPITAL	20.00	0.0009	1.04	11.06	11.06	0.85	24.01	
ST. TAMMANY PARISH HOSPITAL	55.00	0.0025	2.86	30.41	30.41	2.35	66.03	
SUN LITHO	700.00	0.0316	36.46	387.08	387.08	29.86	840.48	
SUNDANCE LITHO INC.	500.00	0.0226	26.04	276.49	276.49	21.33	600.35	
SUNLAND ASSOCIATES	300.00	0.0135	15.62	165.89	165.89	12.80	360.20	
TELEFLORA	4.88	0.0002	0.25	2.70	2.70	0.21	5.86	
TEXAS BOOT	500.00	0.0226	26.04	276.49	276.49	21.33	600.35	
THOMAS & BETTS	255.00	0.0115	13.28	141.01	141.01	10.88	306.18	
TOM MARTIN INC.	495.00	0.0223	25.78	273.72	273.72	21.11	594.33	
TRANSLIFT SYSTEMS, INC.	220.00	0.0099	11.46	121.65	121.65	9.38	264.14	
TRIMM INDUSTRIES	220.00	0.0099	11.46	121.65	121.65	9.38	264.14	
TRUE TEMPER SPORTS	375.00	0.0169	19.53	207.37	207.37	15.99	450.26	
TUBE PROCESSING CORP./CTP CORP.	962.50	0.0434	50.13	532.24	532.24	41.05	1155.66	
U OF MISSISSPPI MEDICAL CENTER	550.00	0.0248	28.64	304.14	304.14	23.46	660.38	
U.S. BUREAU OF RECLAMATION	210.00	0.0095	10.94	116.13	116.13	8.96	252.16	
U.S. FORESTRY SERVICE	240.00	0.0108	12.50	132.71	132.71	10.24	288.16	
UNION TOOL COMPANY, THE	150.00	0.0068	7.81	82.95	82.95	6.40	180.11	
UNITED TECHNOLOGIES, HARDING MACHINE	8525.00	0.3848	443.98	4714.12	4714.12	363.62	10235.84	
UNIVERSITY OF NOTRE DAME	148.37	0.0067	7.73	82.05	82.05	6.33	178.16	
UNOCAL MARKETING	1462.50	0.0660	76.17	808.73	808.73	62.38	1756.01	
USDA - ARS	450.00	0.0203	23.44	248.84	248.84	19.19	540.31	
UTILITY PRODUCTS DIV./RELIANCE COMM TEC	1925.00	0.0869	100.25	1064.48	1064.48	82.11	2311.32	
VANC	1500.00	0.0677	78.12	829.46	829.46	63.98	1801.02	
VANGUARD MANUFACTURING	385.00	0.0174	20.05	212.90	212.90	16.42	462.27	
VANIER GRAPHICS CORP	160.00	0.0072	8.33	88.48	88.48	6.82	192.11	
VAUGHN PRINTING	62.50	0.0028	3.25	34.56	34.56	2.67	75.04	
VENGUARD	1595.00	0.0720	83.07	882.00	882.00	68.03	1915.10	
VENTRA CORPORATION (VERNCO CORP.)	2426.52	0.1095	126.37	1341.81	1341.81	103.50	2913.49	

ENTERPRISE RECOVERY SYSTEMS SITE/BYHALIA, MISSISSIPPI
DE MINIMIS PRP COST MATRIX

PRP NAME	VOLUME (GALLONS)	PERCENT	PAST COSTS $115,370.37	FUT. COSTS $1,225,000.00	PREMIUM 100% FUT. COSTS	ORPHAN SHARE $17,580.10	TOTAL
VIKING LITHOGRAPH INC.	1755.00	0.0792	91.40	970.47	970.47	74.86	2107.20
V & M MFG. CO., INC.	1632.50	0.0737	85.02	902.73	902.73	69.63	1960.11
WALKER MFG. CO.	2420.00	0.1092	126.03	1338.20	1338.20	103.22	2905.65
WARSAW CHEMICAL CO.	2562.03	0.1157	133.43	1416.74	1416.74	109.28	3076.19
WEBER PRINTING	125.00	0.0056	6.51	69.12	69.12	5.33	150.08
WEST POINT CASKET CO.	550.00	0.0248	28.64	304.14	304.14	23.46	660.38
WESTERN KENTUCKY UNIVERSITY-PHYSICAL PLANT OFFICE	275.00	0.0124	14.32	152.07	152.07	11.73	330.19
WESTFORM INDUSTRIES	680.00	0.0307	35.41	376.02	376.02	29.00	816.45
WESTLAND GRAPHICS	1935.00	0.0873	100.77	1070.01	1070.01	82.53	2323.32
WHC, INC.	1100.00	0.0497	57.29	608.27	608.27	46.92	1320.75
WILLIAMS CABINET SHOP INC	1265.00	0.0571	65.88	699.51	699.51	53.96	1518.86
WILMOTH COLOR SERVICE	11.88	0.0005	0.62	6.57	6.57	0.51	14.27
WOODRIDGE PRESS INC.	540.00	0.0244	28.12	298.61	298.61	23.03	648.37
WORKSHOP, THE	200.00	0.0090	10.42	110.60	110.60	8.53	240.15
YODER KITCHENS, INC.	37.50	0.0017	1.95	20.74	20.74	1.60	45.03
Z GRAPHICS	200.00	0.0090	10.42	110.60	110.60	8.53	240.15
ZIMMER PAPER PRODUCTS, INC	3890.00	0.1756	202.59	2151.08	2151.08	165.92	4670.67
*** Total ***							501515.28

ENTERPRISE RECOVERY SYSTEMS SITE
BYHALIA, MARSHALL COUNTY, MISSISSIPPI

ADMINISTRATIVE ORDER ON CONSENT FOR DE MINIMIS SETTLEMENT
RESPONSE TO COMMENTS

On February 18, 1994, EPA published notice of the proposed settlement in the Federal Register. During the subsequent 30-day public comment period, EPA received three comments. In consideration of the comments, EPA made three very minor revisions to the Administrative Order on Consent for De Minimis Settlement. The revisions are appropriate as they clarify and improve the fairness of the settlement. However, none of the revisions are significant.

Comment One: Memphis Light, Gas and Water Division notified EPA that Memphis Light, Gas and Water Division contributed an additional 550 gallons of hazardous substances to the Site.

Response: EPA recalculated the payment due under the De Minimis AOC from Memphis Light, Gas and Water Division. The payment due changed from $5,762.95 to $6,423.32.

Comment Two: The U.S. Department of Justice, Environmental Defense Section, (DOJ Defense) on behalf of the Settling Federal Agencies, objected to the requirement that Settling Federal Agencies make payment under the De Minimis AOC within 30 days of the effective date of the De Minimis AOC because the United States could not guarantee processing payment within 30 days.

Response: In recognition of the limitations placed on the Settling Federal Agencies in processing such payments, EPA has revised the payment provisions of the De Minimis AOC to allow the Settling Federal Agencies only 120 days to make payment.

Comment Three: DOJ Defense, on behalf of the Settling Federal Agencies, requested a minor clarification of the Anti-Deficiency Act language contained in the De Minimis AOC. Specifically, DOJ Defense requested that the following statement be added to Paragraph V(5) of the De Minimis AOC: "Payments by or on behalf of Settling Federal Agencies are subject to availability of appropriated funds."

Response: EPA allowed the clarification in the spirit of cooperation and because the requested language in no way changes the meaning or requirements of the De Minimis AOC.

The comments set out above are the only comments EPA received during the public comment period. The comments did not disclose facts or considerations which indicate that the Cost Recovery Agreement is inappropriate, improper or inadequate. The requested revisions are minor and do not affect the private party Respondents to the De Minimis AOC. Therefore, EPA incorporated the comments into the enclosed De Minimis AOC.

Reference 10
Reassessment Report
Enterprise Recovery Systems
Byhalia, Marshall County, MS
EPA ID No. MSD000693176

U.S. Environmental P

Superfund (CERCLIS)

Query Results

Report an Error

Site ID: Equal To: MSD000693176

Results are based on data extracted on JAN-31-2006

Note: Click on the underlined CORPORATE LINK value for links to that company's environmental web pages.
Click on the underlined MAPPING INFO value to obtain mapping information for the facility.
Click on the underlined RECORD OF DECISION value for a RODS Site Report.
Click on the underlined "View Facility Information" link to view EPA Facility information for the facility.

Go To Bottom Of The Page

CERCLIS EPA ID:	MSD000693176	**SITE NAME:**	ENTERPRISE RECOVERY SYSTEM
STREET ADDRESS:	CAYCE RD	**FACILITY INFORMATION**	View facility information
CITY NAME:	BYHALIA		
STATE ABBR:	MS	**FEDERAL FACILITY:**	N
ZIP CODE:	38611	**NPL STATUS:**	Not on the NPL
COUNTY NAME:	MARSHALL		
CORPORATE LINK:	No	**RECORD OF DECISION (ROD) INFO:**	No
LATITUDE:		**EPA REGIONAL LINK:**	No
LONGITUDE:		**MAPPING INFO:**	MAP
SITE SMSA:	4920		

Enforcement and Cleanup Actions

Action	Action ID	Actual Start Date	Actual End Date	Responsibility	Planned Outcome	Urgency
SITE UNARCHIVED	001		11/07/2005	EPA In-House		
PRP REMOVAL	001	09/30/1993	03/01/1996	Responsible Party	Cleaned up	Time Critical
ARCHIVE SITE	001		09/29/1995	EPA In-House		
ADMIN ORDER ON CONSENT	002		03/23/1994	Federal Enforcement		

REMOVAL	001	11/10/1992	09/30/1993	EPA Fund-Financed	Cleaned up	Time Critical
ADMIN ORDER ON CONSENT	001		09/27/1993	Federal Enforcement		
ADMINISTRATIVE RECORDS	001	04/30/1993	04/30/1993	EPA Fund-Financed	Admin Record Compiled for a Removal Event	
INTEGRATED ASSESSMENT	001	09/23/1992	09/23/1992	EPA Fund-Financed	High	
SITE INSPECTION	001		12/01/1984	State, Fund Financed	NFRAP (No Futher Remedial Action Planned	
PRELIMINARY ASSESSMENT	001		06/01/1984	State, Fund Financed	Low	
DISCOVERY	001		08/01/1980	EPA Fund-Financed		

Site Description

Description Text
ERRB CONDUCTING PRELIMINARY ASSESSMENT CONCURRENT WITH WASTE PROGRAM BRANCH'S HAZARD RANKING ASSESSMENT. ANTICIPATE THIS WILL BECOME EPA FUND-LEAD SOON.

Go To Top Of The Page

Total Number of Facilities Displayed: 1

Reference 11
Reassessment Report
Enterprise Recovery Systems
Byhalia, Marshall County, MS
EPA ID No. MSD000693176

USGS

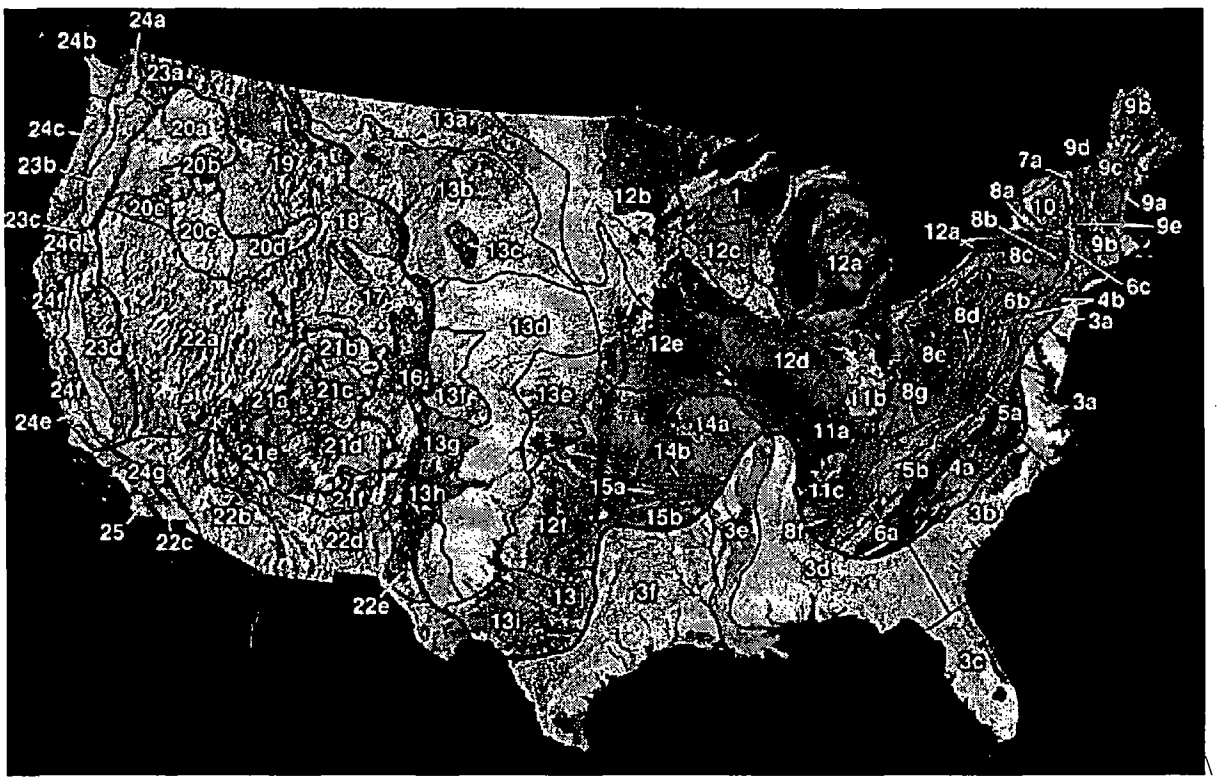
A Tapestry of Time and Terrain:

The Union of Two Maps - Geology and Topography

Back to Boundaries

Physiographic Regions

NEW! Solve the Puzzle of Regions
Requires Flash Plug-in



An interpretative tool that can help make sense out of the large amount of information contained in this map is the regional classification shown here. Geomorphic, or *physiographic*, regions are broad-scale subdivisions based on terrain texture, rock type, and geologic structure and history. Nevin Fenneman's (1946) three-tiered classification of the United States - by *division, province*, and *section* - has provided an enduring spatial organization for the great variety of physical features. The composite image presented here clearly shows the topographic textures and generalized geology (by age) from which the physical regions were synthesized. The features we describe represent many of these subdivisions.

PHYSIOGRAPHIC REGIONS OF THE LOWER 48 UNITED STATES

LAURENTIAN UPLAND

1. Superior Upland

ATLANTIC PLAIN

2. Continental Shelf (not on map)
3. Coastal Plain
   a. Embayed section
   b. Sea Island section
   c. Floridian section
   d. East Gulf Coastal Plain
   e. Mississippi Alluvial Plain
   f. West Gulf Coastal Plain

INTERIOR HIGHLANDS

14. Ozark Plateaus
    a. Springfield-Salem plateaus
    b. Boston "Mountains"
15. Ouachita province
    a. Arkansas Valley
    b. Ouachita Mountains

ROCKY MOUNTAIN SYSTEM

16. Southern Rocky Mountains
17. Wyoming Basin
18. Middle Rocky Mountains
19. Northern Rocky Mountains

APPALACHIAN HIGHLANDS

4. Piedmont province
    a. Piedmont Upland
    b. Piedmont Lowlands
5. Blue Ridge province
    a. Northern section
    b. Southern section
6. Valley and Ridge province
    a. Tennessee section
    b. Middle section
    c. Hudson Valley
7. St. Lawrence Valley
    a. Champlain section
    b. Northern section (not on map)
8. Appalachian Plateaus province
    a. Mohawk section
    b. Catskill section
    c. Southern New York section
    d. Allegheny Mountain section
    e. Kanawha section
    f. Cumberland Plateau section
    g. Cumberland Mountain section
9. New England Province
    a. Seaboard Lowland section
    b. New England Upland section
    c. White Mountain section
    d. Green Mountain section
    e. Taconic section
10. Adirondack province

INTERIOR PLAINS

11. Interior Low Plateaus
    a. Highland Rim section
    b. Lexington Plain
    c. Nashville Basin
12. Central Lowland
    a. Eastern Lake section
    b. Western Lake section
    c. Wisconsin Driftless section
    d. Till Plains
    e. Dissected Till Plains
    f. Osage Plains
13. Great Plains province
    a. Missouri Plateau, glaciated
    b. Missouri Plateau, unglaciated
    c. Black Hills
    d. High Plains
    e. Plains Border
    f. Colorado Piedmont
    g. Raton section
    h. Pecos Valley
    i. Edwards Plateau
    j. Central Texas section

INTERMONTANE PLATEAUS

20. Columbia Plateau
    a. Walla Walla Plateau
    b. Blue Mountain section
    c. Payette section
    d. Snake River Plain
    e. Harney section
21. Colorado Plateaus
    a. High Plateaus of Utah
    b. Uinta Basin
    c. Canyon Lands
    d. Navajo section
    e. Grand Canyon section
    f. Datil section
22. Basin and Range province
    a. Great Basin
    b. Sonoran Desert
    c. Salton Trough
    d. Mexican Highland
    e. Sacramento section

PACIFIC MOUNTAIN SYSTEM

23. Cascade-Sierra Mountains
    a. Northern Cascade Mountains
    b. Middle Cascade Mountains
    c. Southern Cascade Mountains
    d. Sierra Nevada
24. Pacific Border province
    a. Puget Trough
    b. Olympic Mountains
    c. Oregon Coast Range
    d. Klamath Mountains
    e. California Trough
    f. California Coast Ranges
    g. Los Angeles Ranges
25. Lower California province

U.S. Department of the Interior
U.S. Geological Survey
Contact: Administrator
Last Modification: 17 April, 2003 (tel)
USGS Privacy Policy

Reference 12
Reassessment Report
Enterprise Recovery Systems
Byhalia, Marshall County, MS
EPA ID No. MSD000693176

WATER FOR INDUSTRIAL DEVELOPMENT IN

Benton, Lafayette, Marshall, Pontotoc, Tippah,
and Union Counties, Mississippi

A COOPERATIVE STUDY SPONSORED BY THE

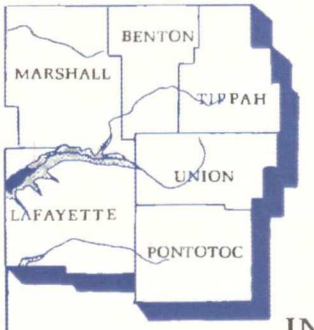
U.S. GEOLOGICAL SURVEY

and the

Mississippi Research and Development Center

JACKSON, MISSISSIPPI

1974



WATER FOR INDUSTRIAL DEVELOPMENT

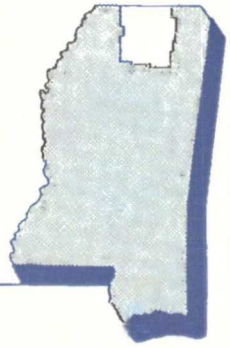
IN

Benton, Lafayette, Marshall, Pontotoc, Tippah, and Union Counties, Mississippi

By
Roy Newcome, Jr.

A COOPERATIVE STUDY SPONSORED BY THE
U.S. GEOLOGICAL SURVEY
and the
MISSISSIPPI RESEARCH AND DEVELOPMENT CENTER
1974

Published by the Mississippi Research and Development Center



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FACTORS FOR CONVERTING ENGLISH UNITS TO INTERNATIONAL SYSTEM (SI) UNITS

The following factors may be used to convert the English units published herein to the International System of Units (SI).

Multiply English units	By	To obtain SI units
	Length	
inches (in)	25.4	millimetres (mm)
feet (ft)	.3048	metres (m)
miles (mi)	16.09	hectometres (hm)
	1.609	kilometres (km)
	Area	
acres	4047	square metres (m^2)
	.4047	square hectometres (hm^2)
	.004047	square kilometres (km^2)
square miles (mi^2)	2.590	square kilometres (km^2)
	Volume	
gallons (gal)	3.785	litres (l)
	3.785×10^{-3}	cubic metres (m^3)
million gallons (10^6 gal)	3785	cubic metres (m^3)
cubic feet (ft^3)	.02832	cubic metres (m^3)
cfs-day (ft^3/s-day)	2447	cubic metres (m^3)
acre-feet (acre-ft)	1233	cubic metres (m^3)
	1.233×10^{-3}	cubic hectometres (hm^3)
	1.233×10^{-6}	cubic kilometres (km^3)
	Flow	
cubic feet per second (ft^3/s)	28.32	litres per second (l/s)
	.02832	cubic metres per second (m^3/s)
gallons per minute (gal/min)	.06309	litres per second (l/s)
	6.309×10^{-5}	cubic metres per second (m^3/s)
million gallons per day (Mgal/d)	43.81	litres per second (l/s)
	.04381	cubic metres per second (m^3/s)
million gallons per day per square mile (Mgal/d/mi^2)	16.92	litres per second per square kilometre (l/s/km^2)
	Gradient	
feet per mile (ft/mi)	18.9	centimetres per kilometre (cm/km)
	.189	metres per kilometre (m/km)
	Permeability (Hydraulic Conductivity)	
gallons per day per square foot (gal/d/ft^2)	.041	cubic metres per day per square metre, or metres per day (m/d)
	Transmissibility (Transmissivity)	
gallons per day per foot (gal/d/ft)	.0125	cubic metres per day per metre (m^3/d/m)
	Specific Capacity	
gallons per minute per foot of drawdown (gal/min/ft)	.21	litres per second per metre (l/s/m)

WATER FOR INDUSTRIAL DEVELOPMENT IN BENTON, LAFAYETTE, MARSHALL, PONTOTOC, TIPPAH, AND UNION COUNTIES, MISSISSIPPI

by

Roy Newcome, Jr.

ABSTRACT

Water for industrial use is available from streams or aquifers throughout the area comprising Benton, Lafayette, Marshall, Pontotoc, Tippah, and Union Counties. The quantities available differ greatly from place to place. A few streams could supply more than 20 million gallons per day (about 900 litres per second) without storage, but in most of the area storage would be required for supplies of that magnitude. Supplies as great as 1 million gallons per day (44 litres per second) could be obtained from wells in most places; 5 million gallons per day (220 litres per second) or greater would be more easily obtained from Tertiary aquifers in the western part of the area than from Cretaceous aquifers in the east.

The water in the streams and aquifers is suitable for many industrial uses. Dissolved-solids concentrations are usually less than 100 milligrams per litre in the streams and are little greater than that in the ground water from the Tertiary aquifers. Water from Cretaceous aquifers has higher mineral concentrations and is harder than most of the other ground water and surface water. Silica concentrations are usually less than 20 milligrams per litre in water from all sources, and color is not likely to be a problem.

INTRODUCTION

Purpose and Scope

An investigation of the water resources of Benton, Lafayette, Marshall, Pontotoc, Tippah, and Union Counties was begun in July 1971. Its purpose was to gather and disseminate facts on the quantity and quality of the water available for industrial uses. In scope, this report provides a general description of streamflow characteristics, including frequency and duration of various flow rates; aquifer distribution and yields; and chemical quality of the water. Major activities directed toward obtaining the data involved stream gaging, aquifer testing, electric logging of wells, and chemical analysis of the water from streams and wells.

This is the tenth in a series of multicounty water-resources investigations conducted cooperatively by the U.S. Geological Survey and the Mississippi Research and Development Center. Locations of the investigations are shown on figure 1. The aim of the investigative program is to provide water-supply planners and developers a foundation upon which local, more detailed studies can be based.

Previous Investigations

The project area has been included in several water-resources studies of larger areas in recent years. Lang and Boswell (1960) tabulated well and water-use data for a large part of northern Mississippi. Cretaceous aquifers of northeastern Mississippi were well described by Boswell (1963), and aquifers that supply wells in the entire Mississippi embayment region are described in a series of reports, of which one by Boswell and others (1965) and one by Hosman and others (1968) cover the present project area Annual reports by the U.S. Geological Survey contain streamflow and stream-quality measurements made at gaging stations throughout Mississippi. A detailed investigation of the geology and ground water in the Pigeon Roost Creek watershed of Marshall County was made by Asmussen and Dendy (1963). Callahan (1973) tabulated current water-supply data.

Reports describing the geology of all the counties are available as follows: Benton County (Lusk, 1956); Lafayette County (Attaya, 1951); Marshall County (Vestal, 1954); Pontotoc County (Priddy, 1943); Tippah County (Conant, 1941); and Union County (Conant, 1942).

Location and Development of Area

The six counties constitute a roughly square area of 3,188 mi² (8,264 km²) in extreme northern Mississippi (fig. 1). The center of the area is about 55 miles (89 km) southeast of Memphis, Tenn., and 160 miles (258 km) north-northeast of Jackson, Miss. Total population was 108,024 in 1970. Major towns are Oxford (13,846), New Albany (6,426), Holly Springs (5,728), Ripley (3,482), and Pontotoc (3,453). Two-thirds of the population is rural, and major crops are soybeans, corn, and cotton. The raising of beef cattle is a growing activity.

Industry is well represented in the area. Furniture, lumber, and garments are among the product leaders. Few of the industries are heavy users of water, but nearly all require some water for processes or for cooling.

HYDROLOGIC ENVIRONMENT

Climate

This part of Mississippi is the least humid and has the greatest temperature range. Even so, temperatures seldom exceed 100°F (38°C) or drop below 0°F (-18°C). The average annual temperature is 63°F (17°C). Shallow ground-water temperature is the same as the average annual air temperature. The growing season is about 7 months long.

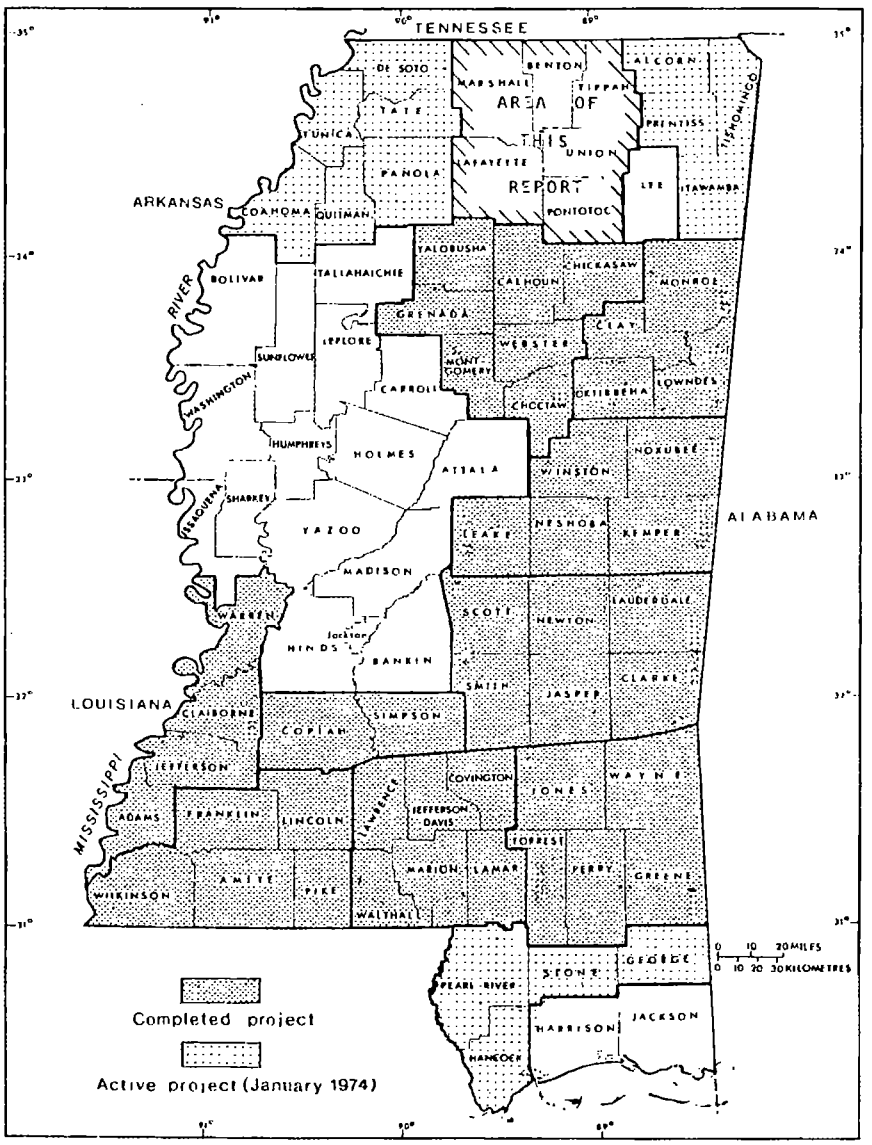


Figure 1.—Locations of multicounty water-resources investigations.

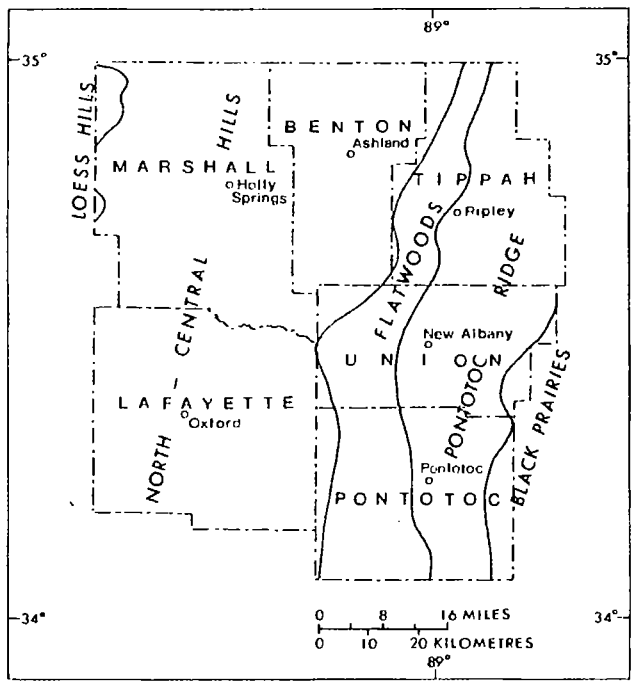


Figure 2.—Physiographic map.

Average temperature, in degrees Fahrenheit. Degrees Celsius = 5/9 (degrees F-32)

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
Holly Springs	42.7	45.1	52.0	61.9	69.9	77.8	80.7	80.2	76.9	63.6	51.3	44.1	61.9
Pontotoc	44.5	47.0	53.7	63.0	70.8	78.4	80.8	80.6	74.8	64.7	52.2	45.6	63.0
University (Oxford)	44.2	46.9	53.7	63.3	70.9	78.6	81.0	81.0	75.0	64.7	52.3	45.6	63.1

Average rainfall, in inches (1 inch = 25.4 mm)

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
Holly Springs	6.43	5.48	5.71	4.79	4.26	3.72	4.60	3.19	3.79	2.91	4.68	5.03	54.59
Pontotoc	5.66	5.17	6.23	5.06	3.70	4.05	4.87	3.28	3.43	2.45	4.57	5.16	53.63
University (Oxford)	5.97	5.29	5.76	5.05	4.02	3.88	4.04	2.91	3.53	2.83	4.84	5.09	53.21

Precipitation averages 54 inches (1,370 mm) per year. The greatest monthly rainfall is usually in January in the western part of the area, March in the eastern part. October is the driest month. This area has the second highest long-term average annual runoff rate in Mississippi, its 18 to 24 inches (508-610 mm) being exceeded only in the southern tip of the State.

Temperature and precipitation tables given above are based on National Weather Service data.

Topography and Drainage

More than half the project area is in the North-Central Hills physiographic district (fig. 2). This is an area underlain by Eocene formations belonging to the Wilcox and Claiborne Groups (table 1). Many hills reach an altitude of 600 feet (183 m)—a few 700 feet (213 m)—and local relief is 50 to 250 feet (16-76 m).

East of the North-Central Hills lies the Flatwoods, a long and narrow band of slightly rolling land developed on the outcrop of the Paleocene-Porters Creek Clay (Midway Group). This land averages about 200 feet (60 m) lower in altitude than the hills to the west, and local relief is small.

The Pontotoc Ridge forms the eastern wall of the Flatwoods. The ridge, broken into hills and valleys, generally stands 100 to 200 feet (30-60 m) above the Flatwoods and is much less rugged on its western slope than on the eastern face. It is composed of the basal Paleocene Clayton Formation and the Upper Cretaceous Ripley Formation.

The outcrop of the Demopolis Chalk of the Selma Group on the southeast edge of the area represents the Black Prairies physiographic district, or Black Belt. This land of low relief is in marked contrast to the higher and steeply dissected overlooking escarpment of the Pontotoc Ridge.

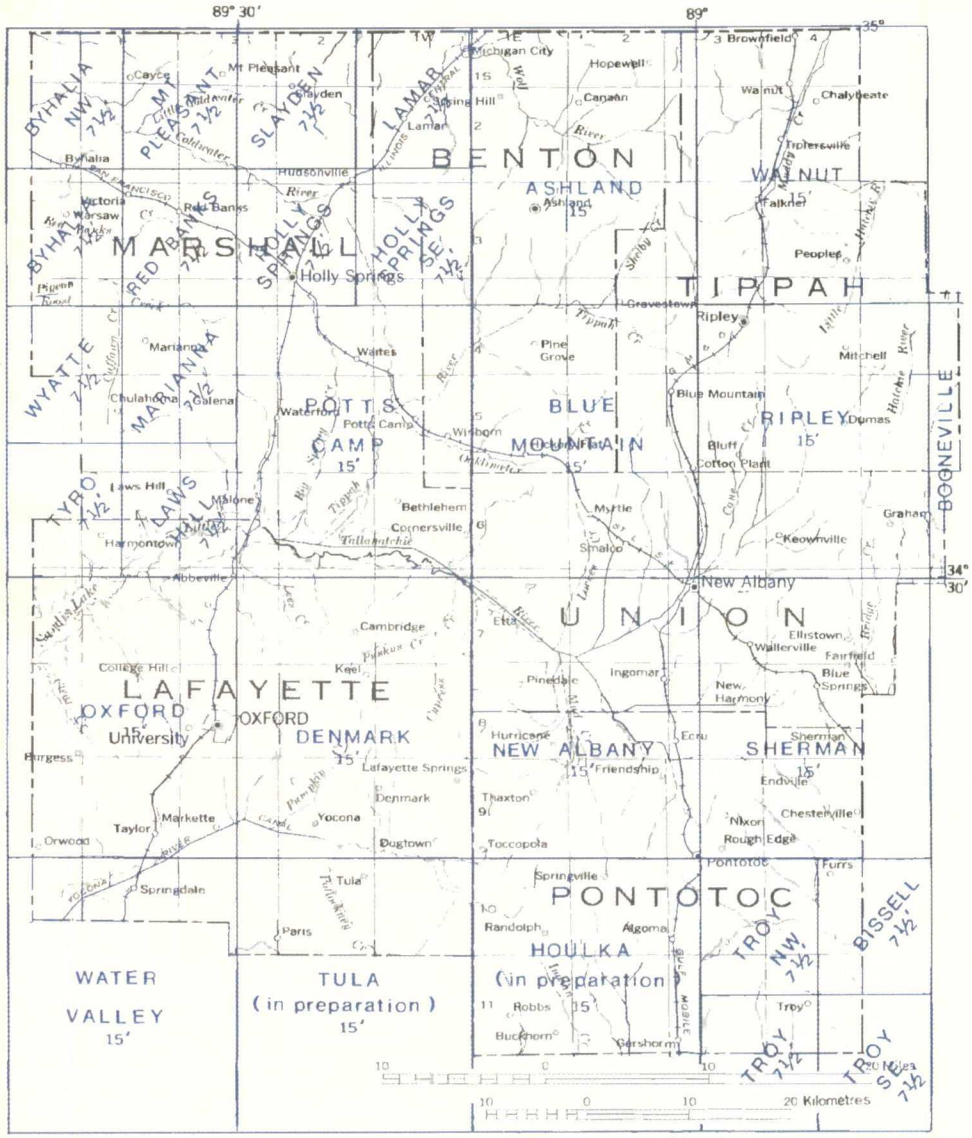
A remnant of the Loess Hills physiographic district lies along the western side of Marshall County. It is chiefly the area northwest of Byhalia and is characterized by steep slopes and narrow valleys. Altitudes range from 300 to 500 ft (90-150 m) above sea level.

Topographic maps are available for most of the area (fig. 3).

Surface drainage into the six-county area is insignificant. This is a highland region containing divides between the Yazoo, Tombigbee, and Wolf-Hatchie drainage basins (fig. 4). Water flows out of the area in all directions. The two largest streams leaving the area, with their approximate average flow at the county lines, are the Hatchie River (370 ft ^{3}/s or 10.5 m ^{3}/s)[1] and the Coldwater River (300 ft ^{3}/s or 8.5 m ^{3}/s). In addition, the Little Tallahatchie River discharges about 800 ft ^{3}/s (22.6 m ^{3}/s into Sardis Lake, and the Yocona River about 400 ft ^{3}/s (11.3 m ^{3}/s) into Enid Lake.

Dry-season flows of streams in the southeastern half of the area are generally low, not only because this is a region of headwaters but also because the lowlands are composed largely of broad belts of impermeable clay and chalk which do not store the runoff for subsequent gradual release. Low flows in the northwestern half are better, chiefly because the surficial material is sandier.

[1] Cubic feet per second, formerly abbreviated "cfs," is now abbreviated "ft ^{3}/s" in the English system and converts to cubic metres per second, abbreviated "m ^{3}/s" in the International System of Units. For small flows, litres per second, abbreviated "l/s" and equal to 0.001 m ^{3}/s, is used in this report.



Base map modified from
U.S. Geological Survey
Map of Mississippi, 1972

Figure 3.—Topographic-map coverage for the six-county project area.

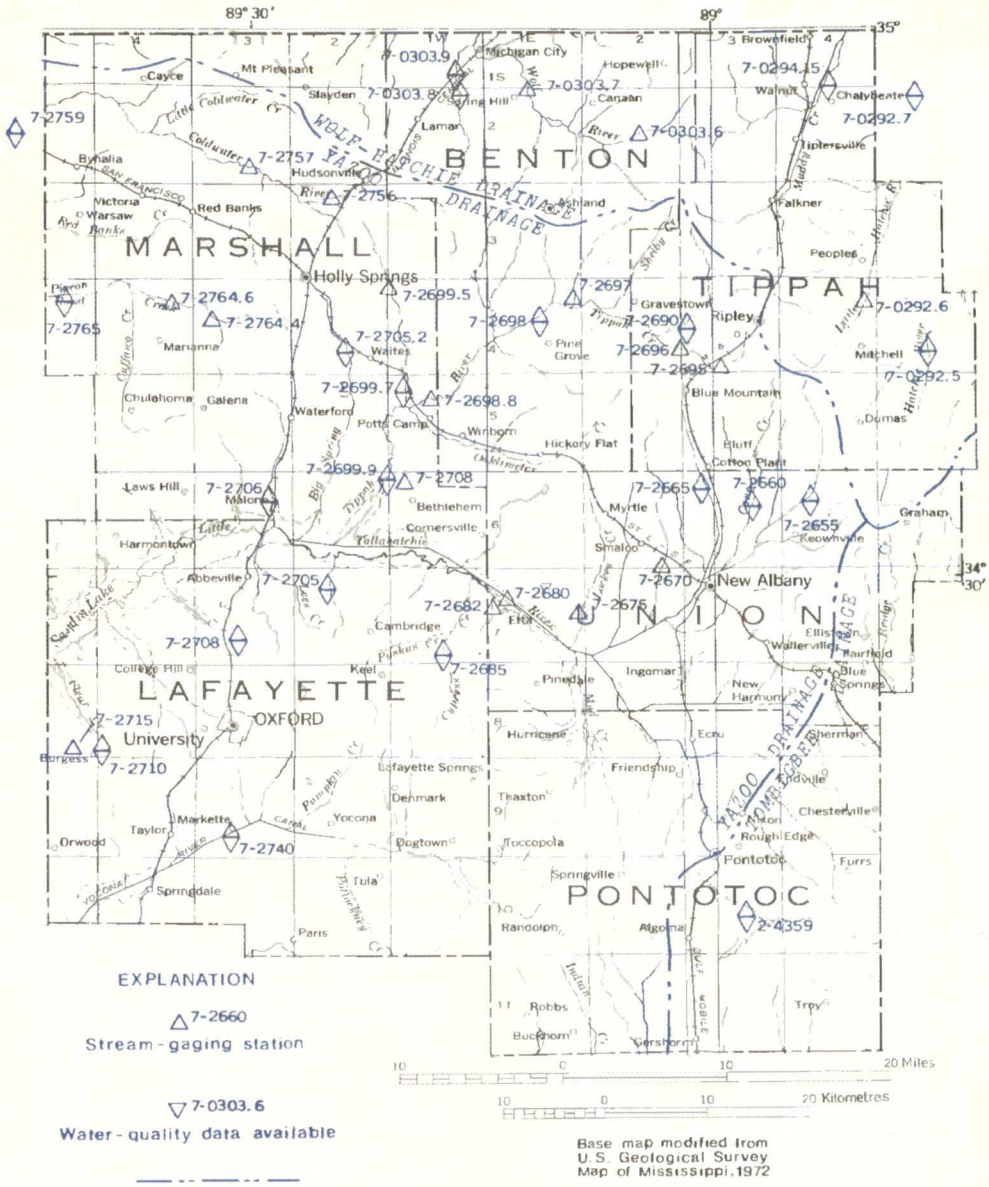


Figure 4.—Principal drainage divides and locations of gaging stations.

Table 1.—Stratigraphic units and their water-bearing character

Era	System	Series	Group	Stratigraphic unit	Water-bearing character
Cenozoic	Quaternary	Holocene		Flood-plain deposits	Not significant aquifers for industrial supplies.
		Pleistocene		Loess	Not an aquifer.
				Terrace deposits	Not significant aquifers.
	Tertiary	Eocene	Claiborne	Sparta Sand	Too limited in extent and too shallow to be a major aquifer in project area. May have local importance.
				Zilpha Clay	Not an aquifer.
				Tallahatta Formation	Contains significant aquifers only in northern Marshall County.
				Meridian Sand Member	Meridian-upper Wilcox aquifer is the principal source of water supply in western half of project area. Large yields available. Water quality good, but pH is low.
			Wilcox	Upper part	
				Middle part	Minor Wilcox aquifers scarcely tapped in project area, but sporadically occurring sand beds are potentially valuable aquifers.
				Lower part	Lower Wilcox aquifer missing in places, but 100 feet (30 m) thick or more in some localities. Locally an important aquifer. Water is of good quality, but contains excessive iron in some places.
		Paleocene	Midway	Naheola Formation	Not aquifers.
				Porters Creek Clay	
				Clayton Formation	
Mesozoic	Cretaceous	Upper Cretaceous	Selma	Owl Creek Formation and Prairie Bluff Chalk	Ripley supplies wells in all counties of project area. Water hard in northeast, soft elsewhere. Chalk units are not aquifers. Coffee Sand tapped chiefly in Tippah and Union Counties, where it is an important aquifer. Water is soft in Union County, hard in Tippah. Sand occurrence sporadic.
				Ripley Formation	
				Demopolis Chalk	
				Coffee Sand	
				Moreville Chalk	
				Eutaw Formation and McShan Formation	A principal aquifer in Pontotoc and Union Counties. Water soft to moderately hard.
			Tuscaloosa	Gordo Formation	A principal aquifer in Pontotoc County. Dissolved solids less than 500 mg/l. Water similar to that in Eutaw-McShan.
Paleozoic	Mississippian(?)				Not known to contain aquifers in project area.

Not exposed in study area

Geology

Pre-Quaternary sedimentary formations from Upper Cretaceous to Eocene in age are exposed from east to west in the project area (fig. 5). In addition, there are small outcrops of Pleistocene loess and terrace deposits and the stream valleys contain Holocene alluvium. The oldest outcropping unit, the Demopolis Chalk, dips toward the west on the southern margin but more northwesterly in most of the six-county area. The rate of dip is 35-40 feet per mile (6.6-7.6 m/km) and the top of the Demopolis is 1,800 feet (550 m) below sea level at the northwest corner of Marshall County (fig. 6). The configuration of this unit illustrates the subsurface structure in the project area.

Noteworthy features of the stratigraphy are the thick and relatively impermeable units of chalk (Demopolis) and clay (Porters Creek) which have much influence on surface-water flow and on ground-water occurrence. Formations that are more or less sandy contain the aquifers from which present and future water supplies are available, and their outcrops, although not all within these counties, form the areas of dependable base flow in the streams. These units are principally the Gordo, McShan, Eutaw, and Ripley Formations, the Wilcox Group, and the Meridian Sand Members of the Tallahatta Formation. See table 1.

The four geohydrologic sections (figs. 7-10) provide examples of the thickness, position, and attitude of the geologic units. Locations of the sections are shown on figure 5.

WATER SUPPLIES

Present Use

There are 19 municipal water supplies and 34 rural water associations or water companies in the six counties. Together they serve about half the population. At least 15 industries have their own water supplies. All the public and industrial supplies are obtained from wells, and about 9½ Mgal/d (415 l/s) is pumped for these purposes. Rural domestic and stock use is about 5 Mgal/d (220 l/s). Wells and springs are the source of all the rural domestic pumpage and part of the stock use. Ponds and streams supply the rest of stock needs. A summary of water use is given in table 2.

About 60 percent of the ground-water pumpage is from the Meridian-upper Wilcox aquifer system. Most of the remainder is distributed fairly evenly among the Cretaceous aquifers.

Problems

The most common water-supply problem in the area is hardness, and this is confined principally to water from the Cretaceous aquifers. Excessive iron is a problem in some wells but is much less common than in the same aquifers in the counties to the south. Fluoride exceeding the optimum concentration of 0.8 mg/l (milligram per litre) recommended by the U.S. Public Health Service (1962) occurs in scattered wells producing from Cretaceous aquifers but, again, less commonly than in the counties to the south. Treatment to raise the pH is required for public supplies obtained from the younger Eocene aquifers.

There are a few places where difficulty has been encountered in attempts to make wells for municipal and rural water systems. A scarcity of sand beds thick enough to provide the needed quantities of water is the cause of this problem.

Low dry-weather streamflow is a limiting factor in development of surface-water-supply sources in these counties. Large storage requirements could be satisfied at few potential reservoir sites.

SURFACE-WATER RESOURCES

Surface water suitable in quality for most industrial uses is available throughout the six-county area. There is considerable variability, however, in the quantities available, either naturally or with storage. Although the average

Table 2.--Water use by county and type in 1974

1 Mgal/d (million gallons per day) = 43.81 l/s (litres per second).

County \ Water use (mgd)	Self-supplied industrial	Public supply	Rural domestic	Stock	Total
Benton	0	0.136	0.340	0.225	0.701
Lafayette	.562	2.930	.299	.360	4.151
Marshall	.041	1.075	.831	.479	2.426
Pontotoc	0	1.373	.476	.442	2.291
Tippah	1.522	.772	.413	.276	2.983
Union	.344	.900	.470	.296	2.010
Total	2.469	7.186	7.186	a2.078	14.562

aAbout 40 percent of stock use is obtained from wells, 60 percent from surface-water sources.

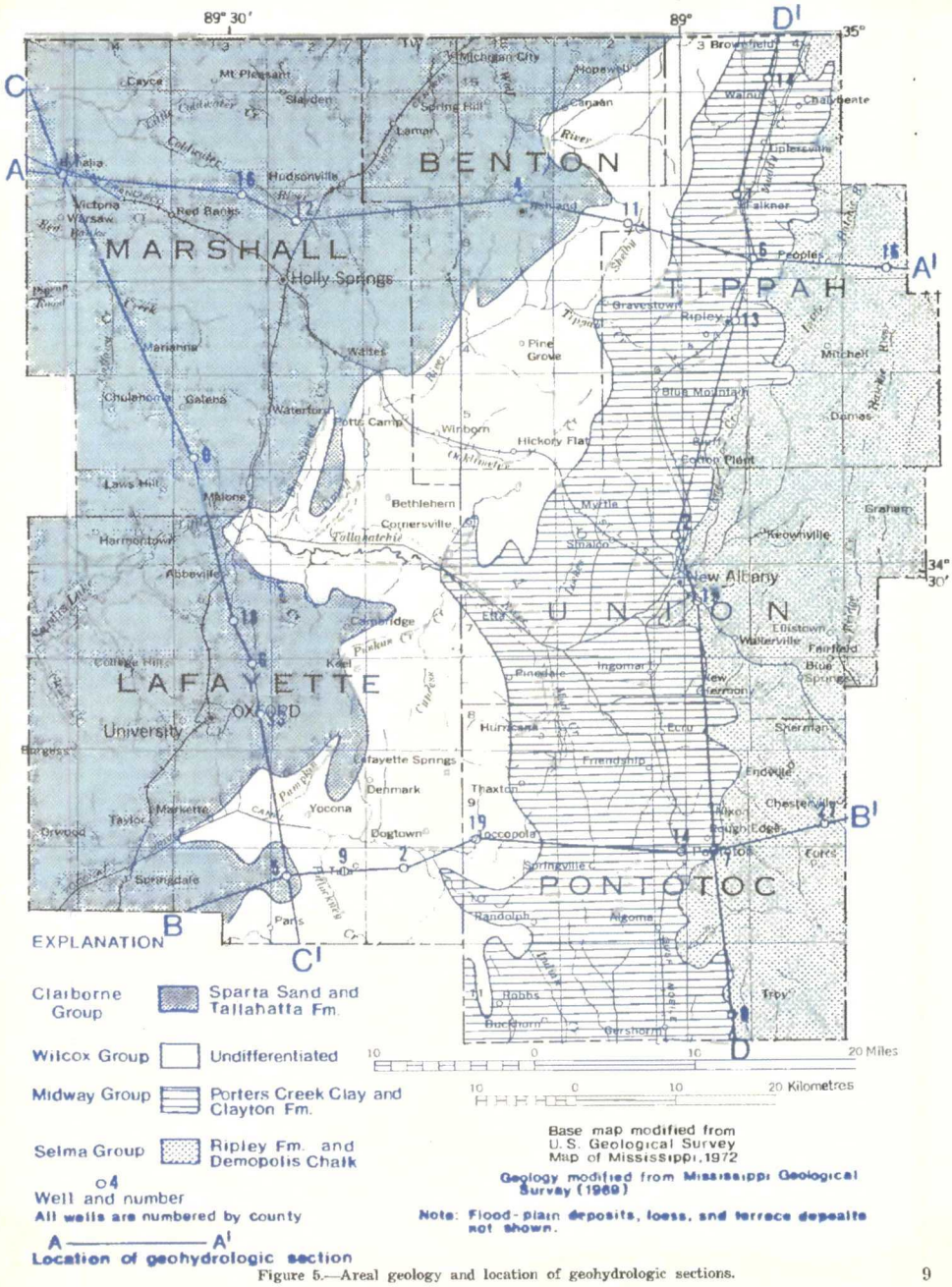


Figure 5.—Areal geology and location of geohydrologic sections.

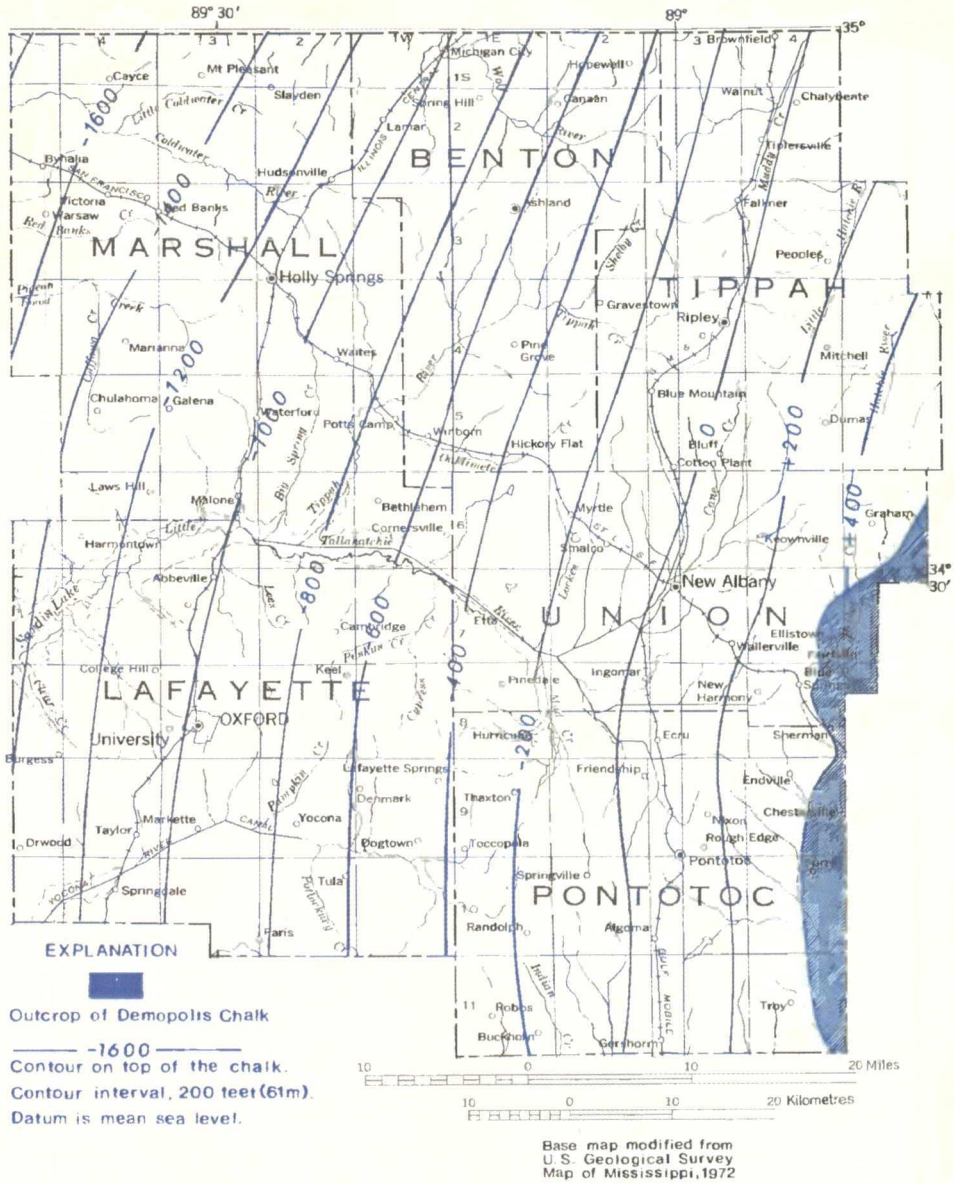


Figure 6.—Configuration of the top of the Demopolis Chalk.

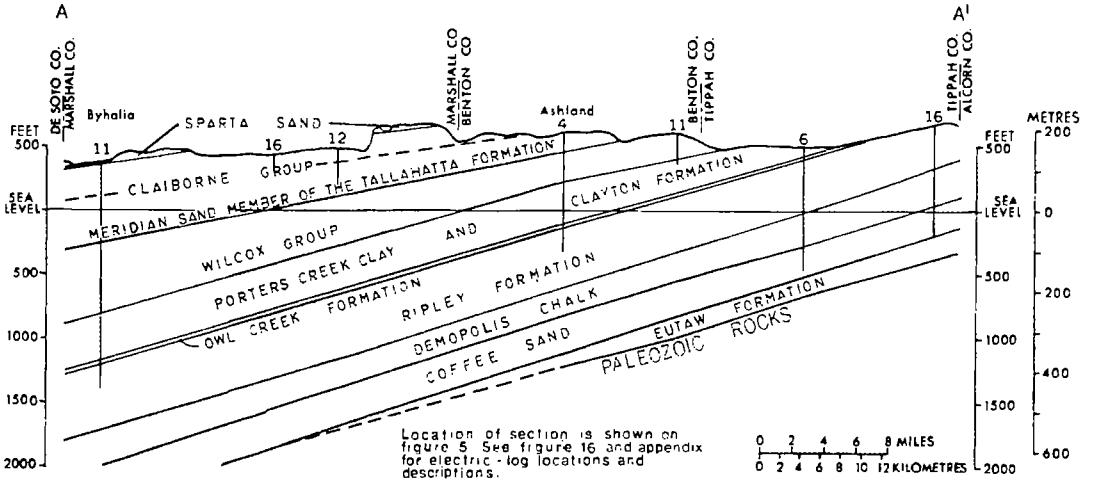


Figure 7.—Geohydrologic section across Marshall, Benton, and Tippah Counties.

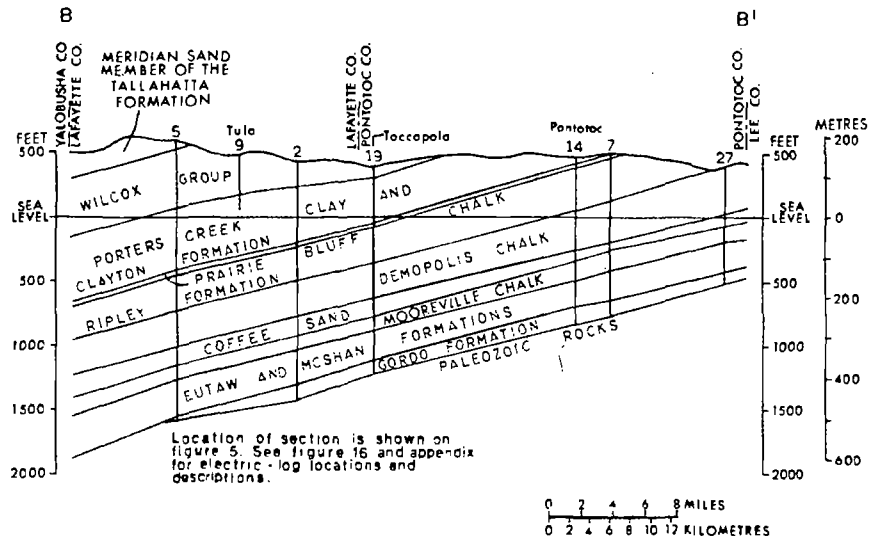


Figure 8.—Geohydrologic section across Lafayette and Pontotoc Counties.

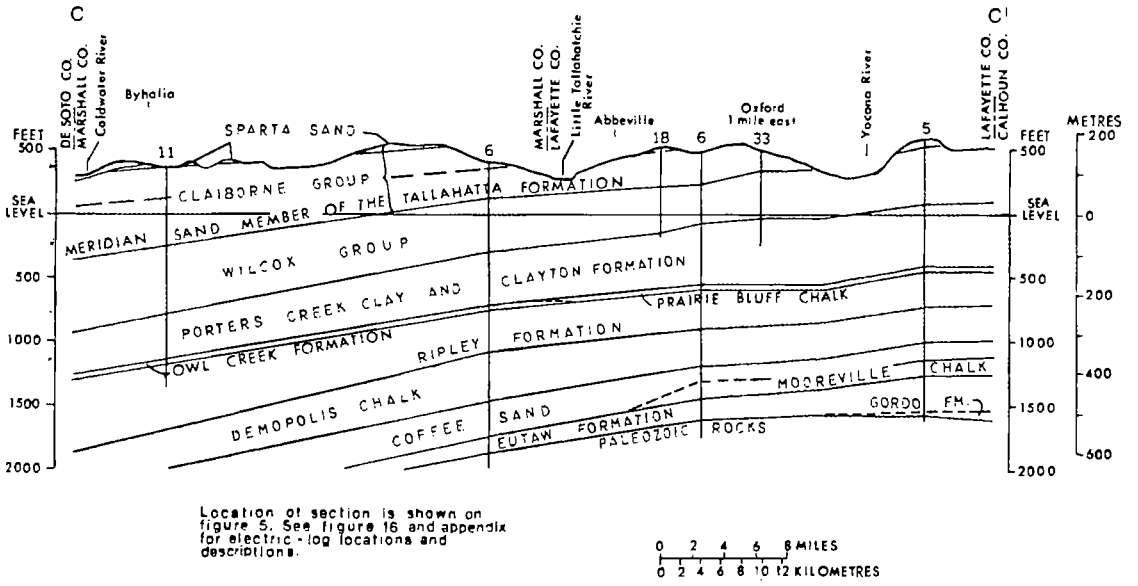


Figure 9.—Geohydrologic section across Marshall and Lafayette Counties.

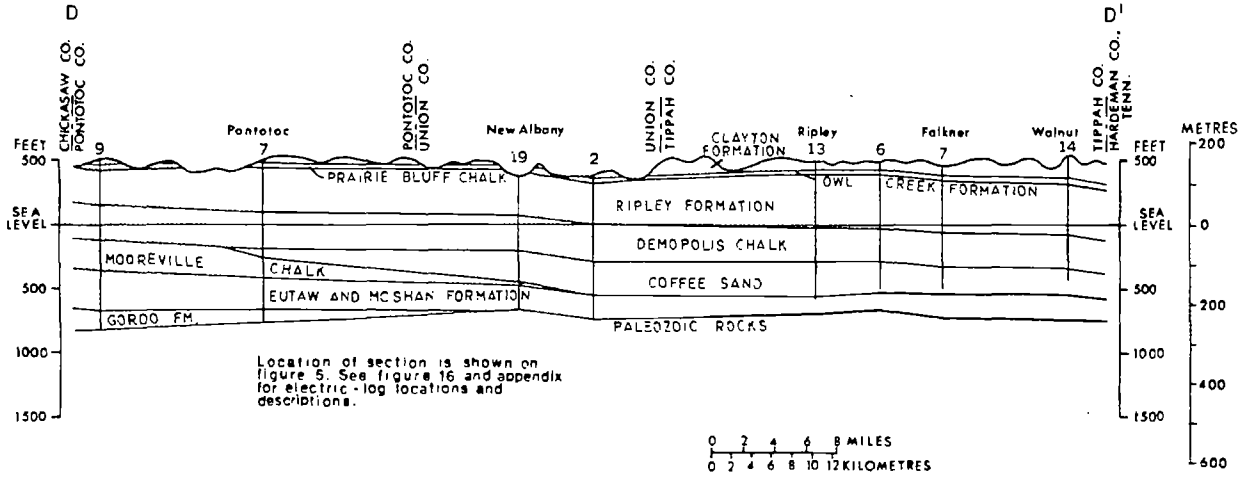


Figure 10.—Geohydrologic section across Pontotoc, Union, and Tippah Counties.

runoff in nearly 1 Mgal/d/mi^2 (17 l/s/km^2), the variability of streamflow with time and place and the low dry-weather flow in most parts of the area will require a consideration of storage reservoirs for large surface-water developments.

The upper end of Sardis Lake, containing about 10 mi^2 (26 km^2) and with several times that area in bordering marshland, is a prominent hydrologic feature along the Lafayette-Marshall County line. A small amount of Enid Lake marsh is in the southwest corner of Lafayette County.

Streamflow and water-quality data are obtained from a network of gaging stations in the area (fig. 4). Descriptions of the sites and the period and type of measurement for each site are given in table 3.

Flow Duration

The percentage of time a stream's flow exceeds specified amounts is one of the most needed items of information for appraising the stream's potential for water supply. Table 4 contains flow-duration data for the streams having sufficient periods of record to permit the calculation. The great range in discharge for some of the streams is striking. The data of table 4 are reliable for long-term prediction if no pronounced climatic or man-made changes occur. For any selected year, the flow percentages may vary greatly from the long-term pattern.

Flow-duration data may be plotted to permit graphical comparison of streams and characterization of types (fig. 11). In this plotting, a direct comparison of the flow characteristics of different streams can be made because the flow is expressed in terms of unit drainage area. A curve with a steep slope throughout (Cane Creek) indicates a stream whose flow is highly variable and derived largely from direct runoff—as would be expected of a stream draining relatively impermeable clay or chalk. A curve with a flattened lower end (Clear Creek) reveals the gradual release of water from storage, typical of streams draining sandy material. Geology alone does not determine the shape of the duration curve, but it has a major role. Integrated with the geologic influence are the effects of climate, topography, and vegetation.

Expressing flow duration in yield per unit of area is for purposes of comparison and is not meant to imply that there is uniform yield throughout the drainage basin. The streamflow yields of segments of individual streams vary as a result of differences in topography, land use, depth of channel incision, position of the water table, and hydraulic characteristics of the channel-bed material. Duration data should be usable for a limited distance upstream or downstream from a gaging station, but if there are substantial differences in the geology or drainage areas of the sites being compared, the new site should be carefully studied—including several low-flow measurements—before the data are considered to be verified for the site.

Low Flow

The dry-season flow of a stream is the most that can be relied on without use of storage facilities. Although average streamflow may be more than adequate for a particular use, a water shortage will occur if the need exceeds the dry-season flow. A water user may be able to adapt to occasional shortages but find frequent occurrences intolerable. The minimum flow, frequency of low flows, and duration of low-flow periods are all of interest to industrial water-supply planners.

Low-flow information in this report supersedes that presented by Speer and others (1964) for the stations in the six-county area.

Frequency of Low Flows

Records for 31 streamflow gaging stations were analyzed to determine the probable frequency of occurrence of lowest mean flow, for specified periods (table 5). Most of the records are for partial-record stations and permit calculation of 7-consecutive-day low flow at 2- and 10-year intervals only, but four stations have sufficient continuous record (through 1970) to provide low flow data for periods of 1, 3, 7, 14, 30, and 60 days at recurrence intervals of 2, 5, 10, and 20 years. Provided that no changes occur in the basin that appreciably affect streamflow, the estimates of low-flow frequency are fairly reliable indicators of future conditions. Table 5 also contains an estimate of minimum flow without regard to frequency and duration.

Areal Variability

Dry-season flows of streams differ greatly because of difference in size of drainage basins, but a comparable parameter can be obtained by dividing the low-flow value for each gaging station by the drainage area above the station. Thus, the 7-day low flow that occurs during a 10-year drought is seen to be less than 0.05 ft^3/s/mi^2 (0.54 l/s/km) for many of the drainage basins listed in table 3, but it is greater than 0.5 ft^3/s/mi^2 (5.4 l/s/km^2) in a few basins. This variability is closely related to the geology in the same way as explained in the section on flow duration.

A generalized map (fig. 12) shows the pattern of areal variability of low flow. Comparing this map with table 5 and the geologic map (fig. 5) shows that streams flowing over outcrops of the Wilcox and Midway Groups, have the lowest sustained yields during dry weather. The Meridian Sand, basal member of the otherwise clayey Tallahatta Formation, sustains the highest dry-season yields—near the highest in Mississippi, in fact. Although there will be exceptions within these yield patterns, the map reveals at a glance the relative reliability of streamflow in various parts of the six-county area. Planners can use this as a guide in preliminary selection of plant sites if sustained streamflow during dry periods is essential to their needs.

Table 3.—Descriptions of stream-gaging stations and water-sampling sites

Type of record: 1, daily record streamflow; 2, partial-record streamflow; 3, temperature and specific conductance partial record; 4, continuous specific conductance; 5, miscellaneous dissolved-oxygen sampling site; 6, miscellaneous chemical-sampling site.

Identification No.	Station name and location	Drainage area (mi^2)	Period of streamflow record (water years)	Type of record: Streamflow	Type of record: Chemical quality
2-4359	Calloway Creek near Pontotoc NW¼ sec. 26, T. 10 S., R. 3 E., at bridge on State Highway 41, 4.8 miles southeast of Pontotoc.	6	1952-54 1956-57 1959-60 1962,1972	2	3,5,6
7-0292.5	Hatchie River near Ripley W½ sec. 22, T. 4 S., R. 5 E., on State Highway 4, 10.5 miles east of Ripley.	[a] 40	1953 1955-57 1960,1972	2	3,5,6
7-0292.6	Little Hatchie River near Ripley NE¼ sec. 12, T. 4 S., R. 4 E., 6.5 miles east of Ripley.	[a] 27	1953 1955-57 1959	2	—
7-0292.7	Hatchie River near Walnut NW¼ sec. 4, T. 2 S., R. 5 E., on State Highway 72, 6 miles east of Walnut.	274	1948-62 1965-67	2	5,6
7-0294.15	Muddy Creek at Walnut On line between secs. 33 and 34, T. 1 S., R. 4 E., on U.S. Highway 72, 1 mile east of Walnut.	[a] 86	1955-57 1959-60 1972	2	3,5
7-0303.6	Wolf River near Brady SE¼ sec. 15, T. 2 S., R. 2 E., on county road, 1.6 miles south of Brady.	[a] 16	1955-57	2	—
7-0303.7	Wolf River at Spring Hill On line between sec. 33, T. 1 S., R. 1 E., and sec. 4, T. 2 S., R. 1 E., on U.S. Highway 72, 1 mile northeast of Spring Hill.	[a] 101	1955-57 1970	2	3,5
7-0303.8	Gray's Creek near Spring Hill On line between sec. 35, T. 1 S., R. 1 W., and sec. 2, T. 2 S., R. 1 W., on Highway 72, 3.5 miles northwest of Spring Hill.	22.4	1953 1955-58	2	6
7-0303.9	Grays Creek near Michigan City SW¼ sec. 26, T. 1 S., R. 1 W., on State Highway 7, 1.8 miles southwest of Michigan City.	32.4	1955-60	2	6
7-2655	Upper Tallahatchie River near New Albany NE¼ sec. 8, T. 6 S., R. 4 E., on county road, 9 miles northeast of New Albany.	23.9	1939-41 1972	1,2	3,5
7-2660	Cane Creek near New Albany SW¼ sec. 11, T. 6 S., R. 3 E., Union County, near right bank on downstream side of bridge on county highway, 450 ft upstream from Ellis Creek, 5.1 miles upstream from mouth, and 6.2 miles northeast of New Albany.	22.2	1939-41 1950-	1	6
7-2665	Lukosasper Creek near Cotton Plant NW¼ sec. 5, T. 6 S., R. 3 E., on county road, 0.5 mile southwest of Cotton Plant.	11.1	1939,1972	1,2	3
7-2670	Hell Creek near New Albany SW¼ sec. 36, T. 6 S., R. 2 E., on U.S. Highway 78, 3 miles northwest of New Albany.	27.3	1939 1941-43 1952-	1,2	—
7-2675	Lockes Creek near Etta SE¼ sec. 13, T. 7 S., R. 1 E., on State Highway 30, 4 miles east of Etta.	29.3	1939	1	—
7-2680	Little Tallahatchie River at Etta SW¼ sec. 8, T. 7 S., R. 1 E., Union County, on downstream side of left main pier of bridge on State Highway 30, 0.8 mile northeast of Etta, 3.8 miles upstream from Puskus Creek, 4 miles downstream from Lockes Creek, 13 miles west of New Albany, and 55.0 miles upstream from head of Panola-Quitman Floodway.	526	1938-	1	3,5,6
7-2682	Pice Creek at Etta NE¼SW¼ sec. 18, T. 7 S., R. 1 E., on State Highway 30, 0.5 mile west of Etta.	9.09	1952-57 1959-60	2	—

Table 3.—Continued

Identification No.	Station name and location	Drainage area (mi^2)	Period of streamflow record (water years)	Type of record: Streamflow	Type of record: Chemical quality
7-2685	Cypress Creek near Etta SE¼ sec. 27, T. 7 S., R. 1 W., on State Highway 30, 4 miles southwest of Etta	28.5	1939-43 1952-57 1959-60 1972	1,2	3,5,6
7-2690	North Tippah Creek near Ripley SW¼ sec. 18, T. 4 S., R. 3 E., on State Highway 4, 5.5 miles west of Ripley.	20.0	1940-42 1953-61, 1964,1972	1,2	3,6
7-2695	Tippah Drainage Canal near Blue Mountain SW¼ sec. 33, T. 4 S., R. 3 E., 3.5 miles west of Ripely on State Highway 15.	18.4	1953 1955-57 1959-60	2	—
7-2696	South Tippah Creek near Blue Mountain On line between sec. 25, T. 4 S., R. 2 E., and sec. 30, T. 4 S., R. 3 E., 2.5 miles north of Blue Mountain.	30	1955-57 1961	2	—
7-2697	Yellow Rabbit Creek near Ashland NE¼ sec. 12, T. 4 S., R. 1 E., at bridge on State Highway 4, 0.5 mile above the mouth, and 5 miles south of Ashland.	[a] 11	1953 1955-57 1959,1961	2	—
7-2698	Tippah River near Ashland NW¼ sec. 15, T. 4 S., R. 1 E., on State Highway 5, 6 miles south of Ashland.	113	1955-57 1959,1972	2	3,5
7-2698.8	Tippah River near Potts Camp SW¼ sec. 9, T. 5 S., R. 1 W., on Highway 78, 1.8 miles northwest of Potts Camp.	[a] 250	1955-56 1958-59	2	—
7-2699.5	Chewalla Creek near Holly Springs NW¼ sec. 6, T. 4 S., R. 1 W., 6 miles east of Holly Springs.	[a] 15	1955,1959	2	—
7-2699.7	Chewalla Creek near Potts Camp SW¼ sec. 5, T. 5 S., R. 1 W., on U.S. Highway 78, 1.8 miles northwest of Potts Camp.	[a] 42	1953-56 1959,1961 1972	2	3,5
7-2699.9	Tippah River near Potts Camp NW¼ sec. 6, T. 6 S., R. 1 W., at bridge on county road 5 miles southwest of Potts Camp.	359	1942-45 1958,1969, 1972	1,2	3,4,5,6
7-2700	Potts Creek near Potts Camp On line between secs. 5 and 6, T. 6 S., R. 1 W., on State Highway 349, 3.9 miles south of Potts Camp.	8.26	1940-41	1	—
7-2705	Bagley Creek near Abbeville SW¼ sec. 4, T. 7 S., R. 2 W., on county road, 5 miles east of Abbeville.	9.96	1940-41 1970	1,2	3
7-2705.2	Big Spring Creek near Holly Springs SW¼ sec. 22, T. 4 S., R. 2 W., U.S. Highway 78, 4.5 miles southeast of Holly Springs.	—	1955-57 1959-60 1972	2	3,5,6
7-2706	Little Spring Creek at Malone SE¼ sec. 11, T. 6 S., R. 3 W., on county road at Malone.	[a] 25	1955-56 1959,1972	2	3,5
7-2708	Hurricane Creek near Oxford NE¼ sec. 28, T. 7 S., R. 3 W., on State Highway 7, 6 miles north of Oxford.	[a] 9	1955-57 1959-60 1972	2	3,5,6
7-2710	Clear Creek near Oxford SE¼ sec. 30, T. 8 S., R. 4 W., Lafayette County, near right bank on downstream side of pier of bridge on State Highway 6, 1.0 mile upstream from Hudson Creek, and 8.3 miles west of Oxford.	10.3	1939-41 1950-	1	3,6
7-2715	Hudson Creek near Oxford SE¼ sec. 25, T. 8 S., R. 5 W., on State Highway 6, 9.5 miles west of Oxford.	9.35	1939-41	1	—
7-2740	Yocona River near Oxford NW¼ sec. 28, T. 9 S., R. 3 W., Lafayette County, near left bank on downstream side of pier of bridge on State Highway 7, 1.5 miles downstream from Barney Branch, 6 miles south of Oxford, and at mile 42.3.	262	1951-	1	3,5,6

Table 3.—Continued

Identification No.	Station name and location	Drainage area (mi^2)	Period of streamflow record (water years)	Type of record: Streamflow	Type of record: Chemical quality
7-2756	Coldwater River near Holly Springs SW¼ sec. 4, T. 3 S., R. 2 W., on State Highway 7, 6 miles north of Holly Springs.	[a] 20	1954-56 1959	2	--
7-2757	Coldwater River near Red Banks SE¼ sec. 27, T. 2 S., R. 3 W., 5.5 miles northeast of Red Banks.	78	1953-55 1956,1959	2	—
7-2759	Coldwater River near Olive Branch SW¼ sec. 17, T. 2 S., R. 5 W., on U.S. Highway 78, 5.5 miles southeast of Olive Branch.	—	1955-56 1959,1966, 1969-	2	3,6
7-2764.4	Pigeon Roost Creek near Holly Springs Sec. 17, T. 4 S., R. 3 W., on county road, 5 miles southwest of Holly Springs.	35.6	1953-56	2	--
7-2764.6	Pigeon Roost Creek near Red Banks On line between secs. 11 and 12, T. 4 S., R. 4 W., on county road, 6 miles south of Red Banks.	55.2	1957-58	2	--
7-2765	Pigeon Roost Creek near Byhalia SE¼ sec. 2, T. 4 S., R. 5 W., on county road, 8 miles south of Byhalia	126	1940-42 1957-58 1971-72	1,2	3,5

[a]Approximate.

Table 4.—Duration of daily flow at streamflow stations

Identification No.	Station name	Drainage area (mi^2)	Flow, in cubic feet per second, which was equaled or exceeded for indicated percentage of time																
			99.5	99	98	95	90	80	70	60	50	40	30	20	10	5	2	1	0.5
7-2660	Cane Creek near New Albany (1940-67)	22.2	0.34	0.44	0.61	1.0	1.7	3.0	4.8	7.0	10	15	22	36	71	141	293	453	655
7-2680	Little Tallahatchie River at Etta (1939-67)	526	7.6	8.9	11	15	22	36	58	84	132	210	352	684	1,710	3,630	7,100	11,000	16,300
7-2710	Clear Creek near Oxford (1940-67)	10.3	3.7	3.9	4.1	4.4	4.8	5.4	5.9	6.4	7.1	7.9	9.0	11	16	32	101	175	263
7-2740	Yocona River near Oxford (1952-67)	262	7.2	8.1	9.4	13	17	25	34	45	66	105	176	330	838	1,570	2,880	4,320	6,030

Note: To convert cubic feet per second to litres per second, multiply by 28.32.

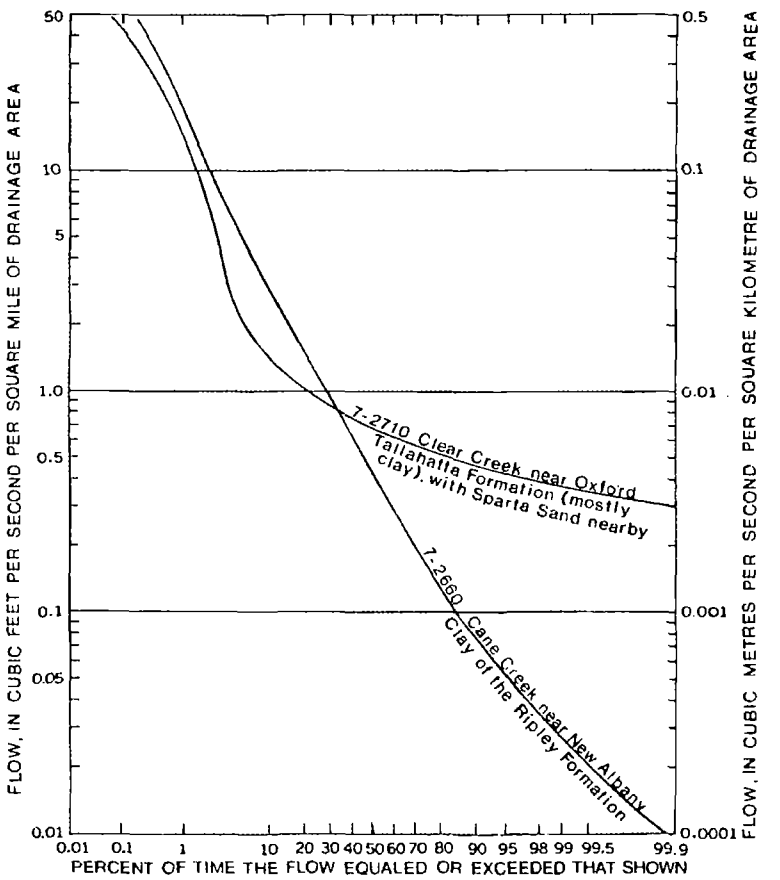


Figure 11.—Flow-duration curves illustrating effect of differences in the geology of drainage areas.

Table 5.—Magnitude and frequency of annual low flows and estimated minimum flows

(To convert cubic feet per second to million gallons per day, multiply by 0.646)

Identification No.	Station name	Drainage area (mi^2)	Period (consecutive days)	Annual low flow, in cubic feet per second, for indicated recurrence interval, in years				Estimated minimum flow (ft^3/s)	7-day, 10-year low flow ($ft^3/s/mi^2$)	Surface geologic unit above station
				2	5	10	20			
2-4350	Calloway Creek near Pontotoc	6	7	1.1	--	0.5	—	—	0.08	Ripley Formation
7-0292.5	Hatchie River near Ripley	[a] 49	7	2.1	—	.8	—	0.4	.02	Do.
7-0292.6	West Branch Hatchie River near Ripley	[a] 27	7	2.6	—	1.5	—	.5	.06	Ripley Formation (McNairy Sand Member)
7-0292.7	Hatchie River near Walnut	274	7	36	—	22	—	6	.08	Do.
7-0294.15	Muddy Creek at Walnut	[a] 96	7	.6	—	.1	—	—	<.01	Clayton Formation
7-0303.6	Wolf River near Brady	[a] 16	7	1.1	—	.6	—	.4	.04	Upper part of Wilcox Group
7-0303.7	Wolf River at Spring Hill	[a]101	7	6.2	—	2.3	—	1.8	.03	Tallahatta Formation
7-0303.8	Gray's Creek near Spring Hill	22.4	7	2.3	—	1.7	—	1.1	.05	Do.
7-0303.9	Gray's Creek near Michigan City	33.4	7	5.4	—	3.4	--	2.2	.11	Do.
7-2655	Upper Tallahatchie River near New Albany	23.9	7	11	—	7.9	—	4.9	.33	Ripley Formation (McNairy Sand Member)
7-2660	Camp Creek near New Albany	22.2	1 3 7 14 30 60	1.1 1.2 1.3 1.5 2.1 2.9	0.60 .64 .71 .84 1.1 1.4	.40 .45 .48 .60 .70 1.0	— — — — — —	0	.02	Ripley Formation
7-2665	Bukasanper Creek near Cotton Plant	11.1	7	0	—	0	—	0	0	Porters Creek Clay and Clayton Formation
7-2670	Hell Creek near New Albany	27.2	7	.2	—	0	—	0	0	Do.
7-2675	Lockna Creek near Etta	24.3	7	.5	—	.2	—	—	<.01	Porters Creek Clay
7-2680	Little Tallahatchie River at Etta	526	1 3 7 14 30 60	14 14 16 18 23 37	8.9 9.6 11 13 14 20	7.1 7.7 8.6 9.4 11 15	5.8 6.4 7.2 7.9 9.1 11	4.1	— .02	Porters Creek Clay and Clayton Formation
7-2682	Pine Creek at Etta	9.09	7	.4	—	.2	—	.1	.02	Porters Creek Clay
7-2685	Cypress Creek near Etta	28.5	7	2.3	—	1.7	--	1.2	.06	Wilcox Group
7-2690	North Tippah Creek near Ripley	20.0	7	.2	—	0	—	0	0	Porters Creek Clay
7-2695	Tippah Drainage Canal near Blue Mountain	18.4	7	1.1	—	.4	—	—	.02	Porters Creek Clay and Clayton Formation
7-2697	Yellow Rabbit Creek near Ashland	[a] 11	7	4.3	--	3.2	—	--	.30	Wilcox Group
7-2698.8	Tippah River near Potts Camp	[b]250	7	61	—	45	—	33	.20	Upper part of Wilcox Group

Table 5.—Continued

Identification No.	Station name	Drainage area (mi²)	Period (consecutive days)	Annual low flow, in cubic feet per second, for indicated recurrence interval, in years				Estimated minimum flow (ft³/s)	7-day, 10-year low flow (ft³/s/mi²)	Surface geologic unit above station
				2	5	10	20			
7-2699.7	Chewella Creek near Potts Camp	[a] 42	7	54	—	52	—	45	1.24	Meridian Sand Member of Tallahatta Formation
7-2700	Potts Creek near Potts Camp	8.26	7	0	—	0	—	0	0	Wilcox Group
7-2705	Bagley Creek near Abbeville	9.96	7	.6	—	.2	—	--	.02	Upper part of Wilcox Group
7-2706	Little Spring Creek at Malone	[a] 25	7	38	—	37	—	35	1.46	Meridian Sand Member of Tallahatta Formation
7-2708	Hurricane Creek near Oxford	[a] 9	7	9.0	—	7.8	—	6.6	.67	Do.
7-2710	Clear Creek near Oxford	10.5	1	5.4	4.5	3.6	3.2	3.0		
			3	5.6	4.6	4.0	3.5			
			7	5.7	4.8	4.2	3.7		.41	Tallahatta Formation and Sparta Sand
			14	5.8	4.9	4.3	3.7			
			30	6.0	5.1	4.4	3.9			
			60	6.4	5.4	4.7	4.1			
7-2715	Hudson Creek near Oxford	9.35	7	.2	—	<.1	—	<.1	<.01	Do.
7-2740	Yocona River near Oxford	262	1	11	6.4	7.1	6.1	4.4		
			3	11	8.7	7.3	6.2			
			7	12	9.7	7.4	6.4		.03	Wilcox Group
			14	13	9.2	7.8	6.7			
			30	13	10	8.5	7.2			
			60	12	13	10	9.0			
7-2764.4	Pigeon Roost Creek near Holly Springs	35.6	7	.5	—	.2	—	.1	<.01	Tallahatta Formation
7-2765	Pigeon Roost Creek near Byhalia	116	7	22	—	21	—	20	.20	Tallahatta Formation and Sparta Sand

[a] Approximate.

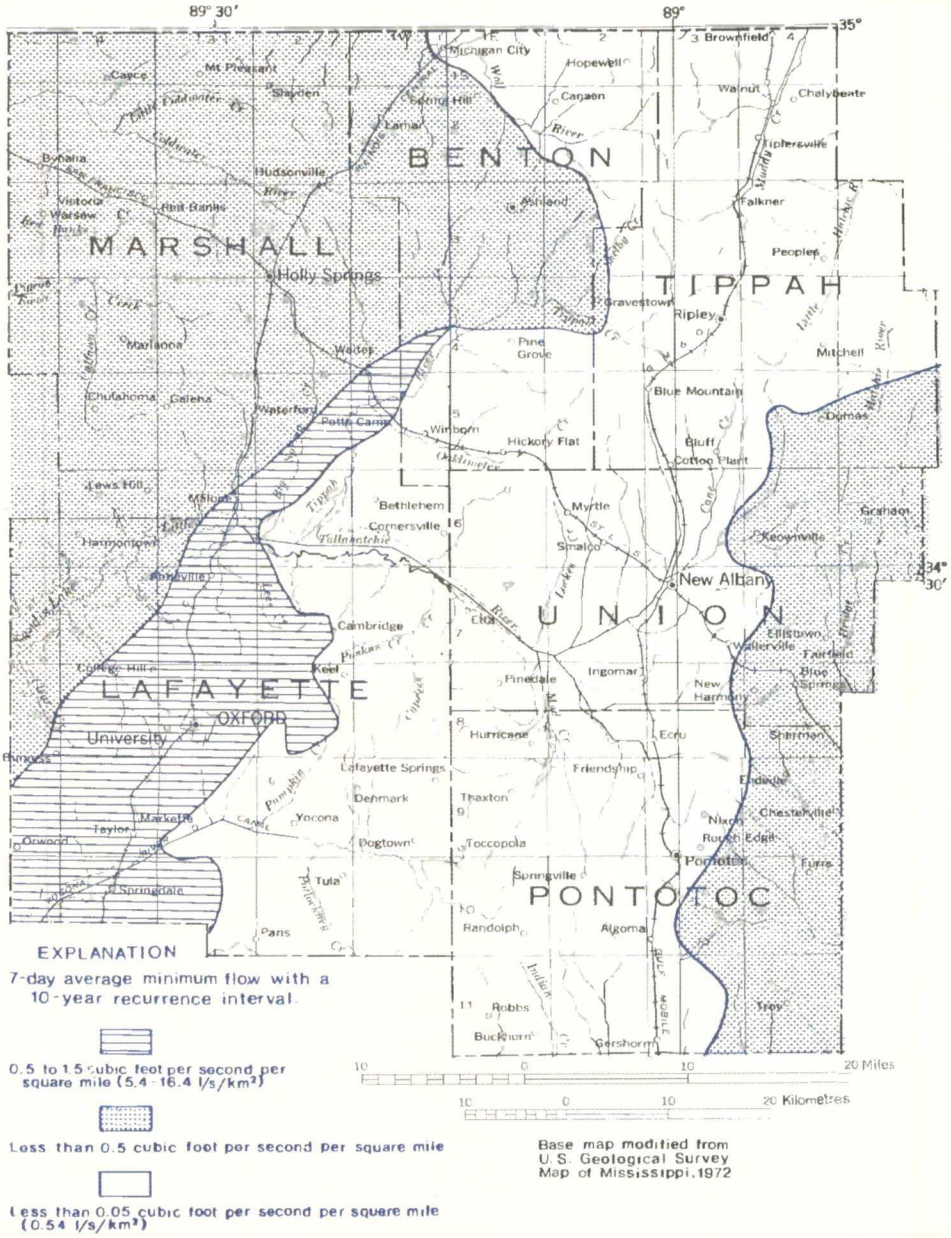


Figure 12.—Areal variability of low flow.

Flood Hazard

Industrial and other developments on flood plains face the risk of damaging floods. Minor flooding occurs in most valleys one or more times a year. Major floods occur less often but can be very destructive. They may inundate flood plains to depths as great as 8 feet (2.4 m), and flow velocities may be sufficient to undermine and wash away substantial structures.

The March 1973 flood that was so destructive in the part of the Yazoo basin west and south of the project area caused little damage in the six counties. Water levels in Sardis and Enid Lakes exceeded those having 100-year recurrence intervals, partly because these flood-control reservoirs were operated to retain floodwater and reduce the severity of flooding downstream. Flooding in the Tombigbee River basin also was much more severe downstream than in the Pontotoc-Union Counties area which contains some of the headwaters.

Large floods cannot be prevented, and reliable prediction of their time of occurrence is not possible, but their magnitude and frequency can be estimated from flood-frequency relations calculated from the records of previous floods. Flood-frequency relations (Wilson and Trotter, 1961; Patterson, 1964; and Barnes and Golden, 1966) have been developed for most streams in the study area. Limitations on the use of the methods are given in the reports. In general, the relations should not be applied to regulated streams, to streams that have very small drainage area, or where storage conditions are variable. Flood-frequency relations are used in the planning and design of flood-protection works, municipal and industrial developments, and in flood-plain zoning.

An excellent source of information on the flood hazard is the flood-prone-area map series of the U.S. Geological Survey. In the six-county area, only one of these maps, the New Albany quadrangle, is presently available.

Chemical Quality

Water in the streams of the area is chemically suitable for most uses. Dissolved-solids concentrations are low; they exceed 100 mg/l in only a few streams. The water is generally soft—there are a few exceptions. Streams heading in the southeastern quarter of the area have hard water because they originate on calcareous outcrops. These same streams have the greatest mineralization in general (table 6). Color ranged from 5 to 40 units (platinum-cobalt scale) in 37 samples from 13 streams and was greater than 15 units in some samples from 6 of the streams.

Water-quality and temperature determinations for Sardis Lake are tabulated in detail by the U.S. Department of the Army, Corps of Engineers (1972).

Dissolved Solids

The mineral constituents of streams are derived from ground-water seepage, from the materials of the stream channel, from the matter contained in overland runoff, and from injected wastes. Ordinarily, in the Gulf Coastal States ground water contains more minerals in solution than surface water; therefore, it is reasonable to expect streams to be the most highly mineralized during low-flow periods, when the ground-water seepage makes up the largest proportion of the streamflow. Where large variations in flow are not accompanied by corresponding inverse changes in dissolved-solids concentration, it is often explained by a scanty discharge of ground water to the stream. This is probably the reason for the relatively constant dissolved-solids concentration in the Little Tallahatchie River at Etta (Station 7-2680) despite a nearly 900-percent difference in flow.

The dissolved-solids concentration in a stream is effectively indicated by the electrical conductance of the water. The type and concentration of the ions in water determine its capacity for conducting an electric current. This rapid and inexpensive method is widely used, and numerical or graphical relations have been developed to convert the specific conductance, in micromhos per centimetre at 25°C, to dissolved-solids concentration, in milligrams per liter. Usually the ratio of the latter to the former is between 0.55 and 0.75. Using an average ratio of 0.65, the specific-conductance values in table 7 can be converted to dissolved solids to provide an estimate of the relative mineralization of the streams during the fall low-flow periods of 1971 and 1973.

A specific-conductance recorder was operated continuously from October 1971 to March 1973 on the Tippah River near Potts Camp (Station 7-2699.9). When compared with the stream-stage hydrograph (fig. 13) it is seen that, generally, the specific conductance decreases following a rise in stream stage.

Dissolved Oxygen

One indicator of the health of a stream is its dissolved-oxygen concentration (DO), for it is largely this element that accomplishes the assimilation of wastes, supports fish life, and retards the growth or accumulation of harmful constituents and organisms. DO alone, of course, does not provide a reliable measure of a stream's quality. Many toxic substances may be present in a stream or lake having optimum DO concentrations.

Oxygen is usually present in amounts of 10 mg/l or less in unpolluted surface water. Where concentrations are less than 4 mg/l a stream or lake is considered to be unsuitable for recreational purposes. Industrial uses vary in their DO requirements and tolerances. Boiler-feed water, for example, should contain little or no DO; however, this does not mean that the supply source of the feed water must have low DO.

An examination of table 7 reveals that, with the possible exception of the Wolf River, all the streams tested in this study had a healthy DO content—at least at the times they were checked in the fall low-flow periods of 1971 and 1973. Additional DO observations for the streams and lakes of the project area are listed by the U.S. Department of the Army, Corps of Engineers (1972).

Table 6.—Chemical analyses of water from streams

(Constituents and hardness are in milligrams per litre)

Date of collection	Flow (ft^3/s)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids	Hardness as $CaCO_3$: Calcium, magnesium	Hardness as $CaCO_3$: Noncarbonate	Specific conductance (micromhos at 25°C)	pH	Color
Station 2-4359 - Calloway Creek near Portetos																		
11- 4-59	3.79	6.4	0.08	42	3.4	2.1	1.0	143	4.6	3.0	0.1	0.4	133	119	2	231	7.5	7
5-31-60	5.52	2.3	.06	35	2.2	2.2	.7	113	4.6	2.5	.1	.4	106	96	4	192	7.4	10
10-24-73	1.50	4.6	.00	32	2.0	2.8	1.1	104	6.2	3.8	.3	1.0	111	88	3	175	7.8	10
Station 7-0292.5 - Patchie River near Ripley																		
11- 3-59	9.41	6.4	0.21	1.9	1.8	1.2	1.0	16	0.0	2.2	0.1	0.5	23	12	0	35	6.9	25
5-30-60	10.8	1.8	.00	2.3	1.0	1.1	.6	14	.8	2.0	.0	.5	18	11	0	30	6.5	25
10-30-73	16.4	9.6	.07	2.2	1.0	1.1	1.1	12	1.6	1.9	.1	.05	25	10	0	26	6.4	10
Station 7-0303.9 - Grays Creek near Michigan City																		
11- 3-59	6.64	7.5	0.15	1.7	1.4	2.2	0.8	17	0.0	2.0	0.0	0.8	25	10	0	38	6.6	5
5-30-60	7.68	3.6	.00	1.5	1.1	2.0	.6	15	.0	1.5	.0	.6	18	8	0	27	6.6	10
10-26-73	14.9	13	.00	1.8	.9	1.9	1.0	13	.3	1.6	.1	.43	30	8	0	30	6.3	5
Station 7-0660 - Grass Creek near New Albany																		
11-13-59	5.20	5.9	0.09	41	3.0	2.8	1.1	138	6.8	3.5	0.1	0.4	133	115	2	220	7.7	5
5-30-60	7.87	3.9	.00	35	2.9	2.5	.7	117	5.2	3.0	.1	.3	112	100	4	197	7.5	5
11-30-73	60	7.2	.07	14	1.8	1.7	2.5	44	5.2	3.5	.0	.06	58	42	6	110	7.0	40
Station 7-2480 - Little Tallahatchie River at Etta																		
10-22-58	66	2.7	0.04	29	3.6	6.7	1.4	98	12	8.5	0.1	0.4	112	88	7	197	7.4	10
3-30-59	321	1.8	.19	23	3.2	5.7	1.0	66	18	7.0	.2	.2	93	70	16	162	7.3	15
6- 3-59	133	2.8	.04	24	3.8	6.5	1.5	71	20	8.0	.2	.8	103	76	18	185	7.1	10
10-21-71	37	9.5	.03	27	2.6	10	3.9	95	13	14	.3	.0	125	78	5	216	7.4	5
6-14-72	66	7.4	.04	24	3.2	10	1.7	77	15	12	.2	.0	112	74	11	200	7.2	5
Station 7-2490 - North Tippah Creek near Ripley																		
11- 3-59	1.78	14	0.22	4.6	4.0	2.5	1.5	23	11	4.0	0.1	0.4	53	28	9	70	6.8	15
5-30-60	2.49	5.5	.00	5.3	3.1	2.5	1.0	18	13	3.5	.0	.4	41	26	10	73	6.5	7
10-30-73	2.16	13	.18	4.3	2.4	2.4	1.6	19	7.7	3.0	.2	.02	43	21	7	55	7.1	20
Station 7-2699.4 - Tippah River near Potts Camp																		
10-21-71	146	12	0.07	3.2	0.9	3.5	1.7	21	1.4	3.1	0.0	0.0	36	13	0	48	6.3	10
6-14-7	130	11	.01	5.6	1.5	2.9	1.1	26	1.2	2.6	.1	.0	39	20	0	57	6.7	5
Station 7-2705 - Bagley Creek near Abbeville																		
10-24-73	1.83	11	0.07	2.3	1.6	2.7	1.6	14	2.4	2.4	0.2	0.2	32	12	1	34	6.6	10

Table 6.—Chemical analyses of water from streams—Continued

(Constituents and hardness are in milligrams per liter)

Date of collection	Flow (ft^3/s)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids	Hardness as $CaCO_3$: Calcium, magnesium	Hardness as $CaCO_3$: Noncarbonate	Specific conductance (micromhos at 25°C)	pH	Color
Station 7-2705.2 - Big Spring Creek near Holly Springs																		
11- 3-59	4.08	7.0	0.26	1.7	1.7	2.0	0.8	19	0.0	1.2	0.0	1.6	25	11	3	35	6.4	8
5-30-60	3.94	6.5	.01	3.0	1.9	2.0	.4	23	.2	1.2	.1	.5	27	16	0	39	6.9	10
10-25-73	5.94	13	.00	2.6	1.3	2.3	1.1	17	.7	1.5	.2	.38	33	12	0	38	6.1	5
Station 7-2708 - Hurricane Creek near Oxford																		
11- 3-59	9.38	7.0	0.36	1.2	1.3	1.9	0.6	15	0.2	2.0	0.0	0.4	22	8	0	26	6.6	9
5-30-60	11.7	2.8	.00	1.1	.8	1.6	.2	11	.0	1.5	.0	.3	14	5	0	22	6.8	10
11-30-73	18	11	.09	2.4	1.2	2.3	1.3	15	1.3	2.8	.2	.19	31	11	0	30	6.9	30
Station 7-2710 - Clear Creek near Oxford																		
11- 3-59	6.16	5.9	0.09	0.9	1.0	2.4	0.6	10	0.0	2.0	0.0	0.6	21	6	0	26	6.5	7
5-30-60	7.89	7.2	.00	1.3	.7	2.4	.3	11	.0	1.5	.1	1.4	20	6	0	29	6.8	20
11-30-73	20	12	.01	2.0	.6	3.2	2.6	12	2.4	2.2	.0	.22	33	7	0	41	6.4	10
Station 7-2740 - Yocona River near Oxford																		
11- 3-59	20.6	5.0	0.13	1.4	1.7	6.2	1.9	25	2.6	5.2	0.1	1.5	43	16	0	67	6.7	25
5-30-60	68.2	3.3	.00	3.3	1.8	4.3	1.3	19	4.2	4.0	.0	.3	32	16	0	53	6.5	15
10- -71	25.0	14	.01	5.6	2.2	10	2.7	36	6.7	7.6	.2	2.1	59	23	0	106	6.6	15
6-14-72	17.2	13	.17	7.0	3.6	10	1.5	42	5.4	8.0	.1	.1	69	28	0	110	6.7	10
Station 7-2759 - Goldwater River near Olive Branch																		
6-14-72	1,690	12	0.20	22	0.7	2.7	1.0	19	3.2	1.4	0.0	0.0	30	12	5	37	6.3	15

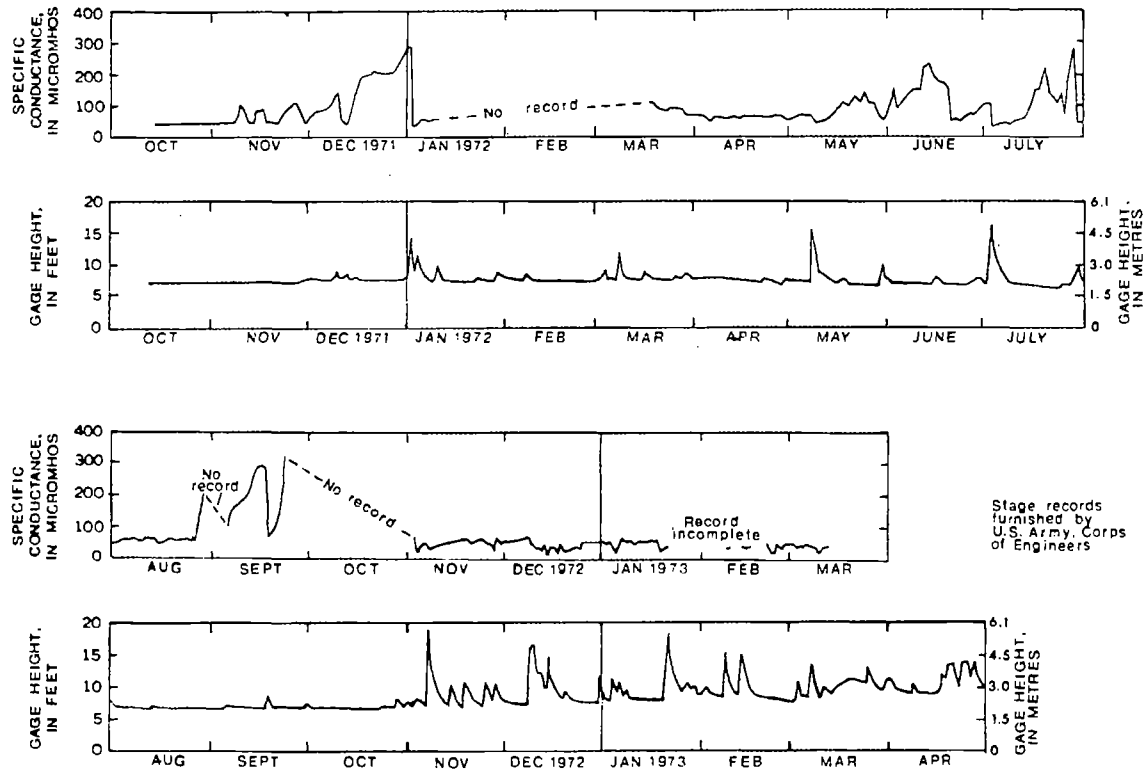


Figure 13.—Specific conductance and stream stage, Tippah River near Potts Camp, Miss.

Table 7.—Stream-quality observations, fall 1971 and 1973

Station No.	Stream	Date	Discharge (ft^3/s)	Specific conductance (micromhos)	D.O. (mg/l)	pH	Temperature (°C)
2-4359	Callaway Creek	10-21-71	2.0	140	7.5	7.2	19.5
		10-24-73	1.5	175	7.8	7.8	21.0
7-0292.5	Hatchie River	10-20-71	8.4	43	8.4	6.7	19.0
		10-30-73	16	26	11.5	6.4	9.0
7-0292.6	West Branch Hatchie River	10-30-73	16	54	11.6	6.5	11.0
7-0292.7	Hatchie River	10-29-73	141	37	9.7	6.8	11.5
7-0294.15	Muddy Creek	10-20-71	4.4	120	8.5	7.1	19.0
		10-29-73	8.6	74	9.9	7.1	11.5
7-0303.6	Wolf River	10-26-73	--	32	5.2	6.1	15.0
7-0303.7	Wolf River	10-20-71	<.05	46	7.0	6.9	17.0
		10-26-73	--	33	8.8	6.3	15.0
7-0303.8	Grays Creek	10-26-73	10	30	9.8	6.3	17.0
7-0303.9	Grays Creek	10-26-73	15	30	9.6	6.3	17.0
7-2655	Upper Tallahatchie River	10-20-71	15	78	9.9	7.1	19.0
7-2660	Cane Creek	11-30-73	60	110	[a]11.8	7.0	17.0
7-2665	Lukesasper Creek	10-30-73	.04	280	9.3	7.8	13.0
7-2680	Little Tallahatchie River	10-21-71	37	200	9.8	7.2	22.5
7-2685	Cypress Creek	10-22-71	4.9	60	9.0	7.0	18.5

Table 7.—Continued

Station No.	Stream	Date	Discharge (ft^3/s)	Specific conductance (micromhos)	D.O. (mg/l)	pH	Temperature (°C)
7-2690	North Tippah Creek	10-30-73	2.2	56	[a]11.2	7.1	14.5
7-2695	Tippah Drainage Canal	10-30-73	6.1	325	[a]11.3	8.1	13.5
7-2697	Yellow Rabbit Creek	10-30-73	9.5	23	10.2	6.5	13.5
7-2698	Tippah River	10-21-71	26	85	[a]9.2	7.0	21.0
7-2698.8	Tippah River	10-25-73	112	54	[a]10.1	6.6	16.0
7-2699.5	Chewalla Creek	10-25-73	--	28	[a]9.5	6.1	28.0
7-2699.7	Chewalla Creek	10-21-71	56	34	8.5	6.8	21.0
7-2699.9	Tippah River	10-21-71	146	48	8.7	6.8	23.0
7-2705	Bagley Creek	10-24-73	1.8	34	8.3	6.6	25.5
7-2705.2	Big Spring Creek	10-21-71	6.0	40	7.3	6.7	19.5
		10-25-73	5.9	38	8.5	6.1	12.5
7-2706	Little Spring Creek	10-19-71	39	44	8.6	6.6	20.5
		10-24-73	46	30	10.0	6.4	16.5
7-2708	Hurricane Creek	10-22-71	12	34	8.2	6.5	18.5
7-2710	Clear Creek	11-30-73	20	41	[a]11.8	6.4	13.0
7-2740	Yocona River	10-22-71	25	100	8.1	6.7	20.5
7-2757	Coldwater River	10-25-73	—	38	9.2	6.5	15.0
7-2764.4	Pigeon Roost Creek	10-25-73	.60	68	[a]10.7	6.3	19.5
7-2765	Pigeon Roost Creek	10-19-71	40	40	[a]10.7	6.6	26.5
		10-25-73	44	30	[a]9.4	6.5	22.0

[a]DO saturation greater than 100 percent, cause unverified.

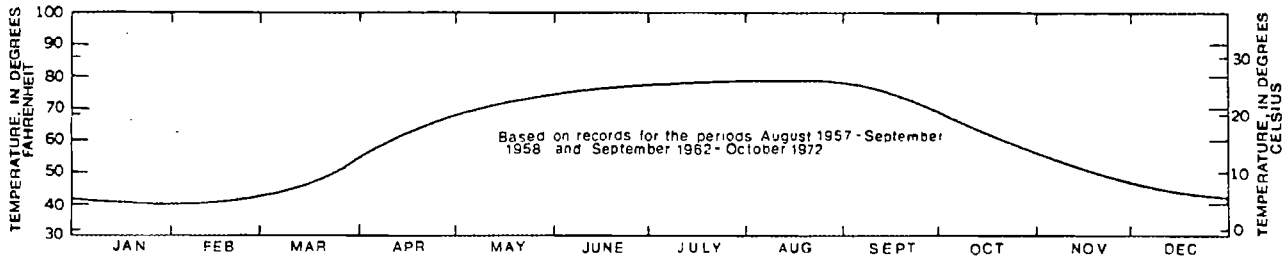


Figure 14.—Average stream temperature, Cane Creek near New Albany, Miss.

Table 8.—Mean monthly flow of selected streams

(From Shell and Thomson, 1970)

Station number	Name and location	Mean flow (ft^3/s)												
		Annual	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
7-2660	Cane Creek near New Albany	36	54	74	84	65	38	18	19	7.5	10	8.0	22	43
7-2680	Little Tallahatchie River at Etta	779	1,530	1,860	1,820	1,230	632	394	358	165	168	86	568	833
7-2710	Clear Creek near Oxford	14	17	25	21	23	14	10	12	7.3	9.3	6.9	11	16
7-2740	Yocona River near Oxford	318	395	703	706	655	297	152	130	56	114	46	210	380

Table 9.—Maximum flow of selected streams

(From Shell and Thomson, 1970)

Station number	Name and location	Maximum flow occurring with indicated recurrence interval in years (ft^3/s)					Maximum flow for indicated period in days and recurrence interval, in years (ft^3/s)			
							1 day		7 day	
		2	5	10	25	50	25	50	25	50
7-2660	Cane Creek near New Albany	2,900	4,510	5,510	6,670	7,460	2,600	2,930	636	689
7-2680	Little Tallahatchie River at Etta	26,200	39,500	48,900	61,300	70,900	45,500	51,500	14,900	16,700
7-2685	Cypress Creek near Etta	3,590	5,790	7,380	9,510	11,200	—	—	—	—
7-2710	Clear Creek near Oxford	2,590	3,890	4,860	6,220	7,320	842	955	211	231
7-2740	Yocona River near Oxford	10,200	17,700	24,500	35,700	46,200	18,100	20,600	6,960	7,870

Temperature

Stream temperature fluctuates widely during the year and even during the month. On the average, however, it is near the average air temperature. Extremes of water temperature measured in the project area are 0° and 35°C (32° and 95°F), but on the average the temperature ranges from 4° to 27°C (40° and 80°F). Figure 14 shows a temperature trend based on numerous measurements throughout the year for the periods indicated. The example is probably typical for a natural stream having low dry-weather flow in this part of Mississippi.

Water temperature is a critical factor in some industrial uses. The natural stream or lake temperature may undergo substantial change in the course of water movement through a pumping plant or filtration plant. Such changes might reduce or aggravate problems related to temperature. Temperature is an important consideration in the planning of any water supply.

Surface-Water-Supply Potential

Two rules should be borne in mind regarding the amount of streamflow available for water supply: (1) The most that can be counted on without storage is the dry-weather flow, and (2) The most that can be counted on with storage is somewhat less than the mean annual flow.

Of interest in certain operations is the maximum flow of streams. In the past it has been a practice in some places to hold wastes until times of high flow and release them to take advantage of the maximum dilution potential.

Low-flow information has been presented earlier in this report (table 5). Mean monthly flows of selected streams are given in table 8, and maximum flows for various periods and frequencies are in table 9.

Limits of Natural Supply

Streams in the project area that have substantial flow during dry-weather periods are listed in table 10, along with the quantity of water available in specified reaches. It is probable that other streams in the area have good dry-weather flow, but data are lacking for a quantitative evaluation of them.

Legal requirements for the appropriation of water from streams in the State are administered by the Mississippi Board of Water Commissioners. The Board receives and evaluates requests and issues permits as appropriate.

Table 10.—Availability of natural supply from selected streams

Flow requirement (Mgal/d)	Streams or reaches in which the indicated flow is available during a 10-year drought
50	Tippah River below mouth of Chewalla Creek.
30	Tippah River below Marshall-Benton County line. Chewalla Creek below railroad crossing north of Potts Camp. °Coldwater River near Marshall County line.
20	°Tippah River below line between Ranges 1 E. and 1 W. in Tp. 4 N. Chewalla Creek below a point east of Holly Springs. °Coldwater River below Little Coldwater Creek. Little Spring Creek below Malone.
10	Tippah River below a point north of Pine Grove. Chewalla Creek for most of its length. °Coldwater River below gaging station 7-2757. Hatchie River below a point east of Walnut. Pigeon Roost Creek below Cuffawa Creek.
5	°Tippah River below Shelby Creek. ° Chewalla Creek. Coldwater River below southeast corner of Tp. 2 S. °Hatchie River below Tippah- Alcorn County line.

°Flow estimated on the basis of drainage-area yield and miscellaneous low-flow records.

Supply with Storage

With a means of storage, a supply much greater than the dry-season flow can be made available. The identification of reservoir sites is beyond the scope of this report, but calculation of storage requirements can be made for specified withdrawal rates where sufficient flow data are available. Sites on the Little Tallahatchie and Yocona Rivers provide the examples in the following table. This implies only that the

Identification number of site	Stream	Drainage area (mi)	Acre-feet of water in storage required to supply the indicated withdrawals during a 20-year drought	
			50 Mgal/d	100 Mgal/d
7-2680	Little Tallahatchie River	526	2,500	7,000
7-2740	Yocona River.	262	3,800	12,000

indicated quantities of water are available if storage facilities can be provided. Reservoir design entails a study of flow characteristics of the stream, pattern of withdrawal, topography and soil conditions, losses due to seepage and evaporation, sedimentation conditions, and flood potential. Once a reservoir is constructed, attention must be given to maintaining the quality of the water. Lakes tend to become stratified and, in their depths, oxygen deficient. Shattles described a DO survey of nearby Grenada Lake in a report by Newcome and Bettandorff (1973).

Sardis Lake, the existing flood-control reservoir, contains 108,000 acre-feet (0.133 km^3) in its conservation pool. Use of this water for industrial and public supplies would be subject to restrictions by the Mississippi Board of Water Commissioners and U.S. Army Corps of Engineers.

GROUND-WATER RESOURCES

The Fresh-Water Section

Except in the southwestern part of Lafayette County, all sand beds in formations of Cretaceous and Tertiary ages contain fresh water (less than 1,000 milligrams of dissolved solids per liter of water). In that area the deepest fresh water is in the Wilcox Group. It is possible that fresh water is available from the consolidated Paleozoic rocks that everywhere underlie the Cretaceous sediments, but no water-test wells have been drilled in those beds. In effect, figure 15, which shows the altitude and configuration of the base of the fresh-water section, is also a contour map on the eroded surface of the Paleozoic rocks. The thickness of the fresh-water section is about 1,000 feet (300 m) at the eastern margin of the project area and 3,000 feet (900 m) in in the northwest corner. In southwestern Lafayette County the thickness is 750 to 1,000 feet (230-300 m).

At nearly every place in the six counties there are at least two aquifers available for water-supply development, and in some areas there are as many as six aquifers. In the eastern part of the project area, Cretaceous formations are the chief source of water supplies; in the west the Tertiary formations are the most commonly tapped.

Electric logs of oil-test and water wells constitute one of the best sources of information on the distribution and thickness of water-bearing sand beds. The sand intervals listed in the appendix were indicated by the available electric logs, the locations of which are given on figure 16.

Aquifers Having Industrial Water-Supply Potential

The Ripley Formation is tapped by major wells in all counties but Lafayette, and it supplies domestic wells even there. In quantity of water supplied the Ripley ranks down the list, however. This distinction belongs to the Meridian-upper Wilcox aquifer whose pumpage is probably 10 times that of the Ripley, even though it is tapped only in Benton, Lafayette, and Marshall Counties. The Eutaw-McShan aquifer system is an important source of water supply in the three eastern counties. The Gordo Formation supplies several major wells in the southern part of the project area, and the Coffee Sand is equally important in the northeastern quarter. These aquifers and others are described, from oldest to youngest in order, in the following pages.

Gordo Formation

The Gordo Formation, of the Tuscaloosa Group, crops out along the eastern margin of northern Mississippi and in northwestern Alabama. In the project area this unit is present only in the subsurface in Pontotoc, southern Union, and eastern Lafayette Counties. It pinches out to the north and west and its position directly overlying hard Paleozoic rocks is taken by the McShan and Eutaw Formations. The base of the Gordo ranges from 300 to 1,800 feet (90-550 m) below sea level in the area, and fresh water is available wherever the formation occurs (fig. 17).

The Gordo is 250 to 300 feet (75-90 m) thick in southern Pontotoc County and about 125 feet (38 m) thick in much of the rest of the area shown in blue on figure 17. This is in contrast to the maximum of 500 feet (150 m) in the counties to the south. Individual sand beds as thick as 125 feet (38 m) have been penetrated by wells, and a large proportion are between 20 and 100 feet (6-30 m) in thickness. Gravel is a prominent constituent of the formation in most places. Sand intervals in the Gordo in many places,as indicated by electric logs, are listed in the appendix.

The potentiometric surface (artesian water-level surface) of the Gordo slopes generally southward at a rate of about 1.5 feet per mile (0.3 m/km). Water levels nearly everywhere stand between 200 and 240 feet (60-73 m) above sea level.

The Gordo is an important aquifer in Pontotoc County where it supplies 0.5 Mgal/d (22 l/s) to the municipal water system of the city of Pontotoc and smaller amounts to three rural water systems. Two rural systems in Lafayette County and one in Union County are supplied by the Gordo. Present wells produce 100 to 250 gal/min (6.3-16 l/s) and have specific capacities [1/] between 1 and 6 gal/min/ft (0.21-1.3 l/s/m) of drawdown.

Pumping tests of wells in the Gordo gave widely varying results. Three tests in the project area indicated aquifer transmissivity (transmissibility) ranging from 5,000 to 60,000 gal/d/ft (60-70 m^3/d/m). Hydraulic conductivity (permeability) is also widely variable, probably owing to different proportions of gravel and sand from place to place. Values from less than 100 to more than 1,000 gal/d/ft^2 (4-40 m/d) are common for the Gordo in northeastern Mississippi, with an average being near 500 gal/d/ft^2 (20 m/d). Two values determined in this project are 570 and 83 gal/d/ft^2 (23 and 3.4 m/d).

[1/] Specific capacity is given for a 1-day period of pumping, the data projected if the pumping period is less than 1 day.

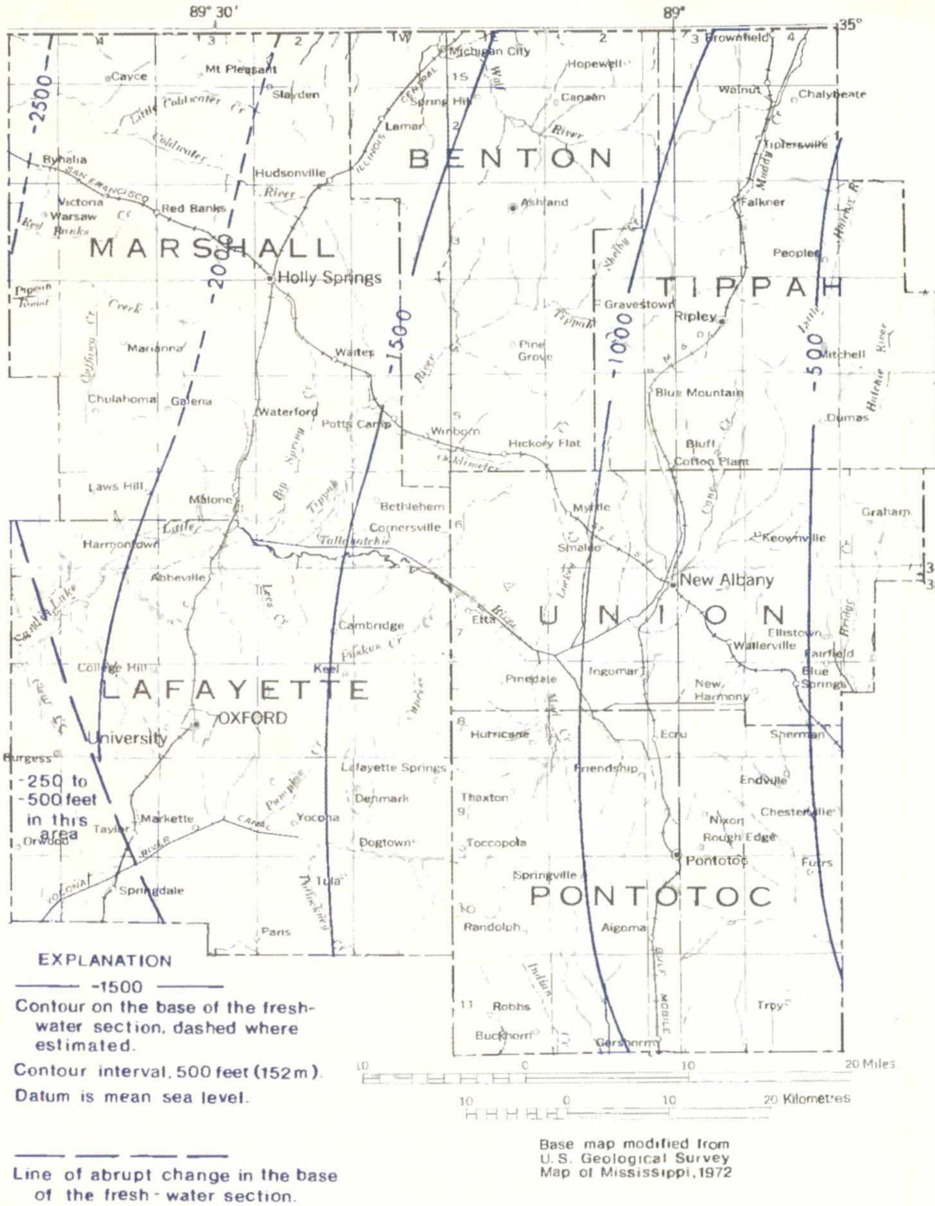


Figure 15.—Configuration of the base of the fresh-water section in post-Paleozoic rocks.

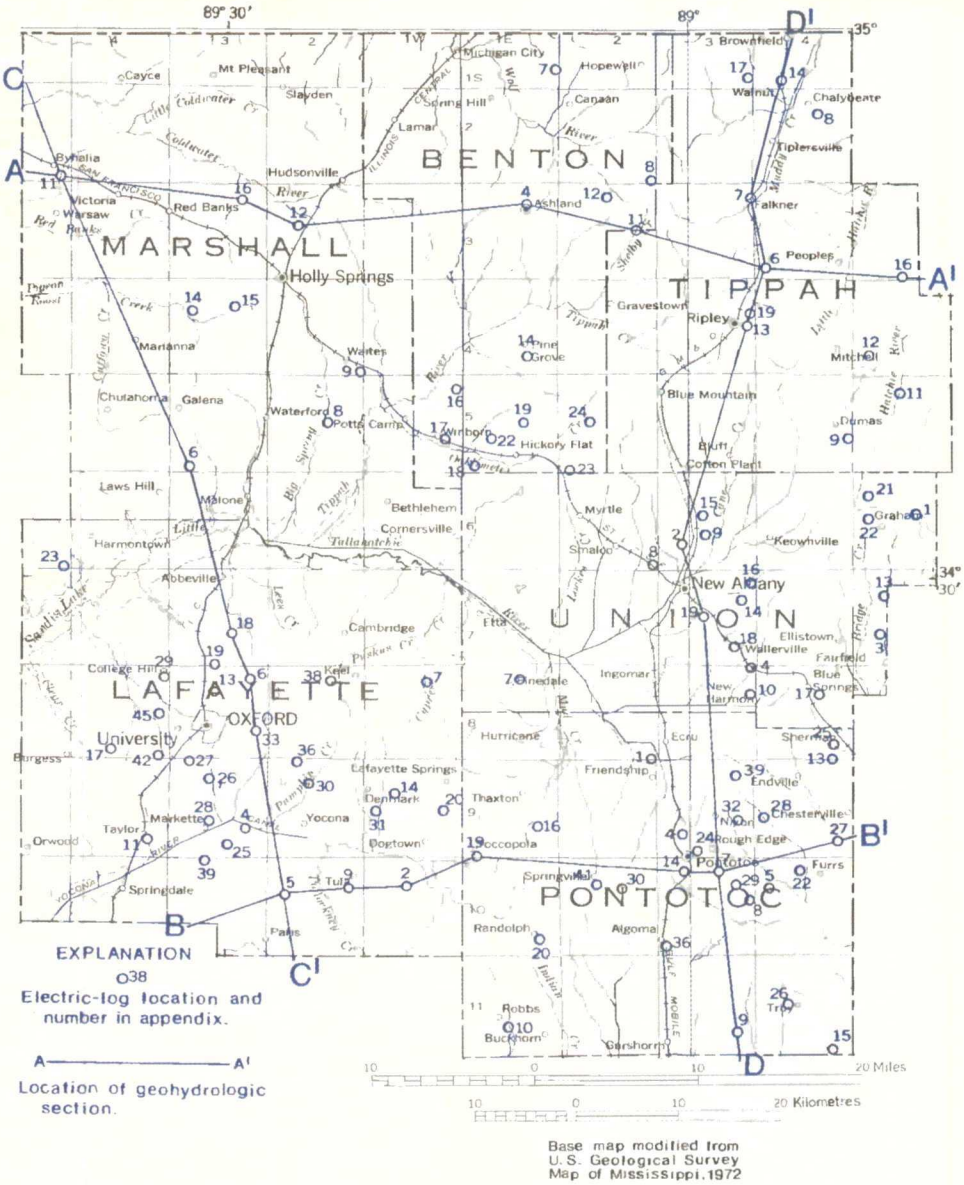


Figure 16.—Locations of electric logs from which sand intervals were determined.

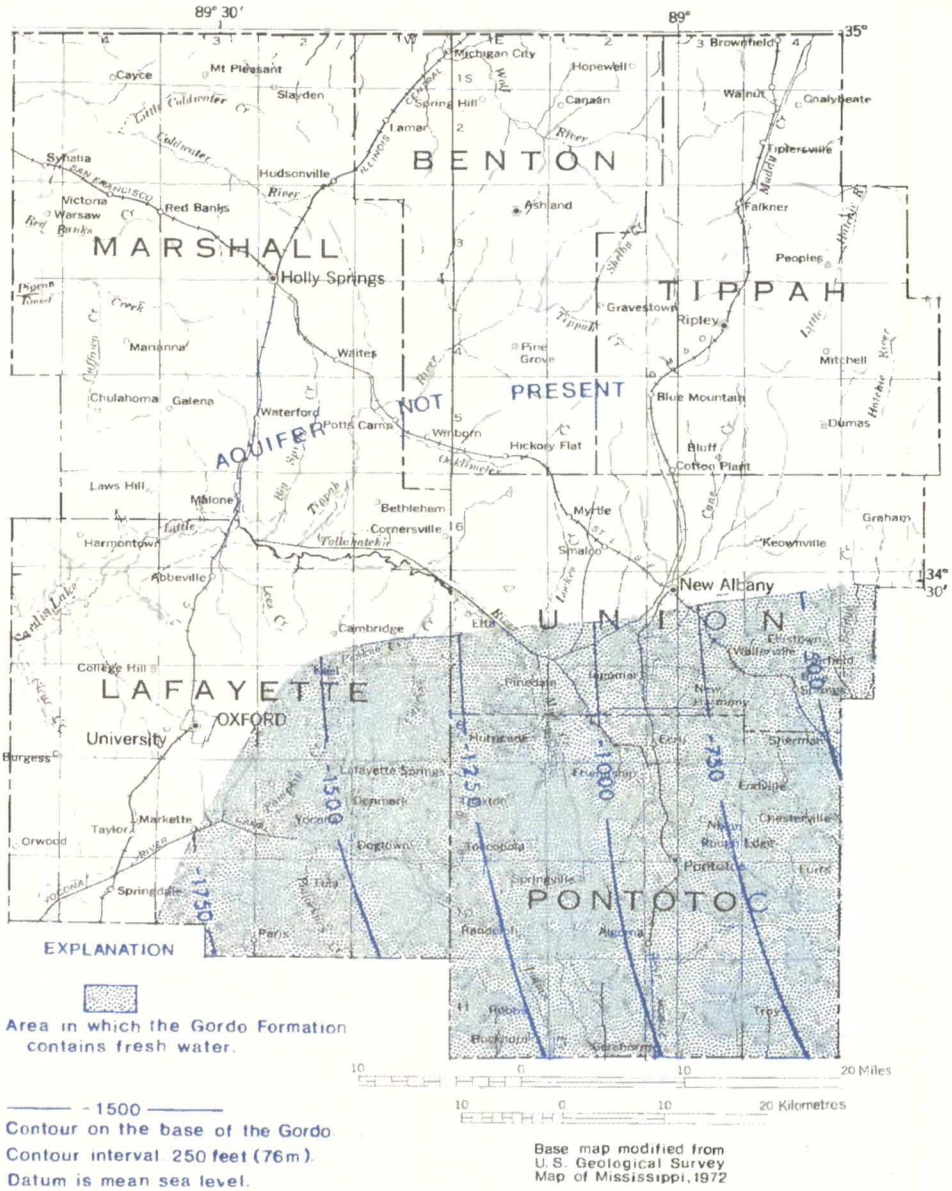


Figure 17.—Fresh-water occurrence in the Gordo Formation.

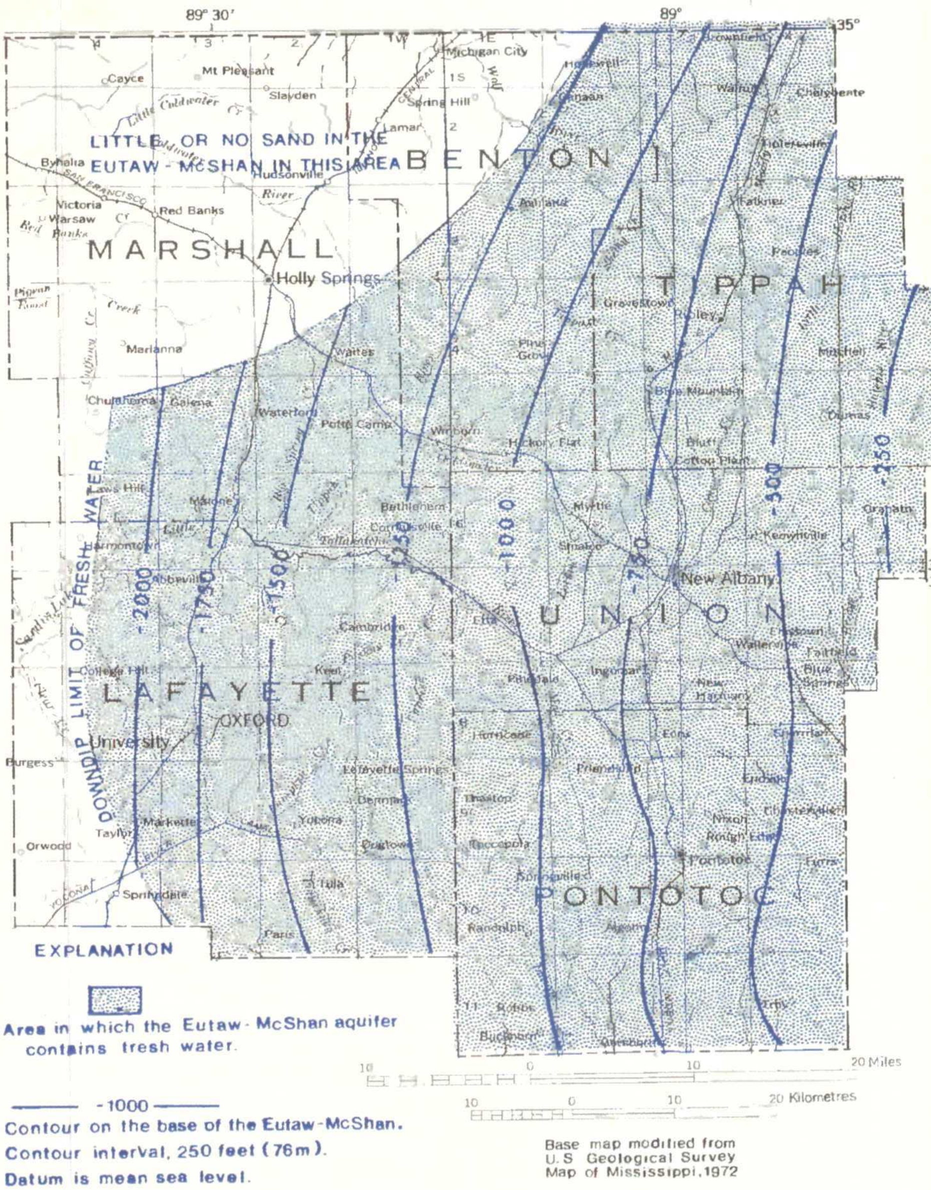


Figure 18.—Fresh-water occurrence in the Eutaw-McShan aquifer system.

Chemical analyses for the Gordo wells in this area indicate that the water may be either a calcium magnesium bicarbonate or a sodium bicarbonate type with a tendency to become a sodium chloride type with depth and with distance from the recharge area. It is soft to moderately hard and, at least in existing wells, dissolved-solids concentrations are less than 500 mg/l. Chloride, often exceeding 100 mg/l, makes up a substantial part of the dissolved solids. At most sites the water is likely to be of similar but slightly better chemical quality than that in the overlying Eutaw-McShan aquifer system. An iron concentration greater than 0.3 mg/l has been recorded only for a well at Pontotoc. Fluoride concentrations are low, except in a well at Toccopola where the fluoride is several times the recommended maximum 1.0 mg/l for drinking water. There is little or no color to the water. The pH is near 8 and silica is less than 15 mg/l.

Inasmuch as wells in the Gordo are among the deepest in the project area, the water they produce is warmer than that from wells in shallower aquifers at the same site. The highest temperature measured in a well discharge was 28°C (Celsius) or 82°F (Fahrenheit); however, this is not representative of temperature at the well intake. The pumping rates of the Gordo wells are not sufficient to bring the water to the surface without substantial loss in temperature caused by its movement through the ever cooler environment of the well casing as it approaches the surface where the average annual temperature is about 17°C (63°F). The intake temperature of the 1,650-foot (503-m) well mentioned above probably was near 35°C (95°F). The meaningful aspect of this discussion is the likelihood that high-capacity deep wells will produce water of higher temperature than that discharged by present wells.

Eutaw and McShan Formations

These two formations are generally considered to compose a hydrologic unit because of their lithologic similarity and, consequently, the difficulty in establishing their contact in the subsurface (Boswell, 1963, p. 48). They are subsequently referred to collectively, in this report, as Eutaw-McShan.

The Eutaw-McShan crops out 20-30 miles (32-48 km) east of the project area and is in the subsurface throughout most of the six-county area; however, it is of significant value as an aquifer only in the eastern part. The base of the unit, which is the base of the McShan in Pontotoc and Union Counties and base of the Eutaw in the other counties, ranges from about 200 to 2,200 feet (60-670 m) below sea level in the area of freshwater occurrence (fig. 18). Thickness of the Eutaw-McShan is 0 to 450 feet (0-140 m); it thins and pinches out to the northwest. Individual sand beds are as thick as 160 feet (50 m) but most are less than 100 feet (30 m). The McShan has a higher proportion of sand than the Eutaw. As in the counties to the south, the Eutaw has a larger number of thin beds of sand.

Water levels in Eutaw McShan wells range from 300 feet (90 m) above sea level in eastern Union County to 165 feet (50 m) in southeastern Pontotoc County. A single well in the unit in southeastern Lafayette County had a water level 216 feet (66 m) above sea level. Most wells in the Eutaw-McShan are near New Albany and Pontotoc, and pumping has, over the years, created drawdown cones in the regional potentiometric surface. Little difference is apparent between water levels in the Eutaw-McShan and the underlying Gordo Formation.

Many of the major wells in Pontotoc and Union Counties produce from the Eutaw-McShan. They discharge 60 to 545 gal/min (3.8-34 l/s) and measured specific capacities are between 2 and 7 gal/min/ft of drawdown (0.41-1.4 l/s/m).

Aquifer transmissivity values of 7,000 to 16,000 gal/d/ft (87-200 $m^3/d/m$) were obtained by four pumping tests. Hydraulic conductivity ranged from 70 to 290 gal/d/ft^2 (2.9-12 m/d). The average hydraulic conductivity indicated by tests of this aquifer system in northeastern Mississippi is about 100 gal/d/ft^2 (4.1 m/d). It is the least permeable of the major aquifers of Mississippi, but where the sand beds are thick and available drawdown is substantial the unit can yield fairly large quantities of water to wells.

Water from the Eutaw-McShan is, on the average, of the same general quality as that in the Gordo. In the downdip areas, such as Lafayette County, the dissolved-solids concentration is greater in the Eutaw-McShan and probably exceeds 500 mg/l in most of that county. Little is known of the water quality of the aquifer system in Tippah County, but based on its quality in Alcorn and Union Counties and in a test well in southeastern Tippah County, it is probably good. A few electric logs in Tippah County indicate sporadic occurrences of sand, and the resistivity curve suggests water of low mineral content. No data are available for Benton County, but the Eutaw-McShan is not likely to be a potential source of industrial water supplies in that county or in Marshall County, because of thinning of the unit to the northwest.

Iron concentrations typically are low, as would be expected with the pH between 7.0 and 8.5. Silica concentrations are 15 mg/l or less and color is low, although a well at Sherman had a color of 30 units. The water is notably harder in Union County than Pototoc, averaging 115 mg/l against 64 mg/l in the analyses available.

Coffee Sand

The Coffee Sand, which crops out in the counties adjacent on the east, underlies nearly the entire project area. In the southern part of Pontotoc and Lafayette Counties the interval is occupied by the Mooreville Chalk, owing to a lateral facies change. Fresh water is available from the Coffee throughout its area of occurrence, except in the western extremity of Lafayette County (fig. 19). The base of the Coffee ranges from sea level to nearly 2,500 feet (750 m) below sea level, making it the deepest fresh-water-bearing unit in the

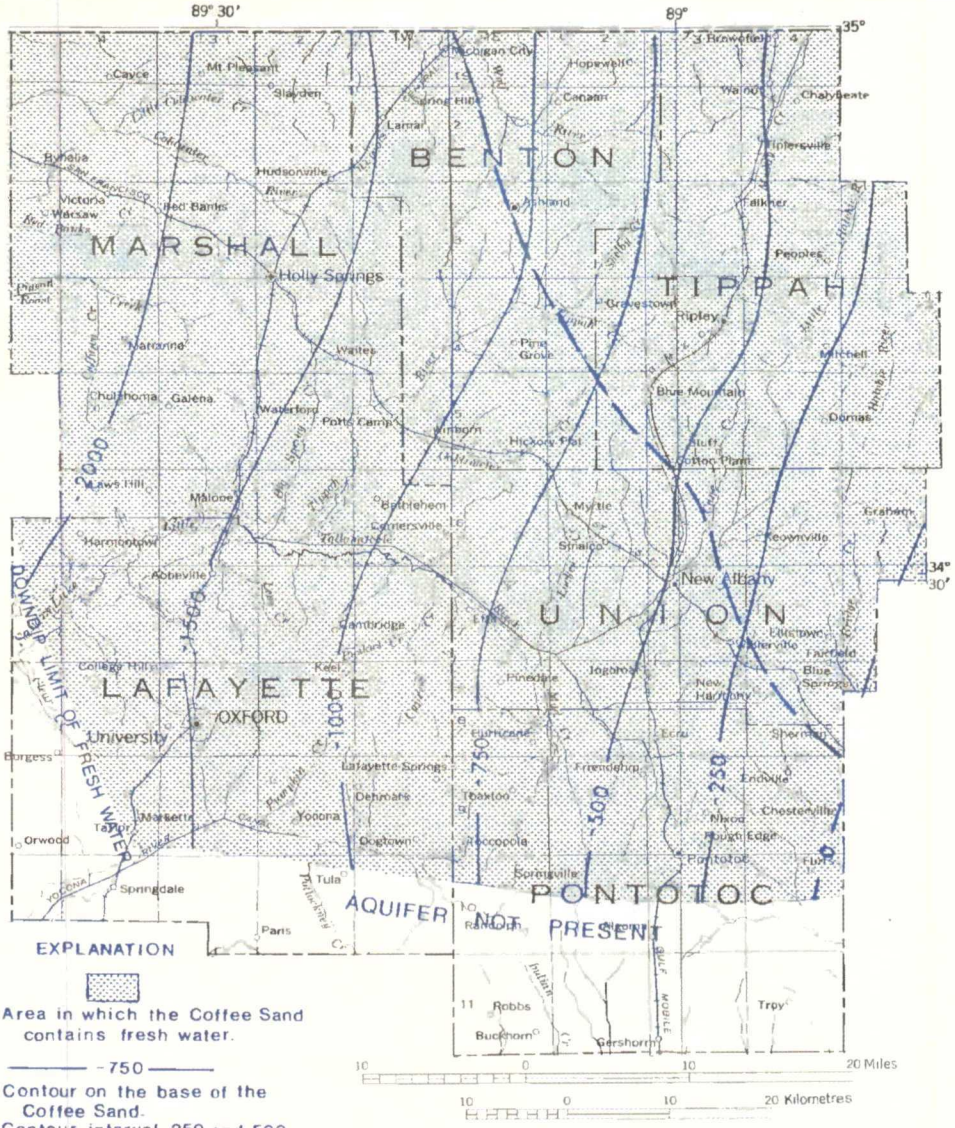


Figure 19.—Fresh-water occurrence in the Coffee Sand.

project area. In thickness the Coffee ranges from 100 feet (30 m) or less in southern Pontotoc County to 300 feet (90 m) or more in Marshall County. Individual sand beds are thinner, on the average, than in the other aquifers of the area. Half of those recorded on electric logs are less than 20 feet (6.1 m) thick and none are more than 100 feet (30 m).

Water levels are available only in Tippah and Union Counties. They range from 400 feet (120 m) above sea level at the east edge of Tippah County to 270 feet (82 m) in south-central Union County. The potentiometric surface probably dips southwestwardly in the area as a whole, but there are insufficient data to verify this. Water levels in wells range from above the land surface to nearly 350 feet (107 m) below land surface, largely as a result of topographic position.

Development of water supplies from the Coffee is almost entirely restricted to Tippah and Union Counties at present, because in the counties to the west better aquifers are found at shallower depths. Even so, more than 500,000 gallons per day (22 l/s) are pumped from Coffee Sand wells, ranking the unit fourth in yield among the six principal aquifers of the area.

The towns of Ripley, Walnut, and Blue Mountain are supplied by Coffee Sand wells, as are several industries and rural water associations. These major wells are pumped at 50 to 560 gal/min (3.2-35 l/s), and measured specific capacities are generally between 1 and 3 gal/min/ft (0.21-0.62 l/s/m).

Three pumping tests made in the project area indicated aquifer transmissivities of 7,000 to 9,000 gal/d/ft (87-110 $m^3/d/m$) for the Coffee. Hydraulic conductivity values obtained were 90 to 150 gal/d/ft^2 (3.7-6.1 m/d). So few pumping tests have been made for this aquifer elsewhere that comparative values for the hydraulic characteristics are difficult to generalize. From the appearance of well cuttings it would be concluded that hydraulic conductivity values obtained here are reasonable for the Coffee in most places.

The water is a calcium magnesium bicarbonate type in Tippah County and a sodium bicarbonate type in Union County. The only existing well outside these counties is in Lafayette County and has water of the same type as in Union County but of considerably higher dissolved-solids concentration because of its position farther downdip. Dissolved-solids concentrations are generally less than 250 mg/l in present wells but would exceed 500 mg/l in the western counties.

Water in the Coffee is much harder in the northeast than elsewhere. Wells in Union County averaged only 30 mg/l hardness in samples analyzed, as opposed to 124 mg/l in Tippah County. The Coffee Sand lies between two chalk units (Demopolis and Mooreville) in the southern part of the project area but is bounded by only one of them (Demopolis) in the north, yet hard water—that would be expected in connection with chalk—is in the north. It could be concluded from this that the source sediments composing the Coffee Sand, as well as the Eutaw-McShan, contained more limy material in the north than in the south.

Silica concentration is less than 15 mg/l, and iron is usually below 0.3 mg/l. Fluoride concentrations are very low in the northeast, but two samples from Lafayette County had 5.0 and 6.5 mg/l. The pH is about 8, and color is not likely to be a problem.

Ripley Formation

The Ripley Formation crops out in the eastern part of Tippah, Union, and Pontotoc Counties and dips northwestwardly. The upper part of the formation contains the best water-bearing sand and is a present or potential source of water supplies in most of the project area. The sand grades to silt and clay in northeastern Lafayettte County, but elsewhere its base ranges from about 600 feet (180 m) above sea level on the east to 1,300 feet (400 m) below sea level in northwestern Marshall County (fig. 20). In many places the sand is more than 50 feet (15 m) thick and in a few places more than 100 feet (30 m). The thick beds have been recorded in all the counties but Lafayette (see appendix). In Tippah and Union Counties the unit is characterized by a large number of thin beds of sand.

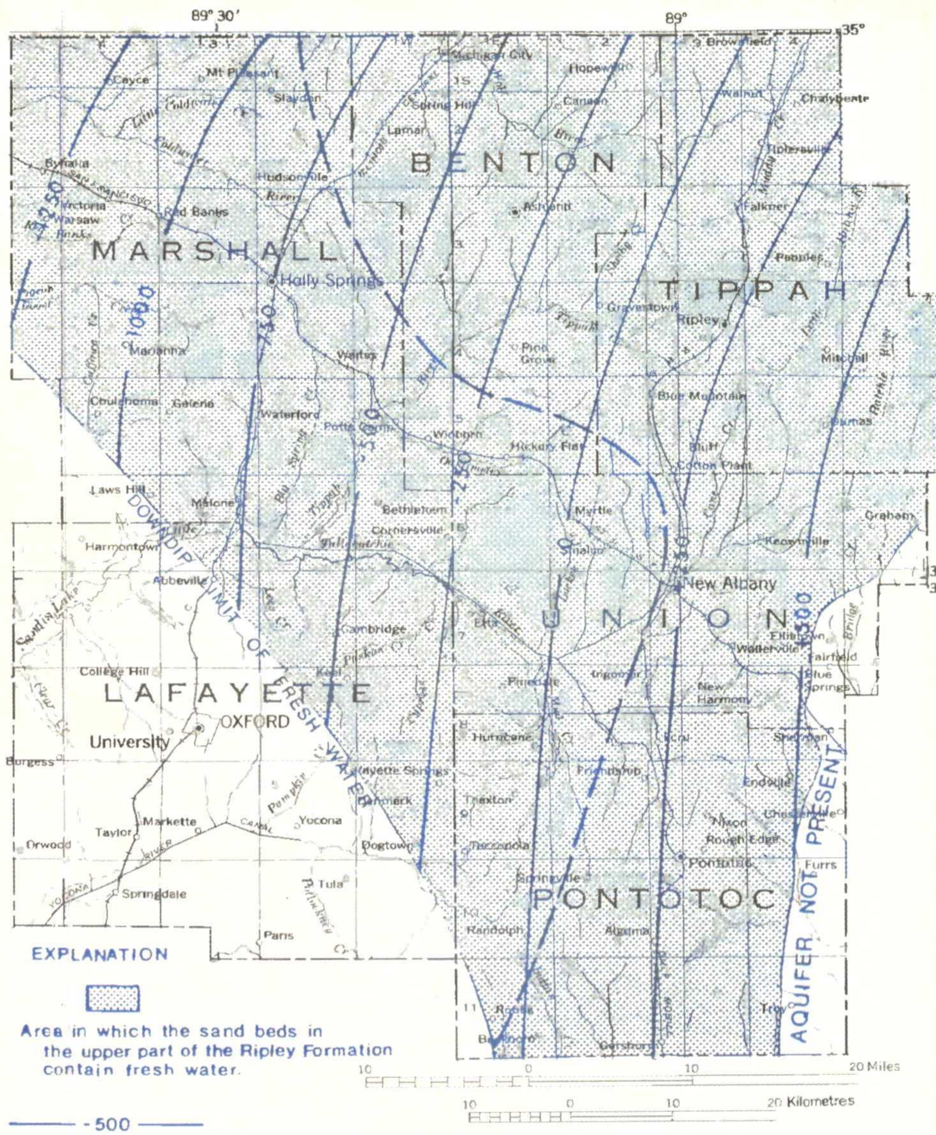
Water levels measured in Ripley wells range from more than 400 feet (120 m) above sea level near the outcrop to about 300 feet (90 m) in Lafayette County. The direction of water movement is unclear from available data but it seems to be generally southwestward. In major wells of the project area, water levels range from 0 to 214 feet (65 m) below the land surface, but most are less than 100 feet (30 m).

The Ripley is the chief source of water supply for the towns of Ashland, Byhalia, Hickory Flat, and Myrtle. Several industries have Ripley wells. About 250,000 gal/d (11 l/s) is pumped from the formation.

Major wells produce 50 to 450 gal/min (3.2-28 l/s), most less than 150 gal/min (9.5 l/s). Measured specific capacities are 1 to 3 gal/min/ft of drawdown (0.21-0.62 l/s/m).

The Ripley is not a highly permeable unit; therefore, a good thickness is necessary to provide a transmissivity comparable to some of the other aquifers. Tests at three sites indicated transmissivities of 2,000 to 6,000 gal/d/ft (25-75 $m^3/d/m$). Hydraulic conductivities were 50-75 gal/d/ft^2 (2.0-3.1 m/d). No other tests of the Ripley have been made in Mississippi.

Water in the Ripley is a hard, calcium magnesium bicarbonate type in the east and a soft, sodium bicarbonate type in the west (fig. 20). Dissolved-solids concentrations were about 200 mg/l in many of the samples analyzed and exceeded 300 mg/l in only a few. Iron exceeded 0.3 mg/l in all samples from Tippah County but in only scattered samples eleswhere. Silica concentrations are usually less than 20 mg/l. Fluoride concentrations of about 1 mg/l are more



EXPLANATION

Area in which the sand beds in the upper part of the Ripley Formation contain fresh water.

——— -500 ———

Contour on the base of upper Ripley sand. Contour interval, 250 feet (76 m). Datum is mean sea level.

— — — —

Western limit of hard water

Base map modified from U.S. Geological Survey Map of Mississippi, 1972

Figure 20.—Fresh-water occurrence in the upper part of the Ripley Formation.

prevalent in Ripley water than in water from the other aquifers, and it exceeded 2 mg/l in two samples. The pH is usually about 8, and there was little or no color in the samples checked.

Lower Wilcox Aquifer

This aquifer, which is composed of the basal sand of the Wilcox Group, is present only in Benton, Lafayette, and Marshall Counties of this study area. The base of the sand dips generally westward in Lafayette County and northwestward in the northern counties. It is 400-500 feet (120-150 m) above sea level on the east and 800 feet (240 m) below sea level in the northwest corner of the area (fig. 21).

In most places the aquifer is less than 50 feet (15 m) thick, but it exceeds 100 feet (30 m) at a few sites. The thickness is extremely variable, even within short distances. In the vicinity of Oxford, for example, it is as thick as 85 feet (26 m) at the University of Mississippi but only 25 feet (7.6 m) or less in most other places. The quality of the sand as an aquifer varies also, and even where good thicknesses occur the silty nature of the material may preclude installation of municipal or industrial wells. Some places where the aquifer is missing or insignificant are Ashland, Byhalia, and an area south of Oxford and west of Yocona. Localities of substantial sand thickness are indicated in the appendix and on figure 21.

Water levels measured in lower Wilcox wells range from 410 feet (125 m) above sea level in central Benton County to 265 feet (80 m) in southwestern Lafayette County. In the Oxford area, where the aquifer is most heavily tapped, the water level is about 325 feet (100 m) above sea level. The direction of water movement is probably westward in general. Water levels in major wells are between 125 and 200 feet (40-60 m) below the land surface.

The only substantial development of water supplies from the lower Wilcox has been in Lafayette County. Several rural water associations and the University of Mississippi are the chief users. Most wells produce 50 to 150 gal/min (3.2-9.5 l/s), but a university well is pumped at 1000 gal/min (63 l/s). Specific capacities measured are 6 and 15 gal/min/ft (1.2-3.1 l/s/m).

A pumping test of the university well indicated an aquifer transmissivity of 30,000 gal/d/ft (370 $m^3/d/m$) and a hydraulic conductivity of 260 $gal/d/ft^2$ (11 m/d). This is about half the average hydraulic conductivity indicated by tests of the lower Wilcox elsewhere in Mississippi.

Water from this aquifer is a soft, sodium bicarbonate type. Chemical analyses are available only for Benton and Lafayette Counties, and in them the dissolved-solids concentration is less than 200 mg/l. Silica concentrations are variable, ranging from less than 5 to 51 mg/l. The water will require treatment for iron removal in some places or for some uses. The pH of the samples tested ranged from about 6 to more than 8. Color was low in all but one sample.

The lower Wilcox is an important aquifer in much of north-central and east-central Mississippi, and locally it is a good source of water supplies in this project area. Its sporadic occurrence and extremely variable thickness limit its value, however, and it is not likely to rank as a major water producer for industries in this area. It may be an outstanding resource in some localities, as at the University of Mississippi, but overdevelopment could occur.

Minor Wilcox Aquifers

Sand beds that occur sporadically between the lower Wilcox aquifer and the Meridian-upper Wilcox aquifer are good sources of water where they have sufficient thickness and areal extent. Unfortunately, these beds are even more unpredictable than the lower Wilcox. They could occur anywhere in the area shown in figure 22, but specific occurrences that have been recorded are given in the appendix.

Most of the sand beds are less than 50 feet (15 m) thick, but several between 50 and 100 feet (15-30 m) and a very few that are thicker than 100 feet (30 m) have been observed. A comparison of figures 21 and 22 shows a similarity in occurrence of thick beds of sand—and thus potential aquifers— in the lower and minor Wilcox. Depositional patterns probably remained fairly stable for long periods in the early part of the Eocene Epoch.

Few major wells presently are producing from the minor Wilcox aquifers in the project area or in the counties adjacent on the south and west. Farther south, however, the aquifers are widely used in Choctaw, Grenada, and Montgomery Counties (Newcome and Bettandorff, 1973). Based on the aquifer thicknesses observed in the current study and assuming modest values for hydraulic conductivity, it should be possible to develop wells producing 500 gal/min (32 l/s) or more in several localities.

Only one chemical analysis is available for a minor Wilcox aquifer in this area. How representative it is cannot be told, but it indicates a water quality that could fit into the type found in the lower Wilcox, and there is no reason to suspect any great difference. The water was soft and of low dissolved-solids concentration.

Meridian-upper Wilcox Aquifer

This aquifer, combining the Meridian Sand Member of the Tallahatta Formation and the uppermost sand bed (where present) of the Wilcox Group, occurs in Benton, Lafayette, and Marshall Counties and is an important source of water supplies in all three. The base of the unit ranges from nearly 600 feet (180 m) above sea level in eastern Benton County to about 300 feet (90 m) below sea level in northwestern Marshall County fig. 23). The dip of the unit is to the west-northwest at about 25 feet per mile (4.8 m/km).

The Meridian-upper Wilcox is the thickest and most productive aquifer in the region. In half the occurrences recorded the thickness is greater

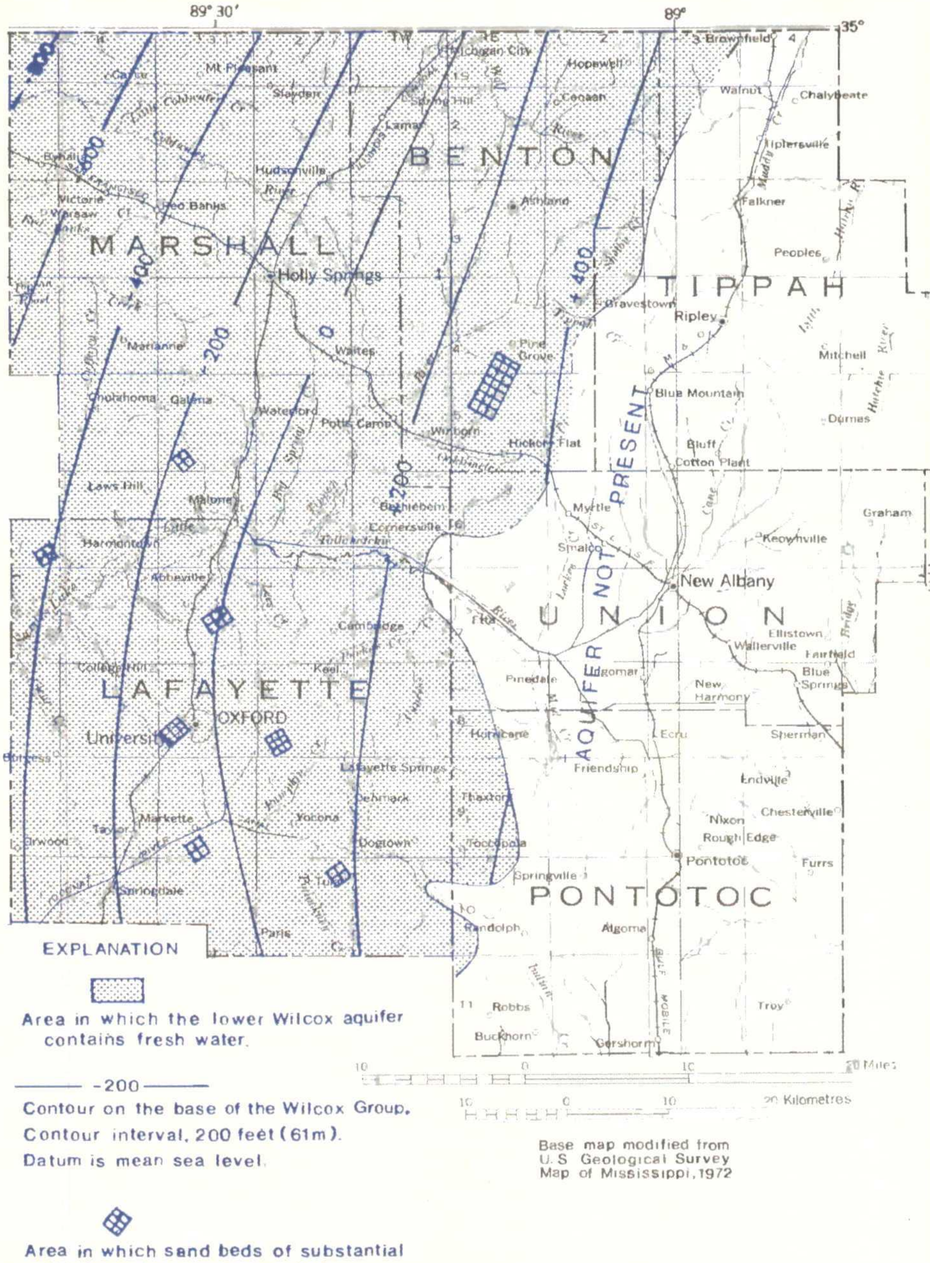


Figure 21.—Fresh-water occurrence in the lower Wilcox aquifer.

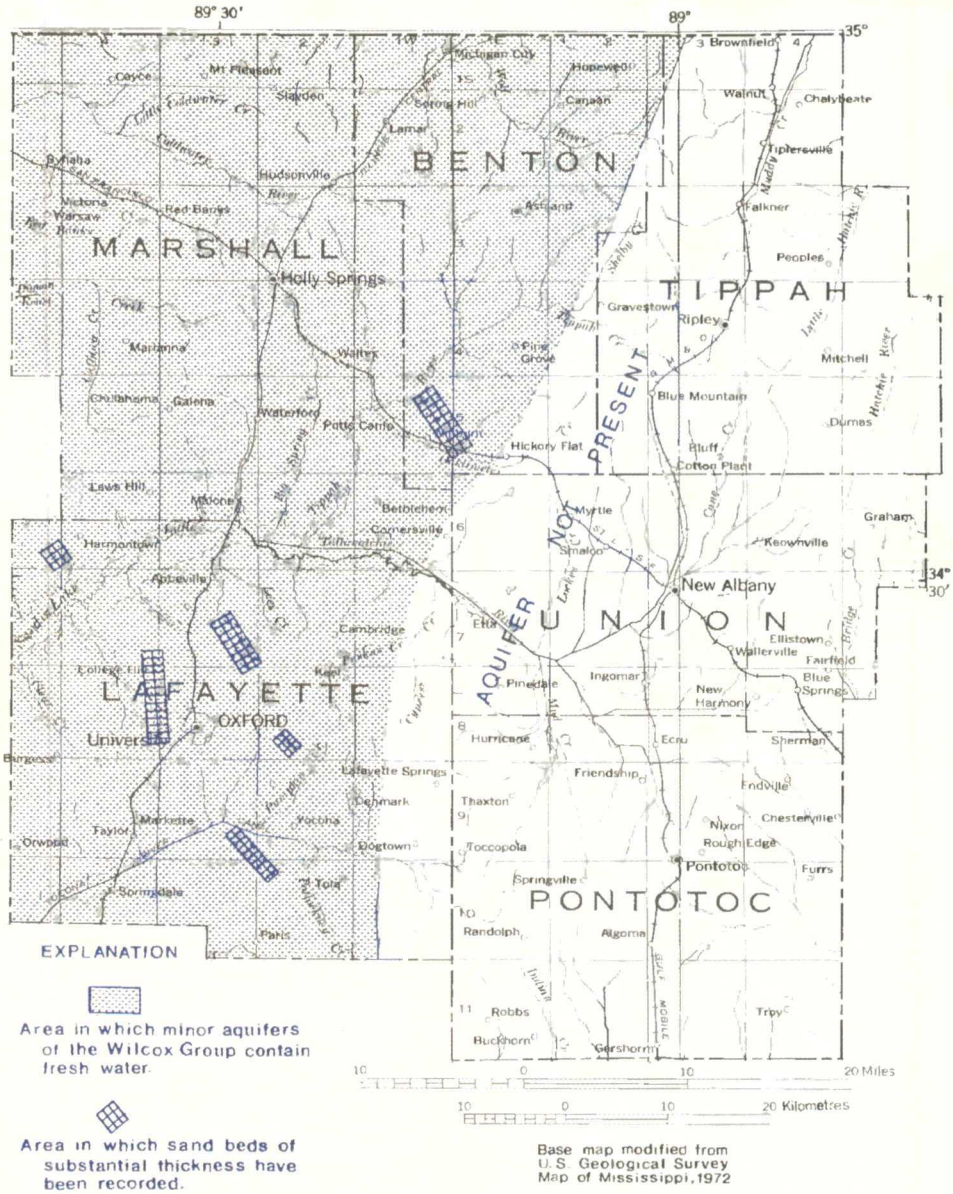


Figure 22.—Fresh-water occurrence in minor aquifers of the Wilcox Group.

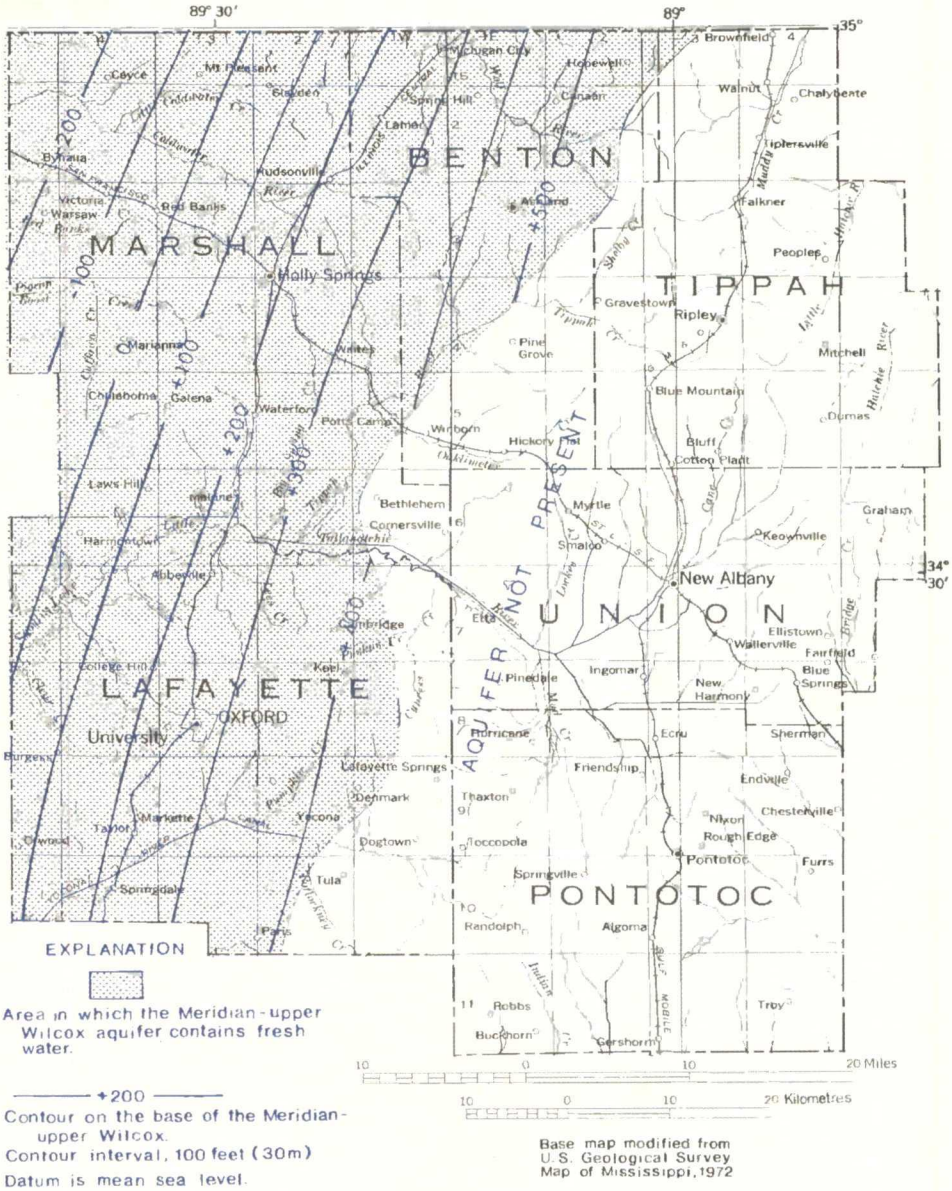


Figure 23.—Fresh-water occurrence in the Meridian-upper Wilcox aquifer.

than 50 feet (15 m) and in a third it is greater than 100 feet (30 m); 1 bed in 10 exceeds 200 feet (60 m).

Measured water levels in wells range from 490 feet (150 m) above sea level at Ashland in Benton County to 300 feet (90 m) in western Lafayette and Marshall Counties. Water-level altitudes are about 425 feet (130 m) at Holly Springs and 360 feet (110 m) at University-Oxford. The water levels in wells are usually between 50 and 200 feet (15-60 m) below the land surface. At Oxford they have declined about 50 feet (15 m) since the 1920's and many pumps now have their intakes within the well screens.

More than 4 Mgal/d (175 l/s) is pumped from this aquifer in the project area. Oxford, Holly Springs, and the University of Mississippi are the largest users, but many rural water associations and industries, especially in Lafayette County, also tap the unit.

The average discharge of major wells is about 260 gal/min (16 l/s), the same as for the Eutaw-McShan aquifer system and the lower Wilcox aquifer. Few of the wells pump more than 500 gal/min (57-63 l/s). Where adequate drawdown is available many of the wells are capable of producing much more than their present pump capacity. Specific capacities of 28 and 56 gal/min/ft of drawdown (6-12 l/s/m) have been measured.

Pumping tests at two sites provided transmissivity values of about 40,000 gal/d/ft (500 $m^3/d/m$) and hydraulic conductivity of 800-1,000 $gal/d/ft^2$ (33-41 m/d). A test of questionable reliability indicated a transmissivity of 170,000 gal/d/ft (2,100 $m^3/d/m$) but the aquifer is thicker and the resulting hydraulic conductivity determination was also 800 $gal/d/ft^2$ (33 m/d). These tests indicate a higher than usual hydraulic conductivity for the Meridian-upper Wilcox; the average elsewhere in Mississippi is about 400 $gal/d/ft^2$ (16 m/d).

The water is soft and low in dissolved-solids concentration. Its type could be described as sodium chloride or calcium bicarbonate, but its dissolved-solids concentration is so low (usually less than 75 mg/l that none of the compounds are present in significant amounts. Silica is less than 20 mg/l, and iron is generally less than 0.1 mg/l. This is the only aquifer described thus far that has a pH below 7, and most supplies require treatment to raise the pH. Color was negligible in the samples analyzed.

This aquifer produces the coolest water of any of the major aquifers of the area, because it is the shallowest. Well-discharge temperatures are between 58° and 64°F (14.5°-17.5°C).

Tallahatta Formation

The part of the Tallahatta Formation above its basal member, the Meridian Sand, is primarily a clayey unit, but it contains some thick beds of sand in northern Marshall County. These sand beds usually are shallow and have water levels well below the top of the bed, thus sharply limiting the available drawdown in wells. Several 50-100 gal/min (3.2-6.3 l/s) wells produce from the Tallahatta, and it is possible that much higher yields could be obtained in localities where the surface formations have not been so deeply incised by erosion as to permanently drain them and leave only their lower parts water bearing.

The water is extremely low in dissolved-solids concentration (less than 50 mg/l, and it is soft. The pH is low, and iron problems may result in water systems unless treatment to raise the pH is applied.

Water Wells

The water wells in the project area are generally drilled by the hydraulic-rotary method. Industrial, municipal-supply, and other large-capacity wells are usually of the telescoped type in which well casing is set to the top of the aquifer and a screen, of smaller diameter, is attached to a lap pipe and inserted through the well casing and set opposite the aquifer. The well casing is cemented in place when it is installed; the lap pipe is sealed to the casing. Many wells are gravel walled. This is done by underreaming the hole below the well casing before setting the screen. After installing the screen, but before the lap pipe is sealed to the casing, sorted gravel is introduced into the reamed area to form a highly permeable zone around the screen.

Major wells range in depth from 91 to 1,692 feet (28-516 m) and tap all the fresh-water formations older than the Sparta Sand. Pontotoc County wells average the deepest and Lafayette County wells the shallowest, although the two deepest wells are in Lafayette County. The major wells are described in table 11 and their locations are shown on figure 24.

When all wells for which records are available are considered—not just the major wells—the depth distribution is that given in table 12. Here it is readily seen that in the three eastern counties wells generally have to be deeper to get a satisfactory water supply; more than half of them are deeper than 200 feet (61 m). Less than one-third of the wells in the western counties are deeper than 200 feet (61 m).

Many of the major wells and some of the small wells have been electrically logged, and these logs provide information on aquifer thickness and character that is an invaluable aid in selecting intervals to be screened. Most of the available water-well and oil-test logs are described in the appendix and their locations are shown on figure 16.

Water Levels and Trends

The water levels in wells are of vital interest to the well designer, for the water level determines how much drawdown is available for any selected pump setting. Since a well can produce water at a specific rate for each foot of drawdown (specific

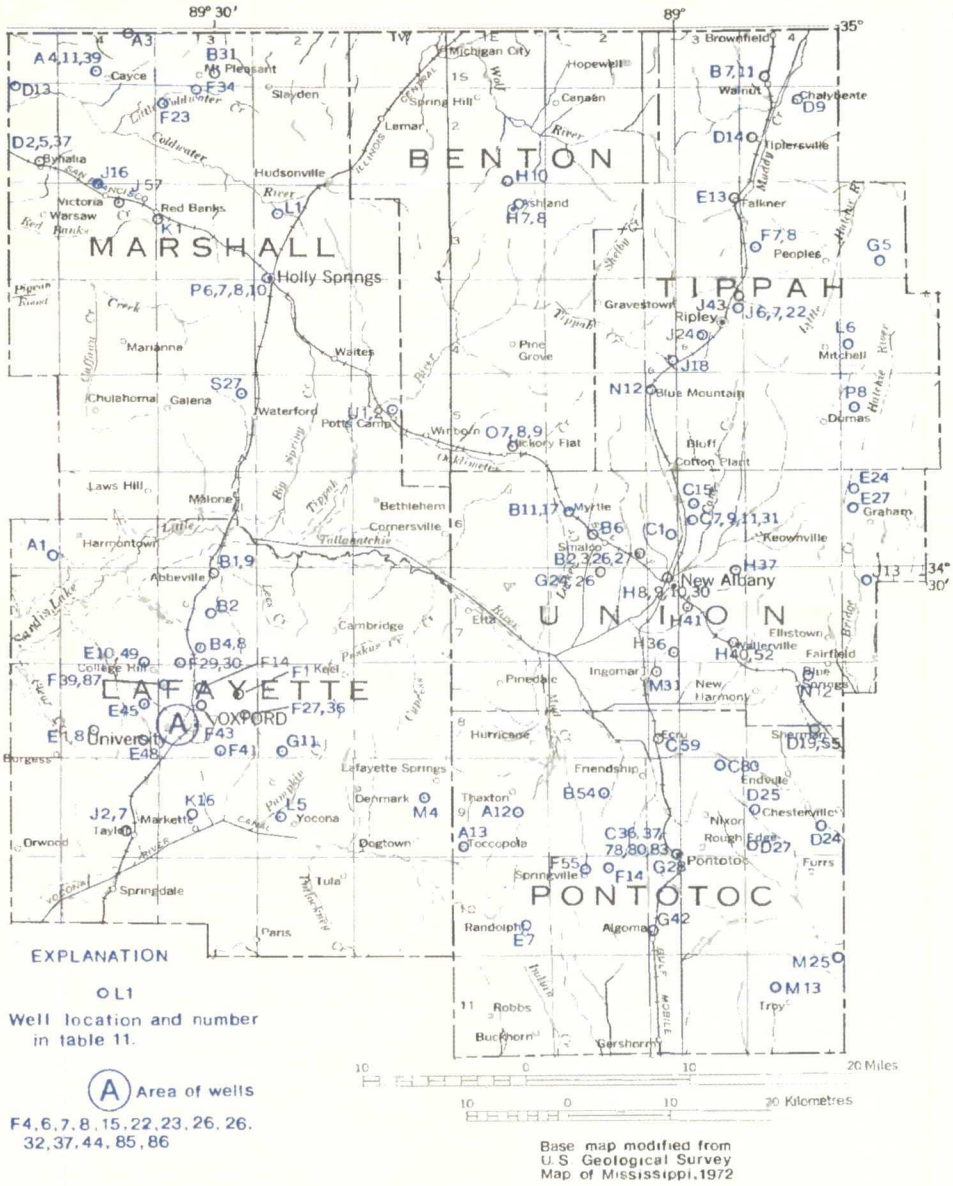


Figure 24.—Major wells in the six-county project area.

Table 11.--Major water wells

EXPLANATION OF SYMBOLS: AQUIFER--G, GORDO; E, EUTAW-MCSHAN; CS, COFFEE SAND; R, RIPLEY; LW, LOWER WILCOX; W, MINOR WILCOX AQUIFERS; MW, MERIDIAN-UPPER WILCOX; T, TALLAHATTA. USE--H, DOMESTIC; I, IRRIGATION; N, INDUSTRIAL; P, PUBLIC SUPPLY; S, STOCK; T, INSTITUTIONAL.

WELL NO.	OWNER WA - WATER ASSOCIATION	DATE	ALT FT	DEPTH FT	DIAM IN	SCREEN LENGTH FT	WATER LEVEL FT	WATER LEVEL DATE	PUMPING RATE GAL/MIN	AQUIFER	USE
BENTON COUNTY											
H7	ASHLAND	1948	640	173	6	22	150	9-57	75	MW	P
H8	ASHLAND	1955	640	190	6	20	150	9-57	75	MW	P
H10	ASHLAND	1968	613	920	10	84	214	5-68	300	R	P
07	JAMES TAYLOR	1939	410	599	4	--	30	6-59	85	R	H
08	HICKORY FLAT	1951	445	615	4	--	25	8-73	150	R	P
09	HICKORY FLAT	1954	405	612	5	--	60	11-72	180	R	P
LAFAYETTE COUNTY											
A1	HARMONTOWN W A	1969	420	366	6	30	140	3-69	250	MW	P
B1	ABBEVILLE W A	1963	420	520	8	50	155	2-63	150	LW	P
B2	HURRICANE W A	1967	520	411	6	42	177	6-72	75	MW	P
B4	U S PLYWOOD CO	1968	430	943	12	40	189	3-68	350	MW	N
B8	U S PLYWOOD CO	1970	430	218	16	50	83	3-70	300	MW	N
B3	ABBEVILLE W A	1967	420	508	8	50	157	3-67	100	LW	P
E1	WESTOVER W A	1967	440	226	6	30	130	10-71	100	MW	P
E8	WESTOVER W A	1970	440	221	6	30	140	70	105	MW	P
E10	COLLEGE HILL W A	1964	417	192	6	40	103	10-71	110	MW	P
E45	WESTERN HILLS	1972	360	220	6	30	90	5-72	50	W	P
E48	THACKER SUBDIV	1973	485	239	10	30	145	3-73	120	MW	P
E49	COLLEGE HILL W A	1973	420	185	6	50	112	7-73	108	MW	P
E1	CAMPGROUND W A	1966	560	190	8	15	146	11-66	100	MW	P
E4	UNIV OF MISS	1948	460	126	16	15	89	4-63	500	MW	T
E6	UNIV OF MISS	1950	400	194	16	30	138	57	500	MW	T
E7	OXFORD	1935	400	132	18	25	85	9-40	300	MW	P
E8	OXFORD	1930	400	120	18	20	85	3-36	410	MW	P
E14	DOGLEYVILLE W A	1965	520	220	6	30	155	7-65	100	MW	P
E15	UNIV OF MISS	1962	400	168	8	31	--	--	60	MW	T
E22	OXFORD	1966	400	98	12	25	--	--	500	MW	P
E23	OXFORD	1966	380	96	12	25	--	--	600	MW	P
E26	OXFORD	1970	400	197	20	25	119	4-70	500	MW	P
E27	BRENT NICHOLS	1971	500	480	4	30	130	4-71	70	LW	H
E28	OXFORD	1969	400	126	20	25	82	7-69	500	MW	P
E29	EMERSON ELEC CO	1970	420	232	6	32	151	8-70	100	MW	N
E30	EMERSON ELEC CO	1970	420	242	6	32	149	8-70	100	MW	N
E32	SCS SED LAB	1960	370	104	16	20	32	10-70	300	MW	H
E36	REHEL DEVELOP	1971	500	420	4	30	220	4-71	60	LW	P
E37	UNIV OF MISS	1963	380	153	10	40	70	12-63	120	MW	I
E39	ABE INC	1962	420	152	4	10	80	7-62	50	MW	P
E41	EAST OXFORD W A	1963	570	596	8	28	175	11-63	170	LW	P
E43	AVENTS DAIRY	1963	560	200	6	--	--	--	100	MW	N
E44	UNIV OF MISS	1971	490	530	20	70	167	10-71	1000	LW	T
E85	UNIV OF MISS	1963	548	236	16	40	192	11-63	500	MW	T
E86	UNIV OF MISS	1969	522	230	16	40	168	6-69	500	MW	T
E87	LAKEWAY GARDENS	1973	400	192	8	30	88	12-73	110	MW	P
G11	PUMPKIN W A	1972	540	420	8	30	190	11-72	160	LW	P
G14	TRACY LUSK	1972	440	360	4	50	127	10-72	50	LW	H
J2	TAYLOR	1964	520	91	8	33	5	3-64	122	MW	P
J7	TAYLOR SCHOOL	1969	450	294	6	20	150	1-69	50	MW	T
K16	COUNTRYSIDE EST	1973	325	595	4	95	57	1-73	65	LW	P
L5	YOCONA W A	1971	330	1692	6	30	114	7-71	130	E	P
M1	LAFAYETTE SPGS	1968	430	1646	8	30	215	10-70	178	G	P

Table 11.--Continued

WELL NO.	OWNER WA - WATER ASSOCIATION	DATE	ALT FT	DEPTH FT	DIAM IN	SCREEN LENGTH FT	WATER LEVEL FT	WATER LEVEL DATE	PUMPING RATE GAL/MIN	AQUIFER	USE
MARSHALL COUNTY											
A3	TWIN HILLS FARM	1952	470	254	12	30	154	5-62	1000	MW	I
A4	SIDNEY HURDLE	1968	420	170	---	24	106	7-68	80	T	P
A11	J F HILLARD	1970	390	176	4	20	80	9-70	70	T	H
A39	J F HILLARD	1972	390	164	4	20	68	9-72	60	T	H
B31	SANDFLAT SCHOOL	1971	440	165	4	16	100	9-71	80	T	H
D2	BYHALIA	1966	360	397	8	33	79	10-66	120	MW	P
D5	BYHALIA	1969	360	1020	10	70	0	11-72	450	R	P
D13	JOHN KENNEDY	1969	350	155	4	15	78	10-69	110	T	H
D37	BYHALIA	1964	360	350	8	33	60	2-64	108	MW	P
F23	E D WEST & SON	1971	400	127	4	12	68	5-71	60	T	S
F34	PHILLIP KARR	1967	400	160	4	12	80	5-67	50	T	H
J16	ROGER WOODS	1969	440	160	4	20	100	2-69	100	T	H
J57	H HURDLE	1971	440	290	4	24	132	6-71	70	MW	P
K1	RED BANKS W A	1965	500	347	6	30	140	65	80	MW	P
L1	EXPER STATION	1968	480	245	---	15	65	12-68	100	MW	H
P6	HOLLY SPRINGS	1929	590	349	18	40	171	11-72	450	MW	P
P7	HOLLY SPRINGS	1938	580	360	18	41	188	11-72	450	MW	P
P8	HOLLY SPRINGS	1954	580	338	24	40	157	11-72	400	MW	P
P10	HOLLY SPRINGS	1968	570	368	18	50	161	11-72	900	MW	P
S27	WALL DOXEY PARK	1959	380	280	4	---	65	11-59	50	W	P
U1	POTTS CAMP	1941	335	729	10	123	+ 1	11-72	200	R	P
U2	MEMPHIS FLOORING	1930	335	735	4	---	+ 18	46	86	R	N
PONTOTOC COUNTY											
A12	W S GOOCH	1965	424	420	6	20	97	7-65	70	R	H
A15	TOCCOPOLA W A	1964	400	1575	10	50	190	9-72	150	G	P
B54	O W TALLANT	1970	400	325	6	85	60	8-70	60	R	S
C36	PONTOTOC	1968	480	1260	12	80	293	1-68	500	G,E	P
C37	PONTOTOC	1966	460	1192	12	80	170	10-66	533	G,E	P
C59	ECRU	1966	400	1172	10	60	178	9-72	180	E	P
C78	PONTOTOC	1972	460	1201	12	84	264	9-72	500	G,E	P
C80	OAK HILL W A	1972	570	1142	8	90	356	3-73	200	E	P
C83	PONTOTOC	1974	460	1206	12	75	274	3-74	500	G	P
D14	SHERMAN	1968	390	847	10	70	155	1-67	200	E	P
D24	E PONTOTOC W A	1969	400	847	8	80	203	3-69	200	E	P
D25	E PONTOTOC W A	1969	501	1080	8	80	301	3-69	200	E	P
D27	PONTOTOC C C	1969	375	980	6	180	195	4-69	100	E	I
D55	SHERMAN	1974	355	775	---	80	166	2-74	300	E	P
E7	RANDOLPH W A	1966	530	1565	8	60	310	11-66	100	G	P
F14	PONTOTOC CO SCH	1971	400	208	10	40	60	6-71	150	R	T
F55	ALGOMA W A	1974	490	1583	8	80	285	3-74	250	E	P
G28	PONTOTOC	1961	465	1239	10	75	240	3-61	500	G	P
G42	ALGOMA W A	1971	420	1064	8	80	221	11-71	175	E	P
M13	TROY W A	1968	490	1160	8	70	293	3-68	120	G	P
M25	MIKE MASK	1972	380	788	5	50	215	10-72	60	E	H

Table 11.--Continued

WELL NO.	OWNER WA - WATER ASSOCIATION	DATE	ALT FT	DEPTH FT	DIAM IN	SCREEN LENGTH FT	WATER LEVEL FT	WATER LEVEL DATE	PUMPING RATE GAL/MIN	AQUIFER	USE
TIPPAH COUNTY											
B7	WALNUT	1956	470	147	10	--	57	56	120	R	P
B11	WALNUT	1970	530	961	10	60	185	6-70	300	CS	P
D9	CHALYBEATE W A	1966	540	855	8	30	180	10-66	100	CS	P
D14	TIPLERSVILLE W A	1965	430	190	10	60	63	9-65	125	R	P
E13	FALKNER W A	1968	465	914	8	67	128	9-68	150	CS	P
F7	RIPLEY	1960	500	889	16	80	162	12-62	500	CS	N
F8	RIPLEY	1960	500	950	16	80	162	12-62	560	CS	N
G5	SPOUT SPRINGS W A	1972	670	685	8	50	270	7-72	100	CS	P
J6	RIPLEY	1946	510	970	12	60	175	9-50	250	CS	P
J7	RIPLEY	1950	510	996	12	80	175	50	400	CS	P
J18	WYANDOTTE CHEM	1955	460	246	6	70	F	10-56	90	E	N
J22	RIPLEY	1970	490	921	12	100	199	10-70	300	CS	P
J24	TIPPAH CONCRETE	1968	460	160	5	30	2	12-68	50	E	N
J43	OIL-GRI PROD CO	1972	540	265	12	50	80	12-72	300	R	N
L6	MITCHELL W A	1968	629	785	8	60	285	1-69	100	CS	P
N12	BLUE MOUNTAIN	1961	460	880	10	40	140	8-73	85	CS	P
P8	DUMAS-PINE GROVE	1968	680	770	8	110	344	8-68	150	CS	P
UNION COUNTY											
B2	STRATFORD FURN	1956	370	326	--	--	--	--	100	R	N
B3	STRATFORD FURN	1959	360	855	14	50	80	5-59	250	CS	N
B6	FURNITURE FRAME	1955	385	500	6	--	25	55	100	P	N
B11	MYRTLE BAPTIST	1955	400	460	6	--	--	--	150	R	P
B17	MYRTLE	1969	430	431	8	50	134	4-73	150	R	P
B26	LANIER CORP	1966	360	346	10	15	81	5-66	100	R	N
B27	LANIER CORP	1960	360	340	10	10	81	9-60	100	R	N
C1	TENN GAS PIPE	1956	405	781	12	--	90	56	290	CS	N
C7	NAT METAL CORP	1958	366	635	8	15	--	--	50	CS	N
C9	COASTAL CHEM	1958	360	612	10	30	+ 24	3-58	100	CS	N
C11	MASTERBILT MFG	1961	380	990	8	62	105	8-61	210	E	N
C15	NORTH HAVEN W A	1969	460	856	8	80	178	6-69	150	CS	P
C31	ERTEL MFG CO	1968	380	689	6	--	10	3-68	100	CS	N
E24	KEOWNVILLE W A	1973	670	818	10	55	325	9-73	130	CS	P
E27	KEOWNVILLE W A	1973	660	780	10	50	327	9-73	150	CS	P
G24	NEW ALBANY C C	1970	380	310	8	40	135	7-70	51	R	I
G26	NEW ALBANY C C	1970	360	270	8	40	76	7-70	54	R	I
H8	NEW ALBANY	1936	360	1030	18	105	123	9-73	296	E	P
H9	NEW ALBANY	1953	430	1077	16	80	200	9-73	444	E	P
H10	MODERN LAUNDRY	1955	445	1186	6	--	130	55	75	E	P
H30	NEW ALBANY	1966	380	1095	16	100	165	9-73	545	E	P
H36	OAKS C C	1969	420	160	6	30	75	4-69	60	R	I
H37	E NEW ALBANY W A	1969	535	1070	8	80	285	8-69	195	E	P
H40	WALLERVILLE W A	1970	540	1177	10	30	309	11-72	250	G	P
H41	DENTON MILLS	1971	380	1023	10	105	140	8-71	250	E	N
H52	WALLERVILLE W A	1972	530	1147	10	85	289	11-72	250	E,G	P
J13	ALPINE W A	1968	430	720	8	60	130	2-73	150	E	P
M31	INGOMAR W A	1973	410	1180	10	60	184	8-73	221	G	P
N17	BLUE SPRINGS	1969	460	517	8	46	197	9-72	130	CS	P

Table 12.—Distribution of well depths

County \ Depth (ft)	Less than 101	101-200	201-300	301-500	501-700	701-1000	1001-1500	More than 1500	Number of wells
	Percent								
Benton	22	50	10	6	9	3	0	0	370
Lafayette	18	50	16	9	3	2	1	1	301
Marshall	10	69	13	2	2	4	0	0	715
Pontotoc	5	29	23	19	8	13	3	0	484
Tippah	6	38	27	22	2	4	1	0	337
Union	3	22	21	33	15	4	2	0	413

Table 13.—Distribution of water levels in wells

County \ Depth (ft)	Flowing	0-20	21-50	51-100	101-150	151-200	201-300	More than 300	Number of wells
	Percent								
Benton	3	7	14	43	25	6	1	1	334
Lafayette	Less than 1	6	14	37	32	8	2	< 1	280
Marshall	2	2	11	46	27	11	1	0	685
Pontotoc	1	4	17	45	15	11	6	1	351
Tippah	4	6	19	44	16	9	1	1	299
Union	2	12	31	31	12	9	2	1	349

capacity), it follows that a high-yield well must have either a large specific capacity or a large amount of available drawdown, or both.

Pumping water from great depths is costly and energy consuming, and it is therefore desirable to have shallow water levels in wells. Long-term pumping or pumping at high rates can lower water levels many feet. The rate of lowering depends chiefly on the amount of water withdrawn during a given period of time and the hydraulic characteristics of the aquifer.

An examination of all water levels on record for wells in the six counties (table 13) shows a large percentage between 50 and 100 feet (15-30 m) and only a small percentage deeper than 150 feet (46 m). Pontotoc County, which has the most deep wells, also has the deepest water levels.

Water-level trends are available for a few observation wells (fig. 25). These trends should be considered representative of the respective aquifers only in the immediate area of the observation wells, although they may have much wider application. The recent rise in water level in the two wells near Oxford probably is a result of redistribution and reduction of pumpage from the Meridian-upper Wilcox aquifer. Longer periods of water-level monitoring in adjacent areas show a general declining trend—on the order of 0.5-1.0 foot (0.15-0.3 m) per year over the past 30 years.

Pumping Effects

At first consideration, pumping effects are seen as undesirable because they are represented by lowered water levels and sometimes by encroachment of water of inferior quality. What is not seen is that creation of a cone of influence around a pumping center serves to induce into the area some of the water that would otherwise flow past it. Also, the water captured by the spreading cone is likely to be as good as that from the local source, since the greater part of it will come from updip areas.

Pumping effects are observed in two ways: (1) by the drawdown in a well that is pumped and (2) by the lowered water level in the aquifer some distance from the pumping well. In the first instance the drawdown is a function of the quantity withdrawn, the aquifer's hydraulic characteristics, and the well's efficiency.[1] In the other, well efficiency in not a parameter.

To obtain an estimate of the amount of drawdown to be expected in wells tapping the aquifers described in this report, refer to figure 26. Where a well has an efficiency less than 100 percent, the drawdown will be increased proportionately. The graph is useful in predicting the drawdown and, consequently, the specific capacity that might be expected in wells tapping aquifers of known or estimated transmissivity.

[1] A well is efficient when the water level while pumping is not much below the water level or potentiometric surface outside the well. Few wells are fully—or 100-percent—efficient, but many approach that efficiency.

To predict the effect that withdrawals have on other wells, the graph of figure 27 may be used. If the transmissivity of an aquifer is known or can be estimated, the graph may be used to show drawdown effects at various combinations of time and distance. This aids in selecting well spacing and withdrawal rates.

Long-term pumping from an aquifer lowers the regional level for that aquifer, the amount of lowering at a specific site being dependent in large part on the degree of concentration of withdrawals. Distributing wells over a large area will minimize the drawdown at any one point. If withdrawals can be distributed among two or more aquifers, interference is further minimized. There are many places in the project area where this can be done. Caution must be exercised, of course, in regard to water-quality consideration. Treatment plants designed for water of a certain quality may not operate efficiently if the quality fluctuates as a result of mixing water from different sources.

Chemical Quality and Temperature

The quality of the water obtained from the various aquifers in the six counties of this project area varies considerably among the aquifers and to a lesser extent from place to place in the same aquifer. In general it may be said that the Cretaceous aquifers have the hardest water and the greatest dissolved-solids concentrations. They also have the least corrosive water. Excessive fluoride is found only in water from the Cretaceous aquifers, but it is sporadic in its occurrence. Nearly all the aquifers have high concentrations of iron in some places, but none is consistently high. Silica varies little among the aquifers and is almost always less than 20 mg/l in concentration. The Gordo and Eutaw-McShan aquifers have much higher chloride concentrations than the other aquifers, but the concentrations are well below 200 mg/l. Color is usually low in all the aquifers.

Table 14 contains chemical analyses for the aquifers of the six counties, and the locations of the wells sampled are shown on figure 28. Many of the analyses are for the major wells listed in table 11; others are for domestic wells that represent aquifers having a potential for industrial and municipal water supply.

An overview of the ground-water quality is given in table 15, which summarizes the comparative factors commonly of interest in industrial water supplies.

Well-discharge temperature in the six counties indicate a geothermal gradient of 1°C per 136 feet (41 m), or 1°F per 76 feet (23 m), of increase in depth (fig. 29). The temperature in near-surface aquifers is about 17°C (63°F), the same as the average annual air temperature. The geothermal gradient may be nearer that found in the counties immediately to the south (1°C per 110 feet) than indicated above, because it is difficult to obtain reliable aquifer temperatures by measuring well discharges. Unless a deep well

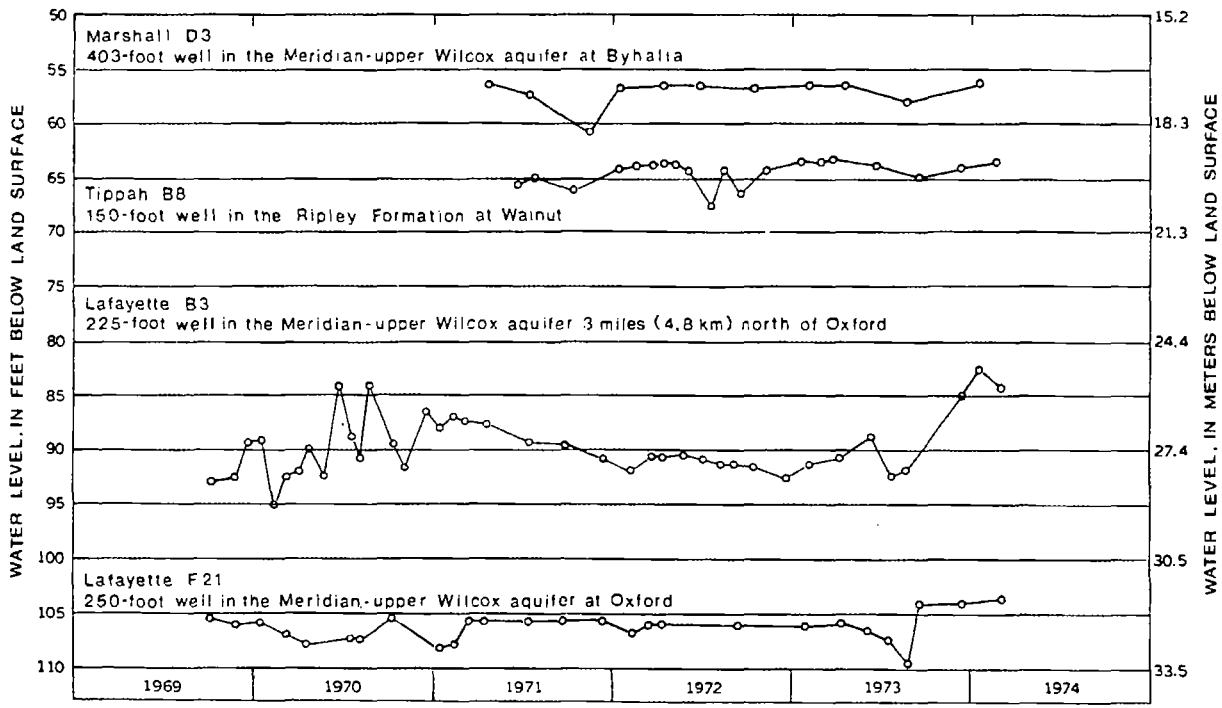


Figure 25.—Water-level trends in observation wells.

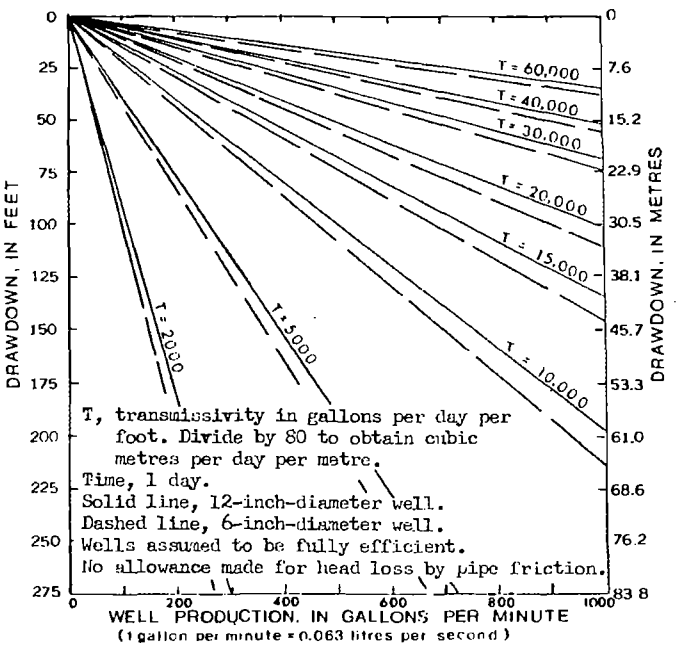


Figure 26.—Drawdown to be expected in pumped wells tapping the artesian aquifers of the six-county area.

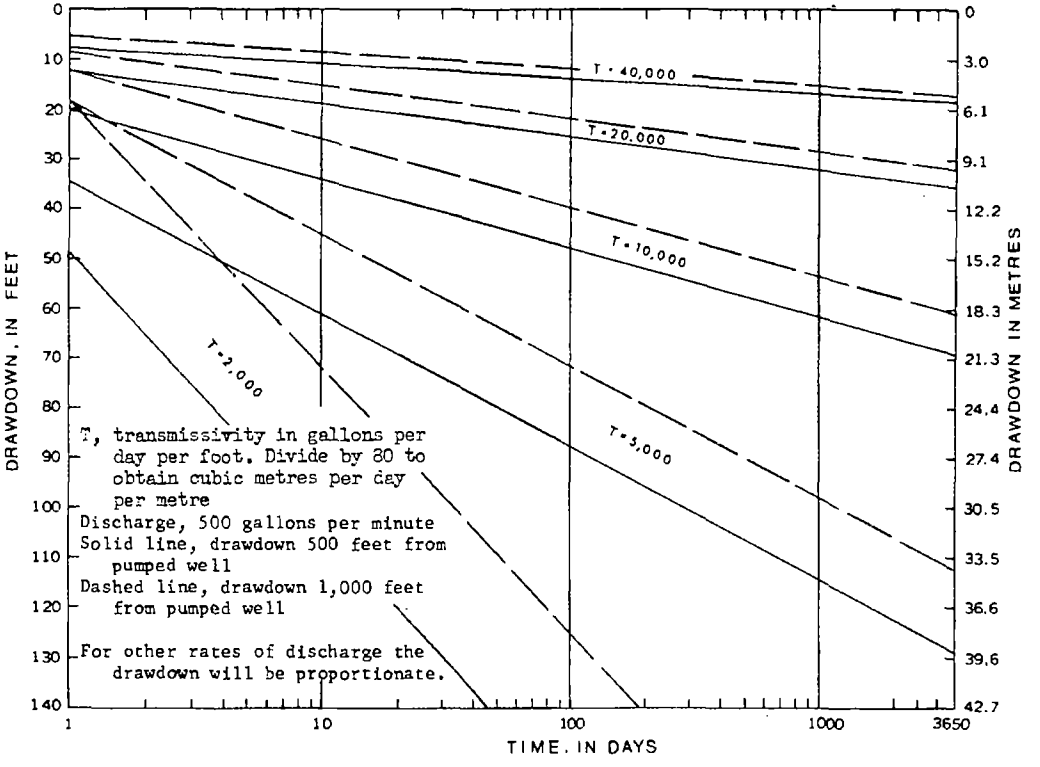


Figure 27.—Theoretical time-distance-drawdown relations for pumping from the artesian aquifers of the six-county area.

Table 14.—Chemical analysis of water from selected wells

Explanation of symbols: Aquifer—G, Gordo; E, Eutaw-McShan; CS, Coffee Sand; R, Ripley; LW, lower Wilcox; W, minor Wilcox aquifers; MW, Meridian-upper Wilcox; T, Tallahatta.

(Dissolved constituents and hardness given in milligrams per liter)

Well No.	Aquifer	Depth (ft)	Date of collection	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids	Hardness as $CaCO_3$	[a]pH	Color
BENTON COUNTY																		
S20	MW	155	2-74	13	0.04	1.0	0.1	1.5	0.7	8	5.3	1.8	0.1	—	29	3	5.6(L)	3
H8	MW	190	11-58	4.4	.04	3.3	1.1	5.6	.9	10	.4	6.2	.2	8.8	52	12	6.8(L)	3
H10	R	920	1-73	18	.16	45	6.7	13	2.1	196	9.4	1.3	.1	.2	193	140	7.4	5
H39	LW	330	1-74	51	2.9	6.6	3.0	9.6	2.7	63	1.6	.8	.1	.01	110	29	6.3	19
J12	LW	230	1-74	25	2.5	9.4	5.2	4.8	3.0	72	.5	.8	.1	.00	87	45	6.2	10
L4	R	495	7-60	—	—	—	—	21	—	176	10	2.0	.3	—	200(est)	136	8.0(L)	--
L7	R	601	2-60	—	.21	—	—	20(est)	--	166	—	2.5	.2	--	193	85	8.3(L)	—
M1	R	390	2-60	—	.27	—	—	—	—	138	10	3.0	.2	—	155	122	8.3(L)	--
N1	R	685	6-57	—	.01	9.4	3.0	72	5.0	226	4.2	5.8	.8	2.8	213	36	8.2(L)	—
O9	R	612	11-72	13	.08	10	3.2	54	4.2	179	8.8	.7	.2	.3	182	38	8.2	0
LAFAYETTE COUNTY																		
A1	MW	366	6-72	13	.02	1.8	.1	3.0	.8	13	.2	.9	.0	.1	37	5	5.6	0
B1	LW	522	11-63	18	.15	.6	.7	52	1.1	141	1.4	1.6	.1	.1	127	4	8.4	4
B2	MW	411	6-72	13	1.0	1.9	.8	2.0	.6	10	.0	2.5	.0	.9	27	8	5.5	0
D1	R	950	7-57	—	—	6.7	1.6	192	6.8	503	1.0	7.5	2.8	1.7	482	23	8.6(L)	—
D4	LW	345	12-67	18	.34	6.2	.6	65	2.9	192	.8	4.5	.0	.5	194	18	7.1(L)	60
E1	MW	226	10-71	14	.08	1.3	.2	2.5	.3	12	.7	1.0	.0	.4	31	4	6.0(L)	0
F7	MW	132	10-54	13	.00	5.6	2.7	7.5	3.2	14	6.9	11	.0	15	72	25	6.6(L)	2
F26	MW	147	11-72	15	.02	5.8	3.0	7.0	2.0	20	8.2	8.0	.4	5.8	69	27	5.5	5
F41	LW	596	11-72	40	1.6	7.6	2.7	23	3.0	96	.0	.0	.4	.0	127	28	6.9	5
F44	LW	530	11-72	4.3	.19	4.2	2.1	38	2.1	121	.0	1.1	.3	.0	112	19	7.9	0
F85	MW	236	1-74	14	.25	6.3	3.5	10	2.0	16	13	11	.1	3.6	84	30	5.4	2
G1	LW	528	12-67	32	.10	3.0	.6	47	1.6	138	.6	2.2	.0	.0	155	10	7.4	5
G11	LW	420	11-72	12	.99	9.6	4.1	22	3.7	93	6.2	2.7	.7	.0	107	34	6.9	5
J2	MW	91	10-71	18	.03	3.9	1.3	6.0	.5	14	3.0	6.7	.0	8.8	63	15	5.4	0
K1	CS	1,600	11-58	5.5	1.4	4.7	1.0	291	4.3	560	.2	122	6.5	.3	722	16	8.4	2
L5	E	1,692	6-72	14	.02	16	29	260	5.0	189	.2	320	.5	.2	754	52	7.9	0
M4	G	1,646	6-72	13	.04	26	6.3	95	4.3	144	4.2	120	.1	.2	341	91	7.9	0

Table 14.—Continued

Well No.	Aquifer	Depth (ft)	Date of collection	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids	Hardness as $CaCO_3$	[a]pH	Color
MARSHALL COUNTY																		
D5	R	1,620	4-70	14	0.06	1.2	0.7	187	2.0	440	0.2	2.0	0.8	0.0	457	6	8.6	0
J16	T	160	1-74	12	0	2.1	.7	7.8	.9	9	.1	11	.0	.84	43	8	5.4	3
K1	MW	347	3-71	14	.04	1.8	.9	3.2	.5	12	1.4	2.0	.0	1.5	41	8	6.0	5
N27	T	145	1-74	15	0	.5	.3	4.8	.5	12	.4	2.2	.1	.06	30	2	5.5	3
P8	MW	344	11-72	18	03	14	4.7	14	3.0	31	16	17	.1	11	112	52	5.5	0
T3	W	271	7-61	39	3.5	7.2	2.9	17	2.2	78	.0	6.4	.0	.0	110	30	7.2(L)	0
U1	R	730	11-72	18	.23	8.4	2.2	80	2.6	228	7.4	.4	.7	1.0	233	25	8.2	0
X2	R	820	7-60	—	—	--	—	—	—	380	10	2.0	2.2	--	—	14	8.3(L)	--
Y3	R	900	7-60	—	—	--	--	—	—	318	10	3.0	1.2	--	--	21	8.2(L)	—
Y7	R	500	7-60	—	—	--	—	—	—	308	10	2.0	1.1	--	—	16	8.2(L)	—
PONTOTOC COUNTY																		
A13	G	1,575	3-67	10	.29	12	5.4	163	3.6	378	.8	63	3.8	.6	458	52	8.0	10
B6	R	230	10-57	—	.00	7.7	3.6	102	5.0	297	9.2	1.8	1.1	1.3	277	34	8.1(L)	6
C36	,E	1,260	9-73	13	—	—	5.9	90	4.2	136	2.3	100	.3	.01	286		8.0	
C59	E	1,172	4-72	13	.09	33	7.2	44	2.2	140	5.4	69	.1	.0	244	110	8.0	0
D14	E	930	10-57	—	.15	14	3.8	63	4.7	140	5.4	50	.7	.7	221	51	7.8(L)	5
D19	E	850	4-72	13	.07	27	12	63	17	148	27	87	1.7	.3	327	120	8.3	30
D24	E	847	6-72	2.8	.02	16	3.7	50	3.1	108	.6	58	.1	.0	185	55	8.4	5
D25	E	1,080	6-72	12	.01	26	5.6	56	4.0	130	4.4	75	.1	.3	256	88	7.9	0
E7	G	1,565	11-71	14	.05	16	2.4	116	1.5	148	.2	122	.1	.2	357	50	8.2	0
F10	R	421	10-57	—	.04	15	6.1	91	6.9	206	87	10	.9	.1	317	62	7.6(L)	10
G8	R	180	10-62	11	.92	62	4.9	4.8	2.0	214	10	3.0	.1	.6	204	175	7.7(L)	5
G9	E	1,088	10-62	10	.00	23	5.5	77	4.3	136	.0	98	.1	.0	286	80	7.5(L)	5
G28	G	1,239	11-72	14	.42	26	6.1	90	3.5	136	.6	120	.2	.3	328	90	8.1	5
G42	E	1,064	11-71	13	.13	5.0	1.3	85	2.6	156	4.9	56	.1	.1	245	18	7.1(L)	0
H1	E	686	3-67	13	.27	6.6	1.1	68	2.5	140	5.6	35	.3	.7	202	21	7.2(L)	10
K1	R	148	10-57	—	.04	38	13	13	7.0	202	16	2.0	.9	1.3	190	148	7.8(L)	5
M3	E	792	10-57	—	.75	4.8	1.0	80	3.5	153	4.4	46	.9	1.1	216	16	7.9(L)	5
M13	G	1,160	11-73	14	.21	13	2.8	70	2.4	134	11	57	.0	1.1	331	44	8.2	0

Table 14.—Continued

Well No.	Aquifer	Depth (ft)	Date of collection	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids	Hardness as $CaCO_3$	[a]pH	Color
TIPPAH COUNTY																		
B8	R	150	12-54	19	0.30	50	8.8	3.4	1.9	186	6.8	5.0	0.4	0.0	190	161	8.0(L)	10
E11	CS	961	6-72	12	.01	27	7.7	15	3.7	140	18	2.4	.2	.7	149	99	7.9	0
D9	CS	855	5-67	11	.22	34	9.0	13	3.4	157	17	3.2	.2	.0	162	122	7.6(L)	10
E13	CS	915	6-72	12	.04	26	6.6	12	3.3	129	11	1.7	.2	.1	138	92	7.9	0
F7	CS	889	1-62	11	.19	38	9.2	17	3.5	180	17	8.9	.1	.0	189	133	7.0(L)	5
G5	CS	660	6-72	14	—	53	17	9	4.5	229	24	4.5	.1	.3	247	200	7.5	0
H5	R	150	2-60	—	.55	—	—	—	—	204	—	6.5	.2	—	331	234	8.1(L)	—
J7	CS	996	2-60	4.5	.04	32	8.6	16	4.6	168	16	4.0	.1	.8	175	116	7.8	5
J18	R	244	10-56	9.9	.77	55	4.6	3.3	1.1	182	8.8	2.0	.1	.4	194	156	7.3(L)	5
K1	CS	720	2-60	9.1	1.7	44	3.6	6.0	2.7	163	5.0	1.5	.2	.2	152	125	8.0(L)	5
L6	CS	785	3-71	12	.48	44	12	7.5	3.7	189	19	1.2	.1	.4	195	158	7.8(L)	5
M3	R	185	60	—	.49	—	—	—	—	182	—	2.5	.3	—	187	156	8.1(L)	—
M12	CS	880	6-72	12	.02	20	4.9	42	3.4	152	29	5.0	.2	.0	192	70	7.9	0
P8	CS	720	6-72	13	.06	31	9.4	24	5.2	146	37	7.4	.2	.2	225	120	7.7	0
UNION COUNTY																		
B2	R	326	5-59	1.8	.11	4.5	1.1	104	3.2	288	3.6	1.5	1.3	1.2	287	16	8.2(L)	6
B17	R	431	6-72	10	.10	7.1	2.5	60	3.4	180	8.6	.6	.2	.4	190	28	8.0	0
C1	CS	781	5-59	2.1	.07	5.6	1.1	65	2.5	184	8.8	3.2	.3	.9	196	18	7.9(L)	6
C11	E	990	2-62	11	.16	14	5.7	59	4.7	162	6.6	37	.2	.0	238	59	7.4	5
C15	CS	856	6-72	12	.02	6.9	.7	61	3.0	172	8.2	3.5	.1	.7	189	20	7.9	0
H8	E	1,030	12-54	14	.27	27	11	85	5.2	150	6.0	130	.4	.1	358	112	7.7(L)	5
H28	R	187	7-57	—	.00	33	3.9	5.6	1.0	122	6.8	3.5	.5	.4	114	98	7.9(L)	—
H30	E	1,095	11-72	13	.08	38	8.3	92	5.5	149	2.2	140	1.0	.0	425	130	7.9	5
H37	E	1,070	6-69	15	2.3	46	9.6	24	3.4	213	15	13	.1	.3	230	154	8.0(L)	10
H40	G	1,177	6-72	11	.05	36	7.8	33	4.2	135	6.8	58	.1	.2	234	120	7.9	0
J13	E	720	6-72	12	.24	37	7.7	63	4.8	146	4.0	100	.1	.2	335	120	7.9	0
M7	R	245	3-67	28	3.1	50	6.1	4.3	1.4	185	5.2	4.1	.2	.1	190	150	7.3(L)	5
M8	CS	684	3-67	11	1.4	7.0	1.2	90	2.1	248	6.8	4.6	2.8	.5	248	22	7.7(L)	5
M31	G	1,180	8-73	11	.05	31	7.3	47	4.6	145	5.1	72	.1	.00	250	110	7.9(L)	3
M12	CS	512	6-72	12	.02	20	4.9	42	3.4	152	29	5.0	.2	.0	191	70	8.1	0

[a]pH measured at well when sample was collected, unless it is designated as a laboratory measurement (L).

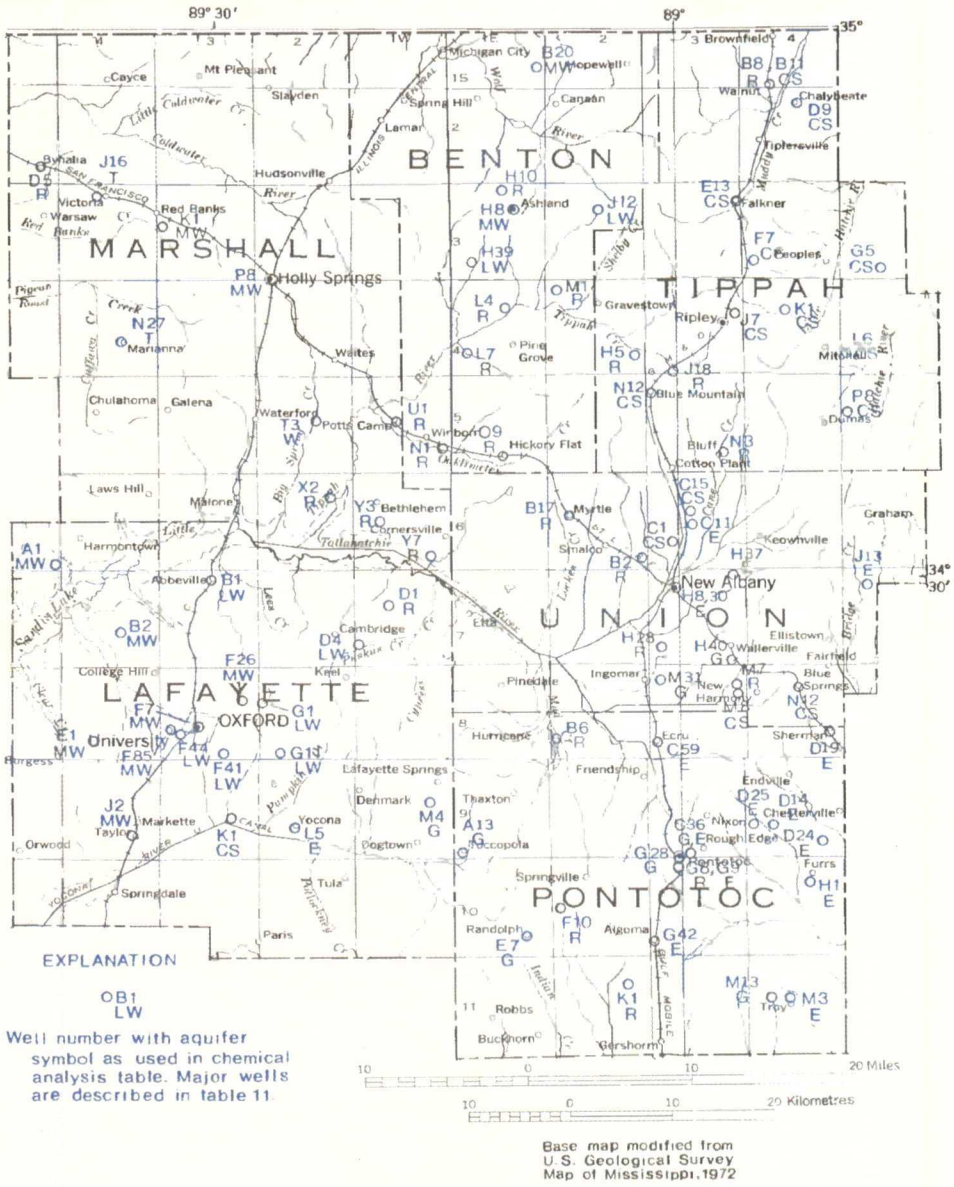


Figure 28.—Locations of wells sampled for chemical analysis.

Table 15.—Evaluation of aquifers by quality requirements

Requirement \ County	Benton	Lafayette	Marshall	Pontotoc	Tippah	Union
Lowest dissolved-solids concentration	Meridian-upper Wilcox	Meridian-upper Wilcox	Meridian-upper Wilcox (or Tallahatta)	Ripley or Butaw-McShan	Coffee Sand	Coffee Sand
Least iron	Any aquifer	Meridian-upper Wilcox, Butaw-McShan, or Gordo	Any aquifer(?)	Butaw-McShan	Coffee Sand	Coffee Sand or Gordo(?)
Less than 1 mg/l fluoride	Any aquifer	Any aquifer except Ripley and Coffee Sand	Any Tertiary aquifer	Gordo or Butaw	Any aquifer	Any aquifer except Ripley
Low hardness	Meridian-upper Wilcox and lower Wilcox	Any Tertiary aquifer	Any aquifer	No aquifer has low hardness everywhere	No aquifer	Coffee Sand
Noncorrosiveness	Ripley	Cretaceous aquifers	Ripley	Any aquifer	Any aquifer	Any aquifer

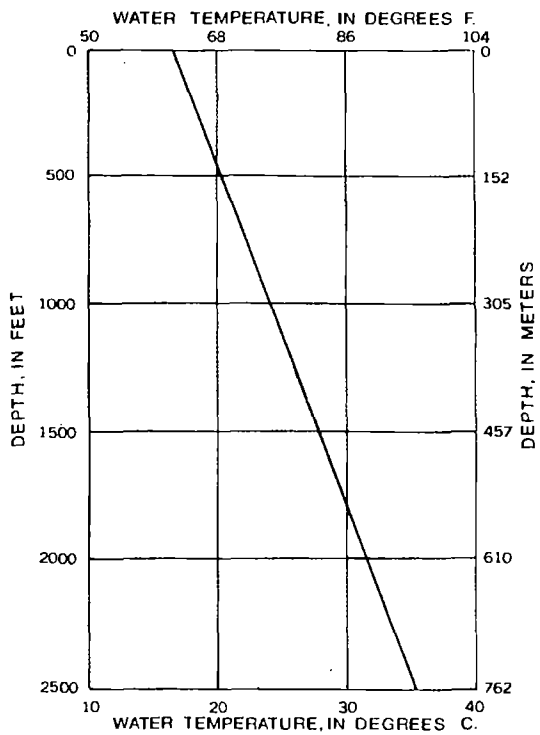


Figure 29.—Depth-temperature relation in the six-county project area.

Table 16.—Guide to ground-water resources of selected localities

Town of locality	Depth of base of fresh-water section (ft)	Principal aquifers available	Reference electric log in appendix and figure 16
Abbeville-Malone	2,200	Meridian-upper Wilcox	—
Ashland	1,900	Meridian-upper Wilcox, Ripley	Benton 4
Blue Mountain	1,300	Ripley, Coffee Sand, Eutaw-McShan	—
Byhalia	2,800	Meridian-upper Wilcox, Ripley	Marshall 11
Ecru	1,200	Ripley, Eutaw-McShan, Gordo	Pontotoc 1
Falkner	1,200	Ripley, Coffee Sand, Eutaw-McShan	Tippah 7
Hickory Flat	1,600	Ripley, Coffee Sand(?)	—
Holly Springs	2,200	Meridian-upper Wilcox, lower Wilcox(?), Ripley(?)	—
Myrtle	1,500	Ripley, Coffee Sand, Eutaw-McShan, Gordo	—
New Albany	1,200	Ripley, Coffee Sand, Eutaw-McShan, Gordo	Union 2,8,19
Oxford	2,200	Meridian-upper Wilcox, lower Wilcox	Lafayette 13,26,27, 33,42,45
Pontotoc	1,300	Ripley, Coffee Sand, Eutaw-McShan, Gordo	Pontotoc 4,7,14,24
Potts Camp	1,800	Ripley, Coffee Sand(?), Eutaw-McShan(?)	—
Randolph	1,600	Ripley, Eutaw-McShan, Gordo	Pontotoc 20
Ripley	1,200	Ripley, Coffee Sand, Eutaw-McShan	Tippah 13,19
Sherman	800	Coffee Sand, Eutaw-McShan, Gordo(?)	Pontotoc 13,25
Tula-Yocona	2,000	Lower Wilcox, Eutaw-McShan	Lafayette 9,30
Walnut	1,300	Ripley, Coffee Sand, Eutaw-McShan	Tippah 8,14,17

has sufficient discharge to move the water quickly to the surface, a loss of heat to the surrounding area occurs, and few of the very deep wells in this project area are of large capacity. It should be borne in mind that the temperature of water delivered by a high-capacity well is likely to be somewhat higher than the temperature of water from a lower-capacity well in the same aquifer at the same site.

Ground-Water-Supply Potential

Several aquifers capable of furnishing small to moderate industrial water requirements are available. Three or four of the aquifers occur in each of the counties, and supplies as great as 1 Mgal/d (48 l/s) could be obtained from wells in most places. Supplies of 5 Mgal/d (240 l/s) or greater will more easily be obtained in the western counties where the most permeable aquifers—those of Eocene age—are available.

There is considerable variability in the thickness and permeability of the aquifers. Test drilling is an important part of water-supply development, although existing data from other water wells and from electric logs of oil tests are very helpful. Table 16 is a guide to data, given in this report, that will aid in an evaluation of the ground-water-supply potential of many towns and communities of the area. This information should be considered only as an indicator of the presence of water-bearing sand and should not be substituted for on-the-site data that can be obtained only by means of test drilling.

Overlapping of areas of pumping influence limits the economical development of ground-water supplies. It is important, therefore, to space wells —both areally and stratigraphically—so that pumping interference will not exceed that determined to be economically tolerable.

SUMMARY

Water can be obtained for industrial use throughout the six counties, but the amount available varies greatly from place to place. The source of potential supplies also varies. In some areas wells alone will provide large quantities of water, in other areas streams or reservoirs must be looked to for anything more than modest quantities, and in still other areas a combination surface-and ground-water supply is the hope for the future.

This area contains the high-volume reaches of few streams, because it is essentially a "headwaters region" and also because about half the area has very low dry-weather flow. The dry-weather flow of streams is the limiting factor in development of surface-water supplies where storage is not provided. With only a moderate amount of storage, however, a supply approaching half the mean annual flow can economically be made available.

The 7-day 10-year low flow is less than 0.05 $ft^3/s/mi^2$ (0.54 $l/s/km^2$) in about half the area, but it is 0.5 to 1.5 $ft^3/s/mi^2$ (5.4-16 $l/s/km^2$), near the highest in Mississippi, in the southwestern part where the streams are bedded in permeable sand formations.

Water in the streams generally contains less than 100 mg/l of dissolved solids and, except in streams heading in the southeastern quarter, it is soft. Color is usually low. Dissolved-oxygen, measured in two fall seasons, was at a healthy level in nearly all streams. Average stream temperatures range between 4° and 27°C (40° and 80°F).

Some of the streams having good potential for industrial water-supply use without storage are the Tippah and Coldwater Rivers and Chewalla and Little Spring Creeks.

The fresh-water section is 750 to 3,000 feet (200-900 m) thick and contains as many as six aquifers in some places. Most wells are between 100 and 1,700 feet (30-520 m) deep. Cretaceous formations are the chief source of water supplies in the eastern part of the area and Tertiary formations in the west. The aquifers having industrial water-supply potential are the Gordo, Eutaw-McShan, Coffee Sand, Ripley, lower and minor Wilcox, Meridian-upper Wilcox, and Tallahatta. Of these, the Ripley is presently tapped over the greatest area but the Meridian-upper Wilcox supplies the largest quantities.

The most permeable aquifers, and usually also the thickest, are the Meridian-upper Wilcox and the Gordo—the youngest and the oldest of the principal aquifers of the area. Most wells produce less than 500 gal/min (32 l/s), but a few produce as much as 1,000 gal/min (63 l/s). Specific capacities as great as 56 gal/min/ft of drawdown (12 l/s/m) have been measured, but most are less than 10 gal/min/ft (2 l/s/m).

Water levels in wells are generally less than 100 feet (30 m) below the surface. The Cretaceous aquifers have deeper water levels than the Tertiary aquifers.

Water from the Tertiary aquifers is of better quality than that from the Cretaceous aquifers; the dissolved-solids concentration and the hardness are lower in the former. Water from the Tertiary units is more likely to be corrosive. Silica is usually less than 20 mg/l and color is low in water from all aquifers. Ground-water temperature in near-surface aquifers is about 17°C (63° F) and it increases about 1°C for every 136 feet (41 m) increase in depth.

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APPENDIX

Sand intervals on electric logs

Explanation: LOG NO. is that shown on the map of figure 16. The numbers for each county begin with 1.
SEC., T., R. is Section, Township, and Range.
ALTITUDE is that of the drill floor, in feet above sea level.
TOP OF LOG is depth, below land surface, at which log begins.
SAND INTERVALS are the depths of the top and bottom of sand beds.
AQUIFER SYMBOLS: G, Gordo; E, Eutaw-McShan; CS, Coffee Sand; R, Ripley; LW, Lower Wilcox; W, Minor Wilcox aquifers; MW, Meridian-upper Wilcox; T, Tallahatta.

LIST OF SAND INTERVALS FROM LOGS IN BENTON COUNTY

LOG NO.	4	7	8	11
SEC., T., R.	03 03S 01E	2 501 S01	36 02S 02E	14 03S 02E
ALTITUDE (FT)	615	E 59	640	600
TOP OF LOG(FT)	8	0	2	3
SAND INTERVALS(FT)	10- 150 MW 350- 385 R 740- 920	25- 165 MW 180- 235 295- 320 360- 385	0- 75 MW 115- 135 155- 165	0- 55 MW 65- 115 W 155- 165 LW 175- 195

LOG NO.	12	14	16	17	18
SEC., T., R.	04 03S 02E	27 04S 01E	01 05S 01W	23 05S 01W	31 05S 01E
ALTITUDE (FT)	530	520	360	370	460
TOP OF LOG(FT)	1	2	4	2	2
SAND INTERVALS(FT)	MW 0- 15 LW140- 175	MW 5- 35 LW140- 220	35- 55 W 60- 140 170- 190 195- 220 LW240- 260	20- 30 W 95- 140 165- 210	W 110- 210

LOG NO.	19	22	23	24
SEC., T., R.	15 05S 01E	20 05S 01E	31 05S 02E	17 05S 02E
ALTITUDE (FT)	520	400	500	585
TOP OF LOG(FT)	1	3	0	4
SAND INTERVALS(FT)	W 140- 160 LW245- 275	LW 105- 165	LW 70- 105	W 15- 30 40- 45 LW 70- 100

LIST OF SAND INTERVALS FROM LOGS IN LAFAYETTE COUNTY

LOG NO.	2	4	5	6	7	9
SEC., T., R.	09 10S 01W	23 09S 03W	07 10S 02W	02 08S 03W	03 08S 01W	11 10S 02W
ALTITUDE (FT)	435	345	595	490	365	490
TOP OF LOG(FT)	295	80	140	40	10	0
SAND INTERVALS(FT)	E 1670-1745	95- 110	MW 140- 240	235- 300	LW 10- 50	W 65- 100
	G 1775-1795	W 190- 200	W 350- 450	W 400- 450	1140-1150	LW 255- 305
	1850-1950	LW 290- 320	LW 475- 490	LW 495- 525	CS 1260-1280	
			1600-1620	1805-1855	1310-1325	
			CS 1750-1770	CS 1870-1900	E 1465-1490	
			E 2010-2140	1910-1920		
			G 2150-2160	E 2010-2060		
				G 2085-2130		

LOG NO.	11	13	14	17
SEC., T., R.	26 09S 04W	09 08S 03W	08 09S 01W	28 08S 04W
ALTITUDE (FT)	320	520	400	440
TOP OF LOG(FT)	0	12	382	22
SAND INTERVALS(FT)	MW 0- 110	MW 55- 225	R 845- 865	T 25- 85
	W 250- 310			100- 120
	LW 420- 440			MW 135- 175
				190- 225
				290- 300
				W 340- 355
				390- 400

LIST OF SAND INTERVALS FROM LOGS IN LAFAYETTE COUNTY

LOG NO.	18	19	20	23	25
SEC., T., R.	22 07S 03E	33 07S 03W	14 09S 01W	36 06S 05W	27 09S 03W
ALTITUDE (FT)	520	420	430	420	320
TOP OF LOG(FT)	6	10	6	7	2
SAND INTERVALS(FT)	MW 15- 300	T 35- 95	LW 120- 150	T 0- 75	W 135- 215
	W 330- 410	MW 120- 240	R 780- 800	100- 110	LW 290- 310
	LW 435- 520		E 1360-1385	MW 150- 440	
			G 1640-1690	W 510- 620	
				650- 710	
				LW 780- 830	

LOG NO.	26	27	28	29	30	31
SEC., T., R.	04 09S 03W	32 08S 03W	21 09S 03W	1 8S 4W	21 09S 02W	18 09S 01W
ALTITUDE (FT)	420	500	360	417	400	410
TOP OF LOG(FT)	105	2	2	10	0	2
SAND INTERVALS(FT)	MW 105- 135	T 10- 40	MW 5- 35	MW 20- 250	MW 5- 40	LW 130- 165
	W 205- 235	70- 85	W 115- 130	W 390- 455	60- 85	200- 220
		MW 90- 120	180- 195	LW 530- 545	W 105- 115	
		125- 180		570- 580	130- 140	
					215- 235	
					LW 300- 310	

LOG NO.	33	36	38	39	42	45
SEC., T., R.	24 8S 3W	32 8S 2W	03 08S 02W	33 09S 03W	36 08S 04W	13 08S 04W
ALTITUDE (FT)	500	540	440	420	480	360
TOP OF LOG(FT)	6	8	64	8	10	10
SAND INTERVALS(FT)	MW 10- 160	MW 10- 150	MW 65- 115	MW 20- 105	MW 10- 245	MW 30- 150
	W 165- 175	190- 235	W/LW 145- 355	LW 400- 505	W 365- 445	W 220- 260
	W 265- 290	W 255- 295			LW 550- 575	LW 535- 550
	LW 450- 480	330- 340			615- 635	
		LW 365- 455				

LIST OF SAND INTERVALS FROM LOGS IN MARSHALL COUNTY

LOG NO.	6	8	9	11	12	14
SEC., T., R.	32 05S 03W	15 05S 02W	36 04S 02W	36 02S 05W	17 03S 02W	08 04S 03W
ALTITUDE (FT)	400	390	500	360	480	480
TOP OF LOG(FT)	97	0	80	0	0	2
SAND INTERVALS(FT)	MW 100- 280	MW 0- 60	MW 80- 170	T 0- 35	T 15- 35	5- 20
	LW 490- 540	W 215- 265	LW 365- 435	115- 155	50- 80	T 25- 115
	R 1130-1250			220- 230	MW 90- 225	130- 145
	1885-1970			MW 280- 290	240- 285	
	LS 2050-2060			540- 590		
	2080-2100			LW 900- 935		
	E 2260-2400			960- 985		
				R 1550-1625		

LOG NO.	15	16
SEC., T., R.	10 04S 03W	02 03S 02W
ALTITUDE (FT)	480	440
TOP OF LOG(FT)	2	3
SAND INTERVALS(FT)	T 25- 145	0- 45
		T 55- 115
		120- 145

LIST OF SAND INTERVALS FROM LOGS IN PONTOTOC COUNTY

LOG NO.	1	4	5	7	8
SEC., T., R.	36 08S 02E	29 09S 03E	07 10S 04E	03 10S 03E	13 10S 03E
ALTITUDE (FT)		470	480	500	430
TOP OF LOG(FT)	25	100	255	78	1140
SAND INTERVALS(FT)	25- 55	R 100- 190	E 935-1015	R 80- 150	E 1245-1295
	R 110- 210	230- 275	G 1120-1170	190- 240	G 1335-1390
	230- 315	955-1005		CS 745- 765	1405-1415
	660- 705	E 1040-1200		930- 955	
	CS 760- 785			E 960-1020	
	810- 825			1050-1060	
	980-1045			1070-1110	
	E 1080-1100			G 1160-1190	
	1110-1150			1220-1250	
	1165-1200				
	G 1210-1225				
	1235-1315				

LOG NO.	9	10	13	14	15	16	19
SEC., T., R.	26 11S 03E	21 11S 01E	35 08S 04E	05 10S 03E	35 11S 04E	23 09S 01E	31 09S 01E
ALTITUDE (FT)	510	350	425	470	350	425	400
TOP OF LOG(FT)	4	100	126	6	246	250	20
SAND INTERVALS(FT)	R 70- 120	R 510- 565	CS 310- 360	110- 210	E 535- 555	R 375- 430	70- 90
	860- 875	E 1310-1405	385- 425	R 245- 260	620- 750		R 640- 675
	900- 920	1420-1445		270- 290	G 940-1065		CS 1030-1040
	955- 970	G 1460-1490		CS 730- 755			1400-1440
	E 975- 990	1530-1630		E 990-1020			E/G 1450-1580
	1000-1020			1050-1165			
	1030-1095			E/G 1180-1255			
	1110-1140						
	G 1180-1200						
	1220-1230						
	1240-1295						

LIST OF SAND INTERVALS FROM LOGS IN PONTOTOC COUNTY

LOG NO.	20	22	24	25	26	27	28
SEC., T., R.	26 10S 01E	04 10S 04E	33 09S 03E	26 08S 04E	17 11S 04E	26 09S 04E	19 09S 04E
ALTITUDE (FT)	530	390	480	390	490	400	500
TOP OF LOG(FT)	2	160	26	4	608	5	6
SAND INTERVALS(FT)	10- 30	R 160- 170	R 100- 180	280- 320	E 845- 925	CS 365- 390	R 20- 30
	R 630- 695	195- 205	240- 320	CS 340- 355	G 980-1065	430- 440	45- 60
	E/G 1455-1480	CS 490- 505	CS 720- 800	360- 380	1090-1125	630- 660	605- 640
	1505-1590		940- 965	425- 455		E 705- 735	CS 645- 665
			E 1105-1140	600- 635		740- 760	685- 730
			1150-1175	E 675- 735		765- 805	E 900- 975
			G 1185-1205	750- 780		G 820- 860	985-1085
			1215-1225			880- 910	G 1105-1115
			1240-1255				

LOG NO.	29	30	32	36	39	41
SEC., T., R.	11 10S 03E	10 10S 02E	23 09S 03E	30 10S 03E	02 09S 03E	09 10S 02E
ALTITUDE (FT)	440	400	480	420	550	490
TOP OF LOG(FT)	399	52	2	2	100	20
SAND INTERVALS(FT)	CS 660- 760	R 160- 280	R 60- 80	R 160- 210	R 100- 180	R 280- 335
	E 860- 890	300- 380	95- 130	250- 310	640- 670	355- 370
	915-1055	CS 760- 780		E 960-1060	E 940-1045	CS 865- 890
		915-1000		1070-1110	1070-1140	1190-1220
						E 1240-1280
						1305-1400

LIST OF SAND INTERVALS FROM LOGS IN TIPPAH COUNTY

LOG NO.	6	7	8	9	11
SEC., T., R.	30 03S 04E	01 03S 03E	10 02S 04E	24 05S 04E	04 05S 05E
ALTITUDE (FT)	500	465	540	660	500
TOP OF LOG(FT)	9	5	10	5	6
SAND INTERVALS(FT)	105- 140	105- 135	90- 115	5- 130	R 10- 70
	205- 240	145- 175	130- 175	R 150- 165	CS 385- 420
	R 275- 295	190- 215	R 195- 225	175- 195	510- 570
	320- 340	R 220- 240	240- 310	220- 230	725- 735
	400- 415	250- 280	315- 350	675- 695	E 745- 760
	770- 800	290- 300	CS 770- 800	730- 755	770- 780
	810- 845	340- 350		CS 760- 790	785- 800
	CS 870- 890			830- 850	
	910- 925	835- 855		E 970-1030	
	935- 950	CS 890- 915			
		920- 930			

LOG NO.	12	13	14	16	17	19
SEC., T., R.	30 04S 05E	13 04S 03E	32 01S 04E	33 03S 05E	25 01S 03E	12 04S 03E
ALTITUDE (FT)	630	490	530	670	560	540
TOP OF LOG(FT)	10	400	6	10	10	10
SAND INTERVALS(FT)	10- 165	R 400- 410	10- 55	10- 50	10- 35	R 125- 140
	R 185- 210	825- 845	185- 215	R 70- 110	R 210- 225	180- 265
	220- 240	865- 880	225- 275	125- 175	255- 270	
	620- 640	CS 910- 945	R 290- 320	185-. 220		
	CS 715- 790	960- 995	350- 380	625- 695		
	800- 830	980- 990	395- 415	CS 730- 820		
			420- 465	830- 860		
			CS 870- 890			
			915- 960			

LIST OF SAND INTERVALS FROM LOGS IN UNION COUNTY

LOG NO.	1	2	3	4	7	8	9
SEC., T., R.	15 06S 05E	29 06S 03E	20 07S 05E	30 07S 03E	03 08S 01E	36 06S 02E	21 06S 03E
ALTITUDE (FT)	465	400	370	420	400	360	380
TOP OF LOG(FT)	160	70	66	83	110	12	19
SAND INTERVALS(FT)	360- 400	R 90- 180	190- 230	CS 500- 540	420- 520	R 110- 170	20- 85
	415- 425	245- 265	CS 250- 280	595- 605	R 590- 660	CS 670- 710	585- 635
	CS 440- 460	690- 705	360- 375	E 950-1000	990-1010		705- 745
	470- 520	720- 735	E 560- 610	1045-1100	CS 1205-1260		CS 755- 770
	E 550- 560	CS 805- 890	630- 680		1320-1330		800- 820
	600- 690	905- 945	695- 710		E 1390-1430		E 910- 985
		1030-1065			1490-1520		
		1085-1135			1510-1540		

LOG NO.	10	13	14	15	16	17
SEC., T., R.	12 08S 03E	08 07S 05E	12 07S 03E	16 06S 03E	01 07S 03E	10 08S 04E
ALTITUDE (FT)	490	430	535	460	470	460
TOP OF LOG(FT)	0	4	10	7	8	10
SAND INTERVALS(FT)	0- 20	280- 315	85- 120	105- 165	0- 90	10- 20
	35- 50	335- 375	R 130- 155	R 180- 200	R 185- 220	R 40- 80
	R 65- 95	CS 400- 425	170- 185	675- 715	245- 255	420- 435
	140- 155	445- 455	640- 670	CS 785- 855	585- 630	440- 450
	205- 220	470- 500	680- 695	880- 905	655- 665	CS 470- 480
	580- 595	E 665- 760	715- 735	E 1010-1050	CS 695- 705	500- 515
	CS 605- 615		CS 760- 770	1065-1075	725- 740	550- 575
	660- 670		785- 805		805- 840	590- 600
			815- 825		885- 895	
			860- 905		E/G 940- 975	
			950- 960		990-1160	
			E 1040-1100			

LOG NO.	18	19	21	22
SEC., T., R.	26 07S 03E	16 07S 03E	70 6S0 5E	18 06S 05E
ALTITUDE (FT)	540	320	6880	640
TOP OF LOG(FT)	10	7	20	10
SAND INTERVALS(FT)	115- 170	65- 90	25- 95	10- 80
	R 225- 235	105- 125	R 150- 215	R 120- 170
	1015-1035	135- 145	585- 595	190- 200
	E 1075-1095	R 155- 180	685- 740	550- 570
	1155-1170	195- 220	CS 750- 760	CS 585- 620
	1200-1210	565- 590	770- 815	665- 720
		CS 650- 665		750- 800
		770- 780		E 960- 990
		820- 840		
		E 920-1020		