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Koppers Inc

MASTERFILE
RELATED
STATUS
ATTACHMENTS
TASKS

ID	Branch	SIC	County	Basin	Start	End
876	Timber and Wood Products	2491	Grenada	Yazoo River	11/09/1981	

Physical Address (Primary)	Mailing Address
1 Koppers Drive Tie Plant, MS 38960	PO Box 160 Tie Plant, MS 38960

Telecom Type	Address or Phone
Work Phone Number	(662) 226-4584, Ext. 11

Alt ID	Alt Name	Alt Type	Start	End
2804300012	Koppers, Inc.	Air-AIRS AFS	10/12/2000	
876	Koppers Inc Grenada Plant	Air-Notification	05/23/2008	
876	Koppers Inc	Air-Notification	02/10/2010	
096000012	Koppers, Inc.	Air-Title V Fee Customer	12/11/2006	
096000012	*Koppers Industries, Inc.*	*Air-Title V Operating*	*03/11/1997*	*03/01/2002*
096000012	*Koppers Industries, Inc.*	*Air-Title V Operating*	*01/13/2004*	*03/26/2007*
096000012	*Koppers, Inc.*	*Air-Title V Operating*	*03/26/2007*	*01/01/2009*
096000012	Koppers, Inc.	Air-Title V Operating	10/28/2009	09/30/2014
876 001	Koppers Company, Inc. Forest Products	GARD	12/08/1981	
MSR220005	Koppers Industries, Inc.	GP-Wood Treating	09/25/1992	
MSD007027543	*Koppers Industries, Inc.*	*Hazardous Waste-EPA ID*	*08/27/1999*	*01/23/2007*
MSD007027543	Koppers, Inc.	Hazardous Waste-EPA ID	01/23/2007	
HW8854301	*Koppers Industries, Inc.*	*Hazardous Waste-TSD*	*06/28/1988*	*06/28/1998*
HW8854301	*Koppers Industries, Inc.*	*Hazardous Waste-TSD*	*11/10/1999*	*03/26/2007*
HW8854301	*Koppers, Inc. (Owner)*	*Hazardous Waste-TSD*	*03/26/2007*	*09/30/2009*
HW8854301	Koppers, Inc./ Beazer East Inc.	Hazardous Waste-TSD	02/10/2010	01/31/2020
876	*Koppers Industries, Inc.*	*Historic Site Name*	*11/09/1981*	*12/11/2006*
876	Koppers, Inc.	Official Site Name	12/11/2006	
MSP090300	*Koppers Industries, Inc.*	*Water - Pretreatment*	*11/14/1995*	*11/13/2000*
MSP090300	*Koppers Industries, Inc.*	*Water - Pretreatment*	*09/18/2001*	*08/31/2006*

MSP090300	Koppers, Inc.	Water - Pretreatment	03/26/2007	02/28/2012
MSU081080	*Koppers Industries, Inc.*	*Water - SOP*	*11/09/1981*	*11/30/1985*

Program	SubProgram	Start Date	End Date
Air	Title V - major	06/01/1900	
Hazardous Waste	Large Quantity Generator	08/27/1999	
Hazardous Waste	TSD - Not Classified	06/28/1988	
Water	NPDES Storm	02/17/2010	
Water	PT CIU	11/14/1995	
Water	PT CIU - Timber Products Processing (Subpart 429)	11/14/1995	
Water	PT SIU	11/14/1995	

Latitude	Longitude	Metadata	S / T / R	Map Links
33 ° 44 ' 3 .00 (033.734167)	89 ° 47 ' 8 .06 (089.785572)	**Point Desc:** PG- Plant Entrance (General). Data collected by Mike Hardy on 11/8/2005. Elevation 223 feet. Just inside entrance gate. **Method:** GPS Code (Psuedo Range) Standard Position (SA Off) **Datum:** NAD83 **Type:** MDEQ	Section: Township: Range:	MGIS Google Maps MapQuest

2/19/2010 11:24:53 AM

RCRA POST-CLOSURE PERMIT RENEWAL APPLICAT

FOR CLOSED FORMER RCRA SURFACE IMPOUNDMENT

KOPPERS INC.
GRENADA, MISSISSIPPI FACILITY
EPA ID NO.: MSD 007 027 543
PERMIT NO.: HW-88-543-01

Prepared for:

BEAZER EAST, INC.

Prepared By:

Key Environmental, Inc.
200 Third Avenue
Carnegie, Pennsylvania 15106

April 4, 2008

KEY ENVIRO INCORPC

RCRA POST-CLOSURE PERMIT RENEWAL APPLICATION

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APRIL 4, 2008

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74102

CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision according to a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, 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.

Document: RCRA Post-Closure Permit Renewal Application
For Closed Former RCRA Surface Impoundments
Koppers Inc.
Grenada, Mississippi Facility

Robert S. Markwell
(Name)

[signature]
(Signature)

Vice President
(Title)

Beazer East, Inc
(Company Name)

04/03/08
(Date)

KEY ENVIRONMENTAL INCORPORATED

RECEIVED
JUN - 2 2008
MDEQ

CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision according to a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, 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.

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(Date)

EXHIBIT 1 – 40 CFR 270.28 DOCUMENT LOCATOR PAGE

§270.28 Part B Information Requirements For Post-Closure Units		
Required Paragraph Pursuant to §270.28	**Description**	**Applicable Section in Permit Renewal Application**
270.11	Signatories to permit applications and reports	Certification Page
270.13	Contents of the Part A Application	Appendix A
270.14(b)(1)	General description of the Facility	Section 2.1
270.14(b)(4)	Security procedures pursuant to 264.14 or request for a waiver	Section 7.2.2
270.14(b)(5)	General inspection schedule pursuant to 265(b), where applicable	Section 7.2.3
270.14(b)(6)	Justification for waiving preparedness and prevention requirements of part 264, subpart C	Section 7.2.1
270.14(b)(11)	Facility location information	Sections 2.1.1 and 2.2
270.14(b)(13)	Copy of the post-closure plan	Section 7.2
270.14(b)(14)	Documentation that notices have been filed pursuant to 264.119	Section 7.2.6
270.14(b)(16)	Most recent post-closure cost estimate pursuant to 264.144 and financial assurance pursuant to 264.145	Section 7.2.7 and Table 3
270.14(b)(18)	Where applicable, proof of coverage by a State financial mechanism in compliance with 264.149 or 264.150	Section 7.2.7 and Appendix K
270.14(b)(19)	Topographic map	Figures 2 and 3
270.14(c)	Additional information requirements	Section 5.0
270.14(d)	Information requirements for solid waste management units	Sections 4.0 and 8.0

1.0 INTRODUCTION

In accordance with Federal Regulations in 40 CFR Parts and 270 and the Mississippi Hazardous Waste Management Regulations (MHWMR) 264 and 270, this Resource Conservation and Recovery Act (RCRA) Post-Closure Care Permit Renewal Application (Renewal Application) is being submitted for the closed surface impoundment (SI) (the Facility) at the Koppers Inc. (Koppers) wood treating plant (Site) located in Tie Plant, Mississippi, Grenada County. Because the Federal Hazardous and Solid Waste Amendment (HSWA) portion of the RCRA Permit and the State of Mississippi Hazardous Waste Management Permit for Post-Closure Care of the closed hazardous waste surface impoundment permit together constitute the full RCRA Permit (Permit) for the Facility, this Renewal Application has been prepared to meet both regulatory requirements. Beazer East, Inc. (Beazer) requests that the MDEQ recognizes that only Beazer operated the Facility. Koppers has owned the real property comprising the Site since late 1988, but has never operated the Facility. Accordingly, Beazer requests that MDEQ delete Koppers from the Hazardous Waste Management Permit for Post-Closure Care of the closed hazardous waste surface impoundment and that Beazer remain on the MDEQ portion of the Permit as the sole permittee.

The Hazardous Waste Management Permit for Post-Closure Care of the closed hazardous waste surface impoundment Permit issued by the State of Mississippi (Permit No. HW 88-543-01) became effective on November 10, 1999 and will expire on November 10, 2009. The HSWA portion of the Permit for EPA ID No. MSD 007 027 543 issued by the United States Environmental Protection Agency (USEPA) Region 4 became effective on October 2, 1998 and will expire October 2, 2008. Pursuant to the Federal HSWA Permit Condition I.D.2 (40 CFR 270.10(h)), and Mississippi Permit No. HW-88-543-01 Section I.E.2, the Permittee shall submit a complete application for a new permit at least 180 days before the permit expires.

The Grenada wood treating plant was built in 1904 by the Ayer & Lord Tie Company (A&L). In 1930, A&L was acquired by the Wood Preserving Corporation, a subsidiary of The Koppers Company. In 1940, The Koppers Company liquidated the Wood Preserving Corporation to form its own wood preserving division. Thereafter, in 1944, The Koppers Company merged with three other companies to become Koppers Company, Inc. Koppers Company, Inc. owned the Grenada Plant until its sale to Koppers Industries, Inc. (n/k/a Koppers Inc.) on December 29, 1988. Koppers Industries, Inc. purchased not only the Grenada Plant at that time, but also the rights to the name "Koppers." As a result of the sale, Koppers Company, Inc. changed its name to Beazer Materials and Services, Inc. ("BM&S"), in January 1989, and then BM&S changed its name to Beazer East, Inc. on April 16, 1990. This history is summarized in the following table for your convenience.

Site Ownership History	
Ayer & Lord Tie Company builds the Grenada wood treating plant	1904
The Wood Preserving Corporation, a subsidiary of The Koppers Company, acquires A&L	1930
The Koppers Company liquidates the Wood Preserving Corporation to form its own wood preserving division	1940
The Koppers Company merges with three other companies to become Koppers Company, Inc.	1944
Koppers Company, Inc. sells the wood treating business and assets to Koppers Industries, Inc.	December 29, 1988
Koppers Company, Inc. changed its name to Beazer Materials and Services, Inc. (BM&S)	January 26, 1989
Beazer Materials and Services, Inc. was changed to Beazer East, Inc. (Beazer)	April 16, 1990
Koppers Industries, Inc. changed its name to Koppers Inc. (Koppers)	2003

Prior to closure, the SI stored hazardous waste material, K001 (bottom sediment sludge from the treatment of wastewaters from wood preserving processes that use creosote and/or pentachlorophenol). In the summer of 1988, all K001 sludge and visually contaminated soils were removed from the SI and shipped to a permitted off-site disposal facility. Closure activities for the SI were initiated in July 1989 which included removal of accumulated rainwater, placement of clean soil fill, construction of a soil-bentonite cap and cover system. Closure activities for the SI were completed by the end of October 1989. The closure construction documentation and closure certification for the SI were submitted to the MDEQ in January 1990.

This reapplication is organized into the following sections with supporting documentation contained in the appendices:

- Section 2.0 of this application presents a description of the Site and the Facility;
- Section 3.0 provides information regarding waste characterization;
- Section 4.0 presents process information for the closed former RCRA SI;
- Section 5.0 includes a description of the Site hydrogeology and groundwater quality related to the Site;

- Section 6.0 discusses corrective action;
- Section 7.0 provides closure and post-closure requirements for the closed former SI including financial assurance information;
- Section 8.0 presents information for solid waste management units; and,
- Section 9.0 provides a list of references cited.

The Part A application is included as Appendix A and supporting documentation is provided in the referenced appendices.

2.0 FACILITY DESCRIPTION, LOCATION, AND TOPOGRAPHY

This section of the renewal application provides a general description of the Koppers Wood Treating Plant Site and the Facility (the closed former RCRA SI). Details include contact information, Facility location and topographic information, a description of the historic activities conducted at the former RCRA SI, and floodplain information. The information provided throughout Sections 2.1 and 2.2 satisfy the regulatory requirements for the renewal application pursuant to 40 CFR 270.14(b)(1) – general description of the Facility, 40 CFR 270.14(b)(11) - Facility location information, and 40 CFR 270.14(b)(19) – topographic map.

2.1 GENERAL DESCRIPTION

The wood treating plant was constructed in 1904 to pressure treat railroad cross ties. Preservatives used include pentachlorophenol (mixed in No. 2 diesel fuel) and creosote. The Koppers plant currently pressure treats railroad cross ties, switch ties and poles. The closed RCRA SI was constructed in the mid-1970's as part of the plant's wastewater treatment system and was used until 1988 to treat wastewater resulting from the wood preserving operations.

The contact for the Facility (closed SI) is:

Mr. Michael Bollinger
Environmental Program Manager
Beazer East, Inc.
One Oxford Centre, Suite 3000
Pittsburgh, Pennsylvania 15219

The contact for the Koppers Wood Treating Plant is:

Mr. Vance R. Haskin
Koppers Inc.
1 Koppers Drive
Tie Plant Road
Tie Plant, Mississippi 38960

The plant's mailing address is:

P.O. Box 160
Tie Plant, Mississippi 38960

Description of Site

The Site is located approximately 1 mile southeast of Grenada, Mississippi, near U.S. Highway 51 as shown on Figure 1. The Site is located in the town of Tie Plant, Mississippi, a rural town with a small residential community located to the northeast. The 171-acre Site is approximately 1.2 miles long and 0.3 miles wide. The Illinois Central Railroad services the Koppers plant and forms the western boundary and cultivated fields form the eastern boundary. Two streams flow northeast across the Koppers plant towards the Batupan Bogue: the Northern Stream in the northern portion of the Koppers plant and the Central Ditch in the central portion of the plant.

A topographic map for the Site and the surrounding region is included as Figure 2. A Facility-specific topographic map detailing pertinent Site features and showing the topography of the SI both prior to closure (as of 1/23/1989) and post-closure (as of 11/21/1989) is presented as Figure 3. Meteorological and wind distribution data obtained from the Federal Aviation Administration, Grenada, Mississippi AAF included in Appendix B.

2.1.1 Description of Closed RCRA Surface Impoundment

The Facility (closed RCRA SI) was constructed in the mid-1970's as part of the plant's wastewater treatment system and was used until 1988 to treat wastewater resulting from the wood preserving operations. No records exist concerning the construction of the SI, but it appears that the SI was constructed by excavating into the natural clay soil and using the excavated material to construct the dike around the SI. During the operation of the SI, bottom sediment sludge (K001) was generated. In the summer of 1988, all K001 sludge and visually contaminated soils were removed from the impoundment and shipped off-site to Chemical Waste Management, Inc., located in Emelle, Alabama for disposal. Prior to closure of the SI, a RCRA permit application was submitted to the MDEQ and Hazardous Waste Management Permit No. 88-543-01 became effective on June 28, 1988 for the operation and post-closure care of the closed SI. The SI was closed in 1989 and certification of closure for the SI was included in the *Closure Construction Documentation Report for the Surface Impoundment Closure* (Keystone, 1989).

2.2 FACILITY LOCATION CRITERIA

2.2.1 Floodplain Standard

The Koppers Site is not located within a 100-year flood plain except for a small area near the central area of the Site. The closed SI is more than 7 feet above this 100-year flood plain. Consequently, no additional flood proofing is required to prevent potential constituent releases from the closed SI during flooding. This information was obtained from the Flood Insurance Rate Map Number 280060 0125B for Grenada County Mississippi. A copy of the map is presented in Appendix C.

3.0 WASTE CHARACTERISTICS

The Grenada, Mississippi Wood Treating Plant, closed former RCRA SI is in post-closure, therefore, no waste will be treated, stored, or disposed of at the closed RCRA former SI during the Post-Closure Period. In accordance with 40 CFR 270.28, the Chemical and Physical Analysis requirement of 40 CFR 270.14(b)(2) and the Waste Analysis Plan requirement defined in 40 CFR 270. 14(b)(3) and 264. 13 (b) do not apply.

The hazardous waste previously contained in the closed SI was K001, defined in 40 CFR 261 as "bottom sediment sludge from the treatment of wastewaters from wood preserving processes that use creosote and/or pentachlorophenol". Appendix D provides a waste analysis for the K001 sludge. No wastes have been placed in the closed SI since it was closed in 1989. Therefore, a Waste Analysis Plan is not applicable for this Renewal Application.

4.0 PROCESS INFORMATION

The information presented in Section 4.0 satisfies the requirements regarding the Facility pursuant to 40 CFR 270.14(D) regarding the information requirements for solid waste management units (SWMUs). Section 8.0 of this Renewal Application satisfies information requirements for SWMUs for the Koppers Wood Treating Plant Site.

The SI was constructed in the mid-1970's to accept process wastewater containing creosote and/or pentachlorophenol. The SI was rectangular, measuring approximately 295 feet by 115 feet. Total depth, including the side berms was approximately 7 feet. The SI was constructed from compacted native clayey soil. The solids from the wastewater settled out in the SI forming a sludge, which was regulated as a K001 listed RCRA hazardous waste (40 CFR S261.32). On July 17, 1984 a sludge sample was collected from the bottom of the SI, prior to its closure, and analyzed for organic and inorganic constituents. The sludge analysis is included in Appendix D. The SI was closed as a landfill in 1989. After the SI was dewatered, all sludge and visually contaminated soils were removed from the SI and transported off-site to a permitted landfill for disposal. The closure activities consisted of placing clean soil fill in the SI and constructing a soil-bentonite cap and vegetated soil cover. Figure 3 presents the as-built final ground surface contours and Figure 4 presents the as-built cross sections of the closed SI. Figure 5 is a current photograph of the surface impoundment.

5.0 GROUNDWATER PROTECTION

This section discusses the Post-Closure Care groundwater monitoring program to be carried out under this permit period. This section describes also the existing groundwater monitoring data that has been completed at the Site in the vicinity of the closed former RCRA SI: this includes interim status groundwater monitoring data collected from 1982 through 1988 and the post-closure care monitoring data collected from 1988 through the present. The information presented in this section satisfies the additional information requirements regarding groundwater protection pursuant to 40 CFR 270.14(C).

5.1 INTERIM STATUS GROUNDWATER MONITORING DATA

Interim status groundwater monitoring was initiated for the then-operating/subsequently closed SI in 1982 and continued until the issuance of the Permit, which was issued by MDEQ in June 1988. In accordance with 40 CFR 265 and MHWMR 265, groundwater upgradient and downgradient of the closed SI was monitored to determine if the closed SI was impacting groundwater quality. A description of the interim status groundwater monitoring well network, data collected from these wells, and results of the interim status monitoring program are discussed in this section.

The interim status monitoring well network was modified as directed by MDEQ several times from 1982 through 1987. In accordance with 40 CFR 265.91(a) one well (R-1) was installed hydraulically upgradient of the SI and three wells (R-2, R-3, and R-4) were installed hydraulically downgradient of the SI. In 1984, the original well system was expanded under the direction of the MDEQ to include installation of five additional wells (R-5 through R-9). Following the installation of the five wells, a bimonthly sampling and analysis program was initiated to further define the groundwater flow pattern. Results of the bimonthly sampling and analysis program indicated that wells R-5 and R-6 were hydraulically upgradient wells and wells R-7, R-8 and R-9 were hydraulically downgradient of the closed SI. However, groundwater quality data from wells R-5 and R-6 were not considered by MDEQ to be characteristic of background groundwater quality. In 1986, five additional wells (R-08B, R-10, R-10B, R-11 and R-12) were installed and in 1987 two wells (R-09C and R-09D) were installed to further characterize groundwater quality and flow. The "B", "C", and "D" series wells were installed to characterize groundwater quality at depth.

A shallow hydraulic gradient at the interim status monitoring wells for the SI made it difficult to assess the upgradient well location. As a result, the additional wells that were installed helped to determine the groundwater flow direction. Based on the subsequent well installations and determination of the groundwater surface elevation, it was determined that the groundwater flow direction at the SI was to the east-northeast, and wells R-01 (and later, R-1R, which replaced R-1) and R-10 were located hydraulically upgradient of the SI.

Boring logs and well construction details for the interim status wells are presented in Appendix E.

Interim Status Monitoring Data
Groundwater sampling was conducted at various well locations throughout the interim status period from 1982 through 1987. From March 1982 through 1984, groundwater sampling was conducted at wells R-01 through R-04. Wells R-05 and R-09 were sampled following their installation in July 1984 through February 1985. Quarterly sampling was also conducted at wells R-05 through R-09 during 1986. Wells R-08B, R-10, R-10B, R-11 and R-12 were sampled in a supplemental sampling round conducted in November 1986. The interim status detection monitoring program was initiated in January 1987. Monitoring wells R-01, R-10, R-07, R-08 and R-09 were sampled under the interim status detection monitoring program Analytical data collected during interim status are included as Appendix E-2 of the 1987 Permit Application.

5.2 MONITORING DATA UNDER THE PERMIT FROM 1988 THROUGH 1998

Under the June 28, 1988 Permit; eight wells monitored the closed SI consisting of two upgradient wells (R-01R and R-10) and six downgradient wells (R-07, R-08, R-08B, R-09, R-09C and R-09D). Figure 6 presents the locations of these wells. The detection monitoring program initially included analyses for pH, conductivity, total dissolved solids, total organic carbon, PAHs, total phenols, and pentachlorophenol. Pursuant to the Permit modification in February 1990, groundwater samples collected from wells monitoring the closed SI were analyzed for the following constituents: PAHs (EPA Method 8310), acid extractable phenolics (EPA Method 8040), phthalates (EPA Method 8060), total and dissolved chromium (EPA Method 601 OA) and mercury (EPA Method 7470) and field pH, specific conductance and temperature. A summary of historical data collected during the detection monitoring program required by the 1988 Permit are provided in Appendix E-4 of the *Post-Closure Care Permit Renewal Application* (1997 Permit Renewal Application) (Fluor Daniel GTI, 1997) and the *Post-Closure Care Permit Renewal Application* (1999 Revised Permit Renewal Application) *(ThermoRetec, revised March 1999)*. Boring logs and well construction information are provided in Appendix E.

Statistical Procedures under the 1988 and 1998 Permits

Previous SI groundwater data had shown that over 90 percent of the up gradient and downgradient monitoring well analyses were below laboratory reporting limits. Because the majority of the permit constituents were below the laboratory reporting limits, a background mean value could not be determined, and the Behrens-Fisher method could not be used for statistical evaluation.

In accordance with Section IV.F of the 1988 Permit, a statistical evaluation was to be completed using the Behrens Fisher Student's t-test or an equivalent method approved by the MDEQ. However, because of the high number of non-detects in the groundwater monitoring data, two documents were prepared by Dr. William R Kodrich, Clarion University of Pennsylvania, detailing statistical alternatives to address this situation. These documents were submitted to

MDEQ by Beazer on September 11, 1990, for MDEQ's approval for applying the statistical alternatives to the post-closure detection monitoring program for the impoundment. The September 11, 1990 submittal included the following two documents that presented:

1. Results of statistical analyses of data for the original five parameters specified in the Koppers Industries Inc. (KII) Grenada permit issued to Kopper's Grenada Facility.

2. Recommended statistical procedures for comparing mean background monitoring well concentrations with mean downgradient compliance monitoring well concentrations at KII's Grenada Facility.

In these documents, Dr. Kodrich presented several statistical methods to be used under various monitoring data situations (e.g., the percentage of non-detects). These methods are included in those recommended in the United States Environmental Protection Agency's (EPA) guidance document, *Statistical Analysis of Ground Water Monitoring Data at RCRA Facilities, Addendum to Interim Final Guidance (1992).* These methods also met the requirements of Mississippi Hazardous Waste Management Regulations 264.

As stated, the statistical evaluations were selected based on the frequencies of detection of the constituents and the statistical distributions of the concentrations in the background samples collected from wells R-0lR and R-10. Statistical evaluations are included in Appendix E-1 of the 1997 Permit Renewal Application and the 1999 Revised Permit Renewal Application. Because so many nondetect results were reported in this monitoring program, the data are not normally distributed. Therefore, a parametric statistical analysis such as a t-test or parametric analysis of variance where arithmetic means and standard deviations are used as a basis for decision analysis is inappropriate. The arithmetic means and standard deviations would not accurately represent the data and use of the parametric tests would most likely result in the derivation of incorrect conclusions. Therefore, nonparametric statistical tests were used to evaluate the data.

Statistical evaluations of the groundwater data were conducted as part of the 1987 Permit Application and the data showed that monitoring wells R-0l and R-10 are located up-gradient with respect to the closed SI and were determined to provide data representing background groundwater quality. The statistical evaluations also indicate that no statistically significant difference exists in comparing concentrations of the permit constituents in the downgradient monitoring wells to those concentrations measured in the up gradient monitoring wells.

During past semi-annual sampling events conducted under the 1998 Permit, the detection of constituents was very infrequent. The downgradient data were compared to a pool of upgradient data collected from wells R-01R and R-10 since the second half of 1990. For those constituents statistically analyzed using the Poisson Tolerance Limit, no downgradient concentration ever exceeded the limit. Therefore, any infrequent constituent detection was not regarded as significant. For those constituents statistically analyzed using the Wilcoxon Rank-Sum Test, downgradient concentrations were also never found to be statistically greater than the upgradient concentrations.

5.3 SITE GEOLOGY AND HYDROGEOLOGY

Regional and Site geology and hydrogeology are most recently described in the Complete Phase II RCRA Facility Investigation Report (Phase II Report, 2003) (GeoTrans, AMEC, and Groundwater Insight, July 2003). In the Phase II Report, data collected during investigations conducted during 1997, 1998, and 2000 were combined with data reported previously in the Interim Measures Workplan (AWD, 1994), to provide updated interpretations. Section 5.3.1 of this Permit Renewal presents the updated Site geology and hydrogeology from the Phase II Report. Section 5.3.2 presents hydrogeologic information specific to the Facility (closed SI units) in order to satisfy the additional information requirements of 40 CFR 270.14(c).

5.3.1 Site Geology and Hydrogeology

The uppermost aquifers in the vicinity of the Site are the Holocene-Pleistocene channel sands, which correlate with the Upper Silt and Sand Zones. These are underlain by the Upper Low-Permeability Zone, which probably correlates with the Basic City Shale; and the Lower Sand Zone, which correlates with the Meridian Sand. These are underlain by a laterally continuous layer of clay and silt, which is greater than 150 feet thick on Site and probably correlates with the upper member of the Wilcox Group.

Fill Zone - Much of the Site north of Central Ditch has fill materials overlying the native geologic materials. The fill varies in thickness from 0 to approximately 10 feet and is comprised of a broad range of grain sizes, from clay to gravel, and materials, including bricks and wood debris. The deeper portions of the fill are often saturated, whereas the shallower fill materials are dry.

Upper Silt and Sand Zones - The Upper Silt and Sand Zones are present below fill or near the land surface over most of the Site. This zone is partially saturated and includes areas of perched water on clay or silt lenses or within former impoundments or the former wood disposal area. The hydraulic conductivity of this zone is approximately 8 ft/day. The zone is unconfined to semi-confined. The moderate hydraulic conductivity is due to the presence of silt and clay in the aquifer.

Horizontal groundwater flow in this zone is generally northeastward toward Batupan Bogue, and is consistent with regional flow. However, Site topography and land use affect local flow directions. For example, in the vicinity of the Central Ditch in the central area of the Site, shallow groundwater flows toward the Central Ditch.

Upper Low-Permeability Zone - The Upper Low-Permeability Zone underlies the Upper Silt and Sand Zones. The zone is heterogeneous in composition and variable in thickness over the Site, ranging from zero to approximately 18 feet. This zone is comprised of interbedded layers of clay and silt, with intermittent sandy lenses. The Upper Low-Permeability Zone is present beneath the Former Wastewater Treatment System, including the former impoundments and wood disposal area. The Upper Low-Permeability Zone extends beyond the Central Ditch in the middle of the Former Wastewater Treatment System area, becoming thinner to non-existent at the Ditch to the southwest and northeast. The zone appears to be discontinuous in localized areas and may allow the Upper Silt and Sand Zones to be in contact with the Lower Sand Zone.

The silt and clay beds of the Upper Low-Permeability Zone are expected to have hydraulic conductivities that are several orders of magnitude lower than the sand beds of the Upper Silt and Sand Zones. The Upper Low-Permeability Zone acts as a local partial confining unit above the Lower Sand Zone and, where present, also impedes the downward migration of DNAPL (HSI, 1996).

Lower Sand Zone - The Lower Sand Zone underlies the Upper Low-Permeability Zone. The Lower Sand Zone ranges in thickness from approximately 90 to 165 feet. The zone behaves as a confined aquifer and has an estimated average hydraulic conductivity of 36 ft/day. Groundwater flows generally north and northeastward across the Site in the Lower Sand Zone and appears to be relatively unaffected by surface topography and activities. There is a downward vertical groundwater gradient over much of the Site. The difference in potentiometric surface elevations between the Upper Silt and Sand Zones and the Lower Sand Zone is as much as three to four feet in the southern and western portions of the Site. The magnitude of the downward gradient diminishes toward the northeast and a very slight upward gradient exists in the eastern portion of the Site.

Lower Confining Zone - The Lower Confining Zone underlies the Lower Sand Zone. This zone is at least 150 feet thick at boring D96-4 and hydraulically separates the Lower Sand Zone from the deeper regional aquifers of the Middle and Lower Wilcox Group.

5.3.2 Facility-Specific Hydrogeologic Information

Figures 2 and 3 of this Renewal Application satisfy the 40 CFR 170.14(c) surface water flow and topographic map requirements. Additional requirements, including groundwater flow and location of the monitoring wells are satisfied by Figures 6 and 7. Figure 7 presents the groundwater potentiometric surface contours for the two semi-annual monitoring events conducted in 2007. Figure 6 shows the locations of the Site monitoring wells, highlighting the wells located upgradient and downgradient of the closed SI that are used in the monitoring program. Flow velocities and hydraulic gradients as determined for the 2007 semi-annual events are presented in Table 2.

5.4 CURRENT GROUNDWATER MONITORING DATA

The groundwater monitoring program for the closed RCRA SI includes semi-annual gauging and sampling of two upgradient monitoring wells (R-01R and R-10) and six downgradient monitoring wells (R-07, R-08, R-08B, R-09, R-09C, and R-09D) (Figure 6). In addition, to provide accurate determinations of groundwater flow rate and direction around the closed SI, up to thirteen additional wells are gauged during the semi-annual events. Monitoring activities are completed in accordance with the requirements of the Permit and the procedures provided in Appendix E-5 of the Permit (Sampling and Analysis Plan). Note that on January 31, 2002, Beazer requested an interpretation of Permit language from MDEQ to clarify the Permit requirements to gauge Site monitoring wells. MDEQ confirmed (in a letter dated February 12, 2002) that the Permit requires gauging of only the eight sampled wells listed in Parts III.B.1.a and III.B.1.b of the Permit. However, in order to provide accurate determinations of groundwater flow rate and direction around the closed SI, Beazer voluntarily gauges additional wells during the semiannual sampling events.

Groundwater elevation measurements and groundwater potentiometric surface maps for the monitoring events are provided in Appendix F. Note that observations of DNAPL in non-RCRA gauging well R-20 have been consistent throughout the monitoring program.

Throughout the monitoring program, groundwater flow in the vicinity of the closed RCRA SI has been determined to be northeastward from the impoundment area. Groundwater flow velocities are calculated in accordance with the requirements of the Permit. The average hydraulic gradients calculated for groundwater across the closed RCRA SI have ranged from 0.002 feet/feet to 0.010 feet/feet. Using the conductivity of 8.63 feet/day (slug test results for A level wells [Hydro-Search Inc., December 1996]) and effective porosity of 0.3 (estimated from Freeze and Cherry, 1979), the average linear groundwater flow velocity in the vicinity of the closed RCRA SI ranged from 0.058 feet/day (21 feet/year) to 0.288 feet/day (104.9 feet/year). The groundwater flow velocities constitute a conservatively high estimate of the potential constituent transport velocity because aqueous constituents are usually subject to interactions with the soil matrix, which can significantly retard the rate of transport relative to the groundwater flow velocity.

As required by the Permit, the groundwater samples are analyzed for the constituents listed in Table 3. Following receipt of the data from the laboratory, analytical data is reviewed for completeness and quality using the protocols of the United States Environmental Protection Agency (USEPA) National Functional Guidelines and USEPA method specifications. Groundwater analytical data collected under the Permit are included with this Permit Renewal in Appendix G. Data collected throughout this monitoring program are consistently non-detect at concentrations equal to or greater than their respective estimated quantitation limits.

Statistical evaluations have consisted of empirical evaluations of the data, performed semiannually in accordance with Appendix E-6 of the 1998 Permit. Consistent with the conclusions drawn from the statistical evaluations performed under the 1987 Permit, described in Section 5.2, these evaluations demonstrate that there is no evidence of a release from the closed unit.

5.5 PROPOSED POST-CLOSURE CARE MONITORING PROGRAM

The Permit indicates that the post-closure detection monitoring program shall continue throughout the active life of the SI, including the closure period, and throughout the post-closure period (Part IV.G.3). The Mississippi Hazardous Waste Regulations incorporate by reference the federal regulations in 40 CFR Part 264. As indicated in 40 CFR Part 264.117(a)(2), the Administrator may shorten the post-closure care period for the hazardous waste unit, if it is found that the unit is closed, and if the owner finds that the reduced period is sufficient to protect human health and the environment. Based on the removal of waste material, capping of the unit in accordance with the closure plan, the subsequent certification of closure, the extensive analytical data base and the statistical evaluations completed to date indicating the absence of unit-related constituents in the groundwater, the closed SI has not, and will not adversely impact groundwater, and subsequently human health and the environment. As such, the conditions of the closed SI meet the requirements for modifying the detection monitoring program. The modifications and rationale for the modifications are described in the following sections.

Wells Proposed to be Included in the Monitoring Program

The current detection groundwater monitoring program for the closed SI consists of eight wells (R-01R, R-07, R-08, R-08B, R-09, R-09C, R-09D and R-10). The detection program will continue to include this network of wells. Wells R-0lR and R-10 are the upgradient wells. The remaining wells are downgradient point of compliance wells. The majority of the wells (R-01R, R-07, R-08, R-09, and R-10) are installed within the upper sand aquifer at depths ranging from 17 to 31 feet bgs. Wells R-08B, R-09C and R-09D are completed in the lower sand at depths ranging from 36 to 87 feet bgs.

Proposed Required Analytical Parameters

Analytical parameters will include the constituents of the current monitoring program listed in Table 3. These constituents include pentachlorophenol as well as the semivolatile constituents listed in 40 CFR 261 Appendix VII – Basis for listing hazardous Waste K001 Constituents. In addition, acenaphthene, fluorene, anthracene, phenanthrene, and pyrene, constituents associated with creosote will continue to be included. Groundwater samples collected during the detection monitoring program will be analyzed in accordance with Sampling and Analysis Plan provided in Appendix H.

Proposed Biennial Monitoring Frequency

Based on the consistent lack of detectable concentrations of the constituents of interest, the frequency of monitoring is proposed to be modified from semiannual to once every other year (biennial).

Statistical Evaluations

Groundwater analytical data from the downgradient wells will be compared to their estimated quantitation limits upon receipt of the data. If the detected concentrations are less than their respective Reporting Limits (RLs), no further action will be taken. If the concentration of any constituent is greater than its RL in at least one well then a statistical evaluation will be performed as described in Appendix H (Sampling and Analysis Plan).

Proposed Biennial Reporting

A biennial groundwater monitoring report will be submitted to MDEQ and will include information, as follows:

- Static groundwater level elevations;
- Potentiometric maps from the biennial sampling event;
- Groundwater flow rate and directions in uppermost aquifer;
- Evaluation of the groundwater surface elevations to determine whether the locations of wells are adequately placed to characterize groundwater flow direction and potential constituent migration; and,
- Comparison of background analytical data from upgradient wells R-01R and R-10 to the analytical results from downgradient wells.

5.6 COMPLIANCE MONITORING PROGRAM

Compliance groundwater monitoring downgradient of the closed impoundment area is not applicable based upon the groundwater monitoring data generated to date. If future Post-Closure Care groundwater detection monitoring data indicate that Facility-related constituents are present in groundwater in the uppermost aquifer at the compliance wells at concentration limits that are specified for the Facility, then a compliance monitoring program will be developed in accordance with 40 CFR Part 270.14 and Part 264.99.

6.0 CORRECTIVE ACTION

Based on nineteen years of post-closure monitoring, Beazer does not anticipate that any groundwater corrective action for the closed SI will be necessary. Should corrective action for the closed SI be dictated by future groundwater monitoring, as proposed herein, that corrective action would be selected and implemented in conjunction with any Site-wide corrective action determined to be necessary through the RFI/CMS and subsequent Site-wide corrective action evaluation. As such, corrective action is not required pursuant to 40 CFR 270.14(C).

7.0 CLOSURE AND POST-CLOSURE REQUIREMENTS

This section discusses the activities performed in closing the former RCRA surface impoundments and the activities to be performed at the closed surface impoundments during this permit period. Sections 7.1 and 7.2 regarding closure plans and activities as well as the post-closure plan satisfies the requirements for the renewal application pursuant to 40 CFR 270.14(b)(13). Subsections 7.2.1 through 7.2.8 address specific requirements of 40 CFR 270.28, as follows:

- Section 7.2.1 presents justification for waiving the Post-Closure Preparedness and Prevention Plan requirements pursuant to 40 CFR 270.14(b)(6);
- Section 7.2.2 presents post-closure security requirements pursuant to 40 CFR 270.14(b)(4);
- Section 7.2.3 presents the post-closure inspection schedule and maintenance plan pursuant to 40 CFR 270.14(b)(5);
- Section 7.2.4 identifies that as per 40 CFR 270.14(b)(28) a Contingency Plan is not required because this is an application for a post-closure permit;
- Section 7.2.5 identifies that as per 40 CFR 270.14(b)(28) a Personnel Training Program is not required because this is an application or a post-closure permit;
- Section 7.2.6 addresses post-closure notices pursuant to 40 CFR 270.14(b)(14);
- Section 7.2.7 addresses the cost estimate and financial assurance mechanism for post-closure pursuant to 40 CFR 270.14(b)(16); and,
- Section 7.2.8 addresses the certification of completion of post-closure care pursuant to 40 CFR 264.120.

7.1 CLOSURE PLANS, ACTIVITIES, AND CERTIFICATION

Closure activities for the SI were completed in October 1989. The construction Documentation Report for Surface Impoundment Closure (Keystone, 1989) was submitted to the MDEQ certifying that the SI was closed in accordance with the specifications of the Facility's closure plan. A copy of the closure certification document is included in Appendix I.

Closure Performance Standard - The SI was closed in a manner that: 1) minimizes the need for further maintenance, and 2) controls and minimizes or eliminates, to the extent necessary to prevent threats to human health and the environment, post-closure escape of hazardous waste or hazardous constituents to groundwater or surface water or to the atmosphere. In general, this performance standard was achieved by removing liquids, bottom sludges and visually contaminated soils, and was ensured by the construction of a low-permeability soil-bentonite cap and vegetative soil cover. In addition groundwater monitoring will continue to document any changes in groundwater quality in the vicinity of the closed SI.

Inventory Removal, Disposal, or Decontamination of Equipment - In 1988, all K001 sludge and visually contaminated soils were removed from the SI and shipped off-site to Chemical Waste Management, Inc. located in Emelle, Alabama for disposal. Accumulated rainwater was pumped from the impoundment to the Grenada POTW in accordance with a letter, dated May 2, 1989, from the State of Mississippi, Bureau of Pollution Control, Industrial Pretreatment Division. Dewatering activities were completed by July 18, 1989. The SI was filled with clean material and covered with a low-permeability soil-bentonite cap. Closure activities were completed by the end of October 1989.

After completion of the final soil fill lift, the dozer was decontaminated. Decontamination was accomplished by scraping, shoveling and sweeping all of the soil from the dozer. Soil removal was performed while the dozer was still within the limits of the SI. Following the removal of soil, the dozer was moved to the plant's concrete-lined equipment wash-down area. All remaining soil and dirt was removed by cleaning the dozer with steam and high pressure water. All rinseate was collected and conveyed to the wash-down area sump, which connects to the plant wastewater treatment system. As required by the approved closure plan, soil removed from the equipment was placed in the SI beneath the soil-bentonite layer.

Liquid and sludges were removed from the SI prior to construction of the cap and cover. After the sludge and visually contaminated soil were removed from the SI, the subgrade was prepared, and the SI dikes were excavated and placed in the SI as fill material. A key trench was excavated with a dozer around the perimeter of the SI. Clean soil fill material from an off-site borrow source was placed in the SI. The fill material was placed in approximately 8-inch lifts and compacted to at least 90 percent of the maximum dry density. Placement and compaction of the soil fill continued until the grades required for the soil-bentonite subbase were achieved.

Soil from a pre-approved off-site borrow source and bentonite were used to construct the clay barrier cap with a permeability less than 1×10^{-7} cm/sec, The soil-bentonite layer was constructed by placing and spreading the soil into 8-inch lifts over the entire SI. This process was continued until a compacted cap two feet thick was constructed. After grading the final lift, the surface of the soil-bentonite layer was rolled smooth with a steel drum roller in preparation for the installation of the filter fabric and drainage layer.

A one-foot layer of drainage material was placed over the soil-bentonite layer. The drainage layer was then covered with geotextile fabric. Finally 18 inches of cover soil was placed over the geotextile fabric overlying the drainage layer. The soil cover was seeded and mulched to establish a vegetated cover.

A drainage channel was constructed along the western side of the capped SI to convey run-off from the west area. The channel begins at the middle of the western side of the cap and extends past the southern end of the cap until it connects with the existing drainage channel that runs from west to east. Surface grading was used around the remaining portions of the capped SI to direct run-off away from the closed SI.

Minimization of Liquid Migration - To minimize infiltration, the cover will drain by a final slope of approximately 4 percent. Also, infiltration beyond the vegetated cover is minimized because of the underlying drainage layer and compacted soil-bentonite which allow infiltration to flow to the perimeter channels.

Maintenance Needs - The closure design minimizes the required future maintenance of the closed landfill. It is intended to minimize any threats to human health and the environment because any post-closure escape of hazardous waste, hazardous waste constituents, leachate, contaminated runoff, or waste products or constituents to groundwater or surface water or the atmosphere are controlled. The liquid portion of the sludge and contaminated soils were removed from the SI prior to construction of the cover. The design of the soil-bentonite cap, drainage layer, and vegetated soil layer promote positive drainage. These measures minimize the infiltration into the disposal area, and isolate the landfill from the local groundwater system. Minimum maintenance will be performed to keep the cover functional.

Drainage and Erosion - Free drainage of precipitation off the cover will be provided by the slope of the soil cover and topsoil layers. The drainage of infiltration by the conducting zone above the soil-bentonite cap is provided by the drainage layer. The drainage layer is constructed of sand which permits drainage to the collection channels. The potential for the drainage layer clogging is reduced by the use of a geotextile fabric atop the sand zone. Drainage is controlled by using off-site diversion ditches, on-site collection channels, surface grading and vegetation. The on-site collection channels are designed to control the on-site surface water and outlet it to existing drainage courses. The cover erosion potential was calculated using the Universal Soil Loss Equation. The final cover design was selected to minimize erosion.

Settlement, Subsidence and Displacement - The soils that comprise the cover are compacted, cohesive fill material, excluding the drainage layer. These materials are not expected to significantly consolidate under the applied cover overburden loading. Calculations estimating cap settlement were presented in the approved Closure Plan. The potential for waste consolidation is precluded because the waste sludges have been removed and replaced by compacted cohesive backfill. The potential for consolidation of the backfill is governed by the compaction criteria for placement and overburden loading. The overburden load has not to date, and is not expected to, cause significant consolidation of the compacted cohesive backfill.

Freeze/Thaw Effects - The soil-bentonite barrier layer is located below the average frost penetration depth reported for the geographical area. The frost penetration depth in the Grenada, Mississippi area is approximately 10 inches. The depth of cover is 3 feet over the soil-bentonite cap and reduces to a minimum of 12 inches at the edge. This provides adequate frost protection for the low-permeability cap.

7.2 POST-CLOSURE PLAN

Requirements for post-closure care include inspection, maintenance, and groundwater monitoring. This Post-Closure Care Plan for the closed SI includes inspection, monitoring, and maintenance activities that have been performed for the last nineteen years under the current permit. These activities will continue to be performed in accordance with the above-cited regulations. There are approximately 11 years remaining in the original 30-year post-closure period.

The post-closure contacts during the post-closure period are:

Facility Contact:
Mr. Michael Bollinger
Environmental Program Manager
Beazer East, Inc.
One Oxford Centre, Suite 3000
Pittsburgh, Pennsylvania 15219
(412) 208-8864

Site Contact:
Mr. Vance R. Haskin, Plant Manager
Koppers Inc.
1 Koppers Drive
P. O. Box 160
Tie Plant, Mississippi 38960
(662) 226-4584

7.2.1 Post-Closure Preparedness and Prevention

Pursuant to 40CFR 270.14(b)(6), this section provides the justification for waiving the Post-Closure Preparedness and Prevention Plan. The closed units include a constructed soil/bentonite cover over subsoils that may contain residual levels of constituents. Waste materials (*i.e.* sludge or liquid products) are not present within the units. The groundwater monitoring results have demonstrated that constituents are not present in groundwater at the closed units. There is no possibility of fire, explosion, or immediate release of hazardous waste constituents that would constitute a threat to human health or the environment. Therefore, it is recommended that a Post-Closure Preparedness and Prevention Plan not be required.

7.2.2 Post-Closure Security

The SI was closed in a manner that controls and minimizes or eliminates, to the extent necessary to prevent threats to human health and the environment, post-closure escape of hazardous waste or hazardous constituents to groundwater or surface water or to the atmosphere. In general, the performance standard was achieved by removing liquids and bottom sludges and by constructing a low-permeability cap and vegetated soil cover.

During the post-closure period, signs are posted and maintained on each side of the closed SI. The warning signs read **"DANGER - UNAUTHORIZED PERSONNEL KEEP OUT"**. The signs are legible from a distance of 25 feet and posted at all directions of approach. Access to the closed SI is controlled by a fence located around the perimeter and an entrance gate.

In addition, the entire perimeter of the Koppers Wood Treating Plant is fenced. All Koppers Plant personnel are instructed to report any unusual activities or security incidents to a supervisor who may in turn contact the police. All visitors are instructed to report to the plant office.

7.2.3 Post-Closure Inspection Schedule and Maintenance Plan

The following features are subject to inspection during the post-closure period:

- Security control devices,
- Erosion damage;
- Cover settlement, subsidence, and displacement;
- Vegetative cover condition;
- Integrity of run-on and run-off control measures;
- Cover drainage system function; and,
- Well condition.

The post-closure care of the closed SI system will be conducted by the operator during the post-closure care period.

Cover Inspection

The operator will conduct annual inspections of access and security systems (i.e., fences and gates). The operator will also examine the cover integrity, including vegetative cover condition, potential erosion damage and cover subsidence and run-on and run-off control system integrity. The results of the inspections and any corrective action taken will be placed on an inspection log sheet which is presented under Forms.

The annual inspection frequency is justified because the forces of nature are likely to cause relatively slow rates of change. For instance, the most likely natural force to affect change to the cover is rainfall runoff. However, even if several large, closely-spaced rainstorms were to cause accelerated erosion, the annual inspection schedule would still allow the operator sufficient time to take appropriate action.

Groundwater Monitoring System Inspection

The following features related to the groundwater monitoring system (all Facility wells) and benchmarks will be subject to inspection and maintenance during each biennial sampling event conducted during the post-closure care period:

- Groundwater monitoring wells;
- Monitoring well covers;
- Locks;
- Surface seals; and,
- Benchmark integrity.

Surface grout around the monitoring wells will be replaced or repaired if the significant cracks, loose or missing grout are observed. Monitoring wells will be re-surveyed if there is any noticeable change in the well such as subsidence or moved protector pipe. The monitoring wells will be kept locked when not in use. Missing or broken padlocks or caps will be replaced as needed.

The established benchmarks will be inspected, and if needed, repair work will be conducted to ensure that the proper elevation has been retained.

The result of the inspections will be placed on an inspection log which is included under Forms. The inspection log will also provide for reporting any variances noted and remedial action taken.

The operator will be responsible for maintenance activities at the closed SI. Additional labor and equipment operators may be needed occasionally and their costs have been included in the post-closure cost estimate. Maintenance activities at the closed SI will be triggered by problems/deficiencies which will be noted in the annual inspections for the cover or during the biennial groundwater monitoring inspections. Observations of the problem/deficiencies could result in initiation of one or more of the following maintenance activities (as appropriate):

- Repair of security control devices;
- Erosion damage repair;
- Correction of settlement, subsidence and displacement;
- Mowing, fertilization, and other vegetative cover maintenance;
- Repair of run-on and runoff control structures; or,
- Well repair or replacement.

7.2.4 Contingency Plan

According to 40 CFR 270.28, a Contingency Plan, per the requirements of 40 CFR270.14(b)(7), is not required because this is an application for a post-closure permit.

7.2.5 Post-Closure Personnel Training

According to 40 CFR 270.28, the personnel training requirements of 40 CFR270.14(b)(12) are not required because this is an application for a post-closure permit.

7.2.6 Post-Closure Notices

Documentation that notices required under 270.14(b)(14) and 264.119 have been submitted are described in this section. Closure of the SI as a landfill was completed in 1989. The report titled, *Closure Construction Documentation Report for the Surface Impoundment Closure* is included as Appendix I. This report contains documentation of closure construction to verify that the SI was closed in accordance with the approved closure plan. The operator and engineer certification of closure is included in Attachments A and B of this report.

Appendix J contains a copy of a survey plat submitted to the local zoning authority which indicates the location and dimension of the closed SI. The plat was prepared and certified by a professional land surveyor and contains a note, which states the area described hereon previously contained a Waste Management Unit. The use of the described area is restricted and any future uses must not disturb the integrity of the final cover without prior approval of the State of Mississippi, Department of Natural Resources.

7.2.7 Cost Estimate and Financial Assurance Mechanism for Post-Closure

In accordance with 270.14(b)(16), Table 4 summarizes the Post-Closure Cost Estimate in current dollars. The cost estimate for post-closure will be updated annually.

The current established financial assurance mechanism for post-closure care as required by 40 CFR 270.14(b)(18) and 40 CFR 264.145 is presented in Appendix K.

7.2.8 Certification of Completion of Post-Closure Care

No later than 60 days after completion of the established permit period, Beazer will submit to MDEQ (by registered mail), a certification that the post-closure care period for the hazardous waste disposal unit was performed in accordance with the specifications in the approved post-closure plan. The certification will be signed by Beazer and an independent registered professional engineer.

8.0 INFORMATION REQUIREMENTS FOR SOLID WASTE MANAGEMENT UNITS

Current information regarding the solid waste management units at the Koppers Wood Treating Site is presented in the CMS Workplan (GeoTrans and Groundwater Insight, 2006). Sections from the CMS Workplan, including the RCRA Facility Assessment History, RCRA Facility Investigation History, Corrective Action History, and Conceptual Facility Model are presented below.

8.1 RCRA FACILITY ASSESSMENT HISTORY

In 1987, the Environmental Protection Agency (EPA) conducted a RCRA Facility Assessment (RFA) of the Site, documented in the report, *RCRA Facility Assessment of the Koppers Industries, Inc., Grenada, Mississippi* (EPA, 1987). The RFA identified the following 13 Solid Waste Management Units (SWMUs):

SWMU 1	Oil/Water Separator
SWMU 2	Surface Impoundment
SWMU 3	Spray Irrigation Field
SWMU 4	Boiler
SWMU 5	Boiler Ash Landfill
SWMU 6	Process Cooling Reservoir
SWMU 7	Container Storage Area
SWMU 8	Drip Track Area
SWMU 9	Chemical Unloading Area
SWMU 10	Underground Storage Tank
SWMU 11	Former Wastewater Treatment System
SWMU 12	North Waste Piles
SWMU 13	South Waste Piles

8.2 RCRA FACILITY INVESTIGATION HISTORY

In 1988, a Phase I RFI of each SWMU identified in the RFA was performed. This investigation included: drilling and sampling 43 borings; installing and sampling 47 groundwater monitoring wells; and, collecting and analyzing eight (8) sediment samples and four (4) surface water samples. The findings of this investigation, presented in the report, *Soil and Groundwater Investigation of Solid Waste Management Units, Koppers Industries, Inc. Plant, Grenada, Mississippi* (Keystone, 1989), were submitted to the MDEQ with recommendations proposing additional investigations of the SWMUs. This Report was accepted as the Phase I RFI Report by the EPA and MDEQ.

In December 1989, the MDEQ concurred that additional investigations were warranted. Subsequently, Beazer prepared the report, *Phase II RFI Work Plan, RCRA Facility Investigation (RFI), Koppers Industries, Inc., Grenada Mississippi* (Keystone, 1990), to outline the scope of work and the procedures to be implemented during the additional investigations of the SWMUs.

Responses to comments by the EPA and the MDEQ on the document were incorporated as revisions titled *Supplemental Work Plan, RCRA Facility Investigation (RFI), Koppers Industries, Inc., Grenada, Mississippi* (Keystone, 1991). In January 1991, the MDEQ and the EPA approved the Supplemental Work Plan, and Phase II RFI field activities began in May 1991. These activities included: collecting and analyzing 24 sediment samples, seven (7) surface soil samples, drilling and sampling 75 soil borings, and collecting and analyzing 25 groundwater samples and 14 surface water samples.

The *Draft Phase II RCRA Facility Investigation, Koppers Industries, Inc., Grenada, Mississippi* (Dames & Moore, 1992) was completed in 1992 and revised in 1994 based on EPA comments. Beazer received a second set of comments on the revised Draft Phase II RFI Report from the EPA on June 12, 1996 (EPA, 1996). Beazer submitted a response to the EPA comments on August 30, 1996 (Beazer, 1996). The *RCRA Facility Investigation, Work Plan Addendum, Koppers Industries, Inc., Grenada Facility, Grenada, Mississippi (work Plan Addendum)* (Hydro-Search, Inc. [HSI], 1997) was prepared in accordance with that response. Supplemental field investigations were conducted during May and June 1997. These investigations included: drilling and sampling 74 soil borings; installing seven (7) geoprobe holes and collecting 14 groundwater samples from these geoprobe holes; and installing and sampling two (2) groundwater monitoring wells.

The 13 SWMUs were investigated in detail during the Phase I and Phase II RFI studies. Most of the SWMUs are located in the central area of the Site, as shown in Figure 2-2 of Appendix L. The Former Wastewater Treatment System was the focus of an Interim Measures investigation conducted in 1996 that consisted of 24 soil borings, ten (10) test pits, and a pump test. The Interim Measures investigation was documented in the report, *RCRA Interim Measure Predesign Investigation Report and Conceptual design* (HSI, 1996). Additional field work, consisting of 24 sediment transects and samples, was performed in August 1998 to support the Interim Measures.

The RCRA Permit (MSD 007 027 543) was reissued in September 1998 and four additional SWMUs were identified in the Permit, as follows:

SWMU 14	Temporary Storage of Soil
SWMU 15	Two Soil Containment Structures
SWMU 16	Old Oil/Water Separator
SWMU 17	Old South Drip Pad/Track

The RCRA Permit reissued in 1998 also specified that three of the SWMUs, initially identified in 1987, required no further action. These SWMUs are:

SWMU 2	Surface Impoundment
SWMU 3	Spray Irrigation Field
SWMU 5	Boiler Ash Landfill

Beazer submitted the *Revised Final Phase II RCRA Facility Investigation Report, Koppers Industries, Inc., Grenada Facility, Grenada, Mississippi* (Revised Final RFI) (HSI GeoTrans and

Ogden, 1998) to the EPA on November 13, 1998. Additional field work was performed in December 1998 to characterize an area newly identified in the reissued RCRA Permit, consisting of 15 soil samples. In addition, 18 sediment samples were collected from the Northern Stream for additional characterization. The *Work Plan to Complete Phase II RCRA Facility Investigation, Koppers Industries, Inc., Grenada Facility, Grenada, Mississippi* (Work Plan to Complete RFI) (HSI GeoTrans, 1999) was submitted in August 1999 to address the EPA's May 20, 1999 comments on the Revised Final RFI. The EPA approved the Work Plan to Complete RFI on March 27, 2000, and activities were implemented from June through September 2000. This sampling included: nine (9) soil sampling locations; 15 sediment samples in the Northern Stream; ten (10) vertical profile borings with groundwater sampling; installation of three (3) groundwater monitoring wells; and baseline natural attention sampling.

In March 2002, the EPA requested Beazer to characterize soils in the vicinity of an area referred to as the former "creosote hole". Beazer submitted the *Work Plan to Characterize Soil in the Vicinity of the Former "Creosote Hole", Koppers Industries/Beazer East, Inc., Tie Plant, Mississippi* (GeoTrans, 2002) in June 2002 to the EPA. The EPA approved this work plan on January 10, 2003, and sampling and analysis of four (4) soil samples from two (2) soil borings were performed in March 2003. A technical memorandum titled, *Results of Soil Characterization, Vicinity of the Former "Creosote Hole", Koppers Industries/Beazer East, Inc., Tie Plant, Mississippi* (GeoTrans, 2003) was submitted to the EPA on April 17, 2003.

Beazer submitted the *Complete Phase II RCRA Facility Investigation Report, Koppers Industries, Inc., Grenada Facility, Grenada, Mississippi* (Complete RFI) (GeoTrans, AMEC, and Groundwater Insight, 2003) to the EPA on July 25, 2003, and the *Addendum to the Complete RFI Risk Assessment and Sediment Toxicity Work Plan for Northern Stream Sediments* (AMEC, 2005) was submitted to the EPA on January 28, 2005. On April 29, 2005, the EPA approved the Complete RFI and commented on the Sediment Toxicity Testing Work Plan. The EPA approved the Sediment Toxicity Testing Work Plan on March 30, 2006, and the *Evaluation of Chemistry and Toxicity of Northern Stream Sediments* was submitted to the EPA on June 30, 2006 (AMEC, 2006).

8.3 CORRECTIVE ACTION HISTORY

Beazer has investigated the Site with over 200 soil borings, 47 sediment samples, 95 groundwater monitoring wells, and 18 surface water samples. Beazer has closed or removed many of the SWMUs at the Site and implemented an Interim Action to mitigate discharge of dense non-aqueous phase liquid (DNAPL) to the Central Ditch. This subsection provides a brief description of the Site SWMUs, summarizes previous investigations at each SWMU, and reviews corrective actions taken at each SWMU. A complete characterization of the investigation results at each SWMU is provided in the Complete RFI. Consistent with previous discussions of the Site, the SWMU discussion is subdivided into the three areas of the Site: the northern area, the central area, and the southern area. Additionally, this subsection includes a description of the nature and extent of Site constituents in groundwater.

8.3.1 Northern Area

The Northern area of the Site is relatively unimpacted and features wood storage areas, the former spray irrigation field (SWMU 3), the north waste piles (SWMU 12), and the Northern Stream, as shown in Figure 2-2 of Appendix L. The town of Tie Plant adjoins the property boundary to the northeast, and the Illinois Central Railroad forms the western boundary. The Northern Stream at the northern portion of the Site flows northeast towards the Batupan Bogue.

SWMU 3 – Spray Irrigation Field

The Former Spray Irrigation Field (SWMU 3) was in use from at least 1975 until mid-1988 and was closed in 1991, in accordance with a closure plan approved by the EPA in January 1991. The RCRA permit reissued in 1998 specified that SWMU 3 required no further action.

SWMU 12 – North Waste Piles

The North Waste Piles (SWMU 12) consisted of construction debris, treated and untreated scrap wood, railroad iron, scrap metal, rubber tires, and other inert material. Six (6) soil samples were collected in 1991 to characterize potential soil impacts at SWMU 12.

Northern Stream

The Northern Stream is a small local drainage that crosses the north edge of the Site. 37 sediment samples have been collected from the Northern Stream in 1991, 1998, 2000, and 2006, to characterize potential Site impacts to the stream sediments. Six (6) surface water samples were collected from the Northern Stream in 1991 to assess potential Site impacts to the stream.

8.3.2 Central Area

The Central area of the Site comprises the main wood-treating facilities and includes 11 SWMUs: the oil/water separator (SWMU 1); the closed RCRA surface impoundment (SWMU 2); the boiler (SWMU 4); the process cooling reservoir (SWMU 6); the container storage area (SWMU 7); the drip track area (SWMU 8); the chemical unloading area (SWMU 9); the underground storage tank (SWMU 10); the former wastewater treatment system (SWMU 11); the old oil/water separator (SWMU 16); and the old south drip pad/track (SWMU 17). The Central Ditch in the central area of the Site flows northeast towards the Batupan Bogue.

SWMU 2 – Closed RCRA Surface Impoundment

SWMU 2 was in use from at least 1975 until mid-1988. This former surface impoundment was formally closed under RCRA in 1988. The State of Mississippi issued Hazardous Waste Management permit No. 88-543-01 on June 28, 1988, as Amended in February 1990 and reissued in November 1999, for post-closure care of the Surface Impoundment. The Mississippi

Department of Natural Resources (MDNR) regulates the post-closure care of this unit, and the RCRA Permit reissued in 1998 specifies that SWMU 2 required no further action.

SWMUs 1, 4, 9, and 10 – Central Process Area

The Central Process Area is comprised of pressurized cylinders, work and storage tanks, and includes SWMUs 1, 4, 9, and 10. The Central Process Area is within the active wood-treating plant. The soils in the Central Process Area have been characterized by 39 soil samples collected in 1991, 18 surface soil samples collected in 1977 and four (4) soil samples collected in 2003.

SWMU 6 - Process Cooling Reservoir

The soils in the Process Cooling Reservoir (SWMU 6) have been characterized by 13 soil samples collected in 1991. Two (2) sediment samples and two (2) surface water samples were collected in 1991 from the Process Cooling Reservoir for characterization purposes.

SWMU 7 – Container Storage Area

The Container Storage Area (SWMU 7) stores containers for less than 90 days. Two (2) soil samples were collected in 1991 and 12 surface soil samples were collected in 1997 to characterize potential Site constituents in soil around the Container Storage Area.

SWMU 8 – Drip Track Area

The drip tracks (SWMU 8) were unlined until 1991 and preservatives from newly treated wood dripped onto Site soil. In 1991, a concrete catchment system was installed which included lining and berming several hundred feet of drip tracks. Approximately 3,200 cubic yards of soil materials were removed during the drip track reconstruction. These soil materials were placed in engineered containment structures, subsequently designated the Two Soil Containment Structures (SWMU 15). Soils in the Drip track Area (SWMU 8) were characterized with 49 soil samples collected in 1991 and 12 surface soil samples collected in 1997.

SWMUs 11 and 16 – Former Wastewater Treatment System and Old Oil/Water Separator

Soils in the Former Wastewater Treatment System (SWMU 11) were assessed with 33 soil samples collected in 1991. The Former Wastewater Treatment System (SWMU 11) was the focus of an Interim Measures investigation conducted in 1996, and Interim Measures Action conducted during 1999 to 2000. The Former Wastewater Treatment System included two (2) former impoundments. A former wood disposal area was located just west of the Former Wastewater Treatment System. The old Oil/Water Separator (SWMU 16) was located west of, and adjacent to, the former wood disposal area. The piece of equipment was taken out of service, cleaned, and backfilled in 1988.

The SWMU 11 Interim Measures (IM) were implemented between April 1999 and May 2000. Work was performed in accordance with the *Interim Measures Work Plan, SWMU 11* (HSI

GeoTrans, 1999b). Interim Measures at the Former Wastewater Treatment System (SWMU 11) were designed to mitigate further discharge of DNAPL into the Central Ditch, and to eliminate potential exposure pathways to wood-treating compounds in the Central Ditch sediment. To accomplish these two objectives, the IM activities included:

- Excavating approximately 30,000 cubic yards of impacted sediment from the Central Ditch;
- Re-lining the ditch with a geosynthetic clay liner, clean import material, and bank armor;
- Consolidating the excavated sediment in the Former Wastewater Treatment System and former wood disposal area, and installing a low-permeability cover with a geosynthetic clay liner over the excavated sediment to reduce the groundwater hydraulic gradient toward the Central Ditch;
- Installing a subsurface vertical containment barrier along the north bank of the Central Ditch, an under-drain beneath the re-lined ditch, and DNAPL recovery wells behind the containment barrier, to contain and collect DNAPL and mitigate continuing seeps into the Central Ditch; and
- Performing ongoing DNAPL collection.

The results of the IM activities were presented in the *Interim Measures SWMU 11 Documentation Report* (HSI GeoTrans, 2000a). the EPA approved the Interim Measures SWMU 11 Document Report on October 16, 2003.

SWMU 17 – Old South Drip Pad/Tracks

The Old South Drip Pad/Tracks were identified as SWMU 17 in the reissued 1998 RCRA Permit as an area where preservatives from newly treated wood dripped onto Site soil. Soils at SWMU 17 were investigated with 19 soil samples collected in 1991, 1998 and 2000.

Central Area Surface Soil PCDD/PCDF Sampling

Thirty-two (32) surface soils in the central area were sampled for PCDDs/PCDFs in areas of documented pentachlorophenol use, due to association between PCDDs/PCDFs and impurities in technical grade pentachlorophenol.

Central Ditch

The Central Ditch sediments were addressed by the SWMU 11 Interim Measures implemented from April 1999 through May 2000. On-Site sediment in the Central Ditch was excavated from beneath the upstream railroad bridge to the east property boundary. A minimum of three (3) feet of visually impacted sediment was removed from the ditch bottom; in some areas, up to five (5) feet of sediment were removed. Approximately 5,000 cubic yards of sediment were removed from the on-Site portion of the Central Ditch. The off-Site Central Ditch excavation consisted of removing up to five (5) feet of visually impacted sediment from the ditch bottom and from buried stream channels, from the east property boundary to the Batupan Bogue. Following excavation, a minimum of three (3) feet of clean backfill material was placed in the off-Site Central Ditch bottom. Approximately 24,200 cubic yards of sediment were removed from the off-Site portion of the Central Ditch. The sediment was placed in a sediment disposal area north of the Central Ditch.

A portion of the on-Site Central Ditch was relined, and a DNAPL recovery system was installed. Nine (9) under-drain sumps were installed beneath the on-Site portion of the Central Ditch, and clean import material was emplaced in the remediated Central Ditch. In addition, a sealed-joint, sheet pile cutoff wall was installed along the north bank of the on-Site Central Ditch to inhibit DNAPL migration to the Central Ditch, and five (5) DNAPL recovery wells were installed along the north side of the cutoff wall.

The design and implementation of the Interim Measures were based upon historical analytical data for 13 sediment samples collected in 1991 and 31 sediment samples collected in 1998. In addition, six (6) surface water samples were collected from the Central Ditch in 1991.

8.3.3 Southern Area

The southern area of the Site is relatively unimpacted and features wood storage areas, the boiler ash landfill (SWMU 5), the south waste piles (SWMU 13), the temporary storage of soils (SWMU 14), and two (2) soil containment structures (SWMU 15). Cultivated fields/woodlands adjoin the property boundary to the east, and the Illinois Central Railroad forms the western boundary. An air conditioning manufacturing facility is located west of the railroad tracks at the southern tip of the Site.

SWMU 5 – Boiler Ash Landfill

The Boiler Ash Landfill (SWMU 5) was closed pursuant to a negotiated Order with the MDEQ and documented in the reports, *Final Report, Groundwater Quality Assessment, Boiler Ash Disposal Area* (Chester Environmental, 1993) and *Supplemental Investigation Addendum to Boiler Ash Landfill Groundwater Quality Assessment* (Dames & Moore, 1994). The RCRA Permit reissued in 1998 specified that SWMU 5 required no further action.

SWMU 13 – South Waste Piles

The South Waste Piles (SWMU 13) consisted of untreated wood and empty railroad spike drums. The south waste piles were removed prior to 1989. 13 soil samples were collected in 1991 around SWMU 13 to characterize potential Site impacts.

SWMUs 14 and 15 – Temporary Storage of Soil and Two Containment Structures

The Temporary Storage of Soil (SWMU 14) formerly contained soil excavated from around the tank process area. The two Soil Containment Structures (SWMU 15), formerly contained soil excavated from the drip track area (SWMU 8). SWMUs 14 and 15 were removed in the fall of 1996 and documented to the EPA and MDEQ (Fluor Daniel GTI, 1997).

8.3.4 Groundwater

The nature and extent of Site constituents in groundwater have been characterized using groundwater analytical results from the most recent groundwater data at and downgradient of the Site. Groundwater beneath the Site is impacted by constituents including pentachlorophenol, benzene, and PAHs. The major groundwater impacts are beneath the Central Process Area, Former Waste Treatment System, the Drip Track Area, and the Old South Drip Pad/Track; these impacts attenuate within a short distance of these areas, as described below.

Selected groundwater wells completed in the Upper and Lower Sand Zones were sampled in 1997 and 2000 to further characterize the horizontal and vertical extent of Site constituents in groundwater. Figures 2-3 and 2-4 in Appendix L present the distribution of pentachlorophenol and benzene, respectively, in the Upper Sand Zone. The PAHs detected in groundwater at the Site consist predominantly of naphthalene, a two-ring compound with a relatively light molecular weight (compared to other PAH compounds) that degrades relatively easily. Figure 2-5 in Appendix L presents the distribution of naphthalene and total PAHs in the Upper Sand Zone.

Figures 2-6 and 2-7 in Appendix L present the distribution of pentachlorophenol and benzene, respectively, in the Lower Sand Zone. Figure 2-8 of Appendix L presents the distribution of naphthalene and total PAHs in the Lower Sand Zone. Figures 2-3 and 2-8 represent the most recent constituent data.

The contours depicted in Figures 2-3 through 2-8 of Appendix L were generated using the analytical data from the groundwater samples collected in 1997 and 2000. The historical data (pre-1977) posted on the Figures are presented for information purposes.

Upper Sand Zone

Pentachlorophenol is present in the Upper Sand Zone groundwater (Figure 2-3 of Appendix L) mainly under the Central Process Area and extends approximately 800 feet east of the Site boundary.

The benzene footprint in the Upper Sand Zone groundwater, shown in Figure 2-4 of Appendix L, is similar in shape and size to that of pentachlorophenol and is mainly located under the Central Process Area.

The naphthalene and total PAH concentrations are also centered under the central area as shown in Figure 2-5 of Appendix L (the Central Process Area, former Wastewater Treatment System, Drip Track Area, and Old South Drip Pad/Track). The isoconcentration lines for the naphthalene concentrations are the same isoconcentration lines for the total PAH concentrations. The naphthalene concentrations comprise approximately 95% of the total PAH concentrations.

The constituents in the Upper Sand Zone groundwater are attributed to Site operations conducted mainly in the Central Process Area, former Wastewater Treatment System, the Drip Track Area, and in the Old South Drip Pad/Track. The relatively small area of pentachlorophenol, benzene, and PAH concentrations, which are mainly contained within the Site boundary, support this conclusion.

Lower Sand Zone

As shown in Figure 2-6 of Appendix L, the pentachlorophenol in the Lower Sand Zone groundwater is present under the Central Process Area and extends approximately 250 feet east of the Site boundary, parallel to and bounded on the south by the Central Ditch.

The benzene footprint in the Lower Sand Zone (Figure 2-7 of Appendix L) is similar to the benzene footprint in the Upper Sand Zone; benzene is mainly located under the Central Process Area and concentrations above the MCL extend downgradient to the east. Benzene concentrations in the Lower Sand Zone have remained relatively constant over the 1991 to 2000 time period. Benzene concentrations are generally higher in the Lower Sand Zone compared to the Upper Sand Zone, with the area of highest concentration being further east by approximately 200 to 300 feet in the Lower Sand Zone.

The extent of the naphthalene and total PAHs in the Lower Sand Zone groundwater (Figure 2-8 of Appendix L) is similar to the distribution of naphthalene and total PAHs in the Upper Sand Zone and is primarily located under the Central Process Area, the former Wastewater Treatment System, the Old South Drip Pad/track area, and just east of the Drip Track Area. The isoconcentration lines for the naphthalene concentrations are the same isoconcentration lines for the total PAH concentrations. This reflects the fact that the naphthalene concentrations comprise approximately 95% of the total PAH concentrations.

Field activities performed during the summer of 2000 refined the understanding of the lateral and vertical extent of Site constituents in the Lower Sand zone. The lateral extent of Site constituents in the Lower Sand Zone has been defined with the results of the temporary vertical boring sampling. The vertical extent of Site constituents within the Lower Sand Zone has been characterized with the temporary vertical borings that were sampled at approximately 20-ft. intervals until the Lower Confining Zone was encountered. The 2000 investigation indicated that the Lower Sand Zone ranged from 90- to 165-feet thick. Site constituents are almost exclusively detected in the upper 35 to 45 feet of the Lower Sand Zone; this is the portion that is monitored by Site wells.

The distributions of pentachlorophenol, benzene, and PAH in the Upper and Lower Sand Zones reflect the limited downgradient migration of these constituents from their sources. Each constituent exhibits a substantial reduction in concentration within a relatively short distance from the source areas.

8.4 CONCEPTUAL FACILITY MODEL

The conceptual Facility model is based on the Site hydrogeology; the constituent distribution at the Site, and the constituent migration pathways.

8.4.1 Site Hydrogeology

The Site is located on a terrace approximately 10 to 15 feet above the floodplain of the Batupan Bogue. The subsurface stratigraphy is defined by six generalized lithological zones, as described below, from the shallowest to the deepest:

Fill Zone	Thickness ranges from 0 to 10 feet.
Upper Silt Zone	Thickness ranges from 5 to 8 feet.
Upper Sand Zone	Thickness ranges from 5 to 15 feet.
Upper Low-Permeability Zone	Thickness ranges from 0 to 18 feet.
Lower Sand Zone	Thickness ranges from 90 to 165 feet.
Lower Confining Zone	Thickness is at least 150 feet.

The channel fill sand beneath the floodplain of Batupan Bogue is comprised of discontinuous lenses of silt, fine sand, and silty clay eroded from the surrounding hills. Above these materials is a layer of silt deposited as wind-blown dust, known as loess. The channel fill sand correlates with the Upper Silt and Sand Zones.

The channel fill sand systems are in contact with the underlying Basic City Shale and Meridian Sand, where these formations were cut by the scour trench system. The Basic City Shale consists of silt and clay, with some fine sand, and correlates with the Upper Low-Permeability Zone at the Site. The Meridian Sand is comprised primarily of clean, fine, quartz sand in the vicinity of the Site and correlates with the Lower Sand Zone.

The Upper Silt and Sand zones are partially saturated and include areas of perched water on clay or silt lenses or within former impoundments. The hydraulic conductivity of these zones is approximately eight (8) feet per day (ft/day). These zones are unconfined or semi-confined, and groundwater flow is generally northeastward toward the Batupan Bogue. Site topography, however, affects local flow directions. For example, in the vicinity of the Central Ditch, shallow groundwater flows toward the Central Ditch.

The Upper Low-Permeability Zone is expected to have hydraulic conductivities that are several orders of magnitude lower than the Upper Silt and Sand Zones. The Upper Low-Permeability Zone acts as a local partial confining unit above the Lower Sand Zone. The Lower Sand Zone behaves as a confined aquifer and has an estimated average hydraulic conductivity of 36 ft/day. Groundwater flows north and northeastward across the Site in this zone and is unaffected by surface topography. The Lower Confining Zone is at least 150 feet thick and hydraulically separates the Lower Sand Zone from the deeper regional aquifers of the Middle and Lower Wilcox Group.

8.4.2 Constituent Distribution

Potential source areas are concentrated in the central area of the Site at the Central Process Area, the Drip Tracks, the Old South Drip Pad/Track Area, and the Former Wastewater Treatment System. Soil and groundwater impacts have been observed below these areas, while DNAPL has been observed mainly below the Former Wastewater Treatment System and Central Process Area. The constituents of potential concern at the Site from investigation activities include: pentachlorophenol; benzene, PAHs; and PCDDs/PCDFs.

PCDDs/PCDFs are byproducts or impurities present in pentachlorophenol. Scientific literature documents that PCDDs/PCDFs strongly adsorb to organic soil particles because of their high lipophilicity and low water solubility. PCDDs/PCDFs are considered insoluble in water with a solubility less than 1 ug/L and are considered immobile in soil due to their K_{OC} values that exceed 1×10^6 (Montgomery and Welkom, 1996). PCDDs/PCDFs exhibit little potential for significant leaching or volatilization once sorbed to particulate matter. The literature also documents the low mobility of the dissolved PCDD/PCDF compounds in groundwater systems. The groundwater wells with pentachlorophenol concentrations that exceed 1,000 to 2,000 micrograms per liter (ug/L) are located in the creosote DNAPL area. Groundwater samples from these wells contain creosote NAPL emulsion; and a PCDD/PCDF analysis of this water will not provide a quantification of dissolved-phase constituents, but rather will be an assessment of the creosote DNAPL emulsion. Therefore, PCDDs/PCDFs are not considered to be a dissolved-phase constituent in groundwater.

8.4.3 Migration Pathways

Historical Site activities have potentially resulted in impacts to surface and subsurface soil, groundwater, surface water, and stream sediment. Figure 2-9 of Appendix L is a block diagram of the surface and subsurface conditions in the Central Plant Area of the Site, as viewed toward the north. The figure encompasses part of the Central Process Area, the Old South Drip Pad/Track, the Former Wastewater Treatment System, and the Central Ditch with its discharge to Batupan Bogue. This figure also illustrates the subsurface conditions with section cuts through and along the Central Ditch. The section cuts show the six lithologic zones and the apparent migration of DNAPL into the Upper Silt and Sand Zones with some accumulation above the Upper Low-Permeability Zone. An approximation of dissolved phase migration is shown in the Upper Sand Zone.

DNAPL has been detected primarily below the Former Wastewater Treatment System and Central Process Area; fewer observations have been noted in the Drip Track Area and in the Old South Drip Pad/Track. In the Former Wastewater Treatment System area, DNAPL has been observed in the Upper Sand and Upper Low-Permeability Zones in perched, thin, coarse layers above finer-grained silt- and clay-rich horizons. The Upper Low-Permeability Zone impedes the downward migration of DNAPL. The migration of DNAPL beneath the Former Wastewater Treatment System is further impeded by: the vertical, sealed-joint, steel sheet pile cutoff wall immediately north of the Central Ditch, and the DNAPL recovery wells and the DNAPL underlain system in the Ditch, all installed as part of the IM.

Constituents in DNAPL below the Former Wastewater Treatment System and Central Process Area dissolve slowly in groundwater. Most of the constituents comprising the DNAPL are very insoluble.

8.4.4 Natural Attenuation Summary and Conceptual Model

An evaluation of Monitored Natural Attenuation is presented in the CMS Workplan (GeoTrans and Groundwater Insight, 2006). The natural attenuation summary and conceptual model from Section 4.5 of the CMS Workplan are presented in this section.

Natural attenuation evidence evaluated to date indicates that the current distribution of dissolved Site constituents in groundwater is stable. Since the risk associated with the current configuration is negligible, monitored natural attenuation (MNA) is strongly indicated as an effective remedy for constituents in groundwater. Work conducted to date has not provided an estimate of the time required for the plume to diminish. For practical purposes, the most effective means of making this determination is through an effective long term monitoring program.

Redox and electron acceptor trends at the Site are consistent with constituent biodegradation. Dissolved oxygen concentrations were typically elevated in the Upper Sand Zone relative to the Lower Sand Zone, because oxygen is replenished more effectively to the Upper Sand Zone. This may contribute to the lesser extent of most constituents in the Upper Sand Zone.

An inversely proportional trend was observed between dissolved oxygen and constituents, indicative of oxygen depletion due to aerobic constituent biodegradation. Site conditions also appear to be favorable for natural utilization of nitrate as an electron acceptor, although the supply of nitrate in background groundwater is relatively low. There is also evidence for the utilization of other major electron acceptors (i.e., iron (III), manganese (IV), sulfate and carbon dioxide) in biodegradation reactions at the Site. Sulfate may be of particular importance in this regard.

Constituent biodegradation is generally not nutrient-limited, with the widespread presence of nitrogen species (either nitrate or ammonium), and orthophosphate detected in groundwater at most locations. Results for dissolved carbon dioxide are consistent with constituent biodegradation, and indicate that at least a portion of this biodegradation proceeds to complete mineralization. Microbial data show the presence of microbes capable of metabolizing pentachlorophenol. They also provide evidence of greater microbial biomass in groundwater containing Site constituents, consistent with microbial growth using constituents as a carbon source.

Simulation results from the analytical model BIOSCREEN indicate that the current distributions of naphthalene, benzene and pentachlorophenol are influenced and limited by biodegradation. Results suggest that even in the absence of constituent biodegradation, plume concentrations should be stable in the zone within 1000 feet of the constituent source area. When biodegradation is added to the simulations, constituent plumes stabilize in even shorter distances and less time.

The BIOSCREEN simulations conservatively assume that the source zones will emit constituents indefinitely. Consequently, they do not provide an estimate of the time required for the plume to recede. For practical purposes, the most effective means of determining the status and rate of plume shrinkage is through an effective long term monitoring program. This approach is technically defensible because there is negligible risk associated with the current plume configuration, and the evaluation indicates that the current configuration is stable. A conceptual diagram summarizing the trends described above is proved in Figure 4-24 of Appendix L.

8.4.5 Summary and Conclusions of the Site-specific Risk Assessment

This presentation of the summary and conclusions of the Site-specific Risk Assessment is excerpted from Section 3.1 of the CMS Workplan (GeoTrans and Groundwater Insight, 2006).

A human and ecological risk assessment was performed for the Site, the results were included in the Complete RFI (GeoTrans, AMEC, and Groundwater Insight, 2003). The human health risk assessment evaluated potential risks to receptors from potential exposure to constituents in soil, surface water, sediment, and groundwater at the Site. Hazard indices associated with all the potential exposure to off-site and on-site media and exposure areas (with the exception of hypothetical future use of off-site groundwater as drinking water at certain locations) are less than 1, indicating that no adverse noncarcinogenic health effects are expected to occur. Hazard indices associated with the hypothetical future use of off-site groundwater as drinking water are less than 1 at three off-site monitoring well locations and exceeded 1 at one off-site and three boundary area monitoring well locations. The three boundary area wells are located near the eastern Site boundary in the central portion of the Site, near and north of the Central Ditch. The off-site well is located east of the boundary wells in the central portion of the Site, near and north of the Central Ditch. Estimated potential carcinogenic risks associated with the all potential exposure to off-site and on-site media and exposure areas (with the exception of hypothetical future use of off-site groundwater as drinking water), are within or below the EPA's target risk range ($1x10^{-6}$ to $1x10^{-4}$). Potential risks associated with the hypothetical future use of off-site groundwater as drinking water are within or below the EPA's target risk range at one boundary monitoring well and at four off-site monitoring well locations and exceeded EPA's target risk range at two boundary monitoring well locations. These boundary area wells are located near the eastern Site boundary in the central portion of the Site, near and north of the Central Ditch. It should be noted that no current exposure to off-site groundwater exists, and no potential future exposure to off-site groundwater is expected to occur, because the site and surrounding area are supplied with municipal drinking water.

The ecological evaluation concluded that potential risks to terrestrial receptors on-site are unlikely because the active wood-treating operations preclude the existence of important ecological habitat in operational portions of the Site.

The Interim Measures eliminated any potential current or potential future risk from exposure to sediment and surface water in the Central Ditch, both on-site and downstream. Potential effects to benthic macroinvertebrates, but not other wildlife using the Northern Stream, was identified to have the potential to occur in a limited portion of the on-site area of the Northern Stream, but are not expected to occur downstream of the Site. Additional sediment toxicity testing for the Northern Stream was performed in 2006. The results of the sediment toxicity testing confirmed that the benthic macroinvertebrate community in the Northern Stream is not adversely affected.

The Environmental Indicators of both Current Human Exposures Under Control (CA 725) and Migration of Contaminated Groundwater Under Control (CA 750) received "YE" designations from the EPA in September 2005, documenting that these Site indicators are under control.

Based on the implementation of the Site corrective actions (including SWMU closures, SWMU 11 Interim Measures, and the Soil/Waste Pile closure actions) and the results of the Site-specific risk assessment, the risks associated with exposure to Site soil, sediment and surface water are within the EPA's acceptable range for all current and reasonable future use scenarios. The only remaining potentially unacceptable risks that remain at the Site are associated with potential exposure to groundwater within certain portions of the Site and limited off-site areas adjacent to the central portion of the Site. It should be noted that no current exposure to off-site groundwater exists, and no potential future exposure to off-site groundwater is expected to occur, because the Site and surrounding area are supplied with municipal drinking water.

8.4.6 Corrective Action Objectives

The Corrective Action Objectives (CAOs) for the Site were presented in the Complete RFI (GeoTrans, AMEC, and Groundwater Insight, 2003) and were again summarized in Section 3.2 of the CMS Workplan (GeoTrans and Groundwater Insight, 2006) with a discussion of the current status of achieving the CAOs. This summary is repeated in this section.

Soil:

1. Mitigate potential unacceptable risk due to direct contact exposure to Site surface soil.

Under the current and reasonable future use conditions for the Site, the risks associated with potential exposure to soil are within the EPA's acceptable range. The hazard indices associated with potential exposure to these constituents are less than 1 and the estimated potential carcinogenic risks associated with exposure to these constituents are within or below the EPA's target risk range. To ensure conditions remain protective of human health and the environment, Institutional Controls will be prepared and recorded to restrict the land use of the Site to industrial.

Groundwater:

1 Control potential unacceptable exposures to on-site groundwater through institutional

controls; and,

2 Mitigate future potential exposure to groundwater constituents that exceed MCLs or acceptable risk levels.

The installation of the barrier wall immediately upgradient of the on-site Central Ditch as part of the IM partially contains impacts in the Upper Sand Zone groundwater. The evaluation of natural attenuation at the Site, presented in the Complete RFI and also in Section 8.4.4 of this Permit Renewal Application, demonstrates that the groundwater plumes in the Upper and Lower Sand Zones are stable. To ensure the conditions identified in the risk assessment remain valid, Institutional Controls will be prepared and recorded to prevent use of certain portions of groundwater on-site (above the Lower Confining Zone) or within the footprint of the off-site groundwater plume.

8.4.7 Natural Attenuation Work Plan

This section presents the Natural Attenuation Work Plan originally presented in Section 4.6 of the CMS Work Plan (GeoTrans and Groundwater Insight, 2006).

The natural attenuation work conducted to date at the Site has compiled a considerable body of evidence supporting the feasibility of MNA. This existing evidence will be augmented with an additional CMS data collection program. The program is summarized in Table 4-7 of Appendix L, and sampling locations are shown in Figure 4-25 of Appendix L. Through this program, an additional sample set will be collected at wells located in the following key locations: 1) at the plume front; 2) within the plume; 3) side-gradient of the plume; 4) within the source area; and, 5) upgradient of the plume. At each of these locations, samples will be collected in both the Upper Sand Zone and the Lower Sand Zone.

Samples will be analyzed for a range of laboratory analytical parameters that have been shown to be useful in evaluating natural attenuation. These parameters will include the following Site constituents: PAHs, BTEX, and pentachlorophenol. They will also include the geochemical parameters: nitrate, iron, manganese, sulfate and methane. Field parameters including ORP, DO and water levels will also be collected. This program will consist of one sample set, however, a second set will be collected if the initial are not consistent with existing data and conclusions. The CMS Report will provide a comparison of the additional data against all previous information from the sampled wells.

Provided that the results are consistent with previous information, a Long Term Natural Attenuation Monitoring Program will be initiated at the Site. The locations, parameters and frequencies for this monitoring program are summarized in Table 4-7 of Appendix L. The Long Term Natural Attenuation Monitoring Program will be confirmed in the CMS Report, and is designed to provide the following:

- efficient and early detection of any future expansion in the extent of dissolved phase constituents;

- confirmation of the ongoing effectiveness of dissolved phase constituent biodegradation; and
- ongoing evaluation of the rate of source depletion.

The Long Term Natural Attenuation Monitoring Program has been developed with consideration of the following Site components:

- vertical constituent distributions;
- lateral extent of constituents;
- trends in constituent indicators parameters; and
- potential for additional constituent migration.

The CMS Report will provide a description of contingency actions, to be initiated if future monitoring results show that the plume is advancing. The technical basis for identifying plume advancement will also be provided.

9.0 REFERENCES

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BEAZER EAST, INC.
PITTSBURGH, PENNSYLVANIA

DRWN: CRJ	DATE: 03/12/08	KEY ENVIRONMENTAL INCORPORATED
CHKD: RMB	DATE: 03/12/08	
APPD: KCF	DATE: 03/12/08	
SCALE:	AS SHOWN	

RCRA POST-CLOSURE PERMIT
RENEWAL APPLICATION
GRENADA, MISSISSIPPI

REFERENCE:

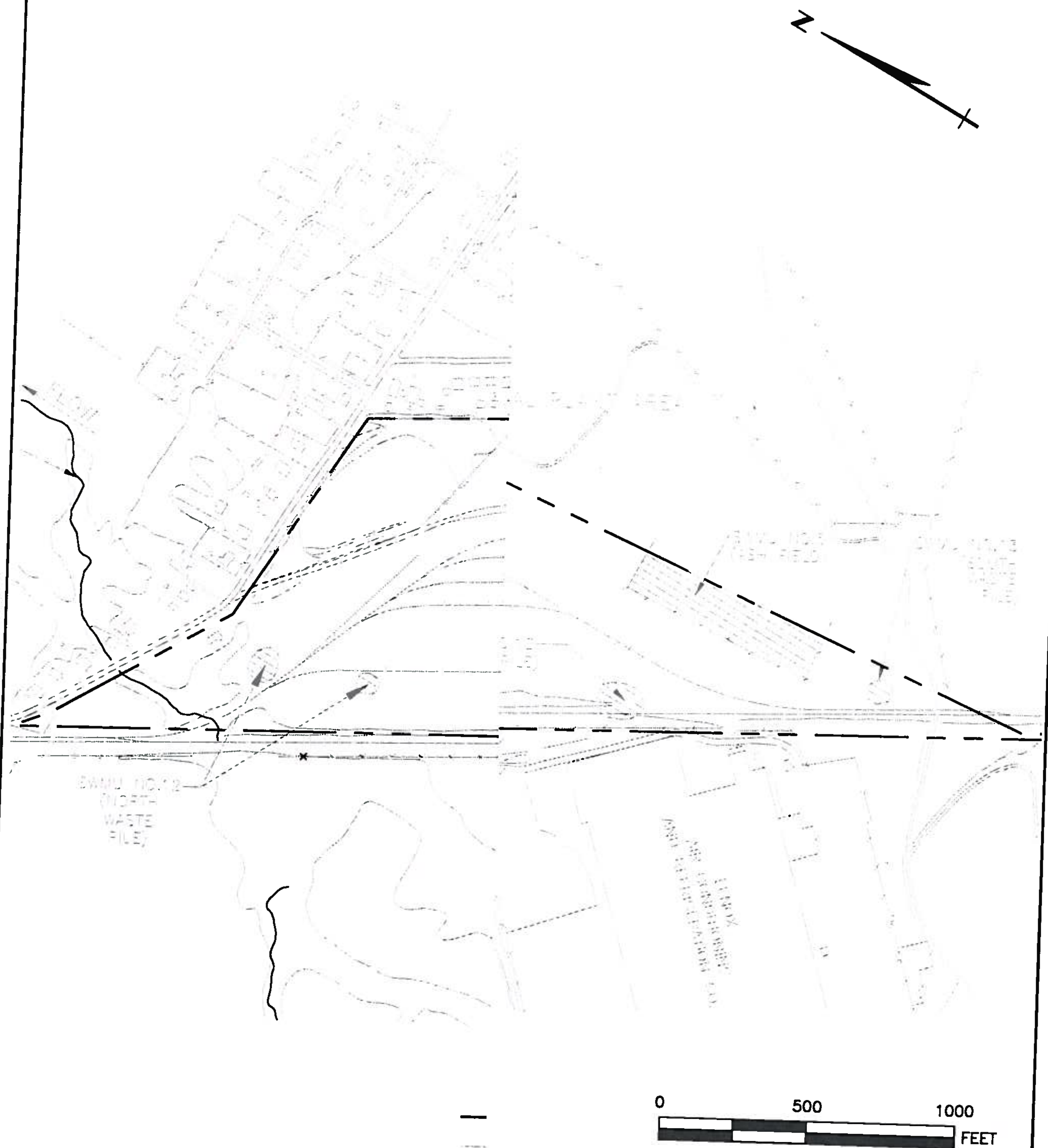
ISSUE DATE:

KEY ENVIRONMENTAL, INC.
200 THIRD AVENUE
CARNEGIE, PA 15106

PHOTOGRAPH OF
CLOSED FORMER SURFACE IMPOUNDMENT
MARCH 2008

PROJECT NO: 08-646

FIGURE 5



BEAZER EAST, INC.
PITTSBURGH, PENNSYLVANIA

DRWN:	CRJ	DATE: 03/12/08	KEY ENVIRONMENTAL INCORPORATED
CHKD:	RMB	DATE: 03/12/08	
APPD:	KCF	DATE: 03/12/08	
SCALE:		AS SHOWN	

RCRA POST-CLOSURE PERMIT
RENEWAL APPLICATION
GRENADA, MISSISSIPPI

LOCATION OF GROUNDWATER MONITORING WELLS

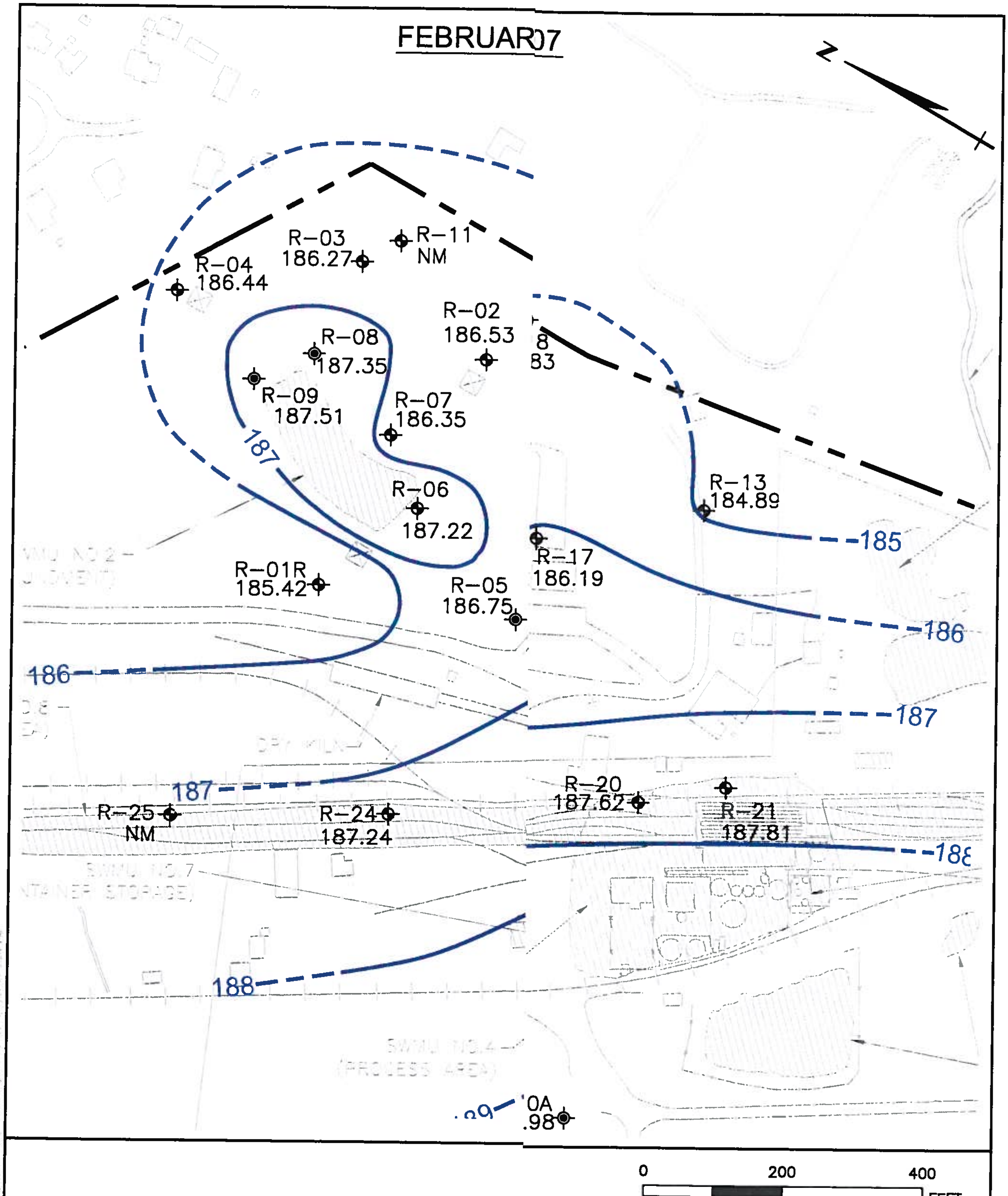
PROJECT NO: 08-648

FIGURE 6

△			
△			
△1			
REV #	DATE	DESCRIPTION	APPD

REFERENCE: ISSUE DATE:

KEY ENVIRONMENTAL, INC.
200 THIRD AVENUE
CARNEGIE, PA 15106



PROPERTY BOUNDARY
SITE FEATURE
FENCE
RAILROAD TRACK

REV #	DATE	DESCRIPTION	APPD

REFERENCE: BASEMAP
REPORT

BEAZER EAST, INC.
PITTSBURGH, PENNSYLVANIA

DRWN:	CRJ	DATE:	03/12/08
CHKD:	RMB	DATE:	03/12/08
APPD:	KCF	DATE:	03/12/08
SCALE:	AS SHOWN		

KEY ENVIRONMENTAL INCORPORATED

RCRA POST-CLOSURE PERMIT
RENEWAL APPLICATION
GRENADA, MISSISSIPPI

GROUNDWATER CONTOURS
UPPER MOST AQUIFER
FEBRUARY 2, 2007/SEPTEMBER 20, 2007

PROJECT NO: 08-848
FIGURE 7

FORMS

Koppers Inc.
Grenada Wood Treating Facility
Grenada, Mississippi
Closed Surface Impoundment Inspection Report

Inspected By	Date of Inspection	Security Inspection				Impoundment Inspection							
		Fence Perimeter	Fence Gate	Fence Lock	Warning Signs	Erosion	Warter Ponding	Tampering	Grass Cover	Surface Variation	Well Locks	Well Casing	Benchmark Integrity

EQUIPMENT CALIBRATION FORM

FTS

INSTRUMENT: ______________________

SERIAL NO.: ______________________

DATE	TIME	PARAMETER		CALIBRATION READING	CALIBRATION RECORDED BY
		pH S.U.	4.00 S.U.	S.U.	
			7.00 S.U.	S.U.	
			10.00 S.U.	S.U.	
		Specific Conductivity(umhos/cm)		umhos/cm	
		Temperature (°C)		°C	

INSTRUMENT: ______________________

SERIAL NO.: ______________________

DATE	TIME	PARAMETER		CALIBRATION READING	CALIBRATION RECORDED BY
		pH S.U.	4.00 S.U.	S.U.	
			7.00 S.U.	S.U.	
			10.00 S.U.	S.U.	
		Specific Conductivity(umhos/cm)		umhos/cm	
		Temperature (°C)		°C	

Field and Technical Services, LLC
RCRA Facility Groundwater Monitoring Well Inspection

FTS

Site Name: ____________ **Site Phone:** ____________

Inspector Name: ____________ **Audit Date:** ____________

Operator: ____________ **Operator phone:** ____________ **Inspector Signature:** ____________

Well Condition

Well ID	Lock	Casing	Cap	Pad/ Drainage	Vegetation/ Accessibility	Potential Hazards	Depth to Water	Total Depth	Depth to Product	Product Thickness	Comments/ Repair Required

FM = Flush Mount * GC = Good Condition * NL = Needs Lock * NR = Needs Replaced * RP = Replaced Lock * SU = Stick Up

APPENDIX A

RCRA HAZARDOUS WASTE
PART A
PERMIT APPLICATION FORM
[40CFR270.13]

SEND COMPLETED FORM TO: The Appropriate State or EPA Regional Office.	United States Environmental Protection Agency **RCRA SUBTITLE C SITE IDENTIFICATION FORM**
1. Reason for Submittal (See instructions on page 14.) MARK ALL BOX(ES) THAT APPLY	**Reason for Submittal:** ☐ To provide Initial Notification of Regulated Waste Activity (to obtain an EPA ID Number for hazardous waste, universal waste, or used oil activities) ☐ To provide Subsequent Notification of Regulated Waste Activity (to update site identification information) ☐ As a component of a First RCRA Hazardous Waste Part A Permit Application ☒ As a component of a Revised RCRA Hazardous Waste Part A Permit Application (Amendment #______) ☐ As a component of the Hazardous Waste Report
2. Site EPA ID Number (page 15)	**EPA ID Number** M S D 0 0 7 0 2 7 5 4 3
3. Site Name (page 15)	**Name: Koppers Inc.**
4. Site Location Information (page 15)	**Street Address: 1 Koppers Drive** **City, Town, or Village: Tie Plant** — **State: Mississippi** **County Name: Grenada** — **Zip Code: 38960**
5. Site Land Type (page 15)	**Site Land Type:** ☒ Private ☐ County ☐ District ☐ Federal ☐ Indian ☐ Municipal ☐ State ☐ Other
6. North American Industry Classification System (NAICS) Code(s) for the Site (page 15)	**A.** 3 2 1 1 1 4 — **B.** _ _ _ _ _ _ **C.** _ _ _ _ _ _ — **D.** _ _ _ _ _ _
7. Site Mailing Address (page 16)	**Street or P. O. Box: PO Box 160** **City, Town, or Village: Tie Plant** **State: Mississippi** **Country: USA** — **Zip Code: 38960**
8. Site Contact Person (page 16)	**First Name: Vance** — **MI: R** — **Last Name: Haskin** **Phone Number: Extension: 662-226-4584** — **Email address: haskinvr@koppers.com**
9. Operator and Legal Owner of the Site (pages 16 and 17)	**A. Name of Site's Operator: See 12. Comments** — **Date Became Operator (mm/dd/yyyy): mid 1970's** **Operator Type:** ☒ Private ☐ County ☐ District ☐ Federal ☐ Indian ☐ Municipal ☐ State ☐ Other **B. Name of Site's Legal Owner: Koppers Inc.** — **Date Became Owner (mm/dd/yyyy): 12/29/1988** **Owner Type:** ☒ Private ☐ County ☐ District ☐ Federal ☐ Indian ☐ Municipal ☐ State ☐ Other

9. Legal Owner (Continued) Address	Street or P. O. Box: 436 Seventh Avenue	
	City, Town, or Village: Pittsburgh	
	State: PA	
	Country: USA	Zip Code: 15219-1800

10. Type of Regulated Waste Activity
Mark "Yes" or "No" for all activities; complete any additional boxes as instructed. (See instructions on pages 18 to 21.)

A. Hazardous Waste Activities
Complete all parts for 1 through 6.

Y ☒ N ☐ **1. Generator of Hazardous Waste**
If "Yes", choose only one of the following - a, b, or c.

☒ a. LQG: Greater than 1,000 kg/mo (2,200 lbs./mo.) of non-acute hazardous waste; or

☐ b. SQG: 100 to 1,000 kg/mo (220 - 2,200 lbs./mo.) of non-acute hazardous waste; or

☐ c. CESQG: Less than 100 kg/mo (220 lbs./mo.) of non-acute hazardous waste

In addition, indicate other generator activities.

Y ☐ N ☒ d. United States Importer of Hazardous Waste

Y ☐ N ☒ e. Mixed Waste (hazardous and radioactive) Generator

Y ☐ N ☒ **2. Transporter of Hazardous Waste**

Y ☒ N ☐ **3. Treater, Storer, or Disposer of Hazardous Waste (at your site)** Note: A hazardous waste permit is required for this activity.

Y ☐ N ☒ **4. Recycler of Hazardous Waste (at your site)**

Y ☐ N ☒ **5. Exempt Boiler and/or Industrial Furnace**
If "Yes", mark each that applies.
☐ a. Small Quantity On-site Burner Exemption
☐ b. Smelting, Melting, and Refining Furnace Exemption

Y ☐ N ☒ **6. Underground Injection Control**

B. Universal Waste Activities

Y ☐ N ☒ **1. Large Quantity Handler of Universal Waste (accumulate 5,000 kg or more) [refer to your State regulations to determine what is regulated]. Indicate types of universal waste generated and/or accumulated at your site. If "Yes", mark all boxes that apply:**

	Generate	Accumulate
a. Batteries	☐	☐
b. Pesticides	☐	☐
c. Thermostats	☐	☐
d. Lamps	☐	☐
e. Other (specify) ______	☐	☐
f. Other (specify) ______	☐	☐
g. Other (specify) ______	☐	☐

Y ☐ N ☒ **2. Destination Facility for Universal Waste**
Note: A hazardous waste permit may be required for this activity.

C. Used Oil Activities
Mark all boxes that apply.

Y ☐ N ☒ **1. Used Oil Transporter**
If "Yes", mark each that applies.
☐ a. Transporter
☐ b. Transfer Facility

Y ☐ N ☒ **2. Used Oil Processor and/or Re-refiner**
If "Yes", mark each that applies.
☐ a. Processor
☐ b. Re-refiner

Y ☐ N ☒ **3. Off-Specification Used Oil Burner**

Y ☐ N ☒ **4. Used Oil Fuel Marketer**
If "Yes", mark each that applies.
☐ a. Marketer Who Directs Shipment of Off-Specification Used Oil to Off-Specification Used Oil Burner
☐ b. Marketer Who First Claims the Used Oil Meets the Specifications

74102

EPA ID NO: M S D 0 0 7 0 2 7 5 4 3 OMB #: 2050-0034 Expires 11/30/2005

11. Description of Hazardous Wastes (See instructions on page 22.)

A. Waste Codes for Federally Regulated Hazardous Wastes. Please list the waste codes of the Federal hazardous wastes handled at your site. List them in the order they are presented in the regulations (e.g., D001, D003, F007, U112). Use an additional page if more spaces are needed.

F032	F034	F035	K001			

B. Waste Codes for State-Regulated (i.e., non-Federal) Hazardous Wastes. Please list the waste codes of the State-regulated hazardous wastes handled at your site. List them in the order they are presented in the regulations. Use an additional page if more spaces are needed for waste codes.

F032	F034	F035	K001			

12. Comments (See instructions on page 22.)

Koppers Inc. owns the Site property and operates a wood preserving plant on the Site property. Beazer East, Inc. (Beazer) is the operator of a closed unit (the Facility) located on the Site Property. This unit (the Facility) was operated from the mid-1970's to 1988 and closed in 198 It includes (1) one former surface impoundment that contained bottom sediment sludge from the treatment of waste water from wood preserving processes that use creosote and pentachlorophenol (K001). Koppers Inc. never operated the Facility. Beazer requests the MDE to recognize that only Beazer operated the Facility. Koppers has owned the real property comprising the Site since late 1988, but has neve operated the Facility. Accordingly, Beazer requests that the MDEQ delete Koppers Inc. from the Hazardous Waste Management Permit for Post-Closure Care of the closed hazardous waste surface impoundment portion of the Permit for the Facility and that Beazer remain on the Permit as the sole Permittee.

13. Certification. I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, 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. For the RCRA Hazardous Waste Part A Permit Application, all operator(s) and owner(s) must sign (see 40 CFR 270.10 (b) and 270.11).
(See instructions on page 22.)

Signature of operator, owner, or an authorized representative	Name and Official Title (type or print)	Date Signed (mm/dd/yyyy)
[signature]	Leslie S Hyde VP Safety & Environmental Affairs Koppers Inc	4/3/08
[signature]	Robert S. Markwell Vice President Beazer East, Inc.	04/03/08

RECEIVED
JUN - 2 2008
MDEQ

EPA ID NO: M S D 0 0 7 0 2 7 5 4 3   OMB #: 2050-0034 Expires 11/30/2005

11. Description of Hazardous Wastes (See instructions on page 22.)

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F032	F034	F035	K001			

B. Waste Codes for State-Regulated (i.e., non-Federal) Hazardous Wastes. Please list the waste codes of the State-regulated hazardous wastes handled at your site. List them in the order they are presented in the regulations. Use an additional page if more spaces are needed for waste codes.

F032	F034	F035	K001			

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13. Certification. I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, 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. For the RCRA Hazardous Waste Part A Permit Application, all operator(s) and owner(s) must sign (see 40 CFR 270.10 (b) and 270.11).
(See instructions on page 22.)

Signature of operator, owner, or an authorized representative	Name and Official Title (type or print)	Date Signed (mm/dd/yyyy)
[signature]	LESLIE S HYDE, VP SAFETY & ENVIRONMENTAL AFFAIRS KOPPERS INC	4/3/2008
[signature]	Robert S. Markwell, Vice President Beazer East, Inc.	04/03/08

EPA ID NO: M S D 0 0 7 0 2 7 5 4 3   OMB #: 2050-0034 Expires 11/30/2005

United States Environmental Protection Agency

HAZARDOUS WASTE PERMIT INFORMATION FORM

1. Facility Permit Contact (See instructions on page 23)	**First Name: Michael**	**MI: W**	**Last Name: Bollinger**
	Phone Number: 412-208-8864	**Phone Number Extension:**	
2. Facility Permit Contact Mailing Address (See instructions on page 23)	**Street or P.O. Box: One Oxford Centre, Suite 3000**		
	City, Town, or Village: Pittsburgh	**State: PA**	
	Country: USA	**Zip Code: 15219**	
3. Operator Mailing Address and Telephone Number (See instructions on page 23)	**Street or P.O. Box: One Oxford Centre, Suite 3000**		
	City, Town, or Village: Pittsburgh		
	State: PA		
	Country: USA	**Zip Code: 15219**	**Phone Number: 412-208-8864**
4. Legal Owner Mailing Address and Telephone Number (See instructions on page 23)	**Street or P.O. Box: Koppers Inc., 436 Seventh Avenue**		
	City, Town, or Village: Pittsburgh		
	State: PA		
	Country: USA	**Zip Code: 15219**	**Phone Number: 412-227-2001**
5. Facility Existence Date (See instructions on page 24)	**Facility Existence Date (mm/dd/yyyy): Mid-1970's**		

6. Other Environmental Permits (See instructions on page 24)

A. Permit Type *(Enter code)*	B. Permit Number	C. Description
		No other environmental permit exists for the RCRA-regulated facility. (Surface impoundment closed as a landfill)

7. Nature of Business (Provide a brief description; see instructions on page 24)

Koppers Inc. owns the Site property and operates a wood preserving plant on the Site property. Beazer East, Inc. is the operator of a closed unit (the Facility) located on the Site property. This unit (the Facility) was operated from the mid-1970's to 1988 and closed in 1989. It includes (1) one former surface impoundment that contained bottom sediment sludge from the treatment of waste water from wood preserving processes that use creosote and pentachlorophenal (K001). Koppers Inc. never operated the facility.

8. Process Codes and Design Capacities (See instructions on page 24) - Enter information in the Sections on Form Page 3.

A. PROCESS CODE - *Enter the code from the list of process codes in the table below that best describes each process to be used at the facility. Fifteen lines are provided for entering codes. If more lines are needed, attach a separate sheet of paper with the additional information. For .other. processes (i.e., D99, S99, T04 and X99), enter the process information in item 9 (including a description).*

B. PROCESS DESIGN CAPACITY- *For each code entered in Section A, enter the capacity of the process.*

1. AMOUNT - *Enter the amount. In a case where design capacity is not applicable (such as in a closure/post-closure or enforcement action) enter the total amount of waste for that process.*

2. UNIT OF MEASURE - *For each amount entered in Section B(1), enter the code in Section B(2) from the list of unit of measure codes below that describes the unit of measure used. Select only from the units of measure in this list.*

C. PROCESS TOTAL NUMBER OF UNITS - *Enter the total number of units for each corresponding process code.*

PROCESS CODE	PROCESS	APPROPRIATE UNITS OF MEASURE FOR PROCESS DESIGN CAPACITY
	Disposal:	
D79	Underground Injection Well Disposal	Gallons; Liters; Gallons Per Day; or Liters Per Day
D80	Landfill	Acre-feet; Hectare-meter; Acres; Cubic Meters; Hectares; Cubic Yards
D81	Land Treatment	Acres or Hectares
D82	Ocean Disposal	Gallons Per Day or Liters Per Day
D83	Surface Impoundment Disposal	Gallons; Liters; Cubic Meters; or Cubic Yards
D99	Other Disposal	Any Unit of Measure in Code Table Below
	Storage:	
S01	Container	Gallons; Liters; Cubic Meters; or Cubic Yards
S02	Tank Storage	Gallons; Liters; Cubic Meters; or Cubic Yards
S03	Waste Pile	Cubic Yards or Cubic Meters
S04	Surface Impoundment Storage	Gallons; Liters; Cubic Meters; or Cubic Yards
S05	Drip Pad	Gallons; Liters; Acres; Cubic Meters; Hectares; or Cubic Yards
S06	Containment Building Storage	Cubic Yards or Cubic Meters
S99	Other Storage	Any Unit of Measure in Code Table Below
	Treatment:	
T01	Tank Treatment	Gallons Per Day; Liters Per Day
T02	Surface Impoundment Treatment	Gallons Per Day; Liters Per Day
T03	Incinerator	Short Tons Per Hour; Metric Tons Per Hour; Gallons Per Hour; Liters Per Hour; Btu Per Hour; Pounds Per Hour; Short Tons Per Day; Kilograms Per Hour; Gallons Per Day; Liters Per Day; Metric Tons Per Hour; or Million Btu Per Hour
T04	Other Treatment	Gallons Per Day; Liters Per Day; Pounds Per Hour; Short Tons Per Hour; Kilograms Per Hour; Metric Tons Per Day; Metric Tons Per Hour; Short Tons Per Day; Btu Per Hour; Gallons Per Day; Liters Per Hour; or Million Btu Per Hour
80	Boiler	Gallons; Liters; Gallons Per Hour; Liters Per Hour; Btu Per Hour; or Million Btu Per Hour

PROCESS CODE	PROCESS	APPROPRIATE UNITS OF MEASURE FOR PROCESS DESIGN CAPACITY
	Treatment (continued):	
T81 T82 T83 T84 T85 T86 T87 T88 T89 T90 T91 T92 T93	Cement Kiln Lime Kiln Aggregate Kiln Phosphate Kiln Coke Oven Blast Furnace Smelting, Melting, or Refining Furnace Titanium Dioxide Chloride Oxidation Reactor Methane Reforming Furnace Pulping Liquor Recovery Furnace Combustion Device Used In The Recovery Of Sulfur Values From Spent Sulfuric Acid Halogen Acid Furnaces Other Industrial Furnaces Listed In 40 CFR §260.10	For T81-T93: Gallons Per Day; Liters Per Day; Pounds Per Hour; Short Tons Per Hour; Kilograms Per Hour; Metric Tons Per Day; Metric Tons Per Hour; Short Tons Per Day; Btu Per Hour; Liters Per Hour; Kilograms Per Hour; or Million Btu Per Hour
T94	Containment Building - Treatment	Cubic Yards; Cubic Meters; Short Tons Per Hour; Gallons Per Hour; Liters Per Hour; Btu Per Hour; Pounds Per Hour; Short Tons Per Day; Kilograms Per Hour; Metric Tons Per Day; Gallons Per Day; Liters Per Day; Metric Tons Per Hour; or Million Btu Per Hour
	Miscellaneous (Subpart X):	
X01	Open Burning/Open Detonation	Any Unit of Measure in Code Table Below
X02	Mechanical Processing	Short Tons Per Hour; Metric Tons Per Hour; Short Tons Per Day; Metric Tons Per Day; Pounds Per Hour; Kilograms Per Hour; Gallons Per Hour; Liters Per Hour; or Gallons Per Day
X03	Thermal Unit	Gallons Per Day; Liters Per Day; Pounds Per Hour; Short Tons Per Hour; Kilograms Per Hour; Metric Tons Per Day; Metric Tons Per Hour; Short Tons Per Day; Btu Per Hour; or Million Btu Per Hour
X04	Geologic Repository	Cubic Yards; Cubic Meters; Acre-feet; Hectare-meter; Gallons; or Liters
X99	Other Subpart X	Any Unit of Measure Listed Below

UNIT OF MEASURE	UNIT OF MEASURE CODE	UNIT OF MEASURE	UNIT OF MEASURE CODE	UNIT OF MEASURE	UNIT OF MEASURE CODE
Gallons	G	Short Tons Per Hour	D	Cubic Yards	Y
Gallons Per Hour	E	Metric Tons Per Hour	W	Cubic Meters	C
Gallons Per Day	U	Short Tons Per Day	N	Acres	B
Liters	L	Metric Tons Per Day	S	Acre-feet	A
Liters Per Hour	H	Pounds Per Hour	J	Hectares	Q
Liters Per Day	V	Kilograms Per Hour	R	Hectare Meters	F
		Million BTU Per Hour	X	BTU per Hour	I

EPA ID NO: I M I S I D I I 0 I 0 I 7 I I 0 I 2 I 7 I I 5 I 4 I 3 I   OMB #: 2050-0034 Expires 11/30/2005

8. Process Codes and Design Capacities (Continued)

EXAMPLE FOR COMPLETING Item 8 (shown in line number X-1 below): A facility has a storage tank, which can hold 533.788 gallons.

Line Number		A. Process Code (From list above)			B. PROCESS DESIGN CAPACITY (1) Amount (Specify)	(2) Unit of Measure (Enter code)	C. Process Total Number of Units	For Official Use Only
X	1	S	0	2	5 3 3.7 8 8	G	0 0 1	
	1				One surface impoundment (the Facility) closed as one landfill. All visible waste was removed; however, clean closure was not achieved.			
	2							
	3							
	4							
	5							
	6							
	7							
	8							
	9							
1	0							
1	1							
1	2							
1	3							
1	4							
1	5							

NOTE: *If you need to list more than 15 process codes, attach an additional sheet(s) with the information in the same format as above. Number the lines sequentially, taking into account any lines that will be used for "other" processes (i.e., D99, S99, T04 and X99) in Item 9.*

9. Other Processes (*See instructions on page 25 and follow instructions from Item 8 for D99, S99, T04 and X99 process codes*)

Line Number (Enter #s in sequence with Item 8)		A. Process Code (From list above)			B. PROCESS DESIGN CAPACITY (1) Amount (Specify)	(2) Unit of Measure (Enter code)	C. Process Total Number of Units	D. Description of Process
X	2	T	0	4	1 0 0.0 0 0	U	0 0 1	In-situ Vitrification

10. Description of Hazardous Wastes (See instructions on page 25) - Enter information in the Sections on Form Page 5.

A. EPA HAZARDOUS WASTE NUMBER - *Enter the four-digit number from 40 CFR, Part 261 Subpart D of each listed hazardous waste you will handle. For hazardous wastes which are not listed in 40 CFR, Part 261 Subpart D, enter the four-digit number(s) from 40 CFR Part 261, Subpart C that describes the characteristics and/or the toxic contaminants of those hazardous wastes.*

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

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

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

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

D. PROCESSES

1. PROCESS CODES:
For listed hazardous waste: For each listed hazardous waste entered in Section A, select the code(s) from the list of process codes contained in Items 8A and 9A on page 3 to indicate all the processes that will be used to store, treat, and/or dispose of all the listed hazardous wastes.
For non-listed hazardous waste: For each characteristic or toxic contaminant entered in Section A, select the code(s) from the list of process codes contained in Items 8A and 9A on page 3 to indicate all the processes that will be used to store, treat, and/or dispose of all the non-listed hazardous wastes that possess that characteristic or toxic contaminant.

NOTE: THREE SPACES ARE PROVIDED FOR ENTERING PROCESS CODES. IF MORE ARE NEEDED:

1. Enter the first two as described above.
2. Enter .000" in the extreme right box of Item 10.D(1).
3. Use additional sheet, enter line number from previous sheet, and enter additional code(s) in Item 10.E.
2. PROCESS DESCRIPTION: *If a code is not listed for a process that will be used, describe the process in Item 10.D(2) or in Item 10.E(2).*

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

1. Select one of the EPA Hazardous Waste Numbers and enter it in Section A. On the same line complete Sections B, C and D by estimating the total annual quantity of the waste and describing all the processes to be used to treat, store, and/or dispose of the waste.

2. In Section A of the next line enter the other EPA Hazardous Waste Number that can be used to describe the waste. In Section D(2) on that line enter .included with above. and make no other entries on that line.

3. Repeat step 2 for each EPA Hazardous Waste Number that can be used to describe the hazardous waste.

EXAMPLE FOR COMPLETING Item 10 (shown in line numbers X-1, X-2, X-3, and X-4 below) - A facility will treat and dispose of an estimated 900 pounds per year of chrome shavings from leather tanning and finishing operations. In addition, the facility will treat and dispose of three non-listed wastes.
Two wastes are corrosive only and there will be an estimated 200 pounds per year of each waste. The other waste is corrosive and ignitable and there will be an estimated 100 pounds per year of that waste. Treatment will be in an incinerator and disposal will be in a landfill.

Line Number		A. EPA Hazardous Waste No. (Enter code)				B. Estimated Annual Quantity of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter code)									(2) PROCESS DESCRIPTION- (If a code is not entered in D(1))
X	1	K	0	5	4	900	P	T	0	3	D	8	0				
X	2	D	0	0	2	400	P	T	0	3	D	8	0				
X	3	D	0	0	1	100	P	T	0	3	D	8	0				
X	4	D	0	0	2												Included With Above

10. Description of Hazardous Wastes (Continued. Use the Additional Sheet(s) as necessary; number pages as 5 a, etc.)

Line Number	A. EPA Hazardous Waste No. (Enter code)	B. Estimated Annual Quantity of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter code)	D. PROCESSES (2) PROCESS DESCRIPTION- (If a code is not entered in D(1))
1	K 0 0 1	0		D 8 3	The former surface impoundment (the Facility) was closed as a landfill in 1989. The closure construction documentation report was submitted to MDEQ in December 1989.
2					
3					
4					
5					
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39					

10. Description of Hazardous Wastes (Continued. Use the Additional Sheet(s) as necessary; number pages as 5 a, etc.)

Line Number		A. EPA Hazardous Waste No. (Enter code)				B. Estimated Annual Quantity of Waste	C. Unit of Measure (Enter code)	E. PROCESSES									
								(1) PROCESS CODES (Enter code)									(2) PROCESS DESCRIPTION- (If a code is not entered in E(1))
4	0																

11. Map (See instructions on pages 25 and 26) See Figures 1 and 2
Attach to this application a topographic map, or other equivalent map, of the area extending to at least one mile beyond property boundaries. The map must show the outline of the facility, the location of each of its existing and proposed intake and discharge structures, each of its hazardous waste treatment, storage, or disposal facilities, and each well where it injects fluids underground. Include all springs, rivers and other surface water bodies in this map area. See instructions for precise requirements.
12. Facility Drawing (See instructions on page 26) See Figure 3
All existing facilities must include a scale drawing of the facility (see instructions for more detail).
13. Photographs (See instructions on page 26) See Figure 5
All existing facilities must include photographs (aerial or ground-level) that clearly delineate all existing structures; existing storage, treatment and disposal areas; and sites of future storage, treatment or disposal areas (see instructions for more detail).
14. Comments (See instructions on page 26)

APPENDIX B

METEROLOGICAL AND WIND DISTRIBUTION DATA

DEPARTMENT OF THE AIR FORCE
AIR WEATHER SERVICE
2076TH DATA CONTROL UNIT (WEATHER)

UNIFORM SUMMARY OF
SURFACE WEATHER OBSERVATIONS

PART A - DERIVED FROM HOURLY OBSERVATIONS
PART B - DERIVED FROM DAILY OBSERVATIONS

GRENADA MISS AAF

13823

AUG 1943 THRU MAY 1944
AUG 1945 THRU NOV 1945

NEW ORLEANS PORT OF EMBARKATION

NEW ORLEANS, LA.

STATION NAME ____ PERIOD ____ UPPER LIMIT OF CIG. AND VISIBILITY IF U____ FT.

STATION	YEAR	MONTH	CODE	DIR. \ VEL.	1-3 M.P.H.	4-12 M.P.H.	13-24 M.P.H.	25-31 M.P.H.	32-46 M.P.H.	47 AND OVER	TOTAL 4 M.P.H. & OVER OBS.	TOTAL 4 M.P.H. & OVER %	TOTAL ALL OBS. OBS.	TOTAL ALL OBS. %	TOTAL VEL.	AV. VE
13823	0	00	32	N	201	579	31				610		811		4984	
			02	NNE	87	211	9				220		307		1777	
			04	NE	334	513	15				528		862		4212	
			06	ENE	293	284	7				291		584		2435	
			08	E	306	347	8				355		661		2853	
			10	ESE	84	216	18				234		318		1916	
			12	SE	131	309	52	1			362		493		3339	
			14	SSE	100	257	43				300		400		2819	
			16	S	149	342	100				442		591		4450	
			18	SSW	96	215	60				275		371		2695	
			20	SW	142	267	79	7	2		355		497		3785	
			22	WSW	92	238	53	2			293		385		2793	
			24	W	104	239	64	2			305		409		3024	
			26	WNW	47	166	33				199		246		1803	
			28	NW	160	349	47				396		556		3530	
			30	NNW	76	237	36				273		349		2476	
			40	CALM	=	=	=	=	=	=	=		1148		=	=
TOTALS →				1148	2402	4769	655	18	2		5438	XXXX XXXX	8988	XXXX XXXX	48891	
PER CENT →														100.0	XXXXXXXX XXXXXXXX	XXXX XXXX

APPENDIX C

FLOOD INSURANCE RATE MAP

APPENDIX D

IMPOUNDMENT SLUDGE ANALYSIS

TABLE 1

KOPPERS COMPANY, INC.

CHEMICAL & ALLIED PRODUCTS

GRENADA, MS

SAMPLE COLLECTION DATA

LAB SAMPLE NO.	SAMPLE SOURCE	DATE COLLECTED	DATE RECEIVED
GM-262	R-1	7/17/84	7/18/84
GM-263	R-2	7/17/84	7/18/84
GM-264	R-3	7/17/84	7/18/84
GM-265	R-4	7/17/84	7/18/84
[illegible]M-266	TO SPRAY FIELD	7/17/84	7/18/84
GM-267	FIELD BLANK (sample had been acidified with $NaHSO_4$)	7/17/84	7/18/84
GM-268	SPRAY FIELD SOIL	7/17/84	7/18/84
GM-269	LAGOON BOTTOMS	7/17/84	7/18/84

[illegible]CTED BY: E. G. Huth
M. Long

ENVIRONMENTAL RESOURCES DEPARTMENT
ENVIRONMENTAL ANALYSIS LABORATORY
MONROEVILLE SCIENCE & TECHNOLOGY CENTER

DATE: 06-07-85
REVISION NO: 1
SECTION C

COMPUCHEM LABORATORIES

REPORT OF DATA

SAMPLE IDENTIFIER: GM 269

COMPUCHEM SAMPLE NUMBER: 31897

SUBMITTED TO:

Mr. Bob Hepner
Koppers, Inc.
Research Dept.
440 College Park Drive
Monroeville, PA 15146

Diana A. Scammell
DIANA A. SCAMMELL
TECHNICAL SPECIALIST, OPERATIONS

R. L. MYERS, PH.D., PRESIDENT

ROBERT E. MEIERER
DIRECTOR OF QUALITY ASSURANCE

LABORATORY CHRONICLE

SAMPLE IDENTIFIER: GM 269
COMPUCHEM SAMPLE NUMBER: 31897

	Date
Received/Refrigerated	07/19/84
Organics	
Extracted	07/23/84
- Pesticides	07/24/84
- Herbicides	07/25/84
Analyzed	
1. Volatiles	07/27/84
2. Acid	08/07/84
3. Base/Neutrals	08/03/84
4. Pesticides/PCBS	07/27/84 - 08/01/84*
5. Herbicides	08/01/84
Inorganics	
1. Metals	08/14/84
2. Cyanide	Not Requested
3. Phenols	Not Requested

*Second column confirmation analysis which serves to verify the presence or absence of the Pesticides/PCB's.

QUALITY ASSURANCE NOTICE

CompuChem Sample No. 31897

Although not required by the Federal Register, December 3, 1979 (modified July, 1982) Volatile Method 624 procedure, the laboratory prepares VOA blanks when compositing water samples and preparing low and medium level hazardous waste VOA samples. This is to insure that the glassware used is free from contamination, and to monitor the possibility of cross-contamination from high levels of volatile organic compounds in some samples and the laboratory atmosphere.

The compositing or method blank (# 31991) prepared with this sample contained the compound(s) listed below. Sample data associated with this blank have been adjusted and/or flagged according to the EPA-recommended methods.

Compound(s)	Concentration Found In Sample (ug/kg)	Applicable Qualifier*
Methylene Chloride	28	NDB

The following data qualifiers are used by EPA and adopted by CompuChem® for reporting purposes:

NDB = The concentration of a priority pollutant in the blank is greater than ½ the detection limit and is greater than ½ the concentration in the sample.

*No adjusted sample concentration is reported.

COMPOUND LIST - VOLATILES ORGANICS

SAMPLE IDENTIFIER: GM 269
COMPUCHEM SAMPLE NUMBER: 31897

		CONCENTRATION (UG/KG)	DETECTION LIMIT (UG/KG)
1V.	CHLOROMETHANE	BDL	10
2V.	VINYL CHLORIDE	BDL	10
3V.	CHLOROETHANE	BDL	10
4V.	BROMOMETHANE	BDL	10
5V.	ACROLEIN	BDL	100
6V.	ACRYLONITRILE	BDL	100
7V.	METHYLENE CHLORIDE	NDB*	10
8V.	TRICHLOROFLUOROMETHANE	BDL	10
9V.	1,1-DICHLOROETHYLENE	BDL	10
10V.	1,1-DICHLOROETHANE	BDL	10
11V.	TRANS-1,2-DICHLOROETHYLENE	BDL	10
12V.	CHLOROFORM	BDL	10
13V.	1,2-DICHLOROETHANE	BDL	10
14V.	1,1,1-TRICHLOROETHANE	BDL	10
15V.	CARBON TETRACHLORIDE	BDL	10
16V.	BROMODICHLOROMETHANE	BDL	10
17V.	1,2-DICHLOROPROPANE	BDL	10
18V.	TRANS-1,3-DICHLOROPROPENE	BDL	10
19V.	TRICHLOROETHYLENE	BDL	10
20V.	BENZENE	BDL	10
21V.	CIS-1,3-DICHLOROPROPENE	BDL	10
22V.	1,1,2-TRICHLOROETHANE	BDL	10
23V.	DIBROMOCHLOROMETHANE	BDL	10
24V.	BROMOFORM	BDL	10
25V.	1,1,2,2-TETRACHLOROETHYLENE	BDL	10
26V.	1,1,2,2-TETRACHLOROETHANE	BDL	10
27V.	TOLUENE	19	10
28V.	CHLOROBENZENE	BDL	10
29V.	ETHYLBENZENE	20	10
30V.	2-CHLOROETHYL VINYL ETHER	BDL	10
31V.	DICHLORODIFLUOROMETHANE†	BDL	
32V.	BIS(CHLOROMETHYL)ETHER†	BDL	

BDL=BELOW DETECTION LIMIT
*See Quality Control Notice

†See Data Report Notice

COMPOUND LIST -- ACID EXTRACTABLE ORGANICS

SAMPLE IDENTIFIER: GM 269
COMPUCHEM SAMPLE NUMBER: 31897

		CONCENTRATION (UG/KG)	DETECTION† LIMIT (UG/KG)
1A.	PHENOL	70000(1)	5000
2A.	2-CHLOROPHENOL	BDL	5000
3A.	2-NITROPHENOL	BDL	5000
4A.	2,4-DIMETHYLPHENOL	8000	5000
5A.	2,4-DICHLOROPHENOL	BDL	5000
6A.	P-CHLORO-M-CRESOL	BDL	5000
7A.	2,4,6-TRICHLOROPHENOL	BDL	5000
8A.	2,4-DINITROPHENOL	BDL	50000
9A.	4-NITROPHENOL	BDL	5000
10A.	4,6-DINITRO-O-CRESOL	BDL	50000
11A.	PENTACHLOROPHENOL	170000	5000

BDL=BELOW DETECTION LIMIT
†See Data Report Notice. Additionally, sample analyzed using a 10:1 dilution, thus the higher than normal detection limits.

(1)Quantitated using secondary ion

COMPOUND LIST -- BASE-NEUTRAL EXTRACTABLE ORGANICS

SAMPLE IDENTIFIER: GM 269
COMPUCHEM SAMPLE NUMBER: 31897

		CONCENTRATION (UG/KG)	DETECTION† LIMIT (UG/KG)
1B.	N-NITROSODIMETHYLAMINE	BDL	12000
2B.	BIS (2-CHLOROETHYL) ETHER	BDL	12000
3B.	1,3-DICHLOROBENZENE	BDL	12000
4B.	1,4-DICHLOROBENZENE	BDL	12000
5B.	1,2-DICHLOROBENZENE	BDL	12000
6B.	BIS (2-CHLOROISOPROPYL) ETHER	BDL	12000
7B.	HEXACHLOROETHANE	BDL	12000
8B.	N-NITROSODI-N-PROPYLAMINE	BDL	12000
9B.	NITROBENZENE	BDL	12000
10B.	ISOPHORONE	BDL	12000
11B.	BIS(2-CHLOROETHOXY) METHANE	BDL	12000
12B.	1,2,4-TRICHLOROBENZENE	BDL	12000
13B.	NAPHTHALENE	280000(1)	12000
14B.	HEXACHLOROBUTADIENE	BDL	12000
15B.	HEXACHLOROCYCLOPENTADIENE	BDL	12000
16B.	2-CHLORONAPHTHALENE	BDL	12000
17B.	DIMETHYLPHTHALATE	BDL	12000
18B.	ACENAPHTHYLENE	BDL	12000
19B.	2,6-DINITROTOLUENE	BDL	12000
20B.	ACENAPHTHENE	120000	12000
21B.	2,4-DINITROTOLUENE	BDL	12000
22B.	DIETHYLPHTHALATE	BDL	12000
23B.	FLUORENE	110000	12000
24B.	4-CHLOROPHENYL PHENYL ETHER	BDL	12000
25B.	DIPHENYLAMINE (N-NITROSO)	BDL	12000
26B.	1,2-DIPHENYLHYDRAZINE (AZOBENZENE)	BDL	12000
27B.	4-BROMOPHENYL PHENYL ETHER	BDL	12000
28B.	HEXACHLOROBENZENE	BDL	12000

BDL=BELOW DETECTION LIMIT
†See Data Report Notice. Additionally, sample extract could not be concentrated to the required volume, and sample was analyzed using a 20:1 dilution, thus the higher than normal detection limits.

(1)Quantitated using secondary ion

COMPOUND LIST -- BASE-NEUTRAL EXTRACTABLE ORGANICS (Page Two)

SAMPLE IDENTIFIER: GM 269
COMPUCHEM SAMPLE NUMBER: 31897

		CONCENTRATION (UG/KG)	DETECTION† LIMIT (UG/KG)
29B.	PHENANTHRENE	430000(1)	12000
30B.	ANTHRACENE	83000	12000
31B.	DI-N-BUTYLPHTHALATE	BDL	12000
32B.	FLUORANTHENE	400000(1)	12000
33B.	BENZIDINE	BDL	12000
34B.	PYRENE	250000	12000
35B.	BUTYLBENZYLPHTHALATE	BDL	12000
36B.	BENZO(A)ANTHRACENE	72000	12000
37B.	3,3'-DICHLOROBENZIDINE	BDL	12000
38B.	CHRYSENE	65000	12000
39B.	BIS(2-ETHYLHEXYL)PHTHALATE	BDL	12000
40B.	DI-N-OCTYLPHTHALATE	BDL	12000
41B.	BENZO(B)FLUORANTHENE	75000	12000
42B.	BENZO(K)FLUORANTHENE	51000	12000
43B.	BENZO(A)PYRENE	28000	12000
44B.	INDENO(1,2,3-C,D)PYRENE	BDL	30000
45B.	DIBENZO(A,H)ANTHRACENE	BDL	30000
46B.	BENZO(G,H,I)PERYLENE	BDL	30000

BDL=BELOW DETECTION LIMIT
†See Data Report Notice. Additionally, sample extract could not be concentrated to the required volume,and sample was analyzed using a 20:1 dilution, thus the higher than normal detection limits.

(1)Quantitated using secondary ion.

COMPOUND LIST -- PESTICIDES/PCB'S

SAMPLE IDENTIFIER: GM 269
COMPUCHEM SAMPLE NUMBER: 31297

		CONCENTRATION (UG/KG)	DETECTION† LIMIT (UG/KG)
1P.	ALDRIN	BDL	400
2P.	ALPHA-BHC	BDL	400
3P.	BETA-BHC	BDL	400
4P.	GAMMA-BHC	BDL	400
5P.	DELTA-BHC	BDL	400
6P.	CHLORDANE	BDL	400
7P.	4,4'-DDT	BDL	400
8P.	4,4'-DDE	BDL	400
9P.	4,4'-DDD	BDL	400
10P.	DIELDRIN	BDL	400
11P.	ALPHA-ENDOSULFAN	BDL	400
12P.	BETA-ENDOSULFAN	BDL	400
13P.	ENDOSULFAN SULFATE	BDL	400
14P.	ENDRIN	BDL	400
15P.	ENDRIN ALDEHYDE	BDL	400
16P.	HEPTACHLOR	BDL	400
17P.	HEPTACHLOR EPOXIDE	BDL	400
18P.	PCB-1242	BDL	4000
19P.	PCB-1254	BDL	4000
20P.	PCB-1221	BDL	4000
21P.	PCB-1232	BDL	4000
22P.	PCB-1248	BDL	4000
23P.	PCB-1260	BDL	4000
24P.	PCB-1016	BDL	4000
25P.	TOXAPHENE	BDL	4000
26P.	METHOXYCHLOR	BDL	4000

BDL=BELOW DETECTION LIMIT
†See Data Report Notice. Additionally, sample analyzed using a 200:1 dilution to properly evaluate the GC Chromatogram, thus the higher than normal detection limits.

COMPOUND LIST - SDWA/RCRA HERBICIDES

SAMPLE IDENTIFIER: GM 269
COMPUCHEM SAMPLE NUMBER: 31897

	CONCENTRATION (MG/L)	DETECTION† LIMIT (MG/L)
1H. 2, 4-D	BDL	20.0
2H. 2,4,5-TP (Silvex)	BDL	2.0

BDL=BELOW DETECTION LIMIT
†See Data Report Notice. Additionally, sample analyzed using a 200:1 dilution to properly evaluate the GC Chromatogram, thus the higher than normal detection limits.

COMPOUND LIST - INORGANICS (METALS)

SAMPLE IDENTIFIER: GM 269
COMPUCHEM SAMPLE NUMBER: 31897

INORGANICS PRIORITY POLLUTANTS	CONCENTRATION (UG/G)		DETECTION LIMIT† (UG/G)
1. ANTIMONY, TOTAL		BDL	0.50
2. ARSENIC, TOTAL	3.3		0.50
3. BERYLLIUM, TOTAL		BDL	0.20
4. CADMIUM, TOTAL		BDL	0.10
5. CHROMIUM, TOTAL	25		0.50
6. COPPER, TOTAL	19		1.0
7. LEAD, TOTAL	30		0.50
8. MERCURY, TOTAL	0.010		0.0020
9. NICKEL, TOTAL	5.2		1.0
10. SELENIUM, TOTAL		BDL	0.10
11. SILVER, TOTAL		BDL	0.50
12. THALLIUM, TOTAL		BDL	0.50
13. ZINC, TOTAL	73		0.20

BDL=BELOW DETECTION LIMIT
†See Data Report Notice

APPENDIX E

BORING LOGS AND MONITORING WELL DETAILS

MONITORING WELL LOG

PROJECT: Grenada, MS (RCRA) — WELL NO. R-1

DRILLING METHOD: H.S.A. — GEOLOGIST: J. B. Gillespie

DRILLER: DISC (Developers International Service Corp.) — DATE: 3/24/82

GROUND ELEVATION	GROUND WATER DEPTH (ft):	GRAVEL PACK
TOP OF WELL: 210.81	AT COMPLETION: 22.8	BENTONITE
DEPTH OF WELL (ft): 32.77	AFTER 12 HOURS: 22.6	BACK FILL
CASING MATERIAL: 2" PVC	SCREEN: 10 ft of 0.010" screen	CONCRETE
		SCREEN

STRATA DEPTH	SAMPLE DEPTH	DESCRIPTION
		Brown FILL and CLAY & SILT, lt broken rock fragments
		Gray/tan CLAY & SILT, tr f brown sand
5		Brown CLAY & SILT, lt f sand
		Tan F -SAND, tr brown clay & Silt
10		Tan F -SAND
15		
20		
		Lt tan F-M SAND, tr c sand
25		
		Lt red/tan F-SAND, tr silt
30		

CONSTRUCTION

SHEET 1 OF 1

KEYSTONE ENVIRONMENTAL RESOURCES, INC.

WELL LOG : R-1R

PROJECT: Grenada Wood Plant **LOCATION:** Grenada, MS

Drilling Method: HOLLOW STEM AUGER
Driller: PROFESSIONAL SERVICE INDUSTRIES, INC..
Geologist: D. SMITH
Date : MARCH 28, 1989

Ground Elevation:
Top of Well Elev.:
Depth of Well: 29.5 FEET
Ground Water Depth:
At Completion:

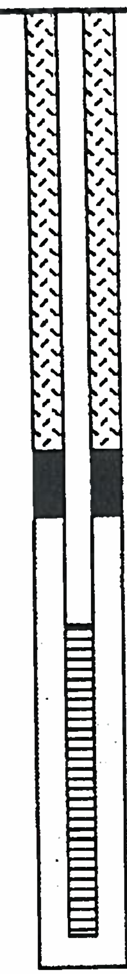
Sample Collection
G-grab T-shelby tube
S-splitspoon C-rock core

Casing Material: 2" PVC
Screen: 2" PVC (0.01" SLOT)

GRAVEL PACK
BENTONITE
GROUT
SCREEN

Depth	Sample	SPT Blow Counts	Description
0			Coarse GRAVEL (FILL)
5	S	7,8,12	Orange-brown SILT AND CLAY, trace brown patches (decomposed organics), trace light gray silt and clay (mottles/veins)
10	S	12,20,20	Light gray/ buff fine clean SAND, well-sorted quartz, trace mafic grains
15	S	2,3,5	
20	S	6,6,8	Light buff fine to medium clean SAND, coarsens gradually with depth
25	S	9,12,11	
30	S	8,8,10	Buff/gray fine to medium clean SAND, trace rust bands, trace clay
			Bottom of Boring at 30.5 feet
35			
40			

Construction



Sheet 1 of 1

MONITORING WELL LOG

PROJECT Grenada, MA (RCRA) WELL NO. R-2

DRILLING METHOD H.S.A. GEOLOGIST J. B. Gillespie

DRILLER Developers International Service Corp. DATE 3/25/82

GROUND ELEVATION ______

TOP OF WELL 209.26

DEPTH OF WELL (ft) 30.54

GROUND WATER DEPTH (ft):

AT COMPLETION 21.54

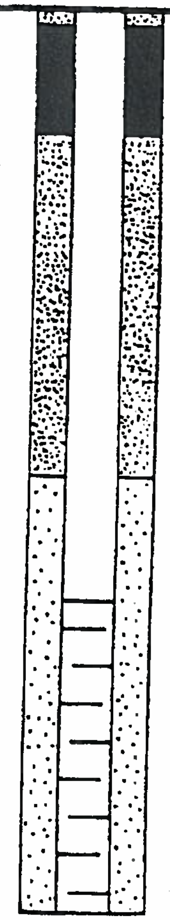
AFTER 12 HOURS 21.5

GRAVEL PACK
BENTONITE
BACK FILL
CONCRETE
SCREEN

CASING MATERIAL 2" PVC SCREEN 10 ft of 0.010" screen

STRATA DEPTH	SAMPLE DEPTH	DESCRIPTION
0–1.5		Gray CLAY & SILT, tr brown/black organic particles (roots)
1.5–5.5		Tan CLAYEY SILT, tr f sand
5.5–9.5		Tan/gray CLAYEY SILT, some f sand
9.5–11.5		Lt tan/gray CLAYEY SILT and F-SAND
11.5–17.5		Lt gray/tan F to V-F SAND, tr silt
17.5–24.5		Lt tan/brown FMC SAND, tr silt
24.5–28.5		Gray F SAND, tr silt

CONSTRUCTION



SHEET 1 OF 1

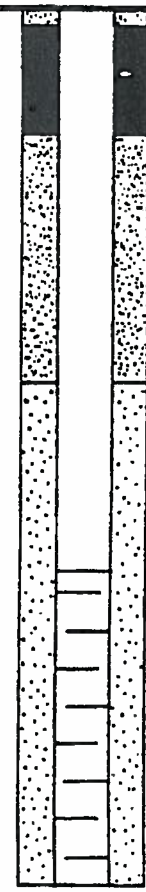
MONITORING WELL LOG

PROJECT: Grenada, MS (RCRA) WELL NO. R-3

DRILLING METHOD: H.S.A. GEOLOGIST: J. B. Gillespie

DRILLER: Developers International Service Corp. DATE: 3/26/82

GROUND ELEVATION:	GROUND WATER DEPTH (ft):	GRAVEL PACK
TOP OF WELL: 206.96	AT COMPLETION: 21.8	BENTONITE
DEPTH OF WELL (ft): 29.8	AFTER 12 HOURS: 22.0	BACK FILL
		CONCRETE
CASING MATERIAL: 2" PVC	SCREEN: 10 ft of 0.010" screen	SCREEN

STRATA DEPTH	SAMPLE DEPTH	DESCRIPTION	CONSTRUCTION
		Brown/gray SILTY CLAY, tr f sand	
5		Brown/gray CLAYEY SILT, lt f sand	
10			
15		Lt tan M-F SAND, tr silt	
20			
25			
30			

SHEET 1 OF 1

MONITORING WELL LOG

PROJECT Grenada, MS (RCRA) WELL NO. R-4

DRILLING METHOD H.S.A. GEOLOGIST J. B. Gillespie

DRILLER Developers International Service Corp. DATE 3/27/82

GROUND ELEVATION

TOP OF WELL 206.06

DEPTH OF WELL (ft) 30.55

GROUND WATER DEPTH (ft):

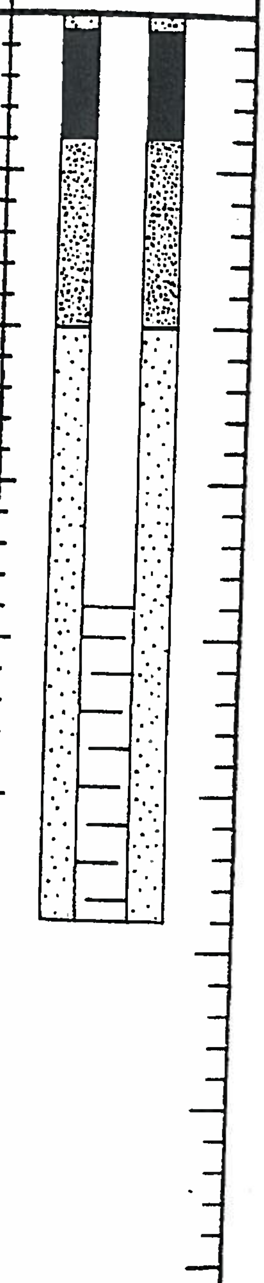
AT COMPLETION 21.55

AFTER 12 HOURS 21.0

GRAVEL PACK
BENTONITE
BACK FILL
CONCRETE
SCREEN

CASING MATERIAL 2" PVC SCREEN 10 ft of 0.010" screen

STRATA DEPTH	SAMPLE DEPTH	DESCRIPTION	CONSTRUCTION
		Brown CLAY & SILT, tr f sand	
5		Lt tan CLAYEY SILT, and F SAND	
		Lt gray/tan F SAND, tr silt	
10			
15		Lt tan/lt gray M-F SAND, tr silt	
20			
25			
30			



SHEET 1 OF 1

MONITORING WELL LOG

PROJECT Grenada, MS WELL NO. R-5

DRILLING METHOD H.S.A. GEOLOGIST J. B. Gillespie

DRILLER P.S.I. Inc.-Engineering DATE 7/17/84

GROUND ELEVATION ______

TOP OF WELL 211.84

DEPTH OF WELL (ft) 31.0

GROUND WATER DEPTH (ft):

AT COMPLETION ______

AFTER ____ HOURS ______

GRAVEL PACK
BENTONITE
BACK FILL
CONCRETE
SCREEN

CASING MATERIAL 2" PVD SCREEN 10' 0.010 Slot

STRATA DEPTH	SAMPLE DEPTH	DESCRIPTION
	X	Dk Brown TOPSOIL, tr organic (roots)
	X	Tan/brown/gray SILT, tr organics (roots)
5.0	X	Brown/tan SILT, some clay & silt, tr stone fragments
	X	Brown SILT and SILT & CLAY
10.0	X	Brown/gray SILT & CLAY and f SAND
	X	Tan SILT & CLAY and F SAND
15.0	X	Tan f SAND, tr silt
20.0	X	
25.0	X	Gray fm SAND, sl anaerobic odor
30.0	X	

CONSTRUCTION

KEYSTONE
ENVIRONMENTAL RESOURCES, INC.

WELL LOG : R-5B

PROJECT: COLLIER LANDFILL LOCATION: GRENADA, MS

DRILLING METHOD: MUD ROTARY
DRILLER: LAYNE-WESTERN COMPANY,INC..

GEOLOGIST:
DATE: 8-10-88

Ground Elevation:
Top of Well Elev.:
Depth of Well: 51'

Sample Collection
G-grab T-shelby tube
S-splitspoon C-rock core

Casing Material:
Screen:

GRAVEL PACK
BENTONITE
GROUT
SCREEN
CAVE-IN

Depth	Sample	SPT Blow Counts	Description	Construction
0–30			SEE R-5 BORING LOG FOR GEOLOGIC DESCRIPTIONS FROM 0 TO 30 FEET	
30–38			Brown Grey mf SAND, trace to little Silty Clay	
35	s	14 19 12		
38–40			Dark Brown CLAY & SILT, trace to little fm Sand	
40	s	1 2 12		

KEYSTONE ENVIRONMENTAL RESOURCES, INC.

WELL LOG : R-5B

PROJECT: AWI **LOCATION:** PORTSMOUTH, VA

DRILLING METHOD: MUD ROTARY
DRILLER: LAYNE-WESTERN COMPANY INC.
GEOLOGIST:
DATE: 8-10-88

Ground Elevation:
Top of Well Elev.:
Depth of Well: 51'

Sample Collection
G-grab T-shelby tube
S-splitspoon C-rock core

Casing Material:
Screen:

GRAVEL PACK, BENTONITE, GROUT, SCREEN, CAVE-IN

Depth	Sample	SPT Blow Counts	Description	Construction
			Brown fm SAND, little Silty Clay	
			Grey fmc SAND, little to trace Silty Clay	
45	s	7 10 8		
50			Brown Silty Clay, Trace of little f Sand	
	s	5 9 11	Grey mf Sand, Trace Clay	
			BOTTOM OF BORING 52.5'	

Sheet 2 of 2

MONITORING WELL LOG

PROJECT Grenada, MS

WELL NO. R-6

DRILLING METHOD H.S.A.

GEOLOGIST J. B. Gillespie

DRILLER P.S.I. Inc.-Engineering

DATE 7/17/84

GROUND ELEVATION

TOP OF WELL 213.04

DEPTH OF WELL (ft) 31.0

GROUND WATER DEPTH (ft):

AT COMPLETION

AFTER ____ HOURS

GRAVEL PACK
BENTONITE
BACK FILL
CONCRETE
SCREEN

CASING MATERIAL 2" PVC

SCREEN 10' 0.010 Slot

STRATA DEPTH	SAMPLE DEPTH	DESCRIPTION
		Brown SILT, and SILT & CLAY, tr stone fragments
		Tan/gray SILT
5.0		Gray/brown SILT & CLAY
10.0 15.0		Tan/white f SAND, tr silt
20.0		Rust/gray fm SAND and CLAY & SILT
25.0		Gray CLAY & SILT, tr f SAND
30.0		Gray fmc SAND, tr silt

CONSTRUCTION

MONITORING WELL LOG

PROJECT Grenada, MS

WELL NO. R-7

DRILLING METHOD H.S.A.

GEOLOGIST J. B. Gillespie

DRILLER P.S.I. Inc.-Engineering

DATE 7/17/84

GROUND ELEVATION ______

TOP OF WELL 21098

DEPTH OF WELL (ft) 31.0

GROUND WATER DEPTH (ft):

AT COMPLETION ______

AFTER ______ HOURS ______

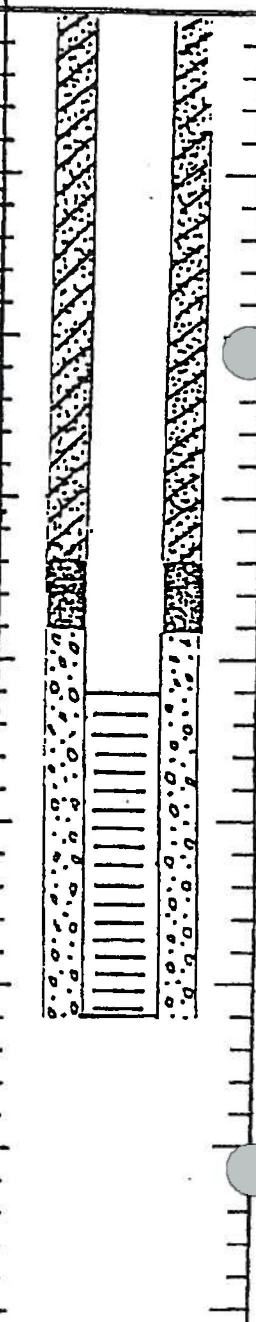
GRAVEL PACK
BENTONITE
BACK FILL
CONCRETE
SCREEN

CASING MATERIAL 2" PVC

SCREEN 10' 0.010 Slot

STRATA DEPTH	SAMPLE DEPTH	DESCRIPTION
5.0		Tan/brown/gray SILT, tr roots
		Tan/brown SILT and SILT & CLAY
10.0		Brown SILT & CLAY and f SAND, SILT
		White vf SAND, some brown silt & clay, tr silt
15.0		White vf SAND, tr brown silt & clay, tr silt
20.0		Tan f SAND, tr silt
25.0		
30.0		Gray/tan mf SAND, tr clay & silt

CONSTRUCTION



MONITORING WELL LOG

PROJECT: Grenada, MS
WELL NO.: R-8
DRILLING METHOD: H.S.A.
GEOLOGIST: J. B. Gillespie
DRILLER: P.S.I. Inc.-Engineering
DATE: 7/17/84

GROUND ELEVATION:
TOP OF WELL: 214.53
DEPTH OF WELL (ft): 31.0

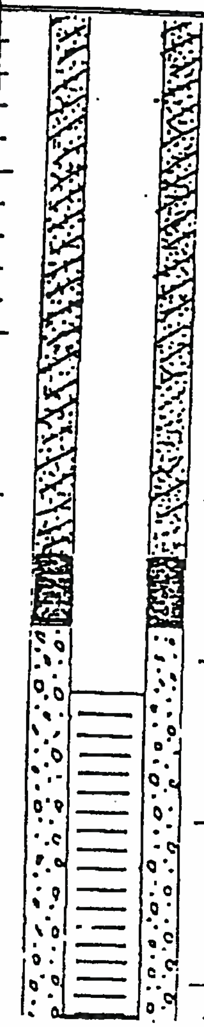
GROUND WATER DEPTH (ft):
AT COMPLETION:
AFTER ___ HOURS:

GRAVEL PACK
BENTONITE
BACK FILL
CONCRETE
SCREEN

CASING MATERIAL: 2" PVC
SCREEN: 10' 0.010 Slot

STRATA DEPTH	SAMPLE DEPTH	DESCRIPTION
		Brown SILT
		Brown SILT and SILT & CLAY
5.0		
		Brown SILT & CLAY
10.0		
		Gray CLAY & SILT, tr vf sand
15.0		
		White/tan vf SAND, tr silt
20.0		
25.0		
		Gray/tan fmc SAND, TR SILT
30.0		

CONSTRUCTION

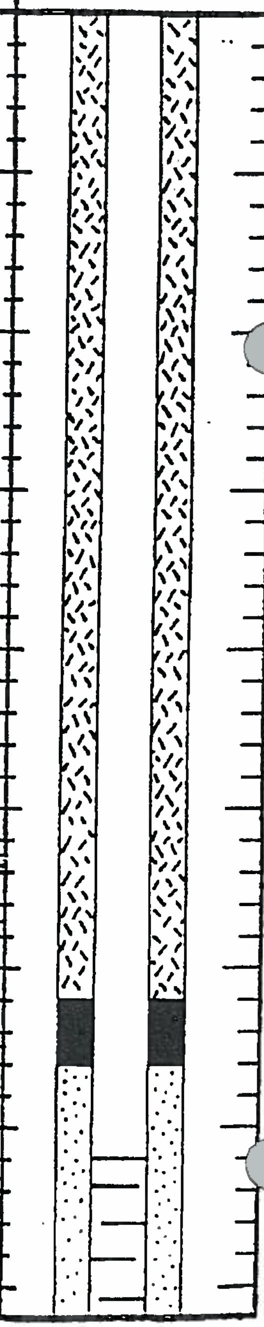


MONITORING WELL LOG

PROJECT: Koppers Co. Inc., Grenada, Mississippi	WELL NO. R-8B
DRILLING METHOD: Mud Rotary	GEOLOGIST: S. A. Colton
DRILLER: PSI Inc.	DATE: 11/13/86

GROUND ELEVATION:	GROUND WATER DEPTH (ft):	GRAVEL PACK
TOP OF WELL: 208.98'	AT COMPLETION:	BENTONITE
DEPTH OF WELL (ft): 46	AFTER ___ HOURS:	BACK FILL
CASING MATERIAL: 2" PVC	SCREEN: 10' of 0.010" slots	CONCRETE / SCREEN

STRATA DEPTH	SAMPLE DEPTH	DESCRIPTION	CONSTRUCTION
0		No samples taken from 0-26.5 feet See R-8 Monitoring Well Log for soil description	
5			
10			
15			
20			
25			
		Grey CLAY and SILT, tr f sand	
		Brown fm SAND, tr to little pockets of clayey silt	
30		Grey/green silty CLAY, tr sand	
		Grey/green CLAY and SILT, tr f sand	



SHEET OF

MONITORING WELL LOG

PROJECT Koppers Co. Inc., Grenada, Mississippi

WELL NO. R-8B

DRILLING METHOD Mud Rotary

GEOLOGIST S. A. Colton

DRILLER PSI Inc.

DATE 11/13/86

GROUND ELEVATION

TOP OF WELL 208.98'

DEPTH OF WELL (ft) 46

GROUND WATER DEPTH (ft):

AT COMPLETION

AFTER HOURS

GRAVEL PACK
BENTONITE
BACK FILL
CONCRETE
SCREEN

CASING MATERIAL

SCREEN

STRATA DEPTH	SAMPLE DEPTH	DESCRIPTION	CONSTRUCTION
		Brown fm SAND, tr pockets of CLAY and SILT	
		Grey clayey SILT, tr to little f sand	
45		Brown fm SAND, tr silt	
		Bottom of boring @ 45.5'	

MONITORING WELL LOG

PROJECT Grenada, MS — WELL NO. R-9

DRILLING METHOD H.S.A. — GEOLOGIST J. B. Gillespie

DRILLER P.S.I. Inc.-Engineering — DATE 7/17/84

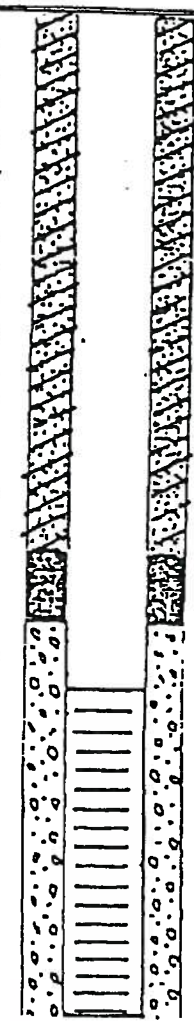
GROUND ELEVATION	
TOP OF WELL	213.66
DEPTH OF WELL (ft)	31.0

GROUND WATER DEPTH (ft):
AT COMPLETION
AFTER ____ HOURS ____

GRAVEL PACK
BENTONITE
BACK FILL
CONCRETE
SCREEN

CASING MATERIAL 2" PVC SCREEN 10' 0.010 Slot

STRATA DEPTH	SAMPLE DEPTH	DESCRIPTION	CONSTRUCTION
	X	Tan SILT, tr roots	
	X	Brown SILT	
5.0	X	Gray SILT, little silt & clay	
	X	Shelby tube	
10.0	X	Brown SILT & CLAY, tr roots	
	X	Brown SILT & CLAY, tr f sand	
15.0	X		
		Tan f SAND, tr silt	
20.0	X		
25.0	X	Tan fmc SAND, tr silt	
30.0	X		



KEYSTONE ENVIRONMENTAL RESOURCES, INC.

WELL LOG (R-9C)

PROJECT: Grenada RCRA	LOCATION: Grenada, Mississippi
Drilling Method: Wash Rotary Driller: P. S. I. Inc.-Engineering	Geologist: C.Cramer Date: August 26, 1987

Ground Elevation: 213.10 feet Top of Well Elev.: 215.99 feet Depth of Well: 63.4 feet	Sample Collection G-grab T-shelby tube S-splitspoon C-rock core	GRAVEL PACK BENTONITE GROUT SCREEN
Ground Water Depth: At Completion:	Casing Material: 2" I.D. PVC Screen: 10' of 0.010 " Slotted	

Depth	Sample	SPT Blow Counts	Description	Construction
5			Refer to well log R-9D for descriptions	
10				
15				
20				
25				
30				
35				
40				

KEYSTONE
ENVIRONMENTAL RESOURCES, INC.

WELL LOG (R-9C)

PROJECT: Grenada RCRA **LOCATION:** Grenada, Mississippi

Drilling Method: Wash Rotary
Driller: P. S. I. Inc.-Engineering
Geologist: C.Cramer
Date: August 26, 1987

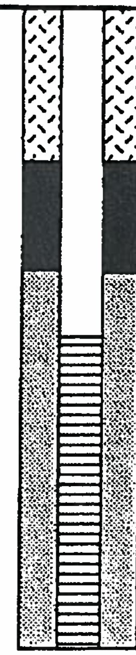
Ground Elevation: 213.10 feet
Top of Well Elev.: 215.99 feet
Depth of Well: 63.4 feet

Sample Collection
G-grab T-shelby tube
S-splitspoon C-rock core

GRAVEL PACK
BENTONITE
GROUT
SCREEN

Ground Water Depth:
At Completion:

Casing Material: 2" I.D. PVC
Screen: 10' of 0.010 " Slotted

Depth	Sample	SPT Blow Counts	Description	Construction
45			Refer to well log R-9D for descriptions	
50				
55				
60				
65				
70				
75				
80				

KEYSTONE ENVIRONMENTAL RESOURCES, INC.

WELL LOG (R-9D)

PROJECT: R-9C and R-9D Well Nest   LOCATION: Grenada,Mississippi

Drilling Method: Wash Rotary   Geologist: C. Cramer
Driller: P. S. I. Inc.-Engineering   Date: August 25, 1987

Ground Elevation: 213.87 feet Top of Well Elev.:216.67 feet Depth of Well: 90 feet	Sample Collection G-grab T-shelby tube S-splitspoon C-rock core	GRAVEL PACK BENTONITE GROUT SCREEN
Ground Water Depth: At Completion:	Casing Material: 2" I.D. PVC Screen: 10' of 0.010" slotted	

Depth	Sample	SPT Blow Counts	Description
0–3.5	S, S		Tan brown SILT, tr. roots
3.5–8.5	S, T		Gray SILT, little clay
8.5–17.5	S, S, S		Brown SILT & CLAY, tr. f sand, tr. roots
17.5–22.5	S		Tan f SAND, tr. silt
22.5–35	S, S		Gray mf SAND, little silt, tr. clay,some wood fragments
35	S	7,14,18	35-35.2' Rust mf SAND, little silt
35.2–40			Gray CLAYEY SILT, tr. f. sand
40	S	15,18,21	40-40.5' Rust mf SAND, tr. silt

KEYSTONE ENVIRONMENTAL RESOURCES, INC.

WELL LOG (R-9D)

PROJECT: R-9C and R-9D Well Nest **LOCATION:** Grenada, Mississippi

Drilling Method: Wash Rotary Geologist: C. Cramer
Driller: P. S. I. Inc.-Engineering Date: August 25, 1987

Ground Elevation: 213.87 feet
Top of Well Elev.: 216.67 feet
Depth of Well: 90 feet

Sample Collection
G-grab T-shelby tube
S-splitspoon C-rock core

GRAVEL PACK
BENTONITE
GROUT
SCREEN

Ground Water Depth:
At Completion:

Casing Material: 2" I.D. PVC
Screen: 10' of 0.010" slotted

Depth	Sample	SPT Blow Counts	Description	Construction
45	S	15,20,28	Rust mf SAND, tr. silt, tr. gray silty clay laminae	
50	S	15,16,17	Rust mf SAND, tr.gray silt	
55	S	15,18,15		
60	S	18,24,34	Brown mf SAND & SILT, micaceous, some small silty clay pockets	
65	S	16,23,31		
70	S	27,50/5	Gray f SAND & SILT, micaceous	
75				
80	S	37,50/5	Gray f SAND, some silt, micaceous	

KEYSTONE ENVIRONMENTAL RESOURCES, INC.

WELL LOG (R-9D)

PROJECT: R-9C and R-9D Well Nest **LOCATION:** Grenada, Mississippi

Drilling Method: Wash Rotary
Driller: P. S. I. Inc.-Engineering
Geologist: C. Cramer
Date: August 25, 1987

Ground Elevation: 213.87 feet
Top of Well Elev.: 216.67 feet
Depth of Well: 90 feet

Sample Collection
G-grab T-shelby tube
S-splitspoon C-rock core

GRAVEL PACK
BENTONITE
GROUT
SCREEN

Ground Water Depth:
At Completion:

Casing Material: 2" I.D. PVC
Screen: 10' of 0.010" slotted

Depth	Sample	SPT Blow Counts	Description	Construction
85	S	31,50/5	Gray f SAND, some silt, micaceous	
90			Bottom of Boring-90 feet	
95				
100				

MONITORING WELL LOG

PROJECT Koppers Co. Inc., Grenada, Mississippi WELL NO. R-10

DRILLING METHOD Hollow Stem Auger GEOLOGIST S. A. Colton

DRILLER PSI Inc. DATE 11/3/86

GROUND ELEVATION ______

TOP OF WELL 208.78'

DEPTH OF WELL (ft) 27

GROUND WATER DEPTH (ft):

AT COMPLETION ______

AFTER ____ HOURS ______

GRAVEL PACK
BENTONITE
BACK FILL
CONCRETE
SCREEN

CASING MATERIAL 2" PVC SCREEN 10' of 0.010" slots

STRATA DEPTH	SAMPLE DEPTH	DESCRIPTION	CONSTRUCTION
		No samples taken See B-1 Boring Log for soil description	
5			
10			
15			
20			
25			
30			

SHEET OF

MONITORING WELL LOG

PROJECT Koppers Co. Inc., Grenada, Mississippi

WELL NO. R-10B

DRILLING METHOD Mud Rotary

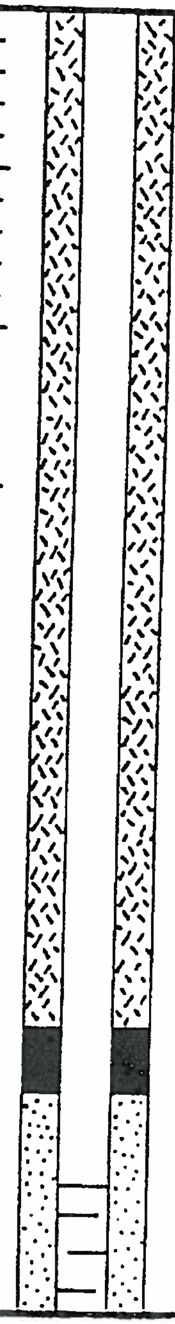
GEOLOGIST S. A. Colton

DRILLER PSI Inc.

DATE 11/14/86

GROUND ELEVATION	GROUND WATER DEPTH (ft):	GRAVEL PACK
TOP OF WELL 208.94'	AT COMPLETION	BENTONITE
DEPTH OF WELL (ft) 47	AFTER HOURS	BACK FILL
		CONCRETE
CASING MATERIAL 2" PVC	SCREEN 10' of 0.010" slots	SCREEN

STRATA DEPTH	SAMPLE DEPTH	DESCRIPTION	CONSTRUCTION
		No samples taken See B-1 Boring Log for soil description	
5			
10			
15			
20			
25			
30			
35			
40			



MONITORING WELL LOG

PROJECT Koppers Co. Inc., Grenada, Mississippi — WELL NO. R-10B

DRILLING METHOD Mud Rotary — GEOLOGIST S. A. Colton

DRILLER PSI Inc. — DATE 11/14/86

GROUND ELEVATION ______	GROUND WATER DEPTH (ft):	GRAVEL PACK
TOP OF WELL 208.94'	AT COMPLETION ______	BENTONITE
DEPTH OF WELL (ft) 47	AFTER ____ HOURS ______	BACK FILL
		CONCRETE
CASING MATERIAL 2" PVC	SCREEN 10' of 0.010" slots	SCREEN

STRATA DEPTH	SAMPLE DEPTH	DESCRIPTION	CONSTRUCTION
		No samples taken See B-1 Boring Log for soil description	
45			
50			

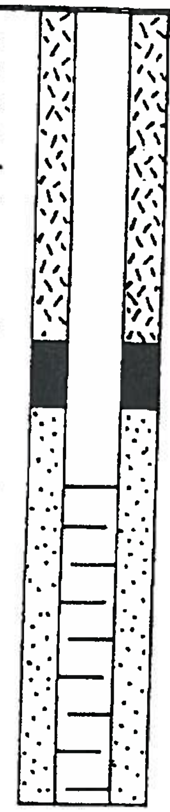
MONITORING WELL LOG

PROJECT Koppers Co. Inc., Grenada, Mississippi WELL NO. R-11

DRILLING METHOD Mud Rotary GEOLOGIST S. A. Colton

DRILLER PSI Inc. DATE 11/12/86

GROUND ELEVATION	GROUND WATER DEPTH (ft):	GRAVEL PACK
TOP OF WELL 203.74'	AT COMPLETION	BENTONITE
DEPTH OF WELL (ft) 25	AFTER HOURS	BACK FILL
		CONCRETE
CASING MATERIAL 2" PVC	SCREEN 10' of 0.010" slots	SCREEN

STRATA DEPTH	SAMPLE DEPTH	DESCRIPTION	CONSTRUCTION
		No samples taken See B-4 Boring Log for soil description	
5			
10			
15			
20			
25			
30			
35			
40			

MONITORING WELL LOG

PROJECT Koppers Co. Inc., Grenada, Mississippi WELL NO. R-12

DRILLING METHOD Mud Rotary GEOLOGIST S. A. Colton

DRILLER PSI Inc. DATE 11/6/86

GROUND ELEVATION

TOP OF WELL- 200.71'

DEPTH OF WELL (ft) 20

GROUND WATER DEPTH (ft):

AT COMPLETION

AFTER HOURS

GRAVEL PACK
BENTONITE
BACK FILL
CONCRETE
SCREEN

CASING MATERIAL 2" PVC SCREEN 10' of 0.010" slots

STRATA DEPTH	SAMPLE DEPTH	DESCRIPTION	CONSTRUCTION
		Brown clayey SILT, tr f sand, tr roots	
5			
10		Grey to brown fmc SAND, tr silt	
15			
20		Grey fmc SAND and silty CLAY	
		Grey/green fmc SAND, tr silt	
		Bottom of boring @ 21.5 feet	
25			

SHEET OF

KEYSTONE
ENVIRONMENTAL RESOURCES, INC.

WELL LOG R-12B

PROJECT: GRENADA WOOD PLANT | **LOCATION: GRENADA, MS**

DRILLING METHOD: MUD ROTARY
DRILLER: LAYNE WESTERN COMPANY, INC.

GEOLOGIST: S. COLTON
DATE: AUGUST 15, 1988

Ground Elevation:
Top of Well Elev.:
Depth of Well: 41'

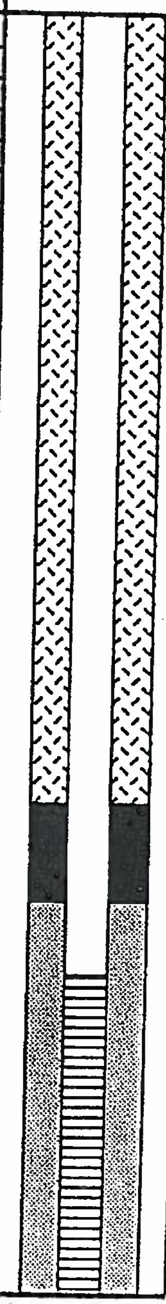
Sample Collection
G-grab T-shelby tube
S-splitspoon C-rock core

Casing Material:
Screen:

GRAVEL PACK
BENTONITE
GROUT
SCREEN
CAVE-IN

Depth	Sample	SPT Blow Counts	Description
0–24.5			SEE R-12 BORING LOG FOR GEOLOGIC DESCRIPTIONS FROM 0 TO 24.5 FEET
25	s	2 4 7	Grey mfc SAND, trace to little Clayey Silt
30	s	8 11 8	Grey mfc SAND, trace to little Clay
35	s	6 35 38	

Construction



Sheet 1 of 2

KEYSTONE ENVIRONMENTAL RESOURCES, INC.

WELL LOG R-12B

PROJECT: GRENADA WOOD PLANT **LOCATION:** GRENADA, MS

DRILLING METHOD: MUD ROTARY
DRILLER: LAYNE WESTERN COMPANY, INC.
GEOLOGIST: S. COLTON
DATE: AUGUST 15, 1988

Ground Elevation:
Top of Well Elev.:
Depth of Well: 41'

Sample Collection
G-grab T-shelby tube
S-splitspoon C-rock core

Casing Material:
Screen:

GRAVEL PACK | BENTONITE | GROUT | SCREEN | CAVE-IN

Depth	Sample	SPT Blow Counts	Description	Construction
	S	8 14 15		
45			BOTTOM OF BORING 43.5'	

Sheet 2 of 2

KEYSTONE ENVIRONMENTAL RESOURCES, INC.

WELL LOG : R-13

PROJECT: GRENADA WOOD PLANT **LOCATION:** GRENADA, MS

DRILLING METHOD: MUD ROTARY
DRILLER: LAYNE-WESTERN COMPANY, INC.
GEOLOGIST: S. COLTON
DATE: 8-3-88

Ground Elevation:
Top of Well Elev.:
Depth of Well: 31'

Sample Collection
G-grab T-shelby tube
S-splitspoon C-rock core

Casing Material:
Screen:

GRAVEL PACK
BENTONITE
GROUT
SCREEN
CAVE-IN

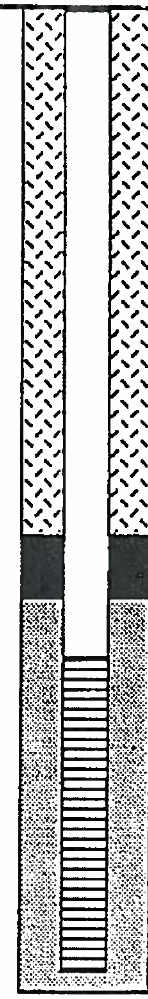
Sample	SPT Blow Counts
s	1 4 7
s	3 6 6
s	1 2 6
s	4 5 7
s	4 7 12
s	8 12 13
s	8 11 13
s	6 10 14
s	8 9 11
s	4 7 16

Depth: 5, 10, 15, 20, 25, 30, 35

Description:

- Brown SILT & CLAY, trace f Sand, trace fm Gravel
- Brown Clayey SILT, trace f Sand
- Brown fm SAND, little Silt and Clay
- Brown fm SAND, trace Silt
- Brown Silty CLAY, some fine Sand
- Brown fm SAND, trace Silt
  @ 11.2 - 11.5 trace Clay
- Grey fmc SAND and f Silty Clay pockets
- BOTTOM OF BORING 31.5'

Construction



KEYSTONE
ENVIRONMENTAL RESOURCES, INC.

WELL LOG : R-16

PROJECT: GRENADA WOOD PLANT **LOCATION:** GRENADA, MS

DRILLING METHOD: MUD ROTARY
DRILLER: LAYNE-WESTERN COMPANY, INC.

GEOLOGIST: S. COLTON
DATE: 8-18-88

Ground Elevation:
Top of Well Elev.:
Depth of Well: 20.5'

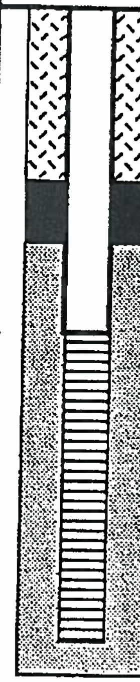
Sample Collection
G-grab T-shelby tube
S-splitspoon C-rock core

Casing Material:
Screen:

GRAVEL PACK	░	SCREEN	☰
BENTONITE	■	CAVE-IN	▨
GROUT	▩		

Depth	Sample	SPT Blow Counts	Description
	s	7 10 9	Brown Clayey SILT, trace f Sand
	s	5 6 6	
5	s	4 8 9	
	s	8 8 9	Brown f SAND, trace to little Silt
10			Brown Grey fmc SAND
	s	1 2 1	Grey mc SAND, little Clay pockets, trace wood fragments
	s	2 1 2	
15	s	1 2 2	Grey Clayey SILT, some f Sand
			Grey fm SAND, little to some Silty Clay products
20	s	2 3 7	
			BOTTOM OF BORING 21.5'
25			
30			
35			

Construction



Sheet 1 of 1

KEYSTONE ENVIRONMENTAL RESOURCES, INC.

WELL LOG : R-17

PROJECT: GRENADA WOOD PLANT **LOCATION:** GRENADA, MS

DRILLING METHOD: MUD ROTARY
DRILLER: LAYNE WESTERN COMPANY, INC.
GEOLOGIST: S. COLTON
DATE: 8-11-88

Ground Elevation:
Top of Well Elev.:
Depth of Well: 29.5'

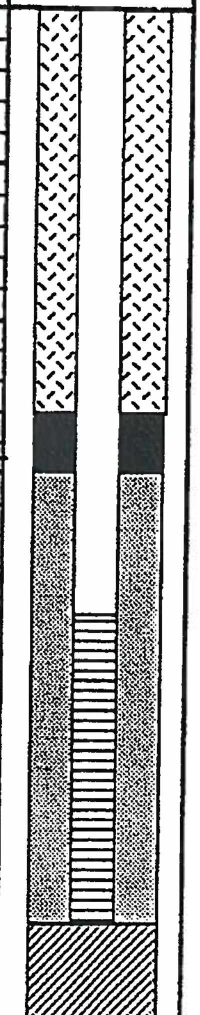
Sample Collection
G-grab T-shelby tube
S-splitspoon C-rock core

Casing Material:
Screen:

GRAVEL PACK
BENTONITE
GROUT
SCREEN
CAVE-IN

Depth	Sample	SPT Blow Counts	Description
	G		
	G		
5	s	6 10 9	Brown Clayey SILT, trace f Sand
	s	6 9 11	
10	s	6 12 11	
	s	6 14 9	
15	s	7 12 9	Grey White f SAND, trace Silt
20	s	9 18 22	@ 19.5' - 21' Sand is fm @ 19.7' - 20' Clay pocket
25	s	7 14 19	@ 25' - 32.5 Sand is fmc and contains Clay pockets
30	s	4 7 13	
35			BOTTOM OF BORING 32.5' COLLAPSE TO 29.5'

Construction



KEYSTONE ENVIRONMENTAL RESOURCES, INC.

WELL LOG : R-18

PROJECT: GRENADA WOOD PLANT **LOCATION:** GRENADA, MS

DRILLING METHOD: MUD ROTARY
DRILLER: LAYNE WESTERN COMPANY, INC.
GEOLOGIST: S. COLTON
DATE: 8-2-88

Ground Elevation:
Top of Well Elev.:
Depth of Well: 31'

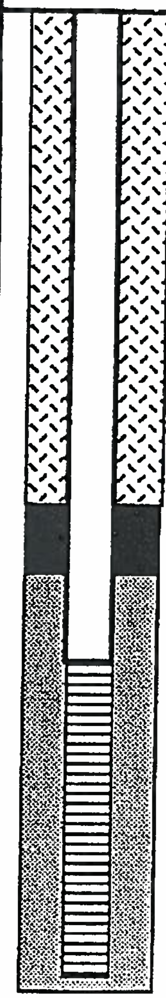
Sample Collection
G-grab T-shelby tube
S-splitspoon C-rock core

Casing Material:
Screen:

GRAVEL PACK
BENTONITE
GROUT
SCREEN
CAVE-IN

Depth	Sample	SPT Blow Counts	Description
	s	3 9 9	Brown Clayey SILT, trace f Sand, trace fine Gravel
	s	3 5 9	
5	s	1 5 13	
			Brown Silty CLAY, trace fine Sand
	s	9 12 18	Brown Grey fm SAND, trace to little Silt @ 30' trace Clay stringers
10	s	10 16 32	
	s	12 14 16	
15	s	10 18 15	
20	s	15 13 15	
25	s	11 18 17	
30	s	5 7 9	
			BOTTOM OF BORING 31.5'
35			

Construction



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KEYSTONE ENVIRONMENTAL RESOURCES, INC.

WELL LOG : R-19

PROJECT: GRENADA WOOD PLANT **LOCATION:** GRENADA, MS

DRILLING METHOD: MUD ROTARY
DRILLER: LAYNE WESTERN COMPANY, INC.
GEOLOGIST: S. COLTON
DATE: 8-16-88

Ground Elevation:
Top of Well Elev.:
Depth of Well: 27'

Sample Collection -
G-grab T-shelby tube
S-splitspoon C-rock core

Casing Material:
Screen:

GRAVEL PACK
BENTONITE
GROUT
SCREEN
CAVE-IN

Depth	Sample	SPT Blow Counts	Description	Construction
0–1	G		Brown Black Clayey SILT, little fm Sand	
2–3	G			
4–5	s	2 1 1	@ 2.5 - 6.5 contains up to 50% fmc Gravel	
7–8	s	2 1 1	Brown SILT & CLAY, trace to little f Sand	
10	s	woh 3 6	Brown mottled Clayey SILT, trace f Sand	
13	s	6 9 9		
15	s	4 5 11	Grey SILT, trace Sand	
20	s	4 6 10	Brown fine SAND, trace Silt	
25	s	4 5 7	Grey m SAND, trace Silt	
27			BOTTOM OF BORING 27'	

KEYSTONE ENVIRONMENTAL RESOURCES, INC.

WELL LOG : R-20

PROJECT: GRENADA WOOD PLANT **LOCATION:** GRENADA, MS

DRILLING METHOD: HOLLOW STEM AUGER GEOLOGIST: J. DiNUNZIO
DRILLER: LAYNE WESTERN COMPANY, INC. DATE: 8-16-88

Ground Elevation: -
Top of Well Elev.:
Depth of Well: 32'

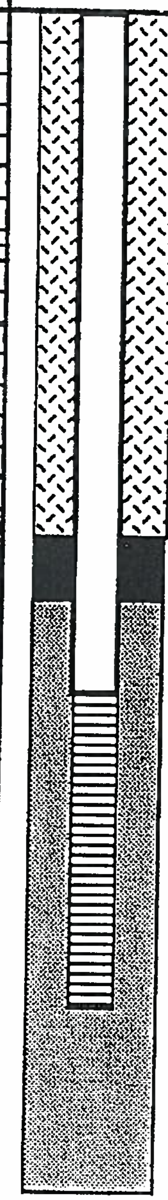
Sample Collection
G-grab T-shelby tube
S-splitspoon C-rock core

Casing Material:
Screen:

GRAVEL PACK
BENTONITE
GROUT
SCREEN
CAVE-IN

Depth	Sample	SPT Blow Counts	Description
	G		FILL (asphalt, gravel)
	G		Brown Silty CLAY, trace Silt
	G		
5	G		Brown CLAY, trace Silt
	G		Dark Grey to Grey Brown Silty CLAY @ 7.5' - 10' trace f Sand @ 10' - 11.25' little to some f Sand
10	s	4 12 21	
			Grey Brown f SAND, some silt trace Clay
	s	11 15 19	Grey White fm SAND, trace to little Silt @ 15' - 16.5' Sand is Brown Black
15	s	9 12 18	
20	s	10 14 13	
25	s	4 9 10	
30			
35			
			BOTTOM OF BORING 38'

Construction



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KEYSTONE
ENVIRONMENTAL RESOURCES, INC.

WELL LOG : R-21

PROJECT: GRENADA WOOD PLANT **LOCATION:** GRENADA, MS

DRILLING METHOD: HOLLOW STEM AUGER
DRILLER: LAYNE WESTERN COMPANY, INC.
GEOLOGIST: J. DiNUNZIO
DATE: 8-15-88

Ground Elevation:
Top of Well Elev.:
Depth of Well: 28'

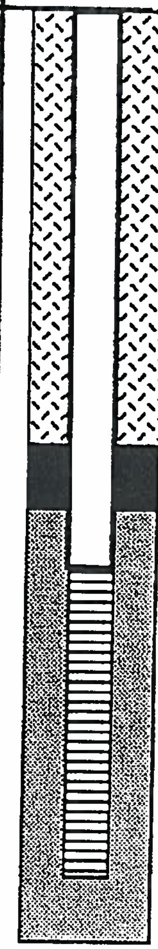
Sample Collection
G-grab T-shelby tube
S-splitspoon C-rock core

Casing Material:
Screen:

GRAVEL PACK
BENTONITE
GROUT
SCREEN
CAVE-IN

Depth	Sample	SPT Blow Counts	Description
0–1	G		FILL (black gravel, asphalt, cinders, fmc sand)
1–4	G		Dark Grey Black Silty CLAY, trace fm Sand
4–7	G		
7–10	G		
10–12			
12–13	s	6 10 16	Grey Clayey SILT, trace to little f Sand
13–14			Brown Grey f SAND & SILT, trace Clay
14–15			Grey Brown Silty CLAY, little f Sand
15–30	s	4 10 4	White Grey fmc SAND, trace to little Silt
20	s	5 9 11	
25	s	3 7 12	
30			BOTTOM OF BORING 30'

Construction



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KEYSTONE
ENVIRONMENTAL RESOURCES, INC.

WELL LOG : R-22

PROJECT: GRENADA WOOD PLANT **LOCATION:** GRENADA, MS

DRILLING METHOD: HOLLOW STEM AUGER
DRILLER: LAYNE WESTERN COMPANY, INC.
GEOLOGIST: J. DiNUNZIO
DATE: 8-15-88

Ground Elevation:
Top of Well Elev.:
Depth of Well: 28'

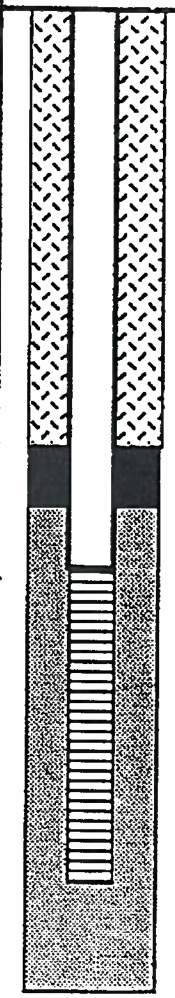
Sample Collection
G-grab T-shelby tube
S-splitspoon C-rock core

Casing Material:
Screen:

GRAVEL PACK
BENTONITE
GROUT
SCREEN
CAVE-IN

Depth	Sample	SPT Blow Counts	Description
	s	4 10 9	FILL (Black Brown m Gravel and Sand, little Silt, trace brick fragments)
	s	2 2 3	Black Brown Grey Silty CLAY, trace f Sand
5	s	2 3 2	
	s	2 2 2	
10	s	2 1 2	
	s	2 2 3	
15	s	2 1 2	Dark Grey - Grey SILT & CLAY
20	s	2 2 4	Grey Green Clayey SILT
25	s	6 4 7	Grey Brown Green mc SAND @ 25' - 26.5' trace to little silt, trace wood fibers @ 30' - 31.5' some silt, trace wood fibers
30	s	6 10 11	
			BOTTOM OF BORING 31.5'
35			

Construction



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KEYSTONE ENVIRONMENTAL RESOURCES, INC.

WELL LOG : R-23

PROJECT: GRENADA WOOD PLANT **LOCATION:** GRENADA, MS

DRILLING METHOD: MUD ROTARY
DRILLER: LAYNE WESTERN COMPANY, INC.
GEOLOGIST: S. COLTON
DATE: 8-15-88

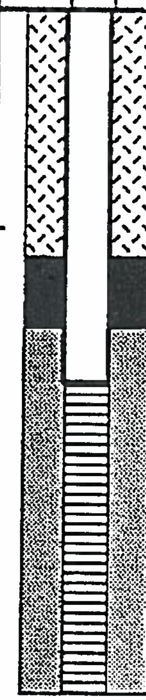
Ground Elevation:
Top of Well Elev.:
Depth of Well: 22'

Sample Collection
G-grab T-shelby tube
S-splitspoon C-rock core

Casing Material:
Screen:

GRAVEL PACK
BENTONITE
GROUT
SCREEN
CAVE-

Depth	Sample	SPT Blow Counts	Description	Construction
0–1.5	s	4 7 3	FILL (cinders, little Silt, little fm Sand, and f gravel, tar in bottom 2")	
1.5–5	s	1 3 4	Brown SILT & CLAY, trace f Sand	
5–6.5	s	2 4 6	Brown Silty CLAY	
6.5–9	s	8 7 8	Brown f SAND, trace Silt	
9–11.5	s	7 8 7	Brown f SAND & CLAY & SILT	
11.5–22	s	5 7 7	Grey mf SAND, trace silt	
	s	4 5 4		
	s	no recov		
22			BOTTOM OF BORING 22'	



KEYSTONE ENVIRONMENTAL RESOURCES, INC.

WELL LOG : R-24

PROJECT: GRENADA WOOD PLANT   LOCATION: GRENADA, MS

DRILLING METHOD: HOLLOW STEM AUGER   GEOLOGIST: J. DiNUNZIO
DRILLER: LAYNE WESTERN COMPANY, INC.   DATE: 8-11-88

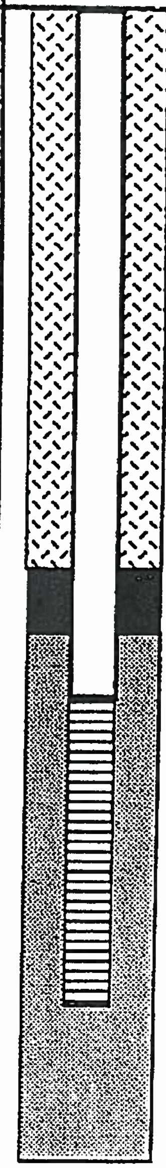
Ground Elevation:
Top of Well Elev.:
Depth of Well: 32'

Sample Collection
G-grab T-shelby tube
S-splitspoon C-rock core

Casing Material:
Screen:

GRAVEL PACK SCREEN
BENTONITE
GROUT CAVE-IN

Depth	Sample	SPT Blow Counts	Description
0	s	18 21 10	FILL (asphalt,gravel, Black Brown Silty Clay, f Sand)
	s	2 2 5	Black Grey Silty CLAY, trace f Sand
5	s	2 5 7	Grey to Dark Brown Silty CLAY @ 5' - 9' trace f Sand @ 5' - 6.5' trace roots @ 10' - 11.5' little to some fm Sand
	s	4 4 4	
10	s	3 4 6	
	s	12 19 18	Grey White fm SAND, trace to little Silt @ 25' - 26.5 trace silty clay, trace root fragments
15	s	9 13 14	
20	s	6 8 7	
25	s	7 6 8	
30	s	4 9 11	Grey Brown mc SAND, trace Silt
		no sample	Grey Brown Silty CLAY
35			
			BOTTOM OF BORING 37'



KEYSTONE ENVIRONMENTAL RESOURCES, INC.

WELL LOG : R-25

PROJECT: GRENADA WOOD PLANT **LOCATION:** GRENADA, MS

DRILLING METHOD: HOLLOW STEM AUGER
DRILLER: LAYNE WESTERN COMPANY, INC.
GEOLOGIST: J. DiNUNZIO
DATE: 8-12-88

Ground Elevation:
Top of Well Elev.:
Depth of Well: 31'

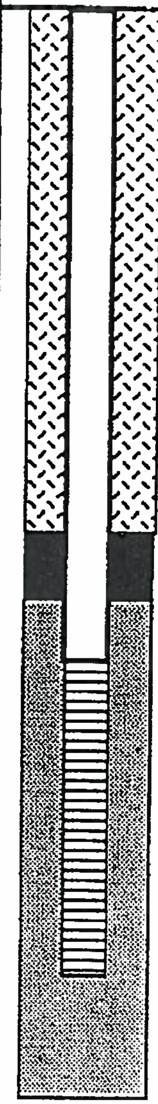
Sample Collection
G-grab T-shelby tube
S-splitspoon C-rock core

Casing Material:
Screen:

GRAVEL PACK
BENTONITE
GROUT
SCREEN
CAVE-IN

Depth	Sample	SPT Blow Counts	Description
	s	7 15 15	FILL (asphalt, Gravel, Brown Clayey Silt, trace fine Sand)
	s	2 1 3	Black Green CLAY, trace Silt, trace roots, trace f Sand
5	s	3 6 7	Grey Brown Silty CLAY
	s	5 7 9	Tan fine SAND & SILT
			Brown Silty CLAY, trace f Sand, trace Gravel
10	s	9 15 16	Green Grey to Brown to Grey fm SAND @ 10' - 10.3' contains 50 % Clayey Silt @ 10.3' - 12.5' trace to little Silt
	s	7 11 15	
15	s	8 9 12	White to white Brown fm SAND, trace to little Silt
20	s	7 10 9	
25	s	4 8 6	Red Brown fmc SAND, trace to little Brown Grey Silty Clay
30	s	no sample	
35			BOTTOM OF BORING 35'

Construction



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KEYSTONE
ENVIRONMENTAL RESOURCES, INC.

WELL LOG : R-26

PROJECT: GRENADA WOOD PLANT **LOCATION:** GRENADA, MS

DRILLING METHOD: MUD ROTARY
DRILLER: LAYNE WESTERN COMPANY, INC.
GEOLOGIST: S. COLTON
DATE: 8-12-88

Ground Elevation:
Top of Well Elev.:
Depth of Well: 33'

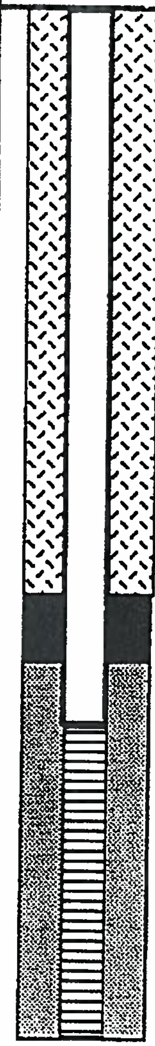
Sample Collection
G-grab T-snelby tube
S-splitspoon C-rock core

Casing Material:
Screen:

GRAVEL PACK
BENTONITE
GROUT
SCREEN
CAVE-IN

Depth	Sample	SPT Blow Counts	Description
0	s	7 9 7	FILL (cinders, Clay, red mc Sand)
	s	1 5 5	Brown CLAY & SILT, trace fm Sand
5	s	3 4 5	Brown Clayey SILT to SILT & CLAY, trace fm sand
	s	2 3 3	
10	s	5 17 18	Brown SILT & CLAY, @ 10.75' Grey White f SAND
	s	6 11 12	
15	s	6 10 9	
20	s	6 11 12	
25	s	2 3 3	Brown Green Silty CLAY, trace f Sand
30	s	4 7 8	Grey mf SAND, trace Silt
35			BOTTOM OF BORING 33'

Construction



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KEYSTONE ENVIRONMENTAL RESOURCES, INC.

WELL LOG : R-27

PROJECT: GRENADA WOOD PLANT **LOCATION:** GRENADA, MS

DRILLING METHOD: MUD ROTARY
DRILLER: LAYNE WESTERN COMPANY, INC.
GEOLOGIST: S. COLTON
DATE: 8-12-88

Ground Elevation:
Top of Well Elev.:
Depth of Well: 23'

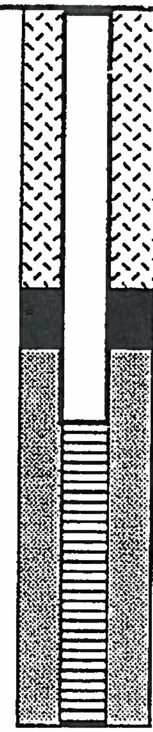
Sample Collection
G-grab T-shelby tube
S-splitspoon C-rock core

Casing Material:
Screen:

GRAVEL PACK
BENTONITE
GROUT
SCREEN
CAVE-IN

Depth	Sample	SPT Blow Counts	Description
	s	4 3 3	Brown Clayey SILT, trace fm Sand, trace to little f gravel
	s	1 2 1	Brown CLAY & SILT, trace fm Sand, trace f gravel
5	s	1 1 2	Brown Silty CLAY, trace fm Sand, trace f Gravel
	s	3 4 6	
10	s	2 3 5	
	s	2 4 5	
15	s	2 3 5	
20	s	4 6 7	Brown fm SAND, trace Clay
25			BOTTOM OF BORING 23'
30			
35			

Construction



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KEYSTONE
ENVIRONMENTAL RESOURCES, INC.

WELL LOG : R-28

PROJECT: GRENADA WOOD PLANT **LOCATION:** GRENADA, MS

DRILLING METHOD: HOLLOW STEM AUGER
DRILLER: LAYNE WESTERN COMPANY, INC.
GEOLOGIST: J. DiNUNZIO
DATE: 8-10-88

Ground Elevation:
Top of Well Elev.:
Depth of Well: 27'

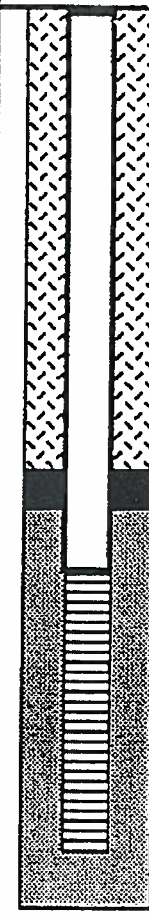
Sample Collection
G-grab T-shelby tube
S-splitspoon C-rock core

Casing Material:
Screen:

GRAVEL PACK
BENTONITE
GROUT
SCREEN
CAVE-IN

Depth	Sample	SPT Blow Counts	Description
	s	6 7 7	Red Brown to Brown Silty CLAY, trace to little f Sand
	s	4 4 6	
5	s	3 5 7	Brown Green CLAY, trace Silt, trace to little f Sand
	s	3 6 8	
10	s	6 11 13	Grey White, Red Brown fm SAND, trace to some Silt
	s	12 10 7	
15	s	6 9 11	Grey Brown m SAND, trace Silt
			Red Brown Silty CLAY, some fm Sand,
20	s	4 5 6	Grey to Grey White fm SAND
25	s	4 9 6	
30			BOTTOM OF BORING 29'
35			

Construction



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KEYSTONE
ENVIRONMENTAL RESOURCES, INC.

WELL LOG : R-29

PROJECT: GRENADA WOOD PLANT **LOCATION:** GRENADA, MS

DRILLING METHOD: HOLLOW STEM AUGER
DRILLER: LAYNE WESTERN COMPANY, INC.
GEOLOGIST: J. DiNUNZIO
DATE: 8-10-88

Ground Elevation:
Top of Well Elev.:
Depth of Well: 28'

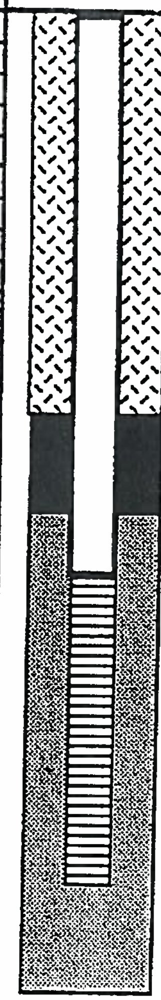
Sample Collection
G-grab T-shelby tube
S-splitspoon C-rock core

Casing Material:
Screen:

GRAVEL PACK
BENTONITE
GROUT
SCREEN
CAVE-IN

Depth	Sample	SPT Blow Counts	Description
0	s	4 5 9	Dark Brown Silty CLAY, trace f Sand
	s	6 8 8	Brown CLAY to Silty Clay, trace Silt to little f Sand
5	s	4 5 6	
	s	3 4 4	
10	s	2 3 8	Red Brown CLAY, some White Grey fm Sand, trace Silt
	s	4 9 10	Brown to Grey fm SAND, little to some Silt, trace to little Clay
15	s	6 5 2	
20	s	2 2 4	
25	s	no sample	
30	s	no sample	
			BOTTOM OF BORING 31.5'
35			

Construction



KEYSTONE ENVIRONMENTAL RESOURCES, INC.

WELL LOG : R-30

PROJECT: GRENADA WOOD PLANT **LOCATION:** GRENADA, MS

DRILLING METHOD: MUD ROTARY
DRILLER: LAYNE WESTERN COMPANY, INC.
GEOLOGIST: S. COLTON
DATE: 8-17-88

Ground Elevation:
Top of Well Elev.:
Depth of Well: 29'

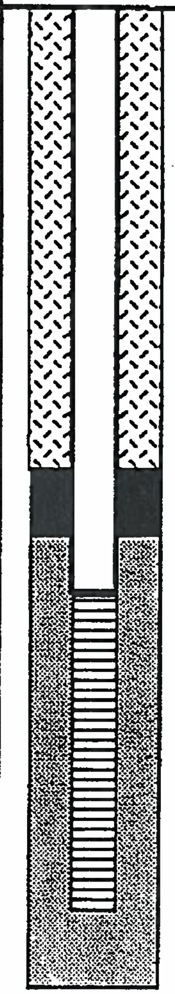
Sample Collection
G-grab T-shelby tube
S-splitspoon C-rock core

Casing Material:
Screen:

GRAVEL PACK
BENTONITE
GROUT
SCREEN
CAVE-IN

Depth	Sample	SPT Blow Counts	Description
	s	4 6 16	Brown Clayey SILT, trace f Sand
	s	7 10 9	
5	s	12 19 31	
	s	8 10 10	White f SAND,trace Silt @ 12.5' - 14' Sand is fm @ 15' - 16.5 Sand is m @ 31.5' is Clay
10	s	6 10 10	
	s	4 8 11	
15	s	10 11 12	
20	s	10 11 12	
25	s	3 7 9	
30	s	1 3 4	
			BOTTOM OF BORING 31.5'
35			

Construction



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KEYSTONE ENVIRONMENTAL RESOURCES, INC.

WELL LOG : R-31

PROJECT: GRENADA WOOD PLANT **LOCATION:** GRENADA, MS

DRILLING METHOD: HOLLOW STEM AUGER
DRILLER: LAYNE WESTERN COMPANY, INC.

GEOLOGIST: J. DiNUNZIO
DATE: 8-17-88

Ground Elevation:
Top of Well Elev.:
Depth of Well: 34'

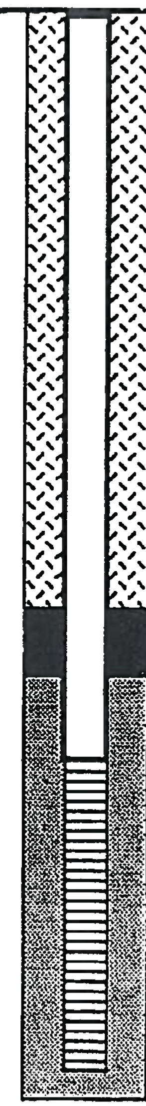
Sample Collection
G-grab T-shelby tube
S-splitspoon C-rock core

Casing Material:
Screen:

GRAVEL PACK
BENTONITE
GROUT
SCREEN
CAVE-IN

Depth	Sample	SPT Blow Counts	Description
	G		FILL (Black m Gravel,some fmc Sand, little asphalt, little Black Brown Silty Clay)
	G		Black Grey to Grey Green to Grey Brown Silty CLAY @ 3' - 5' some wood fragments @ 7.5' - 9' trace to little wood fragments @ 7.5' - 11' little to some f sand
5			
	s	3 4 7	
10	s	4 5 15	Grey Green f SAND & SILT
	s	7 8 7	
15	s	5 7 8	Grey Brown to Brown White fm SAND, trace to little Silt
20	s	4 7 7	
25	s	10 10 5	Red Brown fm SAND, trace Silt, trace black organic streaks
30	s	7 5 9	Grey Brown fmc SAND, trace to little Brown Green Silty Clay
35			BOTTOM OF BORING 35'

Construction



KEYSTONE ENVIRONMENTAL RESOURCES, INC.

WELL LOG (M-1)

PROJECT: Groundwater Monitoring LOCATION: GRENADA, MISSISSIPPI

DRILLING METHOD: MUD ROTARY
DRILLER: PSI, INC.

GEOLOGIST: S. A. COLTON
DATE: October 19, 1987

Top of Well Elev.: 215.00 feet

Depth of Well: 26 feet

Sample Collection
G-grab T-shelby tube
S-splitspoon C-rock core

Casing Material: 2" I.D. PVC
Screen: 10' of 0.010" slotted

SAND PACK
BENTONITE
GROUT
SCREEN

Depth	Sample	SPT Blow Counts	Description
	S	4,6,4	Brown clayey SILT, tr fm sand, tr fm gravel
	S	6,6,8	
5	S	5,5,5	
	S	4,4,5	Brown SILT and CLAY to silty CLAY, tr fm sand
10	S	4,5,10	
	S	8,10,9	Tan fmc SAND, tr silt, tr clay
15	S	6,7,5	
	S	5,8,6	
20	S	7,8,11	
	S	13,18,13	
25	S	9,9,10	Brown silty CLAY, tr to little fm sand
			Bottom of Boring 26.5'
30			
35			
40			

Construction

KEYSTONE
ENVIRONMENTAL RESOURCES, INC.

WELL LOG (M-2)

PROJECT: Groundwater Monitoring   **LOCATION:** GRENADA, MISSISSIPPI

DRILLING METHOD: MUD ROTARY
DRILLER: PSI, INC.
GEOLOGIST: S. A. COLTON
DATE: October 19, 1987

Top of Well Elev.: 215.28 feet
Depth of Well: 27.5 feet

Sample Collection
G-grab   T-shelby tube
S-splitspoon   C-rock core

Casing Material: 2" I.D. PVC
Screen: 10' of 0.010" slotted

SAND PACK
BENTONITE
GROUT
SCREEN

Sample	SPT Blow Counts
S	3,6,13
S	3,4,5
S	4,6,7
S	5,4,5
S	4,5,9
S	5,7,9
S	13,16,24
S	5,6,15
S	9,10,16
S	14,16,14
S	8,12,16
S	8,8,8

Description

Brown/black mf SAND, little silt and cinders

Brown clayey SILT to SILT and CLAY, tr fm sand

Brown SILT and CLAY, little fm sand

Brown SILT and CLAY, some fm sand

Tan to brown/grey fmc SAND, tr clay
some silty clay (18 to 18.5 feet)

Grey/brown SILT and CLAY, tr f sand

Bottom of Boring 29'

Construction

Depth: 5, 10, 15, 20, 25, 30, 35, 40

Sheet 1 of 1

KEYSTONE ENVIRONMENTAL RESOURCES, INC.

BORING LOG BM-2B

PROJECT: GWQA - ASH PILE **LOCATION: GRENADA, MS**

DRILLING METHOD: MUD ROTARY
DRILLER: LAW ENGINEERING, INC.
GEOLOGIST: D. SMITH
DATE: OCTOBER 22, 1989

SAMPLE COLLECTION
G - grab T - shelby tube
S - splitspoon C - rock core

Depth	Sample	SPT Blow Counts	Description
	s	3 10 11	
	s	1 0 1	
5	s	3 3 4	
	s	1 2 3	
10	s	woh / 6" 3 4	
	s	2 1 2	
15	s	2 2 4	
	s	8 4 6	
20	s	1 1 3	SEE BORING LOGS FOR WELL M-2B FOR 0' TO 55.5'
	s	2 1 2	
25	s	3 4 5	
	s	2 2 3	
30	s	1 1 1	
35	s	1 2 2	
40	s	woh/6" 1 2	

KEYSTONE ENVIRONMENTAL RESOURCES, INC.

BORING LOG BM-2B

PROJECT: GWQA - ASH PILE | LOCATION: GRENADA, MS

DRILLING METHOD: MUD ROTARY
DRILLER: LAW ENGINEERING, INC.
GEOLOGIST: D. SMITH
DATE: OCTOBER 22, 1989

SAMPLE COLLECTION
G - grab T - shelby tube
S - splitspoon C - rock core

Depth	Sample	SPT Blow Counts	Description
45	S	3 4 4	SEE BORING LOGS FOR WELL M-2B FOR 0' TO 55.5'
50	S	1 2 2	
55	S	11 23 25	
60	S	4 12 17	Medium Grey fm SAND, trace Clay and Silt @ 59' - 64.5' trace muscovite flakes @ 59' - 60.5' trace black Sand seams
65	S	11 21 31	
70	S	14 31 33	
75	S	11 34 32	Medium Grey fmc SAND, trace Clay and Silt, trace Black Sand seams
80	S	16 33 36	Medium Grey fm SAND, trace Clay and Silt

KEYSTONE
ENVIRONMENTAL RESOURCES, INC.

BORING LOG BM-2B

PROJECT: GWQA - ASH PILE   LOCATION: GRENADA, MS

DRILLING METHOD: MUD ROTARY
DRILLER: LAW ENGINEERING, INC.
GEOLOGIST: D. SMITH
DATE: OCTOBER 22, 1989

SAMPLE COLLECTION
G - grab   T - shelby tube
S - splitspoon   C - rock core

Depth	Sample	SPT Blow Counts	Description
85	s	18 30 44	
			Medium Grey fm SAND, trace Clay and Silt @ 84' - 85.5' trace Black organics (bone coal) in thin (< 1/4 " thick) seams @ 89' - 89.5' trace brown organics (patches of peat) @ 90' Tan f Sand, little Clay and Silt, trace Muscovite flakes (4" thick seam) @ 99' - 100.5' trace dark brown organics (3/8" thick peat seam)
90	s	26 38 50 /6"	
95	s	50/6"	
100	s	30 50/6"	
			BOTTOM OF BORING 100.5'

KEYSTONE
ENVIRONMENTAL RESOURCES, INC.

WELL LOG M-2B

PROJECT: GWQA - ASH PILE **LOCATION: GRENADA, MS**

DRILLING METHOD: MUD ROTARY
DRILLER: LAW ENGINEERING, INC.

GEOLOGIST: D. SMITH
DATE: OCTOBER 21, 1989

Ground Elevation:
Top of Well Elev.:
Depth of Well: 47.5'

Sample Collection
G-grab T-shelby tube
S-splitspoon C-rock core

Casing Material: 2" PVC
Screen: 2" PVC (0.010 slots)

GRAVEL PACK
BENTONITE
GROUT
SCREEN
CAVE-IN

Depth	Sample	SPT Blow Counts	Description	Construction
	s	3 10 11	Black FILL(Sand and Clay, trace Sand and Gravel)	
	s	1 0 1	Light Grey CLAY & SILT, Silt and Clay to Clay and Silt trace to little Orange Brown patches / mottles @ 2.5' - 4' trace mc gravel (Black - weathering to rust colored silt) @ 10' - 11.5' trace to little vf to f Sand, trace Rust Silt patches	
5	s	3 3 4		
	s	1 2 3		
10	s	woh / 6" 3 4		
	s	2 1 2	Light Grey / Rust Silty CLAY	
15	s	2 2 4	Grading from Light Grey fm SAND, some clay to light Grey fm Sand, trace Orange Brown / rust streaks @ 20' - 21.5' little to some clay	
	s	8 4 6		
20	s	1 1 3		
			Light Grey mc Sand	
	s	2 1 2	Light Grey / Orange Brown / Red Orange Silty Clay trace Dark Brown organics(plant)	
25	s	3 4 5	6" pvc casing set at 25' Hard Orange Brown CLAY & SILT @ 25' - 25.5' trace dark Brown organics (decomposed plant matter) @ 27.5' - 29' trace of f Sand @ 29.5' - 31' little vf to f Sand @ 30.5' - 31' thin (< 1/16") layers of medium Grey Clay and Silt	
	s	2 2 3		
30	s	1 1 1		
35	s	1 2 2	Medium Grey Silty CLAY, trace Black organics (decomposed plant matter) grading into medium gray CLAY & SILT	
40	s	woh / 6" 1 2		

KEYSTONE
ENVIRONMENTAL RESOURCES, INC.

WELL LOG M-2B

PROJECT: GWQA - ASH PILE **LOCATION:** GRENADA, MS

DRILLING METHOD: MUD ROTARY
DRILLER: LAW ENGINEERING, INC.

GEOLOGIST: D. SMITH
DATE: OCTOBER 21, 1989

Ground Elevation:

Top of Well Elev.:

Depth of Well: 47.5'

Sample Collection
G-grab T-shelby tube
S-splitspoon C-rock core

Casing Material: 2" AVC
Screen: 2" PVC (0.010 slots)

GRAVEL PACK SCREEN
BENTONITE
GROUT CAVE-IN

Depth	Sample	SPT Blow Counts	Description
			SAME AS ABOVE
45	s	3 4 4	Medium Grey fm SAND @ 44' - 45.5' some Clay @ 49' - 50.5' little Clay
50	s	1 2 2	
			Medium Grey fmc SAND, trace Silty Clay (patch)
55	s	11 23 25	Orange Brown fmc SAND
			BOTTOM OF BORING 55.5'
60			
			SEE BORING LOG FOR BORING BM-2B FOR 55.5' - 100.5'
65			
70			
75			
80			

Construction

KEYSTONE ENVIRONMENTAL RESOURCES, INC.

WELL LOG (M-3)

PROJECT: Groundwater Monitoring **LOCATION:** GRENADA, MISSISSIPPI

DRILLING METHOD: MUD ROTARY
DRILLER: PSI, INC.

GEOLOGIST: S. A. COLTON
DATE: October 19, 1987

Top of Well Elev.: 216.83 feet

Depth of Well: 30 feet

Sample Collection
G-grab T-shelby tube
S-splitspoon C-rock core

Casing Material: 2" I.D. PVC
Screen: 10' of 0.010" slotted

SAND PACK
BENTONITE
GROUT
SCREEN

Sample	SPT Blow Counts
S	3,3,4
S	5,7,9
S	8,11,11
S	6,8,11
S	9,13,15
S	7,11,13
S	6,9,15
S	7,13,14
S	8,7,10
S	8,8,11
S	6,6,6
S	7,7,7
S	3,2,1

Depth scale: 5, 10, 15, 20, 25, 30, 35, 40

Description

Brown clayey SILT, tr f sand

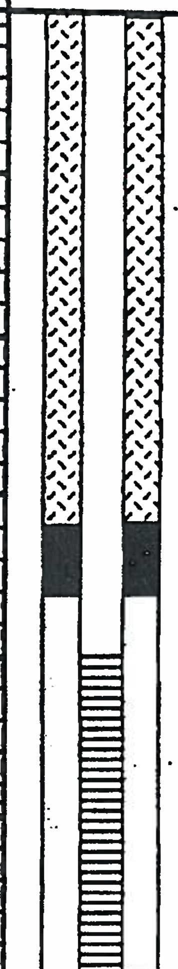
Brown silty CLAY to clayey SILT, tr f sand

Tan fmc SAND, little clayey silt grades to tr silt at 7.7 feet (Sand and clay pocket 22.5 to 22.9 feet)

Brown, grey, green mottled clayey SILT to SILT and CLAY, tr f sand

Bottom of Boring at 31.5 feet

Construction



KEYSTONE ENVIRONMENTAL RESOURCES, INC.

WELL LOG (M-4)

PROJECT: Groundwater Monitoring **LOCATION:** GRENADA, MISSISSIPPI

DRILLING METHOD: MUD ROTARY
DRILLER: PSI, INC.

GEOLOGIST: S. A. COLTON
DATE: October 19, 1987

Top of Well Elev.: 215.86 feet
Depth of Well: 27.5 feet

Sample Collection
G-grab T-shelby tube
S-splitspoon C-rock core

Casing Material: 2" I.D.PVC
Screen: 10' of 0.010" slotted

SAND PACK
BENTONITE
GROUT
SCREEN

Depth	Sample	SPT Blow Counts	Description
	S	1,3,4	Brown clayey SILT to silty CLAY, tr f sand
	S	13,15,18	Brown clayey SILT, tr to and f sand
5	S	14,13,11	Brown, tan f SAND, tr silt little silty clay 5.75 to 6.1 feet
	S	8,10,12	
10	S	8,10,14	
	S	9,12,13	
15	S	6,9,10	
	S	10,12,14	
20	S	7,8,11	
	S	3,3,5	Brown, grey SILT and CLAY, tr c sand
25	S	3,5,8	
	S	6,7,8	
30			Bottom of Boring 29'
35			
40			

Construction

KEYSTONE
ENVIRONMENTAL RESOURCES, INC.

WELL LOG : M-5

PROJECT: GRENADA WOOD PLANT **LOCATION:** GRENADA, MS

DRILLING METHOD: MUD ROTARY
DRILLER: LAW ENGINEERING

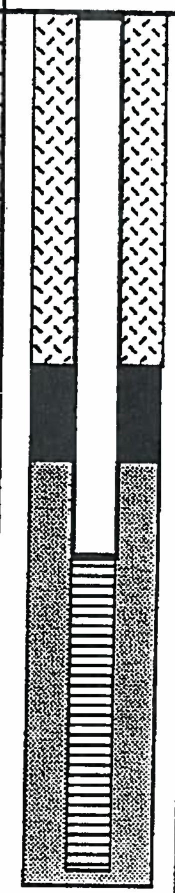
GEOLOGIST: D. SMITH
DATE: 10-19-89

Ground Elevation:
Top of Well Elev.:
Depth of Well: 27.5'

Sample Collection
G-grab T-shelby tube
S-splitspoon C-rock core

Casing Material: 2" PVC
Screen: 2" PVC (0.010 slots)

GRAVEL PACK
BENTONITE
GROUT
SCREEN
CAVE-IN

Depth	Sample	SPT Blow Counts	Description	Construction
			SEE BORING LOG FOR BORING M-5B (no samples taken)	
			BOTTOM OF BORING 28'	

KEYSTONE ENVIRONMENTAL RESOURCES, INC.

WELL LOG M-5B

PROJECT: GWQA - ASH PILE **LOCATION: GRENADA, MS**

DRILLING METHOD: MUD ROTARY
DRILLER: LAW ENGINEERING, INC.
GEOLOGIST: D. SMITH
DATE: OCTOBER 23, 1989

Ground Elevation:
Top of Well Elev.:
Depth of Well: 50'

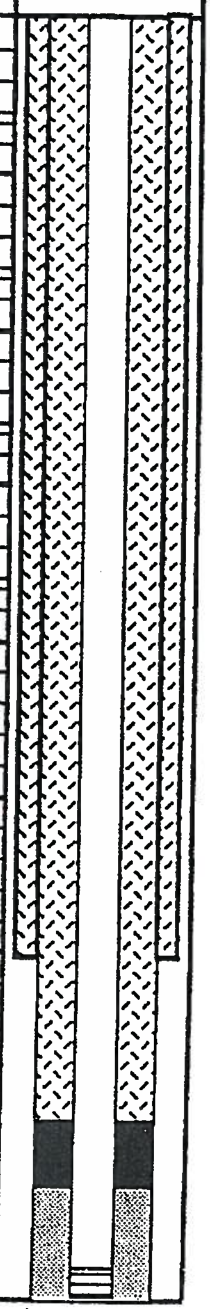
Sample Collection
G-grab T-shelby tube
S-splitspoon C-rock core

Casing Material: 2" PVC
Screen: 2" PVC (0.010 slots)

GRAVEL PACK
BENTONITE
GROUT
SCREEN
CAVE-IN

Depth	Sample	SPT Blow Counts	Description
0	s	5 14 12	FILL(Brown orange Sand and Gravel, trace slag)
			Brown SILT some Clay
5	s	2 3 3	Orqnge Brown CLAY & SILT
10	s	1 2 3	Light gray Brown to light Grey / Orange Brown mottled f SAND, some Clay, trace organics (decomposed plant material)
15	s	2 3 4	Light Grey CLAY & SILT , trace Silty Clay (lense) @ 15' - 15.8' trace Orange Brown Clay and Silt @ 15.8' - 16.5' trace vf Sand
20	s	5 14 14	Light Grey Tan mc SAND, trace f Sand and Silt
25	s	8 11 12	
			Orange Brown Silty CLAY, trace light Grey Silty Clay (mottles)
30	s	2 3 2	6" PVC casing set at 30' Medium Grey Silty CLAY @ 29.5' - 31' trace Orange Brown mottles
35	s	woh/6" 1 2	
40		woh/18"	

Construction



Sheet 1 of 2

KEYSTONE
ENVIRONMENTAL RESOURCES, INC.

WELL LOG **M-5B**

PROJECT: GWQA - ASH PILE **LOCATION: GRENADA, MS**

DRILLING METHOD: MUD ROTARY
DRILLER: LAW ENGINEERING, INC.
GEOLOGIST: D. SMITH
DATE: OCTOBER 23, 1989

Ground Elevation:
Top of Well Elev.:
Depth of Well: 50'

Sample Collection
G-grab T-shelby tube
S-splitspoon C-rock core

Casing Material: 2" PVC
Screen: 2" PVC (0.010 slots)

GRAVEL PACK
BENTONITE
GROUT
SCREEN
CAVE-IN

Depth	Sample	SPT Blow Counts	Description	Construction
			SAME AS ABOVE	
45	s	woh / 6" 1 3	Medium Grey Orange Brown mottled vf SAND, some Clay	
50	s	2 2 4	Medium grey mc SAND, trace medium gray silty Clay (patches)	
			BOTTOM OF BORING 50.5'	
55				
60				
65				
70				
75				
80				

MONITORING WELL LOG

PROJECT Grenada, Miss. Sprayfield — WELL NO. SF-1

DRILLING METHOD HSA — GEOLOGIST C.A. Cramer

DRILLER PSI — DATE 8/21/85

GROUND ELEVATION	GROUND WATER DEPTH (ft):	GRAVEL PACK
TOP OF WELL 212.74	AT COMPLETION	BENTONITE
DEPTH OF WELL (ft)	AFTER HOURS	BACK FILL
		CONCRETE
CASING MATERIAL 2" PVC	SCREEN 10' 0.010 slotted PVC	SCREEN

STRATA DEPTH	SAMPLE DEPTH	DESCRIPTION
		Brown silty CLAY, tr gravel, tr roots, moist
5		Light gray and brown mottled silty CLAY, tr silt pockets, tr organics, moist
10		
		Rust to orange, and light gray mottled silty CLAY, some organic stains, tr concretions (m gravel), moist
15		
20		Gray f SAND and SILT, tr clay, moist to wet
		Gray to Rust f SAND, little silt, tr clay, wet
25		Gray silty CLAY, tr sand, wet
		Gray SILT and f SAND, wet
		Rust to black f SAND, tr silt, wet
30		
35		

CONSTRUCTION

MONITORING WELL LOG

PROJECT Grenada, Miss. Sprayfield — WELL NO. SF-2

DRILLING METHOD HSA — GEOLOGIST C.A. Cramer

DRILLER PSI — DATE 8/22/85

GROUND ELEVATION ______

TOP OF WELL 211.04

DEPTH OF WELL (ft) ______

GROUND WATER DEPTH (ft):

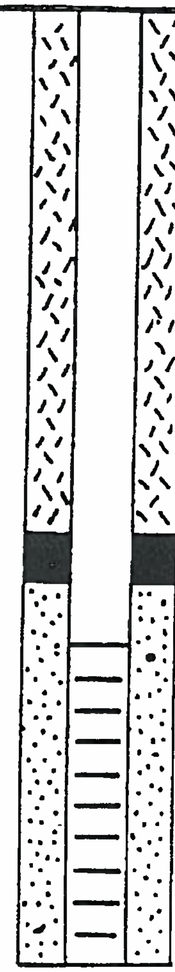
AT COMPLETION ______

AFTER ______ HOURS ______

GRAVEL PACK / BENTONITE / BACK FILL / CONCRETE / SCREEN

CASING MATERIAL 2" PVC — SCREEN 10' 0.010 slotted PVC

STRATA DEPTH	SAMPLE DEPTH	DESCRIPTION	CONSTRUCTION
		Light brown silty CLAY, some roots, moist	
		Light brown and gray mottled clayey SILT, tr roots, moist	
5		Brown and white silty CLAY, fractured, dry	
		Tan clayey SILT, tr white silt pockets, moist	
10		Light gray and rust CLAY and SILT, moist	
15		White, tan, and rust f SAND, tr to some silt, moist	
20			
		Tan mf SAND, little silt, wet	
25		Blue gray silty CLAY,wet	
		Tan to gray mf SAND, little silt, wet	
30			
35			



SHEET 1 OF 1

MONITORING WELL LOG

PROJECT: Grenada, Miss. Sprayfield | WELL NO.: SF-3

DRILLING METHOD: HSA | GEOLOGIST: C.A. Cramer

DRILLER: PSI | DATE: 8/22/85

GROUND ELEVATION:

TOP OF WELL: 211.09

DEPTH OF WELL (ft):

GROUND WATER DEPTH (ft):

AT COMPLETION:

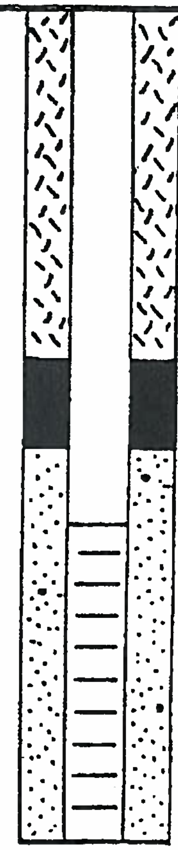
AFTER ____ HOURS:

GRAVEL PACK
BENTONITE
BACK FILL
CONCRETE
SCREEN

CASING MATERIAL: 2" PVC | SCREEN: 10' 0.010" slotted PVC

STRATA DEPTH	SAMPLE DEPTH	DESCRIPTION
		Brown to gray clayey SILT, some roots, moist
5		Tan and gray mottled silty CLAY, tr organic stains, moist
10		Rust and gray mottled CLAY and SILT, tr f sand, moist
15		White f SAND and SILT, moist
		Rust, tan and white laminated mf SAND, tr silt, gray silty clay lens, 15-15.5, 19.5-20, tr sand, moist
20		Tan to gray f SAND, little to some silt, wet
25		Tan mf SAND, tr silt, wet
30		
35		

CONSTRUCTION



MONITORING WELL LOG

PROJECT: Grenada, Miss. Sprayfield

WELL NO. SF-4

DRILLING METHOD: HSA

GEOLOGIST: C.A. Cramer

DRILLER: PSI

DATE: 8/23/85

GROUND ELEVATION:

TOP OF WELL: 212.19

DEPTH OF WELL (ft):

GROUND WATER DEPTH (ft):

AT COMPLETION:

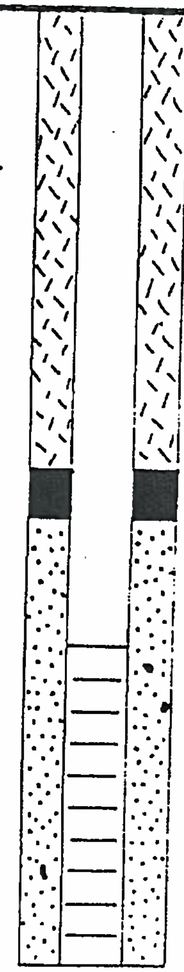
AFTER ____ HOURS:

GRAVEL PACK
BENTONITE
BACK FILL
CONCRETE
SCREEN

CASING MATERIAL:

SCREEN:

STRATA DEPTH	SAMPLE DEPTH	DESCRIPTION	CONSTRUCTION
		Brown silty CLAY, some organics, tr sand, moist	
5		Brown and tan mottled clayey SILT, tr roots, tr organic stains, moist	
10		Light gray and orange mottled, SILT and CLAY, come c sand size black concretions, moist	
15		White, tan, and rust laminated f SAND to mf SAND, tr silt, moist	
20			
		Tan to gray silty CLAY, moist to wet	
25		Gray f SAND and SILT, wet	
		Rust and tan f SAND, little silt, tr clay, wet	
30			
35			



SHEET 1 OF 1

KEYSTONE ENVIRONMENTAL RESOURCES, INC.

Boring Log: B-1

Project: Grenada Wood Plant **Location:** Grenada, MS

Drilling Method: HOLLOW STEM AUGER
Driller: LAYNE-WESTERN COMPANY, INC.
Geologist: D. SMITH
Date: 3 AUGUST, 1988

Sample collection
G-grab T-shelby tube
S-splitspoon C-rock core

Strata Depth	Sample Depth	Blow Count	Description
	S	6 8 8	FILL (orange-brown SILT, some sand and gravel)
	S	3 5 5	Orange-brown/rust mottled CLAY AND SILT, trace organics (decomposed)
	S	3 6 7	Stiff orange-brown/rust/gray mottled CLAY AND SILT to SILT AND CLAY, trace organics (decomposed)
5	S	3 5 6	
	S	3 5 6	
	S	2 5 6	
10	S	2 5 5	
			Bottom of Boring at 10.5 feet
15			
20			

KEYSTONE
ENVIRONMENTAL RESOURCES, INC.

Boring Log: B-2

Project: Grenada Wood Plant **Location:** Grenada, MS

Drilling Method: HOLLOW STEM AUGER
Driller: LAYNE-WESTERN COMPANY, INC.
Geologist: D. SMITH
Date: 23 AUGUST, 1988

Sample collection
G-grab T-shelby tube
S-splitspoon C-rock core

Strata Depth	Sample Depth	Blow Count	Description
	S	3 4 5	Light brown CLAY AND SILT, rust/gray mottles
	S	3 5 6	Light gray/rust/orange-brown mottled CLAY AND SILT
	S	3 5 4	@ 4.5-6 feet Trace decomposed organics
5	S	2 5 6	
	S	3 5 8	Stiff orange-brown/gray mottled SILTY CLAY
	S	3 4 5	
10	S	3 5 6	
			Orange-brown/gray mottled ? SAND @ 10.5 feet light gray m SAND
			Bottom of Boring at 10.5 feet
15			
20			

TABLE 1
FEBRUARY 1998 MONITORING REPORT
BEAZER EAST, INC.
GRENADA, MISSISSIPPI

Sample ID Sample Date Analytical Laboratory Analysis Date	R-1R 02/10/1998 Recra LabNet 02/25/98		R-1R DUP 02/10/1998 Recra LabNet 02/25/98		R-10 02/10/1998 Recra LabNet 02/25/98		R-9 02/11/1998 Recra LabNet 02/25/98		R-9D 02/11/1998 Recra LabNet 02/25/98		R-9C 02/11/1998 Recra LabNet 02/25/98		R-7 02/11/1998 Recra LabNet 02/25/98		R-8 02/11/1998 Recra LabNet 02/25/98		R-8B 02/12/1998 Recra LabNet 02/26/98		EQ-B 02/12/1998 Recra LabNet 02/26/98	
Method 8060 by GC (ug/L)																				
Bis(2-ethylhexyl)Phthalate	2.5	U	2.5	U	170		2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U

U - Compound was analyzed for, but not detected at the given detection limit.

TABLE 2
FEBRUARY 1998 MONITORING REPORT
BEAZER EAST, INC.
GRENADA, MISSISSIPPI

Sample ID Sample Date Analytical Laboratory Analysis Date	R-1R 02/10/1998 Recra LabNet 02/24/98		R-1R DUP 02/10/1998 Recra LabNet 02/24/98		R-10 02/10/1998 Recra LabNet 02/24/98		R-9 02/11/1998 Recra LabNet 02/24/98		R-9D 02/11/1998 Recra LabNet 02/24/98		R-9C 02/11/1998 Recra LabNet 02/24/98		R-7 02/11/1998 Recra LabNet 02/24/98		R-8 02/11/1998 Recra LabNet 02/25/98		R-8B 02/12/1998 Recra LabNet 02/25/98		EQ-B 02/12/1998 Recra LabNet 02/25/98	
Phenolics - Method 8040 by GC (ug/L)																				
2,3,4,6-Tetrachlorophenol	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
2,4,6-Trichlorophenol	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
2,4-Dichlorophenol	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
2,4-Dimethylphenol	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
2,4-Dinitrophenol	30	U	30	U	30	U	30	U	30	U	30	U	30	U	30	U	30	U	30	U
2-Chlorophenol	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
2-Nitrophenol	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
4-Nitrophenol	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
4,6-Dinitro-2-methylphenol	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
4-Chloro-3-methylphenol	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Pentachlorophenol	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
Phenol	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U

U - Compound was analyzed for, but not detected at the given detection limit.

TABLE 3
FEBRUARY 1998 MONITORING REPORT
BEAZER EAST, INC.
GRENADA, MISSISSIPPI

Sample ID	R-1R		R-1R DUP		R-10		R-9		R-9D		R-9C		R-7		R-8		R-8B		EQ-B	
Sample Date	02/10/1998		02/10/1998		02/10/1998		02/11/1998		02/11/1998		02/11/1998		02/11/1998		02/11/1998		02/12/1998		02/12/1998	
Analytical Laboratory	Recra LabNet		Recra LabNet		Recra LabNet		Recra LabNet		Recra LabNet		Recra LabNet		Recra LabNet		Recra LabNet		Recra LabNet		Recra LabNet	
Analysis Date	02/17/98		02/17/98		02/17/98		02/17/98		02/17/98		02/17/98		02/17/98		02/18/98		02/18/98		02/18/98	
PAHs - Method 8310 (ug/L)																				
Naphthalene	2	U	2	U	2.1		2	U	2	U	2	U	2	U	2	U	2	U	2	U
Acenaphthylene	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U
Acenaphthene	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U
Fluorene	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
Phenanthrene	0.23		0.22		0.64		0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Anthracene	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Fluoranthene	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
Pyrene	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
Benzo(a)anthracene	0.02	U	0.02	U	0.02	U	0.02	U	0.02	U	0.02	U	0.02	U	0.02	U	0.02	U	0.02	U
Chrysene	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U
Benzo(b)fluoranthene	0.02	U	0.02	U	0.02	U	0.02	U	0.02	U	0.02	U	0.02	U	0.02	U	0.02	U	0.02	U
Benzo(k)fluoranthene	0.02	U	0.02	U	0.02	U	0.02	U	0.02	U	0.02	U	0.02	U	0.02	U	0.02	U	0.02	U
Benzo(a)pyrene	0.02	U	0.02	U	0.02	U	0.02	U	0.02	U	0.02	U	0.02	U	0.02	U	0.02	U	0.02	U
Dibenzo(a,h)anthracene	0.03	U	0.03	U	0.03	U	0.03	U	0.03	U	0.03	U	0.03	U	0.03	U	0.03	U	0.03	U
Benzo(g,h,i)perylene	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U
Indeno(1,2,3-c,d)pyrene	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U

U - Compound was analyzed for, but not detected at the given detection limit.

TABLE 4
FEBRUARY 1998 MONITORING REPORT
BEAZER EAST, INC.
GRENADA, MISSISSIPPI

Sample ID	R-1R		R-1R DUP		R-10		R-9		R-9D		R-9C		R-7		R-8		R-8B		EQ-B	
Sample Date	02/10/1998		02/10/1998		02/10/1998		02/11/1998		02/11/1998		02/11/1998		02/11/1998		02/11/1998		02/12/1998		02/12/1998	
Analytical Laboratory	Recra LabNet		Recra LabNet		Recra LabNet		Recra LabNet		Recra LabNet		Recra LabNet		Recra LabNet		Recra LabNet		Recra LabNet		Recra LabNet	
Analysis Date	02/16,23/98		02/16,23/98		02/16,23/98		02/16,23/98		02/16,23/98		02/16,23/98		02/16,23/98		02/16,23/98		02/16,23/98		02/16,23/98	
Metals (ug/L)																				
Chromium - Total	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Mercury - Total	0.4		0.29		0.28		0.2	U	0.2	U	0.2	U	0.24		0.2	U	0.25		0.2	U
Chromium - Soluble	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Mercury - Soluble	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U

U - Compound was analyzed for, but not detected at the given detection limit.

TABLE 1
AUGUST 1998 MONITORING REPORT
BEAZER EAST, INC.
GRENADA, MISSISSIPPI

Sample ID Sample Date Analytical Laboratory Analysis Date	R-1R 08/17/1998 Recra LabNet 09/06/1998	R-1R DUP 08/17/1998 Recra LabNet 09/06/98	R-10A 08/17/1998 Recra LabNet 09/06/98	R-9A 08/17/98 Recra LabNet 09/06/98	R-9D 08/17/1998 Recra LabNet 09/06/1998	R-9C 08/17/1998 Recra LabNet 09/06/1998	R-7 08/17/1998 Recra LabNet . 09/06/1998	R-8A 08/17/1998 Recra LabNet 09/06/98	R-8B 08/17/1998 Recra LabNet 09/06/1998
Method 8060 by GC (ug/L)									
Bis(2-ethylhexyl)Phthalate	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U

U - Compound was analyzed for, but not detected at the given detection limit.

TABLE 2
AUGUST 1998 MONITORING REPORT
BEAZER EAST, INC.
GRENADA, MISSISSIPPI

Sample ID Sample Date Analytical Laboratory Analysis Date	R-1R 08/17/1998 Recra LabNet 09/05/1998	R-1R DUP 08/17/1998 Recra LabNet 09/05/98	R-10A 08/17/1998 Recra LabNet 09/05/98	R-9A 08/17/1998 Recra LabNet 09/05/98	R-9D 08/17/1998 Recra LabNet 09/05/1998	R-9C 08/17/1998 Recra LabNet 09/05/1998	R-7 08/17/1998 Recra LabNet 09/05/1998	R-8A 08/17/1998 Recra LabNet 09/05/98	R-8B 08/17/1998 Recra LabNet 09/05/1998
Phenolics - Method 8040 by GC (ug/L)									
2,3,4,6-Tetrachlorophenol	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
2,4,6-Trichlorophenol	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
2,4-Dichlorophenol	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2,4-Dimethylphenol	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1	2
2,4-Dinitrophenol	2 U	2	2 U	2	2 U	2	2 U	2 U	2 U
2-Chlorophenol	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2-Nitrophenol	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
4-Nitrophenol	4	2 U	4	2 U	5	2 U	4	2 U	4
4,6-Dinitro-2-methylphenol	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
4-Chloro-3-methylphenol	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Pentachlorophenol	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
Phenol	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U

U - Compound was analyzed for, but not detected at the given detection limit.

TABLE 3
AUGUST 1998 MONITORING REPORT
BEAZER EAST, INC.
GRENADA, MISSISSIPPI

Sample ID	R-1R	R-1R DUP	R-10A	R-9A	R-9D	R-9C	R-7	R-8A	R-8B
Sample Date	08/17/1998	08/17/1998	08/17/1998	08/17/1998	08/17/1998	08/17/1998	08/17/1998	08/17/1998	08/17/1998
Analytical Laboratory	Recra LabNet	Recra LabNet	Recra LabNet	Recra LabNet	Recra LabNet	Recra LabNet	Recra LabNet	Recra LabNet	Recra LabNet
Analysis Date	08/29/1998	08/29/1998	08/29/1998	08/29/98	08/29/1998	08/29/1998	08/29/1998	08/29/1998	08/29/1998
PAHs - Method 8310 (ug/L)									
Naphthalene	2.5 U	2.2 U	2 U	2 U	2 U	2 U	2 U	2.2 U	2.4 U
Acenaphthylene	2.5 U	2.2 U	2 U	2 U	2 U	2 U	2 U	2.2 U	2.4 U
Acenaphthene	2.5 U	2.2 U	2 U	2 U	2 U	2 U	2 U	2.2 U	2.4 U
Fluorene	0.25 U	0.22 U	0.2 U	0.2 U	0.2 U	0.38	0.2 U	0.22 U	0.42
Phenanthrene	0.62 U	0.56 U	0.5 U	0.5 U	0.5 U	0.71	0.5 U	0.56 U	0.94
Anthracene	0.12 U	0.11 U	0.1 U	0.1 U	0.1 U	<0.10 U	0.1 U	0.11 U	0.15
Fluoranthene	0.25 U	0.22 U	0.2 U	0.2 U	0.52	0.68	0.2 U	0.22 U	0.73
Pyrene	0.25 U	0.22 U	0.2 U	0.2 U	0.46	0.57	0.2 U	0.22 U	0.7
Benzo(a)anthracene	0.025 U	0.022 U	0.02 U	0.038	0.094	0.12	0.02 U	0.022 U	0.18
Chrysene	0.19 U	0.17 U	0.15 U	0.15 U	0.16	0.19	0.15 U	0.17 U	0.36
Benzo(b)fluoranthene	0.025 U	0.022 U	0.02 U	0.036	0.12	0.14	0.02 U	0.022 U	0.16
Benzo(k)fluoranthene	0.025 U	0.022 U	0.02 U	0.02 U	0.044	0.051	0.02 U	0.022 U	0.049
Benzo(a)pyrene	0.025 U	0.022 U	0.02 U	0.029	0.066	0.046	0.02 U	0.022 U	0.08
Dibenzo(a,h)anthracene	0.038 U	0.033 U	0.03 U	0.03 U	0.34	0.25	0.03 U	0.033 U	0.42
Benzo(g,h,i)perylene	0.062 U	0.056 U	0.05 U	0.05 U	0.089	0.073	0.05 U	0.056 U	0.11
Indeno(1,2,3-c,d)pyrene	0.062 U	0.056 U	0.05 U	0.05 U	0.06	0.052	0.05 U	0.056 U	0.063

U - Compound was analyzed for, but not detected at the given detection limit.

TABLE 4
AUGUST 1998 MONITORING REPORT
BEAZER EAST, INC.
GRENADA, MISSISSIPPI

Sample ID Sample Date Analytical Laboratory	R-1R 08/17/1998 Recra LabNet	R-1R DUP 08/17/1998 Recra LabNet	R-10A 08/17/1998 Recra LabNet	R-9A 08/17/1998 Recra LabNet	R-9D 08/17/1998 Recra LabNet	R-9C 08/17/1998 Recra LabNet	R-7 08/17/1998 Recra LabNet	R-8A 08/17/1998 Recra LabNet	R-8B 08/17/1998 Recra LabNet
Metals (ug/L)									
Analysis Date	09/09/1998	09/09/1998	09/09/1998	09/09/1998	09/09/1998	09/09/1998	09/09/1998	09/09/1998	09/09/1998
Chromium - Total	100	53	100	58	10 U	10 U	140	52	10 U
Analysis Date	08/31/1998	08/31/1998	08/31/1998	08/31/98	08/31/1998	08/31/1998	08/31/1998	08/31/1998	08/31/1998
Mercury - Total	0.46	0.2 U	0.2	0.2 U	0.2 U	0.2 U	0.46	0.2 U	0.2 U
Analysis Date	09/22/1998	09/22/1998	09/22/1998	09/22/1998	09/22/1998	09/22/1998	09/22/1998	09/22/1998	09/22/1998
Chromium - Soluble	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Analysis Date	08/31/1998	08/31/1998	08/31/1998	08/31/98	08/31/1998	08/31/1998	08/31/1998	08/31/1998	08/31/1998
Mercury - Soluble	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U

U - Compound was analyzed for, but not detected at the given detection limit.

Table 1
Analytical Summary
First Semi-Annual 1999 Groundwater Sampling
Grenada Facility
Tie Plant, Mississippi

Sample Location: Sample Date:		R-01R 02/17/1999	R-07 02/17/1999	R-08 02/17/1999	R-08B 02/17/1999	R-09 02/17/1999	R-09C 02/17/1999	R-09D 02/17/1999	R-10A 02/17/1999	R-10A Duplicate	BLANK 02/17/1999
Method 6010B											
CHROMIUM - SOLUBLE	UG/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
CHROMIUM - TOTAL	UG/L	52	62	43	30	41	10 U	10 U	63	57	10 U
Method 7470A											
MERCURY - SOLUBLE	UG/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
MERCURY - TOTAL	UG/L	0.2	0.2	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.7	0.2 U
Method SIM											
2,3,4,6-TETRACHLOROPHENOL	UG/L	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
2,4,6-TRICHLOROPHENOL	UG/L	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
2,4-DICHLOROPHENOL	UG/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2,4-DIMETHYLPHENOL	UG/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2,4-DINITROPHENOL	UG/L	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
2-CHLOROPHENOL	UG/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2-NITROPHENOL	UG/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
4,6-DINITRO-2-METHYLPHENOL	UG/L	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
4-CHLORO-3-METHYLPHENOL	UG/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
4-NITROPHENOL	UG/L	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
ACEPHTHENE	UG/L	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
ACEPHTHYLENE	UG/L	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
ANTHRACENE	UG/L	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
BENZ(A)ANTHRACENE	UG/L	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
BENZO(A)PYRENE	UG/L	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
BENZO(B)FLUORANTHENE	UG/L	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
BENZO(G,H,I)PERYLENE	UG/L	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
BENZO(K)FLUORANTHENE	UG/L	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
BIS(2-ETHYLHEXYL) PHTHALATE	UG/L	0.2 E	0.3 E	0.2 E	0.2 E	3.4 E	2 E	3 E	0.3 E	0.2 E	0.1 U
CHRYSENE	UG/L	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U
DIBENZ(A,H)ANTHRACENE	UG/L	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U
FLUORANTHENE	UG/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
FLUORENE	UG/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
INDENO(1,2,3-CD)PYRENE	UG/L	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
PENTACHLOROPHENOL	UG/L	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
PHENOL	UG/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
PHENTHRENE	UG/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
PHTHALENE	UG/L	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
PYRENE	UG/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U

Notes:
E Indicates estimated concentration due to low levels of Bis(2-ethylhexyl)phthalate above the method reporting limit in the method blank;
sample results less than twenty times the level found in the method blank are flagged "E".
U Indicates compound analyzed for but not detected.

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Table 2
Analytical Summary
Second Semi-Annual 1999 Groundwater Sampling
Grenada Facility
Tie Plant, Mississippi

Sample Location: Sample Date:		R-01R 08/26/1999	R-07 08/26/1999	R-08 08/25/1999	R-08B 08/25/1999	R-09 08/25/1999	R-09C 08/25/1999	R-09D 08/25/1999	R-10A 08/26/1999	FB-01 08/26/1999
Method 6010B										
CHROMIUM - SOLUBLE	UG/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
CHROMIUM - TOTAL	UG/L	39	18	53	10 U	23	14	10 U	32	10 U
Method 7470A										
MERCURY - SOLUBLE	UG/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
MERCURY - TOTAL	UG/L	0.3	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Method SIM										
2,3,4,6-TETRACHLOROPHENOL	UG/L	2 UJ	2 UJ	2 UJ	2 UJ	2 UR	2 UJ	2 UJ	2 UJ	2 UJ
2,4,6-TRICHLOROPHENOL	UG/L	2 UJ	2 UJ	2 UJ	2 UJ	2 UR	2 UJ	2 UJ	2 UJ	2 UJ
2,4-DICHLOROPHENOL	UG/L	1 UJ	1 UJ	1 UJ	1 UJ	1 UR	1 UJ	1 UJ	1 UJ	1 UJ
2,4-DIMETHYLPHENOL	UG/L	1 UJ	1 UJ	1 UJ	1 UJ	1 UR	1 UJ	1 UJ	1 UJ	1 UJ
2,4-DINITROPHENOL	UG/L	2 UJ	2 UJ	2 UJ	2 UJ	2 UR	2 UJ	2 UJ	2 UJ	2 UJ
2-CHLOROPHENOL	UG/L	1 UJ	1 UJ	1 UJ	1 UJ	1 UR	1 UJ	1 UJ	1 UJ	1 UJ
2-NITROPHENOL	UG/L	1 UJ	1 UJ	1 UJ	1 UJ	1 UR	1 UJ	1 UJ	1 UJ	1 UJ
4,6-DINITRO-2-METHYLPHENOL	UG/L	2 UJ	2 UJ	2 UJ	2 UJ	2 UR	2 UJ	2 UJ	2 UJ	2 UJ
4-CHLORO-3-METHYLPHENOL	UG/L	1 UJ	1 UJ	1 UJ	1 UJ	1 UR	1 UJ	1 UJ	1 UJ	1 UJ
4-NITROPHENOL	UG/L	2 UJ	2 UJ	2 UJ	2 UJ	2 UR	2 UJ	2 UJ	2 UJ	2 UJ
ACENAPHTHENE	UG/L	2 UJ	2 UJ	2 UJ	2 UJ	2 UJ	2 UJ	2 UJ	2 UJ	2 UJ
ACENAPHTHYLENE	UG/L	2 UJ	2 UJ	2 UJ	2 UJ	2 UJ	2 UJ	2 UJ	2 UJ	2 UJ
ANTHRACENE	UG/L	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ
BENZ(A)ANTHRACENE	UG/L	0.02 UJ	0.02 UJ	0.02 UJ	0.02 UJ	0.02 UJ	0.04 J	0.03 J	0.02 UJ	0.02 UJ
BENZO(A)PYRENE	UG/L	0.02 UJ	0.02 UJ	0.02 UJ	0.02 UJ	0.02 UJ	0.02 J	0.02 UJ	0.02 UJ	0.02 UJ
BENZO(B)FLUORANTHENE	UG/L	0.02 UJ	0.02 UJ	0.02 J	0.02 UJ	0.02 UJ	0.03 J	0.02 UJ	0.02 UJ	0.02 UJ
BENZO(G,H,I)PERYLENE	UG/L	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ
BENZO(K)FLUORANTHENE	UG/L	0.02 UJ	0.02 UJ	0.02 UJ	0.02 UJ	0.02 UJ	0.02 J	0.02 UJ	0.02 UJ	0.02 UJ
BIS(2-ETHYLHEXYL) PHTHALATE	UG/L	0.4 UJ	0.4 UJ	0.6 UJ	0.8 UJ	0.5 UJ	2.1 J	4 J	0.4 UJ	0.2 J
CHRYSENE	UG/L	0.15 UJ	0.15 UJ	0.15 UJ	0.15 UJ	0.15 UJ	0.15 UJ	0.15 UJ	0.15 UJ	0.15 UJ
DIBENZ(A,H)ANTHRACENE	UG/L	0.03 UJ	0.03 UJ	0.03 UJ	0.03 UJ	0.03 UJ	0.03 UJ	0.03 UJ	0.03 UJ	0.03 UJ
FLUORANTHENE	UG/L	0.2 UJ	0.2 UJ	0.21 J	0.2 UJ	0.2 UJ	0.2 UJ	0.2 UJ	0.2 UJ	0.2 UJ
FLUORENE	UG/L	0.2 UJ	0.2 UJ	0.2 UJ	0.2 UJ	0.2 UJ	0.2 UJ	0.2 UJ	0.2 UJ	0.2 UJ
INDENO(1,2,3-CD)PYRENE	UG/L	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ
NAPHTHALENE	UG/L	2 UJ	2 UJ	2 UJ	2 UJ	2 UJ	2 UJ	2 UJ	2 UJ	2 UJ
PENTACHLOROPHENOL	UG/L	2 UJ	2 UJ	2 UJ	2 UJ	2 UR	2 UJ	2 UJ	2 UJ	2 UJ
PHENANTHRENE	UG/L	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ
PHENOL	UG/L	1 UJ	1 UJ	1 UJ	1 UJ	1 UR	1 UJ	1 UJ	1 UJ	1 UJ
PYRENE	UG/L	0.2 UJ	0.2 UJ	0.2 UJ	0.2 UJ	0.2 UJ	0.2 UJ	0.2 UJ	0.2 UJ	0.2 UJ

Notes:
J indicates estimate value.
R indicates a rejected value.
U indicates compound analyzed but not detected.

TABLE 3
Analytical Summary
2000 First Semi-Annual and Second Quarter Background Groundwater Sampling
Grenada Facility
Tie Plant, Mississippi

Sample Location:		R-01R	R-08	R-08B	R-09	R-09 - DUP	R-09C	R-09D	R-10A	FB-01 -- FB	M-01	R-10A	R-10A - DUP	FB-01 -- FB
Sample Date:		02/09/2000	02/09/2000	02/10/2000	02/09/2000	02/09/2000	02/09/2000	02/09/2000	02/09/2000	02/09/2000	06/06/2000	06/06/2000	06/06/2000	06/06/2000
Method 8270C														
2,3,4,6-TETRACHLOROPHENOL	UG/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,4,5-TRICHLOROPHENOL	UG/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,4,6-TRICHLOROPHENOL	UG/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,4-DIMETHYLPHENOL	UG/L	10 UJ	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,4-DINITROPHENOL	UG/L	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U
2-CHLOROPHENOL	UG/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-CHLORO-3-METHYLPHENOL	UG/L	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U
ACENAPHTHENE	UG/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
ACENAPHTHYLENE	UG/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
ANTHRACENE	UG/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(A)ANTHRACENE	UG/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(A)PYRENE	UG/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(B)FLUORANTHENE	UG/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
CHRYSENE	UG/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
DIBENZO(A,H)ANTHRACENE	UG/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
FLUORANTHENE	UG/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
FLUORENE	UG/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
INDENO(1,2,3-CD)PYRENE	UG/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
NAPHTHALENE	UG/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 UJ	10 U	10 U
PENTACHLOROPHENOL	UG/L	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U
PHENANTHRENE	UG/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
PHENOL	UG/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
PYRENE	UG/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U

Notes:
U indicates compound was analyzed for, but not detected.
J indicates an estimate value.

Tab... 5
Second Semiannual 2000 Groundwater Analytical Data
Grenada Facility
Tie Plant, Mississippi

Sample Location:		R-01R	R-01R -- REP1	R-01R -- REP2	R-01R -- REP3	R-08	R-08B	R-09
Sample Date:		9/13/00	9/13/00	9/13/00	9/13/00	9/12/00	9/12/00	9/13/00
Method 8270C								
2,3,4,6-TETRACHLOROPHENOL	UG/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,4,5-TRICHLOROPHENOL	UG/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,4,6-TRICHLOROPHENOL	UG/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,4-DIMETHYLPHENOL	UG/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,4-DINITROPHENOL	UG/L	50 U	50 U	50 U	50 U	50 U	50 U	50 U
2-CHLOROPHENOL	UG/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-CHLORO-3-METHYLPHENOL	UG/L	20 U	20 U	20 U	20 U	20 U	20 U	20 U
ACENAPHTHENE	UG/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U
ACENAPHTHYLENE	UG/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U
ANTHRACENE	UG/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(A)ANTHRACENE	UG/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(A)PYRENE	UG/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(B)FLUORANTHENE	UG/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U
CHRYSENE	UG/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U
DIBENZO(A,H)ANTHRACENE	UG/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U
FLUORANTHENE	UG/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U
FLUORENE	UG/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U
INDENO(1,2,3-CD)PYRENE	UG/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U
NAPHTHALENE	UG/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U
PENTACHLOROPHENOL	UG/L	50 U	50 U	50 U	50 U	50 U	50 U	50 U
PHENANTHRENE	UG/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U
PHENOL	UG/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U
PYRENE	UG/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U

Notes:
U indicates compound was analyzed for, but not detected.

Table 2
Summary of Analytical Data
First Semi-Annual 2001 Groundwater Sampling Event
February 13-14, 2001
Grenada Facility
Tie Plant, Mississippi

Sample Location:		R-01R	R-08	R-08B	R-09	R-09C	R-09D
Sample Date:		2/14/2001	2/14/2001	2/14/2001	2/14/2001	2/14/2001	2/14/2001
Method 8270C							
2,3,4,6-TETRACHLOROPHENOL	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
2,4,5-TRICHLOROPHENOL	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
2,4,6-TRICHLOROPHENOL	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
2,4-DIMETHYLPHENOL	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
2,4-DINITROPHENOL	UG/L	50 U	50 U	50 U	50 U	50 U	50 U
2-CHLOROPHENOL	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
4-CHLORO-3-METHYLPHENOL	UG/L	20 U	20 U	20 U	20 U	20 U	20 U
ACENAPHTHENE	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
ACENAPHTHYLENE	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
ANTHRACENE	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
BENZ(A)ANTHRACENE	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(A)PYRENE	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(B)FLUORANTHENE	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
CHRYSENE	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
DIBENZO(A,H)ANTHRACENE	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
FLUORANTHENE	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
FLUORENE	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
INDENO(1,2,3-CD)PYRENE	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
NAPHTHALENE	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
PENTACHLOROPHENOL	UG/L	50 U	50 U	50 U	50 U	50 U	50 U
PHENANTHRENE	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
PHENOL	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
PYRENE	UG/L	10 U	10 U	10 U	10 U	10 U	10 U

Notes:

U indicates compound was analyzed for, but not detected.

Table 2
Summary of Analytical Data
First Semi-Annual 2001 Groundwater Sampling Event
February 13-14, 2001
Grenada Facility
Tie Plant, Mississippi

Sample Location:		R-09D - DUP	R-10A	FB-01 -- FB
Sample Date:		2/14/2001	2/14/2001	2/14/2001
Method 8270C				
2,3,4,6-TETRACHLOROPHENOL	UG/L	10 U	10 U	10 U
2,4,5-TRICHLOROPHENOL	UG/L	10 U	10 U	10 U
2,4,6-TRICHLOROPHENOL	UG/L	10 U	10 U	10 U
2,4-DIMETHYLPHENOL	UG/L	10 U	10 U	10 U
2,4-DINITROPHENOL	UG/L	50 U	50 U	50 U
2-CHLOROPHENOL	UG/L	10 U	10 U	10 U
4-CHLORO-3-METHYLPHENOL	UG/L	20 U	20 U	20 U
ACENAPHTHENE	UG/L	10 U	10 U	10 U
ACENAPHTHYLENE	UG/L	10 U	10 U	10 U
ANTHRACENE	UG/L	10 U	10 U	10 U
BENZ(A)ANTHRACENE	UG/L	10 U	10 U	10 U
BENZO(A)PYRENE	UG/L	10 U	10 U	10 U
BENZO(B)FLUORANTHENE	UG/L	10 U	10 U	10 U
CHRYSENE	UG/L	10 U	10 U	10 U
DIBENZO(A,H)ANTHRACENE	UG/L	10 U	10 U	10 U
FLUORANTHENE	UG/L	10 U	10 U	10 U
FLUORENE	UG/L	10 U	10 U	10 U
INDENO(1,2,3-CD)PYRENE	UG/L	10 U	10 U	10 U
NAPHTHALENE	UG/L	10 U	10 U	10 U
PENTACHLOROPHENOL	UG/L	50 U	50 U	50 U
PHENANTHRENE	UG/L	10 U	10 U	10 U
PHENOL	UG/L	10 U	10 U	10 U
PYRENE	UG/L	10 U	10 U	10 U

Notes:

U indicates compound was analyzed for, but not detected.

Table 3
Summary of Analytical Data
Second Semiannual Groundwater Sampling Event
August 14 and 15, 2001
Grenada Facility
Tie Plant, Mississippi

Sample Location: Sample Date:		R-01R 8/15/2001	R-07 8/15/2001	R-08 8/15/2001	R-08B 8/15/2001	R-09 8/15/2001	R-09C 8/15/2001	R-09C - DUP 8/15/2001	R-09D 8/15/2001	R-10A 8/15/2001	FB-01 -- FB 8/15/2001
Method 8270C											
2,3,4,6-Tetrachlorophenol	UG/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,4,5-Trichlorophenol	UG/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,4,6-Trichlorophenol	UG/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,4-Dimethylphenol	UG/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,4-Dinitrophenol	UG/L	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U
2-Chlorophenol	UG/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Chloro-3-methylphenol	UG/L	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U
Acenaphthene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Acenaphthylene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Anthracene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Benz(a)anthracene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Benzo(a)pyrene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Benzo(b)fluoranthene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Chrysene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Dibenzo(a,h)anthracene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Fluoranthene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Fluorene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Indeno(1,2,3-cd)pyrene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Naphthalene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Pentachlorophenol	UG/L	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U
Phenanthrene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Phenol	UG/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Pyrene	UG/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U

Notes:

U indicates compound was analyzed for, but not detected.

Tabl 2
Summary of Analytical Data
First Semiannual Groundwater Sampling Event
February 11 and 12, 2002
Grenada Facility
Tie Plant, Mississippi

Sample Location: Sample Date:		R-01R 2/11/02	R-07 2/12/02	R-08 2/12/02	R-08B 2/11/02	R-09 2/12/02	R-09-DUP 2/12/02	R-09C 2/12/02	R-09D 2/12/02	R-10A 2/11/02	EB-01-- EB 2/12/02
Method 8270C											
2,3,4,6-TETRACHLOROPHENOL	UG/L	10 U	10 U	10 U	9.6 U	9.7 U	10 U	10 U	10 U	10 U	10 U
2,4,5-TRICHLOROPHENOL	UG/L	10 U	10 U	10 U	9.6 U	9.7 U	10 U	10 U	10 U	10 U	10 U
2,4,6-TRICHLOROPHENOL	UG/L	10 U	10 U	10 U	9.6 U	9.7 U	10 U	10 U	10 U	10 U	10 U
2,4-DIMETHYLPHENOL	UG/L	10 U	10 U	10 U	9.6 U	9.7 U	10 U	10 U	10 U	10 U	10 U
2,4-DINITROPHENOL	UG/L	50 U	50 U	50 U	48 U	49 U	50 U	50 U	51 U	50 U	51 U
2-CHLOROPHENOL	UG/L	10 U	10 U	10 U	9.6 U	9.7 U	10 U	10 U	10 U	10 U	10 U
4-CHLORO-3-METHYLPHENOL	UG/L	20 U	20 U	20 U	19 U	19 U	20 U	20 U	20 U	20 U	20 U
ACENAPHTHENE	UG/L	10 U	10 U	10 U	9.6 U	9.7 U	10 U	10 U	10 U	10 U	10 U
ACENAPHTHYLENE	UG/L	10 U	10 U	10 U	9.6 U	9.7 U	10 U	10 U	10 U	10 U	10 U
ANTHRACENE	UG/L	10 U	10 U	10 U	9.6 U	9.7 U	10 U	10 U	10 U	10 U	10 U
BENZO(A)ANTHRACENE	UG/L	10 U	10 U	10 U	9.6 U	9.7 U	10 U	10 U	10 U	10 U	10 U
BENZO(A)PYRENE	UG/L	10 U	10 U	10 U	9.6 U	9.7 U	10 U	10 U	10 U	10 U	10 U
BENZO(B)FLUORANTHENE	UG/L	10 U	10 U	10 U	9.6 U	9.7 U	10 U	10 U	10 U	10 U	10 U
CHRYSENE	UG/L	10 U	10 U	10 U	9.6 U	9.7 U	10 U	10 U	10 U	10 U	10 U
DIBENZO(A,H)ANTHRACENE	UG/L	10 U	10 U	10 U	9.6 U	9.7 U	10 U	10 U	10 U	10 U	10 U
FLUORANTHENE	UG/L	10 U	10 U	10 U	9.6 U	9.7 U	10 U	10 U	10 U	10 U	10 U
FLUORENE	UG/L	10 U	10 U	10 U	9.6 U	9.7 U	10 U	10 U	10 U	10 U	10 U
INDENO(1,2,3-CD)PYRENE	UG/L	10 U	10 U	10 U	9.6 U	9.7 U	10 U	10 U	10 U	10 U	10 U
NAPHTHALENE	UG/L	10 U	10 U	10 U	9.6 U	9.7 U	10 U	10 U	10 U	10 U	10 U
PENTACHLOROPHENOL	UG/L	50 U	50 U	50 U	48 U	49 U	50 U	50 U	51 U	50 U	51 U
PHENANTHRENE	UG/L	10 U	10 U	10 U	9.6 U	9.7 U	10 U	10 U	10 U	10 U	10 U
PHENOL	UG/L	10 U	10 U	10 U	9.6 U	9.7 U	10 U	10 U	10 U	10 U	10 U
PYRENE	UG/L	10 U	10 U	10 U	9.6 U	9.7 U	10 U	10 U	10 U	10 U	10 U

Notes:

U indicates compound was analyzed for, but not detected.

Table 3
Summary of Analytical Data
Second Semiannual Sampling Event
August 12 and 13, 2002
Grenada Facility
Tie Plant, Mississippi

Sample Location:		R-01R	R-07	R-08	R-08B	R-09	R-09C	R-09C - DUP	R-09D	R-10A	FB-01 -- FB
Sample Date:		8/12/02	8/13/02	8/13/02	8/13/02	8/13/02	8/13/02	8/13/02	8/13/02	8/12/02	8/13/02
Method 8270C											
2,3,4,6-TETRACHLOROPHENOL	UG/L	10 U	11 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,4,5-TRICHLOROPHENOL	UG/L	10 U	11 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,4,6-TRICHLOROPHENOL	UG/L	10 U	11 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,4-DIMETHYLPHENOL	UG/L	10 U	11 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,4-DINITROPHENOL	UG/L	51 U	53 U	55 U	50 U	50 U	51 U	50 U	51 U	52 U	50 U
2-CHLOROPHENOL	UG/L	10 U	11 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-CHLORO-3-METHYLPHENOL	UG/L	20 U	21 U	22 U	20 U	20 U	20 U	20 U	20 U	21 U	20 U
ACENAPHTHENE	UG/L	10 U	11 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
ACENAPHTHYLENE	UG/L	10 U	11 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
ANTHRACENE	UG/L	10 U	11 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(A)ANTHRACENE	UG/L	10 U	11 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(A)PYRENE	UG/L	10 U	11 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(B)FLUORANTHENE	UG/L	10 U	11 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
CHRYSENE	UG/L	10 U	11 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
DIBENZO(A,H)ANTHRACENE	UG/L	10 U	11 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
FLUORANTHENE	UG/L	10 U	11 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
FLUORENE	UG/L	10 U	11 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
INDENO(1,2,3-CD)PYRENE	UG/L	10 U	11 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
NAPHTHALENE	UG/L	10 U	11 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
PENTACHLOROPHENOL	UG/L	51 U	53 U	55 U	50 U	50 U	51 U	50 U	51 U	52 U	50 U
PHENANTHRENE	UG/L	10 U	11 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
PHENOL	UG/L	10 U	11 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
PYRENE	UG/L	10 U	11 U	11 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U

Notes:

U indicates compound was analyzed, but not detected.

Table 2
First Semiannual 2003 Groundwater Analytical Data
Grenada Facility
Tie Plant, Mississippi

		R-01R	R-07	R-08	R-08B	R-09	R-09C	R-09C - DUP	R-09D	R-10A
Sample Date:		2/10/2003	2/10/2003	2/10/2003	2/10/2003	2/10/2003	2/10/2003	2/10/2003	2/10/2003	2/10/2003
Method 8270C										
2,3,4,6-TETRACHLOROPHENOL	UG/L	9.8 U	10 U	10 U	9.8 U	9.7 U	10 U	9.8 U	9.8 U	9.8 U
2,4,5-TRICHLOROPHENOL	UG/L	9.8 U	10 U	10 U	9.8 U	9.7 U	10 U	9.8 U	9.8 U	9.8 U
2,4,6-TRICHLOROPHENOL	UG/L	9.8 U	10 U	10 U	9.8 U	9.7 U	10 U	9.8 U	9.8 U	9.8 U
2,4-DIMETHYLPHENOL	UG/L	9.8 U	10 U	10 U	9.8 U	9.7 U	10 U	9.8 U	9.8 U	9.8 U
2,4-DINITROPHENOL	UG/L	49 U	50 U	51 U	49 U	49 U	50 U	49 U	49 U	49 U
2-CHLOROPHENOL	UG/L	9.8 U	10 U	10 U	9.8 U	9.7 U	10 U	9.8 U	9.8 U	9.8 U
4-CHLORO-3-METHYLPHENOL	UG/L	20 U	20 U	20 U	20 U	19 U	20 U	20 U	20 U	20 U
ACENAPHTHENE	UG/L	9.8 U	10 U	10 U	9.8 U	9.7 U	10 U	9.8 U	9.8 U	9.8 U
ACENAPHTHYLENE	UG/L	9.8 U	10 U	10 U	9.8 U	9.7 U	10 U	9.8 U	9.8 U	9.8 U
ANTHRACENE	UG/L	9.8 U	10 U	10 U	9.8 U	9.7 U	10 U	9.8 U	9.8 U	9.8 U
BENZO(A)ANTHRACENE	UG/L	9.8 U	10 U	10 U	9.8 U	9.7 U	10 U	9.8 U	9.8 U	9.8 U
BENZO(A)PYRENE	UG/L	9.8 U	10 U	10 U	9.8 U	9.7 U	10 U	9.8 U	9.8 U	9.8 U
BENZO(B)FLUORANTHENE	UG/L	9.8 U	10 U	10 U	9.8 U	9.7 U	10 U	9.8 U	9.8 U	9.8 U
CHRYSENE	UG/L	9.8 U	10 U	10 U	9.8 U	9.7 U	10 U	9.8 U	9.8 U	9.8 U
DIBENZO(A,H)ANTHRACENE	UG/L	9.8 U	10 U	10 U	9.8 U	9.7 U	10 U	9.8 U	9.8 U	9.8 U
FLUORANTHENE	UG/L	9.8 U	10 U	10 U	9.8 U	9.7 U	10 U	9.8 U	9.8 U	9.8 U
FLUORENE	UG/L	9.8 U	10 U	10 U	9.8 U	9.7 U	10 U	9.8 U	9.8 U	9.8 U
INDENO(1,2,3-CD)PYRENE	UG/L	9.8 U	10 U	10 U	9.8 U	9.7 U	10 U	9.8 U	9.8 U	9.8 U
NAPHTHALENE	UG/L	9.8 U	10 U	10 U	9.8 U	9.7 U	10 U	9.8 U	9.8 U	9.8 U
PENTACHLOROPHENOL	UG/L	49 U	50 U	51 U	49 U	49 U	50 U	49 U	49 U	49 U
PHENANTHRENE	UG/L	9.8 U	10 U	10 U	9.8 U	9.7 U	10 U	9.8 U	9.8 U	9.8 U
PHENOL	UG/L	9.8 U	10 U	10 U	9.8 U	9.7 U	10 U	9.8 U	9.8 U	9.8 U
PYRENE	UG/L	9.8 U	10 U	10 U	9.8 U	9.7 U	10 U	9.8 U	9.8 U	9.8 U

Notes:

U indicates compound was analyzed, but not detected.

RETEC

Table 3
Summary of Analytical Data
2003 Second Semiannual Groundwater Sampling Event
Grenada Facility - Tie Plant, Mississippi

	UNITS	R-01R 8/12/2003	R-07 8/12/2003	R-08 8/12/2003	R-08 - DUP 8/12/2003	R-08B 8/12/2003	R-09 8/12/2003	R-09C 8/12/2003	R-09D 8/12/2003	R-10A 8/12/2003
Method 8270C										
2,3,4,6-TETRACHLOROPHENOL	UG/L	10 U	11 U	11 U	10 U	9.7 U	9.7 U	9.7 U	9.5 U	9.8 U
2,4,5-TRICHLOROPHENOL	UG/L	10 U	11 U	11 U	10 U	9.7 U	9.7 U	9.7 U	9.5 U	9.8 U
2,4,6-TRICHLOROPHENOL	UG/L	10 U	11 U	11 U	10 U	9.7 U	9.7 U	9.7 U	9.5 U	9.8 U
2,4-DIMETHYLPHENOL	UG/L	10 U	11 U	11 U	10 U	9.7 U	9.7 U	9.7 U	9.5 U	9.8 U
2,4-DINITROPHENOL	UG/L	51 U	54 U	53 U	50 U	49 U	49 U	49 U	48 U	49 U
2-CHLOROPHENOL	UG/L	10 U	11 U	11 U	10 U	9.7 U	9.7 U	9.7 U	9.5 U	9.8 U
4-CHLORO-3-METHYLPHENOL	UG/L	20 U	21 U	21 U	20 U	19 U	19 U	19 U	19 U	20 U
ACENAPHTHENE	UG/L	10 U	11 U	11 U	10 U	9.7 U	9.7 U	9.7 U	9.5 U	9.8 U
ACENAPHTHYLENE	UG/L	10 U	11 U	11 U	10 U	9.7 U	9.7 U	9.7 U	9.5 U	9.8 U
ANTHRACENE	UG/L	10 U	11 U	11 U	10 U	9.7 U	9.7 U	9.7 U	9.5 U	9.8 U
BENZO(A)ANTHRACENE	UG/L	10 U	11 U	11 U	10 U	9.7 U	9.7 U	9.7 U	9.5 U	9.8 U
BENZO(A)PYRENE	UG/L	10 U	11 U	11 U	10 U	9.7 U	9.7 U	9.7 U	9.5 U	9.8 U
BENZO(B)FLUORANTHENE	UG/L	10 U	11 U	11 U	10 U	9.7 U	9.7 U	9.7 U	9.5 U	9.8 U
CHRYSENE	UG/L	10 U	11 U	11 U	10 U	9.7 U	9.7 U	9.7 U	9.5 U	9.8 U
DIBENZO(A,H)ANTHRACENE	UG/L	10 U	11 U	11 U	10 U	9.7 U	9.7 U	9.7 U	9.5 U	9.8 U
FLUORANTHENE	UG/L	10 U	11 U	11 U	10 U	9.7 U	9.7 U	9.7 U	9.5 U	9.8 U
FLUORENE	UG/L	10 U	11 U	11 U	10 U	9.7 U	9.7 U	9.7 U	9.5 U	9.8 U
INDENO(1,2,3-CD)PYRENE	UG/L	10 U	11 U	11 U	10 U	9.7 U	9.7 U	9.7 U	9.5 U	9.8 U
NAPHTHALENE	UG/L	10 U	11 U	11 U	10 U	9.7 U	9.7 U	9.7 U	9.5 U	9.8 U
PENTACHLOROPHENOL	UG/L	51 U	54 U	53 U	50 U	49 U	49 U	49 U	48 U	49 U
PHENANTHRENE	UG/L	10 U	11 U	11 U	10 U	9.7 U	9.7 U	9.7 U	9.5 U	9.8 U
PHENOL	UG/L	10 U	11 U	11 U	10 U	9.7 U	9.7 U	9.7 U	9.5 U	9.8 U
PYRENE	UG/L	10 U	11 U	11 U	10 U	9.7 U	9.7 U	9.7 U	9.5 U	9.8 U

Notes:

U indicates compound was analyzed, but not detected.

RETEC

Table 2
Summary of Analytical Data
2004 First Semiannual Groundwater Sampling Event
Grenada Facility - Tie Plant, Mississippi

	UNITS	R-01R 03/30/04	R-07 03/30/04	R-08 03/30/04	R-08B 03/30/04	R-09 03/30/04	R-09C 03/30/04	R-09C-DUP 03/30/04	R-09D 03/30/04	R-10A 03/30/04
Method 8270C										
2,3,4,6-TETRACHLOROPHENOL	UG/L	10 U	11 U	10 U	9.8 U	10 U	10 U	10 U	10 U	10 U
2,4,5-TRICHLOROPHENOL	UG/L	10 U	11 U	10 U	9.8 U	10 U	10 U	10 U	10 U	10 U
2,4,6-TRICHLOROPHENOL	UG/L	10 U	11 U	10 U	9.8 U	10 U	10 U	10 U	10 U	10 U
2,4-DIMETHYLPHENOL	UG/L	10 U	11 U	10 U	9.8 U	10 U	10 U	10 U	10 U	10 U
2,4-DINITROPHENOL	UG/L	50 U	53 U	51 U	49 U	50 U	50 U	51 U	51 U	50 U
2-CHLOROPHENOL	UG/L	10 U	11 U	10 U	9.8 U	10 U	10 U	10 U	10 U	10 U
4-CHLORO-3-METHYLPHENOL	UG/L	20 U	21 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U
ACENAPHTHENE	UG/L	10 U	11 U	10 U	9.8 U	10 U	10 U	10 U	10 U	10 U
ACENAPHTHYLENE	UG/L	10 U	11 U	10 U	9.8 U	10 U	10 U	10 U	10 U	10 U
ANTHRACENE	UG/L	10 U	11 U	10 U	9.8 U	10 U	10 U	10 U	10 U	10 U
BENZO(A)ANTHRACENE	UG/L	10 U	11 U	10 U	9.8 U	10 U	10 U	10 U	10 U	10 U
BENZO(A)PYRENE	UG/L	10 U	11 U	10 U	9.8 U	10 U	10 U	10 U	10 U	10 U
BENZO(B)FLUORANTHENE	UG/L	10 U	11 U	10 U	9.8 U	10 U	10 U	10 U	10 U	10 U
CHRYSENE	UG/L	10 U	11 U	10 U	9.8 U	10 U	10 U	10 U	10 U	10 U
DIBENZO(A,H)ANTHRACENE	UG/L	10 U	11 U	10 U	9.8 U	10 U	10 U	10 U	10 U	10 U
FLUORANTHENE	UG/L	10 U	11 U	10 U	9.8 U	10 U	10 U	10 U	10 U	10 U
FLUORENE	UG/L	10 U	11 U	10 U	9.8 U	10 U	10 U	10 U	10 U	10 U
INDENO(1,2,3-CD)PYRENE	UG/L	10 U	11 U	10 U	9.8 U	10 U	10 U	10 U	10 U	10 U
NAPHTHALENE	UG/L	10 U	11 U	10 U	9.8 U	10 U	10 U	10 U	10 U	10 U
PENTACHLOROPHENOL	UG/L	50 U	53 U	51 U	49 U	50 U	50 U	51 U	51 U	50 U
PHENANTHRENE	UG/L	10 U	11 U	10 U	9.8 U	10 U	10 U	10 U	10 U	10 U
PHENOL	UG/L	10 U	11 U	10 U	9.8 U	10 U	10 U	10 U	10 U	10 U
PYRENE	UG/L	10 U	11 U	10 U	9.8 U	10 U	10 U	10 U	10 U	10 U

Notes:

U indicates compound was analyzed, but not detected.

Table 3
Summary of Analytical Data
2004 Second Semiannual Groundwater Sampling Event
Grenada Facility - Tie Plant, Mississippi

	UNITS	R-01R 08/10/04	R-01R - DUP 08/10/04	R-07 08/10/04	R-08 08/10/04	R-08B 08/10/04	R-09 08/10/04	R-09C 08/10/04	R-09D 08/10/04	R-10A 08/10/04
Method 8270C										
2,3,4,6-Tetrachlorophenol	µg/L	9.3 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,4,5-Trichlorophenol	µg/L	9.3 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,4,6-Trichlorophenol	µg/L	9.3 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,4-Dimethylphenol	µg/L	9.3 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,4-Dinitrophenol	µg/L	47 U	50 U	50 U	50 U	50 U	50 U	51 U	52 U	50 U
2-Chlorophenol	µg/L	9.3 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Chloro-3-Methylphenol	µg/L	19 U	20 U	20 U	20 U	20 U	20 U	20 U	21 U	20 U
Acenaphthene	µg/L	9.3 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Acenaphthylene	µg/L	9.3 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Anthracene	µg/L	9.3 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Benzo(a)anthracene	µg/L	9.3 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Benzo(a)pyrene	µg/L	9.3 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Benzo(b)fluoranthene	µg/L	9.3 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Chrysene	µg/L	9.3 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Dibenzo(a,h)anthracene	µg/L	9.3 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Fluoranthene	µg/L	9.3 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Fluorene	µg/L	9.3 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Indeno(1,2,3-cd)pyrene	µg/L	9.3 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Naphthalene	µg/L	9.3 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Pentachlorophenol	µg/L	47 U	50 U	50 U	50 U	50 U	50 U	51 U	52 U	50 U
Phenanthrene	µg/L	9.3 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Phenol	µg/L	9.3 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Pyrene	µg/L	9.3 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U

Notes:
U indicates compound was analyzed, but not detected.

Table 2
Summary of Analytical Data
2005 First Semiannual Groundwater Sampling Event
Grenada Facility - Tie Plant, Mississippi

		Upgradient Wells		Downgradient Wells						
	UNITS	R-01R 2/21/2005	R-10A 2/21/2005	R-07 2/21/2005	R-08 2/21/2005	R-08B 2/21/2005	R-08B DUP 2/21/2005	R-09 2/21/2005	R-09C 2/21/2005	R-09D 2/21/2005
Method 8270C										
2,3,4,6-Tetrachlorophenol	µg/L	9.3 U	9.3 U	10 U	9.7 U	10 U	10 U	10 U	9.5 U	10 U
2,4,5-Trichlorophenol	µg/L	9.3 U	9.3 U	10 U	9.7 U	10 U	10 U	10 U	9.5 U	10 U
2,4,6-Trichlorophenol	µg/L	9.3 U	9.3 U	10 U	9.7 U	10 U	10 U	10 U	9.5 U	10 U
2,4-Dimethylphenol	µg/L	9.3 U	9.3 U	10 U	9.7 U	10 U	10 U	10 U	9.5 U	10 U
2,4-Dinitrophenol	µg/L	47 U	47 U	50 U	49 U	50 U	52 U	51 U	48 U	50 U
2-Chlorophenol	µg/L	9.3 U	9.3 U	10 U	9.7 U	10 U	10 U	10 U	9.5 U	10 U
4-Chloro-3-Methylphenol	µg/L	19 U	19 U	20 U	19 U	20 U	21 U	20 U	19 U	20 U
Acenaphthene	µg/L	9.3 U	9.3 U	10 U	9.7 U	10 U	10 U	10 U	9.5 U	10 U
Acenaphthylene	µg/L	9.3 U	9.3 U	10 U	9.7 U	10 U	10 U	10 U	9.5 U	10 U
Anthracene	µg/L	9.3 U	9.3 U	10 U	9.7 U	10 U	10 U	10 U	9.5 U	10 U
Benzo(a)anthracene	µg/L	9.3 U	9.3 U	10 U	9.7 U	10 U	10 U	10 U	9.5 U	10 U
Benzo(a)pyrene	µg/L	9.3 U	9.3 U	10 U	9.7 U	10 U	10 U	10 U	9.5 U	10 U
Benzo(b)fluoranthene	µg/L	9.3 U	9.3 U	10 U	9.7 U	10 U	10 U	10 U	9.5 U	10 U
Chrysene	µg/L	9.3 U	9.3 U	10 U	9.7 U	10 U	10 U	10 U	9.5 U	10 U
Dibenzo(a,h)anthracene	µg/L	9.3 U	9.3 U	10 U	9.7 U	10 U	10 U	10 U	9.5 U	10 U
Fluoranthene	µg/L	9.3 U	9.3 U	10 U	9.7 U	10 U	10 U	10 U	9.5 U	10 U
Fluorene	µg/L	9.3 U	9.3 U	10 U	9.7 U	10 U	10 U	10 U	9.5 U	10 U
Indeno(1,2,3-cd)pyrene	µg/L	9.3 U	9.3 U	10 U	9.7 U	10 U	10 U	10 U	9.5 U	10 U
Naphthalene	µg/L	9.3 U	9.3 U	10 U	9.7 U	10 U	10 U	10 U	9.5 U	10 U
Pentachlorophenol	µg/L	47 U	47 U	50 U	49 U	50 U	52 U	51 U	48 U	50 U
Phenanthrene	µg/L	9.3 U	9.3 U	10 U	9.7 U	10 U	10 U	10 U	9.5 U	10 U
Phenol	µg/L	9.3 U	9.3 U	10 U	9.7 U	10 U	10 U	10 U	9.5 U	10 U
Pyrene	µg/L	9.3 U	9.3 U	10 U	9.7 U	10 U	10 U	10 U	9.5 U	10 U

Notes:
DUP indicates duplicate sample
U indicates compound was analyzed, but not detected.

RETEC

Table 3
Summary of Analytical Data
2005 Second Semiannual Groundwater Sampling Event
Grenada Facility - Tie Plant, Mississippi

	UNITS	R-01R 9/20/2005	R-07 9/20/2005	R-08 9/20/2005	R-08B 9/20/2005	R-08B-DUP 9/20/2005	R-09 9/20/2005	R-09C 9/20/2005	R-09D 9/20/2005	R-10A 9/20/2005	ERB-01 9/20/2005
Method 8270C											
2,3,4,6-TETRACHLOROPHENOL	µg/L	10 U	10 UJ	11 U	9.8 U	10 U	10 U	9.7 U	10 U	9.8 U	9.7 U
2,4,5-TRICHLOROPHENOL	µg/L	10 U	10 UJ	11 U	9.8 U	10 U	10 U	9.7 U	10 U	9.8 U	9.7 U
2,4,6-TRICHLOROPHENOL	µg/L	10 U	10 UJ	11 U	9.8 U	10 U	10 U	9.7 U	10 U	9.8 U	9.7 U
2,4-DIMETHYLPHENOL	µg/L	10 U	10 UJ	11 U	9.8 U	10 U	10 U	9.7 U	10 U	9.8 U	9.7 U
2,4-DINITROPHENOL	µg/L	50 U	50 UJ	56 U	49 U	50 U	51 U	49 U	52 U	49 U	49 U
2-CHLOROPHENOL	µg/L	10 U	10 UJ	11 U	9.8 U	10 U	10 U	9.7 U	10 U	9.8 U	9.7 U
4-CHLORO-3-METHYLPHENOL	µg/L	20 U	20 UJ	22 U	20 U	20 U	20 U	19 U	21 U	20 U	19 U
ACENAPHTHENE	µg/L	10 U	10 UJ	11 U	9.8 U	10 U	10 U	9.7 U	10 U	9.8 U	9.7 U
ACENAPHTHYLENE	µg/L	10 U	10 UJ	11 U	9.8 U	10 U	10 U	9.7 U	10 U	9.8 U	9.7 U
ANTHRACENE	µg/L	10 U	10 UJ	11 U	9.8 U	10 U	10 U	9.7 U	10 U	9.8 U	9.7 U
BENZO(A)ANTHRACENE	µg/L	10 U	10 UJ	11 U	9.8 U	10 U	10 U	9.7 U	10 U	9.8 U	9.7 U
BENZO(A)PYRENE	µg/L	10 U	10 UJ	11 U	9.8 U	10 U	10 U	9.7 U	10 U	9.8 U	9.7 U
BENZO(B)FLUORANTHENE	µg/L	10 U	10 UJ	11 U	9.8 U	10 U	10 U	9.7 U	10 U	9.8 U	9.7 U
CHRYSENE	µg/L	10 U	10 UJ	11 U	9.8 U	10 U	10 U	9.7 U	10 U	9.8 U	9.7 U
DIBENZO(A,H)ANTHRACENE	µg/L	10 U	10 UJ	11 U	9.8 U	10 U	10 U	9.7 U	10 U	9.8 U	9.7 U
FLUORANTHENE	µg/L	10 U	10 UJ	11 U	9.8 U	10 U	10 U	9.7 U	10 U	9.8 U	9.7 U
FLUORENE	µg/L	10 U	10 UJ	11 U	9.8 U	10 U	10 U	9.7 U	10 U	9.8 U	9.7 U
INDENO(1,2,3-CD)PYRENE	µg/L	10 U	10 UJ	11 U	9.8 U	10 U	10 U	9.7 U	10 U	9.8 U	9.7 U
NAPHTHALENE	µg/L	10 U	10 UJ	11 U	9.8 U	10 U	10 U	9.7 U	10 U	9.8 U	9.7 U
PENTACHLOROPHENOL	µg/L	50 U	50 UJ	56 U	49 U	50 U	51 U	49 U	52 U	49 U	49 U
PHENANTHRENE	µg/L	10 U	10 UJ	11 U	9.8 U	10 U	10 U	9.7 U	10 U	9.8 U	9.7 U
PHENOL	µg/L	10 U	10 UJ	11 U	9.8 U	10 U	10 U	9.7 U	10 U	9.8 U	9.7 U
PYRENE	µg/L	10 U	10 UJ	11 U	9.8 U	10 U	10 U	9.7 U	10 U	9.8 U	9.7 U

Notes:
U indicates compound was analyzed for but not detected
J indicates estimated value
ERB - Equipment rinse blank
DUP - Field duplicate sample
µg/L = micrograms per liter

Table 2
Summary of Analytical Data
2006 First Semiannual Groundwater Sampling Event
Grenada Facility - Tie Plant, Mississippi

		Upgradient Wells		Downgradient Wells						
ANALYTE	UNITS	R-01R 2/1/2006	R-10A 2/1/2006	R-07 2/1/2006	R-08 2/1/2006	R-08B 2/1/2006	R-08B-DUP 2/1/2006	R-09 2/1/2006	R-09C 2/1/2006	R-09D 2/1/2006
Method 8270C										
2,3,4,6-TETRACHLOROPHENOL	UG/L	9.7 U	10 U	9.8 U	9.7 U	10 U	10 U	9.3 U	10 U	9.7 U
2,4,5-TRICHLOROPHENOL	UG/L	9.7 U	10 U	9.8 U	9.7 U	10 U	10 U	9.3 U	10 U	9.7 U
2,4,6-TRICHLOROPHENOL	UG/L	9.7 U	10 U	9.8 U	9.7 U	10 U	10 U	9.3 U	10 U	9.7 U
2,4-DIMETHYLPHENOL	UG/L	9.7 U	10 U	9.8 U	9.7 U	10 U	10 U	9.3 U	10 U	9.7 U
2,4-DINITROPHENOL	UG/L	49 U	51 U	49 U	49 U	51 U	51 U	47 U	51 U	49 U
2-CHLOROPHENOL	UG/L	9.7 U	10 U	9.8 U	9.7 U	10 U	10 U	9.3 U	10 U	9.7 U
4-CHLORO-3-METHYLPHENOL	UG/L	19 U	20 U	20 U	19 U	20 U	20 U	19 U	20 U	19 U
ACENAPHTHENE	UG/L	9.7 U	10 U	9.8 U	9.7 U	10 U	10 U	9.3 U	10 U	9.7 U
ACENAPHTHYLENE	UG/L	9.7 U	10 U	9.8 U	9.7 U	10 U	10 U	9.3 U	10 U	9.7 U
ANTHRACENE	UG/L	9.7 U	10 U	9.8 U	9.7 U	10 U	10 U	9.3 U	10 U	9.7 U
BENZO(A)ANTHRACENE	UG/L	9.7 U	10 U	9.8 U	9.7 U	10 U	10 U	9.3 U	10 U	9.7 U
BENZO(A)PYRENE	UG/L	9.7 U	10 U	9.8 U	9.7 U	10 U	10 U	9.3 U	10 U	9.7 U
BENZO(B)FLUORANTHENE	UG/L	9.7 U	10 U	9.8 U	9.7 U	10 U	10 U	9.3 U	10 U	9.7 U
CHRYSENE	UG/L	9.7 U	10 U	9.8 U	9.7 U	10 U	10 U	9.3 U	10 U	9.7 U
DIBENZO(A,H)ANTHRACENE	UG/L	9.7 U	10 U	9.8 U	9.7 U	10 U	10 U	9.3 U	10 U	9.7 U
FLUORANTHENE	UG/L	9.7 U	10 U	9.8 U	9.7 U	10 U	10 U	9.3 U	10 U	9.7 U
FLUORENE	UG/L	9.7 U	10 U	9.8 U	9.7 U	10 U	10 U	9.3 U	10 U	9.7 U
INDENO(1,2,3-CD)PYRENE	UG/L	9.7 U	10 U	9.8 U	9.7 U	10 U	10 U	9.3 U	10 U	9.7 U
NAPHTHALENE	UG/L	9.7 U	10 U	9.8 U	9.7 U	10 U	10 U	9.3 U	10 U	9.7 U
PENTACHLOROPHENOL	UG/L	49 U	51 U	49 U	49 U	51 U	51 U	47 U	51 U	49 U
PHENANTHRENE	UG/L	9.7 U	10 U	9.8 U	9.7 U	10 U	10 U	9.3 U	10 U	9.7 U
PHENOL	UG/L	9.7 U	10 U	9.8 U	9.7 U	10 U	10 U	9.3 U	10 U	9.7 U
PYRENE	UG/L	9.7 U	10 U	9.8 U	9.7 U	10 U	10 U	9.3 U	10 U	9.7 U

Notes:
DUP indicates duplicate sample.
U indicates compound was analyzed, but not detected.

Table 3
Summary of Analytical Data
2006 Second Semiannual Groundwater Sampling Event
Grenada Facility - Tie Plant, Mississippi

FTS

ANALYTE	UNITS	Upgradient Wells		Downgradient Wells						
		R-01R 9/18/2006	R-10A 9/18/2006	R-07 9/18/2006	R-08 9/18/2006	R-08B 9/18/2006	R-08B - DUP 9/18/2006	R-09 9/18/2006	R-09C 9/18/2006	R-09D 9/18/2006
Method 8270C										
2,3,4,6-TETRACHLOROPHENOL	UG/L	10 U	9.8 U	9.7 U	9.4 U	9.7 U	9.6 U	9.7 U	9.4 U	9.6 U
2,4,5-TRICHLOROPHENOL	UG/L	10 U	9.8 U	9.7 U	9.4 U	9.7 U	9.6 U	9.7 U	9.4 U	9.6 U
2,4,6-TRICHLOROPHENOL	UG/L	10 U	9.8 U	9.7 U	9.4 U	9.7 U	9.6 U	9.7 U	9.4 U	9.6 U
2,4-DIMETHYLPHENOL	UG/L	10 U	9.8 U	9.7 U	9.4 U	9.7 U	9.6 U	9.7 U	9.4 U	9.6 U
2,4-DINITROPHENOL	UG/L	51 U	49 U	49 U	47 U	49 U	48 U	49 U	47 U	48 U
2-CHLOROPHENOL	UG/L	10 U	9.8 U	9.7 U	9.4 U	9.7 U	9.6 U	9.7 U	9.4 U	9.6 U
4-CHLORO-3-METHYLPHENOL	UG/L	20 U	20 U	19 U	19 U	19 U	19 U	19 U	19 U	19 U
ACENAPHTHENE	UG/L	10 U	9.8 U	9.7 U	9.4 U	9.7 U	9.6 U	9.7 U	9.4 U	9.6 U
ACENAPHTHYLENE	UG/L	10 U	9.8 U	9.7 U	9.4 U	9.7 U	9.6 U	9.7 U	9.4 U	9.6 U
ANTHRACENE	UG/L	10 U	9.8 U	9.7 U	9.4 U	9.7 U	9.6 U	9.7 U	9.4 U	9.6 U
BENZO(A)ANTHRACENE	UG/L	10 U	9.8 U	9.7 U	9.4 U	9.7 U	9.6 U	9.7 U	9.4 U	9.6 U
BENZO(A)PYRENE	UG/L	10 U	9.8 U	9.7 U	9.4 U	9.7 U	9.6 U	9.7 U	9.4 U	9.6 U
BENZO(B)FLUORANTHENE	UG/L	10 U	9.8 U	9.7 U	9.4 U	9.7 U	9.6 U	9.7 U	9.4 U	9.6 U
CHRYSENE	UG/L	10 U	9.8 U	9.7 U	9.4 U	9.7 U	9.6 U	9.7 U	9.4 U	9.6 U
DIBENZO(A,H)ANTHRACENE	UG/L	10 U	9.8 U	9.7 U	9.4 U	9.7 U	9.6 U	9.7 U	9.4 U	9.6 U
FLUORANTHENE	UG/L	10 U	9.8 U	9.7 U	9.4 U	9.7 U	9.6 U	9.7 U	9.4 U	9.6 U
FLUORENE	UG/L	10 U	9.8 U	9.7 U	9.4 U	9.7 U	9.6 U	9.7 U	9.4 U	9.6 U
INDENO(1,2,3-CD)PYRENE	UG/L	10 U	9.8 U	9.7 U	9.4 U	9.7 U	9.6 U	9.7 U	9.4 U	9.6 U
NAPHTHALENE	UG/L	10 U	9.8 U	9.7 U	9.4 U	9.7 U	9.6 U	9.7 U	9.4 U	9.6 U
PENTACHLOROPHENOL	UG/L	51 U	49 U	49 U	47 U	49 U	48 U	49 U	47 U	48 U
PHENANTHRENE	UG/L	10 U	9.8 U	9.7 U	9.4 U	9.7 U	9.6 U	9.7 U	9.4 U	9.6 U
PHENOL	UG/L	10 U	9.8 U	9.7 U	9.4 U	9.7 U	9.6 U	9.7 U	9.4 U	9.6 U
PYRENE	UG/L	10 U	9.8 U	9.7 U	9.4 U	9.7 U	9.6 U	9.7 U	9.4 U	9.6 U

Notes:
DUP indicates duplicate sample.
U indicates compound was analyzed, but not detected.

Table 2
Summary of Analytical Data
2007 First Semiannual Groundwater Sampling Event
Grenada Facility - Mississippi

		Upgradient Wells		Downgradient Wells						
ANALYTE	UNITS	R-01R 2/2/2007	R-10A 2/2/2007	R-07 2/2/2007	R-08 2/2/2007	R-08B 2/2/2007	R-08B-DUP 2/2/2007	R-09 2/2/2007	R-09C 2/2/2007	R-09D 2/2/2007
Method 8270C										
2,3,4,6-TETRACHLOROPHENOL	UG/L	10 U	9.7 U	9.4 U	9.5 U	9.8 U	9.4 U	9.6 U	9.4 U	9.4 U
2,4,5-TRICHLOROPHENOL	UG/L	10 U	9.7 U	9.4 U	9.5 U	9.8 U	9.4 U	9.6 U	9.4 U	9.4 U
2,4,6-TRICHLOROPHENOL	UG/L	10 U	9.7 U	9.4 U	9.5 U	9.8 U	9.4 U	9.6 U	9.4 U	9.4 U
2,4-DIMETHYLPHENOL	UG/L	10 U	9.7 U	9.4 U	9.5 U	9.8 U	9.4 U	9.6 U	9.4 U	9.4 U
2,4-DINITROPHENOL	UG/L	51 U	49 U	47 U	48 U	49 U	47 U	48 U	47 U	47 U
2-CHLOROPHENOL	UG/L	10 U	9.7 U	9.4 U	9.5 U	9.8 U	9.4 U	9.6 U	9.4 U	9.4 U
4-CHLORO-3-METHYLPHENOL	UG/L	20 U	19 U	19 U	19 U	20 U	19 U	19 U	19 U	19 U
ACENAPHTHENE	UG/L	10 U	9.7 U	9.4 U	9.5 U	9.8 U	9.4 U	9.6 U	9.4 U	9.4 U
ACENAPHTHYLENE	UG/L	10 U	9.7 U	9.4 U	9.5 U	9.8 U	9.4 U	9.6 U	9.4 U	9.4 U
ANTHRACENE	UG/L	10 U	9.7 U	9.4 U	9.5 U	9.8 U	9.4 U	9.6 U	9.4 U	9.4 U
BENZO(A)ANTHRACENE	UG/L	10 U	9.7 U	9.4 U	9.5 U	9.8 U	9.4 U	9.6 U	9.4 U	9.4 U
BENZO(A)PYRENE	UG/L	10 U	9.7 U	9.4 U	9.5 U	9.8 U	9.4 U	9.6 U	9.4 U	9.4 U
BENZO(B)FLUORANTHENE	UG/L	10 U	9.7 U	9.4 U	9.5 U	9.8 U	9.4 U	9.6 U	9.4 U	9.4 U
CHRYSENE	UG/L	10 U	9.7 U	9.4 U	9.5 U	9.8 U	9.4 U	9.6 U	9.4 U	9.4 U
DIBENZO(A,H)ANTHRACENE	UG/L	10 U	9.7 U	9.4 U	9.5 U	9.8 U	9.4 U	9.6 U	9.4 U	9.4 U
FLUORANTHENE	UG/L	10 U	9.7 U	9.4 U	9.5 U	9.8 U	9.4 U	9.6 U	9.4 U	9.4 U
FLUORENE	UG/L	10 U	9.7 U	9.4 U	9.5 U	9.8 U	9.4 U	9.6 U	9.4 U	9.4 U
INDENO(1,2,3-CD)PYRENE	UG/L	10 U	9.7 U	9.4 U	9.5 U	9.8 U	9.4 U	9.6 U	9.4 U	9.4 U
NAPHTHALENE	UG/L	10 U	9.7 U	9.4 U	9.5 U	9.8 U	9.4 U	9.6 U	9.4 U	9.4 U
PENTACHLOROPHENOL	UG/L	51 U	49 U	47 U	48 U	49 U	47 U	48 U	47 U	47 U
PHENANTHRENE	UG/L	10 U	9.7 U	9.4 U	9.5 U	9.8 U	9.4 U	9.6 U	9.4 U	9.4 U
PHENOL	UG/L	10 U	9.7 U	9.4 U	9.5 U	9.8 U	9.4 U	9.6 U	9.4 U	9.4 U
PYRENE	UG/L	10 U	9.7 U	9.4 U	9.5 U	9.8 U	9.4 U	9.6 U	9.4 U	9.4 U

Notes:
DUP indicates duplicate sample.
U indicates compound was analyzed, but not detected.
UG/L indicates micrograms per liter

Table 3
Summary of Analytical Data
2007 Second Semiannual Groundwater Sampling Event
Grenada Facility - Mississippi

FTS

ANALYTE	UNITS	Upgradient Wells			Downgradient Wells					
		R-01R 9/20/07	R-01R-DUP 9/20/2007	R-10A 9/20/07	R-07 9/20/2007	R-08 9/20/2007	R-08B 9/20/2007	R-09 9/20/2007	R-09C 9/20/2007	R-09D 9/20/2007
Method 8270C										
2,3,4,6-TETRACHLOROPHENOL	UG/L	11 U	9.5 U	11 U	10 U	10 U	11 U	10 U	9.6 U	9.6 U
2,4,5-TRICHLOROPHENOL	UG/L	11 U	9.5 U	11 U	10 U	10 U	11 U	10 U	9.6 U	9.6 U
2,4,6-TRICHLOROPHENOL	UG/L	11 U	9.5 U	11 U	10 U	10 U	11 U	10 U	9.6 U	9.6 U
2,4-DIMETHYLPHENOL	UG/L	11 U	9.5 U	11 U	10 U	10 U	11 U	10 U	9.6 U	9.6 U
2,4-DINITROPHENOL	UG/L	54 U	48 U	54 U	52 U	52 U	53 U	52 U	48 U	48 U
2-CHLOROPHENOL	UG/L	11 U	9.5 U	11 U	10 U	10 U	11 U	10 U	9.6 U	9.6 U
4-CHLORO-3-METHYLPHENOL	UG/L	21 U	19 U	21 U	21 U	21 U	21 U	21 U	19 U	19 U
ACENAPHTHENE	UG/L	11 U	9.5 U	11 U	10 U	10 U	11 U	10 U	9.6 U	9.6 U
ACENAPHTHYLENE	UG/L	11 U	9.5 U	11 U	10 U	10 U	11 U	10 U	9.6 U	9.6 U
ANTHRACENE	UG/L	11 U	9.5 U	11 U	10 U	10 U	11 U	10 U	9.6 U	9.6 U
BENZO(A)ANTHRACENE	UG/L	11 U	9.5 U	11 U	10 U	10 U	11 U	10 U	9.6 U	9.6 U
BENZO(A)PYRENE	UG/L	11 U	9.5 U	11 U	10 U	10 U	11 U	10 U	9.6 U	9.6 U
BENZO(B)FLUORANTHENE	UG/L	11 U	9.5 U	11 U	10 U	10 U	11 U	10 U	9.6 U	9.6 U
CHRYSENE	UG/L	11 U	9.5 U	11 U	10 U	10 U	11 U	10 U	9.6 U	9.6 U
DIBENZO(A,H)ANTHRACENE	UG/L	11 U	9.5 U	11 U	10 U	10 U	11 U	10 U	9.6 U	9.6 U
FLUORANTHENE	UG/L	11 U	9.5 U	11 U	10 U	10 U	11 U	10 U	9.6 U	9.6 U
FLUORENE	UG/L	11 U	9.5 U	11 U	10 U	10 U	11 U	10 U	9.6 U	9.6 U
INDENO(1,2,3-CD)PYRENE	UG/L	11 U	9.5 U	11 U	10 U	10 U	11 U	10 U	9.6 U	9.6 U
NAPHTHALENE	UG/L	11 U	9.5 U	11 U	10 U	10 U	11 U	10 U	9.6 U	9.6 U
PENTACHLOROPHENOL	UG/L	54 U	48 U	54 U	52 U	52 U	53 U	52 U	48 U	48 U
PHENANTHRENE	UG/L	11 U	9.5 U	11 U	10 U	10 U	11 U	10 U	9.6 U	9.6 U
PHENOL	UG/L	11 U	9.5 U	11 U	10 U	10 U	11 U	10 U	9.6 U	9.6 U
PYRENE	UG/L	11 U	9.5 U	11 U	10 U	10 U	11 U	10 U	9.6 U	9.6 U

Notes:

DUP indicates duplicate sample.
U indicates compound was analyzed, but not detected.
UG/L indicates micrograms per liter

Field Duplicates
Field duplicates are independent samples which are collected as close as possible to the same point in space and time. They are two separate samples taken from the same source, stored in separate containers, and analyzed independently. These duplicates are useful in documenting the precision of the sampling process. Duplicate samples are to be included at a minimum rate of one for every twenty samples (5% of total) and will be submitted to the laboratory as "blind" samples. If less than twenty samples are collected during a particular sampling episode, one duplicate shall be performed.

Duplicates of water samples shall be obtained by alternately filling sample containers from the same sampling device for each parameter.

Matrix Spike / Matrix Spike Duplicates
A matrix spike is an aliquot of sample spiked with a known concentration of target analyte(s). The spiking occurs prior to sample preparation and analysis. A matrix spike is used to document the bias of a method in a given sample matrix. Matrix spike duplicates are intra-laboratory split samples spiked with identical concentrations of target analyte(s). The spiking occurs prior to sample preparation and analysis. They are used to document the precision and bias of a method in a given sample matrix. Site-specific matrix spike/matrix spike duplicate (MS/MSD) samples shall be collected and submitted for each sample matrix at a rate of one per 20 samples (5% of total).

4.1.5 Sample Management and Handling
This section addresses the following aspects of sample handling and custody:

- Sample labeling procedures;
- Sample preservation and bottle requirements; and,
- Chain of custody and analytical request procedures.

Sample Labeling
Sample labeling will be conducted in accordance with the requirements outlined in the following KEY SOP:

- SOP #114 – Sample Handling, Preservation, Packaging, and Shipping.

All samples will be labeled with a unique field identification number based on the sample matrix or collection method, the sample location and/or interval, and other pertinent information. Sample labels will be completed using waterproof permanent markers. The labels will be completed and verified by the sampling technician at the time of sample collection. Information marked on the label will consist of the following:

- Client/Facility;
- Sample identification number;
- Sampling technician's initials;
- Date and time of sample collection;

- Preservatives used; and,
- Laboratory analyses to be performed.

Sample Preservation and Bottle Requirements
Sample bottle and preservation requirements are described in KEY SOP #114. The certified clean sample bottles will be provided by the analytical laboratory.

Sample Chain of Custody
Each sample shipment will be accompanied by a chain-of-custody form. This form may be provided by the analytical laboratory or by the Contractor.

The chain-of-custody form creates a legal record of sample possession. This form indicates the sample designation, the date and time of sample collection, sampler's name(s), bottle types, and numbers of bottles used. The samples are to remain in the custody of the sample team or designated custodian (which includes overnight couriers who follow chain of custody procedures) until delivery to the laboratory. The sample custodian maintains custody of the sample to ensure their integrity has not been compromised. A sample is under custody if any of the following conditions are met:

- It is in possession of the custodian or a designated member of the sampling team;
- It is in plain view, after being in possession;
- It was in possession and is locked up (secured); and,
- It is in a designated secure area.

Upon delivery to the laboratory, the chain-of-custody form will be transferred to the laboratory sample custodian. When the form is complete, it should indicate no lapses in sample possession.

Copies of the chain-of-custody forms will be maintained in the project records. If samples are shipped via couriers, the courier freight bills (one for each shipment) will also be maintained in the project records. All samples will be shipped in accordance with U. S. Department of Transportation (DOT) regulations. KEY SOP #105 discusses sample custody and is included in Attachment A to this SAP.

4.1.6 Sample Packaging and Shipping
Proper packaging and shipping of samples will minimize the potential for sample breakage, leakage, or cross contamination and will provide a clear record of sample custody from collection to analysis. Sample custody and shipping protocol are detailed in SOP 114 (Attachment A).

Once properly packed, samples will be shipped to the laboratory via an overnight express service (guaranteeing prompt delivery and package tracking), a courier service, or by the field samplers. The analytical coordinator should be notified of any weekend activities as well.

The COC and shipping documentation will be retained in the project files. The Field Manager is responsible for notifying the Project Quality Assurance Officer of daily sampling activities, sending him/her copies of COCs, and verifying intact arrival of all sample containers by calling the analytical coordinator the day of anticipated arrival.

4.1.7 Equipment Decontamination Procedures

This section describes the methods for decontamination of field equipment that could introduce contamination from one sample collection location to another. The equipment may include tubing, water level measurement devices, or any other non-dedicated or re-used equipment used during field activities. Decontamination of sampling equipment will be performed between each monitoring well as a quality assurance (QA) measure (to prevent cross contamination between samples) and a safety precaution (to maintain a clean working environment). Equipment decontamination procedures are detailed in SOP 115 (Attachment A).

Waste products of decontamination, such as waste liquids, solids, rags, and gloves will be segregated and containerized in 55-gallon drums and disposed of properly based on the nature of contamination. The Field Manager will ensure that the proper decontamination procedures are followed and that all waste materials produced by decontamination are properly managed.

The site safety officer will enforce safety measures that provide the best protection for all persons involved directly with sampling and or decontamination. Subcontractors will be required to follow the decontamination procedures stated in their contracts (and outlined in this section). It is the responsibility of all personnel involved with sample collection or decontamination to maintain a clean working environment and to ensure that contaminants are not introduced to the environment through negligence.

4.2 SAMPLING SCHEDULE

Groundwater monitoring will be performed on an every other year (biennial) basis for the duration of the permit renewal.

4.3 REPORTING

The results of each biennial groundwater monitoring event will be presented in separate biennial reports. Each report will present the gauging data, field parameter data, and analytical data from the most recent event. The reports will also present the groundwater flow direction and linear groundwater flow velocity as described in Section 4.1.2 (based on groundwater contours drawn from the groundwater elevation data).

4.3.1 Statistical Analysis

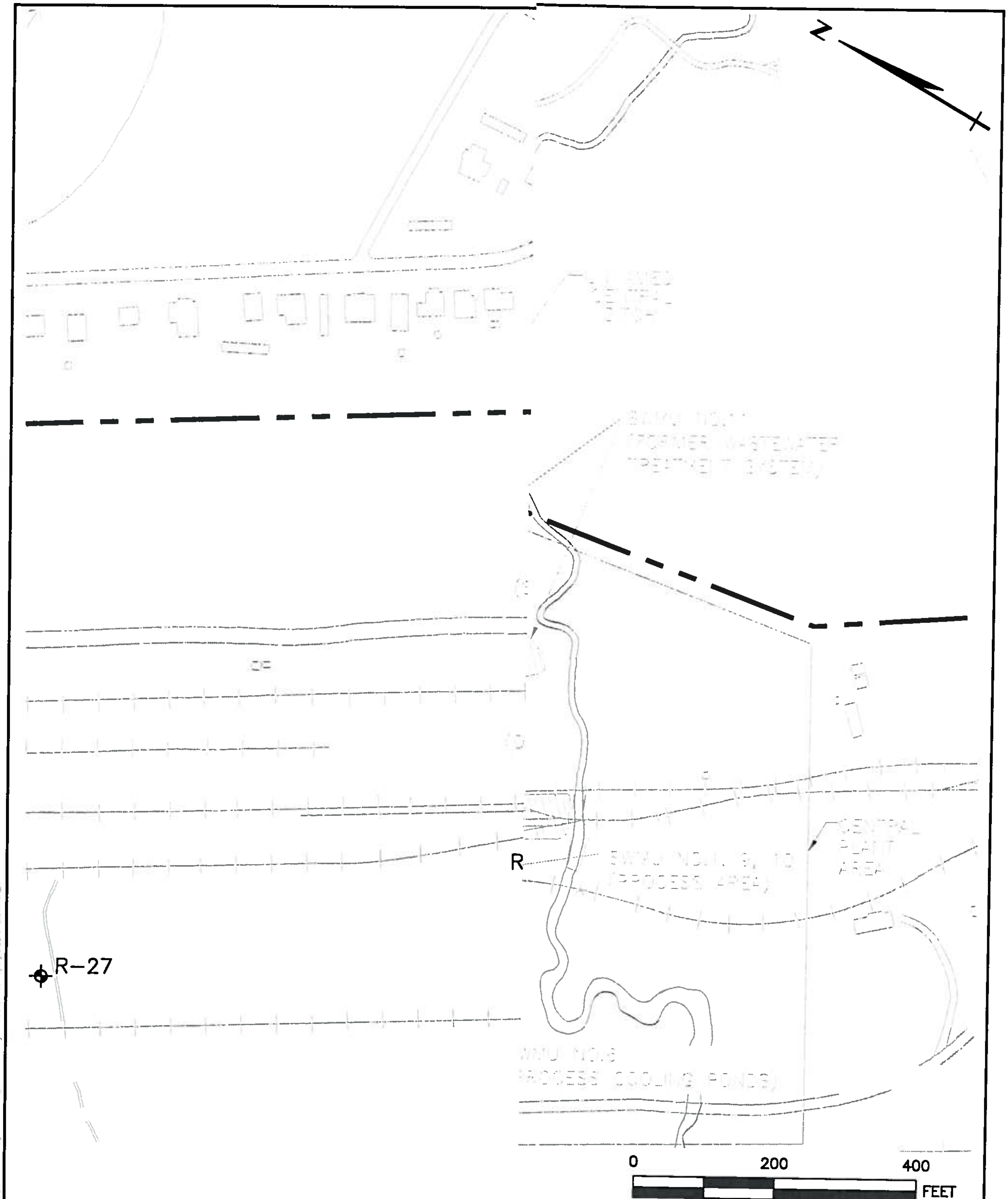
The laboratory will meet the Estimated Quantitation Limits (EQLs) for the constituents listed in Table 4-1 using U.S. EPA Method 8270C. Low-level metholdology will be used by the laboratory in order to achieve MCLs for those constituents with MCLs, specifically benzo(a)pyrene and pentachlorophenol. Groundwater analytical data from the monitoring wells will be compared to reporting limits (RLs) identified in Table 4-1 for each constituent. If the detected concentrations are less than their respective RLs, no further action will be taken. If the concentration of any constituent(s) is greater than its RL in at least one well then a statistical evaluation will be performed.

Table 4-1 Reporting Limits for Semivolatile Organics

Compound	CAS	Reporting Limit (µg/L)
Acenaphthene	83-32-9	10
Acenaphthylene	208-96-8	10
Anthracene	120-12-7	10
Benzo(a)anthracene	56-55-3	10
Benzo(a)pyrene	50-32-8	0.2
4-Chloro-3-methylphenol	59-50-7	20
2-Chlorophenol	95-57-8	10
Chrysene	218-01-9	10
Dibenz(a,h)anthracene	53-70-3	10
2,4-Dimethylphenol	105-67-9	10
2-4-Dinitrophenol	54-28-5	10
Fluoranthene	206-44-0	50
Fluorene	86-73-7	10
Indeno(1,2,3-cd)pyrene	193-39-5	10
Naphthalene	91-20-3	10
Pentachlorophenol	87-86-5	1
Phenanthrene	85-01-8	10
Phenol	108-95-2	10
Pyrene	129-00-0	10
2,3.4,6-Tetrachlorophenol	58-90-2	10
2,4,5-Trichlorophenol	95-95-4	10
2,4,6-Trichlorophenol	88-06-2	10

Statistical evaluation of the analytical data will be conducted in accordance with applicable permit conditions to determine whether concentrations of constituents in compliance point monitoring wells are significantly above any concentration limits that are specified for the Facility.

FIGURE



PROPERTY BOUN
SITE FEATURE
FENCE
RAILROAD TRACK

BEAZER EAST, INC.
PITTSBURGH, PENNSYLVANIA

DRWN: CRJ	DATE: 04/03/08
CHKD: AMG	DATE: 04/03/08
APPD: KCF	DATE: 04/03/08
SCALE:	AS SHOWN

KEY ENVIRONMENTAL INCORPORATED

APPENDIX H– SAMPLING AND ANALYSIS PLAN,
POST–CLOUSURE CARE
GRENADA, MISSISSIPPI

REV #	DATE	DESCRIPTION	APPD
3			
2			
1			

REFERENCE: BASEM REPOR XX
ENTAL, INC.
ENUE
15106

MONITORING WELL LOCATIONS

PROJECT NO: 08-848

FIGURE 1

ATTACHMENT A

#103 - ENVIRONMENTAL SAMPLE PREPARATION

1.0 SCOPE AND PURPOSE

This Standard Operating Procedure (SOP) presents procedures for selecting appropriate sample containers and preservatives when collecting environmental samples for analysis at a selected laboratory. Procedures for packaging and shipping environmental samples are presented in Key SOP #114.

Environmental samples are those that are anticipated to be relatively low in analyte concentration. These samples consist of materials that may have been impacted by source area materials, but do not consist of source area materials such as sludge, material from drums, material from bulk storage tanks, *etc.* Examples of environmental samples include: soil samples collected adjacent to or underlying a source area, stream and sediment samples, and groundwater samples (which do not contain non-aqueous phase liquid).

2.0 REQUIRED MATERIALS

Required materials for sample containers and preservation may include:

- various sized glass containers (with Teflon®-lined lids or caps, clear or amber colored);
- various sized polyethylene containers (with Teflon®-lined lids or caps);
- nitric acid;
- sulfuric acid;
- hydrochloric acid;
- sodium hydroxide; and,
- sodium thiosulfate.

Project-specific, appropriate sample container size, sample volume, holding times, and preservatives should be presented in the Quality Assurance Project Plan (QAPjP).

3.0 METHODOLOGIES

Sample Containers

To limit potential chemical or physical changes in a sample during collection and transport, the sample container selection should be based on the following:

- Sample containers should be new and certified clean prior to sampling activities;
- Sample containers should be constructed of non-reactive materials; and,
- Sample containers should not chemically or physically alter the sample.

The most widely used containers for aqueous samples are composed of glass or polyethylene.

Aqueous Samples

Glass Containers

Glass containers will be used when organic compounds are the analytes of interest. Sample volume will be sufficient to fill each sample container to allow the laboratory to attain the method-specific detection limits. Specific to volatile organic analysis, sample volume will be sufficient to fill each sample container so that no air bubbles are present. Once the sample container is full (and preserved if appropriate), it will be sealed with a Teflon®-lined screw cap. Specific container sizes for each analytical category are presented in the project-specific QAPjP.

Polyethylene Containers

Polyethylene containers will be used for aqueous samples when metals and/or inorganic analytes are the parameters of interest. One-liter polyethylene bottles with solid polyethylene or polyethylene-lined caps will generally be used to collect groundwater samples for metals and inorganic analysis. Once the sample container is full (and preserved if appropriate), it will be sealed with the polyethylene screw cap. Specific container sizes for each analytical category are presented in the project-specific QAPjP.

Solid Samples

Sample containers for the soil matrix are typically clear glass with a volume of 8 ounces. Larger sample containers may be necessary depending upon the number and type of analyses.

Sample Preservation

Sample preservation is important to retard physical and chemical alterations of unstable analytes within the sample matrix. Sample preservation methods are limited and are generally intended to:

Retard biological action;

- Retard hydrolysis of chemical compounds and complexes;
- Limit photolysis;
- Reduce volatility of constituents; and,
- Reduce sorption effects.

Preservation is usually limited to acidification, treatment with an alkaline chemical, reducing light exposure, filtration, and refrigeration.

Prior to any form of preservation, the following parameters, at a minimum, will be measured in the field on water samples and recorded in the field notebook:

- pH;
- Specific conductance; and,
- Temperature.

These field measurements record baseline information on the water sample prior to external influences such as temperature, dissolved carbon dioxide, or oxygen affecting the sample.

Acidification

Acidification of samples is generally performed for two purposes. Acidifying a (water) sample serves to limit metal adsorption to the sample container and will maintain the metal in a dissolved state. Secondly, acidification will act to inhibit bacterial growth. Samples to be acidified for either purpose will require a minimum volume of 100 ml and will be acidified to a pH < 2. Acidification is performed immediately after taking field measurements or following sample filtration.

Alkaline Treatment

Samples are preserved with an alkaline chemical (*e.g.* NaOH) to form salts with volatile compounds such as cyanide. Samples undergoing this preservation require a minimum volume of 100 ml and will be treated to a pH >12.

Preservation of the sample will be performed by the addition of NaOH until the desired pH is achieved (pH > 12). Preservation of a water sample is performed immediately after the field measurements are collected and recorded.

Filtration

Filtration of samples will be used only for specific analytical parameters. It will be used when the dissolved metal content of water is of concern. Filtration will not be performed for samples to be analyzed for volatile organics, semi-volatile organics, or total recoverable metals.

When sample filtration is required, the sample will be drawn through a 0.45 micron filter. The filter material will either be paper or fiberglass dependent on the nature of the sampled water. Filtration is performed immediately following the field measurements and prior to any other preservation methods. If the sample contains a significant level of suspended solids, a paper prefilter will be used prior to the 0.45 micron filter.

Temperature Control

All field samples that are to be analyzed by the laboratory will be sealed and then refrigerated during transfer to and storage at the laboratory. Refrigeration of samples is a bacterial inhibitor and slows the chemical and biological changes of a sample exposed to an oxidizing atmosphere. Transfer and storage of samples will be between 0°C and 10°C, with a target temperature of 4°C. Solid samples are typically limited to this preservation method.

Laboratory Selection and Coordination

Choosing a qualified analytical laboratory is an integral part of sampling activities. Regulatory program requirements and certifications must be considered in selecting the laboratory to ensure that the laboratory is capable of meeting project-specific requirements. Also, the provisions of any Consent Orders or Unilateral Orders applicable to the project must be reviewed and communicated to the laboratory to ensure project-specific requirements are met.

Laboratory Selection

- An analytical laboratory will be chosen based on the following criteria:
- Capabilities of the laboratory including performance history, certifications, and regulatory program experience;
- The qualifications and experience of the laboratory staff;
- Availability of a designated technical client representative who serves as a single point of contact for all Key projects;
- Quality and completeness of standard deliverables, including electronic data transfer availability;
- The specified analyses and turnaround time; and,
- The adequacy of the laboratory's quality assurance/quality control program.

Coordination

After selecting a laboratory, the laboratory will be contacted and the following information requested pertaining to the sampling activities:

- Identification of a responsible party to act as sample custodian at the laboratory who is authorized to accept samples and verify the data entered from the accompanying chain-of-custody forms into the laboratory tracking system.

- Provisions for a laboratory sample custody log consisting of serially numbered, standard laboratory tracking report sheets.

- Specifications of laboratory sample custody procedures for sample handling, storage, and dispersement for analysis.

The laboratory will be notified within 48 hours prior to receipt of samples. The samples will be packaged and shipped *via* express courier or hand delivered within 48 hours of collection to the laboratory. The laboratory will then be contacted to verify receipt of the samples and estimated turnaround time.

Sample Packaging and Shipping

Proper sample packaging and shipping accomplishes the following:

- Allows individual samples to be tracked through transport and analysis;

- Limits the possibility of breaking or losing a sample bottle during transport; and,

- Is part of formal chain-of-custody (COC) procedures (tracking of possession of the samples).

Samples will be packaged and shipped according to the procedures in Key SOP #114, "Sample Handling, Preservation, Packaging, and Shipping."

4.0 DATA RECORDING OR MANAGEMENT

(Reserved)

5.0 REFERENCES

U.S. Environmental Protection Agency, 1986. *RCRA Groundwater Monitoring Technical Enforcement Guidance Document.* OSWER-9950.1. September 1986.

U.S. Environmental Protection Agency, 1986. *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods,* SW-846 3rd Edition (with revisions).

U.S. Environmental Protection Agency, 1987. *A Compendium of Superfund Field Operations Methods, Part 1.* EPA/540/P-87/001. December 1987.

U.S. Environmental Protection Agency, 1991. *Compendium of ERT Groundwater Sampling Procedures.* EPA/540/P-91/007. January 1991.

#104 - SAMPLING EQUIPMENT DECONTAMINATION

1.0 SCOPE AND PURPOSE

This Standard Operating Procedure (SOP) presents methods for on-site decontamination of field sampling equipment. Decontamination is performed as a quality assurance measure and a safety precaution. Decontamination prevents cross-contamination between samples and also helps to maintain a clean working environment for the safety of the field personnel.

Although this SOP defines on-site decontamination procedures, it is highly recommended that (1) dedicated disposable sampling implements are used whenever possible, and (2) sufficient dedicated sampling implements are taken to the field so that the need for field decontamination is eliminated or reduced. For example, in collecting groundwater samples, dedicated, disposable bailers should be used, where practicable.

Decontamination is mainly achieved by washing and rinsing with liquids which include; soap and/or detergent solutions, tap water, distilled water, acetone, hexane, and nitric acid. The actual procedure will vary depending on project-specific requirements as listed in the Quality Assurance Project Plan (QAPjP), the type of equipment to be used, and the analytical parameters of interest.

2.0 REQUIRED MATERIALS[1]

- Distilled water;
- Phosphate-free detergent (e.g., Liquinox, Alconox)
- Potable water supply;
- Hexane;
- Acetone;
- Isopropanol;
- 10% Nitric acid;
- Paper towels;
- Cleaning brushes;
- Aluminum foil;
- Gloves;
- Safety glass;
- Protective clothing;
- Cleaning containers (e.g., buckets, pans); and
- Dedicated squirt bottles for each solvent above and/or distilled water.

[1] Depending on project-specific requirements, not all materials may be necessary.

3.0 METHODOLOGY

It is the primary responsibility of the field team leader to assure that the proper decontamination procedures are followed. Project-specific decontamination procedures are to be included in the field SAP. It is the responsibility of the project safety officer (or designee) to develop and implement safety measures which provide protection for all persons involved directly with decontamination.

The contaminants encountered and type of equipment used will dictate the type of field decontamination procedures required. At a minimum, the following procedures will be used:

- Remove adhered material from the sampling equipment by brushing and/or rinsing with tap water;
- Wash with non-phosphate detergent and tap water;
- Rinse with distilled tap water;
- Rinse with appropriate solvent[2], if organic constituents are of interest;
- Rinse with 10% nitric acid, if metals are a constituent of interest;
- Rinse with distilled water; and
- Air dry or dry with clean paper towels.

Safety Precautions

At a minimum, eye protection, safety shoes, and gloves are to be worn. There are several types of gloves that may be worn, depending on equipment being cleaned, type and extent of equipment contamination, and cleaning solutions or solvents being used.

Polyvinyl gloves may be worn when the equipment to be decontaminated is not heavily coated with constituents such as tars/oils. In cases where heavy accumulations of tars/oils are present on the equipment, neoprene or similar chemically compatible gloves are recommended. If a potential for skin contact exists, protective clothing should be worn.

[2] Note the specific solvent will be dictated by project-specific requirements.

4.0 QA/QC PROCEDURES

To insure that sampling equipment is cleaned properly, and does not lead to cross-contamination of samples, field rinsate blanks will be collected. A rinsate blank will consist of pouring or pumping deionized organic-free water over the specific sampling device or through the device after it has been cleaned. The rinsate sample is performed in the field and generally one rinsate blank is collected each day of sampling or at a rate of 1 per 20 for each parameter, which ever is less, for each matrix being sampled or for each type of sampling instrument decontaminated and reused per day. The rinsate samples are analyzed for the specific parameters of concern (for each matrix). Rinsate blanks are not required if dedicated sampling equipment is used. Additional quality assurance samples may be collected if deemed necessary by project specific requirements. All project specific quality assurance sampling will be defined in the sampling and analysis plan (SAP) or QAPjP prior to initiation of the field work.

5.0 RECORDING REQUIREMENTS

The field team leader will maintain a record of the decontamination procedures.

6.0 REFERENCES

United States Environmental Protection Agency, January 1991. *Compendium of ERT Groundwater Sampling Procedures.* EPA/540/P-91/007. Washington D.C.

#105 - CHAIN OF CUSTODY

1.0 SCOPE AND PURPOSE

This Standard Operating Procedure (SOP) presents procedures for documenting possession/custody of environmental samples from the time of collection through delivery to the receiving analytical laboratory. At this point, internal laboratory records should document sample custody until final disposition. This SOP also discusses sample identification and the use of chain-of-custody (COC) forms.

Possession of the samples must be traceable from the time each is collected until analysis is completed. To document sample possession, chain-of-custody procedures are followed. Chain-of-custody evidence includes all documentation associated with the sample including the chain-of-custody form, sample label, custody seal, courier's receipt (if applicable), and field notebook.

A sample is under custody if one or more of the following criteria are met:

- It is in possession of the custodian or a designated member of the sampling team;
- It is in plain view, after being in possession;
- It was in possession and is secured against tampering; and,
- It is placed in a designated secure area.

2.0 REQUIRED MATERIALS

- Sample container labels;
- Chain-of-custody forms;
- Field notebook;
- Shipping Airbills;
- Locks or Packaging Tape; and,
- Custody seals.

3.0 METHODOLOGIES

The Project Manager (or designee) is responsible for ensuring that sample labeling is completed in accordance with this SOP and that chain-of-custody forms are completed for sample shipments. All individuals relinquishing and receiving samples shall sign, date, and record the time on the chain-of-custody forms.

Sample Identification

Blank sample labels will be supplied by the analytical laboratory and affixed to the sample container. Sample labels will be completed using waterproof permanent markers or ink. The labels will be filled out at the time of sample collection by the field sampling personnel. The following identifying sample information will be included on the label:

- Client/Site;
- Sample identification alpha-numeric code;
- Sample collector's initials;
- Date and time (military) of sample collection;
- Analytical method; and,
- Laboratory analysis to be performed.

Chain-of-Custody Forms

Once the sample containers have been filled with the sampled media and properly labeled, they will be prepared for shipment to the receiving analytical laboratory. Coolers containing samples will be accompanied by a chain-of-custody form (see example COC form in Figure 1).

The field team leader (or designee) shall complete a chain-of-custody form for each lot of packaged samples (*e.g.*, cooler). COC forms shall be completed in ink. Any transcription errors shall be corrected by striking the erroneous information with a single horizontal line. The corrected information shall be added immediately adjacent to the strikeout. The sampler should initial the correction.

The following information will be recorded on the COC form:

- Client/Site;
- Name(s) of sampler(s);
- Sample identification alpha-numeric code;
- Date and time (military) of sample collection;
- Type of sample (*e.g.*, soil, groundwater);
- Number of containers per sample location;
- Requested analyses;
- Type of containers and preservatives used;
- Name and address for the completed laboratory reports;
- Name and address for laboratory invoices; and,
- Specific instructions/notes for the laboratory, as necessary.

Any area of the COC, where sample information is not completed, should have a hatched line drawn through to show that this portion of the COC will not be completed.

Each COC will be placed in a waterproof plastic bag and affixed to the underside of the shipping container lid. Samples will be packaged properly for shipment as described in SOP #114, Sample Handling, Preservation, Packaging, and Shipping, and dispatched to the appropriate laboratory for analysis. Shipping containers will be padlocked or otherwise sealed for shipment to the laboratory.

All shipments should be accompanied by the completed Chain-of-Custody Record. The original record will accompany the shipment to the laboratory, and a copy will be retained by the field team leader for the project file. Shipping bills and receipts must be retained as part of the chain-of-custody documentation.

Upon receipt of the samples by the laboratory, the laboratory person assigned to log-in samples will confirm that the shipping container seals are in good condition and have not been disturbed. The original chain-of-custody form is to be signed and dated by the laboratory person logging in the samples. In addition, the receiving laboratory is to inspect each sample and indicate the condition of the sample on the COC. The receiving laboratory is to retain a copy of each chain-of-custody form along with the shipping bill. Internal laboratory chain-of-custody procedures will be followed once samples are logged in by the receiving laboratory.

4.0 DATA RECORDING/MANAGEMENT

As discussed in Section 3.0, information related to tracking environmental samples will be recorded on the COC forms which will be retained in the project files.

5.0 REFERENCES

U.S. Environmental Protection Agency, 1986. *RCRA Groundwater Monitoring Technical Enforcement*

U.S. Environmental Protection Agency, 1986. *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods,* SW-846 3rd Edition (with revisions).

U.S. Environmental Protection Agency, 1987. *A Compendium of Superfund Field Operations Methods, Part 1.* EPA/540/P-87/001. December 1987.

U.S. Environmental Protection Agency, 1991. *Compendium of ERT Groundwater Sampling Procedures.* EPA/540/P-91/007. January 1991.

Figure 1
Example Chain-of-Custody Form

KEY ENVIRONMENTAL INCORPORATED

CHAIN OF CUSTODY

200 Third Avenue
Carnegie, PA 15106
Phone (412) 279-3363
Fax (412) 279-4332

Project No.:	Project Name:
Samplers: (signatures)	

Sample I.D.	Date	Time	comp	grab	Sample Location Description	Number of Containers											Requested Analyses

Relinquish By: (signature)	Date	Time	Received By: (signature)	Date	Time	Notes:
Relinquish By: (signature)	Date	Time	Received By: (signature)	Date	Time	
Relinquish By: (signature)	Date	Time	Received By: (signature)	Date	Time	

Distribution: Original to Accompany samples; Copy Returned with Report

dmw-c:\administrative\forms\coc.xls
Revised 4/3/2008
Form # 3

#106 - FIELD LOGBOOK

1.0 SCOPE AND PURPOSE

This Standard Operating Procedure (SOP) presents procedures for proper documentation of site activities with respect to the daily field logbook. Field logbooks are the primary source of documentation for site activities, and serve as legal record of all occurrences during those activities.

2.0 REQUIRED MATERIALS

The required materials for maintaining a field log book include a water-resistant, permanently bound notebook and a pen with permanent ink.

3.0 METHODOLOGIES

Pertinent information regarding the site and work procedures must be documented. Information recorded in the notebook should be noted with the date and time of entry. The following items are commonly included as logbook entries:

- Name and location of site;
- Date and time of arrival and departure;
- Name of person keeping log;
- Names and affiliations of project personnel;
- Sampling event description; including methodology, sample numbers and volumes, description of samples, date and time of sample collection, and name of collector;
- Prevailing weather conditions;
- Technical measurements and readings;
- Diagrams and sketches;
- Description of equipment used;
- List and descriptions of photographs; and,
- Equipment calibration information.

Information should be recorded in permanent ink for the legal record. The company name, address, and phone number should be entered at the beginning of the log book. The pages of the logbook should be numbered for ease of reference. Blank spaces should be crossed out and initialed. All notes should be written at the time of observation. Changes or deletions should be crossed out with a single line and initialed by the individual making the change. At the end of each field day, the project scientist/engineer or designee should sign and date each page of the notebook on which entries were made to verify the day's activities.

4.0 QA/QC PROCEDURES

At the end of each day of field activities, the individual or individuals maintaining the field log book should review the notes for accuracy and completeness. Corrections, deletions, or additions should be initialed and the time and date should be noted.

5.0 DATA RECORDING AND MANAGEMENT

It is recommended that a running activity log be maintained, indicating the times of activities and observations; recorded data be written in the form of tables with an appropriate title; and that diagrams be included to illustrate pertinent information. Log books should be labeled with the project name, project number, and a consecutive number for cataloging purposes.

6.0 REFERENCES

Environmental Research Center, University of Nevada - Las Vegas, March 1989, Soil Sampling Quality Assurance User's Guide, EPA/600/8-89/046.

Fetter, C. W., 1994, Applied Hydrogeology, Macmillan College Press Publishing Company, New York, New York, 691 p.

U.S. EPA, September 1986, RCRA Ground-Water Monitoring Technical Enforcement Guidance Document, OSWER-9950.1

#109 - GROUNDWATER LEVEL MEASUREMENTS

SCOPE AND PURPOSE

This section provides general instructions for the accurate measurement of groundwater levels using various methods/equipment. The methods conform to those presented in American Society for Testing and Materials Method D 4750-87.

APPLICABILITY

The procedures presented will permit the accurate determination of water levels (depth to water measurements) in wells and piezometers. The data produced can be used in conjunction with well top-of-casing (TOC) elevations to calculate groundwater elevations and subsequently determine groundwater flow gradients and directions, and vertical gradients. The data may also be used to evaluate drawdown in pumping and/or observation wells during aquifer characterization tests.

DEFINITIONS

Top-of-Casing (TOC): The point of the well riser from which all measurements are made and for which the elevation is surveyed. If the TOC is not identified on the well casing, measurements should be taken from the northernmost point on the lip of the riser.

Depth to Water: Distance measured from TOC to the water surface in feet (to tenths and hundredths).

PROCEDURES

Depth to water measurements can be collected using several methods:

- Graduated tape and marker chalk - indirect reading; and,
- Electronic water level indicator (E-tape) - direct reading.

In general, the equipment is not dedicated for use at any one particular site or well and should, therefore, be carefully and thoroughly decontaminated between each use. Decontamination procedures are discussed in SOP No. 115. Equipment may be dedicated to a well or series of site wells if the investigation is of sufficient scope and length to support the additional cost (particularly the E-tape and electronic water level indicator). Substantial contamination (*e.g.*, floating product) in a well may also necessitate the dedication of measuring equipment.

GENERAL

The measurement for each well should be repeated until two consecutive readings are recorded that are ±0.01 foot (this may not be practical during aquifer pump tests). The data will be recorded in the field logbook; for indirect methods, record both measurements—DO NOT PERFORM SUBTRACTION/ADDITION IN YOUR HEAD. All measuring devices will be decontaminated between wells.

GRADUATED TAPE

A heavy object (plunker or popper) is taped or otherwise attached to the end of a graduated tape (marked to hundredths of a foot). The plunker will help to keep the tape taut while measuring; and, since the tape tends to cling to the inside wall of the well, it will assist in lowering the tape. The first one to two feet of the tape are coated with chalk, and then the tape is slowly lowered down the well. The user will be able to determine that the water surface has been reached by (a) the "plunking" sound made by the weight when the water surface is reached, or (b) the apparent decrease in weight of the tape as the plunker/tape become buoyant in the liquid. After the water surface is encountered, the tape is lowered an additional six inches to a foot and the total length of tape in the well from the TOC is noted and recorded. When the tape is removed from the well, the point at which the chalk is wetted (washed off) is noted and recorded. By subtracting the length of tape that was below the water surface (wetted) from the total tape length extended from TOC, the depth to water can be calculated. It is important that all measurements be recorded and the calculation made from the recorded data. Never make the calculation in your head.

ELECTRONIC WATER LEVEL INDICATOR OR E-TAPE

E-tapes are constructed of two-strand insulated wire with a heavy metal object attached at the end to act as a weight. When the water surface is encountered, an electric circuit is completed, which is indicated at the surface by activation of a light or buzzer,

Some E-tapes are graduated to 0.05 foot while others are marked only every 5 or 10 feet. If the tape is marked to the nearest 0.05 foot, the depth to water from the TOC is interpolated between the marks and recorded to the nearest 0.01 foot. When the tape is marked only every 5 or 10 feet, the depth at which water is encountered is calculated by marking the length of line extended from TOC at the time of circuit completion and measuring the distance to hundredths of a foot from length marker, and adding or subtracting this distance as appropriate. Record both measurements and perform the calculation in the notebook; do not make the calculation in your head.

#114 - SAMPLE HANDLING, PRESERVATION, PACKAGING, AND SHIPPING

1.0 SCOPE AND PURPOSE

This Standard Operating Procedure (SOP) describes the procedures associated with the handling, preservation, packaging, and shipment of environmental samples for laboratory analysis or testing. Environmental samples may consist of air, groundwater, surface water, sediments, soil, non-aqueous phase liquid (NAPL), and/or sludges. The objective of sample preparation, handling, packaging, and shipping protocols is to develop standard procedures which will preserve the integrity of the samples and minimize the potential for sample tracking errors, sample spillage or leakage, and/or sample container breakage. The field team leader is responsible for the implementation of the sample handling, preservation, packaging, and shipping requirements outlined in the project-specific sampling and analysis plan (SAP).

2.0 REQUIRED MATERIALS

Required materials may include the following:

- Sample containers (preserved, as necessary);
- Sample bottle labels;
- Chain-of-Custody forms;
- Sample cooler;
- Bubble wrap or other suitable packing material;
- "Blue Ice" (*i.e.*, reusable, freezable ice packs) or sealed bagged ice;
- Shipping bills (Federal Express, Airborne, etc.);
- Packaging tape; and,
- Zip lock plastic bags.

3.0 METHODOLOGIES

3.1 Sample Handling

Sample Containers

Sample containers and appropriate preservatives (where necessary) will be supplied by the analytical laboratory. After the respective sample containers have been filled with appropriate sample media and preserved as necessary, samples will be properly identified using sample container labels, and the samples will be stored at an appropriate temperature (usually <4°C) to preserve the integrity of the samples.

Sample Preservation

Preservatives will be supplied by the laboratory. Where possible, preserved containers should be supplied by the lab. Common preservatives include hydrochloric acid (HCl), sulfuric acid (H_2SO_4), nitric acid (HNO_3), or sodium hydroxide (NaOH). Samples will be preserved in accordance with EPA protocol specified in SW-846 or the project specific protocols outlined in the quality assurance project plan (QAPjP). Use of the preservatives will be noted on the COC for each particular sample and analytical parameter.

Sample Labels

Blank sample labels will be supplied by the analytical laboratory and affixed to the sample container. Sample labels will be completed using waterproof permanent markers or ink. The labels will be filled out at the time of sample collection by the field sampling personnel. The following identifying sample information will be included on the label:

- Client/Site;
- Sample identification alpha-numeric code;
- Sample collector's initials;
- Date and time (military) of sample collection;
- Analytical method; and,
- Laboratory analysis to be performed.

Chain-of-Custody Forms

A chain-of-custody (COC) record will be established and maintained to document sample possession from the time of collection until receipt by the laboratory. Once samples are received by the laboratory, they will be handled under the laboratory internal COC procedures. Field sampling personnel will initiate a COC record by recording the following minimum data as the samples are collected:

- Client/Site;
- Name(s) of sampler(s);
- Sample identification alpha-numeric code;
- Date and time (military) of sample collection;
- Type of sample (e.g., soil, groundwater);
- Number of containers per sample location;
- Requested analyses;
- Type of containers and preservatives used;
- Name and address for the competed laboratory reports;
- Name and address for the laboratory invoices; and,
- Specific instructions/notes for the laboratory, as necessary.

Sample COC forms will be placed in waterproof plastic bags and taped to the underside of the cooler lids. Sample COC forms will generally be supplied by the subcontracting analytical laboratory.

Subsequently, at each change of possession, the COC record will be signed by the person relinquishing the samples and by the person receiving the samples. The date and time of the transfer of possession of the sample will be recorded on the COC form; this occurs when the samples are transferred from the sampling personnel to the courier and when the samples are received at the analytical laboratory. Sample COC forms shall be completed in ink. Any transcription errors shall be corrected by striking the erroneous information with a single horizontal line. The correct information will be added immediately adjacent to the strikeout. The sampler should initial the correction. (Refer to SOP #105 for additional information).

3.2 Sample Packaging and Shipping

All samples will be transported to the analytical laboratory in durable, waterproof, secured metal or plastic coolers. Sample coolers will generally be supplied by the laboratory. All samples will be packaged very carefully to prevent sample breakage. Samples will be shipped *via* overnight carrier (*e.g.,* Federal Express, Airborne, United Parcel Service) or hand delivered to the analytical laboratory, generally within 48 hours of collection. However, project specific protocols will be checked to assure that specified sample holding times are not exceeded in the event that samples are not shipped on the same day that they were collected. Additionally, the sample security and preservation must be maintained if samples are not to be transported immediately to the laboratory. The following procedure should be followed for packaging samples for shipment to the laboratory for testing and/or analysis.

1. Place plastic bubble wrap matting or suitable material over the base and bottom corners of each cooler or shipping container.

2. Obtain a chain-of-custody record (similar to the example shown in Figure 1) and enter all the appropriate information as discussed above. Chain-of-custody records will include complete information for each sample. One or more chain-of-custody records shall be completed for each cooler or shipping container as needed to manifest each sample.

3. Place bubble wrapping or other suitable material around glass bottles and place standing upright on the base of the cooler, taking care to leave room for packing material and ice or equivalent. Rubber bands or tape may be used to secure wrapping completely around each sample bottle.

4. Place additional bubble wrap and/or Styrofoam pellet packing or equivalent material throughout the voids between sample containers within each cooler.

5. Place cold packs or ice in heavy duty "zip-lock" type plastic bags, completely close the bags, and distribute such packages over the top of the samples. Add additional bubble wrap and/or Styrofoam pellets or other packing materials to fill the balance of the cooler or container.

6. If shipping the samples by express, courier, or delivery service, sign the chain-of-custody record thereby relinquishing custody of the samples. The date and time of custody transfer should be recorded on the chain-of-custody form. The custody transfer should be documented when directly transferring custody to a receiving party or when transmitting to a shipping service for subsequent receipt by the analytical laboratory. The shipping service should not be asked to sign chain-of-custody records.

7. Remove the last copy from the chain-of-custody record and retain with the field records. Place the original and remaining copies in a "zip-lock" type plastic bag and tape the bag to the underside of the lid of the cooler or shipping container.

8. Close the top or lid of the cooler or shipping container and with another person gently rotate the container to verify that the contents are packed so that they do not move. Improve the packaging if needed and reclose.

9. Packaging tape should be wrapped entirely around the sample shipping containers. A minimum of two full wraps of packaging tape will be placed in at least two places on the cooler or shipping container. Some project-specific QAPjPs may require custody seals be placed on the sample shipping containers. Sign and date the chain-of-custody tape.

10a. When transporting samples by automobile to the laboratory, and where periodic changes of ice are required, the cooler should only be temporarily closed so that reopening of the cooler can be easily performed. In these cases, chain-of-custody will be maintained by the person transporting the samples and chain-of-custody tape need not be used. If the cooler is to be left unattended, then chain-of-custody procedures should be implemented.

10b. If shipment is required, transport the cooler to an overnight express package terminal or arrange for pickup. Obtain copies of all shipment records as provided by the shipping service.

11. Upon receipt of the samples, the analytical laboratory will open the cooler or shipping container and will sign "received by laboratory" on each chain-of-custody form. The laboratory will verify that the chain-of-custody tape has not been broken previously and that the chain-of-custody tape number corresponds with the number on the chain-of-custody record. The analytical laboratory will then forward the back copy of the chain-of-custody record to the sample collector to indicate that sample transmittal is complete.

4.0 QUALITY CONTROL

Quality control samples such as rinsate blanks and duplicates will be specified by the project QAPjP. A sample jar containing water should be sent as a temperature blank with each sample shipment requiring temperature preservation to ensure proper temperature is maintained. Also, a trip blank, provided by the laboratory will accompany shipments with samples intended for volatile organic chemical (VOC) analysis.

5.0 DATA RECORDING/MANAGEMENT

The documentation for supporting the sample handling, preservation, packaging and shipping will consist of chain-of-custody records, shipping records laboratory reports. In addition, a description of sample packaging procedures will be written in the Field Log Book. All documentation will be retained in the project files.

6.0 REFERENCES

U.S. Environmental Protection Agency, 1986. *RCRA Groundwater Monitoring Technical Enforcement Guidance Document.* OSWER-9950.1. September 1986.

U.S. Environmental Protection Agency, 1986. *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods,* SW-846 3rd Edition (with revisions).

U.S. Environmental Protection Agency, 1987. *A Compendium of Superfund Field Operations Methods, Part 1.* EPA/540/P-87/001. December 1987.

U.S. Environmental Protection Agency, 1991. *Compendium of ERT Groundwater Sampling Procedures.* EPA/540/P-91/007. January 1991.

#117 - GROUNDWATER SAMPLING

SCOPE AND PURPOSE

This section presents the methods and equipment necessary for collection of groundwater samples. The procedures presented are based on standard industry practices and are usually required by state and federal agencies.

APPLICABILITY

These procedures are applicable to groundwater sampling programs for evaluating conditions at hazardous and solid waste disposal facilities and non-regulated sites.

DEFINITIONS

All terms in this section are in common usage or are defined within the text.

PROCEDURES

The standard procedures outlined below may be modified on a site-specific basis depending upon the constituents of interest, the ultimate data usage, and in recognition of agency policies. Methods deviating from the Key Environmental, Inc. (KEY) SOP should be discussed in the preparation of the sampling plan and revisions approved by the Project Manager and the Geosciences Manager.

Groundwater samples are generally not to be collected less than one to two weeks after well installation is completed. This should be taken into account when developing a schedule for implementation and completion of a field investigation.

EQUIPMENT

An extensive equipment list is included to aid in preparation of the sampling event (Appendix 117-A). In most cases, a pump or bailer can be used for purging and sampling. The type of pump or bailer selected will be dependent upon the well diameter, depth to water, and, in some cases, the sample parameters. There are many available pump models manufactured; several are discussed below:

X **Suction Lift Pumps**

Advantages:
- Readily available, relatively portable, and inexpensive.

Disadvantages:
- Use is limited to situations where depth to water is less than 20 feet.

- Reducing the pressure on the water may cause the volatile organic compounds (VOCs) to come out of solution. These pumps are not recommended for sample collection.

X **Portable Submersible Pumps**

Advantages:

- Portable; can be used to sample several monitoring wells in a brief period of time.

- Dependent upon the size of the pump and pumping depths; relatively large pumping rates are possible.

Disadvantages:

- Most submersible pumps require a minimum well casing inside diameter of 4 inches.

X **Air Lift Pumps**

Advantages:

- Portable; light-weight; easily transported and handled in the field.

- Capable of handling lifts of as much as 100 feet.

- Capable of producing flows of several gallons per minute (flow rate is dependent on lift).

Disadvantages:

- Air contacts the sample, which can cause a loss of volatile fraction; consequently, not acceptable for collecting samples for organic analysis.

- Not suitable for collecting samples for pH sensitive parameters such as metals.

- Requires bottle gas or oiless air compressor to drive the pump.

X **Bladder Pumps**

Advantages:

- Portable light-weight; easily transported and handled in the field.

- Small diameter pumps are available, which can easily accommodate 2-inch diameter monitoring wells.

- Drive gas does not touch sample; generally accepted method for collecting samples for all groundwater testing parameters.

Disadvantages:

- Slow pumping rates make them inefficient for pumping large volumes of water.

- Require compressed gas source, either bottled gas or oiless air compressor.

Bailers used by Remcor are constructed of various materials (Teflon™, stainless steel, or polyvinyl chloride) and are available in various diameters and lengths. Additional bailer options include bottom or top filling and bottom or top draining. The appropriate bailer should be identified in the site work plan in accordance with specific study needs:

Advantages:

- Able to be constructed from a wide variety of materials compatible with the parameter of interest.

- Sufficiently economical and convenient to allow a separate bailer to be assigned to each well to minimize the potential for cross contamination.

- No external power source required.

- Low surface to volume ratio reduces outgassing of volatile organics.

Disadvantages:

- Sometimes impractical to evacuate stagnant water in a well with a bailer.

- Transfer of water sample from bailer to sample bottle can cause aeration.

- Cross contamination can be a problem if equipment is not adequately decontaminated prior to each use.

GROUNDWATER PURGING/SAMPLING

All pertinent information should be documented in the field notebook(s) and on the Groundwater Well Purge Sheet. Prior to on-site activities, the sampling team members should read and clearly understand the site-specific sampling plan. The following methods should be followed at all sites unless alternate procedures are specifically addressed in the sampling plan:

Step 1 The land surface around the well protective casing should be covered with plastic sheeting to limit contact between the ground surface and purging/sampling equipment.

Step 2 Measure the depth to the static water level and the total depth of each well from the top of the well casing and record the data in the field notebook. Subtract the depth to static water from the total well depth to calculate the length of the water column in each well.

Step 3 Calculate the volume of water in the well according to the following formulae:

$$V_{cf} = (r^2)(L)$$

where:

V_{cf} = volume of water in cubic feet (ft3)

r = radius of the well in feet

L = length of the water column in feet.

and

$$V_{gal} = V_{cf} \text{ x } 7.481$$

where:

V_{gal} = volume in gallons

V_{cf} = volume in ft^3

Step 4 Measure sufficient length of rope and/or discharge line necessary for bailer or pump as appropriate.

Step 5a Unless directed otherwise by the sampling plan, Ipump) install the pump with the pump intake located immediately above the screened portion of the well. If a pump is not dedicated to each well, the pump should be thoroughly rinsed with distilled water between each location and new discharge line should be used for each well. Care should be taken to sample the least impacted well first and subsequent wells sampled in ascending order of impact.

Step 5b A laboratory-cleaned bailer with new disposable rope attached should be used at each well. The rope should be cut to sufficient length to allow the bailer to be lowered to the bottom of the well. While purging with a bailer, care must be taken to minimize turbidity in the samples. Never let the bailer fall into the well, lower it slowly to the water surface. Fill the bailer from the top of the water column and retrieve slowly until the bailer is free of the water column.

Step 6 Measure the necessary purge volumes by pumping or bailing into a graduated bucket. If the purged water contains a nonaqueous phase (free product) or it is required by the sampling plan, the graduated bucket should be intermittently emptied into a larger storage container (55-gallon drum). If no free product is present and the water is not a hazardous waste, the purged water may be disposed of on the ground away from the top of the well. If sufficient water is not present for purging of the required volumes, the well should be bailed dry and permitted to recharge prior to sampling. The time required for purging should be recorded in the field notes and on the Groundwater Well Purge Sheet.

If feasible, sampling should follow immediately after purging; in general, within two hours of completion of purging. If additional time is required to allow the well to recover before sufficient water is available for sampling, this should be recorded in the field notes.

Step 7a Decrease the discharge rate and fill aliquots in the following order:
(for pumps)

- Field parameters, pH, specific conductance, temperature
X VOCs - there should be no headspace in these sample bottles
X Semivolatile organic compounds
X Pesticides and polychlorinated biphenyls
X Metals
X Water quality parameters (sulfate, chloride, nitrate, etc.)

Step 7b The initial bail after purging should be used to fill the VOC bottles and the
(for bailers) remainder for measurement of field parameters. Remaining sample bottles should be filled in the order indicated in Step 7a above.

Step 8 Preservatives should be added as appropriate after collecting each sample, excluding dissolved metals. The dissolved metals sample should be filtered using a 0.45-micron filter, then preserved as appropriate.

Sample labels can be affixed prior to sampling or following collection. The labels should be taped on the bottles using clear tape to prevent smearing or the labels falling off the bottles due to moisture.

Step 9 Record the approximate time of sample collection in the field notes and chain-of-custody (COC) form (SOP No. 105). Samples should be placed in iced coolers (4 to 10 degrees centigrade) immediately after collection.

Step 10 Dispose of all disposable rope and disposable health and safety equipment as solid waste unless otherwise directed in the sampling plan.

APPENDIX 117-A
EQUIPMENT LIST

Pumps (sized to well, specifications reviewed with respect to well installation and water levels);

Bailers (Teflon™, polyvinyl chloride [PVC], stainless steel; bottom or top-filling; bottom or top-draining);

Rope;

PVC discharge line (and other appropriate material);

Latex gloves (and other suitable protective clothing);

Water level indicator;

Garbage bags/plastic sheeting;

pH and specific conductance meters; thermometers;

Permanent markers;

Clear tape;

Packing tape;

Duct tape;

Chain-of-custody forms and seals;

Analytical request forms;

Preservatives, hydrochloric acid, nitric acid, sulfuric acid, sodium hydroxide);

pH paper;

Methanol;

Nitric acid ;

Spray bottles;

Distilled water;

Laboratory deionized water;

Groundwater Well Purge Sheets;

Paper towels;

Rags;

Alconoxo® soap;

Buckets (5-gallon);

Sample filtering system and 0.45-micron filters;

Blue ice or freezer bags and ice;

SS-gallon drums for containerizing purge water (when required);

Well keys;

Field logbook; and,

Key Environmental, Inc. SOPs

ATTACHMENT B

WELL NO.:

FTS

GROUNDWATER SAMPLE COLLECTION RECORD

Project No.: OM045808-091 **Date:** ______ **Time: Start:** ______ am/pm
Project Name: ______ **Finish:** ______ am/pm
Location: Grenada, MS
Weather Conditions: ______ **Collector:** ______
Print Sign

1. WATER LEVEL DATA (measured from top of well casing)

a. **Total Casing Length:** ______ (ft) b. **Well Casing Type:** ______

c. **Depth to Water:** ______ (ft) d. **Casing Diameter:** ______ (in)

e. **Length of Water Column:** ______ (ft) (a-c)

f. **Well Volume:** ______ (gal)

Conversion Factors (cf)
(e x cf = f)

Casing I.D. (in)	Conv. Fact.
1	0.041
2	0.163
3	0.367
4	0.653
6	1.470

2. WELL PURGE DATA

a. **Purge Method:** ______

b. **Field Testing Equipment:** ______

c. **Number of Well Volumes to Remove:** Three

d. **Required Total Purge Volume (1f x 2c):** ______

Vol. Purged (total gal)	Temp (°C)	pH (s.u.)	Spec. Cond.	Notes

3. SAMPLE COLLECTION INFORMATION

Sampling Method(s): ______

Sample Identification (name, time, date): ______

QC Samples (name, time, date): ______

Analytical Parameters and Methods: SVOCs (PAHs and Acid Extractable Phenolics)-8270C

Comments: ______

EQUIPMENT CALIBRATION FORM

FTS

INSTRUMENT: ______________________

SERIAL NO.: ______________________

DATE	TIME	PARAMETER		CALIBRATION READING	CALIBRATION RECORDED BY
		pH S.U.	4.00 S.U.	S.U.	
			7.00 S.U.	S.U.	
			10.00 S.U.	S.U.	
		Specific Conductivity(umhos/cm)		umhos/cm	
		Temperature (°C)		°C	

INSTRUMENT: ______________________

SERIAL NO.: ______________________

DATE	TIME	PARAMETER		CALIBRATION READING	CALIBRATION RECORDED BY
		pH S.U.	4.00 S.U.	S.U.	
			7.00 S.U.	S.U.	
			10.00 S.U.	S.U.	
		Specific Conductivity(umhos/cm)		umhos/cm	
		Temperature (°C)		°C	

APPENDIX I

CLOSURE CONSTRUCTION DOCUMENTATION REPORT FROM SURFACE IMPOUNDMENT CLOSURE

CLOSURE CONSTRUCTION
DOCUMENTATION REPORT
FOR
SURFACE IMPOUNDMENT CLOSURE
KOPPERS INDUSTRIES, INC.
GRENADA, MS

Prepared for:

BEAZER MATERIALS AND SERVICES, INC.
PITTSBURGH, PENNSYLVANIA

Prepared by:

KEYSTONE ENVIRONMENTAL RESOURCES, INC.
3000 TECH CENTER DRIVE
MONROEVILLE, PA 15146

PROJECT NO. 176975

DECEMBER 1989

DCC #R 415

TABLE OF CONTENTS

1.0 INTRODUCTION

This document presents a summary of the construction activities associated with the closure of the surface impoundment at the Koppers Industries, Inc. (KII), wood treating plant located in Grenada, Mississippi. The construction work was performed by Green and Green Construction Company, of Grenada, Mississippi. The work was inspected and supervised by Keystone Environmental Resources, Inc. (Keystone), on behalf of Beazer Materials and Services, Inc. (BM&S). BM&S, formerly Koppers Company, Inc., was the previous owner of the Grenada facility. BM&S has retained the status of "operator" of the surface impoundment and the responsibility for this unit under the terms of the sales contract with the new owner, KII.

The surface impoundment was constructed in the mid-1970's as part of the plant's wastewater management program and were used until 1988 to treat wastewater resulting from the wood preserving operations. No construction records exist in the company files, but verbal history indicates that the impoundment was constructed by excavating into the natural clay soils and the surface was mechanically compacted. Apparently, the excavated material was used to construct the dikes around the impoundment. During its operation, bottom sediment sludge (K001) (as defined in 40CFR Part 261.32) was generated. In the summer of 1988, all K001 sludge and visibly contaminated soils were removed from the impoundment and were shipped off-site. A description of these activities and copies of the waste manifests are included in Appendix C of this report.

This report contains the documentation of closure construction to verify that the impoundment has been closed in accordance with the approved closure plan. This report is divided into six sections. Section 2.0 contains a narrative description of the closure activities. Section 3.0 describes the inspection and quality control performed during construction. Section 4.0 presents the As-Built drawings of the completed construction and the survey plat with the deed restriction notification. Section 5.0 contains the construction schedule and Section 6.0 presents photographic documentation of construction activities. Appendix A contains the daily construction inspection reports. Appendix B contains the soil testing data and results. Appendix C contains a description of the sludge removal operations and copies of the waste manifests. The "Operator Certification of Closure" is contained in Attachment A and "Professional Engineer Certification of Closure" is contained in Attachment B.

2.0 CLOSURE ACTIVITIES

The following sections briefly describe the construction activities which were performed to complete closure of the surface impoundment in accordance with the approved plan. Additional information on closure construction activities is included in Appendix A in the form of construction inspection daily reports. A photographic record illustrating the construction activities is also included in Section 6.0, and these photographs are referenced in the descriptions of closure activities.

2.1 Health and Safety Training

Construction personnel received 40 hours of Hazardous Waste Operations and Emergency Response Training in accordance with the requirements of 29 CFR 1910.120. The training was conducted during the week of June 25, 1989.

Since all K001 sludges had previously been removed from the work area, Level D personnel protective equipment was used throughout the construction activities.

2.2 Construction Start-up Meeting

An informal, on-site construction start-up meeting was held on July 19, 1989. The meeting was attended by both the construction engineer and foreman from Green and Green Construction Company and the resident inspector and project manager from Keystone Environmental Resources, Inc. The construction activities, sequence and schedule were reviewed; construction quality assurance testing, inspections and responsibilities were discussed; and, questions concerning the execution of closure were discussed and resolved.

2.3 Site Preparation

Equipment was mobilized to the site during the week of July 9, 1989 and site preparation work began on July 12. Initially, the equipment consisted of a track hoe and a dozer. Additional pieces of equipment were mobilized throughout the job as was required to accomplish the construction. Site preparation work consisted of brush and fence removal, removal of rainwater from the impoundment, and proof-rolling of the subgrade. These activities are discussed in the following sections.

2.3.1 Clearing

The fence and all trees and brush within a ten foot wide area around the impoundment were removed prior to the completion of dewatering.

2.3.2 Impoundment Dewatering

In accordance with the letter, dated May 2, 1989, from the State of Mississippi, Bureau of Pollution Control, Industrial Pretreatment Division, accumulated rainwater was pumped from the impoundment to the Grenada POTW. Dewatering activities were initiated by Koppers Industries, Inc. personnel on June 19, 1989 and were completed by the contractor on July 18, 1989.

After dewatering was completed, the pump and intake and discharge hoses were taken to the plant's equipment wash down area and were decontaminated by steam cleaning. Both internal and external surfaces were decontaminated.

2.3.3 Subgrade Preparation

After the accumulated rainwater was removed from the impoundments, the subgrade was prepared by tracking with the dozer. Wet subgrade soils were conditioned by spreading them in order to expedite their drying (see Photo 2).

2.4 Excavation of Impoundment Dikes

When the subgrade was prepared, the impoundment dikes were excavated and placed into the surface impoundment as fill material (see Photos 3 and 4). Photo 5 shows the impoundment after placing and compacting the dike soils.

2.5 Soil-Bentonite Key Trench Excavation

After the impoundment dikes were excavated and placed in the impoundment, a key trench was excavated with the dozer around the perimeter. The trench was excavated into the existing side slopes of the impoundments to a depth determined from the slopes and elevations of the final contours. The excavated soil was placed into the impoundments as fill.

2.6 Soil Fill

After completion of the cut and fill of the dikes and key trench material, clean soil fill from an off-site borrow source was placed in the impoundments (See Photo 6). The fill was spread into lifts of approximately eight (8) inches, loose thickness and compacted to at least 90 percent of the maximum dry density obtained from the Standard Proctor Test Method for compaction (ASTM D-698). In-place densities were checked periodically throughout fill placement to verify that this minimum standard was met. The soil testing, conducted to approve the borrow source prior to construction and as quality assurance documentation during construction, is discussed in Section 3.2. Placement and compaction of the soil fill continued until the grades required for the soil-bentonite subbase were achieved.

2.7 Equipment Decontamination

After completion of the final soil fill lift, the dozer was decontaminated. Decontamination was accomplished by scraping, shovelling and sweeping all of the soil from the dozer. Soil removal was performed while the dozer was still within the limits of the impoundment. Following the removal of soil, the dozer was moved to the plant's concrete lined equipment wash down area. All remaining soil and dirt was removed by cleaning the dozer with steam and high pressure water. All rinseate was collected and conveyed to the wash down area sump, which connects to the plant wastewater treatment system. As required by the approved closure plan, soil removed from the equipment was placed in the impoundment beneath the soil-bentonite layer.

2.8 Soil-Bentonite Layer

Soil from a pre-approved off-site borrow source and bentonite were used to construct the clay barrier soil layer. Prior to construction, the borrow source was sampled. Soil from the borrow source was mixed with bentonite and the resultant soil-bentonite mixture was remolded and tested in the laboratory to demonstrate that the clay soil could be placed and compacted to achieve an in-place coefficient of permeability less than 1 x 10^{-7} cm/sec. The soil testing program and construction quality assurance program are discussed in Section 3.2.

The soil-bentonite layer was constructed by placing and spreading the soil into an eight (8) inch (loose thickness) lift over the entire impoundment. Bentonite was then applied to the soil at a rate of between 2.2 and 3.0 lbs/ft^3. The bentonite was mixed into the soil by tilling and/or disking until the bentonite was uniformly distributed throughout the soil lift (See Photos 7 through 13).

The soil-bentonite layer was then compacted with the rubber-tired roller. The soil-bentonite layer was compacted to at least 95 percent of the maximum dry density obtained from the Standard Proctor Test Method for Compaction (ASTM D-698). The moisture content was adjusted, as required, to assure that the placement soil moisture content exceeded the optimum moisture content for the soil.

To document that the constructed soil-bentonite layer had a coefficient of permeability less than 1 x 10^{-7} cm/sec, two "undisturbed" samples were obtained from each lift and tested in the laboratory (See Photo 14). The results of the laboratory permeability tests indicated that the original first lift of the soil-bentonite layer had a coefficient of permeability greater than 1 x 10^{-7} cm/sec and, therefore, did not meet the requirements of the approved closure plan. This lift was subsequently added to the soil fill zone and the elevations of the remaining cap components were adjusted accordingly. Four more soil-bentonite lifts totaling two (2) feet in thickness (compacted) were then placed using increasing amounts of bentonite. Following completion of placement of the last lift of the soil-bentonite layer, the final surface was shaped and graded to conform to the intent of the design drawings. The surface of the soil-bentonite layer was rolled smooth with a steel drum roller in preparation for the installation of the filter fabric and the drainage layer.

2.9 Geotextiles and Drainage Layer

A one-foot layer of drainage material was then placed over the soil-bentonite layer. Prior to construction, the drainage layer material was tested to verify that its coefficient of permeability was greater than 1 x 10^{-2} cm/sec. The drainage layer material was placed in a single, 12-inch thick lift and was compacted to at least 75% relative density. A non-woven geotextile was placed around the edge of the impoundment cap area and extended approximately two (2) feet beneath the drainage layer material (See Photos 17 and 18). Soil testing and quality control programs are discussed in Section 3.2. The drainage layer was completed by shaping the outer edges to a 4 horizontal to 1 vertical slope, lapping the geotextile over the slope and covering the layer with geotextile (See Photos 21-23). Photo 24 shows how the 18" overlap on the edges was stapled.

2.10 Cover Soil

Eighteen inches of cover soil was placed over the geotextile overlying the drainage layer. The first lift was placed by progressively placing and spreading the soil with end loaders so that the equipment did not track directly on the geotextile (See Photos 20 and 25). The soil was placed in lifts of approximately eight (8) inches, loose thickness and compacted with a rubber-tired roller. The cover soil was compacted to a dry unit weight corresponding to at least 90 percent of the maximum dry density obtained from the Standard Proctor Test method for Compaction (ASTM D-698).

2.11 Stone Protection

Stone protection was placed along the side slopes of the drainage layer against the filter fabric (See Photo 19). The two feet of coarse stone was placed to a slope of four (4) horizontal to one (1) vertical.

2.12 Top Soil

Top soil was placed over the coversoil layer (See Photo 26). A minimum of six (6) inches of topsoil was placed and spread to establish the finished elevations and slopes for the cap construction. The topsoil was placed and lightly compacted and then prepared for seeding.

2.13 Drainage Structure

A drainage channel was constructed along the western side of the capped surface impoundment to convey run-off away from the west area. The channel begins at the middle of the western side of the cap and extends past the southern end of the cap until it connects perpendicularly with an existing drainage channel that runs from west to east (See Photo 33). Surface grading was used around the remaining portions of the capped area to direct run-off away from the closed surface impoundment.

2.14 Vegetation

To complete the closure construction, the capped area was seeded and mulched to establish vegetal cover. The topsoil was prepared for seeding by applying fertilizer and tilling to incorporate the fertilize throughout the topsoil layer (See Photos 27-29). A seed mixture, consisting of the following:

Common Name	Rate (lbs/acre)
Bermuda Grass (Common) hulled	20
Fescue	35
Rye	112

was applied to the capped area by a hand seeder (See Photo 30). The seeded area was then mulched with straw at the rate of 4,000 pounds per acre. Immediately following the application of the mulch, it was lightly compacted with a tractor-pulled culti-packer which crimped the mulch into the seed bed (See Photo 31). Photo 32 shows an overview of the seeded cap.

3.0 CONSTRUCTION DOCUMENTATION AND QUALITY ASSURANCE

In order to insure that the construction was performed in accordance with the intent of the approved closure plan and the design drawings and construction specifications, Keystone provided a full-time resident inspector throughout most of the construction period. Additionally, a local soil testing consultant (Mid-South Testing Company) was used to provide soil testing services during the borrow source approval phase and throughout construction. Soil permeability testing was provided by Springer Engineering in Starkville, MS. These activities are summarized in the following sections.

3.1 Construction Inspection and Daily Reports

Keystone's resident inspectors were on-site during all construction activities except for dewatering, brush clearing and fence removal. The resident inspector was responsible for visual inspection of the closure construction, coordination of the testing conducted by the soils consultant, assisting the contractor with interpretation of the design drawings and specifications, and preparation of construction inspection daily reports. The construction inspection reports included information about the weather, contractor personnel, equipment employed, inspectors and visitors on-site, and a summary of the daily activities. Copies of these reports are included as Appendix A.

3.2 Soil Testing

Soil testing was performed prior to construction to approve the contractor's proposed borrow sources and during construction as quality assurance documentation. The testing performed during construction included both field testing and laboratory testing of samples from the construction. The various testing is described in the following sections and the test data and results are included as Appendix B.

3.2.1 Borrow Source Approval Testing

The contractor's proposed borrow source, for each of the soil layers required for the cap construction, was tested to verify compliance with the respective project material specifications. The unclassified soil fill, soil for the soil-bentonite layer and the cover soil were each tested to determine natural moisture content, grain size distribution, Atterberg Limits and moisture density relationship (Standard Proctor Test Method for Compaction ASTM D698). Samples of the soil-bentonite soil were also remolded, at the optimum moisture content, to a dry unit weight corresponding to 95 percent of the maximum dry unit weight obtained from the Standard Proctor Test and tested to determine the coefficient of permeability. The drainage layer material was tested to determine grain size distribution, coefficient of permeability and minimum and maximum densities. The topsoil material was tested to determine natural moisture content, grain size distribution and Atterberg Limits. The stone protection material was tested to determine grain size distribution.

3.2.2 Construction Quality Assurance Testing

Field testing of the various soil layers was conducted throughout the construction to verify that the fill materials were placed and compacted as required by the construction specifications and to verify that the construction satisfied the intent of the design.

3.2.2.1 Soil Fill

In-place density tests were performed on the soil fill. The tests indicated that the in-place density equalled or exceeded the dry density corresponding to 90 percent of the maximum dry density obtained from the Standard Proctor Test. Additionally, the corresponding moisture contents from these tests ranged from -0.9 percent to +1.9 percent of the optimum moisture content.

3.2.2.2 Soil-Bentonite Layer

In-place density tests and laboratory permeability tests were performed on the soil-bentonite soil layer. Sixty-three density tests and ten permeability tests were performed. All final density tests performed on the soil-bentonite layer indicated that the in-place dry density exceeded the dry density corresponding to 95 percent of the maximum dry density obtained from the Standard Proctor Test. The corresponding moisture contents exceeded the optimum moisture content except for three tests and they were within 1% of the optimum. Several of the moisture contents exceeded the limit of 3 percent above the optimum moisture content specified in the construction specifications; but, for these ten tests, the soil-bentonite layer did not exhibit any deflection under heavy equipment travel. Two samples of the in-place soil-bentonite layer were obtained on each soil-bentonite lift with 3-inch diameter shelby tube samplers. Each sample was tested in the laboratory to determine the coefficient of permeability of the soil-bentonite soil layer. The test results indicated that the first soil-bentonite lift did not meet the permeability requirements of the approved closure plan. This lift was left in place and incorporated into the soil fill zone, but that the next four lifts (2 feet total) did meet the required minimum permeability criteria.

3.2.2.3 Drainage Layer

In-place density tests were performed on the drainage layer. A total of eight density tests were performed. All final density tests performed on the drainage layer indicated that the in-place dry density exceeded 75 per cent relative density.

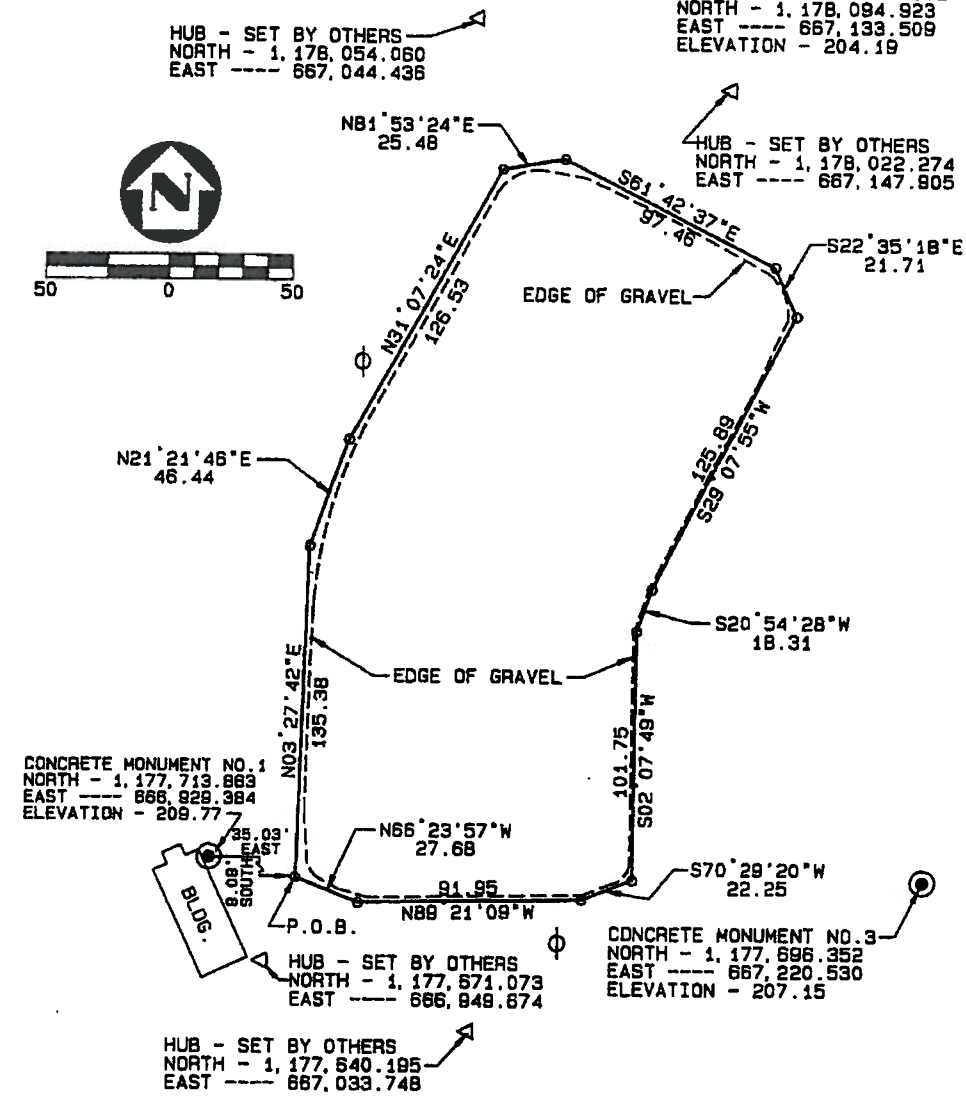
3.2.2.4 Cover Soil

In-place density tests were performed on the cover soil layer. A total of sixteen density tests were performed. All final density tests indicated that the in-place dry density exceeded 90 percent of the maximum dry density obtained from the Standard Proctor Test. The corresponding moisture contents averaged 4.3 percent below the optimum moisture content.

4.0 DRAWINGS

The following drawings show the plan view and the cross-sections of the cap and surface impoundment and the survey plat with deed restriction notification.

NOTE:
THE AREA DESCRIBED HEREON PREVIOUSLY CONTAINED A WASTE MANAGEMENT UNIT DESIGNATED U.S.EPA IDENTIFICATION NUMBER MSD 007027543.THE USE OF THE DESCRIBED AREA IS RESTRICTED AND ANY FUTURE USES MUST NOT DISTURB THE INTEGRITY OF THE FINAL COVER SYSTEM WITHOUT THE PRIOR APPROVAL OF THE STATE OF MISSISSIPPI DEPARTMENT OF NATURAL RESOURCES, BUREAU OF POLLUTION CONTROL.MAINTENANCE, INSPECTIONS AND MONITORING ARE TO BE PERFORMED IN ACCORDANCE WITH THE APPROVED CLOSURE/POST-CLOSURE PLAN.



-- DESCRIPTION --

A PART OR PARCEL OF SECTION 28, TOWNSHIP 22 NORTH, RANGE 5 EAST, GRENADA COUNTY, MISSISSIPPI AND BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

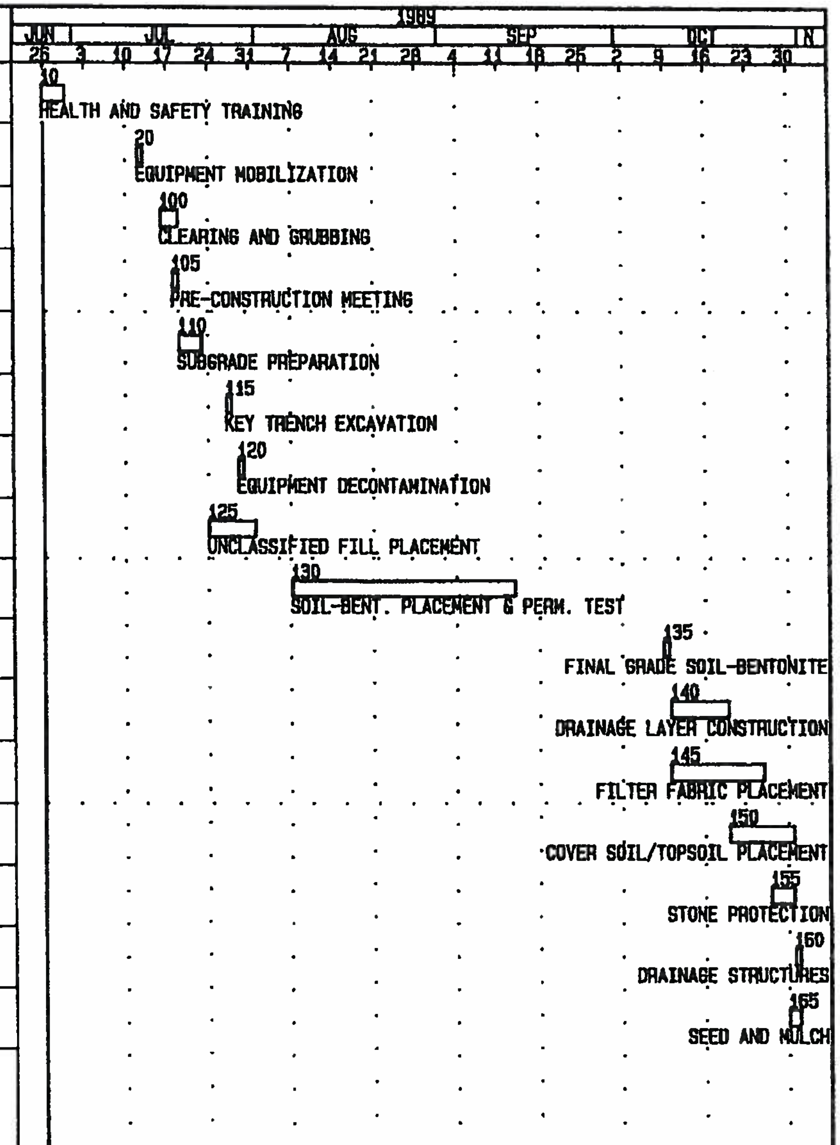
BEGINNING AT A POINT THAT IS 9.08 FEET SOUTH AND 35.03 FEET EAST OF CONCRETE MONUMENT NO.1 THENCE RUN NORTH 03°27'42"EAST FOR 135.38 FEET TO A POINT; THENCE RUN NORTH 21°21'46"EAST FOR 46.44 FEET TO A POINT; THENCE RUN NORTH 31°07'24"EAST FOR 126.53 FEET TO A POINT; THENCE RUN NORTH 81°53'24"EAST FOR 25.48 FEET TO A POINT; THENCE RUN SOUTH 61°42'37" EAST FOR 97.46 FEET TO A POINT; THENCE RUN SOUTH 22°35'18"EAST FOR 21.71 FEET TO A POINT; THENCE RUN SOUTH 29°07'55"WEST FOR 125.89 FEET TO A POINT; THENCE RUN SOUTH 20°54'28"WEST FOR 18.31 FEET TO A POINT; THENCE RUN SOUTH 02°07'49"WEST FOR 101.75 FEET TO A POINT; THENCE RUN SOUTH 70°29'20" WEST FOR 22.25 FEET TO A POINT; THENCE RUN NORTH 89°21'09"WEST FOR 91.95 FEET TO A POINT; THENCE RUN NORTH 66°23'57"WEST FOR 27.68 FEET TO THE POINT OF BEGINNING OF HEREIN DESCRIBED PARCEL OF LAND CONTAINING 40,729.681 SQ.FT.OR 0.935 ACRES MORE OR LESS.

I, JACK T.WILLIS,SR., HEREBY CERTIFY THAT I HAVE MADE A SURVEY OF THE LANDS DESCRIBED HEREINABOVE AND THAT THE PLAT AND DESCRIPTION OF SAID LANDS ARE TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.

WITNESS MY SIGNATURE, THE 9 DAY OF January 1990.

REGISTERED PROFESSIONAL ENGINEER NO. 4040
REGISTERED LAND SURVEYOR NO. 2344
MISSISSIPPI

ACTIVITY ID	ACTIVITY DESCRIPTION	ORIG DUR	EARLY START	EARLY FINISH
10	HEALTH AND SAFETY TRAINING	4	26JUN89	29JUN89
20	EQUIPMENT MOBILIZATION	1	12JUL89	12JUL89
100	CLEARING AND GRUBBING	3	16JUL89	18JUL89
105	PRE-CONSTRUCTION MEETING	1	18JUL89	18JUL89
110	SUBGRADE PREPARATION	4	19JUL89	22JUL89
115	KEY TRENCH EXCAVATION	1	27JUL89	27JUL89
120	EQUIPMENT DECONTAMINATION	1	29JUL89	29JUL89
125	UNCLASSIFIED FILL PLACEMENT	8	24JUL89	31JUL89
130	SOIL-BENT. PLACEMENT & PERM. TEST	38	7AUG89	13SEP89
135	FINAL GRADE SOIL-BENTONITE	1	9OCT89	9OCT89
140	DRAINAGE LAYER CONSTRUCTION	10	10OCT89	19OCT89
145	FILTER FABRIC PLACEMENT	16	10OCT89	25OCT89
150	COVER SOIL/TOPSOIL PLACEMENT	11	20OCT89	30OCT89
155	STONE PROTECTION	4	27OCT89	30OCT89
160	DRAINAGE STRUCTURES	1	31OCT89	31OCT89
165	SEED AND MULCH	2	30OCT89	31OCT89



Activity Bar/Early Dates
Critical Activity
Progress Bar

1984, 1985, 1986, 1987

SURFACE IMPOUNDMENT CLOSURE
BEAZER MATERIALS AND SERVICES, INC.
GRENADA, MS

Project Start : 26JUN89
Project Finish: 31OCT89

Sheet 1 of 1

Data Date: 26JUN89
Plot Date: 13DEC89

PREPARED BY: T. KIRCHNER 178078-10

Date	Revision	Checked	Approved

5.0 SCHEDULE

The following schedule identifies the start and completion dates of each activity during the closure.

6.0 PHOTOGRAPHS

The following photographs represent a brief pictorial account of the closure and are referenced in Section 2.0.

KOPPERS INDUSTRIES, INC.
GRENADA, MS PLANT

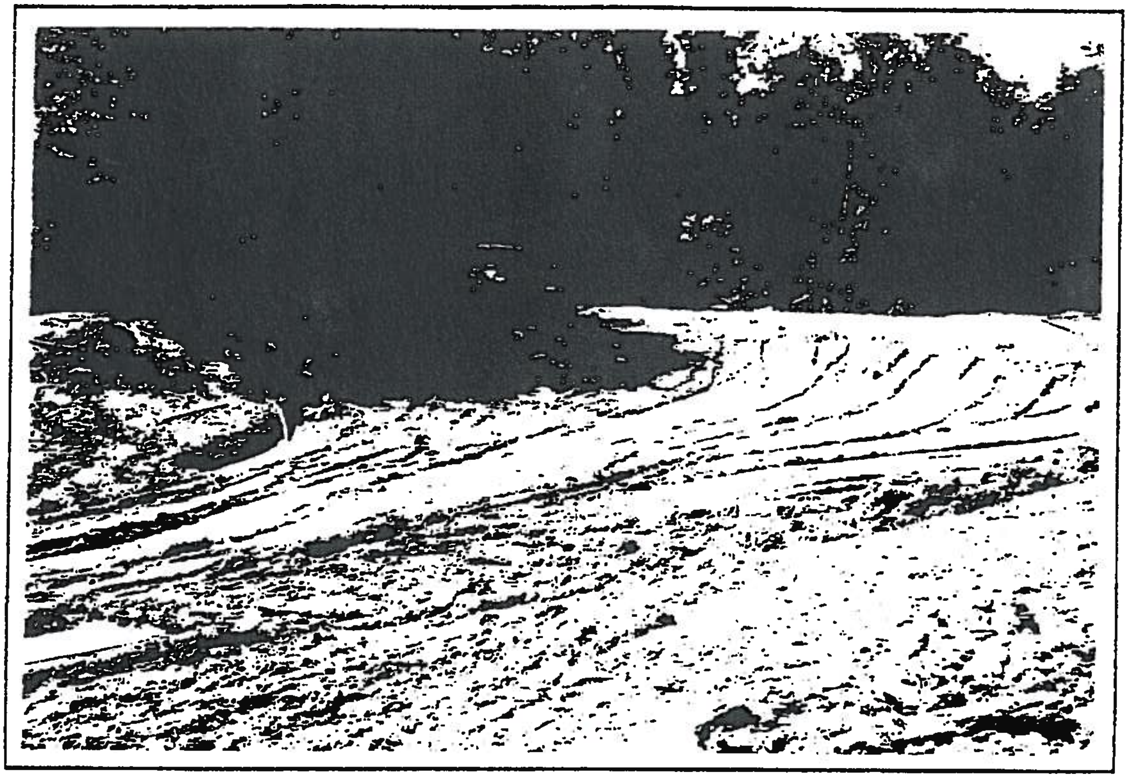


PHOTO 1: Subgrade Preparation: Dewatering and Tracking

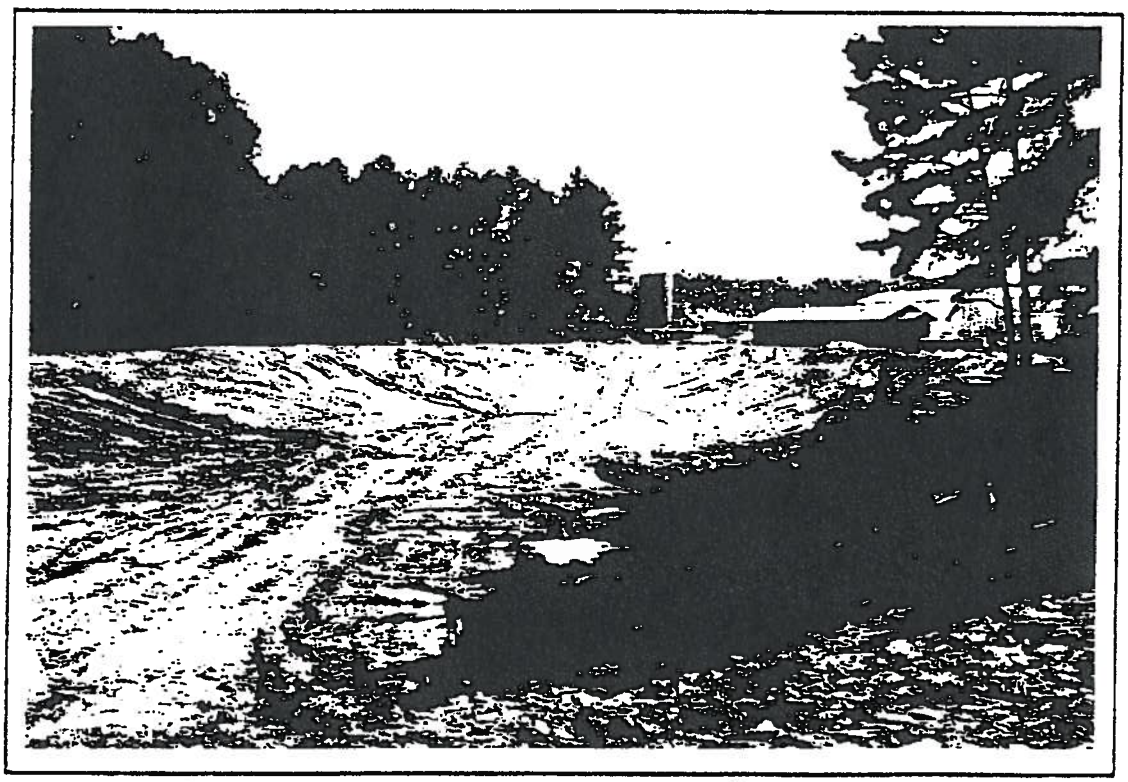


PHOTO 2: Subgrade Preparation: Spreading Soil to Dry

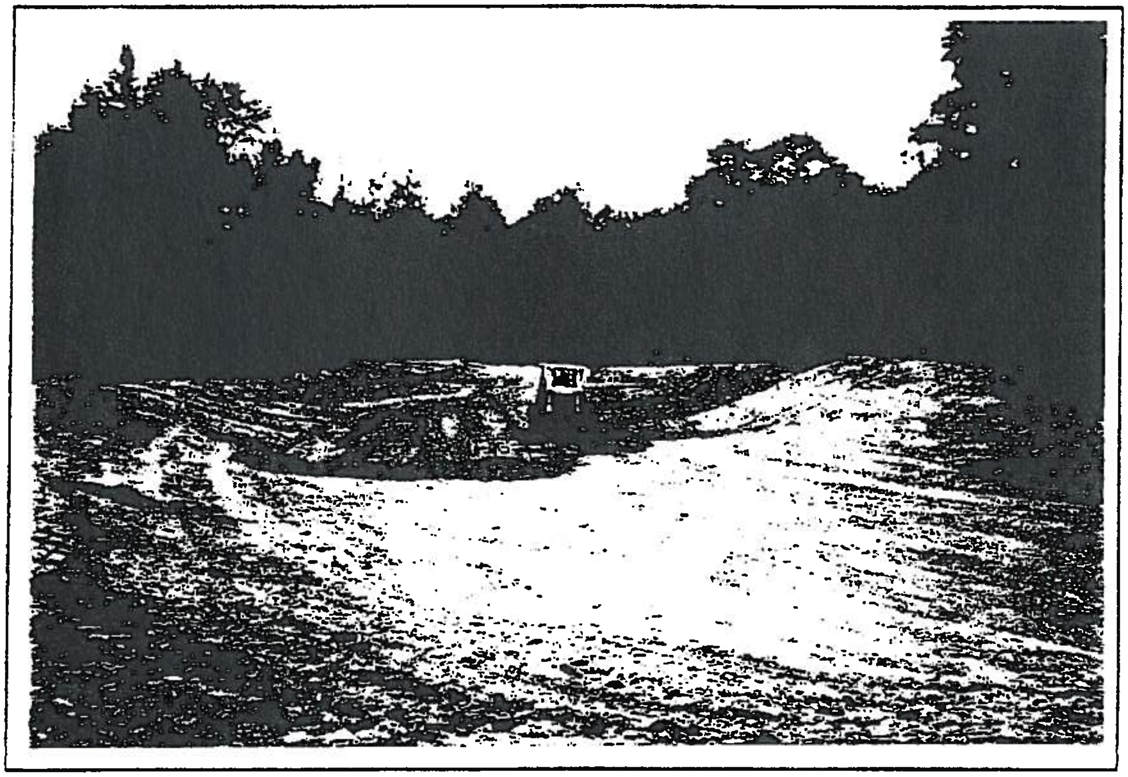


PHOTO 3: Cut and Fill of Dike Material Using D5H and D6H Dozers

PHOTO 4: Checking Grade Elevation During Cut and Fill

PHOTO 5: Rolled Surface During Cut and Fill

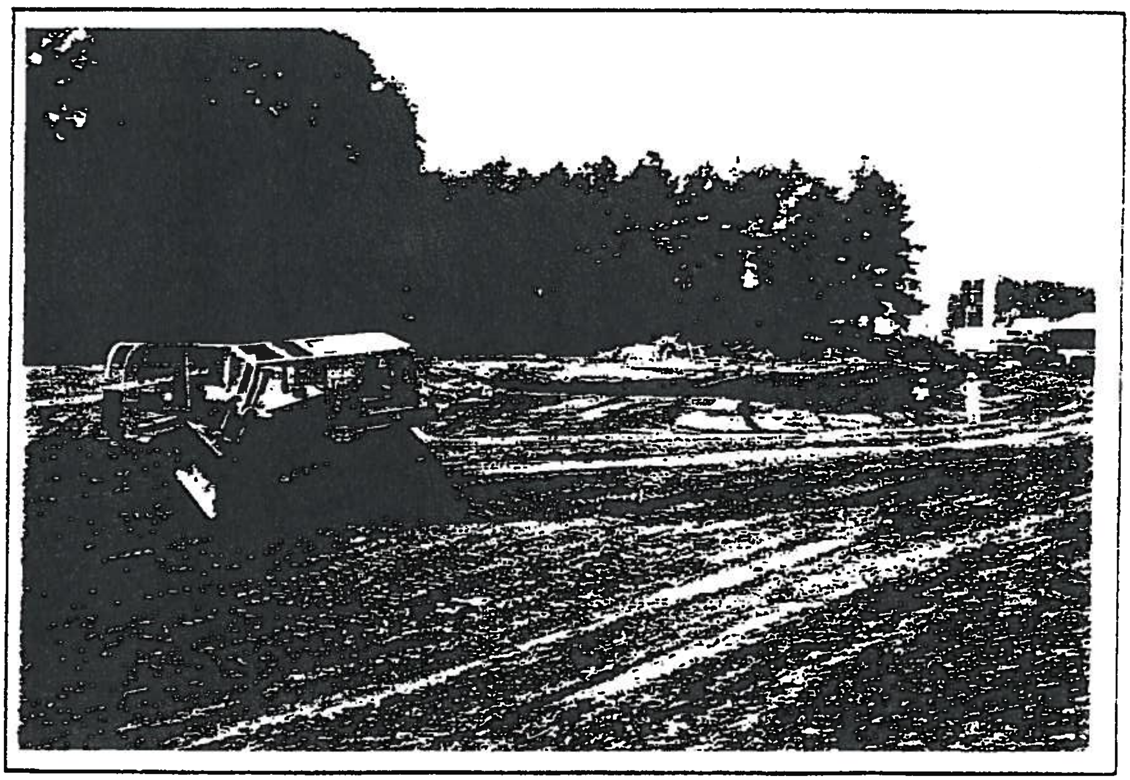


PHOTO 6: Beginning of Unclassified Fill

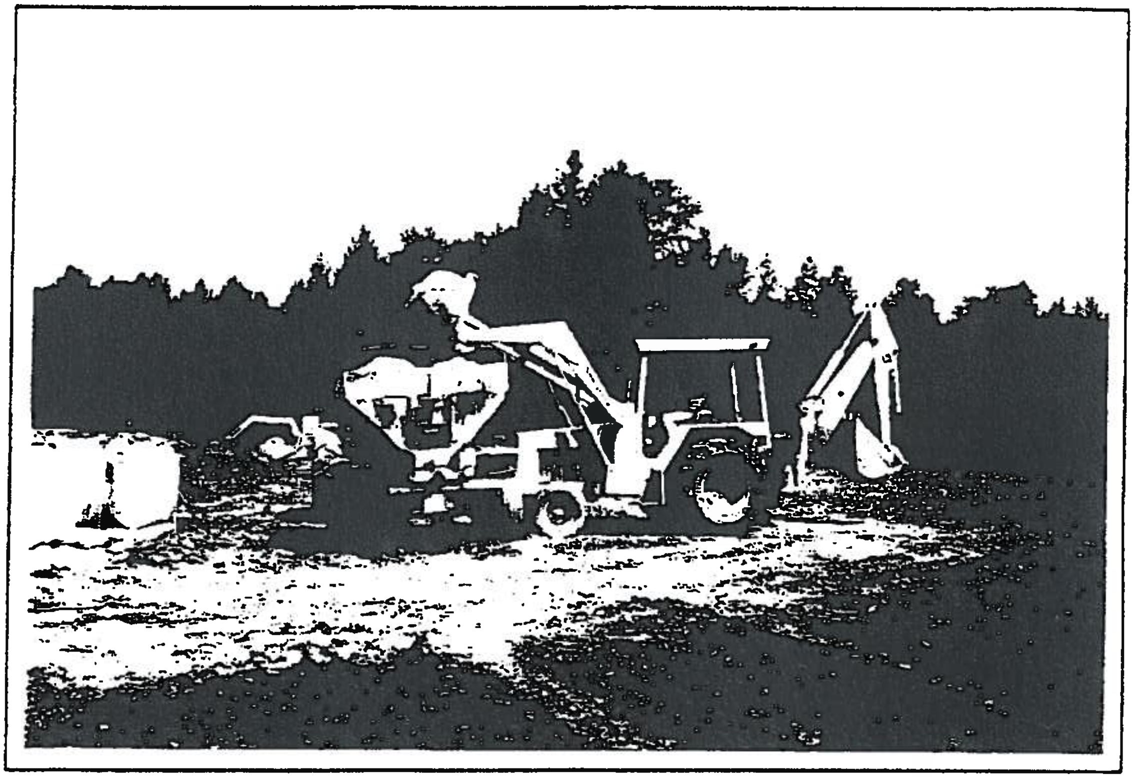


PHOTO 7: Loading Bentonite into the Spreader with the Backhoe

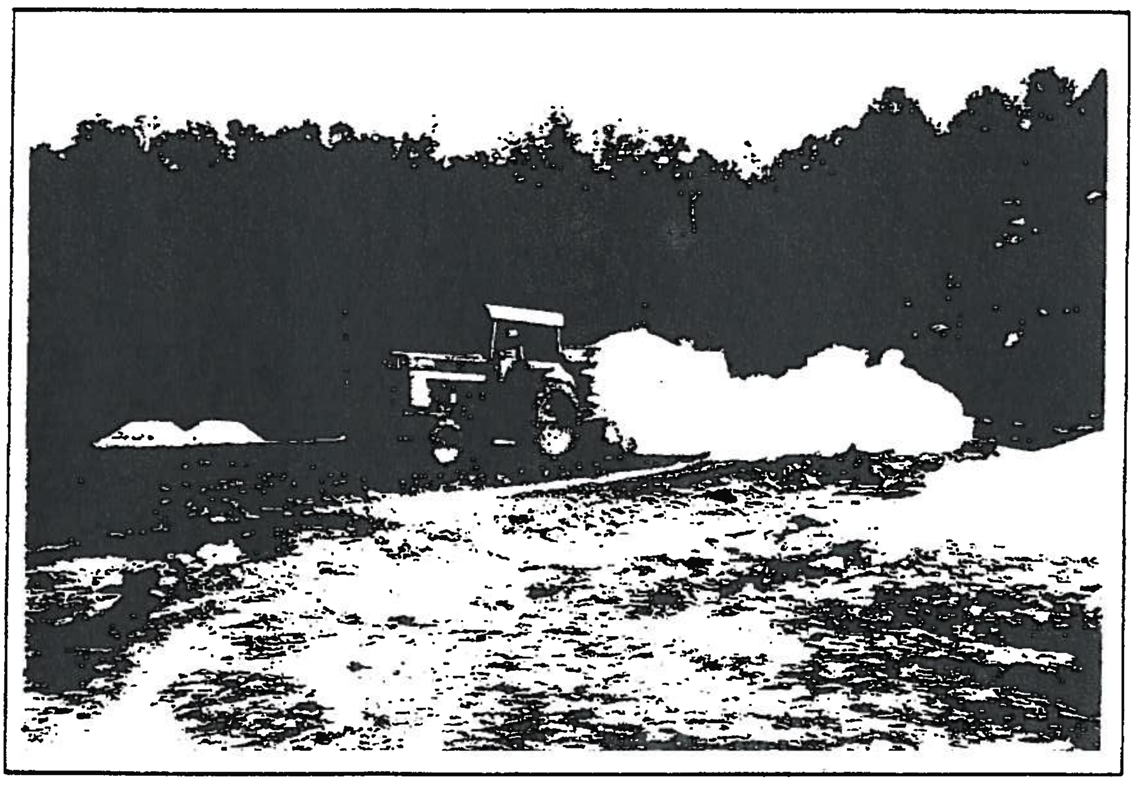


PHOTO 8: Spreading Bentonite

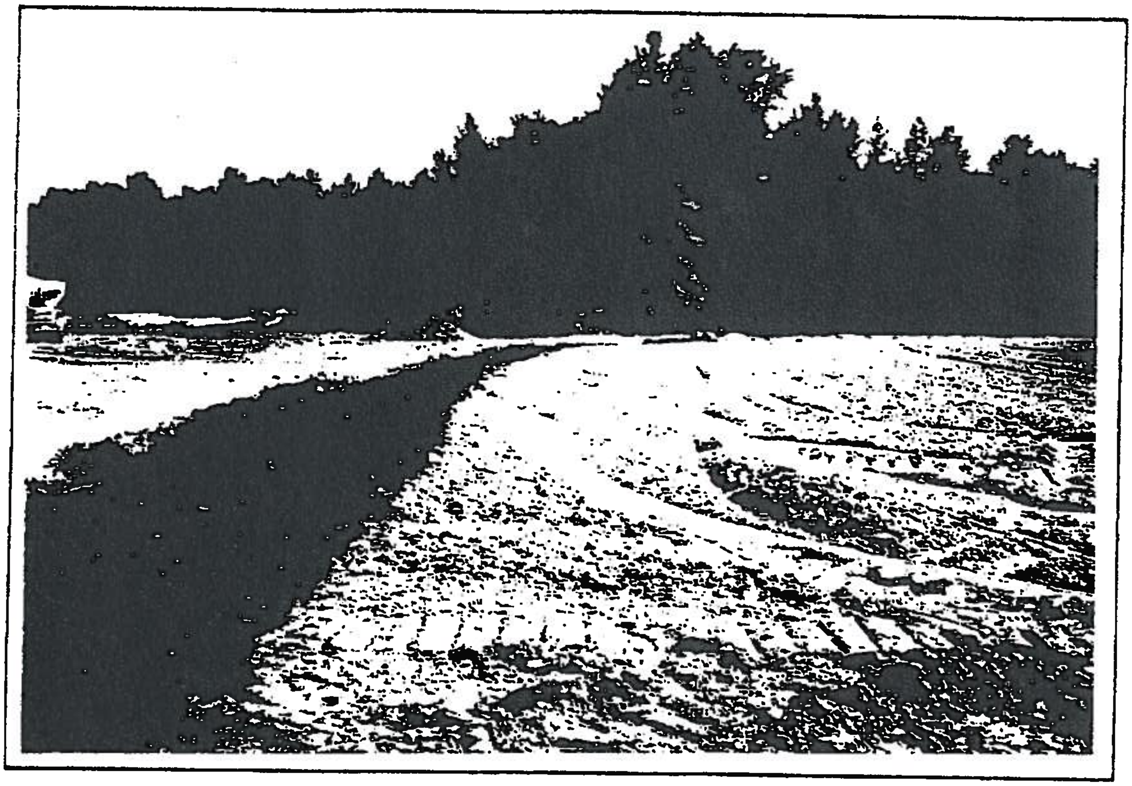


PHOTO 9: Soil-Bentonite Surface After Spreading Bentonite

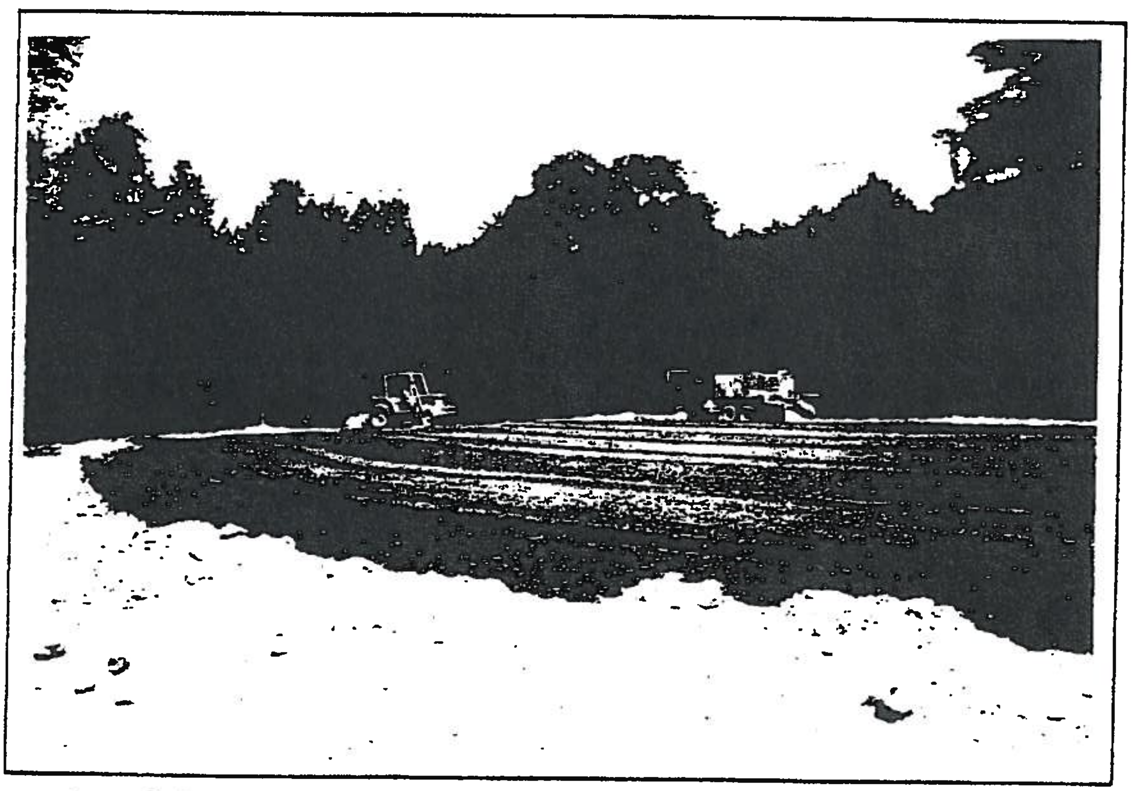


PHOTO 10: Watering and Tilling Soil-Bentonite

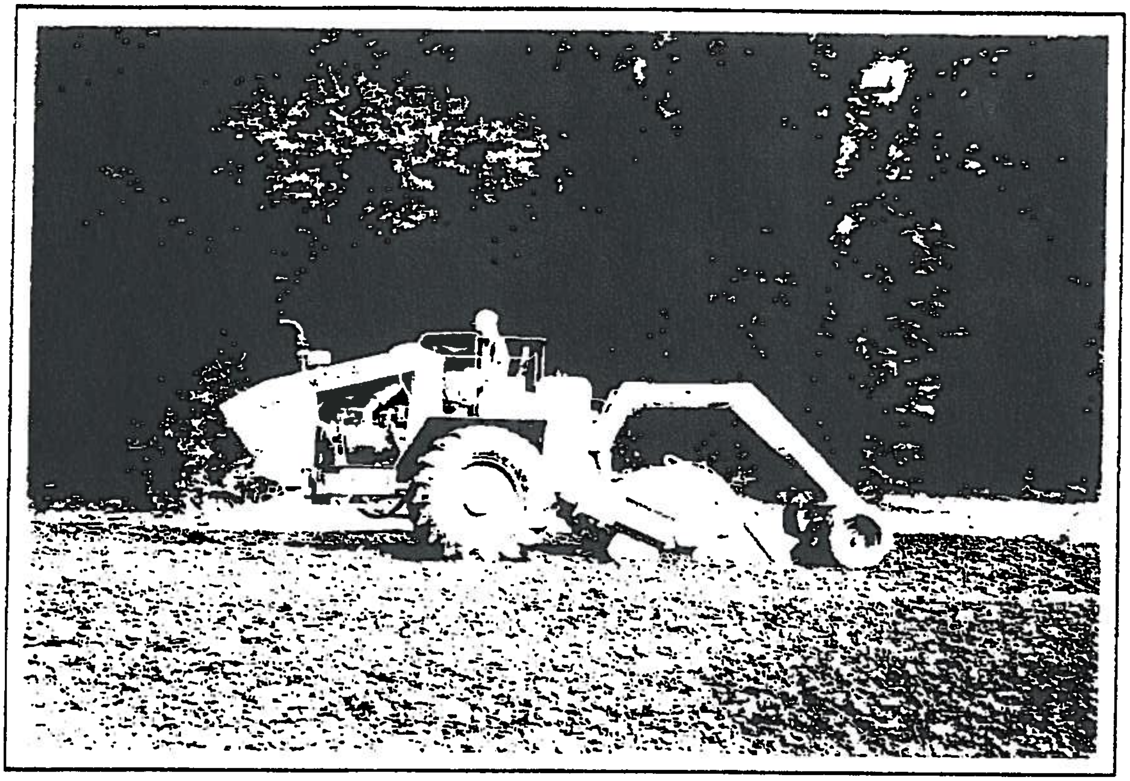


PHOTO 11: Tilling Soil-Bentonite

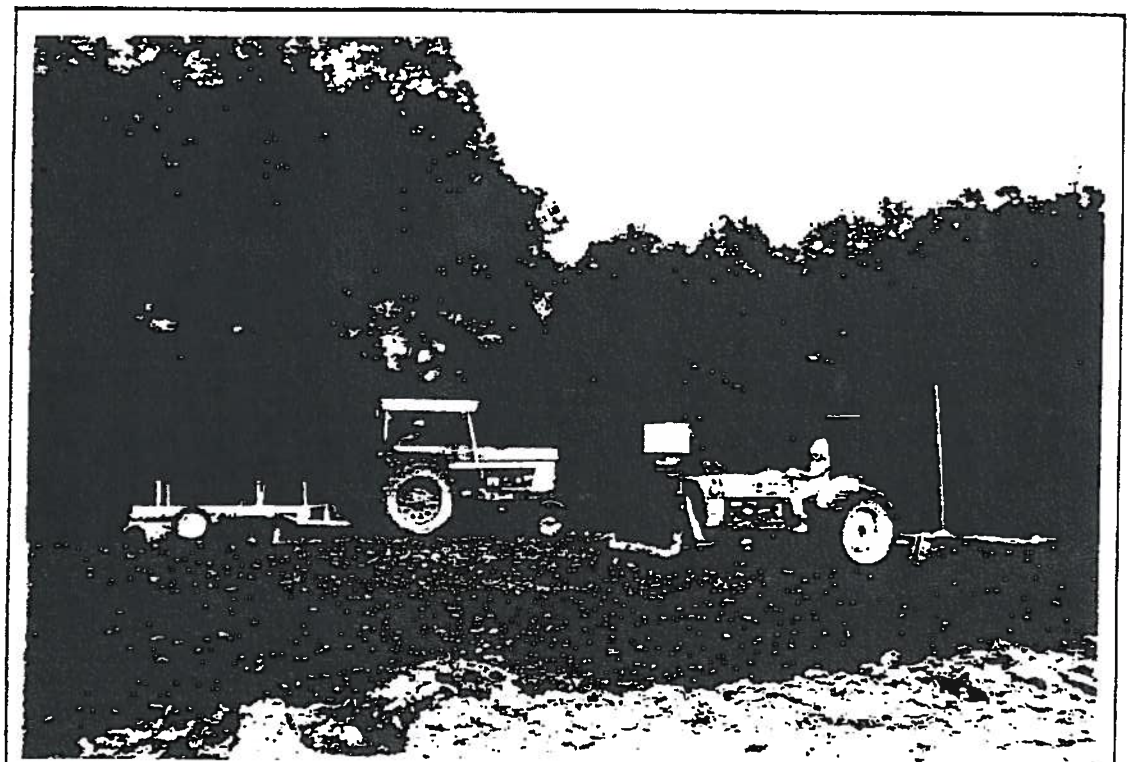


PHOTO 12: Disking and Tilling Soil-Bentonite

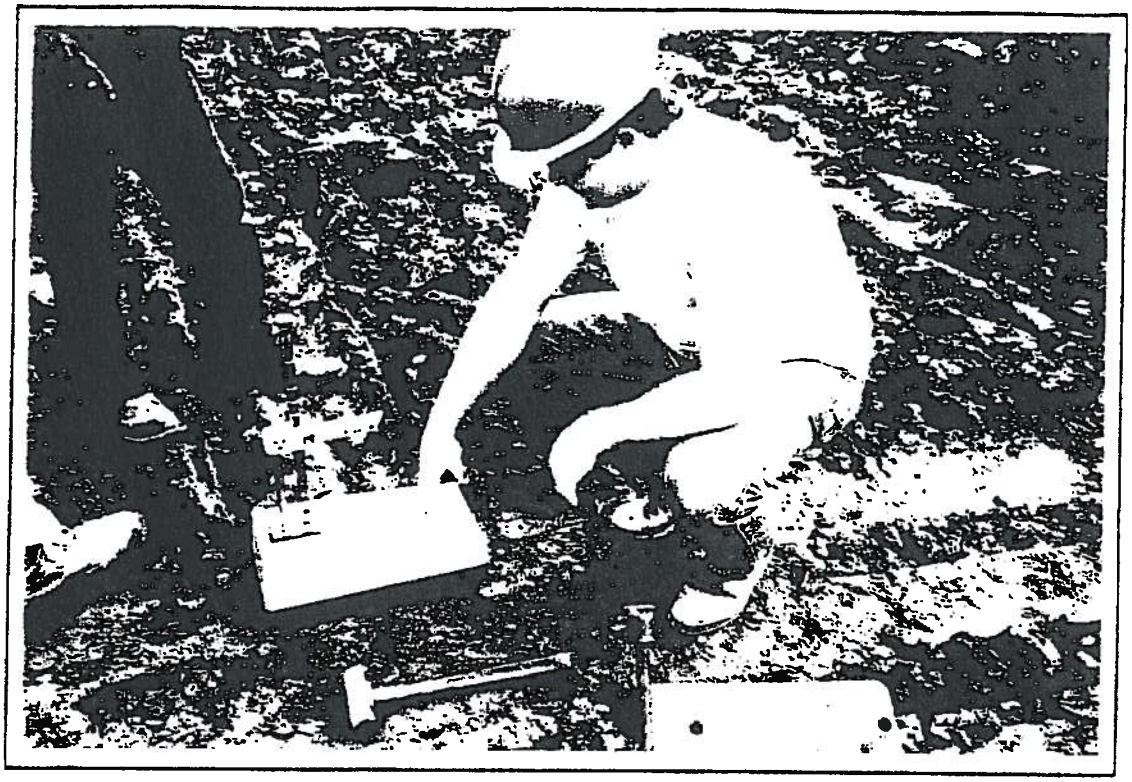


PHOTO 13: Checking Moisture Content with Humboldt Nuclear Tester

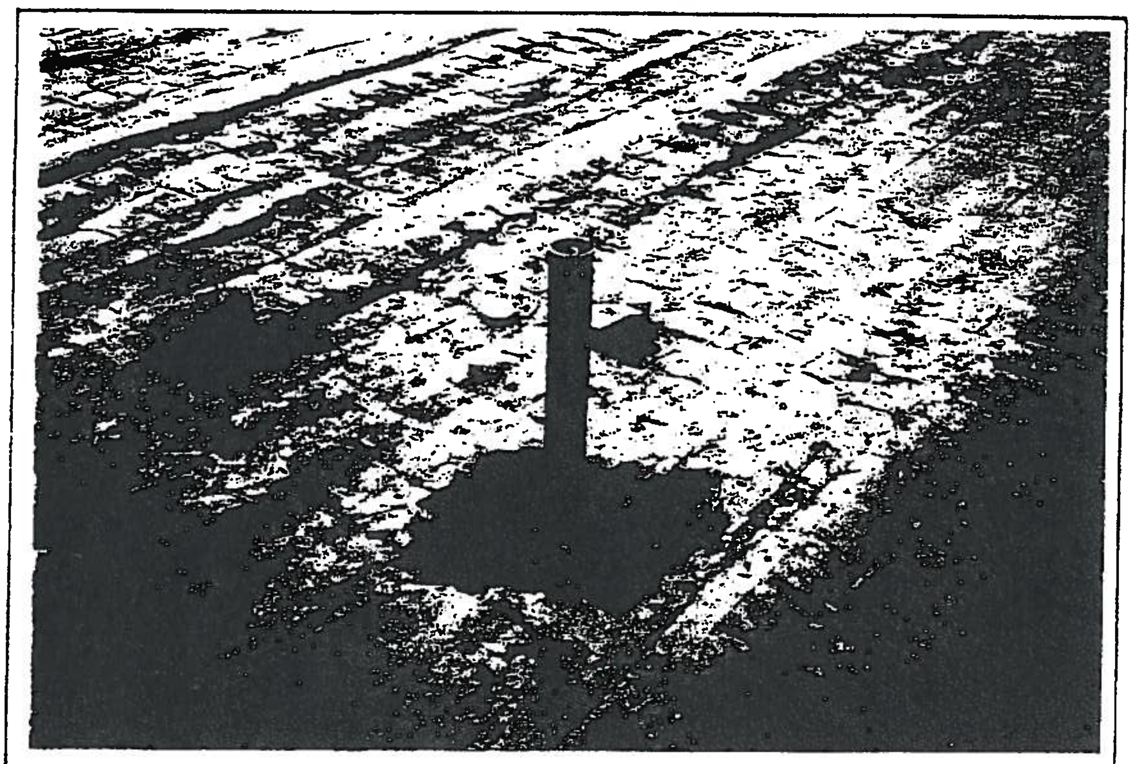


PHOTO 14: Digging Out Shelby Tube

PHOTO 15: Old Feeder Lines to Lagoon

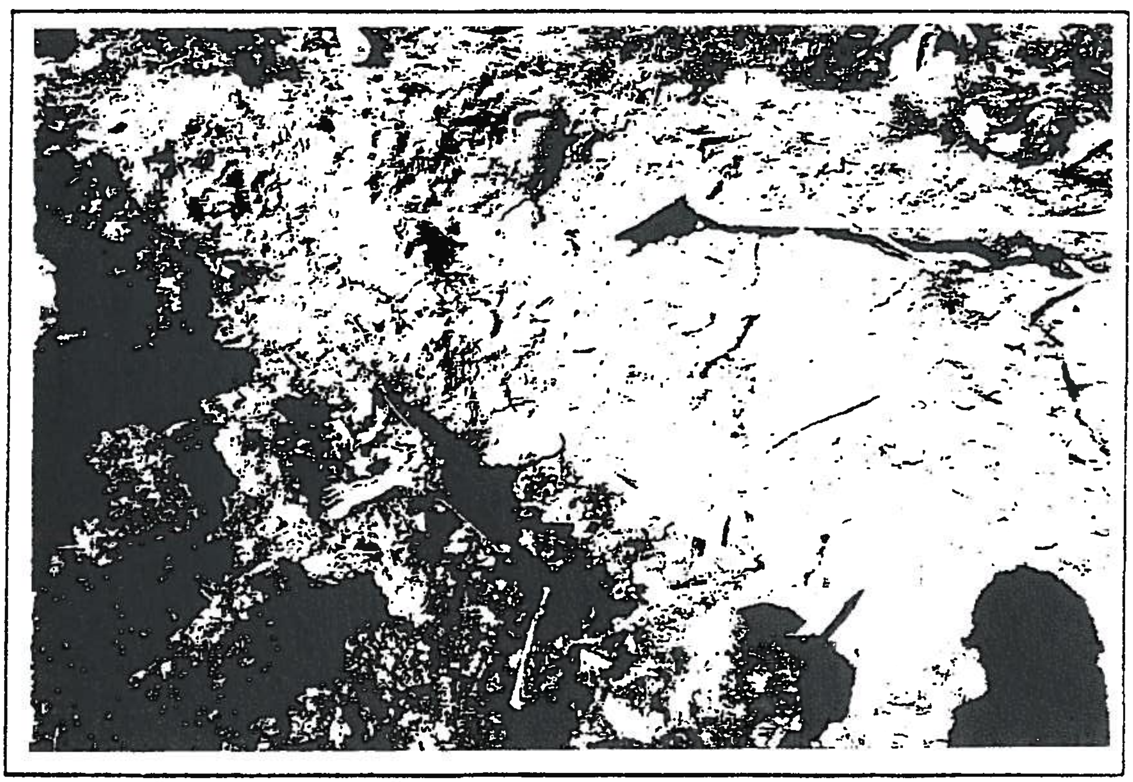


PHOTO 16: Old Feeder Pipes to Lagoon - Cut and Backfilled 10' with [illegible]

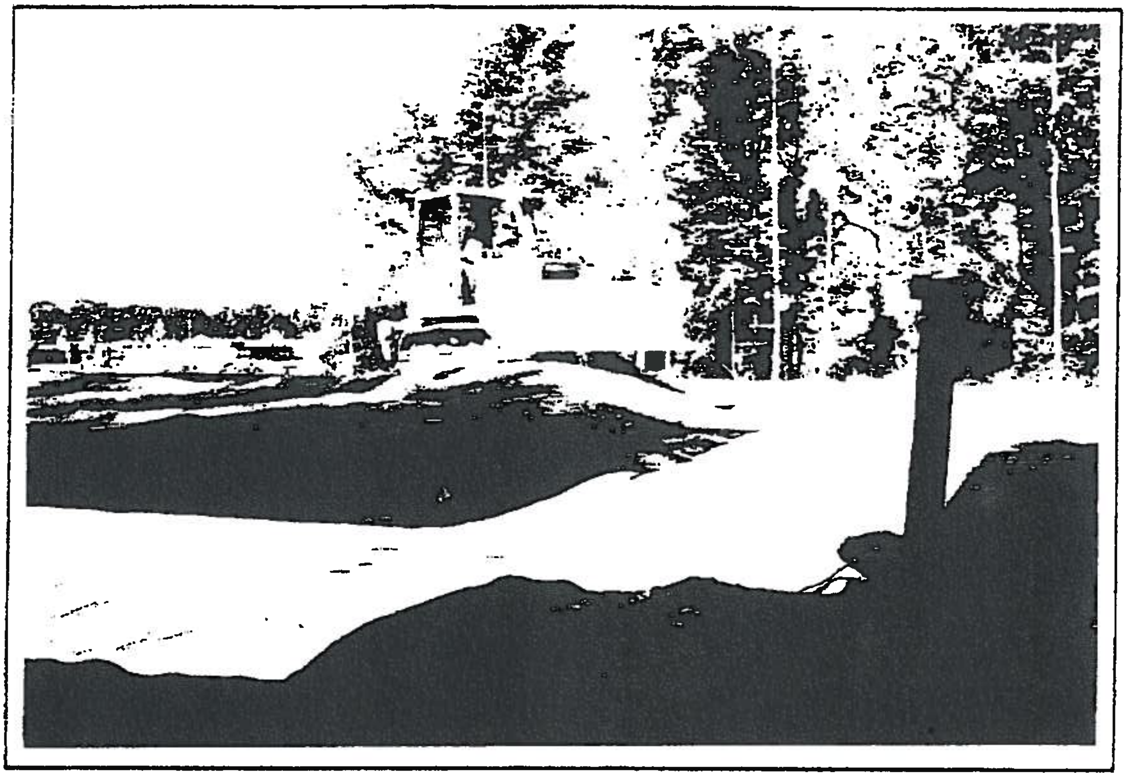


PHOTO 17: Pushing Sand (Drainage Layer) into Position with 850D Dozer

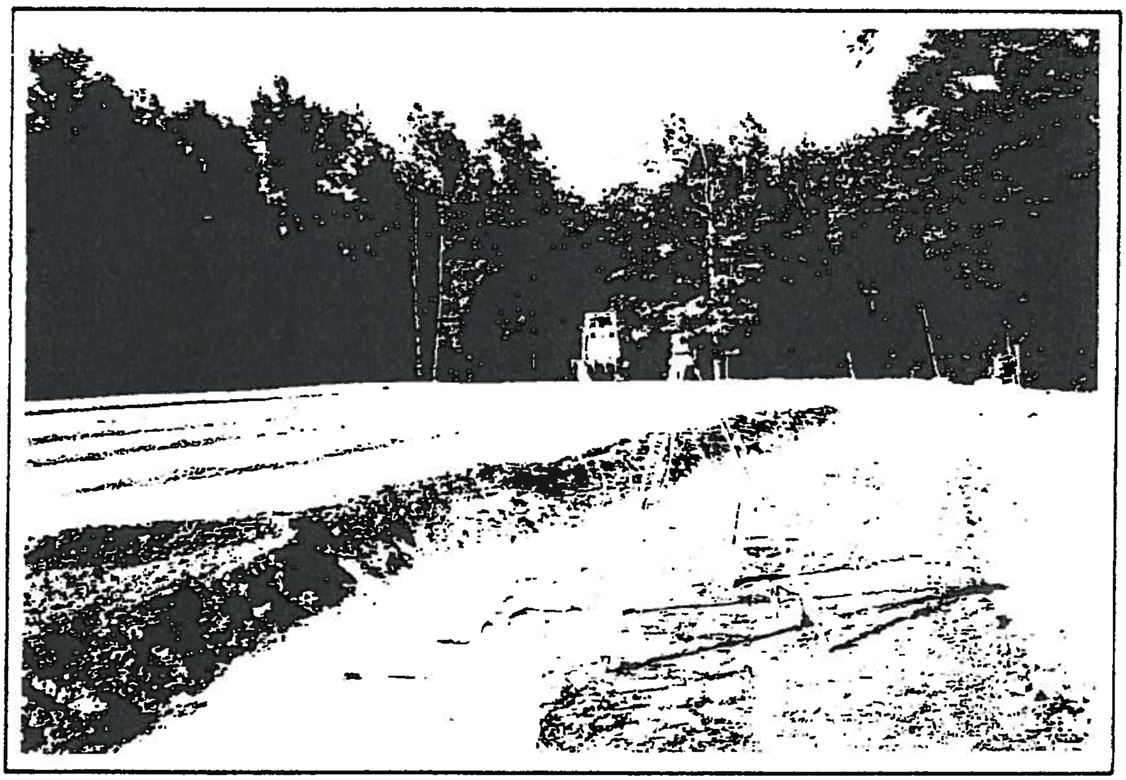


PHOTO 18: 850D Dozer Grading Drainage Layer

PHOTO 19: South End: Raking Gravel into Position

PHOTO 20: Placing Filter Fabric onto Drainage Layer and Pushing Cover Soil onto the Fabric

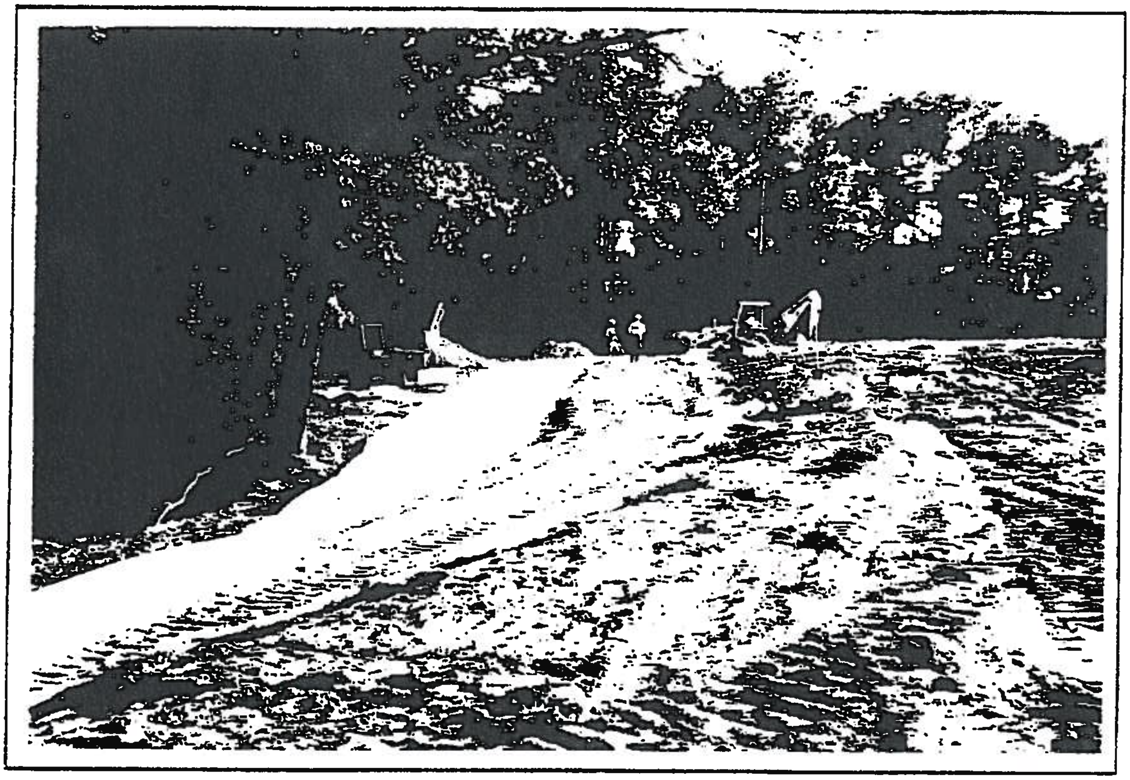


PHOTO 21: Folding Filter Fabric back over the Ten-Foot Extension

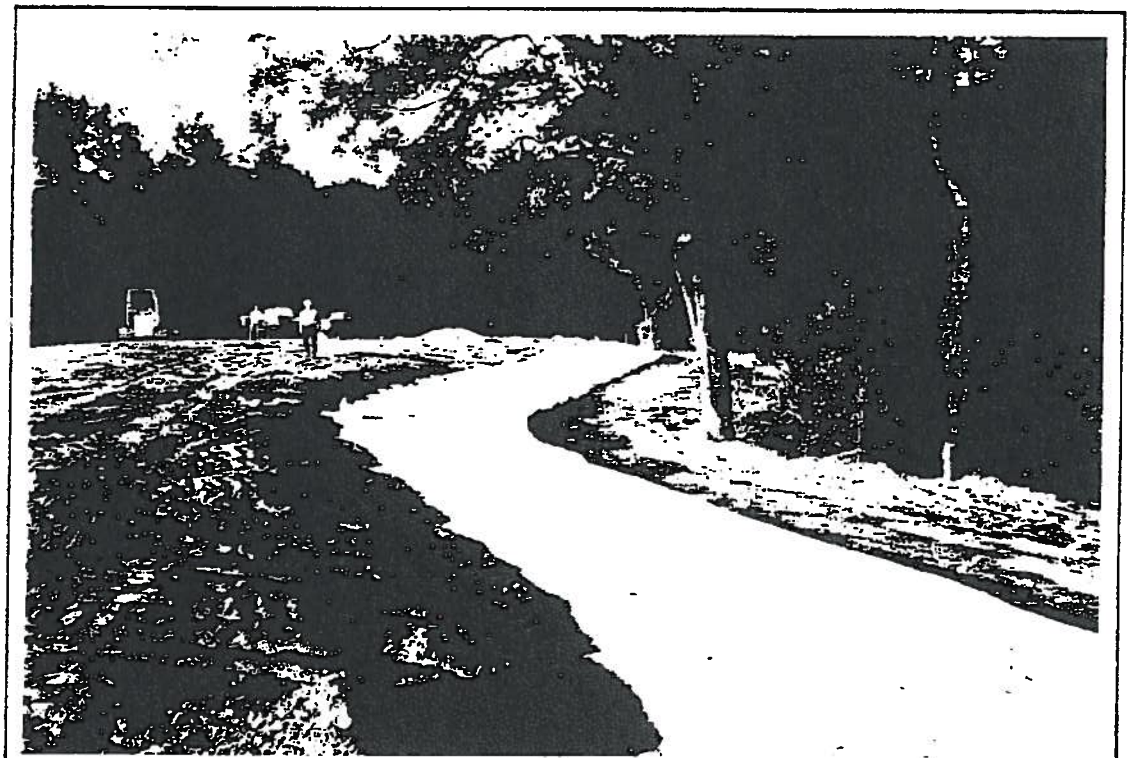


PHOTO 22: East Side Extension: Ready for Cover Soil

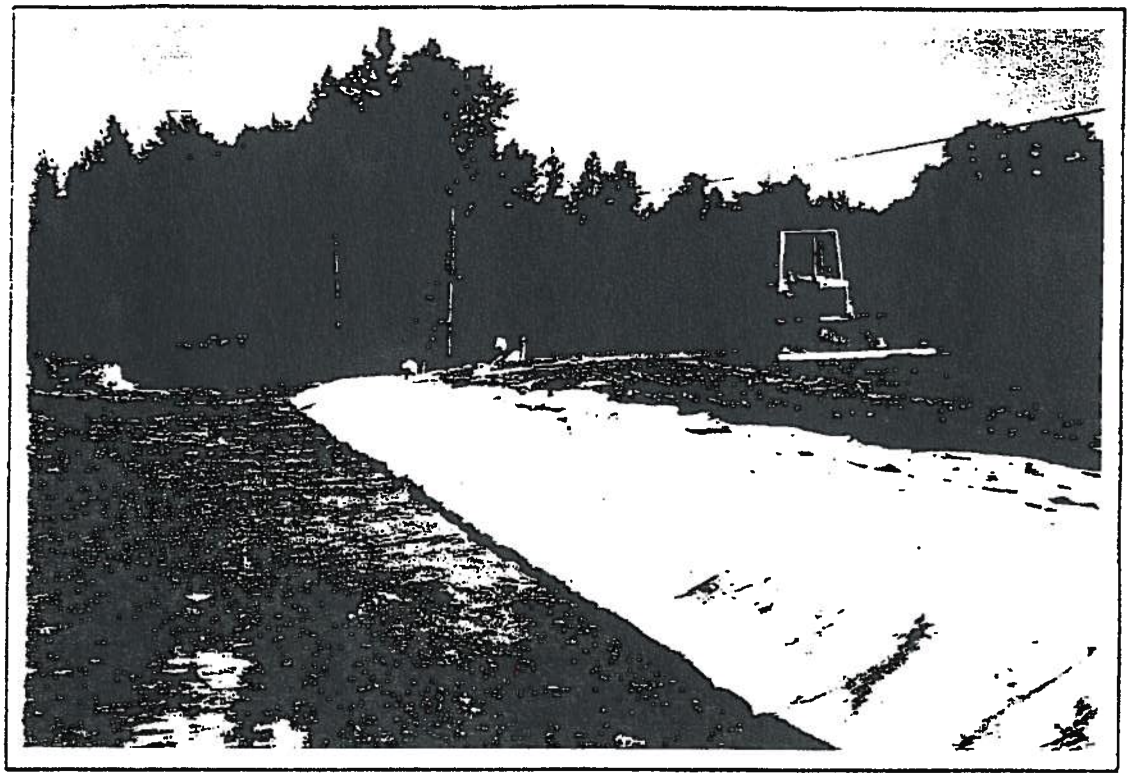


PHOTO 23: Folding Back Filter Fabric on West Side

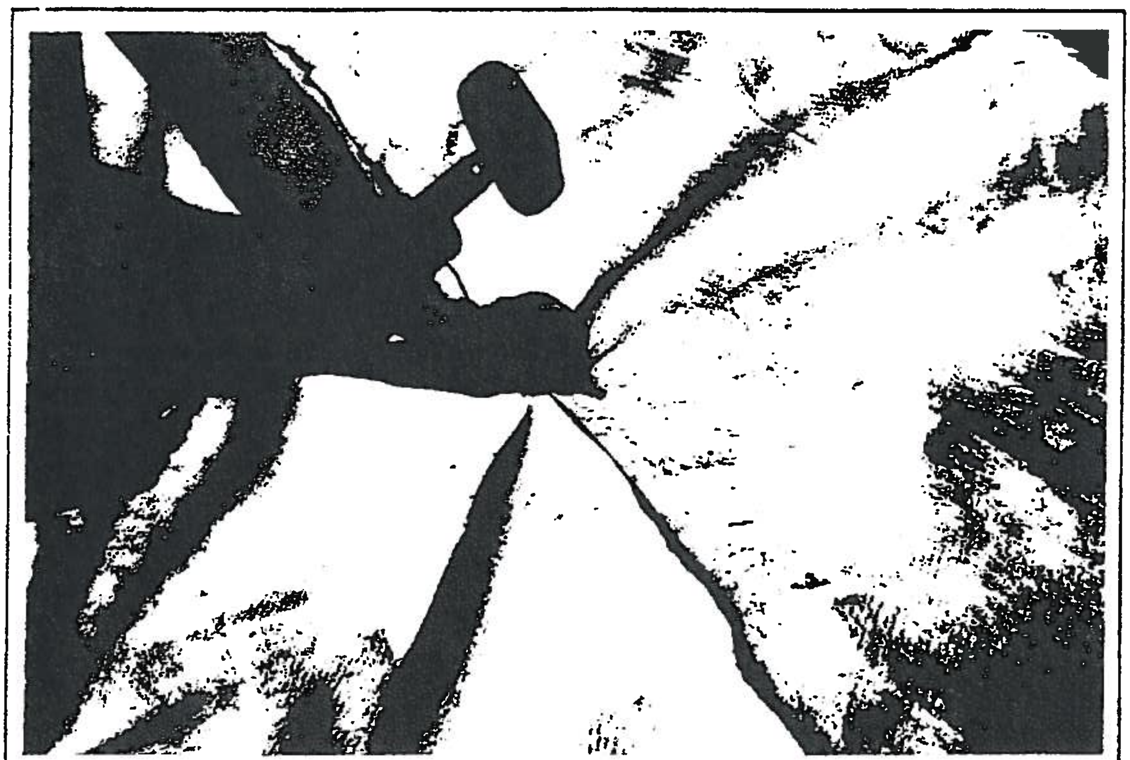


PHOTO 24: Stapling Overlaps

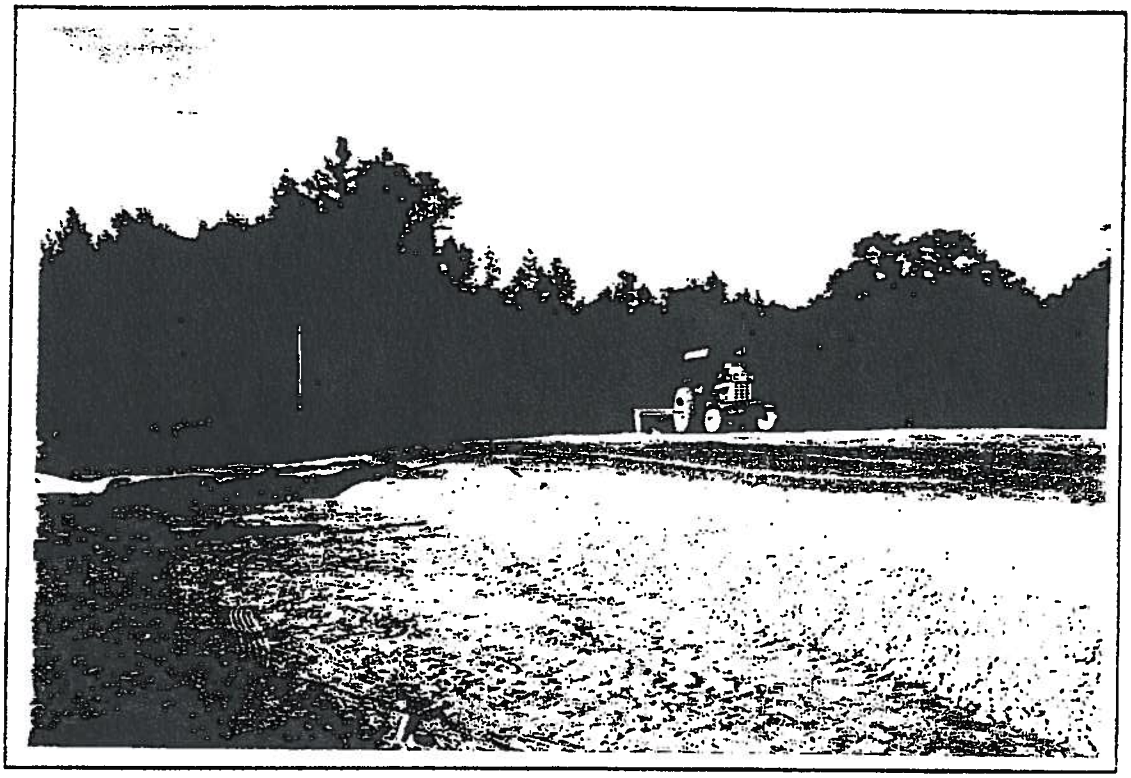


PHOTO 25: Grading Cover Soil

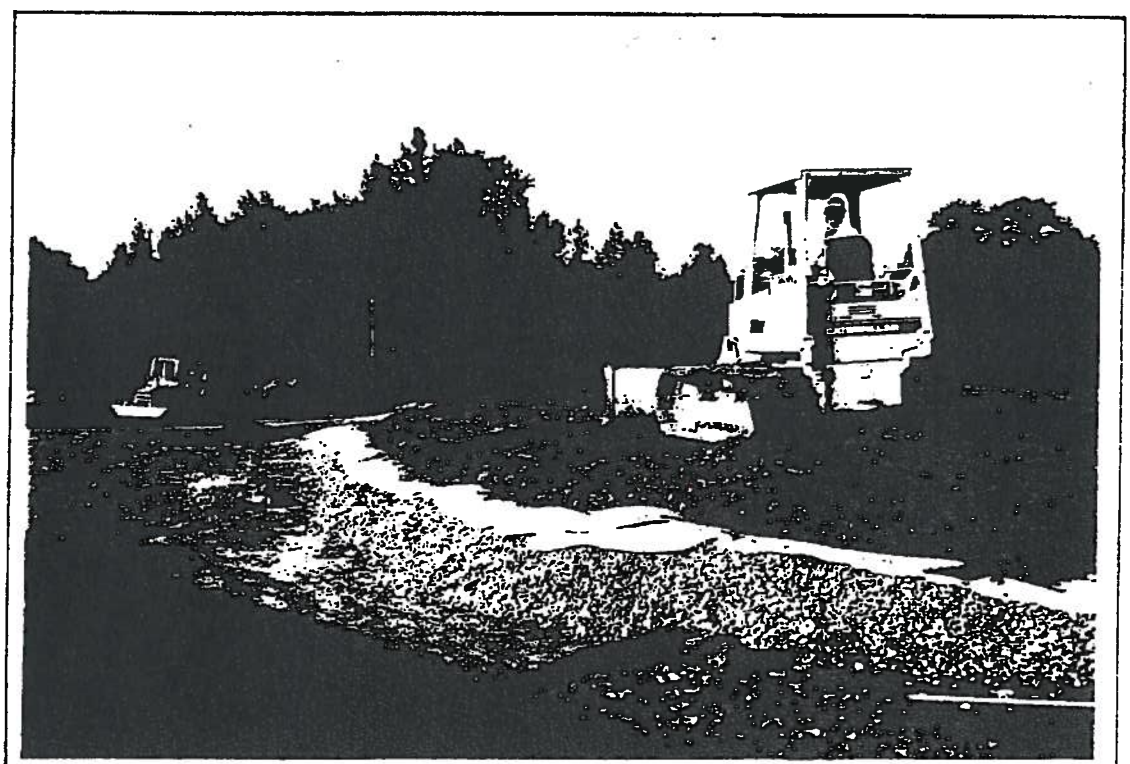


PHOTO 26: Grading Top Soil Along West Side

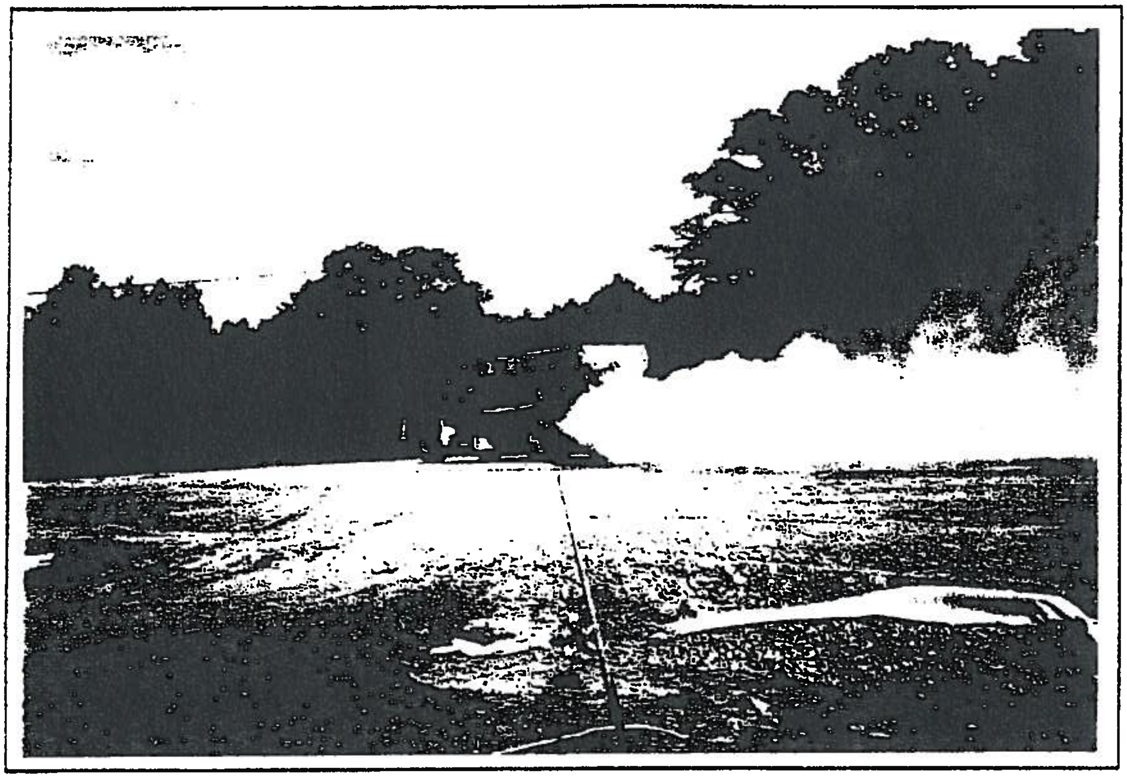


PHOTO 27: Applying Limestone with Truck-Mounted Agricultural Spreader

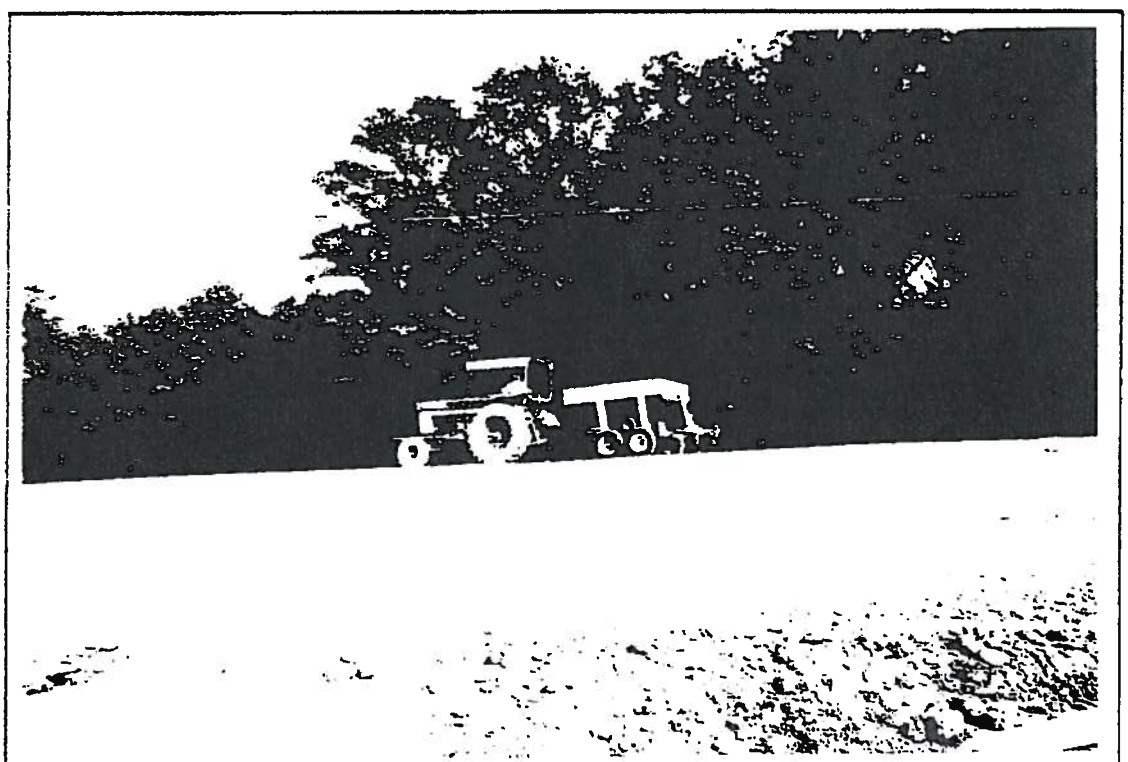


PHOTO 28: Applying Fertilizer with Tractor-Pulled Agricultural Spreader

PHOTO 29: Disking Lime and Fertilizer

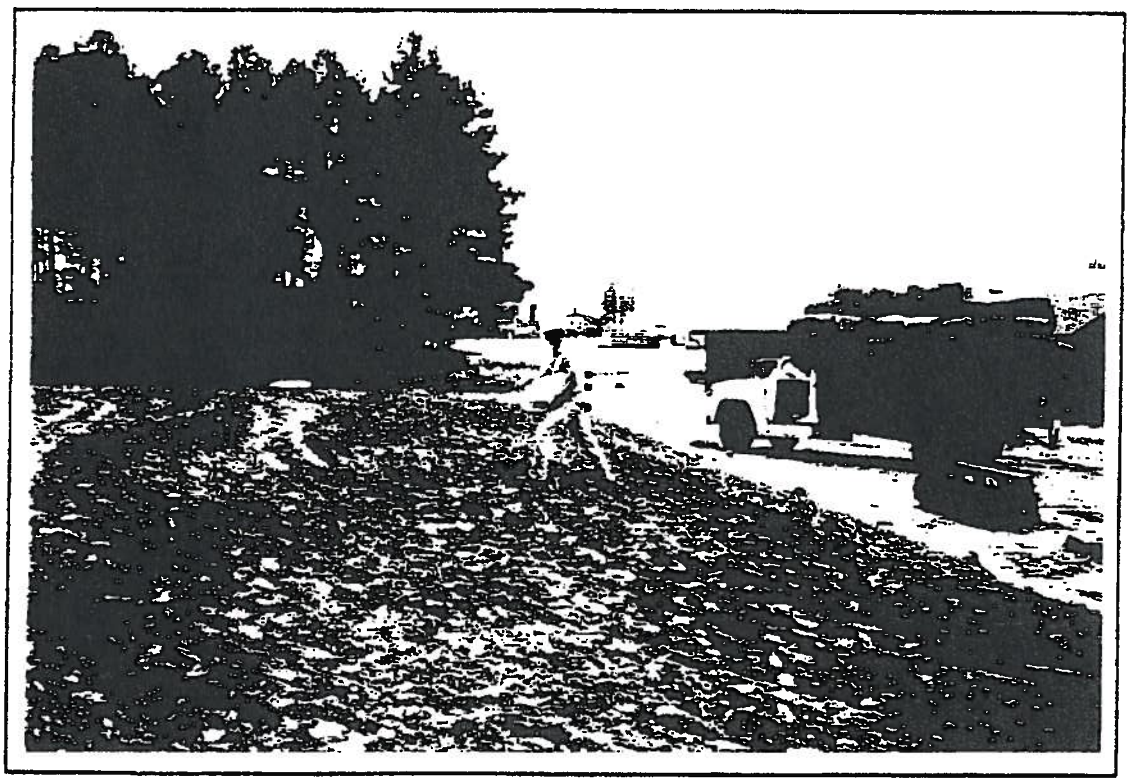


PHOTO 30: Grass Seeding with Hand Spreader

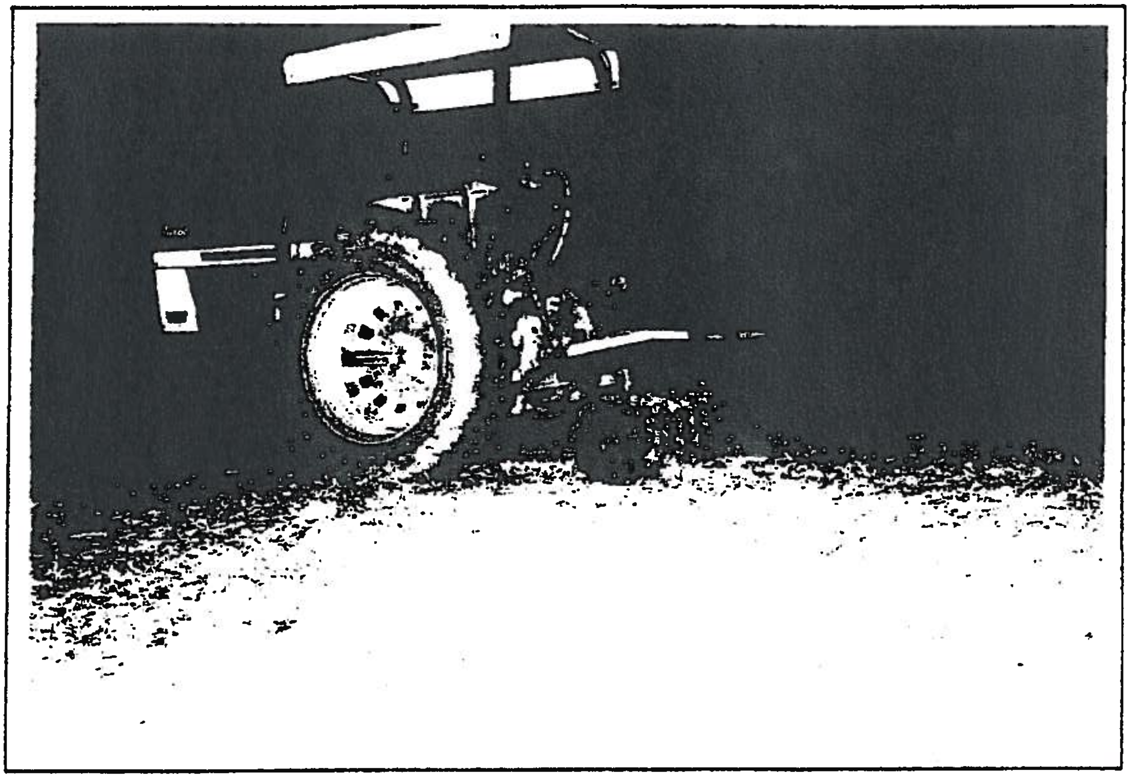


PHOTO 31: Tractor-Pulled Crimper for Seed and Mulch

PHOTO 32: Northwest View of Finished Cap

PHOTO 33: Seeded Drainage Ditch from West Side of Cap

APPENDIX A

Daily Construction Inspection Reports

KEYSTONE ENVIRONMENTAL RESOURCES, INC.
CONSTRUCTION INSPECTION DAILY REPORT

BEAZER MATERIALS & SERVICES, INC.
SURFACE IMPOUNDMENT CLOSURE
KOPPERS INDUSTRIES, INC.
GRENADA, MISSISSIPPI PLANT

DATE: 7/19/89
REPORT NO.: 1
SHEET 1 of 2
BY: TPK

WEATHER: MOSTLY SUNNY, HOT

PRECIPITATION: 0 (inches) TEMPERATURE: LOW 71 HIGH 87

CONTRACTOR PERSONNEL ON SITE: GREEN & GREEN: JOE WILLING, RICKEY DENLEY, TOM DOUBLEDAY

EQUIPMENT EMPLOYED: TRACK HOE, D5H DOZER

INSPECTORS ON SITE: TERRY KIRCHNER: KEYSTONE

QUALITY CONTROL TESTS AND SAMPLES: NONE

VISITORS ON SITE: G&G: NEIL TURNAGE, JOHN GREEN
KEYSTONE: MIKE BOLLINGER

SUMMARY OF ACTIVITIES: MIKE AND I ARRIVED ABOUT 12:30 PM. GREEN & GREEN PERSONNEL WERE CLEARING A TEN-FOOT ZONE AROUND THE SURFACE IMPOUNDMENT OF TREES, FENCING AND WHAT REMAINED OF THE DISCONNECTED PUMP SYSTEM WHICH FED THE S.I.

ATTACHMENTS: —

SIGNATURE: Terrence D. Kirchner

KEYSTONE ENVIRONMENTAL RESOURCES, INC.
CONSTRUCTION INSPECTION DAILY REPORT

BEAZER MATERIALS & SERVICES, INC.
SURFACE IMPOUNDMENT CLOSURE
KOPPERS INDUSTRIES, INC.
GRENADA, MISSISSIPPI PLANT

DATE: 7/19/89
REPORT NO.: 1
SHEET 2 of 2
BY: TPK

SUMMARY OF ACTIVITIES (cont.):

BECAUSE OF THE EXCESS RAIN OVER THE PAST FEW WEEKS, THE IMPOUNDMENT HAD TO BE PUMPED DRY WITH A RENTAL PUMP DISCHARGING TO THE LOCAL P.O.T.W.

THIS RAIN LEFT THE BOTTOM OF THE IMPOUNDMENT MUDDY. SO THE CONTRACTORS TODAY ALSO WERE SPREADING OUT THE SOIL TO EXPEDITE ITS DRYING.

FINISHED 5:30 PM

ATTACHMENTS: —

SIGNATURE: Trina P. Kintner

KEYSTONE ENVIRONMENTAL RESOURCES, INC.
CONSTRUCTION INSPECTION DAILY REPORT

BEAZER MATERIALS & SERVICES, INC.
SURFACE IMPOUNDMENT CLOSURE
KOPPERS INDUSTRIES, INC.
GRENADA, MISSISSIPPI PLANT

DATE: 7/20/89
REPORT NO.: 2
SHEET 1 of 1
BY: TPK

WEATHER: MORNING: MOSTLY SUNNY ; AFTERNOON : CLOUDY

PRECIPITATION: 0 (inches) TEMPERATURE: LOW 68 HIGH 82

CONTRACTOR PERSONNEL ON SITE: GREEN & GREEN :
JOE WILLING , JOE DAVE McCLESKEY , RICKEY DENLEY ,
NEIL TURNAGE

EQUIPMENT EMPLOYED: CATERPILLAR D5H DOZER

INSPECTORS ON SITE: TERRY KIRCHNER : KEYSTONE

QUALITY CONTROL TESTS AND SAMPLES: NONE

VISITORS ON SITE: MIKE BOLLINGER : KEYSTONE

SUMMARY OF ACTIVITIES:

ATTACHMENTS: —

SIGNITURE: Terrence P. Kirchner

KEYSTONE ENVIRONMENTAL RESOURCES, INC.
CONSTRUCTION INSPECTION DAILY REPORT

BEAZER MATERIALS & SERVICES, INC.
SURFACE IMPOUNDMENT CLOSURE
KOPPERS INDUSTRIES, INC.
GRENADA, MISSISSIPPI PLANT

DATE: 7/21/89
REPORT NO.: 3
SHEET 1 of 1
BY: TPK

WEATHER: AM: OVERCAST, PM: PARTLY CLOUDY

PRECIPITATION: 0 (inches) TEMPERATURE: LOW 70 HIGH 88

CONTRACTOR PERSONNEL ON SITE: GREEN & GREEN CONST:
JOE WILLING, JOE DAVE McCLESKEY, RICKEY DENLEY

EQUIPMENT EMPLOYED: D5H DOZER, RUBBER-TIRED ROLLER,
1066 TRACTOR

INSPECTORS ON SITE: TERRY KIRCHNER : KEYSTONE

QUALITY CONTROL TESTS AND SAMPLES: NONE

VISITORS ON SITE: JOHN GREEN : GREEN + GREEN

SUMMARY OF ACTIVITIES: ARRIVED 7:00 AM.
A 30 FOOT SECTION OF THE DIKE WAS PUSHED IN BY THE DOZER TO BE USED AS A RAMP FOR THE TRUCKS TO DUMP FROM.
WORKED BOTTOM AGAIN AND THEN PROOF-ROLLED WITH TRACTOR-PULLED RUBBER-TIRED ROLLER.

ATTACHMENTS: —
SIGNATURE: Terrance P. Kirchner

KEYSTONE ENVIRONMENTAL RESOURCES, INC.
CONSTRUCTION INSPECTION DAILY REPORT

BEAZER MATERIALS & SERVICES, INC.
SURFACE IMPOUNDMENT CLOSURE
KOPPERS INDUSTRIES, INC.
GRENADA, MISSISSIPPI PLANT

DATE: 7/22/89
REPORT NO.: 4
SHEET 1 of 2
BY: TPK

WEATHER: AM: SUNNY, MILD ; PM: PARTLY CLOUDY

PRECIPITATION: 0 (inches) TEMPERATURE: LOW 72 HIGH 87

CONTRACTOR PERSONNEL ON SITE: GREEN & GREEN CONST.: JOE WILLING, RICKEY DENLEY, TOM DOUBLEDAY, JOE DAVE McCLESKEY, NEIL TURNAGE

EQUIPMENT EMPLOYED: D5H DOZER, 1066 TRACTOR, RUBBER-TIRED ROLLER

INSPECTORS ON SITE: TERRY KIRCHNER : KEYSTONE

QUALITY CONTROL TESTS AND SAMPLES: NONE

VISITORS ON SITE: NONE

SUMMARY OF ACTIVITIES: ARR: 7:00AM.
G&G DUG UP NORTH END AS IT WAS STILL SOFT AND REPLACED IT WITH BANK MATERIAL.

TPK
PROOF-ROLLED WITH TRACTOR-PULLED RUBBER-TIRED ROLLER.

ATTACHMENTS: —

SIGNATURE: Terrence P. Kirchner

KEYSTONE ENVIRONMENTAL RESOURCES, INC.
CONSTRUCTION INSPECTION DAILY REPORT

BEAZER MATERIALS & SERVICES, INC.
SURFACE IMPOUNDMENT CLOSURE
KOPPERS INDUSTRIES, INC.
GRENADA, MISSISSIPPI PLANT

DATE: 7/22/89
REPORT NO.: 4
SHEET 2 of 2
BY: TPK

SUMMARY OF ACTIVITIES (cont.):

RE-TOOK CENTERLINE TO GET TOP LOCATION FOR INTERSECTION OF GRADE OF EXISTING GROUND TO CAP

10:30 AM. : FINISHED SUBGRADE WORK

STARTED UNCLASSIFIED FILL.

ATTACHMENTS:

SIGNATURE: Terence P. Kirkner

KEYSTONE ENVIRONMENTAL RESOURCES, INC.
CONSTRUCTION INSPECTION DAILY REPORT

BEAZER MATERIALS & SERVICES, INC.
SURFACE IMPOUNDMENT CLOSURE
KOPPERS INDUSTRIES, INC.
GRENADA, MISSISSIPPI PLANT

DATE: 7/23/89
REPORT NO.: 5
SHEET 1 of 1
BY: TPK

WEATHER: ____

PRECIPITATION: ____ (inches) TEMPERATURE: LOW ____ HIGH ____

CONTRACTOR PERSONNEL ON SITE: ____

EQUIPMENT EMPLOYED: ____

INSPECTORS ON SITE: ____

QUALITY CONTROL TESTS AND SAMPLES: ____

VISITORS ON SITE: ____

SUMMARY OF ACTIVITIES: NO WORK TODAY

ATTACHMENTS: —

SIGNATURE: Thomas P. Kuhn

KEYSTONE ENVIRONMENTAL RESOURCES, INC.
CONSTRUCTION INSPECTION DAILY REPORT

BEAZER MATERIALS & SERVICES, INC.
SURFACE IMPOUNDMENT CLOSURE
KOPPERS INDUSTRIES, INC.
GRENADA, MISSISSIPPI PLANT

DATE: 7/24/89
REPORT NO.: 6
SHEET 1 of 2
BY: TPK

WEATHER: PARTLY SUNNY, HUMID

PRECIPITATION: 0.5 (inches) TEMPERATURE: LOW 65 HIGH 82

CONTRACTOR PERSONNEL ON SITE: GREEN & GREEN CONST.: JOE WILLING, JOE DAVE MCCLESKEY, RICKEY DENLEY, TOM DOUBLEDAY, JOHN SUGGS, NEIL TURNAGE

EQUIPMENT EMPLOYED: D5H DOZER, SUMP PUMP, D6H DOZER, RUBBER-TIRED ROLLER, 1066 TRACTOR

INSPECTORS ON SITE: TERRY KIRCHNER: KEYSTONE
JEFF VANCE: MID-SOUTH TESTING

QUALITY CONTROL TESTS AND SAMPLES: COMPACTION & MOISTURE (SEE ATTACHMENTS)

VISITORS ON SITE: NONE

SUMMARY OF ACTIVITIES: ARR. 7:00 A.M.
RAIN FROM EARLY SUNDAY MORNING WAS PUMPED OUT LEAVING WATER PONDS TO BE RE-WORKED WITH DOZERS.
LAID 1ST AND 2ND LIFTS, ROLLED AND TESTED FOR MOISTURE AND COMPACTION. SEE ATTACHMENTS (THIS FINISHED DIKE MATERIAL).

ATTACHMENTS: 6-1, 6-2 SIGNATURE: Terrance P. Kirchner

KEYSTONE ENVIRONMENTAL RESOURCES, INC.
CONSTRUCTION INSPECTION DAILY REPORT

BEAZER MATERIALS & SERVICES, INC.
SURFACE IMPOUNDMENT CLOSURE
KOPPERS INDUSTRIES, INC.
GRENADA, MISSISSIPPI PLANT

DATE: 7/24/89
REPORT NO.: 4
SHEET 2 of 2
BY: TPK

SUMMARY OF ACTIVITIES (cont.):

STARTED 3RD LIFT OF UNCLASSIFIED MATERIAL. THIS SOIL CAME FROM GREEN & GREEN'S BORROW PIT AT THEIR GARAGE LOCATION.

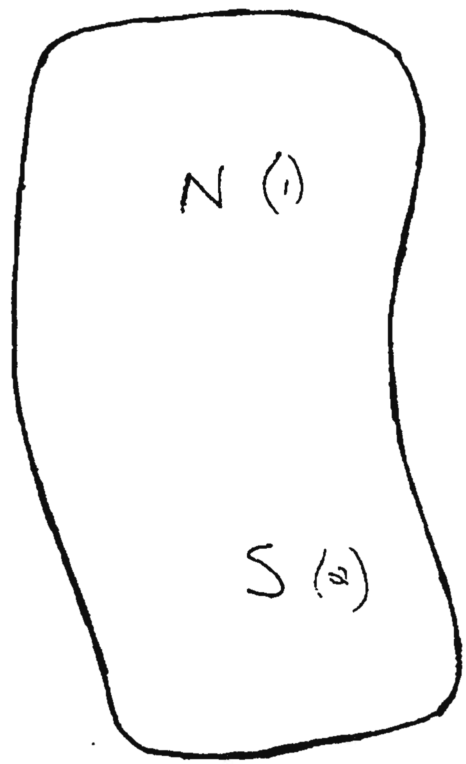
FINISHED AT 6:30 AM

ATTACHMENTS: ____________ SIGNATURE: Terrence P. Kirchner

ATTACHMENT 6-1 DATE 7/24/89

TEST NO.	% MOISTURE	% COMPACTION
1	19.2	95.8
2	16.3	95.2
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		

1ST UNCLASSIFIED



ATTACHMENT 6-2 DATE 7/24/89

2ND UNCLASSIFIED

TEST NO.	% MOISTURE	% COMPACTION
1	20.5	96.4
2	22.7	97.6
3	18.7	96.5
4		
5		
6	OPTIMUM 17.2% (-2%, +3%)	COMPACTION ≥ 95%
7		
8		
9		
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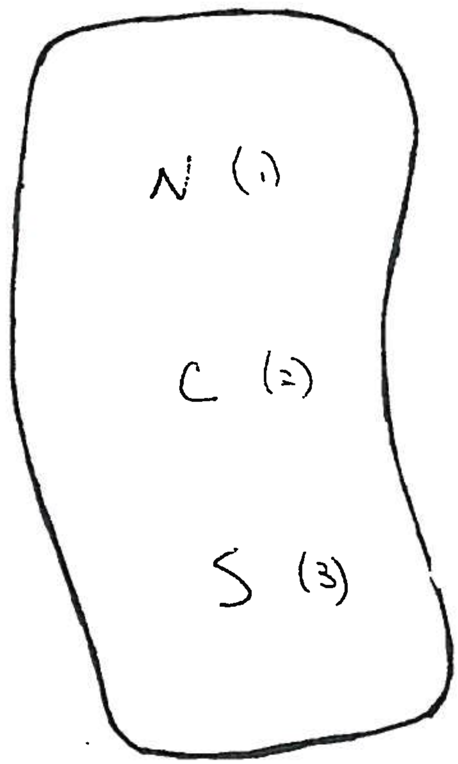
11		
12		
13		
14		
15		



KEYSTONE ENVIRONMENTAL RESOURCES, INC.
CONSTRUCTION INSPECTION DAILY REPORT

BEAZER MATERIALS & SERVICES, INC.
SURFACE IMPOUNDMENT CLOSURE
KOPPERS INDUSTRIES, INC.
GRENADA, MISSISSIPPI PLANT

DATE: 7/25/89
REPORT NO.: 7
SHEET 1 of 1
BY: TPK

WEATHER: AM: OVERCAST, PM: PARTLY SUNNY

PRECIPITATION: 0 (inches) TEMPERATURE: LOW 65 HIGH 83

CONTRACTOR PERSONNEL ON SITE: GREEN & GREEN CONST.: JOE WILLING, RICKEY DENLEY, JOE DAVE McCLESKEY, JOHN SIGGS

EQUIPMENT EMPLOYED: D5H DOZER, 1066 TRACTOR, RUBBER-TIRED ROLLER

INSPECTORS ON SITE: TERRY KIRCHNER: KEYSTONE
JEFF VANCE: MID-SOUTH TESTING

QUALITY CONTROL TESTS AND SAMPLES: DENSITY & MOISTURE

VISITORS ON SITE: JOHN GREEN (G+G), TOM HUDSON (CAT.)

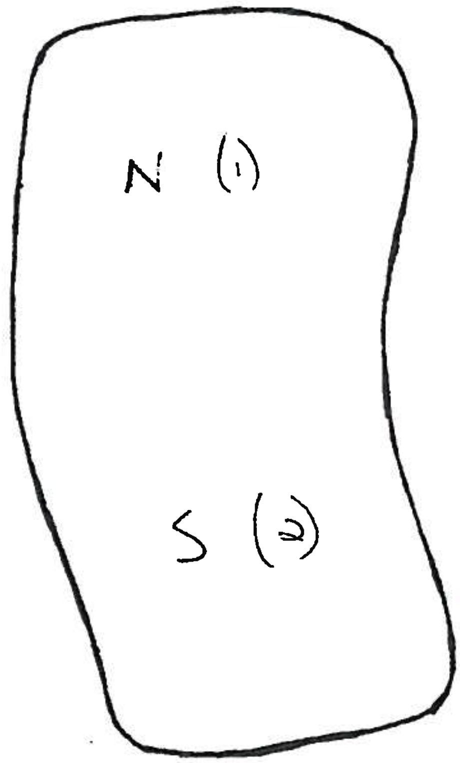
SUMMARY OF ACTIVITIES: 7:00 AM.
FINISHED PLACING 3RD LIFT. IT WAS ROLLED AND TESTED. THE 4TH LIFT WAS ALSO PLACED, ROLLED AND TESTED. SEE ATTACHMENTS FOR RESULTS.

ATTACHMENTS: 7-1, 7-2 SIGNATURE: Terrence P. Kirchner

ATTACHMENT 7-1 DATE 7/25/89

3RD UNCLASSIFIED

TEST NO.	% MOISTURE	% COMPACTION
1	15.00	104.2
2	14.60	100.5
3		
4	OPT MOIST.	COMP.
5	17.2%	≥ 95%
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		

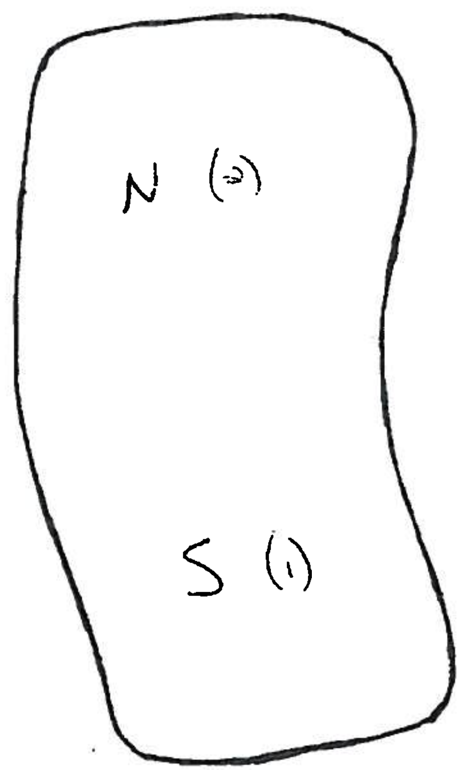


ATTACHMENT 7-2

DATE 7/25/89 — SOUTH TEST
7/26/89 — NORTH TEST

4TH UNCLASSIFIED

TEST NO.	% MOISTURE	% COMPACTION
1	15.8	103.2
2	16.6	99.8
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		



KEYSTONE ENVIRONMENTAL RESOURCES, INC.
CONSTRUCTION INSPECTION DAILY REPORT

BEAZER MATERIALS & SERVICES, INC.
SURFACE IMPOUNDMENT CLOSURE
KOPPERS INDUSTRIES, INC.
GRENADA, MISSISSIPPI PLANT

DATE: 7/26/89
REPORT NO.: 8
SHEET 1 of 1
BY: TPK

WEATHER: AM, PM: SUNNY, HOT, HUMID

PRECIPITATION: 0 (inches) TEMPERATURE: LOW 68 HIGH 90

CONTRACTOR PERSONNEL ON SITE: GREEN + GREEN CONST.: JOE WILLING, RICKEY DONLEY, ~~JOE~~ DAVE McCLESKEY, JOHN SUGGS, NEIL TURNAGE

EQUIPMENT EMPLOYED: D5H DOZER, 1066 TRACTOR, RUBBER-TIRED ROLLER.

INSPECTORS ON SITE: TERRY KIRCHNER: KEYSTONE
JEFF VANCE: MID-SOUTH TESTING

QUALITY CONTROL TESTS AND SAMPLES: DENSITY + MOISTURE SEE ATTACHMENTS.

VISITORS ON SITE: JOHN GREEN (G + G)

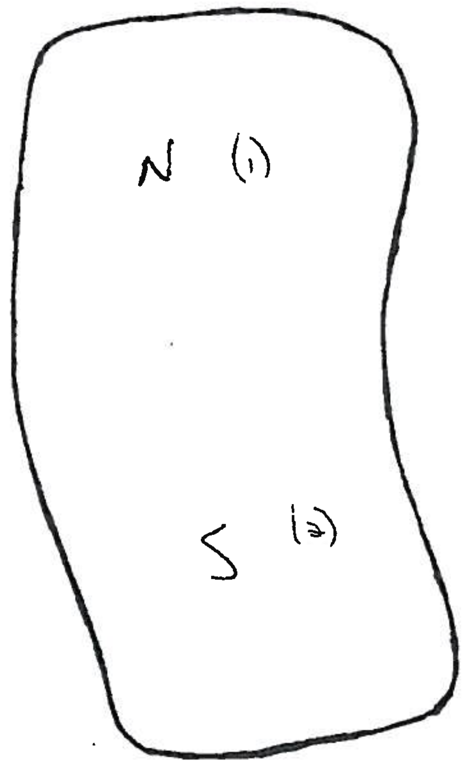
SUMMARY OF ACTIVITIES: 7:00 A.M.
TESTED 4TH (NORTH) LIFT. THEN LAID, ROLLED AND TESTED THE 5TH AND 6TH LIFTS OF UNCLASSIFIED SOIL

ATTACHMENTS: 8-1, 8-2, SIGNATURE: Terrence P. Kirchner

ATTACHMENT 8-1 DATE 7/26/89

5TH UNCLASSIFIED

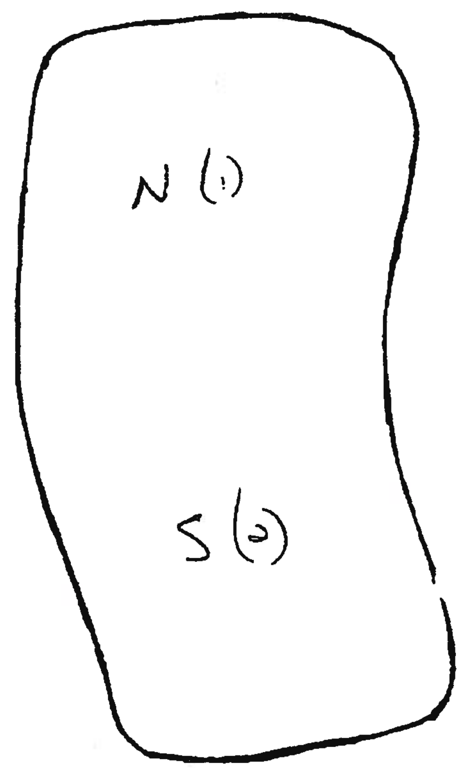
TEST NO.	% MOISTURE	% COMPACTION
1	18.9	101.6
2	15.8	97.8
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		



ATTACHMENT 8-2 DATE 7/26/89

6TH UNCLASSIFIED

TEST NO.	% MOISTURE	% COMPACTION
1	16.9	104.1
2	18.0	103.6
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		



KEYSTONE ENVIRONMENTAL RESOURCES, INC.
CONSTRUCTION INSPECTION DAILY REPORT

BEAZER MATERIALS & SERVICES, INC.
SURFACE IMPOUNDMENT CLOSURE
KOPPERS INDUSTRIES, INC.
GRENADA, MISSISSIPPI PLANT

DATE: 7/27/89
REPORT NO.: 9
SHEET 1 of 1
BY: TPK

WEATHER: AM: SUNNY, HAZY, HOT; PM: OVERCAST, COOL

PRECIPITATION: 0 (inches) TEMPERATURE: LOW 69 HIGH 83

CONTRACTOR PERSONNEL ON SITE: GREEN + GREEN CONST.:
JOE WILLING, RICKEY DENLEY, JOE DAVE McCLESKEY,
JOHN SUGGS, NEIL TURNAGE

EQUIPMENT EMPLOYED: D5H DOZER, 1066 TRACTOR,
RUBBER-TIRED ROLLER

INSPECTORS ON SITE: TERRY KIRCHNER: KEYSTONE
JEFF VANCE: MID-SOUTH TESTING

QUALITY CONTROL TESTS AND SAMPLES: DENSITY + MOISTURE
SEE ATTACHMENTS

VISITORS ON SITE: JOHN GREEN (G+G CONST.)

SUMMARY OF ACTIVITIES: ARR. 7:00 AM.
PLACED, ROLLED AND TESTED 7TH, 8TH,
9TH LIFTS OF UNCLASSIFIED SOIL.
ALSO PLACED, ROLLED AND TESTED 10TH (N)
SEE ATTACHMENTS

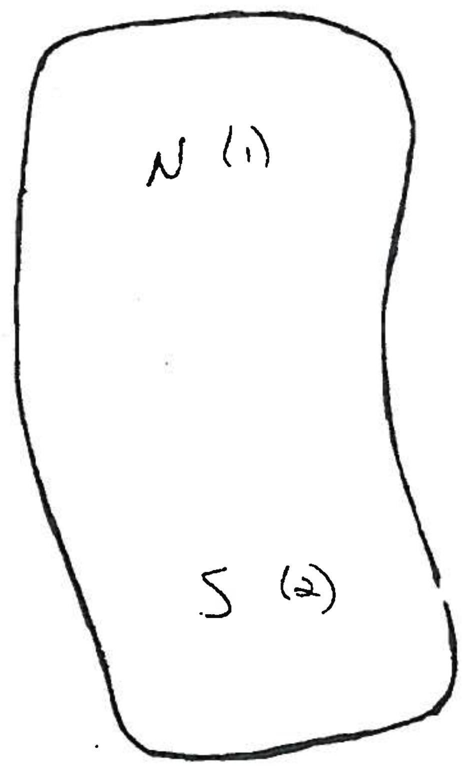
FINISHED AT 6:30 PM

ATTACHMENTS: 9-1, 9-2, 9-3, 9-4 SIGNATURE: T.P. Kirchner

ATTACHMENT 9-1 DATE 7/27/89

TEST NO.	% MOISTURE	% COMPACTION
1	17.7	102.3
2	16.8	103.1
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		

7TH UNCLASSIFIED



ATTACHMENT 9-2 DATE 7/27/89

8TH UNCLASSIFIED

TEST NO.	% MOISTURE	% COMPACTION
1	18.8	101.8
2	16.8	100.9
3		
4		
5		
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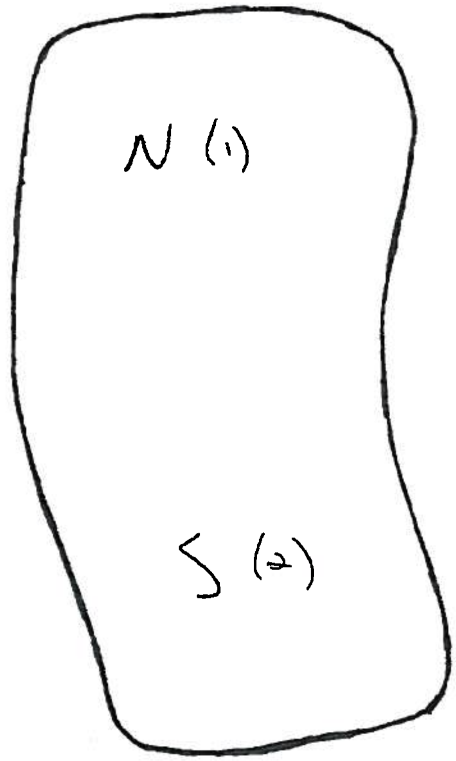
12		
13		
14		
15		



ATTACHMENT 9-3 DATE 7/27/89

9TH UN CLASSIFIED

TEST NO.	% MOISTURE	% COMPACTION
1	18.9	100.6
2	18.5	104.1
3		
4		
5		
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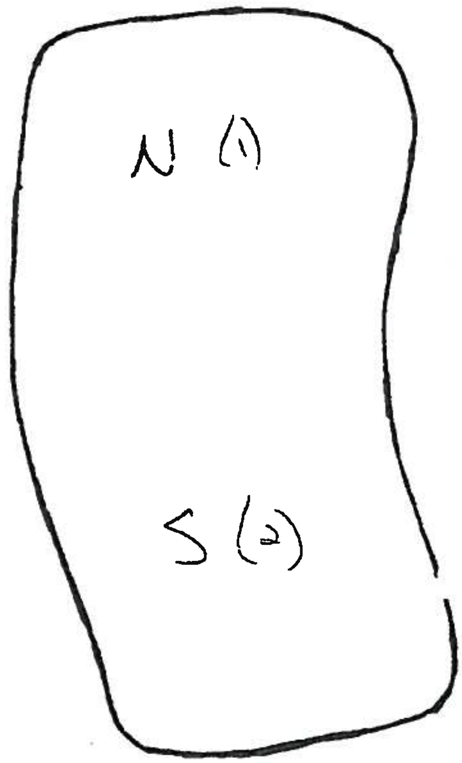
7		
8		
9		
10		
11		
12		
13		
14		
15		

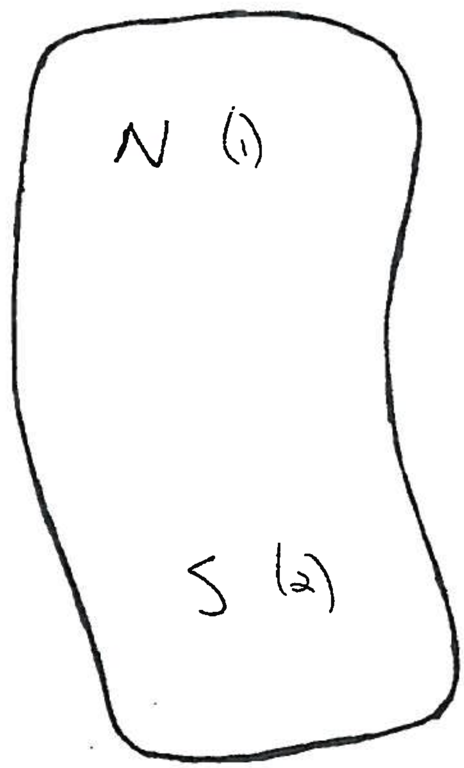


ATTACHMENT 9-4

DATE 7/27/89 N
7/28/89 S

10 TH UNCLASSIFIED

TEST NO.	% MOISTURE	% COMPACTION
1	16.6	104.0
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		



KEYSTONE ENVIRONMENTAL RESOURCES, INC.
CONSTRUCTION INSPECTION DAILY REPORT

BEAZER MATERIALS & SERVICES, INC.
SURFACE IMPOUNDMENT CLOSURE
KOPPERS INDUSTRIES, INC.
GRENADA, MISSISSIPPI PLANT

DATE: 7/28/89
REPORT NO.: 10
SHEET 1 of 1
BY: TPK

WEATHER: AM: SUNNY, MILD ; PM: OVERCAST (DRIZZLE) THEN CLEARING

PRECIPITATION: TRACE (inches) TEMPERATURE: LOW 65 HIGH 82

CONTRACTOR PERSONNEL ON SITE: GREEN & GREEN:
JOE WILLING, RICKEY DENLEY, JOE DAVE M'CLOSKEY, JOHN SUGGS, NEIL TURNAGE

EQUIPMENT EMPLOYED: D5H DOZER, 1066 TRACTOR, RUBBER-TIRED ROLLER, BACKHOE

INSPECTORS ON SITE: TERRY KIRCHNER: KEYSTONE
JEFF VANCE: MID-SOUTH TESTING

QUALITY CONTROL TESTS AND SAMPLES: DENSITY & MOISTURE
SEE ATTACHMENTS

VISITORS ON SITE: NONE

SUMMARY OF ACTIVITIES: ARR: 7:00AM
ROLLED AND TESTED 10TH - SOUTH.
PLACED, ROLLED AND TESTED 11TH LIFT.

RECEIVED TRUCK LOAD OF BENTONITE (49,460 lb)
STORED IT IN A TRENCH CUT BY THE BACKHOE

ATTACHMENTS: 10-1 SIGNATURE: Terrence P. Kirchner

ATTACHMENT 10-1 DATE 7/28/89

TEST NO.	% MOISTURE	% COMPACTION
1	18.8	100.7
2	19.8	101.4
3		
4		
5		
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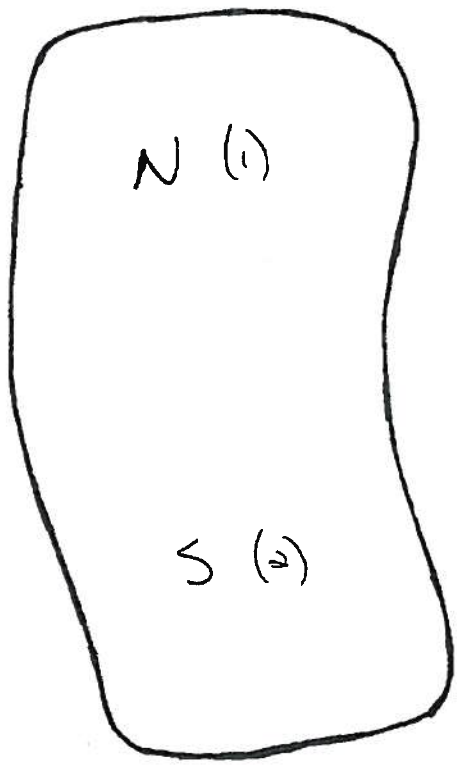
14		
15		

11TH UNCLASSIFIED



KEYSTONE ENVIRONMENTAL RESOURCES, INC.
CONSTRUCTION INSPECTION DAILY REPORT

BEAZER MATERIALS & SERVICES, INC.
SURFACE IMPOUNDMENT CLOSURE
KOPPERS INDUSTRIES, INC.
GRENADA, MISSISSIPPI PLANT

DATE: 7/29/89
REPORT NO.: 11
SHEET 1 of 1
BY: ______

WEATHER: AM: PARTLY CLOUDY, MILD; PM: SUNNY, HOT

PRECIPITATION: 0 (inches) TEMPERATURE: LOW 68 HIGH 85

CONTRACTOR PERSONNEL ON SITE: GREEN & GREEN: JOE WILLING, RICKEY DENLEY, JOE DAVE McCLESKEY, JOHN SIGGS; NEIL TURNAGE

EQUIPMENT EMPLOYED: D5H DOZER, 1066 TRACTOR, RUBBER-TIRED ROLLER

INSPECTORS ON SITE: TERRY KIRCHNER: KEYSTONE
JEFF VANCE: MID-SOUTH TESTING

QUALITY CONTROL TESTS AND SAMPLES: DENSITY & MOISTURE
SEE ATTACHMENT

VISITORS ON SITE: NONE

SUMMARY OF ACTIVITIES: ARR. 7:30 AM., FIN. 5:30 PM
DECONTAMINATED D5H DOZER WITH HIGH PRESSURE STEAM ON CONCRETE PAD AT GARAGE.
WELL # R-8B WAS KNOCKED OVER BY DOZER.
LAST FILL-LIFT TESTS WERE TAKEN ON 12TH LIFT.
STARTED PLACING FILL FOR BENTONITE-SOIL LAYER
TILLER SHEAR PIN BROKE; BROUGHT IN NEW TILLER

ATTACHMENTS: 11-1 SIGNATURE: Terrance P. Kirchner

ATTACHMENT 11-1 DATE 7/29/89

TEST NO.	% MOISTURE	% COMPACTION
1	18.2	99.7
2	16.9	104.7
3	17.0	102.9
4		
5		
6		
7		
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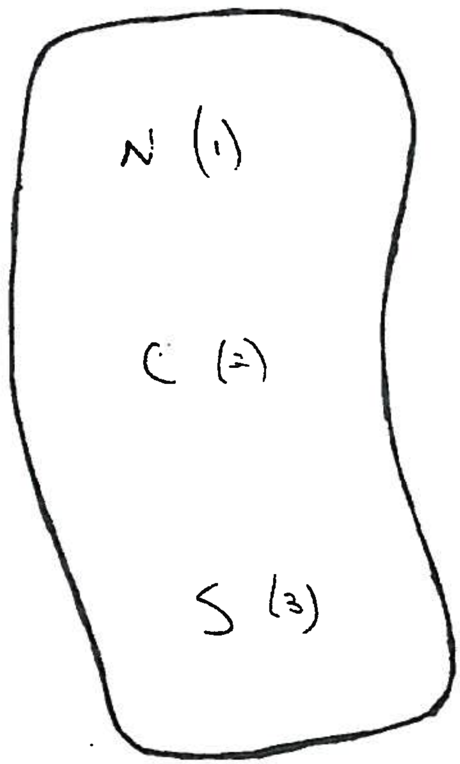
11		
12		
13		
14		
15		



KEYSTONE ENVIRONMENTAL RESOURCES, INC.
CONSTRUCTION INSPECTION DAILY REPORT

BEAZER MATERIALS & SERVICES, INC.
SURFACE IMPOUNDMENT CLOSURE
KOPPERS INDUSTRIES, INC.
GRENADA, MISSISSIPPI PLANT

DATE: 7/30/89
REPORT NO.: 12
SHEET 1 of 1
BY: TPK

WEATHER: SUNNY, HOT, HUMID

PRECIPITATION: 0 (inches) TEMPERATURE: LOW 69 HIGH 89

CONTRACTOR PERSONNEL ON SITE: GREEN & GREEN:
JOE WILLING, RICKEY DENLEY, JOE DAVE McCLESKEY,
JOHN SUGGS; NEIL TURNAGE

EQUIPMENT EMPLOYED: D5H DOZER, 1066 TRACTOR, TRACK HOE
WATER TRUCK, RUBBER-TIRED ROLLER, TILLER (BOSTIAG)

INSPECTORS ON SITE: TERRY KIRCHNER: KEYSTONE
JEFF VANCE: MID-SOUTH TESTING

QUALITY CONTROL TESTS AND SAMPLES: MOISTURE CHECKS

VISITORS ON SITE: NONE

SUMMARY OF ACTIVITIES: ARR. 7:00 AM
WATERED 1ST LIFT OF SOIL-BENTONITE LAYER WITH
APPROX 9000 GAL OF WATER. TILLED AND COMPACTED A
SMALL SECTION TO CHECK MOISTURE. APPLIED BENTONITE
(39,470 lbs) OR 2.2 lb/FT^3) AND TILLED IT IN.
LOADED TREE DEBRIS ONTO TRUCKS
J. VANCE HERE ALL DAY ($240/DAY)

ATTACHMENTS: SIGNATURE: Terry P. Kirchner

KEYSTONE ENVIRONMENTAL RESOURCES, INC.
CONSTRUCTION INSPECTION DAILY REPORT

BEAZER MATERIALS & SERVICES, INC.
SURFACE IMPOUNDMENT CLOSURE
KOPPERS INDUSTRIES, INC.
GRENADA, MISSISSIPPI PLANT

DATE: 7/31/89
REPORT NO.: 13
SHEET 1 of 1
BY: TPK

WEATHER: SUNNY, HOT

PRECIPITATION: 0 (inches) TEMPERATURE: LOW 68 HIGH 88

CONTRACTOR PERSONNEL ON SITE: GREEN & GREEN CONST. : JOE WILLING, RICKEY DENLEY, JOE DAVE McCLESKEY, JOHN SUGGS, NEIL TURNAGE

EQUIPMENT EMPLOYED: D5 # DOZER, 1066 TRACTOR, TILLER, ROLLER

INSPECTORS ON SITE: TERRY KIRCHNER : KEYSTONE, MIKE BOLLINGER : KEYSTONE, JEFF VANCE : MID-SOUTH TESTING

QUALITY CONTROL TESTS AND SAMPLES: DENSITY & MOISTURE SEE ATTACHMENT.

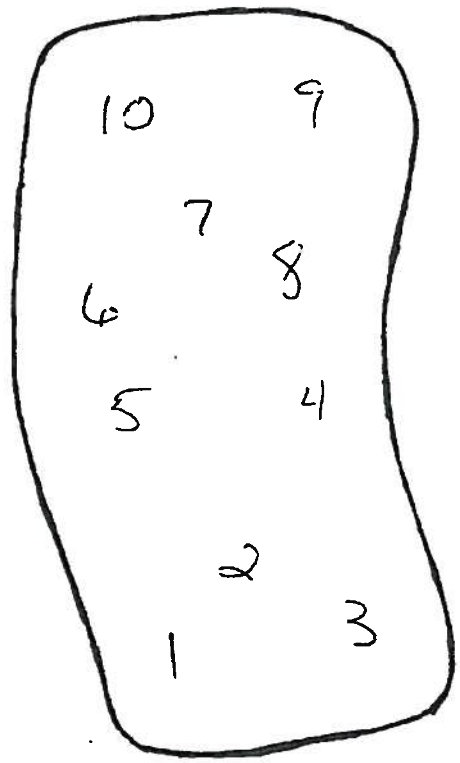
VISITORS ON SITE: NONE

SUMMARY OF ACTIVITIES: ARR. 7:00 AM.
A NEW PROCTOR WAS TAKEN ON THE SOIL MIXTURE GIVING NEW MOISTURE OPTIMUM OF 19.8% (MAX. 22.8%) RECEIVED TWO MORE TRUCK LOADS OF BENTONITE (49,040 lbs ; 49,520 lbs). DROVE TWO SHELBY TUBES INTO SOIL / BENTONITE AND TOOK THEM TO SPRINGER ENGR. IN STARKVILLE, MS. M. BOLLINGER SUPERVISED.

ATTACHMENTS: 13-1 SIGNATURE: Terrence P. Kirchner

ATTACHMENT 13-1   DATE 7/31/89

TEST NO.	% MOISTURE	% COMPACTION
1	23.7	98.6
2	22.7	99.7
3	20.9	101.2
4	24.1	98.6
5	24.7	98.5
6	25.4	100.1
7	23.8	98.5
8	20.6	103.8
9	22.4	100.2
10	18.8	105.7
11		
12		
13		
14		
15		



KEYSTONE ENVIRONMENTAL RESOURCES, INC.
CONSTRUCTION INSPECTION DAILY REPORT

BEAZER MATERIALS & SERVICES, INC.
SURFACE IMPOUNDMENT CLOSURE
KOPPERS INDUSTRIES, INC.
GRENADA, MISSISSIPPI PLANT

DATE: 8/7/89
REPORT NO.: 14
SHEET 1 of 1
BY: TPK

WEATHER: OVERCAST, MILD

PRECIPITATION: 0 (inches) TEMPERATURE: LOW 62 HIGH 78

CONTRACTOR PERSONNEL ON SITE: GREEN + GREEN: JOE WILLING, JOHN SUGGS

EQUIPMENT EMPLOYED: D5H DOZER (TO PUSH START TRACTOR), 1066 TRACTOR, SCRAPER

INSPECTORS ON SITE: TERRY KIRCHNER: KEYSTONE
JEFF VANCE: MID-SOUTH TESTING

QUALITY CONTROL TESTS AND SAMPLES: SAMPLES TAKEN FROM 1ST LIFT OF S/B LAYER TO RUN ATTERBERG LIMITS (FOR 1,2,3 ADD'T. lbs OF BENT.)

VISITORS ON SITE: NONE

SUMMARY OF ACTIVITIES: ARR. 7:00 AM. FIN. 5:30
RAINED YESTERDAY. GOT RESULTS OF SHELBY TUBE PERMEABILITY TESTS. BOTH FAILED (10^{-5}, 8.8×10^{-6})
TILLED SOIL ALL DAY — ONCE PER HOUR TO HELP DRY IT OUT; ALSO DISKING TO DRY.
TOOK PICTURES OF WELLS.

ATTACHMENTS: ______ SIGNATURE: Terrence P. Kirchner

KEYSTONE ENVIRONMENTAL RESOURCES, INC.
CONSTRUCTION INSPECTION DAILY REPORT

BEAZER MATERIALS & SERVICES, INC.
SURFACE IMPOUNDMENT CLOSURE
KOPPERS INDUSTRIES, INC.
GRENADA, MISSISSIPPI PLANT

DATE: 8/8/89
REPORT NO.: 15
SHEET 1 of 2
BY: TPK

WEATHER: SUNNY, MILD

PRECIPITATION: 0 (inches) TEMPERATURE: LOW ____ HIGH ____

CONTRACTOR PERSONNEL ON SITE: GREEN & GREEN;
JOE WILLING, JOHN SUGGS (BOTH 7-5:30)
RICKEY DONLEY, JOE DAVE MCCLOSKEY (BOTH 1-5:30)

EQUIPMENT EMPLOYED: 1066 TRACTOR, DISK IMPLEMENT,
SCRAPER,

INSPECTORS ON SITE: TERRY KIRCHNER: KEYSTONE
JEFF VANCE: MID-SOUTH TESTING

QUALITY CONTROL TESTS AND SAMPLES: DENSITY & MOISTURE
SEE ATTACHMENT

VISITORS ON SITE: NONE

SUMMARY OF ACTIVITIES: ARR: 7 AM FINISHED 5:30
SINCE THE FIRST SOIL-BENTONITE LIFT DID NOT PASS THE PERMEABILITY, IT WAS DECIDED (MLB) TO INCORPORATE THIS LIFT AS PART OF THE UNCLASSIFIED FILL AND NOT AS THE FIRST LIFT OF THE SOIL-BENT. LAYER.
MET WITH JEFF VANCE TO SEE RESULTS OF ATTERBERG LIMITS TESTS FOR THE THREE SAMPLES

ATTACHMENTS: 15-1 SIGNATURE: Terrence P. Kirchner

KEYSTONE ENVIRONMENTAL RESOURCES, INC.
CONSTRUCTION INSPECTION DAILY REPORT

BEAZER MATERIALS & SERVICES, INC.
SURFACE IMPOUNDMENT CLOSURE
KOPPERS INDUSTRIES, INC.
GRENADA, MISSISSIPPI PLANT

DATE: 8/8/89
REPORT NO.: 15
SHEET 2 of 2
BY: TPK

SUMMARY OF ACTIVITIES (cont.):

OF THE IN-PLACE SOIL WHICH WERE GIVEN 1, 2, AND 3 POUNDS (EXTRA) / CF OF BENTONITE. WE'LL PROBABLY USE 2 TO 3 lbs EXTRA.

JOHN SUGGS DISKED UNTIL NOON (ONE PER HOUR)

AFTER LUNCH — JOE DAVE, RICKED AND JOE CAME AND WORKED UNTIL 5 P.M.

NEIL RETOOK CENTER LINE AND GRADE LINES WERE RE-ESTABLISHED.

LIFT (FAILED ONE) WAS ROLLED AND WILL BE INCORPORATED INTO UNCLASSIFIED. THEREFORE, DENSITY AND MOISTURE TESTS WERE TAKEN.

ATTACHMENTS: ______ SIGNATURE: Thomas P. Kushner

ATTACHMENT 15-1 DATE 8/8/89

TEST NO.	% MOISTURE	% COMPACTION
1	18.3	100.3
2	11.8	112.9
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		

KEYSTONE ENVIRONMENTAL RESOURCES, INC.
CONSTRUCTION INSPECTION DAILY REPORT

BEAZER MATERIALS & SERVICES, INC.
SURFACE IMPOUNDMENT CLOSURE
KOPPERS INDUSTRIES, INC.
GRENADA, MISSISSIPPI PLANT

DATE: 8/9/89
REPORT NO.: 14
SHEET 1 of 1
BY: TPK

WEATHER: SUNNY, MILD

PRECIPITATION: 0 (inches) TEMPERATURE: LOW 67 HIGH 84

CONTRACTOR PERSONNEL ON SITE: GREEN + GREEN CONST: JOE WILLING, RICKEY DENLEY, JOE DAVE McCLESKEY, JOHN SUGGS.

EQUIPMENT EMPLOYED: D5H DOZER, 1066 TRACTOR, DISK, RUBBER-TIRED ROLLER

INSPECTORS ON SITE: TERRY KIRCHNER: KEYSTONE; MIKE BOLLINGER: KEYSTONE; JEFF VANCE: MID-SOUTH TESTING

QUALITY CONTROL TESTS AND SAMPLES: SAMPLES TAKEN FOR GRAIN SIZE DIST., PROCTOR, AND OPT. MOIST. ANALYSIS.

VISITORS ON SITE: NONE

SUMMARY OF ACTIVITIES: 7:55 AM, FIN. 7:30 PM
STARTED ~~NEXT~~ LIFT (NEW 1ST LIFT OF SOIL-BENT)
USING SOIL WITH MORE CLAY CONTENT.
MID-SOUTH TESTING TOOK SAMPLES FOR
GRAIN SIZE DIST, PROCTOR AND OPT. MOISTURE.
OLD 1ST LIFT WAS OFF GRADE SLIGHTLY,
SO HIGH SANDY SECTION WAS REMOVED.

ATTACHMENTS: ______ SIGNATURE: Terrance P. Kirchner

KEYSTONE ENVIRONMENTAL RESOURCES, INC.
CONSTRUCTION INSPECTION DAILY REPORT

BEAZER MATERIALS & SERVICES, INC.
SURFACE IMPOUNDMENT CLOSURE
KOPPERS INDUSTRIES, INC.
GRENADA, MISSISSIPPI PLANT

DATE: 8/10/89
REPORT NO.: 17
SHEET 1 of 1
BY: TPK

WEATHER: SUNNY, MILD

PRECIPITATION: 0 (inches) TEMPERATURE: LOW 64 HIGH 85

CONTRACTOR PERSONNEL ON SITE: GREEN + GREEN: JOE WILLING, RICKEY DENLEY, JOE DAVE (MCCLESKEY), JOHN SLIGGS.

EQUIPMENT EMPLOYED: D5H DOZER

INSPECTORS ON SITE: TERRY KIRCHNER, MIKE BOLLINGER: KEYSTONE
JEFF VANCE: MID-SOUTH TESTING (1/2 DAY)

QUALITY CONTROL TESTS AND SAMPLES:

VISITORS ON SITE: NONE

SUMMARY OF ACTIVITIES: 7:00 AM ; FIN. 6:00 PM
SCRAPED CLAY LAYER SECTION OFF NE CORNER AND REMOVED EXCESS SANDY LAYER BELOW IT. RE-SET GRADE STAKES AFTER REPLACING THE CLAY LAYER.

ATTACHMENTS: SIGNATURE: Terrance P. Kirchner

KEYSTONE ENVIRONMENTAL RESOURCES, INC.
CONSTRUCTION INSPECTION DAILY REPORT

BEAZER MATERIALS & SERVICES, INC.
SURFACE IMPOUNDMENT CLOSURE
KOPPERS INDUSTRIES, INC.
GRENADA, MISSISSIPPI PLANT

DATE: 8/11/89
REPORT NO.: 18
SHEET 1 of 1
BY: TPK

WEATHER: HOT, SUNNY, HAZY

PRECIPITATION: 0 (inches) TEMPERATURE: LOW 64 HIGH 86

CONTRACTOR PERSONNEL ON SITE: GREEN & GREEN CONST.: JOE WILLING, RICKEY DENLEY, JOE DAVE McCLESKEY, JOHN SUGGS.

EQUIPMENT EMPLOYED: D5H DOZER, AGR. SPREADER, 1066 TRACTOR, BACK HOE, DISK

INSPECTORS ON SITE: TERRY KIRCHNER & MIKE BOLLINGER: KEYSTONE; JEFF VANCE: MID-SOUTH TESTING

QUALITY CONTROL TESTS AND SAMPLES: MOISTURE.

VISITORS ON SITE: NONE

SUMMARY OF ACTIVITIES: 7:00 AM, FIN. 6 PM
APPLIED BENTONITE FROM TRACTOR-PULLED SPREADER IN THREE DOSES TOTALLING 45,080 lbs; TILLING AFTER EACH APPLICATION.
THEN PUT FIVE TRUCK LOADS OF WATER ONTO MIXTURE AND DISKED THEM TOGETHER. MOISTURE CHECK INDICATED SLIGHTLY HIGH; THEREFORE, WILL DISK IN AM.

ATTACHMENTS: ______ SIGNATURE: Terrence P. Kirchner

KEYSTONE ENVIRONMENTAL RESOURCES, INC.
CONSTRUCTION INSPECTION DAILY REPORT

BEAZER MATERIALS & SERVICES, INC.
SURFACE IMPOUNDMENT CLOSURE
KOPPERS INDUSTRIES, INC.
GRENADA, MISSISSIPPI PLANT

DATE: 8/12/89
REPORT NO.: 19
SHEET 1 of 1
BY: TPK

WEATHER: SUNNY, HOT, HUMID

PRECIPITATION: 0 (inches) TEMPERATURE: LOW 68 HIGH 87

CONTRACTOR PERSONNEL ON SITE: GREEN + GREEN CONST.: JOE WILLING, RICKEY DENLEY

EQUIPMENT EMPLOYED: D5H DOZER (TO PUSH SHELBY TUBES), 1066 TRACTOR, DISK IMPLEMENT, ROLLER

INSPECTORS ON SITE: T. KIRCHNER, M. BOLLINGER: KEYSTONE; JEFF VANCE: MID-SOUTH TESTING

QUALITY CONTROL TESTS AND SAMPLES: DENSITY + MOISTURE

VISITORS ON SITE: NONE

SUMMARY OF ACTIVITIES: 7:05 am ; FIN. 12 noon
DISKED SOME OF THE WET AREAS FROM YESTERDAY'S WATERING, THEN ROLLED WHEN THE SOIL APPEARED TO HAVE DRIED. G & G THEN DROVE SHELBY TUBES WITH DOZER AFTER COMPACTION + MOISTURE TESTS WERE DONE. DROVE TUBES TO SPRINGER ENGR FOR ANALYSIS.

ATTACHMENTS: 19-1 SIGNATURE: Thomas P. Kirchner

ATTACHMENT 19-1 DATE 8/12/89

TEST NO.	% MOISTURE	% COMPACTION
1	25.2	99.5
2	25.9	102.7
3	24.3	102.5
4	26.1	103.3
5	25.5	100.1
6	26.1	95.5
7	25.7	96.8
8	24.4	98.5
9	26.0	98.5
10	29.0	95.0
11		
12		
13		
14		
15		

1ST SOIL-BENTONITE LIFT

KEYSTONE ENVIRONMENTAL RESOURCES, INC.
CONSTRUCTION INSPECTION DAILY REPORT

BEAZER MATERIALS & SERVICES, INC.
SURFACE IMPOUNDMENT CLOSURE
KOPPERS INDUSTRIES, INC.
GRENADA, MISSISSIPPI PLANT

DATE: 8/18
REPORT NO.: 20
SHEET 1 of 1
BY: CMR

WEATHER: Sunny, Humid → rained approximately 1 inch on 8/17

PRECIPITATION: 0 (inches) TEMPERATURE: LOW 70 HIGH 92

CONTRACTOR PERSONNEL ON SITE: Joe Willing, Ricky Denny (also 3 truck drivers for Green & Green hauled in clay)

EQUIPMENT EMPLOYED: Caterpillar D5H, International tractor w/ disk attachment

INSPECTORS ON SITE: Chris Roscher

QUALITY CONTROL TESTS AND SAMPLES: Jeff Vance sampled the clay stockpile twice performed sieve analysis and atterburg limits

VISITORS ON SITE: none

SUMMARY OF ACTIVITIES: Standing water in perimeter of cap was pumped out in the morning. In the afternoon, muddy areas of the cap were disk to help dry them. 3 trucks hauled clay in morning and afternoon and D5H stockpiled the soil in one area. Worked from 7:00 to 5:30.

ATTACHMENTS: — SIGNITURE: Christian M. Rasch

KEYSTONE ENVIRONMENTAL RESOURCES, INC.
CONSTRUCTION INSPECTION DAILY REPORT

BEAZER MATERIALS & SERVICES, INC.
SURFACE IMPOUNDMENT CLOSURE
KOPPERS INDUSTRIES, INC.
GRENADA, MISSISSIPPI PLANT

DATE: 8/19/89
REPORT NO.: 21
SHEET 1 of 1
BY: CMR

WEATHER: Hot Hazy partly sunny

PRECIPITATION: 0 (inches) TEMPERATURE: LOW 70 HIGH 93

CONTRACTOR PERSONNEL ON SITE: Joe Willing, John Suggs, Tom Doubleday (left at 10:00 AM)
Hours worked 7:00 to 5:30

EQUIPMENT EMPLOYED: International Farmall w/ disk, Caterpillar D5H, International w/ rubber tired compacter, Bomag rototiller

INSPECTORS ON SITE: Chris Rascler

QUALITY CONTROL TESTS AND SAMPLES: 2 samples from stockpile #1 PI=12 78% passing sieve (#200); #2 14 PI, 85% passing sieve (#200) - see below for more

VISITORS ON SITE:

SUMMARY OF ACTIVITIES: Wet areas (around perimeter) were disk, rototilled, leveled and then recompacted. Jeff Vance tested 4 locations w/ Humboldt. The results were:
#1 19.7% moisture 104.5% rel. density, #2 24% moisture 97.1% rel. density
#3 23.4% moisture 102% rel density #4 27.4% moisture, 97.3% rel density
I said this was OK and he (Joe Willing) didn't have to rework it.

ATTACHMENTS: —
SIGNITURE: Christian M. Rasch

KEYSTONE ENVIRONMENTAL RESOURCES, INC.
CONSTRUCTION INSPECTION DAILY REPORT

BEAZER MATERIALS & SERVICES, INC.
SURFACE IMPOUNDMENT CLOSURE
KOPPERS INDUSTRIES, INC.
GRENADA, MISSISSIPPI PLANT

DATE: 8/20/89 (sunday)
REPORT NO.: 22
SHEET 1 of 1
BY: CMR

WEATHER: Hot Humid Hazy in morning sunny in afternoon

PRECIPITATION: ____ (inches) TEMPERATURE: LOW 70 HIGH 94

CONTRACTOR PERSONNEL ON SITE: Tom Doubleday (left at 2:00)
John Suggs, Joe Winning

Worked from 7:00 to 3:30

EQUIPMENT EMPLOYED: International farmall w/ disk, Caterpillar D5H

INSPECTORS ON SITE: Chris Rascher

QUALITY CONTROL TESTS AND SAMPLES: — none

VISITORS ON SITE: — none

SUMMARY OF ACTIVITIES: ~~The cap surface was~~
The capped was staked out w/ an approximate grid pattern of 3 rows w/ 40' spacing. The stock filed soil was then spread over the cap by Tom D., John S. moved soil from stakeds. Joe W. leveled ~~evened out~~ soil from 1:30 to 3:30. Not enough soil to cover last ~50'x50'x6" at north east end.

ATTACHMENTS: — SIGNITURE: Christian M. Rasch

KEYSTONE ENVIRONMENTAL RESOURCES, INC.
CONSTRUCTION INSPECTION DAILY REPORT

BEAZER MATERIALS & SERVICES, INC.
SURFACE IMPOUNDMENT CLOSURE
KOPPERS INDUSTRIES, INC.
GRENADA, MISSISSIPPI PLANT

DATE: 8/21/89
REPORT NO.: 23
SHEET 1 of 2
BY: CMR

WEATHER: Hot Humid Sunny

PRECIPITATION: 0 (inches) TEMPERATURE: LOW 74 HIGH 96

CONTRACTOR PERSONNEL ON SITE: John Suggs, Ricky Denny
Joe Willing, Tom Doubleday (7:00 to 8:00)

7:00 to 7:30

EQUIPMENT EMPLOYED: 1 double axle dump hauled in 4 load of clay,
D5H dozer, John Deere frontend loader backhoe, Rex rototiller,
water truck, International Farmall w/ disk, compactor & lime spreader.

INSPECTORS ON SITE: Chris Roselor

QUALITY CONTROL TESTS AND SAMPLES: Jeff Vance 12:30 to 7:00
% moisture - random samples uncompacted.

VISITORS ON SITE: John Green (owner of Green & Green)

SUMMARY OF ACTIVITIES: John Suggs, Tom Doubleday, Ricky D.
removed level stakes & rocks (2-3 hours). Truck hauling in more
clay and dozer leveled area (Joe Willing). Cap was then
disk and 3 1/2 loads of bentonite were added. Cap was
rototilled after each load of bentonite was applied. The
1st load was applied near 11:00AM. The 1st load weighed
13,450 lbs (18,450 gross), the second weighed 14,170 lbs,

ATTACHMENTS: ____________ SIGNITURE: ____________

KEYSTONE ENVIRONMENTAL RESOURCES, INC.
CONSTRUCTION INSPECTION DAILY REPORT

BEAZER MATERIALS & SERVICES, INC.
SURFACE IMPOUNDMENT CLOSURE
KOPPERS INDUSTRIES, INC.
GRENADA, MISSISSIPPI PLANT

DATE: 8/21/89
REPORT NO.: 23
SHEET 2 of 2
BY: CMR

SUMMARY OF ACTIVITIES (cont.): and the third (and fourth) weighed 20,000 lbs. Roto tilling was done to a depth of 6". The first two tilling took approximately 45 min. each and the third took approximately 1 hr 45 min. The clay looked completely mixed and no unmixed bentonite was observed.

After roto tilling Jeff Vance ~~took 4~~ sampled randomly at 4 places in the ~~un~~ uncompacted clay the results were: 17%, 20%, 19.4% and 23%. Four truck loads of water were then applied (total of 7000 gal H_2O). Water application was completed at 6:45. 3 ~~0~~ ~~or~~ random ~~samples~~ locations were then sampled w/ the Humbolt, the results were: 29%, 19%, 19%. Visually dry areas were then further wetted w/ 4th load of water. Compaction was then attempted but the truck kept getting stuck. It was then decided to just have the dozer lightly compact for the end of the day.

ATTACHMENTS: —

SIGNITURE: Christine M. Rasch

KEYSTONE ENVIRONMENTAL RESOURCES, INC.
CONSTRUCTION INSPECTION DAILY REPORT

BEAZER MATERIALS & SERVICES, INC.
SURFACE IMPOUNDMENT CLOSURE
KOPPERS INDUSTRIES, INC.
GRENADA, MISSISSIPPI PLANT

DATE: 8/22/89
REPORT NO.: 24
SHEET 1 of 3
BY: CMR

WEATHER: Very Hot sunny Humid

PRECIPITATION: _____ (inches) TEMPERATURE: LOW 74 HIGH 99

CONTRACTOR PERSONNEL ON SITE: Joe Winning, Tom Doubleday, Joe Suggs, Ricky Denny

EQUIPMENT EMPLOYED: International Farmall w/ disk & compactor, Bomag (10 min.), D5H dozer, water truck

INSPECTORS ON SITE: Chris Rascler

QUALITY CONTROL TESTS AND SAMPLES: Jeff Vance took % moisture and % relative density w/ Humboldt at 11 locations. Took 2 shelby tubes.

VISITORS ON SITE: ______

SUMMARY OF ACTIVITIES: John Suggs compacted for 2 hrs w/ rubber tired compactor. Tom D. and Ricky D. replaced blades on Rex for 2 hrs. Joe W. rotatilled obvious wet spots for 10 min. w/ Bomag to help dry them a little. After compaction 11 locations encompassing the whole site were chosen for testing. Percent moisture and relative density tests w/ Humboldt were performed.

ATTACHMENTS: ______ SIGNITURE: Christine M. Rasch

KEYSTONE ENVIRONMENTAL RESOURCES, INC.
CONSTRUCTION INSPECTION DAILY REPORT

BEAZER MATERIALS & SERVICES, INC.
SURFACE IMPOUNDMENT CLOSURE
KOPPERS INDUSTRIES, INC.
GRENADA, MISSISSIPPI PLANT

DATE: 8/22/89
REPORT NO.: 24
SHEET 2 of 3
BY: CMR

SUMMARY OF ACTIVITIES (cont.):

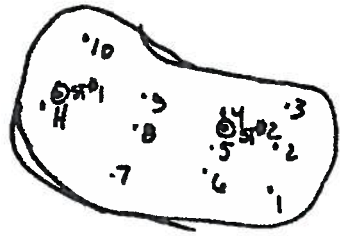
Two ~~to~~ sampling locations did not pass they were location #3 and #11. I called Mike B. to check, he said to ~~re~~ rework the areas and add water. The areas surrounding #3 and #11 were reworked (other areas that visually appeared dry were also reworked) and water was added.
The reworked areas were retested, Area #11 passed area #3 did not. (see attached table). The area surrounding area #3 was reworked and watered again and then it passed. Shelby tube samples were then taken near sampling point #11 and #5 and delivered to Springer Eng.
Note: There was some confusion as to whether optimum moisture was 24 or 25%. Jeff Vance ~~opum~~ ~~decided~~ stated it was 24.2%.

ATTACHMENTS: ______

SIGNITURE: Christian M. Rauch

24-1

tests taken on 8/22/89



approximate locations

ST#1, ST#2 - shelby tube samples

1st Sampling

	% moisture	% rel. density		2nd Sampling	3rd sampling
1	23.5 (25.8, 25.2)	95.2 (94.8, 95.8) (retested in same area)	passed		
2	25.0	95.5	passed		
3	23.0	101.7	did not pass	fail	26.7 96.6 passed
4	26.2	97.6	pass		
5	24.8	95.0	pass		
6	24.9	99.5	pass		
7	25.3	97.3	pass		
8	24.2 (26.3)	95.3 (94.5) (retest)	pass		
9	27.5	95.1	pass		
10	24.7	99.7	pass		
11	23.1	100.3	did not pass	24.2% 97.8	passed

KEYSTONE ENVIRONMENTAL RESOURCES, INC.
CONSTRUCTION INSPECTION DAILY REPORT

BEAZER MATERIALS & SERVICES, INC.
SURFACE IMPOUNDMENT CLOSURE
KOPPERS INDUSTRIES, INC.
GRENADA, MISSISSIPPI PLANT

DATE: 8/29/89
REPORT NO.: 25
SHEET 1 of 3
BY: TPK

WEATHER: SUNNY, HOT, HUMID : MORNING AND AFTERNOON

PRECIPITATION: TRACE (inches) TEMPERATURE: LOW 73 HIGH 95

CONTRACTOR PERSONNEL ON SITE:

GREEN & GREEN : JOE WILLING, RICKEY DENLEY, JOHN SUGGS

EQUIPMENT EMPLOYED: CATERPILLAR D5H DOZER, INTERNATIONAL FARMALL TRACTOR, BACK HOE, TWO TRAILER TRUCKS, RUBBER-TIRED ROLLER

INSPECTORS ON SITE: TERRY KIRCHNER : KEYSTONE

QUALITY CONTROL TESTS AND SAMPLES: NONE

VISITORS ON SITE: JEFF VANCE : MID-SOUTH TESTING

SUMMARY OF ACTIVITIES: STARTED AT 7:00 AM.

STOPPED AT MID-SOUTH TESTING TO GET RESULTS OF GRAIN SIZE AND ATTERBERG LIMITS TESTS.

- GRAIN SIZE (PASSING # 200 SIEVE) : 78%, 83%
- PLASTICITY INDEX : 15

ARRIVED AT SITE AT 7:45 AM. JOE AND RICKEY

ATTACHMENTS: SIGNATURE: Terrence P. Kirchner

KEYSTONE ENVIRONMENTAL RESOURCES, INC.
CONSTRUCTION INSPECTION DAILY REPORT

BEAZER MATERIALS & SERVICES, INC.
SURFACE IMPOUNDMENT CLOSURE
KOPPERS INDUSTRIES, INC.
GRENADA, MISSISSIPPI PLANT

DATE: 8/29/89
REPORT NO.: 35
SHEET 2 of 3
BY: TPK

SUMMARY OF ACTIVITIES (cont.):

WENT TO GET AN ALTERNATE TILLER AS BOTH OF THE TWO PREVIOUSLY USED ONES ARE DOWN FOR REPAIRS

RICKEY WAS BACK AT 8:45 WITH THE BACK HOE.

TWO TRAILERS USED TO BRING IN SOIL FROM THE BORROW.

JOE WILLING ISN'T SURE IF THE BORROW HAS ENOUGH CLAYEY SOIL FOR THE NEXT LIFT. MAY HAVE TO FIND A NEW PIT (JOE W.)

AT 7:00 AM, JOHN, RICKEY AND JOE ARE TAKING GRADE CHECKS AS THEY PLACE THE STAKES. APPROXIMATELY 50% OF THE SOIL FOR THIS LIFT IS IN PLACE.

AFTER LUNCH, THE CREW CONTINUED TO PICK UP ROCKS AND JOE W. OPERATED THE DOZER IN ORDER TO SPREAD THE ARRIVING BORROW MATERIAL. ONLY ONE TRUCK IS DELIVERING MATERIAL NOW.

ATTACHMENTS: ____________ SIGNATURE: Timothy P. Kerchner

KEYSTONE ENVIRONMENTAL RESOURCES, INC.
CONSTRUCTION INSPECTION DAILY REPORT

BEAZER MATERIALS & SERVICES, INC.
SURFACE IMPOUNDMENT CLOSURE
KOPPERS INDUSTRIES, INC.
GRENADA, MISSISSIPPI PLANT

DATE: 8/29/89
REPORT NO.: 25
SHEET 3 of 3
BY: TPK

SUMMARY OF ACTIVITIES (cont.):

AT 4:30 PM, A BRIEF SHOWER CAME THROUGH; NOTHING SIGNIFICANT FELL.

THE LAST TRUCK LOAD WAS DELIVERED AT 5:40 PM. AT 5:45, THE NORTH HALF OF THE IMPOUNDMENT WAS BEING ROLLED AS THE SOUTH HALF WAS BEING "CLEANED-UP" ACCORDING TO GRADE STAKES. BLUEPRINT CHECK WILL BE DONE TOMORROW.

FINISHED AT 6:10 PM

ATTACHMENTS: ____________

SIGNATURE: Timothy P. Keeling

KEYSTONE ENVIRONMENTAL RESOURCES, INC.
CONSTRUCTION INSPECTION DAILY REPORT

BEAZER MATERIALS & SERVICES, INC.
SURFACE IMPOUNDMENT CLOSURE
KOPPERS INDUSTRIES, INC.
GRENADA, MISSISSIPPI PLANT

DATE: 8/30/89
REPORT NO.: 26
SHEET 1 of 2
BY: TPK

WEATHER: HUMID, OVERCAST A.M.; SUNNY BY 9:30

PRECIPITATION: 0.58 (inches) EARLY MORNING TEMPERATURE: LOW 73 HIGH 93

CONTRACTOR PERSONNEL ON SITE:

GREEN & GREEN: JOE WILLING, RICKEY DENLEY, JOHN SUGGS, LEONARD LANIER, CLYDE MEYERS

EQUIPMENT EMPLOYED: FARM TRACTOR - IH 1066, DISK IMPLEMENT, BACK HOE, SMALL GARDEN TILLER (MASCHIO TYPE A), FORD TRACTOR

INSPECTORS ON SITE: TERRY KIRCHNER - KEYSTONE

QUALITY CONTROL TESTS AND SAMPLES: NONE

VISITORS ON SITE: JEFF VANCE : MID-SOUTH TESTING

SUMMARY OF ACTIVITIES: ARRIVED AT 7:00 AM.

THE TOP INCH OR TWO WAS WET FROM AN EARLY MORNING SHOWER. JOE W. DECIDED TO LET IT AIR DRY A LITTLE BEFORE DISKING.

AT 10:45, THE TOP 3 OR 4 INCHES WERE DISKED TO SPEED UP THE DRYING.

AT 11:00, THE SMALL GARDEN TILLER WAS BROUGHT

ATTACHMENTS: SIGNATURE: Terrence P. Kirchner

KEYSTONE ENVIRONMENTAL RESOURCES, INC.
CONSTRUCTION INSPECTION DAILY REPORT

BEAZER MATERIALS & SERVICES, INC.
SURFACE IMPOUNDMENT CLOSURE
KOPPERS INDUSTRIES, INC.
GRENADA, MISSISSIPPI PLANT

DATE: 8/30/89
REPORT NO.: 26
SHEET 2 of 2
BY: TPK

SUMMARY OF ACTIVITIES (cont.):

TO THE SITE.

AT 11:30, THE FRONT LEFT TIRE ON THE WATER TRUCK WAS CHANGED (DUE TO A FLAT).

AFTER LUNCH, THE CREW RESUMED PICKING UP OVERSIZED ROCKS IN THE LIFT. WHICH THE DISK HAD LOOSENED.

LEONARD & CLYDE LEFT AT 4:00 PM.

TESTED THE NEW TILLER - MIXED 50-50.
4:00 PM - LOADED BENTONITE : 15,055 lbs (NET)
4:30 PM - BEGAN SPRAYING BENTONITE
5:00 PM - BEGAN DISKING SOIL/BENTONITE
5:25 PM - STARTED TILLING ; 6:20 STOPPED
6:10 PM - STARTED ROLLING ; 6:25 STOPPED
- ROLLED BECAUSE OF 50% CHANCE OF RAIN.

FINISHED 6:30 PM

ATTACHMENTS: ______ SIGNATURE: Travis P. Kuchina

KEYSTONE ENVIRONMENTAL RESOURCES, INC.
CONSTRUCTION INSPECTION DAILY REPORT

BEAZER MATERIALS & SERVICES, INC.
SURFACE IMPOUNDMENT CLOSURE
KOPPERS INDUSTRIES, INC.
GRENADA, MISSISSIPPI PLANT

DATE: 8/31/89
REPORT NO.: 27
SHEET 1 of 2
BY: TPK

WEATHER: FOGGY, PARTLY SUNNY A.M.; SUNNY, HOT P.M.

PRECIPITATION: ____ (inches) TEMPERATURE: LOW 74 HIGH 95

CONTRACTOR PERSONNEL ON SITE:
GREEN & GREEN: JOE WILLING, RICKEY DENLEY, JOHN SUGGS, JOE DAVE M^CCLOSKEY

EQUIPMENT EMPLOYED: IH 1066 TRACTOR, SPREADER, D5H CAT. DOZER, DISK IMPLEMENT, MASCHIO TILLER

INSPECTORS ON SITE: TERRY KIRCHNER: KEYSTONE
JEFF VANCE: MID-SOUTH TESTING

QUALITY CONTROL TESTS AND SAMPLES: MOISTURE AND DENSITY (SEE ATTACHMENT)

VISITORS ON SITE: NONE

SUMMARY OF ACTIVITIES: ARRIVED 7:00 AM
THE SPREADER WAS LOADED WITH THE SECOND APPLICATION OF BENTONITE: WEIGHT = 15,450 lbs (NET)
STARTED SPREADING AT 8:10; FINISHED AT 8:25.
DISKED THIS APPLICATION, BUT WILL ROTOTILL THE THIRD APPLICATION OF BENTONITE.

ATTACHMENTS: 27-1 SIGNATURE: Terrance P. Kirchner

KEYSTONE ENVIRONMENTAL RESOURCES, INC.
CONSTRUCTION INSPECTION DAILY REPORT

BEAZER MATERIALS & SERVICES, INC.
SURFACE IMPOUNDMENT CLOSURE
KOPPERS INDUSTRIES, INC.
GRENADA, MISSISSIPPI PLANT

DATE: 8/31/89
REPORT NO.: 27
SHEET 2 of 2
BY: TPK

SUMMARY OF ACTIVITIES (cont.):

THE THIRD LOAD OF BENTONITE WEIGHED 15,380 lbs (NET)

CALLED MIKE BOLLINGER (KEYSTONE) ABOUT ADDING EXTRA BENTONITE. HE SAID TO ADD ABOUT 5000 EXTRA POUNDS SINCE THE RESULTS OF THE LAST LIFTS' PERMEABILITY TESTS WERE SO CLOSE TO THE DESIGN SPECS.

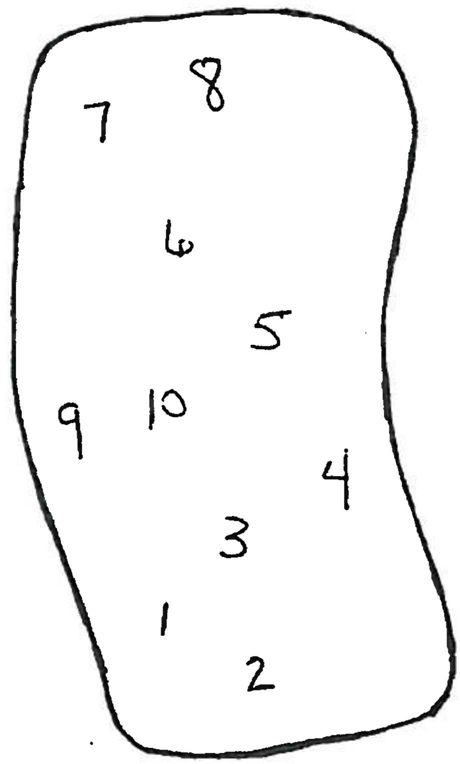
THE FOURTH LOAD OF BENTONITE WEIGHED 5,940 lbs (NET).

FINISHED SPREADING BENTONITE AT 11:30 AM.
DISKED SOIL/BENTONITE FROM 11:30 - 12:00.
TILLED FROM 12:45 - 1:45.
WATER WAS THEN APPLIED TO BRING UP THE MOISTURE CONTENT. AFTER WATERING, THE SOIL WAS ROTOTILLED AGAIN AND THEN ROLLED WITH THE RUBBER-TIRED ROLLER.
JEFF VANCE OF MID-SOUTH TESTING TOOK MOISTURE AND DENSITY TESTS (SEE ATTACHMENT FOR RESULTS). SOME OF THE TESTS SHOWED EXCESS MOISTURE AND LOW COMPACTION. MORE WILL BE TAKEN TOMORROW.
FINISHED 6:30

ATTACHMENTS: ______ SIGNATURE: Tamma P. Kinkana

ATTACHMENT 27-1 DATE 8/31/89

TEST NO.	% MOISTURE	% COMPACTION
1	27.0	96.6
2	29.0	92.8
3	26.0	98.8
4	31.8	89.8
5	31.6	87.8
6	24.4	98.2
7	25.5	98.3
8	27.0	95.6
9	26.5	94.5
10	26.0	96.3
11		
12		
13		
14		
15		



KEYSTONE ENVIRONMENTAL RESOURCES, INC.
CONSTRUCTION INSPECTION DAILY REPORT

BEAZER MATERIALS & SERVICES, INC.
SURFACE IMPOUNDMENT CLOSURE
KOPPERS INDUSTRIES, INC.
GRENADA, MISSISSIPPI PLANT

DATE: 9/1/89
REPORT NO.: 28
SHEET 1 of 2
BY: TPK

WEATHER: SUNNY, HOT, HUMID

PRECIPITATION: 0 (inches) TEMPERATURE: LOW 71 HIGH 94

CONTRACTOR PERSONNEL ON SITE:
GREEN & GREEN: JOE WILLING, RICKEY DENLEY, JOHN SUGGS, JOE DAVE McCLOSKEY

EQUIPMENT EMPLOYED: IH 1066 TRACTOR, CAT. D5H DOZER, DISK IMPLEMENT

INSPECTORS ON SITE: TERRY KIRCHNER: KEYSTONE
JEFF VANCE: MID-SOUTH TESTING

QUALITY CONTROL TESTS AND SAMPLES: MOISTURE AND DENSITY (SEE ATTACHMENT)

VISITORS ON SITE: NONE

SUMMARY OF ACTIVITIES: ARRIVED AT 7:00 A.M.
SEVERAL AREAS APPEARED TOO WET; THEREFORE, THESE AREAS WERE DISKED IN ORDER TO EXPEDITE THEIR DRYING. AFTER DRYING, THESE AREAS WERE THEN ROLLED AND MOISTURE AND DENSITY TESTS WERE TAKEN (SEE ATTACHMENT).

ATTACHMENTS: 28-1 SIGNATURE: Terry P Kirchner

KEYSTONE ENVIRONMENTAL RESOURCES, INC.
CONSTRUCTION INSPECTION DAILY REPORT

BEAZER MATERIALS & SERVICES, INC.
SURFACE IMPOUNDMENT CLOSURE
KOPPERS INDUSTRIES, INC.
GRENADA, MISSISSIPPI PLANT

DATE: 9/1/89
REPORT NO.: 28
SHEET 2 of 2
BY: TPK

SUMMARY OF ACTIVITIES (cont.):

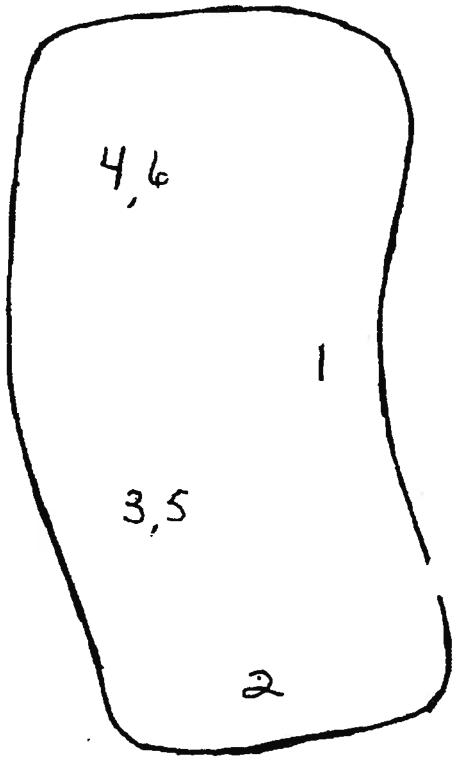
SHELBY TUBES WERE THEN PUSHED INTO
THE SOIL FOR PERMEABILITY SAMPLES.
AT 10:00 AM., SAMPLES WERE TAKEN TO
SPRINGER ENGINEERING IN STARKVILLE, MS.
FOR TESTING.
RETURNED TO PLANT BY 3:00 PM. TO
STORE EQUIPMENT THEN WENT TO AIRPORT
FOR FLIGHT BACK TO PITTSBURGH.

ATTACHMENTS: 28-1

SIGNATURE: Tom P. Kirkman

ATTACHMENT 28-1 DATE 9/1/89

TEST NO.	% MOISTURE	% COMPACTION	
1	25.5	99.0	O.K.
2	27.0	97.8	O.K.
3	29.8/31.4	94.3/92.4	NG
4	31.7/28.7	91.0/94.8	NG
* 5	25.5	99.7	OK
* 6	24.8	99.8	OK
7			
8			
9			
10			
11			
12			
13			
14			
15			



* NOS. 5 AND 6 WERE TAKEN IN APPROXIMATELY THE SAME LOCATIONS AS NOS. 3 AND 4, RESPECTIVELY; HOWEVER, THEY WERE TAKEN 4 HOURS LATER.

KEYSTONE ENVIRONMENTAL RESOURCES, INC.
CONSTRUCTION INSPECTION DAILY REPORT

BEAZER MATERIALS & SERVICES, INC.
SURFACE IMPOUNDMENT CLOSURE
KOPPERS INDUSTRIES, INC.
GRENADA, MISSISSIPPI PLANT

DATE: 9/9/89
REPORT NO.: 39
SHEET 1 of 3
BY: TPK

WEATHER: MILD & CLOUDY IN MORNING; SUNNY, HOT, HUMID IN AFTERNOON

PRECIPITATION: 0 (inches) TEMPERATURE: LOW 73 HIGH 95

CONTRACTOR PERSONNEL ON SITE:
GREEN & GREEN: RICKEY DENLEY, JOHN SUGGS

EQUIPMENT EMPLOYED: INTERNATIONAL FARMALL WITH DISK, CASE 850 DOZER (USING CHISEL PLOW), INT. FARMALL WITH BENTONITE SPREADER, BOMAG ROTOTILLER, WATER TRUCK, CASE BACK HOE

INSPECTORS ON SITE: TERRY KIRCHNER

QUALITY CONTROL TESTS AND SAMPLES: NONE

VISITORS ON SITE: NONE

SUMMARY OF ACTIVITIES: ARRIVED AT 7:00 AM.
JOHN SUGGS WAS USING THE DISK TO BREAK-UP SOIL FURTHER AFTER RICKEY DENLEY MADE A PASS WITH THE 850 DOZER USING THE CHISEL PLOW TO LOOSEN SOIL. AFTER THIS, THEY BOTH WERE PICKING UP ANY ROCKS GREATER THAN SIX INCHES IN DIAMETER. FURTHER DISKING WAS THEN DONE.

ATTACHMENTS: ____________ SIGNATURE: Terence P. Kirchner

KEYSTONE ENVIRONMENTAL RESOURCES, INC.
CONSTRUCTION INSPECTION DAILY REPORT

BEAZER MATERIALS & SERVICES, INC.
SURFACE IMPOUNDMENT CLOSURE
KOPPERS INDUSTRIES, INC.
GRENADA, MISSISSIPPI PLANT

DATE: 9/9/89
REPORT NO.: 29
SHEET 2 of 3
BY: TPK

SUMMARY OF ACTIVITIES (cont.):

TO UNCOVER ANY REMAINING ROCKS.
AT 11:15, THE SPREADER WAS LOADED WITH THE FIRST BATCH OF BENTONITE TO BE SPREAD.
AT 11:45, THE BENTONITE WAS SPREAD.
FIRST APPLICATION: 15,610 lbs (NET)

AT 1:00 PM, THE SOIL AND BENTONITE WAS MIXED USING THE DISK.
AT 1:10, THE BOMAG ROTOTILLER WAS USED TO PROVIDE BETTER MIXING AND TO INSURE THAT IT WAS MIXED TO A DEPTH OF SIX INCHES.
FINISHED TILLING AT 3:00 PM.
MORE LOOSE ROCKS LARGER THAN SIX INCHES IN DIAMETER WERE REMOVED.
AT 3:15, THE SECOND APPLICATION WAS LOADED INTO THE SPREADER; WEIGHT: 15,110 lbs (NET)
3:50 STARTED TILLING SOIL/BENTONITE USING BOMAG TILLER AND SMALL (MASCHIO) TILLER.
THIRD LOAD OF BENTONITE WEIGHED 14,560 lbs (NET)

ATTACHMENTS: ____________ SIGNATURE: Terence P. Kirkman

KEYSTONE ENVIRONMENTAL RESOURCES, INC.
CONSTRUCTION INSPECTION DAILY REPORT

BEAZER MATERIALS & SERVICES, INC.
SURFACE IMPOUNDMENT CLOSURE
KOPPERS INDUSTRIES, INC.
GRENADA, MISSISSIPPI PLANT

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SHEET 3 of 3
BY: TPK

SUMMARY OF ACTIVITIES (cont.):

CALLED MIKE BOLLINGER (KEYSTONE) ABOUT ADDING EXTRA BENTONITE AGAIN ON THIS LIFT AS WAS DONE ON THE LAST LIFT. HE SAID TO GO AHEAD AND ADD EXTRA. FOURTH LOAD WEIGHED 7,160 lbs (NET) THEREFORE, TOTAL BENTONITE ADDED WAS:

1ST	15,610 lbs
2ND	15,110
3RD	14,560
4TH	7,160
TOTAL	52,440 lbs

AT 6:30 THE THIRD AND FOURTH LOADS OF BENTONITE WERE TILLED INTO THE SOIL USING BOTH TILLERS AGAIN.
FINISHED TILLING AT 8:30 PM

ATTACHMENTS:

SIGNATURE: Thomas P. Kirkman

KEYSTONE ENVIRONMENTAL RESOURCES, INC.
CONSTRUCTION INSPECTION DAILY REPORT

BEAZER MATERIALS & SERVICES, INC.
SURFACE IMPOUNDMENT CLOSURE
KOPPERS INDUSTRIES, INC.
GRENADA, MISSISSIPPI PLANT

DATE: 9/10/89
REPORT NO.: 30
SHEET 1 of 2
BY: TPK

WEATHER: OVERCAST, DRIZZLING (RAINED LAST NIGHT)

PRECIPITATION: 1 (inches) TEMPERATURE: LOW 71 HIGH 85

CONTRACTOR PERSONNEL ON SITE:
GREEN & GREEN: JOE WILLING (2 HRS)

EQUIPMENT EMPLOYED: NONE

INSPECTORS ON SITE: TERRY KIRCHNER

QUALITY CONTROL TESTS AND SAMPLES: NONE

VISITORS ON SITE: NONE

SUMMARY OF ACTIVITIES: ARRIVED AT 7:00 A.M.
APPROXIMATELY ONE INCH OF RAIN FELL THROUGH THE NIGHT. SINCE THE RAIN WAS NOT EXPECTED, THE LIFT WAS NOT ROLLED LAST NIGHT. THIS LEFT THE RAIN SATURATE THE TOP TWO OR THREE INCHES TO THE EXTENT THAT IT WAS TOO WET TO DISK DRY

ATTACHMENTS: SIGNATURE: Terry P Kirchner

KEYSTONE ENVIRONMENTAL RESOURCES, INC.
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BEAZER MATERIALS & SERVICES, INC.
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KOPPERS INDUSTRIES, INC.
GRENADA, MISSISSIPPI PLANT

DATE: 9/10/89
REPORT NO.: 33
SHEET 2 of 2
BY: TPK

SUMMARY OF ACTIVITIES (cont.):

I RETURNED TWICE MORE DURING THE AFTERNOON TO CHECK ON THE DRYING, BUT SINCE THE SUN WAS OBSCURRED BY CLOUDS ALL DAY, THE SOIL NEVER DRIED.

ATTACHMENTS: ______________ SIGNATURE: Teresa P. Kirkner

KEYSTONE ENVIRONMENTAL RESOURCES, INC.
CONSTRUCTION INSPECTION DAILY REPORT

BEAZER MATERIALS & SERVICES, INC.
SURFACE IMPOUNDMENT CLOSURE
KOPPERS INDUSTRIES, INC.
GRENADA, MISSISSIPPI PLANT

DATE: 9/11/89
REPORT NO.: 31
SHEET 1 of 3
BY: TPK

WEATHER: AM: HAZY, ALTOCUMULUS CLOUDS ; PM: PARTLY SUNNY, SOME DRIZZLE

PRECIPITATION: TRACE (inches) TEMPERATURE: LOW 73 HIGH 89

CONTRACTOR PERSONNEL ON SITE: GREEN & GREEN CONST : JOE WILLING, RICKEY DENLEY, JOHN SUGGS, JOE DAVE McCLESKEY

EQUIPMENT EMPLOYED: IHINGIC TRACTOR, DISK IMPLEMENT, 850 DOZER, FORD TRACTOR, MASCHIO TILLER, RUBBER-TIRED ROLLER

INSPECTORS ON SITE: TERRY KIRCHNER - KEYSTONE
JEFF VANCE - MID-SOUTH TESTING

QUALITY CONTROL TESTS AND SAMPLES: MOISTURE & DENSITY WITH HUMBOLDT SAMPLER.

VISITORS ON SITE: NONE

SUMMARY OF ACTIVITIES: ARRIVED AT 7:05 A.M.
RICKEY WAS DISKING THE SOIL TO HELP IT DRY MORE QUICKLY.
IN ORDER TO GET AN IDEA OF THE MOISTURE CONTENT, THE SURFACE WAS ROLLED (TWO PASSES ONLY) AND THE RESULTS OF TWO TESTS (30% and 28% MOISTURE) SHOWED

ATTACHMENTS: ________________ SIGNATURE: Terry P. Kirchner

KEYSTONE ENVIRONMENTAL RESOURCES, INC.
CONSTRUCTION INSPECTION DAILY REPORT

BEAZER MATERIALS & SERVICES, INC.
SURFACE IMPOUNDMENT CLOSURE
KOPPERS INDUSTRIES, INC.
GRENADA, MISSISSIPPI PLANT

DATE: 9/11/89
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SHEET 2 of 3
BY: TPK

SUMMARY OF ACTIVITIES (cont.):

THAT WATER CONTENT WAS IN EXCESS OF THE ACCEPTABLE MOISTURE LIMIT OF OPTIMUM (24.2%) PLUS 3% ABOVE OPTIMUM (27.2%)

AFTER LUNCH, STORM CLOUDS BEGAN TO MOVE IN SO THE 850 D TRACTOR TRACKED OVER THE SURFACE TO PARTIALLY ROLL THE TOP IN CASE IT RAINED.

JEFF VANCE OF MID-SOUTH TESTING TOOK MORE SAMPLES AND BOTH WERE LOW (20% AND 21.8%) INDICATING THAT MUCH MOISTURE HAD EVAPORATED IN SOME SECTIONS WHILE OTHERS STILL APPEARED WET.

SINCE THE RAIN FROM SUNDAY MORNING ONLY WET THE TOP 2" OR 3", MIXING OF THE WHOLE 6" MIGHT CREATE THE PERFECT MOISTURE. THEREFORE, THE FORD TRACTOR W/ MASCHIO TILLER MADE TWO PASSES, BUT ONLY TILLED TOP 4"; ~~SO~~ THE DISK WAS BROUGHT OUT IN ORDER TO MIX THE FULL 6" DEPTH.

BY THIS TIME, THE MOISTURE APPEARED

ATTACHMENTS: ______________ SIGNATURE: Terence P. Kirchner

KEYSTONE ENVIRONMENTAL RESOURCES, INC.
CONSTRUCTION INSPECTION DAILY REPORT

BEAZER MATERIALS & SERVICES, INC.
SURFACE IMPOUNDMENT CLOSURE
KOPPERS INDUSTRIES, INC.
GRENADA, MISSISSIPPI PLANT

DATE: 9/11/89
REPORT NO.: 31
SHEET 3 of 3
BY: TPK

SUMMARY OF ACTIVITIES (cont.):

TO HAVE DROPPED BELOW OPTIMUM, BUT
IT WAS TOO LATE TO BEGIN ADDING
WATER, TILLING AND ROLLING.
THEREFORE, THE TOP WAS ROLLED IN CASE
OF RAIN TONIGHT.
FINISHED AT 6:00 PM

ATTACHMENTS:

SIGNATURE: Teresa P. Kirkman

KEYSTONE ENVIRONMENTAL RESOURCES, INC.
CONSTRUCTION INSPECTION DAILY REPORT

BEAZER MATERIALS & SERVICES, INC.
SURFACE IMPOUNDMENT CLOSURE
KOPPERS INDUSTRIES, INC.
GRENADA, MISSISSIPPI PLANT

DATE: 9/12/89
REPORT NO.: 32
SHEET 1 of 2
BY: TPK

WEATHER: AM: OVERCAST, MILD, 9:00 AM: PARTLY SUNNY, HOT, HUMID

PRECIPITATION: 0 (inches) TEMPERATURE: LOW 71 HIGH 94

CONTRACTOR PERSONNEL ON SITE: GREEN & GREEN CONST:
RICKEY DENLEY, CLYDE MEYERS.

EQUIPMENT EMPLOYED: IH 1066 TRACTOR, DISK IMPLEMENT, WATER TRUCK, RUBBER-TIRED ROLLER

INSPECTORS ON SITE: TERRY KIRCHNER : KEYSTONE
JEFF VANCE : MID-SOUTH TESTING

QUALITY CONTROL TESTS AND SAMPLES: MOISTURE AND DENSITY TESTS

VISITORS ON SITE: JOHN GREEN (PRES. OF GREEN + GREEN)

SUMMARY OF ACTIVITIES: ARRIVED AT 7:00 AM.
JEFF VANCE TOOK SEVERAL MOISTURE AND COMPACTION TESTS. THE RESULTS WERE BELOW SPECIFICATIONS FOR BOTH MOISTURE AND COMPACTION. THEREFORE, THE SOIL WAS DISKED IN PREPARATION OF ADDING WATER. BASED ON RESULTS OF THIS MORNINGS TESTS, ONE

ATTACHMENTS: 32-1, 32-2 SIGNATURE: Terrance P. Kirchner

KEYSTONE ENVIRONMENTAL RESOURCES, INC.
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BEAZER MATERIALS & SERVICES, INC.
SURFACE IMPOUNDMENT CLOSURE
KOPPERS INDUSTRIES, INC.
GRENADA, MISSISSIPPI PLANT

DATE: 9/12/89
REPORT NO.: 32
SHEET 2 of 2
BY: TPK

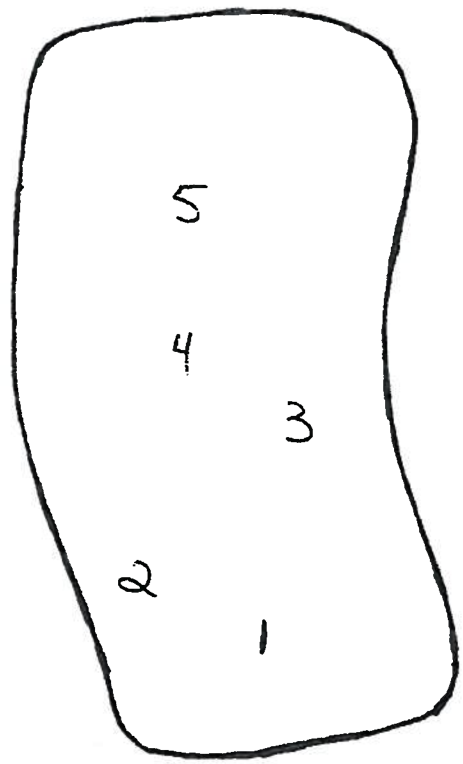
SUMMARY OF ACTIVITIES (cont.):

TRUCKLOAD OF WATER WAS ADDED.
THE SOIL WAS THEN DISKED AGAIN AND
THEN ROLLED WITH THE IH 1066 TRACTOR AND
RUBBER-TIRED ROLLER (SIX PASSES).
SIX MOISTURE AND COMPACTION TEST WERE
TAKEN AND ALL BUT ONE TEST FAILED IN
EITHER MOISTURE OR COMPACTION PERCENTAGE.
AFTER LUNCH, THE SOIL WAS DISKED AGAIN
AND THIS TIME, TWO MORE TRUCKLOADS (4000 GAL)
WERE ADDED, THEN DISKED AND ROLLED (SIX PASSES).
ELEVEN AREAS WERE THEN TESTED FOR MOISTURE
AND COMPACTION (SEE ATTACHMENT).
RESULTS WERE ACCEPTABLE. THEREFORE, TWO
SHELBY TUBE SAMPLES WERE DRIVEN AND
THEN SEALED WITH WAX. SINCE IT WAS
TOO LATE TO TAKE THEM TO THE LAB, I WILL
TAKE THEM TOMORROW MORNING TO SPRINGER
ENGINEERING FOR ANALYSIS OF PERMEABILITY.
FINISHED AT 6:00 PM.

ATTACHMENTS: 32-1, 32-2 SIGNATURE: Timothy P. Kirkham

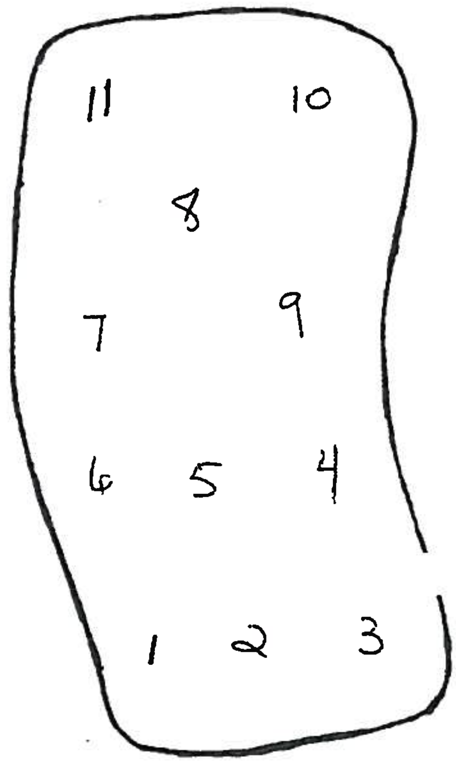
ATTACHMENT 32-1 DATE 9/12/89

TEST NO.	% MOISTURE	% COMPACTION
1	21.4	104.3
2	29.2 / 26.3	91.3 / 93.6
3	20.9	107.6
4	22.8	103.3
5	24.2	98.5
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		



ATTACHMENT 32-2 DATE 9/12/89

TEST NO.	% MOISTURE	% COMPACTION	
1	24.9	100.2	ok.
2	24.7	97.8	ok.
3	25.2	101.1	ok.
4	24.2	103.9	ok
5	26.9	99.3	ok
6	26.9	94.4	ok
7	25.9	103.1	ok
8	24.0	104.0	ok
9	25.8	96.4	ok
10	24.3	102.1	ok
11	27.2	94.7	ok
12			
13			
14			
15			



KEYSTONE ENVIRONMENTAL RESOURCES, INC.
CONSTRUCTION INSPECTION DAILY REPORT

BEAZER MATERIALS & SERVICES, INC.
SURFACE IMPOUNDMENT CLOSURE
KOPPERS INDUSTRIES, INC.
GRENADA, MISSISSIPPI PLANT

DATE: 9/13/89
REPORT NO.: 33
SHEET 1 of 1
BY: TPK

WEATHER: NOT APPLICABLE

PRECIPITATION: N/A (inches) TEMPERATURE: LOW N/A HIGH N/A

CONTRACTOR PERSONNEL ON SITE: NONE

EQUIPMENT EMPLOYED: NONE

INSPECTORS ON SITE: NONE

QUALITY CONTROL TESTS AND SAMPLES: NONE

VISITORS ON SITE: NONE

SUMMARY OF ACTIVITIES:

STOPPED BY MID-SOUTH TESTING TO PICK UP SAND SAMPLE TO TAKE TO SPRINGER ENGINEERING FOR FALLING HEAD PERMEABILITY TEST AND RELATIVE DENSITY TEST ALONG WITH THE TWO SHELBY TUBES FOR ANALYSIS OF PERMEABILITY. THEY SHOULD BE READY BY 9/18 OR 9/19/89.

ATTACHMENTS: NONE SIGNATURE: Terrence P. Kirkman

KEYSTONE ENVIRONMENTAL RESOURCES, INC.
CONSTRUCTION INSPECTION DAILY REPORT

BEAZER MATERIALS & SERVICES, INC.
SURFACE IMPOUNDMENT CLOSURE
KOPPERS INDUSTRIES, INC.
GRENADA, MISSISSIPPI PLANT

DATE: 9/22/89
REPORT NO.: 34
SHEET 1 of 1
BY: TPK

WEATHER: POURING RAIN, REMNANTS OF HURRICANE HUGO

PRECIPITATION: ? (inches) TEMPERATURE: LOW — HIGH —

CONTRACTOR PERSONNEL ON SITE: NONE

EQUIPMENT EMPLOYED: NONE

INSPECTORS ON SITE: TERRY KIRCHNER : KEYSTONE

QUALITY CONTROL TESTS AND SAMPLES: NONE

VISITORS ON SITE: NONE

SUMMARY OF ACTIVITIES: UNABLE TO DO ANY WORK AS RAIN INTENSITY INCREASING FROM HURRICANE HUGO

ATTACHMENTS: ________ SIGNATURE: T. P. Kirchner

KEYSTONE ENVIRONMENTAL RESOURCES, INC.
CONSTRUCTION INSPECTION DAILY REPORT

BEAZER MATERIALS & SERVICES, INC.
SURFACE IMPOUNDMENT CLOSURE
KOPPERS INDUSTRIES, INC.
GRENADA, MISSISSIPPI PLANT

DATE: 10/9/89
REPORT NO.: 35
SHEET 1 of 2
BY: TPK

WEATHER: SUNNY, MILD

PRECIPITATION: 0 (inches) TEMPERATURE: LOW 45 HIGH 80

CONTRACTOR PERSONNEL ON SITE: GREEN & GREEN CONST.: RICKEY DENLEY, JOE DAVE M^C CLESKEY

EQUIPMENT EMPLOYED: IH 1066 TRACTOR, FORD 3000 TRACTOR, BOX SCRAPER, DRUM ROLLER

INSPECTORS ON SITE: TERRY KIRCHNER : KEYSTONE

QUALITY CONTROL TESTS AND SAMPLES: NONE

VISITORS ON SITE: JOE WILLING : GREEN & GREEN

SUMMARY OF ACTIVITIES: G+G USED THE BOX SCRAPER TO GET A UNIFORM GRADE ON THE BENTONITE SURFACE AND THEN PULLED THE DRUM ROLLER TO ACHIEVE A SMOOTH SURFACE.

I ARRIVED AT 12:30 AM FROM PITTSBURGH AND TWO G+G MEN WERE DIGGING

ATTACHMENTS: ______ SIGNATURE: Terence P. Kirchner

KEYSTONE ENVIRONMENTAL RESOURCES, INC.
CONSTRUCTION INSPECTION DAILY REPORT

BEAZER MATERIALS & SERVICES, INC.
SURFACE IMPOUNDMENT CLOSURE
KOPPERS INDUSTRIES, INC.
GRENADA, MISSISSIPPI PLANT

DATE: 10/9/89
REPORT NO.: 35
SHEET 2 of 2
BY: TPK

SUMMARY OF ACTIVITIES (cont.):

OUT THE MUD FROM AROUND THE TWO PIPES WHICH ORIGINALLY FED INTO THE IMPOUNDMENT.
WHEN THIS WAS CLEAR, THEY REPLACED THE MUD INSIDE THESE PIPES WITH A CEMENT MIXTURE IN ORDER TO PERMANENTLY SEAL THE PIPES. ENOUGH CEMENT WAS MIXED TO BACKFILL THE PIPES TEN FEET. THIS TEN FEET BEGAN APPROXIMATELY TEN FEET FROM THE TOP OF THE KEY TRENCH OF THE CLAY LAYER

FINISHED AT 3 PM.

ATTACHMENTS: ______________ SIGNATURE: T. P. Kirkman

KEYSTONE ENVIRONMENTAL RESOURCES, INC.
CONSTRUCTION INSPECTION DAILY REPORT

BEAZER MATERIALS & SERVICES, INC.
SURFACE IMPOUNDMENT CLOSURE
KOPPERS INDUSTRIES, INC.
GRENADA, MISSISSIPPI PLANT

DATE: 10/10/89
REPORT NO.: 34
SHEET 1 of 2
BY: TPK

WEATHER: CLEAR, MILD

PRECIPITATION: 0 (inches) TEMPERATURE: LOW 55 HIGH 79

CONTRACTOR PERSONNEL ON SITE: GREEN & GREEN CONST :
JOE WILLING, RICKEY DONLEY, JOE DAVE McCLESKEY

EQUIPMENT EMPLOYED: IH 1066 TRACTOR, FORD 3000 TRACTOR,
BOX SCRAPER, DRUM ROLLER, CASE 850D DOZER

INSPECTORS ON SITE: TERRY KIRCHNER : KEYSTONE

QUALITY CONTROL TESTS AND SAMPLES: NONE

VISITORS ON SITE: NONE

SUMMARY OF ACTIVITIES: ARRIVED AT 7:00 AM
CUT ONE 15' ROLL OF FILTER FABRIC IN HALF
AND LAID IT AROUND SOUTH END, EAST SIDE
AND NORTH END. ONTO THIS FABRIC, SAND
WAS PLACED, COVERING 3 FEET (2 FEET BEYOND
THE 50' DISTANCE ~~■~~ FROM CENTER LINE).
THE SAND TRUCKS BACKED ONTO THE CLAY

ATTACHMENTS: ____________ SIGNATURE: Terrence P. Kirchner

KEYSTONE ENVIRONMENTAL RESOURCES, INC.
CONSTRUCTION INSPECTION DAILY REPORT

BEAZER MATERIALS & SERVICES, INC.
SURFACE IMPOUNDMENT CLOSURE
KOPPERS INDUSTRIES, INC.
GRENADA, MISSISSIPPI PLANT

DATE: 12/15/89
REPORT NO.: 36
SHEET 2 of 2
BY: TPK

SUMMARY OF ACTIVITIES (cont.):

LAYER IN ORDER TO SPOT-PLACE THE SAND AND ELIMINATE EXCESS PUSHING OF THE SAND INTO POSITION. ANY GROOVES MADE BY THE TRUCKS WERE EITHER ROLLED WITH THE DRUM ROLLER OR BACK-DRAGGED WITH THE BLADE OF THE 850 D DOZER BEFORE ANY SAND WAS LAIN.

ABOUT HALF OF THE SAND REQUIRED WAS DELIVERED TODAY.

FINISHED 5:30 PM.

ATTACHMENTS: ______

SIGNATURE: Terrence P. Kastner

KEYSTONE ENVIRONMENTAL RESOURCES, INC.
CONSTRUCTION INSPECTION DAILY REPORT

BEAZER MATERIALS & SERVICES, INC.
SURFACE IMPOUNDMENT CLOSURE
KOPPERS INDUSTRIES, INC.
GRENADA, MISSISSIPPI PLANT

DATE: 10/11/89
REPORT NO.: 37
SHEET 1 of 2
BY: TPK

WEATHER: CLEAR, COOL

PRECIPITATION: 0 (inches) TEMPERATURE: LOW 48 HIGH 84

CONTRACTOR PERSONNEL ON SITE: GREEN & GREEN: JOE WILLING, RICKEY DENLEY, JOE DAVE McCLESKEY

EQUIPMENT EMPLOYED: 850 D DOZER, TRAILER TRUCKS

INSPECTORS ON SITE: TERRY KIRCHNER : KEYSTONE

QUALITY CONTROL TESTS AND SAMPLES: NONE

VISITORS ON SITE: NONE

SUMMARY OF ACTIVITIES: ARRIVED 7:00 AM.
TRUCKS STARTED AROUND 7:30 AM DELIVERING SAND.
LAID OUT THE REMAINDER OF THE FILTER FABRIC AROUND THE SOUTHWEST CORNER, LEAVING ABOUT 25 FEET OPEN FOR TRUCK TRAFFIC.

ATTACHMENTS: SIGNATURE: Terrence P. Kirchner

KEYSTONE ENVIRONMENTAL RESOURCES, INC.
CONSTRUCTION INSPECTION DAILY REPORT

BEAZER MATERIALS & SERVICES, INC.
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KOPPERS INDUSTRIES, INC.
GRENADA, MISSISSIPPI PLANT

DATE: 10/11/89
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SHEET 2 of 2
BY: TPK

SUMMARY OF ACTIVITIES (cont.):

WHEN THE SAND LIFT LOOKED FULL, THE TRUCKS WERE STOPPED AND THEY CHECKED GRADE. IT LOOKS LIKE ABOUT A DOZEN LOADS WILL STILL BE NEEDED.

ATTACHMENTS: ____________

SIGNATURE: Teresa P. Kirkner

KEYSTONE ENVIRONMENTAL RESOURCES, INC.
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BEAZER MATERIALS & SERVICES, INC.
SURFACE IMPOUNDMENT CLOSURE
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GRENADA, MISSISSIPPI PLANT

DATE: 10/12/89
REPORT NO.: 34
SHEET 1 of 2
BY: TPK

WEATHER: SUNNY, MILD w/ MORNING FOG

PRECIPITATION: 0 (inches) TEMPERATURE: LOW 54 HIGH 85

CONTRACTOR PERSONNEL ON SITE: GREEN + GREEN:
JOE WILLING, RICKEY DENLEY, JOE DAVE McCLESKEY

EQUIPMENT EMPLOYED: 850 D DOZER

INSPECTORS ON SITE: TERRY KIRCHNER : KEYSTONE

QUALITY CONTROL TESTS AND SAMPLES: NONE

VISITORS ON SITE: JEFF VANCE : MID-SOUTH TESTING

SUMMARY OF ACTIVITIES:
13 TRUCKLOADS OF SAND WERE DELIVERED, BRINGING THE SURFACE VERY CLOSE TO GRADE SPECS.
THE GRAVEL EDGES WERE RAKED TO BRING THEM AS CLOSE AS POSSIBLE TO A 4:1 SLOPE (H:V)

ATTACHMENTS: SIGNATURE: Terrance P. Kirchner

KEYSTONE ENVIRONMENTAL RESOURCES, INC.
CONSTRUCTION INSPECTION DAILY REPORT

BEAZER MATERIALS & SERVICES, INC.
SURFACE IMPOUNDMENT CLOSURE
KOPPERS INDUSTRIES, INC.
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SHEET 2 of 2
BY: TPK

SUMMARY OF ACTIVITIES (cont.):

IT LOOKS LIKE ONE MORE LOAD OF SAND WILL BE NEEDED TO CLOSE GAP WHERE TRUCKS BACKED UP ONTO SAND. JEFF VANCE STOPPED BY AND I ASKED HIM TO COME TOMORROW FOR DRY DENSITY TESTS AND TO GET A SAMPLE OF THE BORROW PIT'S SOIL TODAY TO RUN A NEW PROCTOR TEST ON IT. HE'LL GET SAMPLE ~~TOMORROW~~.

FINISHED 5:30 PM.

ATTACHMENTS:

SIGNATURE: Terence P. Kirchner

KEYSTONE ENVIRONMENTAL RESOURCES, INC.
CONSTRUCTION INSPECTION DAILY REPORT

BEAZER MATERIALS & SERVICES, INC.
SURFACE IMPOUNDMENT CLOSURE
KOPPERS INDUSTRIES, INC.
GRENADA, MISSISSIPPI PLANT

DATE: 10/13/89
REPORT NO.: 39
SHEET 1 of 3
BY: TPK

WEATHER: SUNNY, MILD w/ AM. FOG; AFTERNOON HUMID

PRECIPITATION: 0 (inches) TEMPERATURE: LOW 54 HIGH 75

CONTRACTOR PERSONNEL ON SITE: GREEN & GREEN:
JOE WILLING, RICKEY DENLEY, JOE DAVE McCLESKEY

EQUIPMENT EMPLOYED: 850 D DOZER

INSPECTORS ON SITE: TERRY KIRCHNER: KEYSTONE
JEFF VANCE: MID-SOUTH TESTING

QUALITY CONTROL TESTS AND SAMPLES: DRY DENSITY TESTS

VISITORS ON SITE:

SUMMARY OF ACTIVITIES:
FINISHED SAND LAYER AND TURNED FILTER FABRIC UP AND OVER THE EDGE OF THE SAND SO THAT THE GRAVEL COULD BE PLACED AGAINST THE OUTSIDE RIM OF THE CONDUCTING ZONE.

ATTACHMENTS: SIGNATURE: Terrence P. Kirchner

KEYSTONE ENVIRONMENTAL RESOURCES, INC.
CONSTRUCTION INSPECTION DAILY REPORT

BEAZER MATERIALS & SERVICES, INC.	DATE: 10/13/89
SURFACE IMPOUNDMENT CLOSURE	REPORT NO.: 39
KOPPERS INDUSTRIES, INC.	SHEET 2 of 3
GRENADA, MISSISSIPPI PLANT	BY: TPK

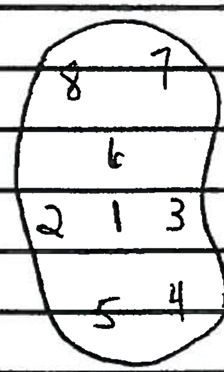
SUMMARY OF ACTIVITIES (cont.):

JEFF VANCE OF MID-SOUTH PERFORMED DRY DENSITY TESTS W/ HUMBOLDT NUCLEAR MACHINE. TARGET DENSITY WAS CALCULATED ACCORDING TO THE FOLLOWING EQUATION:

$$\text{DRY DENSITY} = \frac{\text{MIN. DRY DENSITY} \times \text{MAX DRY DENSITY}}{\text{MAX DRY DEN} - \underset{\text{(REQ'D REL DEN)}}{0.75}(\text{MAX. D.D.} - \text{MIN. D.D.})}$$

$$\text{DRY DENSITY} = \frac{90.4 \times 106.3}{106.3 - .75(106.3 - 90.4)} = \boxed{101.8}$$

TEST	DRY DENSITY		% MOISTURE
1	108.9	O.K	5.7
2	107.1	OK	5.7
3	107.8	OK	5.9
4	106.6	OK	5.1
5	109.9	OK	5.5
6	108.8	OK	4.6
7	106.9	OK	6.2
8	106.1	OK	4.9



ATTACHMENTS: ____________ SIGNATURE: Teresa P. Kirkman

KEYSTONE ENVIRONMENTAL RESOURCES, INC.
CONSTRUCTION INSPECTION DAILY REPORT

BEAZER MATERIALS & SERVICES, INC.
SURFACE IMPOUNDMENT CLOSURE
KOPPERS INDUSTRIES, INC.
GRENADA, MISSISSIPPI PLANT

DATE: 10/13/89
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SHEET 3 of 3
BY: TPK

SUMMARY OF ACTIVITIES (cont.):

JEFF VANCE AND I WENT TO THE BORROW PIT TO GET A SAMPLE OF THE COVER SOIL LAYER SO THAT A STANDARD PROCTOR TEST/ANALYSIS COULD BE EVALUATED.

FINISHED AT 5:30 PM.

ATTACHMENTS:

SIGNATURE: Terrence P. Kuhn

KEYSTONE ENVIRONMENTAL RESOURCES, INC.
CONSTRUCTION INSPECTION DAILY REPORT

BEAZER MATERIALS & SERVICES, INC.
SURFACE IMPOUNDMENT CLOSURE
KOPPERS INDUSTRIES, INC.
GRENADA, MISSISSIPPI PLANT

DATE: 10/14/89
REPORT NO.: 40
SHEET 1 of 1
BY: TPK

WEATHER: FOGGY, COOL

PRECIPITATION: 0 (inches) TEMPERATURE: LOW 55 HIGH 83

CONTRACTOR PERSONNEL ON SITE: GREEN + GREEN:
JOE WILLING, RICKEY DENLEY, JOE DAVE McCLESKEY

EQUIPMENT EMPLOYED: BACK HOE

INSPECTORS ON SITE: TERRY KIRCHNER: KEYSTONE

QUALITY CONTROL TESTS AND SAMPLES: NONE

VISITORS ON SITE: NONE

SUMMARY OF ACTIVITIES: FINISHED PLACING AGGREGATE WITH THE BACK HOE BY 9:00 AM. THEN STARTED TO RAKE IT INTO PLACE AND 4:1 SLOPE. TOLD JOE W. THAT HE NEEDED TO DO A QUANTITY IN-PLACE SURVEY. HE'LL GET WITH NEIL TO SEE THAT IT IS DONE. FINISHED BY 12 NOON.

ATTACHMENTS:

SIGNATURE: Terrence P. Kirchner

KEYSTONE ENVIRONMENTAL RESOURCES, INC.
CONSTRUCTION INSPECTION DAILY REPORT

BEAZER MATERIALS & SERVICES, INC.
SURFACE IMPOUNDMENT CLOSURE
KOPPERS INDUSTRIES, INC.
GRENADA, MISSISSIPPI PLANT

DATE: 10/15/89
REPORT NO.: 41
SHEET 1 of 1
BY: TPK

WEATHER: CLOUDY, COOL, FOGGY

PRECIPITATION: 0 (inches) TEMPERATURE: LOW 56° HIGH ____

CONTRACTOR PERSONNEL ON SITE: GREEN & GREEN CONST:
NEIL TURNAGE, JOE WILLING, DOUG BOYD

EQUIPMENT EMPLOYED: TRANSIT, ROD

INSPECTORS ON SITE: TERRY KIRCHNER : KEYSTONE

QUALITY CONTROL TESTS AND SAMPLES: NONE

VISITORS ON SITE: NONE

SUMMARY OF ACTIVITIES: ARR. 7:00 AM
NEIL, JOE AND DOUG DID QUANTITY SURVEY
FOR SAND AND AGGREGATE LAYER.
FINISHED AT 9:00 AM. LEFT FOR PITTSBURGH
AS G&G SAID ALL OF THEIR TRUCKS ARE
DOWN AND WON'T HAVE ANY UNTIL 10/19/89

ATTACHMENTS: ____ SIGNATURE: Terrence P. Kirchner

KEYSTONE ENVIRONMENTAL RESOURCES, INC.
CONSTRUCTION INSPECTION DAILY REPORT

BEAZER MATERIALS & SERVICES, INC.
SURFACE IMPOUNDMENT CLOSURE
KOPPERS INDUSTRIES, INC.
GRENADA, MISSISSIPPI PLANT

DATE: 10/18/89
REPORT NO.: 42
SHEET 1 of 2
BY: TPK

WEATHER: COLD, OVERCAST, INTERMITTENT DRIZZLE

PRECIPITATION: TRACE (inches) TEMPERATURE: LOW 40 HIGH 52

CONTRACTOR PERSONNEL ON SITE: GREEN & GREEN CONST.: JOE WILLING (1/2 DAY), JOHN GREEN AND OTHERS FROM CONCRETE PLANT

EQUIPMENT EMPLOYED: DOZER

INSPECTORS ON SITE: TERRY KIRCHNER : KEYSTONE

QUALITY CONTROL TESTS AND SAMPLES: NONE

VISITORS ON SITE: NONE

SUMMARY OF ACTIVITIES: ARRIVED FROM PITTSBURGH ABOUT 12:30 PM. JOHN GREEN AND OTHERS WERE SPREADING OUT FILTER FABRIC. A RAMP OF COVER SOIL WAS BUILT ON WEST SIDE SO THAT THE TRUCKS COULD BACK UP ONTO CAP AND DUMP THEIR LOADS. ABOUT 3/4 OF SURFACE WAS COVERED WITH FABRIC.

ATTACHMENTS: ______ SIGNATURE: Terrence P. Kirchner

KEYSTONE ENVIRONMENTAL RESOURCES, INC.
CONSTRUCTION INSPECTION DAILY REPORT

BEAZER MATERIALS & SERVICES, INC.
SURFACE IMPOUNDMENT CLOSURE
KOPPERS INDUSTRIES, INC.
GRENADA, MISSISSIPPI PLANT

DATE: 10/18/89
REPORT NO.: 42
SHEET 2 of 2
BY: TPK

SUMMARY OF ACTIVITIES (cont.):

THE TRUCKS STOPPED ABOUT 1:30 AM WHEN THE RAIN CAME FORCING THE JOB TO SHUT DOWN AS THE TRUCKS COULD NOT MAKE IT IN AND OUT OF THE BORROW AREA.

FINISHED AT 1:30. WENT TO SEE D. SMITH W/ DRILLERS AT SOUTH END OF PLANT TO CHECK OUT PROGRESS

ATTACHMENTS:

SIGNATURE: Terrance P. Kirdmer

KEYSTONE ENVIRONMENTAL RESOURCES, INC.
CONSTRUCTION INSPECTION DAILY REPORT

BEAZER MATERIALS & SERVICES, INC.
SURFACE IMPOUNDMENT CLOSURE
KOPPERS INDUSTRIES, INC.
GRENADA, MISSISSIPPI PLANT

DATE: 10/19/89
REPORT NO.: 43
SHEET 1 of 1
BY: TPK

WEATHER: OVERCAST, COLD, SLIGHT DRIZZLE

PRECIPITATION: 0.1 (inches) TEMPERATURE: LOW 40 HIGH 50

CONTRACTOR PERSONNEL ON SITE: GREEN + GREEN: JOE WILLING, NEIL TURNAGE, DOUG BOYD

EQUIPMENT EMPLOYED: NONE

INSPECTORS ON SITE: TERRY KIRCHNER : KEYSTONE

QUALITY CONTROL TESTS AND SAMPLES: NONE

VISITORS ON SITE: NONE

SUMMARY OF ACTIVITIES: INTERMITTANT DRIZZLE AT PLANT SITE WITH RAIN AT BORROW AREA. GREEN + GREEN DECIDED TO SHUT DOWN AS TRUCKS CAN'T PULL THE HILL FROM THE BORROW PIT. FINISHED AT PLANT AT 10:30AM. WORKED ON REPORTS.

ATTACHMENTS: NONE SIGNATURE: T.P. Kirchner

KEYSTONE ENVIRONMENTAL RESOURCES, INC.
CONSTRUCTION INSPECTION DAILY REPORT

BEAZER MATERIALS & SERVICES, INC.
SURFACE IMPOUNDMENT CLOSURE
KOPPERS INDUSTRIES, INC.
GRENADA, MISSISSIPPI PLANT

DATE: 10/20/89
REPORT NO.: 44
SHEET 1 of 2
BY: TPK

WEATHER: SUNNY, COLD

PRECIPITATION: 0 (inches) TEMPERATURE: LOW 32 HIGH 55

CONTRACTOR PERSONNEL ON SITE: GREEN + GREEN ; DOUG BOYD, BENJY HOWARD

EQUIPMENT EMPLOYED: D30 LGP DOZER, IH TRACTOR W/ BOX SCRAPER, RUBBER-TIRED ROLLER

INSPECTORS ON SITE: TERRY KIRCHNER : KEYSTONE JEFF VANCE : MID-SOUTH TESTING

QUALITY CONTROL TESTS AND SAMPLES: COMPACTION AND MOISTURE TESTS W/ HUMBOLDT TESTER (NUCLEAR)

VISITORS ON SITE: JOHN GREEN, NEAL TURNAGE : GREEN + GREEN

SUMMARY OF ACTIVITIES: ARR. 7:00 AM
G+G FINISHED LAYING OUT THE FILTER FABRIC AND THE SPREAD OUT THE FIRST LIFT OF THE COVER SOIL. FINISHED ROLLING THE FIRST LIFT BY 1:30 PM. JEFF VANCE OF MID-SOUTH TESTING TOOK COMPACTION AND MOISTURE TESTS W/ HUMBOLDT TESTER.

ATTACHMENTS: 44-1 SIGNITURE: Terrence P. Kirchner

KEYSTONE ENVIRONMENTAL RESOURCES, INC.
CONSTRUCTION INSPECTION DAILY REPORT

BEAZER MATERIALS & SERVICES, INC.
SURFACE IMPOUNDMENT CLOSURE
KOPPERS INDUSTRIES, INC.
GRENADA, MISSISSIPPI PLANT

DATE: 10/20/89
REPORT NO.: 44
SHEET 2 of 2
BY: TPK

SUMMARY OF ACTIVITIES (cont.):

OPTIMUM MOISTURE IS 18%. ALL TESTS PASSED HAVING ≥ 95% COMPACTION AND ± 5% OF OPTIMUM MOISTURE.

DIANE SMITH OF KEYSTONE BROUGHT THE DRILLERS DOWN TO WORK ON THE SURROUNDING WELLS: STABILIZING MOST WITH A NEW CONCRETE BASE AND REPAIRING K8-B (THE WELL KNOCKED DOWN BACK IN JULY).

TRUCKS STARTED ABOUT 3 PM DELIVERING COVER SOIL FOR SECOND 9" LIFT.

NEIL T. OF G+G SURVEYED FOR GRADE ONLY.

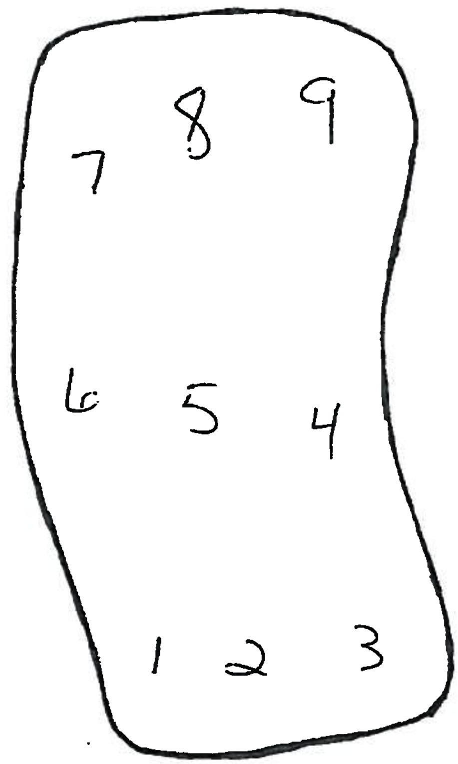
WILL NEED A FEW MORE LOADS TOMORROW

FINISHED 6 PM.

ATTACHMENTS: ______ SIGNATURE: T. P. Kirk

ATTACHMENT 44-1 DATE 10/20/89

TEST NO.	% MOISTURE	% COMPACTION
1	15.1	95.1
2	14.6	102.0
3	16.4	99.4
4	16.6	104.1
5	14.5	106.1
6	15.0	99.1
7	15.5	100.1
8	14.6	95.4
9	14.3	105.3
10		
11		
12		
13		
14		
15		



KEYSTONE ENVIRONMENTAL RESOURCES, INC.
CONSTRUCTION INSPECTION DAILY REPORT

BEAZER MATERIALS & SERVICES, INC.
SURFACE IMPOUNDMENT CLOSURE
KOPPERS INDUSTRIES, INC.
GRENADA, MISSISSIPPI PLANT

DATE: 10/21/89
REPORT NO.: 45
SHEET 1 of 2
BY: TPK

WEATHER: CLEAR, COLD

PRECIPITATION: 0 (inches) TEMPERATURE: LOW 32 HIGH 53

CONTRACTOR PERSONNEL ON SITE: GREEN + GREEN: BENJY HOWARD, DOUG BOYD, NEIL TURNAGE

EQUIPMENT EMPLOYED: IH 1066 TRACTOR, BOX SCRAPER, D3C LGP DOZER, BACK HOE

INSPECTORS ON SITE: TERRY KIRCHNER : KEYSTONE

QUALITY CONTROL TESTS AND SAMPLES: NONE

VISITORS ON SITE: JOHN GREEN : GREEN + GREEN

SUMMARY OF ACTIVITIES: TWO TRUCKS DUMPED THIS MORNING TO FILL IN LOW SPOT. NEIL, BENJY AND DOUG TOOK GRADE SURVEY. BENJY THEN RAN THE DOZER TO EVEN OUT THE SURFACE AND FIND OUT IF MORE SOIL IS NEEDED. AT 2:40 PM, MORE TRUCKS CAME TO FILL IN GAPS AND

ATTACHMENTS: ____________ SIGNATURE: Terrence P. Kirchner

KEYSTONE ENVIRONMENTAL RESOURCES, INC.
CONSTRUCTION INSPECTION DAILY REPORT

BEAZER MATERIALS & SERVICES, INC.
SURFACE IMPOUNDMENT CLOSURE
KOPPERS INDUSTRIES, INC.
GRENADA, MISSISSIPPI PLANT

DATE: 10/21/89
REPORT NO.: 45
SHEET 2 of 2
BY: TPK

SUMMARY OF ACTIVITIES (cont.):

TO STOCKPILE SOME SOIL FOR THE
BACKHOE TO PLACE SOIL AROUND EDGES
TRYING TO GET CLOSE TO 4:1 SLOPE.
LOOKS CLOSE TO GRADE AND WILL BE
CHECKED TOMORROW OR MONDAY,

FINISHED AT 6 PM

ATTACHMENTS: ______ SIGNATURE: T. P. Kuchmin

KEYSTONE ENVIRONMENTAL RESOURCES, INC.
CONSTRUCTION INSPECTION DAILY REPORT

BEAZER MATERIALS & SERVICES, INC.
SURFACE IMPOUNDMENT CLOSURE
KOPPERS INDUSTRIES, INC.
GRENADA, MISSISSIPPI PLANT

DATE: 10/22/89
REPORT NO.: 46
SHEET 1 of 1
BY: TPK

WEATHER: CLEAR, COLD

PRECIPITATION: 0 (inches) TEMPERATURE: LOW 35 HIGH 55

CONTRACTOR PERSONNEL ON SITE: NONE

EQUIPMENT EMPLOYED:

INSPECTORS ON SITE:

QUALITY CONTROL TESTS AND SAMPLES:

VISITORS ON SITE:

SUMMARY OF ACTIVITIES: ARRIVED 7:00 A.M.
WAITED TWO HOURS - NO ONE FROM G+G CAME.

ATTACHMENTS: SIGNATURE: T.P. Kirchner

KEYSTONE ENVIRONMENTAL RESOURCES, INC.
CONSTRUCTION INSPECTION DAILY REPORT

BEAZER MATERIALS & SERVICES, INC.
SURFACE IMPOUNDMENT CLOSURE
KOPPERS INDUSTRIES, INC.
GRENADA, MISSISSIPPI PLANT

DATE: 10/23/89
REPORT NO.: 47
SHEET 1 of 2
BY: TPK

WEATHER: CLOUDY, MILD

PRECIPITATION: ____ (inches) TEMPERATURE: LOW 45 HIGH 60

CONTRACTOR PERSONNEL ON SITE: GREEN + GREEN: BENJY HOWARD, DOUG BOYD, NEIL TURNAGE

EQUIPMENT EMPLOYED: D3 LGP DOZER, IH 1066 TRACTOR, BOX SCRAPER

INSPECTORS ON SITE: TERRY KIRCHNER : KEYSTONE
JEFF VANCE : MID-SOUTH TESTING

QUALITY CONTROL TESTS AND SAMPLES: COMPACTION AND MOISTURE TESTS

VISITORS ON SITE: JOHN GREEN : GREEN + GREEN

SUMMARY OF ACTIVITIES: ARR. 7 AM.
PUSHED COVER SOIL TO MAKE GRADE, REPAIRED MINOR RIPS IN FILTER FABRIC AND SLOPED EDGES AROUND S.I. ABOVE GRAVEL.
JEFF VANCE TOOK COMPACTION AND MOISTURE TESTS; COMPACTION WAS GOOD, BUT MOISTURE WAS MORE THAN 5% LOWER THAN OPTIMUM.

ATTACHMENTS: 47-1 SIGNATURE: Terry P. Kirchner

KEYSTONE ENVIRONMENTAL RESOURCES, INC.
CONSTRUCTION INSPECTION DAILY REPORT

BEAZER MATERIALS & SERVICES, INC.
SURFACE IMPOUNDMENT CLOSURE
KOPPERS INDUSTRIES, INC.
GRENADA, MISSISSIPPI PLANT

DATE: 10/23/89
REPORT NO.: 47
SHEET 2 of 2
BY: TPK

SUMMARY OF ACTIVITIES (cont.):

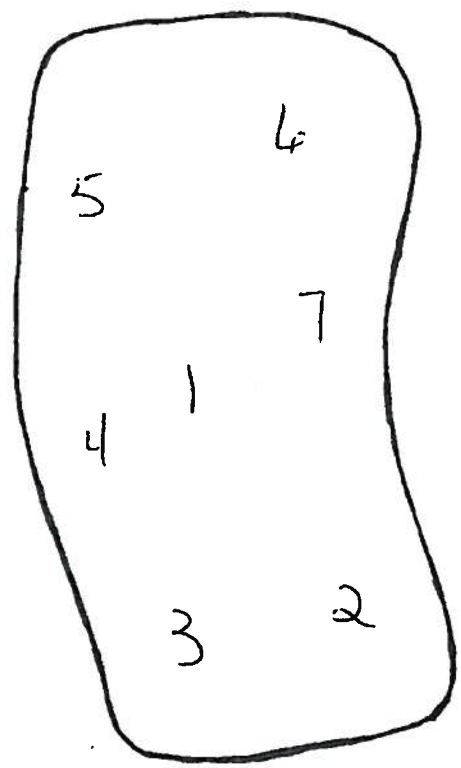
JOHN GREEN INSISTED THAT SOIL WAS NOT DRY. I CALLED MIKE BOLLINGER OF KEYSTONE AND HE SAID TO GET ANOTHER PROCTOR OR TWO AND THAT THESE WILL BE COMPARED TO TODAY'S TEST RESULTS. (ORIGINAL PROCTOR MAY NOT BE REPRESENTATIVE.)
CLEANED UP SURFACE WITH TRACTOR AND BOX SCRAPER

FINISHED 7 PM

ATTACHMENTS: ____________ SIGNATURE: T.P. Kushner

ATTACHMENT 47-1 DATE 10/23/89

TEST NO.	% MOISTURE	% COMPACTION
1	13.4	111.4
2	13.9	96.5
3	13.0	87.0
4	11.6	104.4
5	10.1	100.9
6	9.4	102.6
7	13.0	102.0
8		
9		
10		
11		
12		
13		
14		
15		



KEYSTONE ENVIRONMENTAL RESOURCES, INC.
CONSTRUCTION INSPECTION DAILY REPORT

BEAZER MATERIALS & SERVICES, INC.
SURFACE IMPOUNDMENT CLOSURE
KOPPERS INDUSTRIES, INC.
GRENADA, MISSISSIPPI PLANT

DATE: 10/24/89
REPORT NO.: 48
SHEET 1 of 2
BY: TPK

WEATHER: SUNNY, MILD

PRECIPITATION: 0 (inches) TEMPERATURE: LOW 50 HIGH 77

CONTRACTOR PERSONNEL ON SITE: GREEN + GREEN: BENJY HOWARD, DOUG BOYD, NEIL TURNAGE

EQUIPMENT EMPLOYED: D30 LGP DOZER

INSPECTORS ON SITE: TERRY KIRCHNER : KEYSTONE

QUALITY CONTROL TESTS AND SAMPLES: NONE

VISITORS ON SITE: NONE

SUMMARY OF ACTIVITIES: ARR. 7 AM.
DISCOVERED THAT EXTENSION DIMENSION OF IMPOUNDMENT CAP WAS APPROXIMATELY TEN FEET SHORT ALL AROUND. CORRECTED THIS BY LAYING OUT FILTER CLOTH AROUND EDGE AND PUTTING MORE SAND ONTO THE CLOTH. BOTH MIKE B. AND JOHN G. KNOW ABOUT THIS.

ATTACHMENTS: ______ SIGNATURE: T.P. Kirchner

KEYSTONE ENVIRONMENTAL RESOURCES, INC.
CONSTRUCTION INSPECTION DAILY REPORT

BEAZER MATERIALS & SERVICES, INC.
SURFACE IMPOUNDMENT CLOSURE
KOPPERS INDUSTRIES, INC.
GRENADA, MISSISSIPPI PLANT

DATE: 10/24/89
REPORT NO.: 48
SHEET 2 of 2
BY: TPK

SUMMARY OF ACTIVITIES (cont.):

G + G ORDERED TWO MORE ROLLS OF FILTER FABRIC WHICH ARE NEEDED TO FINISH EXTENSION. SPECS WERE RELAYED TO MIKE B. AND HE O.K.'d THEM.
FINISHED EAST SIDE AND HALF OF WEST SIDE. REMOVED WEST SIDE RAMP SO THAT FABRIC AND SAND CAN BE PLACED THERE TOMORROW.

FINISHED 7 PM

ATTACHMENTS:

SIGNATURE: T. P. Kuchma

KEYSTONE ENVIRONMENTAL RESOURCES, INC.
CONSTRUCTION INSPECTION DAILY REPORT

BEAZER MATERIALS & SERVICES, INC.
SURFACE IMPOUNDMENT CLOSURE
KOPPERS INDUSTRIES, INC.
GRENADA, MISSISSIPPI PLANT

DATE: 10/25/89
REPORT NO.: 44
SHEET 1 of 2
BY: TPK

WEATHER: CLEAR, COOL, PATCHY FOG

PRECIPITATION: 0 (inches) TEMPERATURE: LOW 48 HIGH 81

CONTRACTOR PERSONNEL ON SITE: GREEN + GREEN:
DOUG BOYD, BENJY HOWARD, NEIL T. (1/2 DAY)

EQUIPMENT EMPLOYED: BACK HOE

INSPECTORS ON SITE: TERRY KIRCHNER: KEYSTONE

QUALITY CONTROL TESTS AND SAMPLES: NONE

VISITORS ON SITE: JEFF VANCE: MID-SOUTH TESTING

SUMMARY OF ACTIVITIES: ARR. 7 AM.
REMOVED FORD TRACTOR FROM SITE.
LAID OUT FILTER FABRIC ALONG REMAINDER OF WEST SIDE AND DOWN TOWARD SOUTH END.
GOT THREE LOADS OF GRAVEL AND STARTED SPOTTING IT AROUND SAND EDGE WITH THE BACK HOE.

ATTACHMENTS: SIGNATURE: T.P. Kirchner

KEYSTONE ENVIRONMENTAL RESOURCES, INC.
CONSTRUCTION INSPECTION DAILY REPORT

BEAZER MATERIALS & SERVICES, INC.
SURFACE IMPOUNDMENT CLOSURE
KOPPERS INDUSTRIES, INC.
GRENADA, MISSISSIPPI PLANT

DATE: 10/25/89
REPORT NO.: 49
SHEET 2 of 2
BY: TPK

SUMMARY OF ACTIVITIES (cont.):

JEFF VANCE OF MID-SOUTH TESTING STOPPED BY TO RELAY RESULTS OF NEW PROCTOR TESTS ON THE COVER SOIL

OPTIMUM MOISTURE PERCENTS ARE AS FOLLOWS:

SANDY SECTION → 14 % OPT. MOIST.

CLAYEY SECTION → 17 % OPT. MOIST.

THEREFORE, RESULTS FROM 10/23 ARE OK.

FINISHED 6:30 PM

ATTACHMENTS:

SIGNATURE: T.P. Kirk[illegible]

KEYSTONE ENVIRONMENTAL RESOURCES, INC.
CONSTRUCTION INSPECTION DAILY REPORT

BEAZER MATERIALS & SERVICES, INC.
SURFACE IMPOUNDMENT CLOSURE
KOPPERS INDUSTRIES, INC.
GRENADA, MISSISSIPPI PLANT

DATE: 10/26/89
REPORT NO.: 50
SHEET 1 of 2
BY: TPK

WEATHER: CLEAR, COOL, SOME FOG

PRECIPITATION: 0 (inches) TEMPERATURE: LOW 40 HIGH 80

CONTRACTOR PERSONNEL ON SITE: GREEN + GREEN: DOUG BOYD, BENJY HOWARD, NEIL TURNAGE (1/2)

EQUIPMENT EMPLOYED: D3 LGP DOZER, BACK HOE, BOX SCRAPER, IH 1066 TRACTOR

INSPECTORS ON SITE: TERRY KIRCHNER: KEYSTONE

QUALITY CONTROL TESTS AND SAMPLES: NONE

VISITORS ON SITE: NONE

SUMMARY OF ACTIVITIES: ARR. 7 AM.
FINISHED SOUTH END WITH SAND AND GRAVEL + IMMEDIATELY THEREAFTER NEIL T. TOOK A QUANTITY SURVEY (X-SECT.) WITH STATIONS AT TOP OF SAND AND BOTTOM OF GRAVEL.

ATTACHMENTS: ______ SIGNATURE: T.P. Kirchner

KEYSTONE ENVIRONMENTAL RESOURCES, INC.
CONSTRUCTION INSPECTION DAILY REPORT

BEAZER MATERIALS & SERVICES, INC.
SURFACE IMPOUNDMENT CLOSURE
KOPPERS INDUSTRIES, INC.
GRENADA, MISSISSIPPI PLANT

DATE: 10/26/89
REPORT NO.: 50
SHEET 2 of 2
BY: TPK

SUMMARY OF ACTIVITIES (cont.):

THE DOZER PUSHED ABOUT 12 LOADS OF COVER SOIL ONTO THE TEN FOOT EXTENSION. MORE GRAVEL WAS ADDED TO THE SIDES AFTER FABRIC WAS PULLED UP AT THE CORNERS. BOX SCRAPER WAS THEN USED TO SHAPE UP THE SURFACE. LEFT ABOUT A FOOT ON THE SIDES FOR SPILL OFF FROM THE TOP SOIL TO BE ADDED.

CALLED MIKE B. TO CHECK ON THE POSSIBLE CHANGE IN GRASS SEED AS BERMUDA PROBABLY WON'T START HERE THIS TIME OF YEAR. G+G RECOMMENDS RYE (AN ANNUAL) AND FESCUE AND SOME BERMUDA (FOR SPRING START). ALSO, MIKE WILL CHECK ON CHANGING ASPHALT TACK COAT TO CRIMP METHOD FOR MULCH. HE SHOULD KNOW BY TOMORROW.

FINISHED AT 6:30 PM

ATTACHMENTS: ______ SIGNATURE: T.P. Kirchner

KEYSTONE ENVIRONMENTAL RESOURCES, INC.
CONSTRUCTION INSPECTION DAILY REPORT

BEAZER MATERIALS & SERVICES, INC.
SURFACE IMPOUNDMENT CLOSURE
KOPPERS INDUSTRIES, INC.
GRENADA, MISSISSIPPI PLANT

DATE: 10/27/89
REPORT NO.: 51
SHEET 1 of 2
BY: TPK

WEATHER: SUNNY, MILD

PRECIPITATION: 0 (inches) TEMPERATURE: LOW 41 HIGH 81

CONTRACTOR PERSONNEL ON SITE: GREEN + GREEN:
DOUG BOYD, BOUTY HOWARD, NEIL TURNAGE (1/2)

EQUIPMENT EMPLOYED: D3 OLOP DOZER, ~~F~~ 1 DEW TRACTOR, BOX SCRAPER

INSPECTORS ON SITE: TERRY KIRCHNER: KEYSTONE

QUALITY CONTROL TESTS AND SAMPLES: NONE

VISITORS ON SITE: NONE

SUMMARY OF ACTIVITIES: ARR 7 AM.
FINISHED GRADING COVER SOIL, NEIL T. TOOK QUANTITY SURVEY WITH TOP AND TOE OF THE COVER SOIL.
STARTED TOP SOIL ABOUT 9:30 PM. - STOPPED WHILE SURVEYING - RESUMED AROUND 10:30 AM, AGAIN WITH TWO TRUCKS.

ATTACHMENTS: ______ SIGNATURE: T.P. Kirchner

KEYSTONE ENVIRONMENTAL RESOURCES, INC.
CONSTRUCTION INSPECTION DAILY REPORT

BEAZER MATERIALS & SERVICES, INC.
SURFACE IMPOUNDMENT CLOSURE
KOPPERS INDUSTRIES, INC.
GRENADA, MISSISSIPPI PLANT

DATE: 10/27/89
REPORT NO.: 51
SHEET 2 of 2
BY: TPK

SUMMARY OF ACTIVITIES (cont.):

MORE GRADING WAS DONE AROUND THE GRAVEL EDGE, SPOTTING LOADS TO EVEN OUT THE EDGE.

PLACED FILTER FABRIC OVER NE SIDE OF GRAVEL FOR FINAL PUSH OF TOP SOIL

ABOUT 5 PM, EXTRA TRUCKS BROUGHT TOP SOIL UNTIL 6:30.

FINISHED 6:30 PM.

ATTACHMENTS:

SIGNATURE: T. P. Kirsh[illegible]

KEYSTONE ENVIRONMENTAL RESOURCES, INC.
CONSTRUCTION INSPECTION DAILY REPORT

BEAZER MATERIALS & SERVICES, INC.
SURFACE IMPOUNDMENT CLOSURE
KOPPERS INDUSTRIES, INC.
GRENADA, MISSISSIPPI PLANT

DATE: 10/28/89
REPORT NO.: 52
SHEET 1 of 1
BY: TPK

WEATHER: SUNNY, COOL

PRECIPITATION: 0 (inches) TEMPERATURE: LOW 40 HIGH 78

CONTRACTOR PERSONNEL ON SITE: GREEN + GREEN:
BENJY HOWARD, DOUG BOYD

EQUIPMENT EMPLOYED: D3OLGP DOZER

INSPECTORS ON SITE: TERRY KIRCHNER: KEYSTONE

QUALITY CONTROL TESTS AND SAMPLES: NONE

VISITORS ON SITE: NONE

SUMMARY OF ACTIVITIES: ARR 7:50 AM
RAKED OUT SIDES OF GRAVEL EDGE. NO
TRUCKS UNTIL 9:30 AM.
ALMOST ENOUGH TOP SOIL DELIVERED
TODAY. WILL NEED A FEW LOADS TOMORROW.
WILL GRADE ON MONDAY.
FINISHED 7:50 PM

ATTACHMENTS: ____________ SIGNATURE: T.P. Kirchner

KEYSTONE ENVIRONMENTAL RESOURCES, INC.
CONSTRUCTION INSPECTION DAILY REPORT

BEAZER MATERIALS & SERVICES, INC.
SURFACE IMPOUNDMENT CLOSURE
KOPPERS INDUSTRIES, INC.
GRENADA, MISSISSIPPI PLANT

DATE: 10/29/89
REPORT NO.: 53
SHEET 1 of 1
BY: TPK

WEATHER: ______

PRECIPITATION: ______ (inches) TEMPERATURE: LOW ____ HIGH ____

CONTRACTOR PERSONNEL ON SITE: ______

EQUIPMENT EMPLOYED: ______

INSPECTORS ON SITE: ______

QUALITY CONTROL TESTS AND SAMPLES: ______

VISITORS ON SITE: ______

SUMMARY OF ACTIVITIES: OFF TODAY

ATTACHMENTS: ______ SIGNITURE: T.P Kinhner

KEYSTONE ENVIRONMENTAL RESOURCES, INC.
CONSTRUCTION INSPECTION DAILY REPORT

BEAZER MATERIALS & SERVICES, INC.
SURFACE IMPOUNDMENT CLOSURE
KOPPERS INDUSTRIES, INC.
GRENADA, MISSISSIPPI PLANT

DATE: 10/30/89
REPORT NO.: 54
SHEET 1 of 2
BY: TPK

WEATHER: PARTLY CLOUDY, MILD

PRECIPITATION: 0 (inches) TEMPERATURE: LOW 50 HIGH 82

CONTRACTOR PERSONNEL ON SITE: GREEN + GREEN: BENJY HOWARD, DOUG BOYD, NEIL TURNAGE, CHARLES

EQUIPMENT EMPLOYED: D3CLGP DOZER

INSPECTORS ON SITE: TERRY KIRCHNER: KEYSTONE

QUALITY CONTROL TESTS AND SAMPLES:

VISITORS ON SITE: JOHN GREEN: GREEN + GREEN

SUMMARY OF ACTIVITIES: ARR 7:30 AM
NEIL T. BLUE-TOP SURVEYED WITH BENJY + DOUG. THEN BENJY GRADED TOP SOIL TO GET UNIFORM TOP SURFACE.
STRAW ARRIVED ABOUT 9:30 AM.
LIME ARRIVED 2:10 (≈ 1000 lbs). IT WAS SPREAD WITH RENTAL SPREADER/DRIVER.

ATTACHMENTS: SIGNATURE: T. P. Kirchner

KEYSTONE ENVIRONMENTAL RESOURCES, INC.
CONSTRUCTION INSPECTION DAILY REPORT

BEAZER MATERIALS & SERVICES, INC.
SURFACE IMPOUNDMENT CLOSURE
KOPPERS INDUSTRIES, INC.
GRENADA, MISSISSIPPI PLANT

DATE: 10/30/89
REPORT NO.: 54
SHEET 2 of 2
BY: TPK

SUMMARY OF ACTIVITIES (cont.):

2:20 APPLIED APPROX 660 lbs (800 lb/AC × 0.8 AC)
2:40 DISKED LIME AND FERTILIZER (2 PASSES)

SEEDS:
① FESCUE (FAWN TALL): 0% ENDOPHYTE, 9/5/89, LOT # P8-9-5-TF, No. 023798
35 lbs / ACRE
② HULLED BERMUDA: 66050/1005
20 lbs / ACRE
③ RYE: 150 lbs TOTAL

COMPACTED LIGHTLY WITH TRACTOR-PULLED CULTI-PACKER 4:40 - 5:10 PM.

SPREAD ≈ 100 BALES OF STRAW BY HAND
COMPACTED WITH TRACTOR-PULLED CRIMPER

FINISHED AT 8:00 PM

ATTACHMENTS: ______ SIGNATURE: T.P. Kirchner

KEYSTONE ENVIRONMENTAL RESOURCES, INC.
CONSTRUCTION INSPECTION DAILY REPORT

BEAZER MATERIALS & SERVICES, INC.
SURFACE IMPOUNDMENT CLOSURE
KOPPERS INDUSTRIES, INC.
GRENADA, MISSISSIPPI PLANT

DATE: 10/31/89
REPORT NO.: 55
SHEET 1 of 2
BY: TPK

WEATHER: OVERCAST, COOL

PRECIPITATION: 0 (inches) TEMPERATURE: LOW 50 HIGH 75

CONTRACTOR PERSONNEL ON SITE: GREEN & GREEN: BENTY HOWARD, DOUG BOYD

EQUIPMENT EMPLOYED: D3C LGP DOZER, BACK HOE

INSPECTORS ON SITE: TERRY KIRCHNER : KEYSTONE

QUALITY CONTROL TESTS AND SAMPLES: NONE

VISITORS ON SITE: NONE

SUMMARY OF ACTIVITIES: ARR: 7:00 AM.
SPREAD 4-5 MORE BALES OF STRAW TO COVER ANY SPOTS LEFT FROM LAST NIGHT'S SPREADING. BUCKED ALL LOOSE PILES OF GRAVEL, SAND AND COVER SOIL OVER INTO ONE SECTION.
DUG TRENCH AND APPLIED SEED & STRAW,

ATTACHMENTS: ____ SIGNATURE: T.P. Kirchner

KEYSTONE ENVIRONMENTAL RESOURCES, INC.
CONSTRUCTION INSPECTION DAILY REPORT

BEAZER MATERIALS & SERVICES, INC.
SURFACE IMPOUNDMENT CLOSURE
KOPPERS INDUSTRIES, INC.
GRENADA, MISSISSIPPI PLANT

DATE: 10/31/89
REPORT NO.: 55
SHEET 2 of 2
BY: TPK

SUMMARY OF ACTIVITIES (cont.):

AFTER CHECKING GRADE OF THE TRENCH.

THE EDGE OF THE FILTER FABRIC WAS THEN CUT / TRIMMED AROUND THE CAP.

RAKED GRAVEL TO SLOPE.
TOO DARK TO TAKE FINAL PICTURES TONIGHT, WILL GET THEM IN THE MORNING.

FINISHED AT 6 PM.

ATTACHMENTS:

SIGNITURE: T.P. Kuhn

KEYSTONE ENVIRONMENTAL RESOURCES, INC.
CONSTRUCTION INSPECTION DAILY REPORT

BEAZER MATERIALS & SERVICES, INC.
SURFACE IMPOUNDMENT CLOSURE
KOPPERS INDUSTRIES, INC.
GRENADA, MISSISSIPPI PLANT

DATE: 11/1/89
REPORT NO.: 56
SHEET 1 of 1
BY: TPK

WEATHER: COOL, HAZY, SUNNY

PRECIPITATION: 0 (inches) TEMPERATURE: LOW 49 HIGH 74

CONTRACTOR PERSONNEL ON SITE: GREEN & GREEN CONST.:
NEIL TURNAGE, DOUG BOYD, BENJY HOWARD

EQUIPMENT EMPLOYED: NONE

INSPECTORS ON SITE: TERRY KIRCHNER : KEYSTONE

QUALITY CONTROL TESTS AND SAMPLES: NONE

VISITORS ON SITE: NONE

SUMMARY OF ACTIVITIES: GREEN & GREEN REMOVED
ALL OF THEIR REMAINING EQUIPMENT.
I TOOK FINAL PICTURES OF CAP + TRENCH.

FINISHED 9 AM

ATTACHMENTS: SIGNATURE: T. P. Kirchner

APPENDIX B

Soil Testing Data and Results

PERMEABILITY TESTING

Springer Engineering, Inc.
206 Glenn Street
Starkville, MS 39759
601-323-2296

September 29, 1989

MID-SOUTH TESTING LABORATORIES, INC.
Attn: Mr. Jeff Vance
133 Mound Street
Grenada, Mississippi 38901

RE: Permeability Analysis
Kopper's Lagoon
Grenada, Mississippi

Dear Mr. Vance:

Attached hereto is a recapitulation of test results obtained on samples submitted from the project referenced above. Please feel free to contact us should you have any questions concerning the information provided or if we may be additional assistance. Our invoice for services rendered is enclosed.

We appreciate the opportunity to assist Mid-South Testing Laboratories on this project.

Sincerely,

Clyde L. Pritchard

Clyde L. Pritchard, P.E.

CP:cs

PERMEABILITY ANALYSIS
KOPPER'S LAGOON
GRENADA, MISSISSIPPI

*DATE SAMPLED	DESCRIPTION	COEFF. OF PERMEABILITY (cm/sec)
7-31-89	Clay Liner - North	1.4×10^{-5}
	Clay Liner - South	8.2×10^{-6}
7-31-89	Coarse Sand Fill Harris Pit	6.9×10^{-3}
8-12-89	Clay Liner - S-1	1.4×10^{-8}
	Clay Liner - S-2	8.4×10^{-9}
8-22-89	Clay Liner - ST-1	7.9×10^{-8}
	Clay Liner - ST-2	7.7×10^{-8}
9-1-89	Clay Liner - North	4.2×10^{-8}
	Clay Liner - South	6.2×10^{-8}
9-12-89	Clay Liner - North	3.6×10^{-8}
	Clay Liner - South	8.4×10^{-9}
9-12-89	Course Sand Fill	5.6×10^{-2}

*Samples Delivered To Laboratory By Keystone Environmental Consultants.

DRAINAGE LAYER

Sieve Analysis

TMD-602
(REV. 4—70)

MID-SOUTH TESTING LABORATORIES, INC.
P. O. Box 147 - 415 First Street
Grenada, Mississippi 38901

MISS.

PLANT LETTER ______ DATE 9-13-97

REPORT NO. 1 PROJ. NO. Koppers Lagoon

MATERIAL Fill Sand COUNTY Grenada

NO. CARS ______ QUAN. REP. ______

CONSIGNEE Green + Green DESTINATION Site

PRODUCER Memphis Stone ADDRESS ______

TYPE OF CONSTRUCTION TO BE USED IN ______

SIEVE ANALYSIS (PER CENT PASSING)

CAR NO.						
SATISFACTORY CARD NO.						
2½" SIEVE						
2" SIEVE						
1½" SIEVE						
1¼" SIEVE						
1" SIEVE						
¾" SIEVE						
½" SIEVE						
3/8" SIEVE	100					
No. 4 SIEVE	98.6					
No. 8 SIEVE						
No. 10 SIEVE	89.5					
No. 16 SIEVE						
No. 20 SIEVE						
No. 30 SIEVE						
No. 40 SIEVE	35.0					
No. 50 SIEVE						
No. 60 SIEVE						
No. 80 SIEVE	1.3					
No. 100 SIEVE						
No. 200 SIEVE	0.7					
PER CENT LOSS ON WASH						
COLOR TEST ______						
FINENESS MODULUS ______						

This material has been inspected and is ______ for use in the above construction.

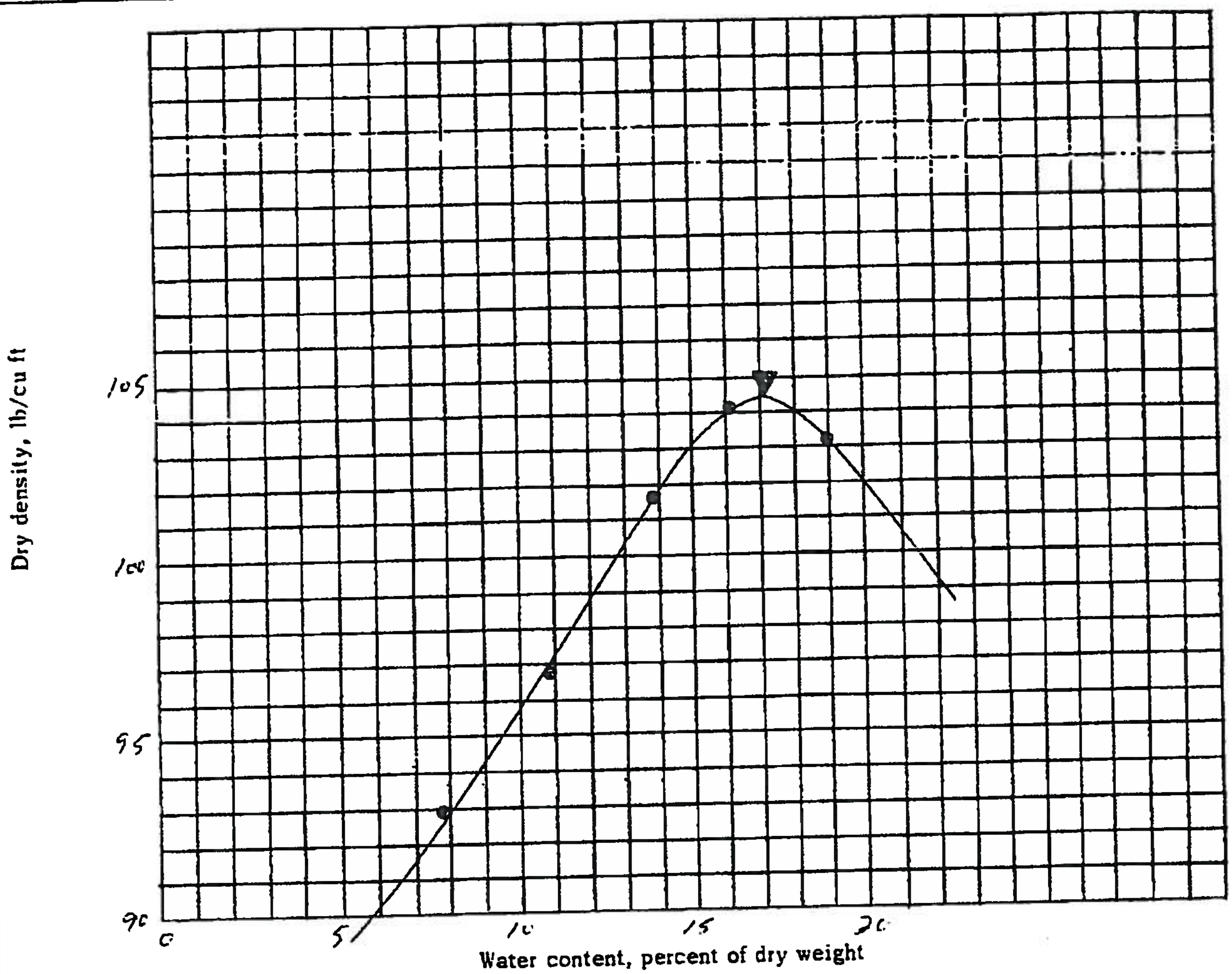
REMARKS:

Distribution:
Original to Testing Engineer;
1 copy to District Engineer;
1 copy to Project Engineer;
1 copy for Plant File.

SIGNED Jeff Ward

MATERIALS INSPECTOR

STANDARD PROCTOR TESTS



Standard compaction test

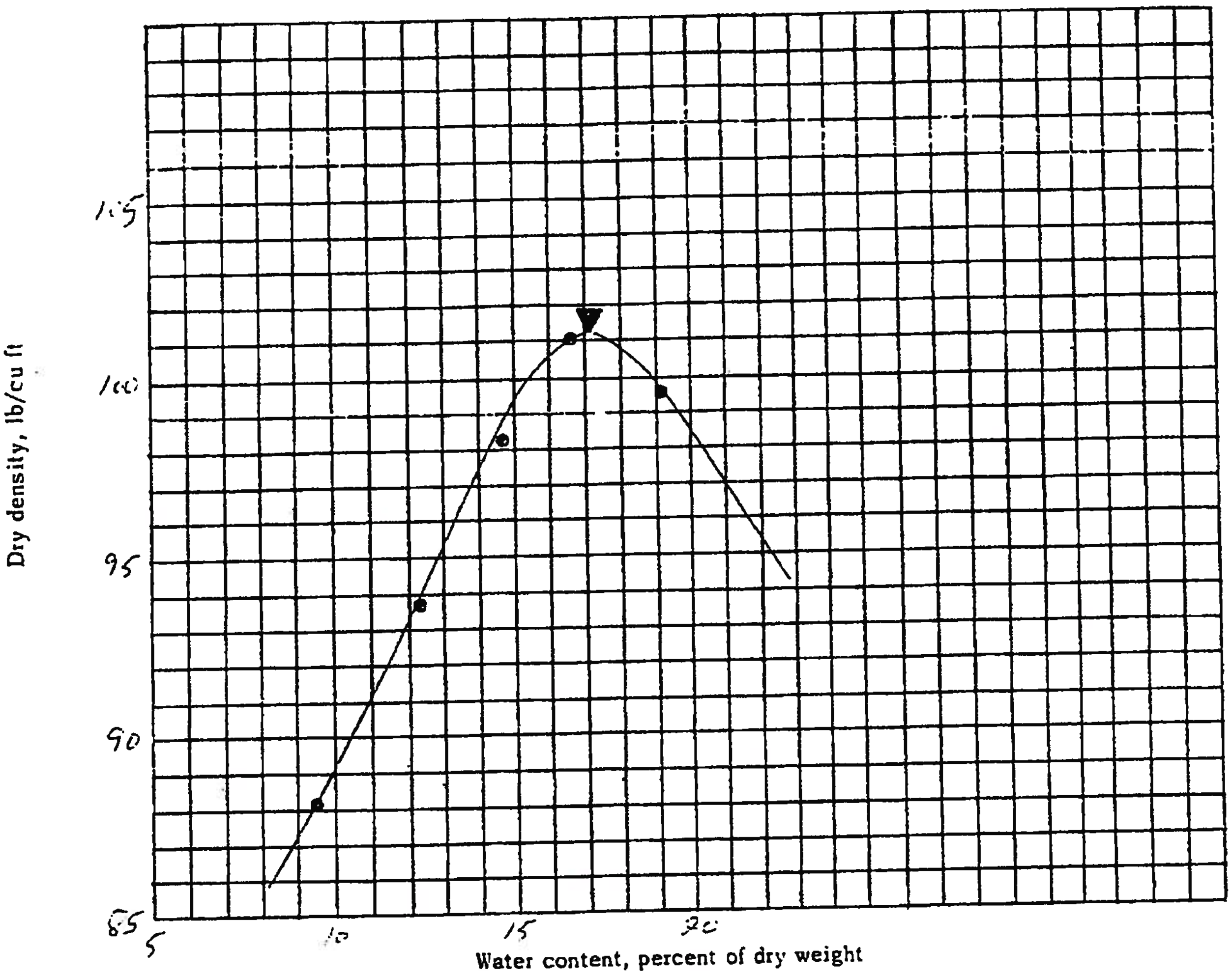
25 blows per each of 3 layers, with 5.5 lb rammer and

12 inch drop. 4 inch diameter mold.

Sample No.	Elev or Depth.	Classification	G	LL	PL	%> No. 4	%> ¾ in.

Sample lb.				
Natural water content, percent				
Optiman water content, percent	17.1			
Max dry density, lb/cu ft	104.6			

Remarks	Project Koppers Lagoon
	Area Site - Brown Clayey Silt
	Lab. No. / Date 7-21-89



Standard compaction test

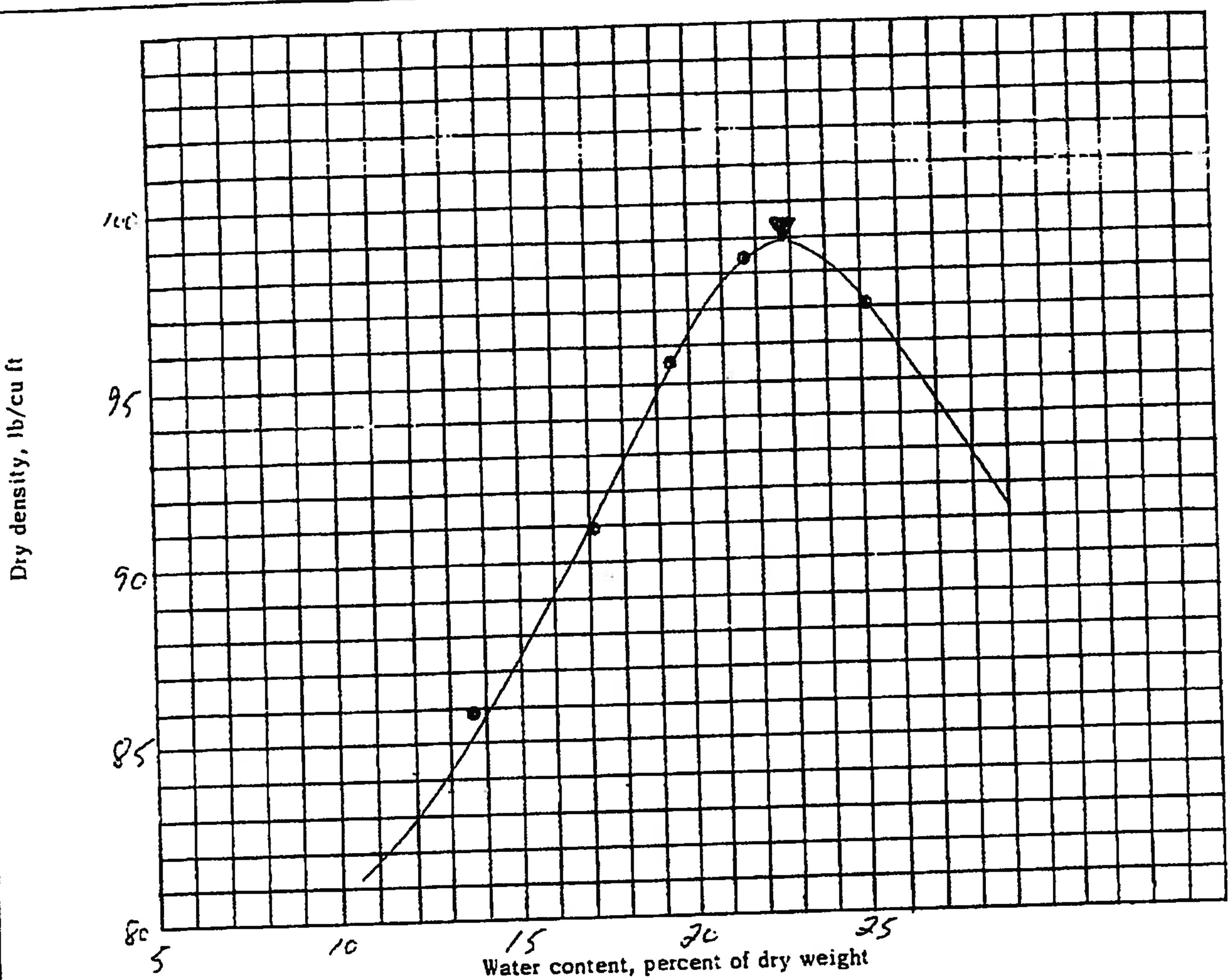
25 blows per each of 3 layers, with 5.5 lb rammer and

12 inch drop. 4 inch diameter mold.

Sample No.	Elev or Depth.	Classification	G	LL	PL	%> No. 4	%> ¾ in.

Sample lb.				
Natural water content, percent				
Optiman water content, percent	17.1			
Max dry density, lb/cu ft	101.2			

Remarks [signature]	Project Koppers Lagoon
	Area Green Pit - Red Sand Clay
	Lab. No. / Date 7-22-89



Standard compaction test

25 blows per each of 3 layers, with 5.5 lb rammer and

12 inch drop. 4 inch diameter mold.

Sample No.	Elev or Depth.	Classification	G	LL	PL	%> No. 4	%> ¾ in.
		Bentonite - 2.2 pounds per cubic feet					

Sample lb.				
Natural water content, percent				
Optiman water content, percent	22.8			
Max dry density, lb/cu ft	98.9			

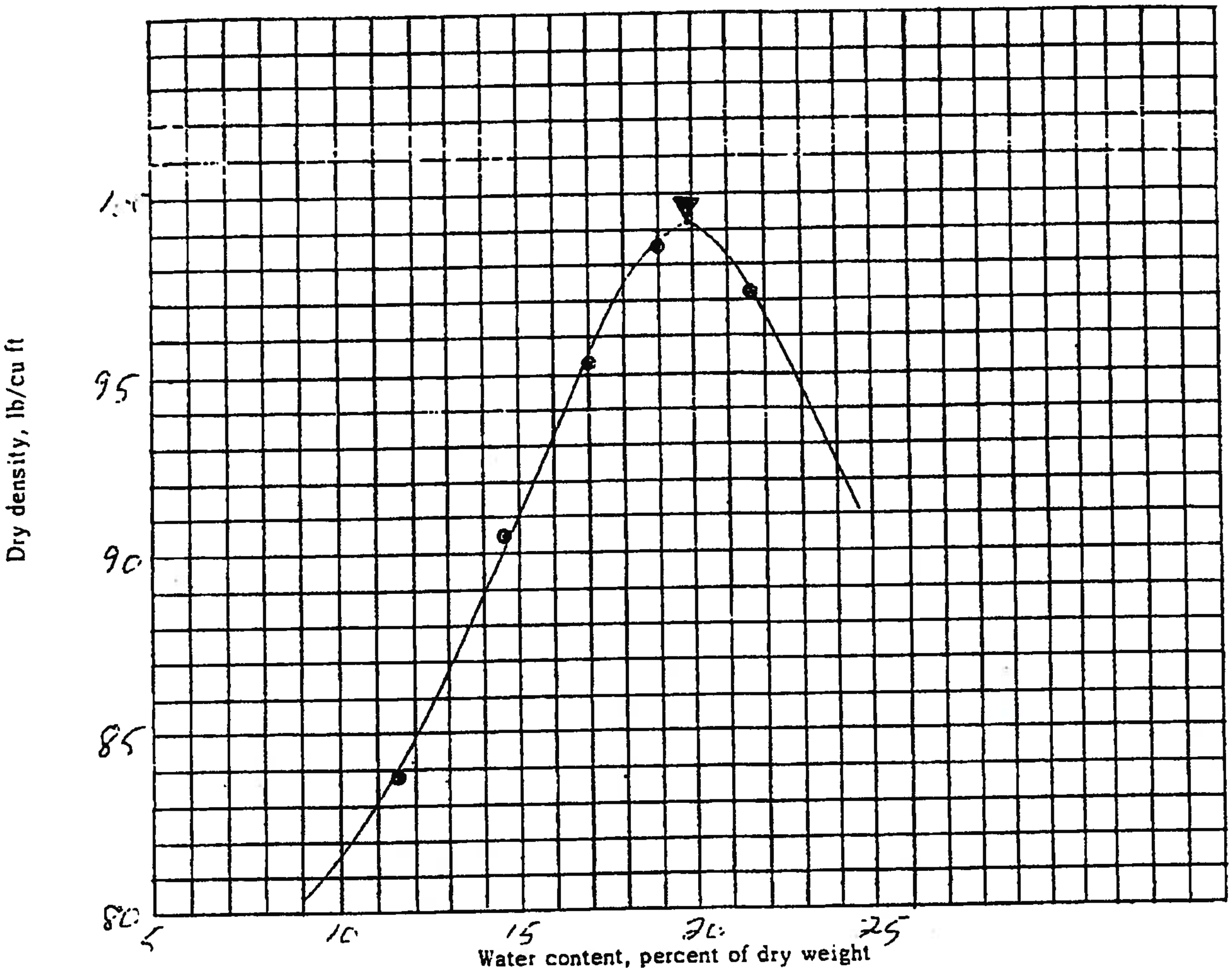
Remarks Jeff Tance

Project Koppers Lagoon

Area Green Pit - Red Sand - Bentonite

Lab. No.

Date 7-27-89



Standard compaction test

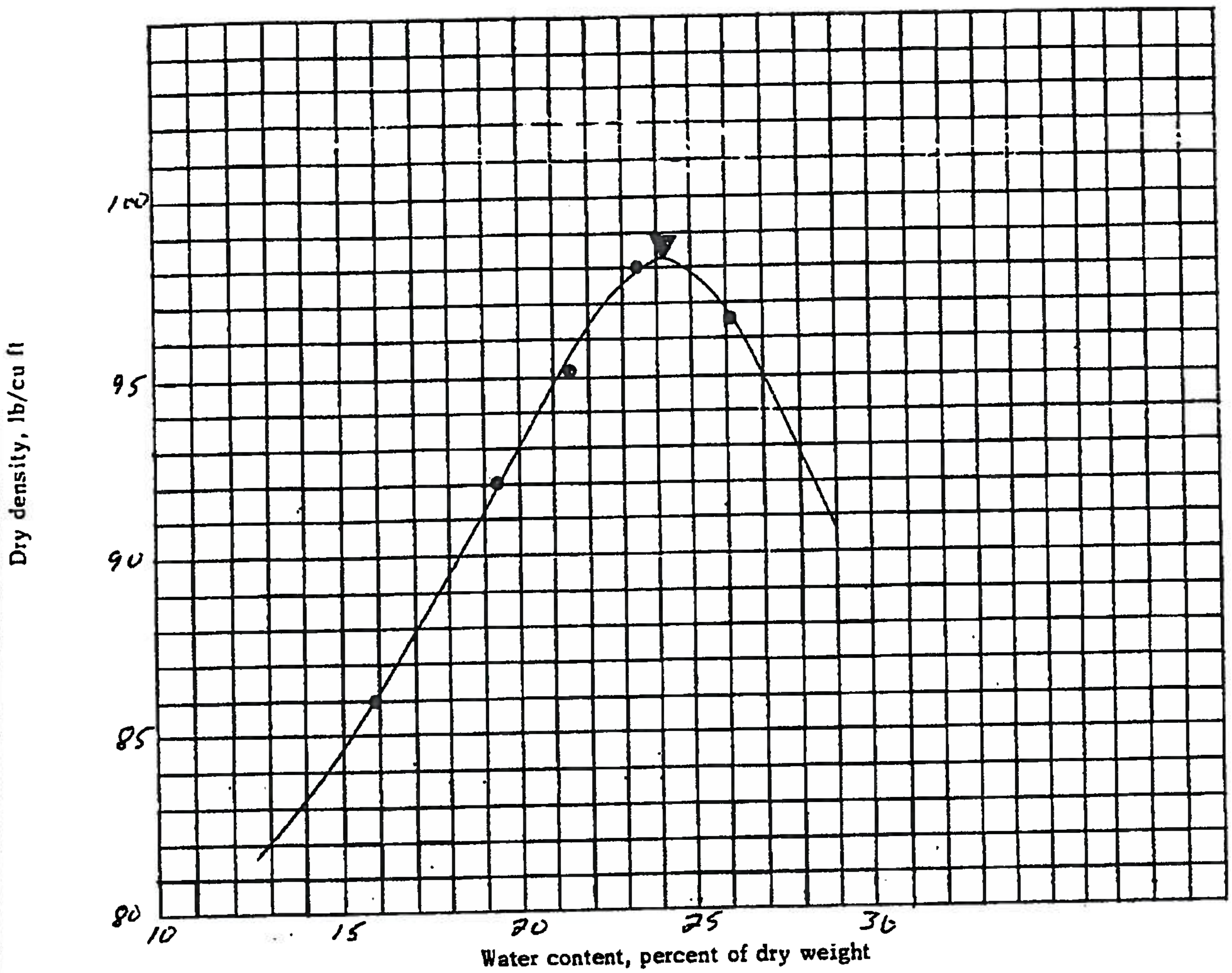
25 blows per each of 5 layers, with 5.5 lb rammer and

12 inch drop. 4 inch diameter mold.

Sample No.	Elev or Depth.	Classification	G	LL	PL	%> No. 4	%> ¾ in.
		Bentonite 2.2 pounds					
		per Cu. Ft.					
		Composite Sample					

Sample lb.				
Natural water content, percent				
Optiman water content, percent	19.8			
Max dry density, lb/cu ft	99.3			

Remarks [signature]	Project Koppers Lagoon
	Area On-site - Red Sand Clay
	Lab. No. / Date 7-30-89



Standard compaction test

25 blows per each of 3 layers, with 5.5 lb rammer and

12 inch drop. 4 inch diameter mold.

Sample No.	Elev or Depth.	Classification	G	LL	PL	%> No. 4	%> ¾ in.
		Bentonite - 1st Layer					
		2.2 / C.F.					

Sample lb.				
Natural water content, percent				
Optiman water content, percent	24.2			
Max dry density, lb/cu ft	98.3			

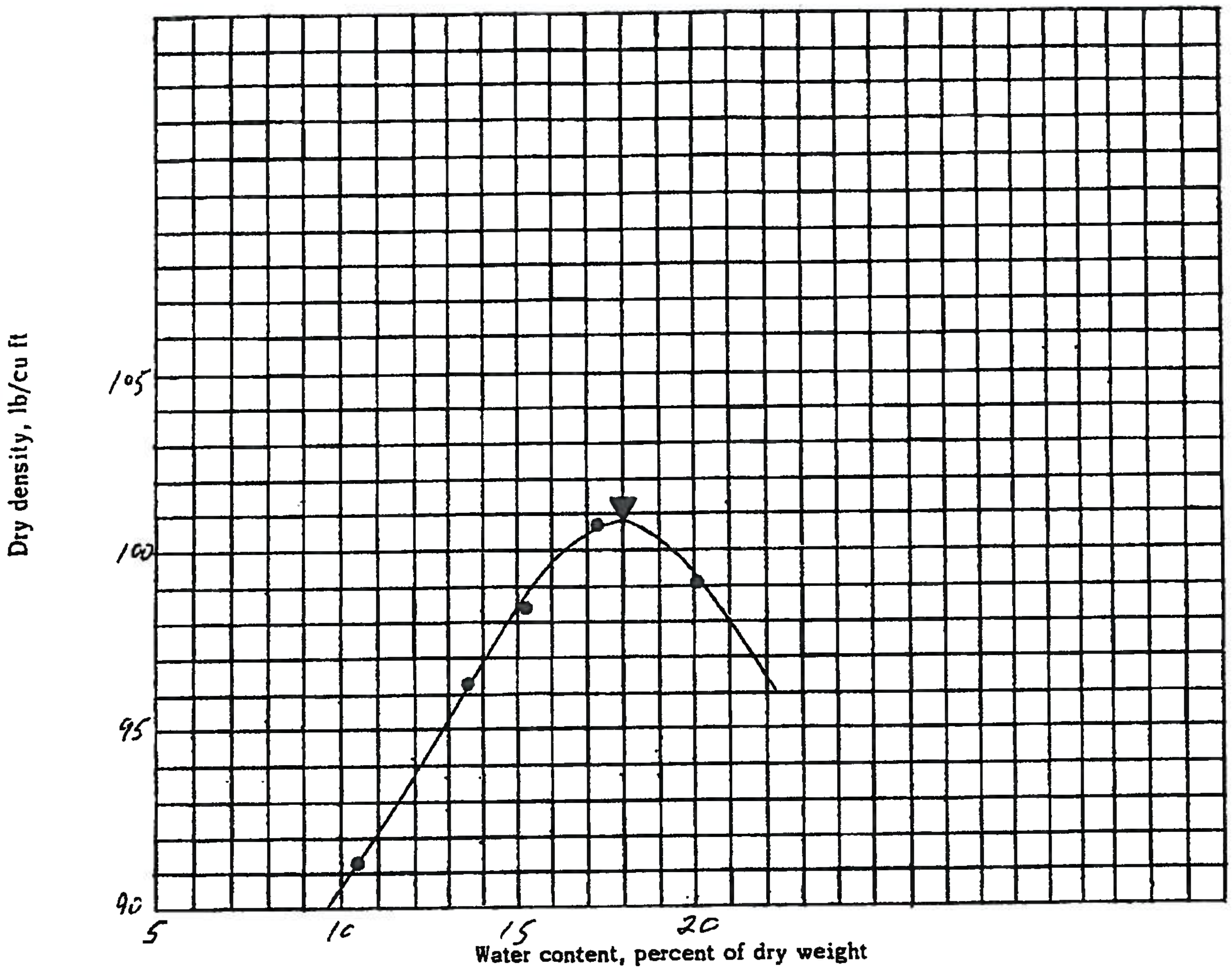
Remarks

Project Koppers Lagoon

Area

Lab. No.

Date 8-9-89



Standard compaction test

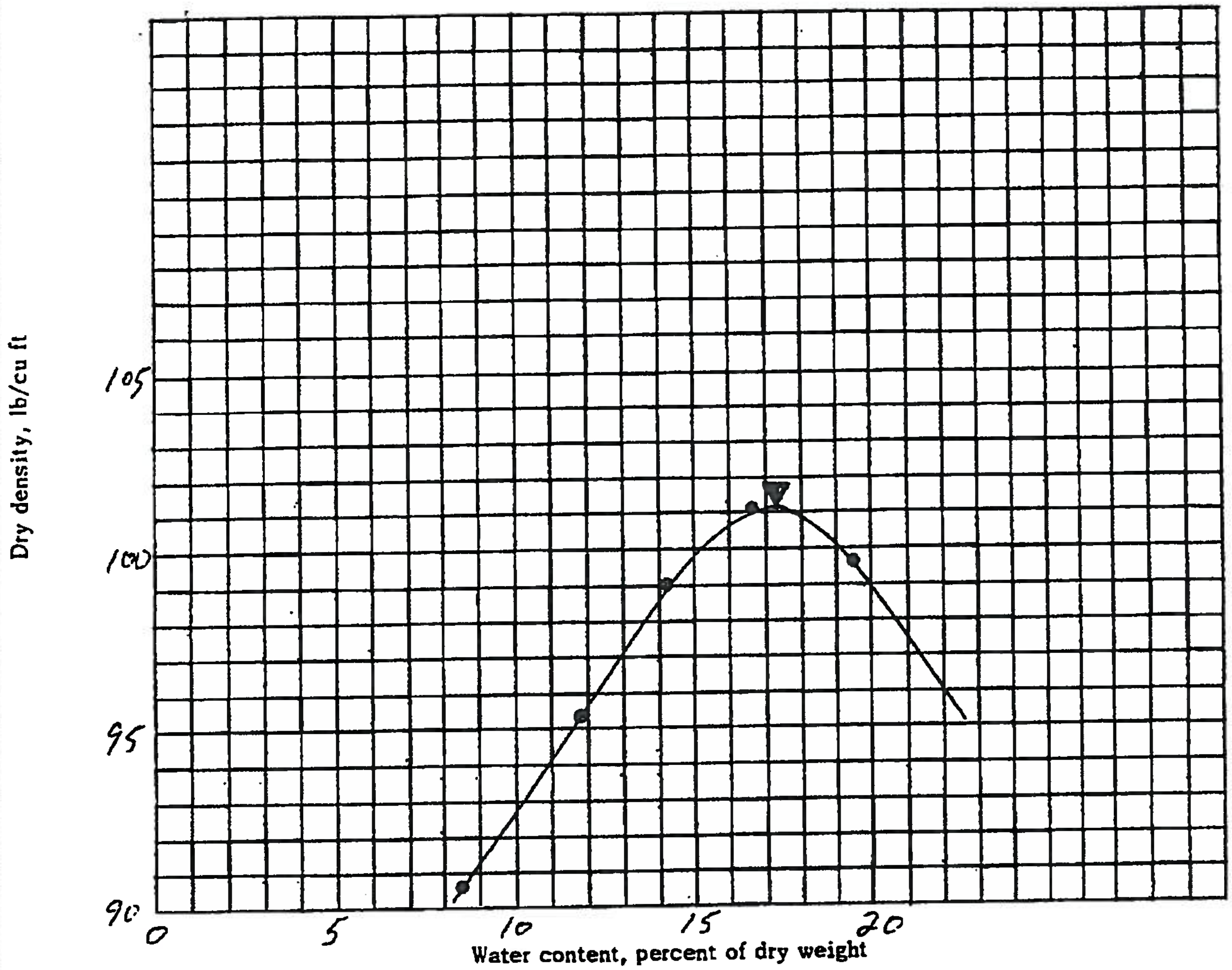
25 blows per each of 3 layers, with 5.5 lb rammer and

12 inch drop. 4 inch diameter mold.

Sample No.	Elev or Depth.	Classification	G	LL	PL	%> No. 4	%> ¾ in.

Sample lb.				
Natural water content, percent				
Optiman water content, percent	18.0			
Max dry density, lb/cu ft	100.7			

Remarks Jeff Vance	Project Koppers Lagoon
	Area Green Pit - red Sand Clay
	Lab. No. Date 10-14-89



Standard compaction test

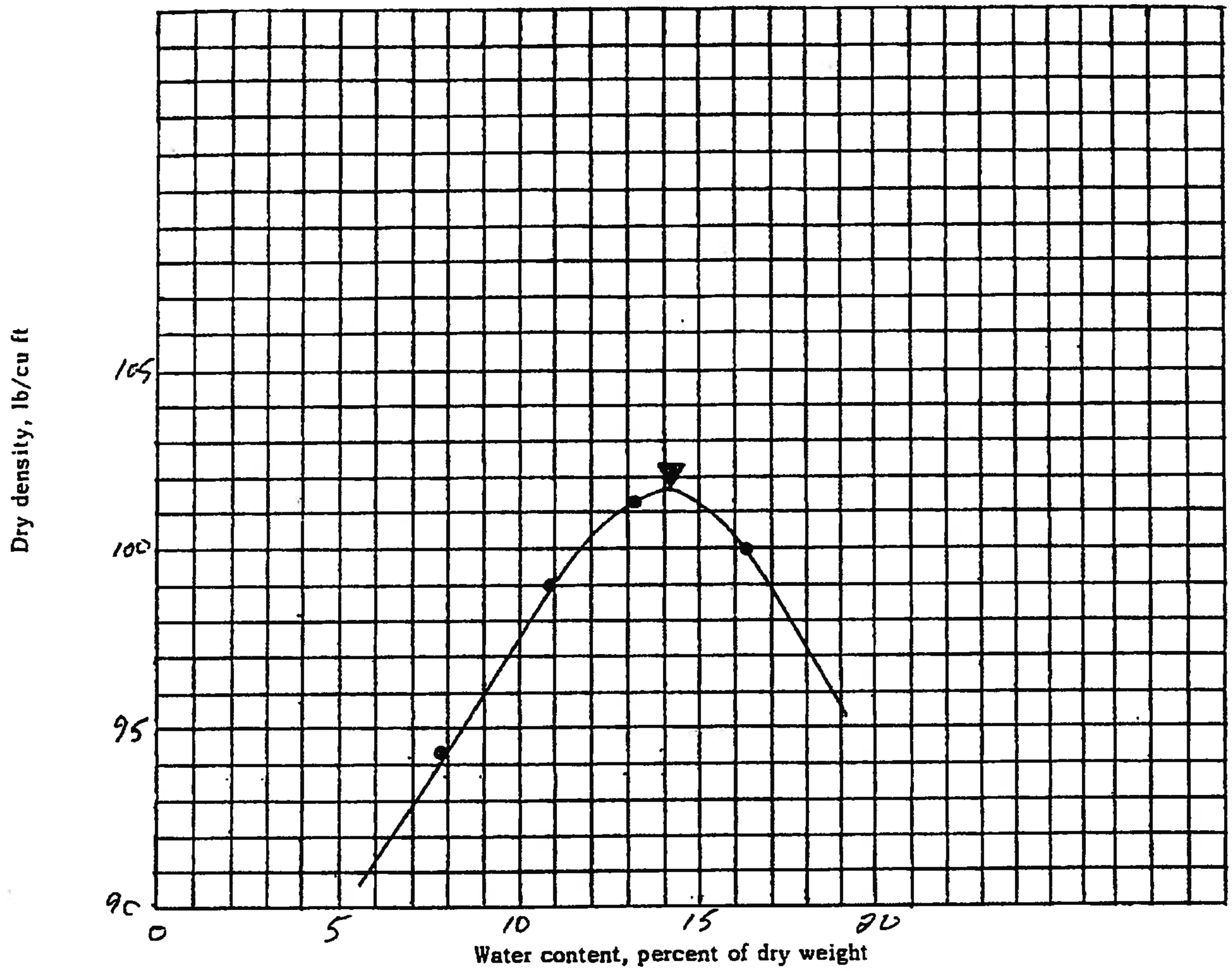
25 blows per each of 3 layers, with 5.5 lb rammer and

12 inch drop. 4 inch diameter mold.

Sample No.	Elev or Depth.	Classification	G	LL	PL	%> No. 4	%> ¾ in.

Sample lb.				
Natural water content, percent				
Optiman water content, percent	17.3			
Max dry density, lb/cu ft	101.1			

Remarks	Project Koppers Lagoon	
	Area red Sandy Clay - on site	
	Lab. No.	Date 10-24-89



Standard compaction test

25 blows per each of 3 layers, with 5.5 lb rammer and

12 inch drop. 4 inch diameter mold.

Sample No.	Elev or Depth.	Classification	G	LL	PL	%> No. 4	%> ¾ in.

Sample lb.				
Natural water content, percent				
Optiman water content, percent	14.1			
Max dry density, lb/cu ft	101.6			

Remarks [signature]	Project Koppers Lagoon
	Area Site - red Sand
	Lab. No. Date 10-24-89

SOIL-BENTONITE LAYER

Atterberg Limits

MID-SOUTH TESTING LABORATORIES, INC.
P. O. Box 147 - 133 South Mound Street
Grenada, Mississippi 38901

Report on SOIL SAMPLES

Lab. Nos.

Road

Submitted by Mid South Testing

Reported to Keystone Env

Producer Onsite Soil (RAW SOIL)

Proj. No. Koppers Lagoon

County Grenada

Sampled by Vance

Date Sampled 7 31-89

Date Received

Date Reported 8-2-89

TEST RESULTS*

Lab. No.								
Sample No.	1							
Station No.								
Depth								

PHYSICAL CHARACTERISTICS

Liquid Limit	28							
Plastic Limit	20							
Plasticity Index	8							
Shrinkage Limit								
Shrinkage Ratio								
Centrifuge Moisture								
Field Moisture								
Volume Change								

MECHANICAL ANALYSIS

%Pass No. 10 Sieve	100							
%Pass No. 40 Sieve	90.1							
%Pass No. 60 Sieve	60.5							
%Pass No. 200 Sieve	29.3							
%Pass No. 270 Sieve	19.3							
% Silt	9							
% Clay	10							
% Colloids								
Dust Ratio**								
Consistency								
HCL Reaction								
GROUP								
U. S. C.								
Est. CBR								
Bearing Capacity								

*Particles above 0.074 mm. in diameter by sieve method; particles below 0.074 mm. in diameter by hydrometer method.

**Percentage of material finer than No. 40 sieve passing No. 200 sieve.

Reported by Jeff Vance

MID-SOUTH TESTING LABORATORIES, INC.
P. O. Box 147 - 133 South Mound Street
Grenada, Mississippi 38901

Report on SOIL SAMPLES

Lab. Nos. ______ Proj. No. Koppers Lagoon

Road ______ County Grenada

Submitted by Mid South Testing Sampled by Vance

Reported to Keystone Date Sampled 8-7-89

Producer Onsite Samples Date Received ______

Date Reported 8-8-89

TEST RESULTS*

Bentonite per Cu. Ft.	1 Pounds	2 Pounds	3 Pounds					
Lab. No.								
Sample No.	1	2	3					
Station No.								
Depth								
PHYSICAL CHARACTERISTICS								
Liquid Limit	30	32	34					
Plastic Limit	20	20	19					
Plasticity Index	10	12	15					
Shrinkage Limit								
Shrinkage Ratio								
Centrifuge Moisture								
Field Moisture								
Volume Change								
MECHANICAL ANALYSIS								
%Pass No. 10 Sieve	100	100	100					
%Pass No. 40 Sieve	93	91	90					
%Pass No. 60 Sieve	61	63	59					
%Pass No. 200 Sieve	34	33	31					
%Pass No. 270 Sieve								
% Silt								
% Clay								
% Colloids								
Dust Ratio**								
Consistency								
HCL Reaction								
GROUP								
U. S. C.								
Est. CBR								
Bearing Capacity								

*Particles above 0.074 mm. in diameter by sieve method; particles below 0.074 mm. in diameter by hydrometer method.
**Percentage of material finer than No. 40 sieve passing No. 200 sieve.

All samples had 2.2pds per Cu. Ft. before Additional Bentonite was Added.

Reported by Jeff Vance

MID-SOUTH TESTING LABORATORIES, INC.
P. O. Box 147 - 133 South Mound Street
Grenada, Mississippi 38901

Report on SOIL SAMPLES

Lab. Nos. ____ Proj. No. Koppers Lagoon

Road ____ County Grenada

Submitted by Mid South Testing ____ Sampled by Vance

Reported to Keystone Env. ____ Date Sampled 8-9-89

Producer Onsite - Before Bentonite ____ Date Received ____

Date Reported 8-10-89

TEST RESULTS*

Lab. No.								
Sample No.								
Station No.								
Depth								
PHYSICAL CHARACTERISTICS								
Liquid Limit	33	35						
Plastic Limit	19	20						
Plasticity Index	14	15						
Shrinkage Limit								
Shrinkage Ratio								
Centrifuge Moisture								
Field Moisture								
Volume Change								
MECHANICAL ANALYSIS								
%Pass No. 10 Sieve	100	100						
%Pass No. 40 Sieve	93	95						
%Pass No. 60 Sieve	89	90						
%Pass No. 200 Sieve	87	85						
%Pass No. 270 Sieve								
% Silt								
% Clay								
% Colloids								
Dust Ratio**								
Consistency								
HCL Reaction								
GROUP								
U. S. C.								
Est. CBR								
Bearing Capacity								

*Particles above 0.074 mm. in diameter by sieve method; particles below 0.074 mm. in diameter by hydrometer method.

**Percentage of material finer than No. 40 sieve passing No. 200 sieve.

Reported by Jeff Vance

MID-SOUTH TESTING LABORATORIES, INC.
P. O. Box 147 - 133 South Mound Street
Grenada, Mississippi 38901

Report on SOIL SAMPLES

Lab. Nos. ______________________ Proj. No. Koppers Lagoon

Road ______________________ County Grenada

Submitted by Mid South Testing Sampled by Vance

Reported to Keystone Date Sampled 8-11-89

Producer 1st Layer Bentonite Date Received ______

Date Reported 8-14-89

TEST RESULTS*

Lab. No.								
Sample No.	1	2						
Station No.								
Depth								
PHYSICAL CHARACTERISTICS								
Liquid Limit	38	37						
Plastic Limit	20	19						
Plasticity Index	18	18						
Shrinkage Limit								
Shrinkage Ratio								
Centrifuge Moisture								
Field Moisture								
Volume Change								
MECHANICAL ANALYSIS								
%Pass No. 10 Sieve	100	100						
%Pass No. 40 Sieve	94	95						
%Pass No. 60 Sieve	88	91						
%Pass No. 200 Sieve	86	86						
%Pass No. 270 Sieve								
% Silt								
% Clay								
% Colloids								
Dust Ratio**								
Consistency								
HCL Reaction								
GROUP								
U. S. C.								
Est. CBR								
Bearing Capacity								

*Particles above 0.074 mm. in diameter by sieve method; particles below 0.074 mm. in diameter by hydrometer method.
**Percentage of material finer than No. 40 sieve passing No. 200 sieve.

Reported by Jeff Vance

MID-SOUTH TESTING LABORATORIES, INC.
P. O. Box 147 - 133 South Mound Street
Grenada, Mississippi 38901

Report on SOIL SAMPLES

Lab. Nos.

Road

Submitted by Mid South Testing

Reported to Keystone

Producer onsite stockpile - 2nd layer - raw soil

Proj. No. Koppers Lagoon

County Grenada

Sampled by Vance

Date Sampled 8-18-89

Date Received

Date Reported 8-19-89

TEST RESULTS*

	x						
Lab. No.							
Sample No.	1	2					
Station No.							
Depth							
PHYSICAL CHARACTERISTICS							
Liquid Limit	32	34					
Plastic Limit	20	20					
Plasticity Index	12	14					
Shrinkage Limit							
Shrinkage Ratio							
Centrifuge Moisture							
Field Moisture							
Volume Change							
MECHANICAL ANALYSIS							
%Pass No. 10 Sieve	100	100					
%Pass No. 40 Sieve	90	95					
%Pass No. 60 Sieve	85	89					
%Pass No. 200 Sieve	78	83					
%Pass No. 270 Sieve							
% Silt							
% Clay							
% Colloids							
Dust Ratio**							
Consistency							
HCL Reaction							
GROUP							
U. S. C.							
Est. CBR							
Bearing Capacity							

*Particles above 0.074 mm. in diameter by sieve method; particles below 0.074 mm. in diameter by hydrometer method.

**Percentage of material finer than No. 40 sieve passing No. 200 sieve.

Reported by Jeff Vance

MID-SOUTH TESTING LABORATORIES, INC.
P. O. Box 147 - 133 South Mound Street
Grenada, Mississippi 38901

Report on SOIL SAMPLES

Lab. Nos. ____ Proj. No. Koppers Lagoon

Road ____ County Grenada

Submitted by Mid South Testing Sampled by Vance

Reported to Keystone Date Sampled 8-28-89

Producer On-site - Stockpile - Raw soil Date Received ____
THIRD Lift - Soil

Date Reported 8-29-89

TEST RESULTS*

Lab. No.								
Sample No.	1	2						
Station No.								
Depth								
PHYSICAL CHARACTERISTICS								
Liquid Limit	35	37						
Plastic Limit	20	21						
Plasticity Index	15	16						
Shrinkage Limit								
Shrinkage Ratio								
Centrifuge Moisture								
Field Moisture								
Volume Change								
MECHANICAL ANALYSIS								
%Pass No. 10 Sieve	100	100						
%Pass No. 40 Sieve	91	95						
%Pass No. 60 Sieve	86	90						
%Pass No. 200 Sieve	80	84						
%Pass No. 270 Sieve								
% Silt								
% Clay								
% Colloids								
Dust Ratio**								
Consistency								
HCL Reaction								
GROUP								
U. S. C.								
Est. CBR								
Bearing Capacity								

*Particles above 0.074 mm. in diameter by sieve method; particles below 0.074 mm. in diameter by hydrometer method.
**Percentage of material finer than No. 40 sieve passing No. 200 sieve.

Reported by Jeff Vance

MID-SOUTH TESTING LABORATORIES, INC.
P. O. Box 147 - 133 South Mound Street
Grenada, Mississippi 38901

Report on SOIL SAMPLES

Lab. Nos.__________ Proj. No. Koppers Lagoon

Road 4th Lift County Grenada

Submitted by Mid South Testing Sampled by Vance

Reported to Keystone Date Sampled 9-5-89

Producer Onsite Stock Pile - raw Soil Date Received

Date Reported 9-7-89

TEST RESULTS*

Lab. No.								
Sample No.	1	2						
Station No.								
Depth								

PHYSICAL CHARACTERISTICS

Liquid Limit	34	33						
Plastic Limit	20	19						
Plasticity Index	14	14						
Shrinkage Limit								
Shrinkage Ratio								
Centrifuge Moisture								
Field Moisture								
Volume Change								

MECHANICAL ANALYSIS

%Pass No. 10 Sieve	100	100						
%Pass No. 40 Sieve	90	91						
%Pass No. 60 Sieve	83	87						
%Pass No. 200 Sieve	77	86						
%Pass No. 270 Sieve								
% Silt								
% Clay								
% Colloids								
Dust Ratio**								
Consistency								
HCL Reaction								
GROUP								
U. S. C.								
Est. CBR								
Bearing Capacity								

*Particles above 0.074 mm. in diameter by sieve method; particles below 0.074 mm. in diameter by hydrometer method.

**Percentage of material finer than No. 40 sieve passing No. 200 sieve.

Reported by Jeff Vance

BACKFILL DENSITY TESTS

MID-SOUTH TESTING LABORATORIES, INC.

FIELD DENSITY DATA

226-7415

Grenada, MS

... Keppers Lignum ... County Grenada District ______ Frame ______

Technician Vance COMPONENT: (circle one)______ MATERIAL: (circle one)______ TREATMENT:______

Lift ______ Course: Basement Soil Design Soil Soil(Type): Sandy, Silty, Clayey; None______

Depth Measured Inches ______ Subbase Base ______ Sand Clay, Semi-Gr., Clay-Gr. Lime (% by Wt.): 1st Appl.______

Lot Size ______ Block Base Binder Base Class ______ 2nd Appl.______

Unit of Deviation ______ Base ______ Design Depth ______ Inches ______ Cement (% by Vol.)______

	1. Section No.						
	2. Test No.	1	2	3	4	5	6
	3. Date	7-24-89	7-24-89	7-24-89	7-24-89	7-24-89	7-24-89
	4. Time						
	5. Station						
	6. Location	North	South	North	Center	South	South
	7. Depth	1st Lift	1st Lift	2nd Lift	2nd Lift	2nd Lift	2nd Lift
	8. Sta. Limits Sect. Being Tested						
Moisture	9. Standard Count						
	10. Moisture Count						
	11. Moisture Count Ratio						
	12. Moisture, PCF						
Density	13. Standard Count						
	14. Density Count						
	15. Air-gap Count(If Used)						
	16. Density Count Ratio						
	17. Wet Density, PCF						
Test Values	18. Dry Density, PCF						
	19. Moisture Content, %	19.1	18.0	20.5	22.7	18.7	18.9
Standard Density	20. From Standard Density Curve	104.6	104.6	104.6	104.6	104.6	104.6
	21. Standard Density Curve Number						
	22. In-Place Density % of Standard	95.8	96.1	96.4	97.6	96.5	97.0
	23. Specified percent of Standard Density	95	95	95	95	95	95
	24. No. of Samples in Lot						
	25. Algebraic Sum of Deviations in Lot						
	26. Dev. from SV = Algebraic sum of Lot / No. of Smpls in Lot						
	27. Algebraic sum of deviation in applicable lots						
	...al No. of Samples Used						
	... Avg 1 Dev. applicable lots = Blk 27 / Blk 28						

Distribution:

Signed Jeff Vance

Title S.C.T.

MID-SOUTH TESTING LABORATORIES, INC.

226-7415

FIELD DENSITY DATA

Grenada, MS

Project Kippin Lagoon County Grenada District ________ Frame ________

Technician Vance COMPONENT: (circle one) ________ MATERIAL: (circle one) ________ TREATMENT: ________

Lift ________ Course: Basement Soil Design Soil Soil(Type): Sandy, Silty, Clayey None ________

Depth Measured Inches ________ Subbase Base ________ Sand Clay, Semi-Gr., Clay-Gr. Lime (% by Wt.): 1st Appl. ________

Lot Size ________ Block Base Binder Base Class ________ 2nd Appl. ________

Unit of Deviation ________ Base ________ Design Depth ________ Inches ________ Cement (% by Vol.) ________

	1. Section No.						
	2. Test No.	7	8	9	10	11	
	3. Date	7-25-89	7-25-89	7-25-89	7-25-89	7-26-89	
	4. Time						
	5. Station						
	6. Location	Center	South	North	South	North	
	7. Depth	3rd lift	3rd lift	3rd lift	4th lift	4th lift	
	8. Sta. Limits Sect. Being Tested						
Moisture	9. Standard Count						
	10. Moisture Count						
	11. Moisture Count Ratio						
	12. Moisture, PCF						
Density	13. Standard Count						
	14. Density Count						
	15. Air-gap Count(If Used)						
	16. Density Count Ratio						
	17. Wet Density, PCF						
Test Values	18. Dry Density, PCF						
	19. Moisture Content, %	14.6	13.0	14.9	15.8	16.6	
Standard Density	20. From Standard Density Curve	101.2	101.2	101.2	101.2	101.2	
	21. Standard Density Curve Number						
	22. In-Place Density % of Standard	100.5	96.1	104.2	103.2	99.8	
	23. Specified percent of Standard Density	95	95	95	95	95	
	24. No. of Samples in Lot						
	25. Algebraic Sum of Deviations in Lot						
	26. Dev. from SV = Algebraic sum of Lot / No. of Smpls in Lot						
	27. Algebraic sum of deviation in applicable lots						
	28. Total No. of Samples Used						
	29. Avg 1 Dev. applicable lots = Blk 27 / Blk 28						

Distribution:

Signed J. H. Vance

Title S.C.T.

MID-SOUTH TESTING LABORATORIES, INC.

226-7415

FIELD DENSITY DATA

Grenada, MS

Koppers Lagoon County Grenada District ______ Frame ______

Technician Lance COMPONENT: (circle one) ______ MATERIAL: (circle one) ______ TREATMENT: ______

Lift ______ Course: Basement Soil Design Soil Soil(Type): Sandy, Silty, Clayey None ______

Depth Measured Inches ______ Subbase Base ______ Sand Clay, Semi-Gr., Clay-Gr. Lime (% by Wt.): 1st Appl. ______

Lot Size ______ Block Base Binder Base Class ______ 2nd Appl. ______

Unit of Deviation ______ Base ______ Design Depth ______ Inches ______ Cement (% by Vol.) ______

	1. Section No.						
	2. Test No.	12	13	14	15	16	17
	3. Date	7-26-89	7-26-89	7-26-89	7-26-89	7-27-89	7-27-89
	4. Time						
	5. Station						
	6. Location						
	7. Depth	5th L.Ft	5th L.Ft	6th L.Ft	6th L.Ft	7th L.Ft	7th L.Ft
	8. Sta. Limits Sect. Being Tested						
Moisture	9. Standard Count						
	10. Moisture Count						
	11. Moisture Count Ratio						
	12. Moisture, PCF						
Density	13. Standard Count						
	14. Density Count						
	15. Air-gap Count(If Used)						
	16. Density Count Ratio						
	17. Wet Density, PCF						
Test Values	18. Dry Density, PCF						
	19. Moisture Content, %	15.8	18.9	18.0	16.9	16.8	17.7
Standard Density	20. From Standard Density Curve	101.2	101.2	101.2	101.2	101.2	101.2
	21. Standard Density Curve Number						
	22. In-Place Density % of Standard	97.8	101.6	103.6	104.1	103.1	102.3
	23. Specified percent of Standard Density	95	95	95	95	95	95
	24. No. of Samples in Lot						
	25. Algebraic Sum of Deviations in Lot						
	26. Dev. from SV = Algebraic sum of Lot / No. of Smpls in Lot						
	27. Algebraic sum of deviation in applicable lots						
	28. Total No. of Samples Used						
	g 1 Dev. applicable lots = Blk 27 / Blk 28						

Distribution:

Signed [signature]

Title S.C.T.

MID-SOUTH TESTING LABORATORIES, INC.

226-7415 FIELD DENSITY DATA Grenada, MS

Project Koppers Lagoon County Grenada District ____ Frame ____

Technician Vance COMPONENT: (circle one) ____ MATERIAL: (circle one) ____ TREATMENT: ____

Lift: ____ Course: Basement Soil Design Soil Soil(Type): Sandy, Silty, Clayey None ____

Depth Measured Inches ____ Subbase Base ____ Sand Clay, Semi-Gr., Clay-Gr. Lime (% by Wt.): 1st Appl. ____

Lot Size ____ Block Base Binder Base Class ____ 2nd Appl. ____

Unit of Deviation ____ Base ____ Design Depth ____ Inches ____ Cement (% by Vol.) ____

	1. Section No.						
	2. Test No.	18	19	20	21	22	23
	3. Date						
	4. Time						
	5. Station						
	6. Location	N	S	N	S	N	S
	7. Depth	8th Lift	8th Lift	9th Lift	9th Lift	10th Lift	10th Lift
	8. Sta. Limits Sect. Being Tested						
Moisture	9. Standard Count						
	10. Moisture Count						
	11. Moisture Count Ratio						
	12. Moisture, PCF						
Density	13. Standard Count						
	14. Density Count						
	15. Air-gap Count(If Used)						
	16. Density Count Ratio						
	17. Wet Density, PCF						
Test Values	18. Dry Density, PCF						
	19. Moisture Content, %	18.8	16.8	18.9	18.5	16.6.	18.5
Standard Density	20. From Standard Density Curve	101.2	101.2	101.2	101.2	101.2	101.2
	21. Standard Density Curve Number						
	22. In-Place Density % of Standard	101.8	100.9	100.6	104.1	104.0	104.7
	23. Specified percent of Standard Density	95	95	95	95	95	95
	24. No. of Samples in Lot						
	25. Algebraic Sum of Deviations in Lot						
	26. Dev. from SV = Algebraic sum of Lot / No. of Smpls in Lot						
	27. Algebraic sum of deviation in applicable lots						
	28. Total No. of Samples Used						
	29. Avg l Dev. applicable lots = Blk 27 / Blk 28						

Distribution:

Signed Jeff Vance

Title S.C.T.

MID-SOUTH TESTING LABORATORIES, INC.

226-7415

FIELD DENSITY DATA

Grenada, MS

n Keppers Lagoon County Grenada District ______ Name ______

Technician Vance COMPONENT: (circle one) ______ MATERIAL: (circle one) ______ TREATMENT: ______

Lift ______ Course: Basement Soil Design Soil Soil(Type): Sandy, Silty, Clayey None ______

Depth Measured Inches ______ Subbase Base ______ Sand Clay, Semi-Gr., Clay-Gr. Lime (% by Wt.): 1st Appl. ______

Lot Size ______ Block Base Binder Base Class ______ 2nd Appl. ______

Unit of Deviation ______ Base ______ Design Depth ______ Inches ______ Cement (% by Vol.) ______

	1. Section No.						
	2. Test No.	24	25	26	27	28	
	3. Date						
	4. Time						
	5. Station						
	6. Location	North	South	South	Center	North	
	7. Depth	11th Lift	11th Lift	Final Soil	Final Soil	Final Soil	
	8. Sta. Limits Sect. Being Tested						
Moisture	9. Standard Count						
	10. Moisture Count						
	11. Moisture Count Ratio						
	12. Moisture, PCF						
Density	13. Standard Count						
	14. Density Count						
	15. Air-gap Count(If Used)						
	16. Density Count Ratio						
	17. Wet Density, PCF						
Test Values	18. Dry Density, PCF						
	19. Moisture Content, %	18.8	19.8	17.0	16.9	18.2	
Standard Density	20. From Standard Density Curve	101.2	101.2	101.2	101.2	101.2	
	21. Standard Density Curve Number						
	22. In-Place Density % of Standard	100.7	101.4	102.9	104.7	99.7	
	23. Specified percent of Standard Density	95	95	95	95	95	
	24. No. of Samples in Lot						
	25. Algebraic Sum of Deviations in Lot						
	26. Dev. from SV = Algebraic sum of Lot / No. of Smpls in Lot						
	27. Algebraic sum of deviation in applicable lots						
	28. Total No. of Samples Used						
	Avg 1 Dev. applicable lots = Blk 27 / Blk 28						

Distribution:

Signed Jeff Vance

Title S.C.T.

SOIL-BENTONITE LAYER DENSITY TESTS

MID-SOUTH TESTING LABORATORIES, INC.

226-7415

FIELD DENSITY DATA

Grenada, MS

Koppers Lagoon County Grenada District ______ Frame ______

Technician Vance COMPONENT: (circle one) ______ MATERIAL: (circle one) ______ TREATMENT: ______

Lift 1st Course: Basement Soil Design Soil Soil(Type) Sandy, Silty, Clayey None ______

Depth Measured Inches ______ Subbase Base ______ Sand Clay, Semi-Gr., Clay-Gr. Lime (% by Wt.): 1st Appl. ______

Lot Size ______ Block Base Binder Base Class ______ 2nd Appl. ______

Unit of Deviation ______ Base ______ Design Depth ______ Inches ______ Cement (% by Vol.) ______

	1. Section No.						
	2. Test No.	1	2	3	4	5	6
	3. Date	7-31-89	7-31-89	7-31-89	7-31-89	7-31-89	7-31-89
	4. Time						
	5. Station						
	6. Location from ℄						
	7. Depth Below Subgrade(Emb.)						
	8. Sta. Limits Sect. Being Tested						
oisture	9. Standard Count						
	10. Moisture Count						
	11. Moisture Count Ratio						
	12. Moisture, PCF						
Density	13. Standard Count						
	14. Density Count						
	15. Air-gap Count(If Used)						
	16. Density Count Ratio						
	17. Wet Density, PCF						
Test Values	18. Dry Density, PCF						
	19. Moisture Content, %	23.7	22.7	20.9	24.1	24.7	25.6
Standard Density	20. From Standard Density Curve	99.3	99.3	99.3	99.3	99.3	99.3
	21. Standard Density Curve Number						
	22. In-Place Density % of Standard	98.6	99.7	101.2	98.6	98.5	100.1
	23. Specified percent of Standard Density	95	95	95	95	95	95
	24. No. of Samples in Lot						
	25. Algebraic Sum of Deviations in Lot						
	26. Dev. from SV = Algebraic sum of Lot / No. of Smpls in Lot						
	27. Algebraic sum of deviation in applicable lots						
	28. Total No. of Samples Used						
	Avg I Dev. applicable lots = Blk 27 / Blk 28						

MID SOUTH LAB COPY

Distribution: 1st Bentonite Layer Density taken at random Area.

Signed Jeff Vance

Title S.C.T.

MID-SOUTH TESTING LABORATORIES, INC.

FIELD DENSITY DATA

Grenada, MS

226-7415

Project Keppers Lagoon County Grenada District ______ Frame ______

Technician Vance COMPONENT: (circle one) ______ MATERIAL: (circle one) ______ TREATMENT: ______

Lift 1st Course: Basement Soil Design Soil Soil(Type): Sandy, Silty, Clayey None ______

Depth Measured Inches ______ Subbase Base ______ Sand Clay, Semi-Gr., Clay-Gr. Lime (% by Wt.): 1st Appl. ______

Lot Size ______ Block Base Binder Base Class ______ 2nd Appl. ______

Unit of Deviation ______ Base ______ Design Depth ______ Inches ______ Cement (% by Vol.) ______

1. Section No.						
2. Test No.	7	8	9	10		
3. Date	7-31-89	7-31-89	7-31-89	7-31-89		
4. Time						
5. Station						
6. Location from ℄						
7. Depth Below Subgrade(Emb.)						
8. Sta. Limits Sect. Being Tested						
Moisture 9. Standard Count						
Moisture 10. Moisture Count						
Moisture 11. Moisture Count Ratio						
Moisture 12. Moisture, PCF						
Density 13. Standard Count						
Density 14. Density Count						
Density 15. Air-gap Count(If Used)						
Density 16. Density Count Ratio						
Density 17. Wet Density, PCF						
Test Values 18. Dry Density, PCF						
Test Values 19. Moisture Content, %	23.9	20.6	22.4	20.6		
Standard Density 20. From Standard Density Curve	99.3	99.3	99.3	99.3		
Standard Density 21. Standard Density Curve Number						
Standard Density 22. In-Place Density % of Standard	98.5	103.8	100.2	105.7		
Standard Density 23. Specified percent of Standard Density	95	95	95	95		
24. No. of Samples in Lot						
25. Algebraic Sum of Deviations in Lot						
26. Dev. from SV = Algebraic sum of Lot / No. of Smpls in Lot						
27. Algebraic sum of deviation in applicable lots						
28. Total No. of Samples Used						
29. Avg 1 Dev. applicable lots = Blk 27 / Blk 28						

MID-SOUTH LAB COPY

Distribution: 1st Bentonite Layer.

Signed [signature]

Title ______

MID-SOUTH TESTING LABORATORIES, INC.

226-7415

FIELD DENSITY DATA

Grenada, MS

Koppers Lagoon County Grenada District ____ Frame ____

Technician Vance COMPONENT: (circle one) ____ MATERIAL: (circle one) ____ TREATMENT: ____

Lift ____ Course: Basement Soil Design Soil Soil(Type) Sandy, Silty, Clayey None ____

Depth Measured Inches ____ Subbase Base ____ Sand Clay, Semi-Gr., Clay-Gr. Lime (% by Wt.): 1st Appl. ____

Lot Size ____ Block Base Binder Base Class ____ 2nd Appl. ____

Unit of Deviation ____ Base ____ Design Depth ____ Inches ____ Cement (% by Vol.) ____

	1. Section No.							
	2. Test No.	1	2	3	4	5	6
	3. Date	8-12-89	8-12-89	8-12-89	8-12-89	8-12-89	8-12-8[illegible]
	4. Time						
	5. Station						
	6. Location from ℄						
	7. Depth Below Subgrade(Emb.)						
	8. Sta. Limits Sect. Being Tested						
Moisture	9. Standard Count						
	10. Moisture Count						
	11. Moisture Count Ratio						
	12. Moisture, PCF						
Density	13. Standard Count						
	14. Density Count						
	15. Air-gap Count(If Used)						
	16. Density Count Ratio						
	17. Wet Density, PCF						
Test Values	18. Dry Density, PCF						
	19. Moisture Content, %	25.2	24.9	22.7	26.1	25.1	26.1
Standard Density	20. From Standard Density Curve	98.3	98.3	98.3	98.3	98.3	98.3
	21. Standard Density Curve Number						
	22. In-Place Density % of Standard	99.5	102.7	103.4	103.3	100.1	95.5
	23. Specified percent of Standard Density	95	95	95	95	95	95
	24. No. of Samples in Lot						
	25. Algebraic Sum of Deviations in Lot						
	26. Dev. from SV = Algebraic sum of Lot / No. of Smpls in Lot						
	27. Algebraic sum of deviation in applicable lots						
	28. Total No. of Samples Used						
	Avg 1 Dev. applicable lots = Blk 27 / Blk 28						

Distribution: 1st LAYER OF BENTONITE

Signed Jeff Vance

Title S.C.T

MID-SOUTH TESTING LABORATORIES, INC.

226-7415

FIELD DENSITY DATA

Grenada, MS

Project Koppers Lagoon County Grenada District ______ Frame ______

Technician Vance COMPONENT: (circle one) ______ MATERIAL: (circle one) ______ TREATMENT: ______

Lift ______ Course: Basement Soil Design Soil Soil(Type): Sandy, Silty, Clayey None ______

Depth Measured Inches ______ Subbase Base ______ Sand Clay, Semi-Gr., Clay-Gr. Lime (% by Wt.): 1st Appl. ______

Lot Size ______ Block Base Binder Base Class ______ 2nd Appl. ______

Unit of Deviation ______ Base ______ Design Depth ______ Inches ______ Cement (% by Vol.) ______

1. Section No.							
2. Test No.		7	8	9	10	11	12
3. Date		8-12-89	8-12-89	8-12-89	8-12-89	8-12-89	8-12-89
4. Time							
5. Station							
6. Location from ℄							
7. Depth Below Subgrade(Emb.)							
8. Sta. Limits Sect. Being Tested							
Moisture	9. Standard Count						
	10. Moisture Count						
	11. Moisture Count Ratio						
	12. Moisture, PCF						
Density	13. Standard Count						
	14. Density Count						
	15. Air-gap Count(If Used)						
	16. Density Count Ratio						
	17. Wet Density, PCF						
Test Values	18. Dry Density, PCF						
	19. Moisture Content, %	25.7	24.4	26.0	29.0	22.8	26.
Standard Density	20. From Standard Density Curve	98.3	98.3	98.3	98.3	98.3	98.3
	21. Standard Density Curve Number						
	22. In-Place Density % of Standard	96.8	98.5	98.3	95.0	105.0	105.1
	23. Specified percent of Standard Density	95	95	95	95	95	95
24. No. of Samples in Lot							
25. Algebraic Sum of Deviations in Lot							
26. Dev. from SV = Algebraic sum of Lot / No. of Smpls in Lot							
27. Algebraic sum of deviation in applicable lots							
28. Total No. of Samples Used							
29. Avg 1 Dev. applicable lots = Blk 27 / Blk 28							

Distribution: 1st Layer of Bentonite

#12 - oven moisture - 25.1

Signed Jeff Vance

Title ______

MID-SOUTH TESTING LABORATORIES, INC.

226-7415

FIELD DENSITY DATA

Grenada, MS

Koppers Company County Grenada District ______ Frame ______

Technician Vance COMPONENT: (circle one) ______ MATERIAL: (circle one) ______ TREATMENT: ______

Lift ______ Course: Basement Soil Design Soil Soil(Type) Sandy, Silty, Clayey None ______

Depth Measured Inches ______ Subbase Base ______ Sand Clay, Semi-Gr., Clay-Gr. Lime (% by Wt.): 1st Appl. ______

Lot Size ______ Block Base Binder Base Class ______ 2nd Appl. ______

Unit of Deviation ______ Base ______ Design Depth ______ Inches ______ Cement (% by Vol.) ______

	1. Section No.						
	2. Test No.	1	2	3	4		
	3. Date	8-19-89	8-19-89	8-19-89	8-19-89		
	4. Time						
	5. Station						
	6. Location from ℄						
	7. Depth Below Subgrade(Emb.)						
	8. Sta. Limits Sect. Being Tested						
Moisture	9. Standard Count						
	10. Moisture Count						
	11. Moisture Count Ratio						
	12. Moisture, PCF						
Density	13. Standard Count						
	14. Density Count						
	15. Air-gap Count(If Used)						
	16. Density Count Ratio						
	17. Wet Density, PCF						
Test Values	18. Dry Density, PCF						
	19. Moisture Content, %	19.7	24.0	23.4	27.4		
Standard Density	20. From Standard Density Curve	98.3	98.3	98.3	98.3		
	21. Standard Density Curve Number						
	22. In-Place Density % of Standard	104.7	97.1	102.8	97.3		
	23. Specified percent of Standard Density	95	95	95	95		
	24. No. of Samples in Lot						
	25. Algebraic Sum of Deviations in Lot						
	26. Dev. from SV = Algebraic sum of Lot / No. of Smpls in Lot						
	27. Algebraic sum of deviation in applicable lots						
	28. Total No. of Samples Used						
	29. Avg 1 Dev. applicable lots = Blk 27 / Blk 28						

Distribution: 1st Lift of Bentonite
Retest after rain and
re compaction

Signed Jeff Vance

Title S.C.T.

MID-SOUTH TESTING LABORATORIES, INC.

226-7415

FIELD DENSITY DATA

Grenada, MS

Project Koppers Lagoon County Grenada District ______ Frame ______

Technician Vance COMPONENT: (circle one) ______ MATERIAL: (circle one) ______ TREATMENT ______

Lift ______ Course: Basement Soil Design Soil Soil(Type) Sandy, Silty, Clayey None ______

Depth Measured Inches ______ Subbase Base ______ Sand Clay, Semi-Gr., Clay-Gr. Lime (% by Wt.): 1st Appl. ______

Lot Size ______ Block Base Binder Base Class ______ 2nd Appl. ______

Unit of Deviation ______ Base ______ Design Depth ______ Inches ______ Cement (% by Vol.) ______

1. Section No.								
2. Test No.		1	2	3	4	5	6
3. Date		8-22-89	8-22-89	8-22-89	8-22-89	8-22-89	8-22-89
4. Time							
5. Station							
6. Location from ℄							
7. Depth Below Subgrade(Emb.)							
8. Sta. Limits Sect. Being Tested							
Moisture	9. Standard Count						
	10. Moisture Count						
	11. Moisture Count Ratio						
	12. Moisture, PCF						
Density	13. Standard Count						
	14. Density Count				retest		
	15. Air-gap Count(If Used)				#3		
	16. Density Count Ratio						
	17. Wet Density, PCF						
Test Values	18. Dry Density, PCF						
	19. Moisture Content, %	24.9	25.0	23.0	26.7	26.2	24.8
Standard Density	20. From Standard Density Curve	98.3	98.3	98.3	98.3	98.3	98.3
	21. Standard Density Curve Number						
	22. In-Place Density % of Standard	95.3	95.5	101.7	96.6	97.6	95.0
	23. Specified percent of Standard Density	95	95	95	95	95	95
24. No. of Samples in Lot							
25. Algebraic Sum of Deviations in Lot							
26. Dev. from SV = Algebraic sum of Lot / No. of Smpls in Lot							
27. Algebraic sum of deviation in applicable lots							
28. Total No. of Samples Used							
29. Avg 1 Dev. applicable lots = Blk 27 / Blk 28							

Distribution: 2nd Layer-Bentonite

Signed Jeff Vance

Title S.C.T.

MID-SOUTH TESTING LABORATORIES, INC.

226-7415

FIELD DENSITY DATA

Grenada, MS

Koppers Lagoon County Grenada District ______ Frame ______

Technician VANCE COMPONENT: (circle one) ______ MATERIAL: (circle one) ______ TREATMENT: ______

Lift ______ Course: Basement Soil Design Soil Soil(Type): Sandy, Silty, Clayey None ______

Depth Measured Inches ______ Subbase Base ______ Sand Clay, Semi-Gr., Clay-Gr. Lime (% by Wt.): 1st Appl. ______

Lot Size ______ Block Base Binder Base Class ______ 2nd Appl. ______

Unit of Deviation ______ Base ______ Design Depth ______ Inches ______ Cement (% by Vol.) ______

	1. Section No.						
	2. Test No.	7	8	9	10	11	12
	3. Date	8-22-89	8-22-89	8-22-89	8-22-89	8-22-89	8-22-89
	4. Time						
	5. Station						
	6. Location from ℄						
	7. Depth Below Subgrade(Emb.)						
	8. Sta. Limits Sect. Being Tested						
Moisture	9. Standard Count						
	10. Moisture Count						
	11. Moisture Count Ratio						
	12. Moisture, PCF						
Density	13. Standard Count						
	14. Density Count						
	15. Air-gap Count(If Used)						
	16. Density Count Ratio						
	17. Wet Density, PCF						
Test Values	18. Dry Density, PCF						
	19. Moisture Content, %	24.8	25.3	24.2	27.5	24.7	23.1
Standard Density	20. From Standard Density Curve	98.3	98.3	98.3	98.3	98.3	98.3
	21. Standard Density Curve Number						
	22. In-Place Density % of Standard	99.5	97.3	95.3	95.1	99.7	100.3
	23. Specified percent of Standard Density	95	95	95	95	95	95
	24. No. of Samples in Lot						
	25. Algebraic Sum of Deviations in Lot						
	26. Dev. from SV = Algebraic sum of Lot / No. of Smpls in Lot						
	27. Algebraic sum of deviation in applicable lots						
	28. Total No. of Samples Used						
	29. Avg 1 Dev. applicable lots = Blk 27 / Blk 28						

Distribution: 2nd LAYER – BENTONITE

Signed Jeff Vance

Title S.C.T.

MID-SOUTH TESTING LABORATORIES, INC.

226-7415

FIELD DENSITY DATA

Grenada, MS

Project Koppers Lagoon County Grenada District ______ Frame ______

Technician Vance COMPONENT: (circle one) ______ MATERIAL: (circle one) ______ TREATMENT: ______

Lift ______ Course: Basement Soil Design Soil Soil(Type): Sandy, Silty, Clayey None ______

Depth Measured Inches ______ Subbase Base ______ Sand Clay, Semi-Gr., Clay-Gr. Lime (% by Wt.): 1st Appl. ______

Lot Size ______ Block Base Binder Base Class ______ 2nd Appl. ______

Unit of Deviation ______ Base ______ Design Depth ______ Inches ______ Cement (% by Vol.) ______

	1. Section No.							
	2. Test No.	13						
	3. Date	8-22-89						
	4. Time							
	5. Station							
	6. Location from ℄							
	7. Depth Below Subgrade(Emb.)							
	8. Sta. Limits Sect. Being Tested							
Moisture	9. Standard Count							
	10. Moisture Count							
	11. Moisture Count Ratio							
	12. Moisture, PCF							
Density	13. Standard Count	retest						
	14. Density Count							
	15. Air-gap Count(If Used)	#12						
	16. Density Count Ratio							
	17. Wet Density, PCF							
Test Values	18. Dry Density, PCF							
	19. Moisture Content, %	24.2						
Standard Density	20. From Standard Density Curve	98.3						
	21. Standard Density Curve Number							
	22. In-Place Density % of Standard	97.8						
	23. Specified percent of Standard Density	95						
	24. No. of Samples in Lot							
	25. Algebraic Sum of Deviations in Lot							
	26. Dev. from SV = Algebraic sum of Lot / No. of Smpls in Lot							
	27. Algebraic sum of deviation in applicable lots							
	28. Total No. of Samples Used							
	29. Avg 1 Dev. applicable lots = Blk 27 / Blk 28							

Distribution: 2nd Layer - Bentonite

Signed JW Vance

Title S.C.T.

226-7415

MID-SOUTH TESTING LABORATORIES, INC.

FIELD DENSITY DATA

Grenada, MS

Project Kippers Layer County Grenada District ______ Frame ______

Technician Ford CL COMPONENT: (circle one) ______ MATERIAL: (circle one) ______ TREATMENT: ______

Lift ______ Course: Basement Soil Design Soil Soil(Type): Sandy, Silty, Clayey None ______

Depth Measured Inches ______ Subbase Base ______ Sand Clay, Semi-Gr., Clay-Gr. Lime (% by Wt.): 1st Appl. ______

Lot Size ______ Block Base Binder Base Class ______ 2nd Appl. ______

Unit of Deviation ______ Base ______ Design Depth ______ Inches ______ Cement (% by Vol.) ______

	1. Section No.						
	2. Test No.	1	2	3	4	5	6
	3. Date	8-31-59	8-31-59	8-31-59	8-31-59	8-31-59	8-31-59
	4. Time						
	5. Station						
	6. Location from ℄						
	7. Depth Below Subgrade(Emb.)						
	8. Sta. Limits Sect. Being Tested						
Moisture	9. Standard Count						
	10. Moisture Count						
	11. Moisture Count Ratio						
	12. Moisture, PCF						
Density	13. Standard Count						
	14. Density Count						
	15. Air-gap Count(If Used)						
	16. Density Count Ratio						
	17. Wet Density, PCF						
Test Values	18. Dry Density, PCF						
	19. Moisture Content, %	27.0	29.0	26.0	31.8	31.6	24.[illegible]
Standard Density	20. From Standard Density Curve	98.3	98.3	98.5	98.5	98.5	98.5
	21. Standard Density Curve Number						
	22. In-Place Density % of Standard	96.6	92.8	98.8	89.8	87.8	95.[illegible]
	23. Specified percent of Standard Density	95	95	95	95	95	95
	24. No. of Samples in Lot						
	25. Algebraic Sum of Deviations in Lot						
	26. Dev. from SV = Algebraic sum of Lot / No. of Smpls in Lot						
	27. Algebraic sum of deviation in applicable lots						
	tal No. of Samples Used						
	Avg 1 Dev. applicable lots = Blk 27 / Blk 28						

Distribution: 3rd Layer - Bentonite

Signed Jeff [illegible]

Title S.C.T.

MID-SOUTH TESTING LABORATORIES, INC.

26-7415 FIELD DENSITY DATA Grenada, MS

Project Nepples Layer County Grenada District______ Frame______

Technician Vance COMPONENT: (circle one)______ MATERIAL: (circle one)______ TREATMENT:______

Lift______ Course: Basement Soil Design Soil Soil(Type): Sandy, Silty, Clayey :None______

Depth Measured Inches______ Subbase Base______ Sand Clay, Semi-Gr., Clay-Gr. Lime (% by Wt.): 1st Appl.______

Lot Size______ Block Base Binder Base Class______ 2nd Appl.______

Unit of Deviation______ Base______ Design Depth______ Inches______ Cement (% by Vol.)______

	1. Section No.						
	2. Test No.	7	8	9	10	11	12
	3. Date	8-31-89	8-31-89	8-31-89	8-31-89	9-1-89	9-1-89
	4. Time						
	5. Station						
	6. Location from ℄						
	7. Depth Below Subgrade(Emb.)						
	8. Sta. Limits Sect. Being Tested						
Moisture	9. Standard Count						
	10. Moisture Count						
	11. Moisture Count Ratio						
	12. Moisture, PCF					retest	retest
Density	13. Standard Count					#2	#4+5
	14. Density Count						
	15. Air-gap Count(If Used)						
	16. Density Count Ratio						
	17. Wet Density, PCF						
Test Values	18. Dry Density, PCF						
	19. Moisture Content, %	25.5	27.0	26.5	26	25.5	27.0
Standard Density	20. From Standard Density Curve	98.3	98.3	98.3	98.3	98.3	98.3
	21. Standard Density Curve Number						
	22. In-Place Density % of Standard	98.3	95.6	94.5	96.3	99	97.8
	23. Specified percent of Standard Density	95	95	95	95	95	95
	24. No. of Samples in Lot						
	25. Algebraic Sum of Deviations in Lot						
	26. Dev. from SV = Algebraic sum of Lot / No. of Smpls in Lot						
	27. Algebraic sum of deviation in applicable lots						
	28. Total No. of Samples Used						
	Avg 1 Dev. applicable lots = Blk 27 / Blk 28						

Distribution: 3rd Layer - Bentonite

Signed Jeff Vance

Title SCT.

MID-SOUTH TESTING LABORATORIES, INC.

FIELD DENSITY DATA

Grenada, MS

226-7415

Koppers Lagoon County Grenada District ____ Frame ____

Technician Vance COMPONENT: (circle one) ____ MATERIAL: (circle one) ____ TREATMENT: ____

Lift ____ Course: Basement Soil Design Soil Soil(Type): Sandy, Silty, Clayey None ____

Depth Measured Inches ____ Subbase Base ____ Sand Clay, Semi-Gr., Clay-Gr. Lime (% by Wt.): 1st Appl. ____

Lot Size ____ Block Base Binder Base Class ____ 2nd Appl. ____

Unit of Deviation ____ Base ____ Design Depth ____ Inches ____ Cement (% by Vol.) ____

	1. Section No.						
	2. Test No.	13	14	15	16		
	3. Date	9-1-89	9-1-89	9-1-89	9-1-89		
	4. Time						
	5. Station						
	6. Location from ℄						
	7. Depth Below Subgrade(Emb.)						
	8. Sta. Limits Sect. Being Tested			retest	retest		
Moisture	9. Standard Count			#13	#14		
	10. Moisture Count						
	11. Moisture Count Ratio						
	12. Moisture, PCF						
Density	13. Standard Count						
	14. Density Count						
	15. Air-gap Count(If Used)						
	16. Density Count Ratio						
	17. Wet Density, PCF						
Test Values	18. Dry Density, PCF						
	19. Moisture Content, %	29.8	31.7	25.5	24.8		
Standard Density	20. From Standard Density Curve	98.3	98.3	98.3	98.3		
	21. Standard Density Curve Number						
	22. In-Place Density % of Standard	94.3	91.0	99.7	99.8		
	23. Specified percent of Standard Density	95	95	95	95		
	24. No. of Samples in Lot						
	25. Algebraic Sum of Deviations in Lot						
	26. Dev. from SV = Algebraic sum of Lot / No. of Smpls in Lot						
	27. Algebraic sum of deviation in applicable lots						
	28. Total No. of Samples Used						
	Avg 1 Dev. applicable lots = Blk 27 / Blk 28						

Distribution: 3rd Layer - Bentonite

Signed Jeff Vance

Title S.C.T.

MID-SOUTH TESTING LABORATORIES, INC.

226-7415

FIELD DENSITY DATA

Grenada, MS

Project Koppers Lagoon County Grenada District ______ Frame ______

Technician Vance COMPONENT: (circle one) ______ MATERIAL: (circle one) ______ TREATMENT: ______

Lift ______ Course: Basement Soil Design Soil Soil(Type): Sandy, Silty, Clayey None ______

Depth Measured Inches ______ Subbase Base ______ Sand Clay, Semi-Gr., Clay-Gr. Lime (% by Wt.): 1st Appl. ______

Lot Size ______ Block Base Binder Base Class ______ 2nd Appl. ______

Unit of Deviation ______ Base ______ Design Depth ______ Inches ______ Cement (% by Vol.) ______

1. Section No.							
2. Test No.		1	2	3	4	5	6
3. Date		9-12-89	9-12-89	9-12-89	9-12-89	9-12-89	9-12-89
4. Time							
5. Station							
6. Location from ℄							
7. Depth Below Subgrade(Emb.)							
8. Sta. Limits Sect. Being Tested							
Moisture	9. Standard Count						
	10. Moisture Count						
	11. Moisture Count Ratio						
	12. Moisture, PCF						
Density	13. Standard Count		retest				
	14. Density Count		#1				
	15. Air-gap Count(If Used)						
	16. Density Count Ratio						
	17. Wet Density, PCF						
Test Values	18. Dry Density, PCF						
	19. Moisture Content, %	28.6	24.9	24.7	25.2	24.2	20.4
Standard Density	20. From Standard Density Curve	98.3	98.3	98.3	98.3	98.3	98.3
	21. Standard Density Curve Number						
	22. In-Place Density % of Standard	91.4	100.2	97.8	101.1	103.9	103.0
	23. Specified percent of Standard Density	95	95	95	95	95	95
24. No. of Samples in Lot							
25. Algebraic Sum of Deviations in Lot							
26. Dev. from SV = Algebraic sum of Lot / No. of Smpls in Lot							
27. Algebraic sum of deviation in applicable lots							
28. Total No. of Samples Used							
29. Avg 1 Dev. applicable lots = Blk 27 / Blk 28							

Distribution: 4th Lift - Bentonite

Signed Jeff Vance

Title S.C.T.

??6-7415

MID-SOUTH TESTING LABORATORIES, INC.

FIELD DENSITY DATA

Grenada, MS

Project Koppers Lagoon County Grenada District ______ Frame ______

Technician Vance COMPONENT: (circle one) ______ MATERIAL: (circle one) ______ TREATMENT: ______

Lift ______ Course: Basement Soil Design Soil Soil(Type): Sandy, Silty, Clayey None ______

Depth Measured Inches ______ Subbase Base ______ Sand Clay, Semi-Gr., Clay-Gr. Lime (% by Wt.): 1st Appl. ______

Lot Size ______ Block Base Binder Base Class ______ 2nd Appl. ______

Unit of Deviation ______ Base ______ Design Depth ______ Inches ______ Cement (% by Vol.) ______

	1. Section No.						
	2. Test No.	7	8	9	10	11	12
	3. Date						
	4. Time						
	5. Station						
	6. Location from ℄						
	7. Depth Below Subgrade(Emb.)						
	8. Sta. Limits Sect. Being Tested						
Moisture	9. Standard Count						
	10. Moisture Count						
	11. Moisture Count Ratio						
	12. Moisture, PCF						
Density	13. Standard Count	retest	retest				retest
	14. Density Count						#11
	15. Air-gap Count(If Used)	#6	#6 & 7				
	16. Density Count Ratio						
	17. Wet Density, PCF						
Test Values	18. Dry Density, PCF						
	19. Moisture Content, %	22.4	26.9	26.9	25.9	28	28.5
Standard Density	20. From Standard Density Curve	98.3	98.3	98.3	98.3	98.3	98.3
	21. Standard Density Curve Number						
	22. In-Place Density % of Standard	102.9	99.3	96.4	103.1	94.7	96
	23. Specified percent of Standard Density	95	95	95	95	95	95
	24. No. of Samples in Lot						
	25. Algebraic Sum of Deviations in Lot						
	26. Dev. from SV = Algebraic sum of Lot / No. of Smpls in Lot						
	27. Algebraic sum of deviation in applicable lots						
	tal No. of Samples Used						
	29. Avg 1 Dev. applicable lots = Blk 27 / Blk 28						

Distribution: 4th Lift - Bentonite

Signed Jeff Vance

Title S.C.T.

MID-SOUTH TESTING LABORATORIES, INC.

226-7415 **FIELD DENSITY DATA** Grenada, MS

Project Koppers Lagoon County Grenada District ______ Frame ______

Technician Vance COMPONENT: (circle one) ______ MATERIAL: (circle one) ______ TREATMENT: ______

Lift ______ Course: Basement Soil Design Soil Soil(Type): Sandy, Silty, Clayey None ______

Depth Measured Inches ______ Subbase Base ______ Sand Clay, Semi-Gr., Clay-Gr. Lime (% by Wt.): 1st Appl. ______

Lot Size ______ Block Base Binder Base Class ______ 2nd Appl. ______

Unit of Deviation ______ Base ______ Design Depth ______ Inches ______ Cement (% by Vol.) ______

	1. Section No.						
	2. Test No.	13	14	15	16	17	18
	3. Date	9-12-89	9-12-89	9-12-89	9-12-89	9-12-89	9-12-89
	4. Time						
	5. Station						
	6. Location from ℄						
	7. Depth Below Subgrade(Emb.)						
	8. Sta. Limits Sect. Being Tested						
Moisture	9. Standard Count						
	10. Moisture Count						
	11. Moisture Count Ratio						
	12. Moisture, PCF						
Density	13. Standard Count	retest	retest				retest
	14. Density Count						#17
	15. Air-gap Count(If Used)	11+12	11,12,13				
	16. Density Count Ratio						
	17. Wet Density, PCF						
Test Values	18. Dry Density, PCF						
	19. Moisture Content, %	23.1	24.0	25.8	24.3	27.2	27.2
Standard Density	20. From Standard Density Curve	98.3	98.3	98.3	98.3	98.3	98.3
	21. Standard Density Curve Number						
	22. In-Place Density % of Standard	100.2	104.0	96.4	102.1	94.6	94.7
	23. Specified percent of Standard Density	95	95	95	95	95	95
	24. No. of Samples in Lot						
	25. Algebraic Sum of Deviations in Lot						
	26. Dev. from SV = Algebraic sum of Lot / No. of Smpls in Lot						
	27. Algebraic sum of deviation in applicable lots						
	28. Total No. of Samples Used						
	29. Avg 1 Dev. applicable lots = Blk 27 / Blk 28						

Distribution: 4th Lift - Bentonite

Signed Jeff Vance

Title S.C.T.

DRAINAGE LAYER DENSITY TESTS

MID-SOUTH TESTING LABORATORIES, INC.

226-7415

FIELD DENSITY DATA

Grenada, MS

Project Koppers Lagoon County Grenada District ______ Frame ______

Technician Vance COMPONENT: (circle one) ______ MATERIAL: (circle one) ______ TREATMENT: ______

Lift ______ Course: Basement Soil Design Soil Soil(Type): Sandy, Silty, Clayey None ______

Depth Measured Inches ______ Subbase Base ______ Sand Clay, Semi-Gr., Clay-Gr. Lime (% by Wt.): 1st Appl. ______

Lot Size ______ Block Base Binder Base Class ______ 2nd Appl. ______

Unit of Deviation ______ Base ______ Design Depth ______ Inches ______ Cement (% by Vol.) ______

	1. Section No.						
	2. Test No.	1	2	3	4	5	6
	3. Date	10-13-89	10-13-89	10-13-89	10-13-89	10-13-89	10-13-89
	4. Time						
	5. Station						
	6. Location from ℄						
	7. Depth Below Subgrade(Emb.)						
	8. Sta. Limits Sect. Being Tested						
Moisture	9. Standard Count						
	10. Moisture Count						
	11. Moisture Count Ratio						
	12. Moisture, PCF						
Density	13. Standard Count						
	14. Density Count						
	15. Air-gap Count(If Used)						
	16. Density Count Ratio						
	17. Wet Density, PCF						
Test Values	18. Dry Density, PCF	108.9	107.1	107.8	106.6	109.9	108.8
	19. Moisture Content, %	5.7	5.7	5.9	5.1	5.5	4.6
Standard Density	20. From Standard Density Curve						
	21. Standard Density Curve Number						
	22. In-Place Density % of Standard						
	23. Specified percent of Standard Density						
	24. No. of Samples in Lot						
	25. Algebraic Sum of Deviations in Lot						
	26. Dev. from SV = Algebraic sum of Lot / No. of Smpls in Lot						
	27. Algebraic sum of deviation in applicable lots						
	28. Total No. of Samples Used						
	29. Avg l Dev. applicable lots = Blk 27 / Blk 28						

12" Fill Sand Layer

Signed Jeff Vance

Title S.C.T.

MID-SOUTH TESTING LABORATORIES, INC.

226-7415 — FIELD DENSITY DATA — Grenada, MS

Koppers Lagoon County Grenada District ______ Frame ______

Technician Vance COMPONENT: (circle one)______ MATERIAL: (circle one)______ TREATMENT: ______

Lift ______ Course: Basement Soil Design Soil Soil(Type): Sandy, Silty, Clayey None______

Depth Measured Inches______ Subbase Base______ Sand Clay, Semi-Gr., Clay-Gr. Lime (% by Wt.): 1st Appl.______

Lot Size______ Block Base Binder Base Class______ 2nd Appl.______

Unit of Deviation______ Base ______ Design Depth______ Inches______ Cement (% by Vol.)______

1. Section No.							
2. Test No.	7	8					
3. Date	10-13-89	10-13-89					
4. Time							
5. Station							
6. Location from ℄							
7. Depth Below Subgrade(Emb.)							
8. Sta. Limits Sect. Being Tested							
Moisture — 9. Standard Count							
Moisture — 10. Moisture Count							
Moisture — 11. Moisture Count Ratio							
Moisture — 12. Moisture, PCF							
Density — 13. Standard Count							
Density — 14. Density Count							
Density — 15. Air-gap Count(If Used)							
Density — 16. Density Count Ratio							
Density — 17. Wet Density, PCF							
Test Values — 18. Dry Density, PCF	106.9	106.1					
Test Values — 19. Moisture Content, %	6.2	4.9					
Standard Density — 20. From Standard Density Curve							
Standard Density — 21. Standard Density Curve Number							
Standard Density — 22. In-Place Density % of Standard							
Standard Density — 23. Specified percent of Standard Density							
24. No. of Samples in Lot							
25. Algebraic Sum of Deviations in Lot							
26. Dev. from SV = Algebraic sum of Lot / No. of Smpls in Lot							
27. Algebraic sum of deviation in applicable lots							
28. T[illegible]al No. of Samples Used							
[illegible]vg l Dev. applicable lots = Blk 27 / Blk 28							

Signed Jeff Vance

Title S.C.T.

HAZARDOUS WASTE MANIFEST

(As Required By The Alabama Department of Environmental Management)

Chemical Waste Management

Please print or type. *(Form designed for use on elite (12-pitch) typewriter.)*

Form Approved. OMB No. 2050-0039. Expires 9-30

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.: MSD007027543 Manifest Document No. 00165
2. Page 1 of 1

Information in the shaded area is not required by Federal law.

A. State Manifest Document Number: CWMA 414084

B. State Generator's ID

3. Generator's Name and Mailing Address:
Koppers Company, Inc.
P. O. Box 160
Tie Plant, Ms. 38960 125 88 KE

4. Generator's Phone (601) 226-4584

5. Transporter 1 Company Name: ~~Dart Transportation Co.~~ 125 88 KE
6. US EPA ID Number: ~~OHD000818525~~

C. State Transporter's ID

D. Transporter's Phone

7. Transporter 2 Company Name: WPI TRANSPORTATION CO
8. US EPA ID Number: TXD 051064 1463

E. State Transporter's ID

F. Transporter's Phone

9. Designated Facility Name and Site Address:
CHEMICAL WASTE MANAGEMENT, INC.
Emelle Facility
Alabama Highway 17 at Mile Marker 163
Emelle, Alabama 35459

10. US EPA ID Number: ALD000622464

G. State Facility's ID: 219-938-7020

H. Facility's Phone: 205/652-9721

11. US DOT Description *(Including Proper Shipping Name, Hazard Class, and ID Number)*	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. RCRA Hazardous Waste, Solid N.O.S. (K-001) ORM-E NA-9189 CWM Profile Number RES-H-53976	001	DT	40900	P	
b. CWM Profile Number					
c. CWM Profile Number					
d. CWM Profile Number					

J. Additional Descriptions for Materials Listed Above
Work Order No. 8807 ~~029~~ 22048
RES P.O. No. 28-0631
Emergency Contact - (601) 226-4584

K. Handling Codes for Wastes Listed Above
a. D S1 b. c. d.

15. Special Handling Instructions and Additional Information
I certify that no absorbent had been added to the above waste which would prohibit it from being land filled. PERRCRA3004(C-1) When handling wear eye protection and protective equipment such as impervious clothing and gloves.

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name: J. D. Clayton | Signature: J. D. Clayton | Month Day Year: 07 22 88

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name | Signature | Month Day Year: ~~07 22 88~~

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name: DARRELL BLACK | Signature: Darrell Black | Month Day Year: 07 22 88

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name: [illegible] | Signature: [illegible] | Month Day Year: 7 22 88

EPA Form 8700-22 (Rev. 9-86) Previous edition is obsolete

GENERATOR No. 2 (Must Accompany Shipment)

HAZARDOUS WASTE MANIFEST

(As Required By The Alabama Department of Environmental Management)

Please print or type. *(Form designed for use on elite (12-pitch) typewriter.)*

Form Approved. OMB No. 2050-0039. Expires 9-30-L

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. MSD007027543 Manifest Document No. 00067
2. Page 1 of 1

Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address: Koppers Company, Inc.
P. O. Box 160
Tie Plant, Ms.
4. Generator's Phone (601) 226-4584

A. State Manifest Document Number: CWMA 414082

B. State Generator's ID

5. Transporter 1 Company Name: ~~Dart Transportation Co.~~ 6. US EPA ID Number ~~OHD009865825~~

C. State Transporter's ID

D. Transporter's Phone

7. Transporter 2 Company Name: WPT TRANSPORTATION Co 8. US EPA ID Number TXD050641463

E. State Transporter's ID

F. Transporter's Phone

9. Designated Facility Name and Site Address:
CHEMICAL WASTE MANAGEMENT, INC.
Emelle Facility
Alabama Highway 17 at Mile Marker 163
Emelle, Alabama 35459

10. US EPA ID Number ALD000622464

G. State Facility's ID: 219-938-2020

H. Facility's Phone: 205/652-9721

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. RCRA Hazardous Waste, Solid N.O.S. (K-001) ORM-E NA-9189 CWM Profile Number RES-H-53976	001	DT	47750	P	
b. CWM Profile Number					
c. CWM Profile Number					
d. CWM Profile Number					

J. Additional Descriptions for Materials Listed Above

Work Order No. 8807 ~~D29~~ 22048
RES P.O. No. 28-0631
Emergency Contact - (601) 226-4584

K. Handling Codes for Wastes Listed Above
a. 081 b. c. d.

15. Special Handling Instructions and Additional Information
I certify that no absorbent had been added to the above waste which would prohibit it from being land filled. PERRCRA3004(C-1) When handling wear eye protection and protective equipment such as impervious clothing and gloves.

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name: J. D. Clayton Signature: J. D. Clayton Month Day Year 07 22 88

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name Signature Month Day Year ~~07 22 88~~

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name: Bobby Houser Signature: Bobby Houser Month Day Year 07 22 88

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name: B Mall Signature: [illegible] Month Day Year [illegible]

EPA Form 8700-22 (Rev. 9-86) Previous edition is obsolete

HAZARDOUS WASTE MANIFEST

(As Required By The Alabama Department of Environmental Management)

Chemical Waste Management

Please print or type. *(Form designed for use on elite (12-pitch) typewriter.)*

Form Approved. OMB No. 2050-0039. Expires 9-30-88

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. M S D 0 0 7 0 2 7 5 4 3 | Manifest Document No. 0 0 0 6 9

2. Page 1 of 1

Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
Koppers Company, Inc.
P. O. Box 160
Tie Plant, Ms.

A. State Manifest Document Number: CWMA 414080

B. State Generator's ID

4. Generator's Phone (601) 226-4584

5. Transporter 1 Company Name: Dart Transportation Co.
6. US EPA ID Number: U H D 0 0 9 8 6 5 8 2 5

C. State Transporter's ID

D. Transporter's Phone

7. Transporter 2 Company Name: VPI TRANSPORTATION CO
8. US EPA ID Number: TXD 0 5 0 6 4 1 4 6 3

E. State Transporter's ID

F. Transporter's Phone

9. Designated Facility Name and Site Address
CHEMICAL WASTE MANAGEMENT, INC.
Emelle Facility
Alabama Highway 17 at Mile Marker 163
Emelle, Alabama 35459

10. US EPA ID Number: A L D 0 0 0 6 2 2 4 6 4

G. State Facility's ID: 219-938-7030

H. Facility's Phone: 205/652-9721

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
RCRA Hazardous Waste, Solid N.O.S. (K-001) ORM-E NA-9189 CWM Profile Number RES-H-53976	001	DT	42490	P	
CWM Profile Number					
CWM Profile Number					
CWM Profile Number					

J. Additional Descriptions for Materials Listed Above
Work Order No. 8807 ~~025~~ 25048
RES P.O. No. 28-0631
Emergency Contact - (601) 226-4584

K. Handling Codes for Wastes Listed Above
a. D81 c.
b. d.

15. Special Handling Instructions and Additional Information
I certify that no substance had been added to the above waste which would prohibit it from being land filled. PERRCRA3004(C-1) When handling wear eye protection and protective equipment such as impervious clothing and gloves.

16. **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name	Signature	Month Day Year
J. D. Clayton	J D Clayton	0 7 2 3 8 8

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month Day Year
		0 7 1 8 8

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month Day Year
Dennis Schuster	Dennis Schuster	0 7 2 3 8 8

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name	Signature	Month Day Year
Roger McKinnis	Roger McKinnis	07 25 88

EPA Form 8700-22 (Rev. 9-86) Previous edition is obsolete.

GENERATOR No. 2 ...

HAZARDOUS WASTE MANIFEST

(As Required By The Alabama Department of Environmental Management)

Please print or type. *(Form designed for use on elite (12-pitch) typewriter.)* Form Approved. OMB No. 2050-0039. Expires 9-30-

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. MSD007027543 | Manifest Document No. 00717 | 2. Page 1 of 1 | Information in the shaded areas is not required by Federal law.

A. State Manifest Document Number: CWMA 414078

3. Generator's Name and Mailing Address
Koppers Company, Inc.
P. O. Box 160
Tie Plant, Ms. 38960 7-25-88

B. State Generator's ID

4. Generator's Phone 601) 226-4584

5. Transporter 1 Company Name: ~~Dart Transportation Co.~~ | 6. US EPA ID Number: ~~OHD009865825~~

C. State Transporter's ID

D. Transporter's Phone

7. Transporter 2 Company Name: WPI TRANSPORTATION CO TXD | 8. US EPA ID Number: 050641416131

E. State Transporter's ID

F. Transporter's Phone

9. Designated Facility Name and Site Address
CHEMICAL WASTE MANAGEMENT, INC.
Emelle Facility
Alabama Highway 17 at Mile Marker 163
Emelle, Alabama 35459

10. US EPA ID Number: ALD000622464

G. State Facility's ID: 219-938-7020

H. Facility's Phone: 205/652-9721

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. RCRA Hazardous Waste, Solid N.O.S. (K-001) ORM-E NA-9189 CWM Profile Number RES-H-53976	001	DT	46950	P	
b. CWM Profile Number					
c. CWM Profile Number					
d. CWM Profile Number					

J. Additional Descriptions for Materials Listed Above
Work Order No. 8807 ~~028~~ 25048
RES P.O. No. 28-0631
Emergency Contact - (601) 226-4584

K. Handling Codes for Wastes Listed Above
a. D-81 c.
b. d.

15. Special Handling Instructions and Additional Information
I certify that no absorbent had been added to the above waste which would prohibit it from being land filled. PERRCRA3004(C-1) When handling wear eye protection and protective equipment such as impervious clothing and gloves.

16 GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment, OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford

Printed/Typed Name: J. D. Clayton | Signature: J. D. Clayton | Month Day Year: 07 23 88

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: | Signature: | Month Day Year: ~~07 88~~

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name: Willie Wagner | Signature: Willie Wagner | Month Day Year: 07 23 88

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name: Rank McKinnis | Signature: Roger McKinnis | Month Day Year: 07 25 88

HAZARDOUS WASTE MANIFEST

(As Required By The Alabama Department of Environmental Management)

Please print or type. *(Form designed for use on elite (12-pitch) typewriter.)* Form Approved. OMB No. 2050-0039. Expires 9-30-...

UNIFORM HAZARDOUS WASTE MANIFEST	1. Generator's US EPA ID No. MSD007027543 — Manifest Document No. 00073	2. Page 1 of 1 — Information in the shaded areas is not required by Federal law.
3. Generator's Name and Mailing Address: Koppers Company, Inc. P. O. Box 160 Tie Plant, Ms. 38960		A. State Manifest Document Number: CWMA 414106
4. Generator's Phone (601) 226-4584		B. State Generator's ID
5. Transporter 1 Company Name: Dart Transportation Co.	6. US EPA ID Number: OHD009865825	C. State Transporter's ID
		D. Transporter's Phone
7. Transporter 2 Company Name	8. US EPA ID Number	E. State Transporter's ID
		F. Transporter's Phone
9. Designated Facility Name and Site Address: CHEMICAL WASTE MANAGEMENT, INC. Emelle Facility Alabama Highway 17 at Mile Marker 163 Emelle, Alabama 35459	10. US EPA ID Number: ALD000622464	G. State Facility's ID: 219-938-7020
		H. Facility's Phone: 205/652-9721

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. RCRA Hazardous Waste, Solid N.O.S.(K-001) ORM-E NA-9189 — CWM Profile Number RES-H-53976	001	DT	50275	P	
b. CWM Profile Number					
c. CWM Profile Number					
d. CWM Profile Number					

J. Additional Descriptions for Materials Listed Above

Work Order No. 880725048
RES P. O. No. 28-0631
Emergency Contact - (601) 226-4584

K. Handling Codes for Wastes Listed Above

a. D-81 c.
b. d.

15. Special Handling Instructions and Additional Information
I certify that no absorbent had been added to the above waste which would prohibit it from being land filled. PERRCRA3004(C-1) When handling wear eye protection and protective equipment such as impervious clothing and gloves.

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name	Signature	Month Day Year
J. D. Clayton	J. D. Clayton	07 24 88

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month Day Year
James Ross	James Ross	07 24 88

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month Day Year

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19

Printed/Typed Name	Signature	Month Day Year
Roger McKinnis	Roger McKinnis	07 25 88

HAZARDOUS WASTE MANIFEST

(As Required By The Alabama Department of Environmental Management)

Please print or type. *(Form designed for use on elite (12-pitch) typewriter.)*

Form Approved. OMB No. 2050-0039. Expires 9-30-

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. MSD007027543 — Manifest Document No. 00075
2. Page 1 of 1

Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
Koppers Company, Inc.
P. O. Box 160
Tie Plant, Ms. 38960

4. Generator's Phone (601) 226-4584

A. State Manifest Document Number: CWMA 414103

B. State Generator's ID: [illegible]

5. Transporter 1 Company Name: Dart Transportation Co.
6. US EPA ID Number: OHD009865825

C. State Transporter's ID

D. Transporter's Phone

7. Transporter 2 Company Name
8. US EPA ID Number

E. State Transporter's ID

F. Transporter's Phone

9. Designated Facility Name and Site Address
CHEMICAL WASTE MANAGEMENT, INC.
Emelle Facility
Alabama Highway 17 at Mile Marker 163
Emelle, Alabama 35459

10. US EPA ID Number: ALD000622464

G. State Facility's ID: 219-[illegible]-7020

H. Facility's Phone: 205/652-9721

GENERATOR

11. US DOT Description *(Including Proper Shipping Name, Hazard Class, and ID Number)*	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. RCRA Hazardous Waste, Solid N.O.S.(K-001) ORM-E NA-9189 — CWM Profile Number RES-H-53976	001	DT	6321	P	
b. CWM Profile Number					
c. CWM Profile Number					
d. CWM Profile Number					

J. Additional Descriptions for Materials Listed Above
Work Order No. 880725048
RES P. O. No. 28-0631
Emergency Contact - (601) 226-4584

K. Handling Codes for Wastes Listed Above
a. D81 c.
b. d.

15. Special Handling Instructions and Additional Information
I certify that no absorbent had been added to the above waste which would prohibit it from being land filled. PERRCRA3004(C-1) When handling wear eye protection and protective equipment such as impervious clothing and gloves.

16. **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name: J. D. Clayton — Signature: J. D. Clayton — Month Day Year: 07 24 88

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: HG CORKREN — Signature: H G Corkren — Month Day Year: 07 24 88

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name — Signature — Month Day Year

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name: Roger McKinnis — Signature: Roger McKinnis — Month Day Year: 07 25 88

EPA Form 8700-22 (Rev. 9-86) Previous edition is obsolete.

GENERATOR No. 2 (Mail Accompany Shipment)

HAZARDOUS WASTE MANIFEST

Chemical Waste Management

(As Required By The Alabama Department of Environmental Management)

Please print or type. *(Form designed for use on elite (12-pitch) typewriter.)*

Form Approved. OMB No. 2050-0039. Expires 9-30-88

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.: M S D 0 0 7 0 2 7 5 4 3 — Manifest Document No.: 0 0 0 7 7

2. Page 1 of 1

Information in the shaded areas is not required by Federal law.

A. State Manifest Document Number: CWMA 414109

B. State Generator's ID: [illegible]

3. Generator's Name and Mailing Address:
Koppers Company, Inc.
P. O. Box 160
Tie Plant, Ms. 38960

4. Generator's Phone (601) 226-4584

5. Transporter 1 Company Name: Dart Transportation Co.

6. US EPA ID Number: O H D 0 0 9 8 6 5 8 2 5

C. State Transporter's ID: [illegible]

D. Transporter's Phone: [illegible]

7. Transporter 2 Company Name:

8. US EPA ID Number:

E. State Transporter's ID:

F. Transporter's Phone:

9. Designated Facility Name and Site Address:
CHEMICAL WASTE MANAGEMENT, INC.
Emelle Facility
Alabama Highway 17 at Mile Marker 163
Emelle, Alabama 35459

10. US EPA ID Number: A L D 0 0 0 6 2 2 4 6 4

G. State Facility's ID: 215-[illegible]

H. Facility's Phone: 205/652-9721

11. US DOT Description *(Including Proper Shipping Name, Hazard Class, and ID Number)*	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. RCRA Hazardous Waste, Solid N.O.S. (K-001) ORM-E NA-9189 — CWM Profile Number RES-H-53976	0 0 1	D T	44400	P	[illegible]
b. CWM Profile Number					
c. CWM Profile Number					
d. CWM Profile Number					

J. Additional Descriptions for Materials Listed Above

Work Order No. 880725048
RES P. O. No. 28-0631
Emergency Contact - (601) 226-4584

K. Handling Codes for Wastes Listed Above

a. D-81 b. c. d.

15. Special Handling Instructions and Additional Information
I certify that no adsorbent had been added to the above waste which would prohibit it from being land filled. PERRCRA3004(C-1) When handling wear eye protection and protective equipment such as impervious clothing and gloves.

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name	Signature	Month Day Year
J. D. Clayton	J. D. Clayton	0 7 2 4 8 8

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month Day Year
Willis Hicks	Willis Hicks	0 7 2 4 8 8

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month Day Year

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name	Signature	Month Day Year
Roger McKinnis	Roger McKinnis	0 7 2 5 8 8

EPA Form 8700-22 (Rev. 9-86) Previous edition is obsolete.

GENERATOR

HAZARDOUS WASTE MANIFEST

Chemical Waste Management

(As Required By The Alabama Department of Environmental Management)

Please print or type. *(Form designed for use on elite (12-pitch) typewriter.)*

Form Approved. OMB No. 2050-0039. Expires 9-30-

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.: M S D 0 0 7 0 2 7 5 4 3 — Manifest Document No. 0 0 0 7 9
2. Page 1 of 1

Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address:
Koppers Company, Inc.
P. O. Box 160
Tie Plant, Ms. 38960

4. Generator's Phone (601) 226-4584

A. State Manifest Document Number: CWMA 414107

B. State Generator's ID

5. Transporter 1 Company Name: Dart Transportation Co.
6. US EPA ID Number: O H D 0 0 9 8 6 5 8 2 5

C. State Transporter's ID

D. Transporter's Phone

7. Transporter 2 Company Name
8. US EPA ID Number

E. State Transporter's ID

F. Transporter's Phone

9. Designated Facility Name and Site Address:
CHEMICAL WASTE MANAGEMENT, INC.
Emelle Facility
Alabama Highway 17 at Mile Marker 163
Emelle, Alabama 35459

10. US EPA ID Number: A L D 0 0 0 6 2 2 4 6 4

G. State Facility's ID: 219-932-7020

H. Facility's Phone: 205/652-9721

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. RCRA Hazardous Waste, Solid N.O.S. (K-001) ORM-E NA-9189 — CWM Profile Number RES-H-53976	001	DT	66540	P	
b. CWM Profile Number					
c. CWM Profile Number					
d. CWM Profile Number					

J. Additional Descriptions for Materials Listed Above
Work Order No. 88 0725048
RES P. O. No. 28-0631
Emergency Contact - (601) 226-4584

K. Handling Codes for Wastes Listed Above
a. D81 b. c. d.

15. Special Handling Instructions and Additional Information
I certify that no absorbent had been added to the above waste which would prohibit it from being land filled. PERRCRA3004(C-1) When handling wear eye protection and protective equipment such as impervious clothing and gloves.

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name: J. D. Clayton — Signature: J. D. Clayton — Month Day Year: 07 24 88

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: DARRYL M. COKKREN — Signature: Darry M. C— — Month Day Year: 07 24 88

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name — Signature — Month Day Year

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name: Roger McKinnis — Signature: Roger McKinnis — Month Day Year: 07 25 88

EPA Form 8700-22 (Rev. 9-86) Previous edition is obsolete.

GENERATOR No. 2 (Mail ...)

Please print or type. *(Form designed for use on elite (12-pitch) typewriter.)*

Chemical Waste Management

HAZARDOUS WASTE MANIFEST

(As Required By The Alabama Department of Environmental Management)

Form Approved. OMB No. 2050-0039. Expires 9-30-

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.: M S D 0 0 7 0 2 7 5 4 3 — Manifest Document No.: 0 0 0 8 1
2. Page 1 of 1

Information in the shaded areas is not required by Federal law.

A. State Manifest Document Number: CWMA 414105

B. State Generator's ID

3. Generator's Name and Mailing Address: Koppers Company, Inc.
P. O. Box 160
Tie Plant, Ms. 38960

4. Generator's Phone (601) 226-4584

5. Transporter 1 Company Name: Dart Transportation Co.
6. US EPA ID Number: O H D 0 0 9 8 6 5 8 2 5

C. State Transporter's ID

D. Transporter's Phone

7. Transporter 2 Company Name
8. US EPA ID Number

E. State Transporter's ID

F. Transporter's Phone

9. Designated Facility Name and Site Address:
CHEMICAL WASTE MANAGEMENT, INC.
Emelle Facility
Alabama Highway 17 at Mile Marker 163
Emelle, Alabama 35459

10. US EPA ID Number: A L D 0 0 0 6 2 2 4 6 4

G. State Facility's ID: 219 [illegible] 7020

H. Facility's Phone: 205/652-9721

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. RCRA Hazardous Waste, Solid N.O.S. (K-001) ORM-E NA-9189 — CWM Profile Number RES-H-53976	001	DT	55250	P	
b. CWM Profile Number					
c. CWM Profile Number					
d. CWM Profile Number					

J. Additional Descriptions for Materials Listed Above:
Work Order No. 880725048
RES P. O. No. 28-0631
Emergency Contact - (601) 226-4584

K. Handling Codes for Wastes Listed Above: a. P81 b. c. d.

15. Special Handling Instructions and Additional Information: I certify that no absorbent had been added to the above waste which would prohibit it from being land filled. PERRCRA3004(C-1) When handling wear eye protection and protective equipment such as impervious clothing and gloves.

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name: J. D. Clayton — Signature: J. D. Clayton — Month Day Year: 07 24 88

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: DAvid Michael — Signature: [signature] — Month Day Year: 07 24 88

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name — Signature — Month Day Year

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name: Roger McKinnis — Signature: Roger McKinnis — Month Day Year: 07 25 88

GENERATOR / TRANSPORTER / FACILITY

HAZARDOUS WASTE MANIFEST

Chemical Waste Management

(As Required By The Alabama Department of Environmental Management)

Please print or type. *(Form designed for use on elite (12-pitch) typewriter.)*

Form Approved. OMB No. 2050-0039. Expires 9-30-88

UNIFORM HAZARDOUS WASTE MANIFEST	1. Generator's US EPA ID No. MSD007027543	Manifest Document No. 00083	2. Page 1 of 1	Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
Koppers Company, Inc.
P. O. Box 160
Tie Plant, Ms. 38960

4. Generator's Phone (601) 226-4584

A. State Manifest Document Number CWMA 414127

B. State Generator's ID

5. Transporter 1 Company Name: Dart Transportation Co.
6. US EPA ID Number: OHD009865825

C. State Transporter's ID

D. Transporter's Phone

7. Transporter 2 Company Name
8. US EPA ID Number

E. State Transporter's ID

F. Transporter's Phone

9. Designated Facility Name and Site Address
CHEMICAL WASTE MANAGEMENT, INC.
Emelle Facility
Alabama Highway 17 at Mile Marker 163
Emelle, Alabama 35459

10. US EPA ID Number: ALD000622464

G. State Facility's ID 219-938-2020

H. Facility's Phone 205/652-9721

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. RCRA Hazardous Waste, Solid N.O.S.(K-001) ORM-E NA-9189 CWM Profile Number RES-H-53976	001	DT	52110	P	
b. CWM Profile Number					
c. CWM Profile Number					
d. CWM Profile Number					

J. Additional Descriptions for Materials Listed Above
Work Order No. 88P725048
RES P. O. No. 28-0631
Emergency Contact - (601) 226-4584

K. Handling Codes for Wastes Listed Above
a. D81
b.
c.
d.

15. Special Handling Instructions and Additional Information
I certify that no absorbent had been added to the above waste which would prohibit it from being land filled. PERRCRA3004(C-1) When handling wear eye protection and protective equipment such as impervious clothing and gloves.

16 GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name	Signature	Month Day Year
J. D. Clayton	J. D. Clayton	07 25 88

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month Day Year
DANNY M. CORKREN	Danny M. Corkren	07 25 88

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month Day Year

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name	Signature	Month Day Year
[illegible]	[illegible]	7 25 88

HAZARDOUS WASTE MANIFEST

(As Required By The Alabama Department of Environmental Management)

Please print or type. *(Form designed for use on elite (12-pitch) typewriter.)*

Form Approved. OMB No. 2050-0039. Expires 9-30-88

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.: MSD007027543 — Manifest Document No.: 00085

2. Page 1 of 1

Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address:
Koppers Company, Inc.
P. O. Box 160
Tie Plant, Ms. 38960

4. Generator's Phone (601) 226-4584

A. State Manifest Document Number: CWMA 414125

B. State Generator's ID:

5. Transporter 1 Company Name: Dart Transportation Co.

6. US EPA ID Number: OHD009865825

C. State Transporter's ID:

D. Transporter's Phone:

7. Transporter 2 Company Name:

8. US EPA ID Number:

E. State Transporter's ID:

F. Transporter's Phone:

9. Designated Facility Name and Site Address:
CHEMICAL WASTE MANAGEMENT, INC.
Emelle Facility
Alabama Highway 17 at Mile Marker 163
Emelle, Alabama 35459

10. US EPA ID Number: ALD000622464

G. State Facility's ID: 219-938-7020

H. Facility's Phone: 205/652-9721

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. RCRA Hazardous Waste, Solid N.O.S.(K-001) ORM-E NA-9189 — CWM Profile Number RES-H-53976	001	DT	50010	P	
b. — CWM Profile Number					
c. — CWM Profile Number					
d. — CWM Profile Number					

J. Additional Descriptions for Materials Listed Above:
Work Order No. 880725048
RES P. O. No. 28-0631
Emergency Contact - (601) 226-4584

K. Handling Codes for Wastes Listed Above: a. D31 b. c. d.

15. Special Handling Instructions and Additional Information:
I certify that no free liquids had been added to the above waste which would prohibit it from being land filled. PERPCRA3004(C-1) When handling wear eye protection and protective equipment such as impervious clothing and gloves.

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name	Signature	Month Day Year
J. D. Clayton	J. D. Clayton	07 25 88

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month Day Year
James Ross	James Ross	07 25 88

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month Day Year

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name	Signature	Month Day Year
Bill Mills	Bill Mill	[illegible]

HAZARDOUS WASTE MANIFEST

(As Required By The Alabama Department of Environmental Management)

Please print or type. *(Form designed for use on elite (12 pitch) typewriter.)*

Form Approved. OMB No. 2050-0039. Expires 9-30-

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. MSD007027543 Manifest Document No. 00087
2. Page 1 of 1

Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address: Koppers Company, Inc. P. O. Box 160 Tie Plant, Ms. 38960
4. Generator's Phone (601) 226-4584

A. State Manifest Document Number: CWMA 414123

B. State Generator's ID

5. Transporter 1 Company Name: Dart Transportation Co.
6. US EPA ID Number: OHD009865825

C. State Transporter's ID

D. Transporter's Phone

7. Transporter 2 Company Name
8. US EPA ID Number

E. State Transporter's ID

F. Transporter's Phone

9. Designated Facility Name and Site Address: CHEMICAL WASTE MANAGEMENT, INC. Emelle Facility Alabama Highway 17 at Mile Marker 163 Emelle, Alabama 35459
10. US EPA ID Number: ALD000622464

G. State Facility's ID: 219-938-7020

H. Facility's Phone: 205/652-9721

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. RCRA Hazardous Waste, Solid N.O.S.(K-001) ORM-E NA-9189 CWM Profile Number RES-H-53976	001	DT	46440	P	
b. CWM Profile Number					
c. CWM Profile Number					
d. CWM Profile Number					

J. Additional Descriptions for Materials Listed Above

Work Order No. 880725048
RES P. O. No. 28-0631
Emergency Contact - (601) 226-4584

K. Handling Codes for Wastes Listed Above

a. DJ' c.

b. d.

15. Special Handling Instructions and Additional Information
I certify that no absorbent had been added to the above waste which would prohibit it from being land filled. PERRCRA3004(C-1) When handling wear eye protection and protective equipment such as impervious clothing and gloves.

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment. OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name: J. D. Clayton — Signature: J. D. Clayton — Month Day Year: 10 25 88

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name: Tommy Corkren — Signature: Tommy Corkren — Month Day Year: 10 25 88

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name — Signature — Month Day Year

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in item 19.

Printed/Typed Name: B. [illegible] — Signature: [illegible] — Month Day Year: [illegible]

HAZARDOUS WASTE MANIFEST

Chemical Waste Management

(As Required By The Alabama Department of Environmental Management)

Please print or type. *(Form designed for use on elite (12-pitch) typewriter.)*

Form Approved. OMB No. 2050-0039. Expires 9-

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. MSD007027543 | Manifest Document No. 00089 | 2. Page 1 of 1 | Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
Koppers Company, Inc.
P. O. Box 160
Tie Plant, Ms. 38960

4. Generator's Phone (601) 226-4584

A. State Manifest Document Number: CWMA 414121

B. State Generator's ID

5. Transporter 1 Company Name: Dart Transportation Co.
6. US EPA ID Number: OHD009865825

C. State Transporter's ID
D. Transporter's Phone

7. Transporter 2 Company Name
8. US EPA ID Number

E. State Transporter's ID
F. Transporter's Phone

9. Designated Facility Name and Site Address
CHEMICAL WASTE MANAGEMENT, INC
Emelle Facility
Alabama Highway 17 at Mile Marker 163
Emelle, Alabama 35459

10. US EPA ID Number: ALD000622464

G. State Facility's ID: 219-938-7020
H. Facility's Phone: 205/652-9721

GENERATOR

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. RCRA Hazardous Waste, Solid N.O.S. (K-001) ORM-E NA-9189 — CWM Profile Number RES-H-53976	001	DT	56120	P	
b. CWM Profile Number					
c. CWM Profile Number					
d. CWM Profile Number					

J. Additional Descriptions for Materials Listed Above
Work Order No. 880725048
RES P. O. No. 28-0631
Emergency Contact - (601) 226-4584

K. Handling Codes for Wastes Listed Above
a.
b. P81
c.
d.

15. Special Handling Instructions and Additional Information
I certify that no absorbent had been added to the above waste which would prohibit it from being land filled. PERRCRA3004(C-1) When handling wear eye protection and protective equipment such as impervious clothing and gloves.

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment, OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name	Signature	Month Day Year
J. D. Clayton	J. D. Clayton	07 25 88

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month Day Year
David Michael	[illegible]	07 25 88

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month Day Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name	Signature	Month Day Year
Lester Burrell	Lester Burrell	0 1 1 1 9 88

EPA Form 8700-22 (Rev. 9-86) Previous edition is obsolete.

HAZARDOUS WASTE MANIFEST

(As Required By The Alabama Department of Environmental Management)

Please print or type. *(Form designed for use on elite (12-pitch) typewriter.)* Form Approved. OMB No. 2050-0039. Expires 9-3

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.: MSD007027543 — Manifest Document No.: 00097

2. Page 1 of 1

Information in the shaded areas is not required by Federal law.

A. State Manifest Document Number: CWMA 414119

B. State Generator's ID

3. Generator's Name and Mailing Address:
Koppers Company, Inc.
P. O. Box 160
Tie Plant, Ms. 38960

4. Generator's Phone (601) 226-4584

5. Transporter 1 Company Name: Dart Transportation Co.

6. US EPA ID Number: OHD009865825

C. State Transporter's ID

D. Transporter's Phone

7. Transporter 2 Company Name

8. US EPA ID Number

E. State Transporter's ID

F. Transporter's Phone

9. Designated Facility Name and Site Address:
CHEMICAL WASTE MANAGEMENT, INC.
Emelle Facility
Alabama Highway 17 at Mile Marker 163
Emelle, Alabama 35459

10. US EPA ID Number: ALD000622464

G. State Facility's ID: 219-938-7020

H. Facility's Phone: 205/652-9721

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. RCRA Hazardous Waste, Solid N.O.S.(K-001) ORM-E NA-9189 — CWM Profile Number RES-H-53976	001	DT	56840	P	
b. CWM Profile Number					
c. CWM Profile Number					
d. CWM Profile Number					

J. Additional Descriptions for Materials Listed Above
Work Order No. 880725048
RES P. O. No. 28-0631
Emergency Contact - (601) 226-4584

K. Handling Codes for Wastes Listed Above
a. D 31
b.
c.
d.

15. Special Handling Instructions and Additional Information
I certify that no adsorbent had been added to the above waste which would prohibit it from being land filled. PERRCRA3004(C-1) When handling wear eye protection and protective equipment such as impervious clothing and gloves

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment. OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford

Printed/Typed Name: J. D. Clayton — Signature: J. D. Clayton — Month Day Year: 07 25 88

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: DANNY M. CORRELL — Signature: Danny M. Corr... — Month Day Year: 07 25 88

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name — Signature — Month Day Year

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name: [illegible] — Signature: [illegible] — Month Day Year: [illegible]

HAZARDOUS WASTE MANIFEST

(As Required By The Alabama Department of Environmental Management)

Form Approved. OMB No. 2050-0039. Expires 9-30-8

Please print or type. *(Form designed for use on elite (12-pitch) typewriter.)*

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. MSD007027543 Manifest Document No. 00093

2. Page 1 of 1

Information in the shaded areas is not required by Federal law.

A. State Manifest Document Number: CWMA 414117

B. State Generator's ID

3. Generator's Name and Mailing Address
Koppers Company, Inc.
P. O. Box 160
Tie Plant, Ms. 38960

4. Generator's Phone (601) 226-4584

5. Transporter 1 Company Name: Dart Transportation Co.

6. US EPA ID Number: OHD009865825

C. State Transporter's ID

D. Transporter's Phone

7. Transporter 2 Company Name

8. US EPA ID Number

E. State Transporter's ID

F. Transporter's Phone

9. Designated Facility Name and Site Address
CHEMICAL WASTE MANAGEMENT, INC.
Emelle Facility
Alabama Highway 17 at Mile Marker 163
Emelle, Alabama 35459

10. US EPA ID Number: ALD000622464

G. State Facility's ID: 219-938-7020

H. Facility's Phone: 205/652-9721

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. RCRA Hazardous Waste, Solid N.O.S.(K-001) ORM-E NA-9189 CWM Profile Number RES-H-53976	001	DT	545560	P	
b. CWM Profile Number					
c. CWM Profile Number					
d. CWM Profile Number					

J. Additional Descriptions for Materials Listed Above
Work Order No. 880726050
RES P. O. No. 28-0631
Emergency Contact - (601) 226-4584

K. Handling Codes for Wastes Listed Above
a. D51 c.
b. d.

15. Special Handling Instructions and Additional Information
I certify that no absorbent had been added to the above waste which would prohibit it from being land filled. PERRCRA3004(C-1) When handling wear eye protection and protective equipment such as impervious clothing and gloves.

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment, OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name	Signature	Month Day Year
J. D. Clayton	J. D. Clayton	07 26 88

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month Day Year
Brady Pate	Brady Pate	07 26 88

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month Day Year

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name	Signature	Month Day Year
[illegible]	[illegible]	[illegible]

GENERATOR — TRANSPORTER — FACILITY

HAZARDOUS WASTE MANIFEST

Chemical Waste Management

(As Required By The Alabama Department of Environmental Management)

Please print or type *(Form designed for use on elite (12-pitch) typewriter.)*

Form Approved. OMB No. 2050-0039. Expires 9-

UNIFORM HAZARDOUS WASTE MANIFEST	1. Generator's US EPA ID No. MSD097027543 · Manifest Document No. 00005	2. Page 1 of 1	Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
Koppers Company, Inc.
P. O. Box 160
Tie Plant, Ms. 38960

4. Generator's Phone (601) 226-4584

A. State Manifest Document Number: CWMA 414114

B. State Generator's ID

5. Transporter 1 Company Name: Dart Transportation Co.
6. US EPA ID Number: OHD009865825

C. State Transporter's ID

D. Transporter's Phone

7. Transporter 2 Company Name
8. US EPA ID Number

E. State Transporter's ID

F. Transporter's Phone

9. Designated Facility Name and Site Address
CHEMICAL WASTE MANAGEMENT, INC.
Emelle Facility
Alabama Highway 17 at Mile Marker 163
Emelle, Alabama 35469

10. US EPA ID Number: ALD000622464

G. State Facility's ID: 213-938-7020

H. Facility's Phone: 205/652-9721

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. RCRA Hazardous Waste, Solid N.O.S.(K-001) ORM-E NA-9189 CWM Profile Number RES-H-53976	001	DT	55040	P	
b. CWM Profile Number					
c. CWM Profile Number					
d. CWM Profile Number					

J. Additional Descriptions for Materials Listed Above
Work Order No. 880726050
RES P. O. No. 28-0631
Emergency Contact - (601) 226-4584

K. Handling Codes for Wastes Listed Above
a. D 51
b.
c.
d.

15. Special Handling Instructions and Additional Information
I certify that no absorbent had been added to the above waste which would prohibit it from being land filled. PERRCRA3004(C-1) When handling wear eye protection and protective equipment such as impervious clothing and gloves.

16. **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

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Printed/Typed Name: J. D. Clayton | Signature: J. D. Clayton | Month Day Year: 07 26 88

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: Bobby Pratt | Signature: Bobby Pratt | Month Day Year: 07 26 88

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name | Signature | Month Day Year

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name: Bill [illegible] | Signature: Bill [illegible] | Month Day Year: [illegible]

EPA Form 8700-22 (Rev. 9-88) Previous edition is obsolete.

HAZARDOUS WASTE MANIFEST

(As Required By The Alabama Department of Environmental Management)

print or type. *(Form designed for use on elite (12-pitch) typewriter.)*

Form Approved. OMB No. 2050-0039. Expires 9-30-88

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.: MSD007027543 | Manifest Document No.: 00917 | 2. Page 1 of 1 | Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address:
Koppers Company, Inc.
P. O. Box 160
Tie Plant, Ms. 38960

Generator's Phone (601) 226-4584

A. State Manifest Document Number: CWMA 414112

5. Transporter 1 Company Name: Dart Transportation Co. | 6. US EPA ID Number: OHD019865825

7. Transporter 2 Company Name: | 8. US EPA ID Number:

9. Designated Facility Name and Site Address:
CHEMICAL WASTE MANAGEMENT, INC.
Emelle Facility
Alabama Highway 17 at Mile Marker 163
Emelle, Alabama 35459.

10. US EPA ID Number: ALD000622464

G. State Facility's ID: 219-93837030

H. Facility's Phone: 205/652-9721

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
RCRA Hazardous Waste, Solid N.O.S.(K-001) ORM-E NA-9189 CWM Profile Number RES-H-53976	001	DT	44840	P	
CWM Profile Number					
CWM Profile Number					
CWM Profile Number					

J. Additional Descriptions for Materials Listed Above:
Work Order No. 880726050
RES P. O. No. 28-0631
Emergency Contact - (601) 226-4584

K. Handling Codes for Wastes Listed Above: a. D 31 b. c. d.

15. Special Handling Instructions and Additional Information:
I certify that no absorbent had been added to the above waste which would prohibit it from being land filled. PERRCRA3004(C-1) When handling wear eye protection and protective equipment such as impervious clothing and gloves.

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

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Printed/Typed Name: J. D. Clayton | Signature: J. D. Clayton | Month Day Year: 10 26 88

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: Willie Hicks | Signature: Willie Hicks | Month Day Year: 10 26 88

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name: | Signature: | Month Day Year:

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name: Bill Mi[illegible] | Signature: B[illegible] | Month Day Year: [illegible]

HAZARDOUS WASTE MANIFEST

(As Required By The Alabama Department of Environmental Management)

ease print or type. *(Form designed for use on elite (12-pitch) typewriter.)* 99 Form Approved. OMB No. 2050-0039. Expires 9-30-88

UNIFORM HAZARDOUS WASTE MANIFEST	1. Generator's US EPA ID No. MSD007027543 Manifest Document No. 00097	2. Page 1 of 1	Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
Koppers Company, Inc.
P. O. Box 160
Tie Plant, Ms. 38960

4. Generator's Phone (601) 226-4584

A. State Manifest Document Number CWMA 414135

B. State Generator's ID

5. Transporter 1 Company Name: Dart Transportation Co.
6. US EPA ID Number: OHD009865825

C. State Transporter's ID

D. Transporter's Phone

7. Transporter 2 Company Name
8. US EPA ID Number

E. State Transporter's ID

F. Transporter's Phone

9. Designated Facility Name and Site Address
CHEMICAL WASTE MANAGEMENT, INC.
Emelle Facility
Alabama Highway 17 at Mile Marker 163
Emelle, Alabama 35459

10. US EPA ID Number: ALD000622464

G. State Facility's ID

H. Facility's Phone 205/652-9721

11. US DOT Description *(Including Proper Shipping Name, Hazard Class, and ID Number)*	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. RCRA Hazardous Waste, Solid N.O.S. (K-001) ORM-E NA-9189 CWM Profile Number RES-H-53976	001	DT	54570	P	
b. CWM Profile Number					
c. CWM Profile Number					
d. CWM Profile Number					

J. Additional Descriptions for Materials Listed Above
Work Order No. 880726050
RES P.O. No. 28-0631
Emergency Contact - (601) 226-4584

K. Handling Codes for Wastes Listed Above
a. DJ c.
b. d.

15. Special Handling Instructions and Additional Information
I certify that no absorbent had been added to the above waste which would prohibit it from being land filled. PERRCRA 3004(C-1) When handling wear eye protection and protective equipment such as impervious clothing and gloves.

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name	Signature	Month Day Year
J. D. Clayton	J. D. Clayton	07 26 88

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month Day Year
DAVid Michael	[illegible]	07 26 88

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month Day Year

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name	Signature	Month Day Year
[illegible]	[illegible]	[illegible]

EPA Form 8700-22 (Rev. 9-86) Previous edition is obsolete

HAZARDOUS WASTE MANIFEST

(As Required By The Alabama Department of Environmental Management)

...se print or type. *(Form designed for use on elite (12-pitch) typewriter.)*

Form Approved. OMB No. 2050-0039. Expires 9-30-88

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.: M S D 0 0 7 0 2 7 5 4 3 0 — Manifest Document No.: 0...

2. Page 1 of 1

Information in the shaded areas is not required by Federal law.

A. State Manifest Document Number: CWMA 414133

B. State Generator's ID

3. Generator's Name and Mailing Address:
Koppers Company, Inc.
P. O. Box 160
Tie Plant, Ms. 38960

4. Generator's Phone (601) 226-4584

5. Transporter 1 Company Name: Dart Transportation Co.

6. US EPA ID Number: 0 H D 0 0 9 8 6 5 8 2 5

C. State Transporter's ID

D. Transporter's Phone

7. Transporter 2 Company Name

8. US EPA ID Number

E. State Transporter's ID

F. Transporter's Phone

9. Designated Facility Name and Site Address:
CHEMICAL WASTE MANAGEMENT, INC.
Emelle Facility
Alabama Highway 17 at Mile Marker 163
Emelle, Alabama 35459

10. US EPA ID Number: A L D 0 0 0 6 2 2 4 6 4

G. State Facility's ID

H. Facility's Phone: 205/652-9721

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. RCRA Hazardous Waste, Solid N.O.S. (K-001) ORM-E NA-9189 — CWM Profile Number RES-H-53976	001	DT	51760	P	
b. — CWM Profile Number					
c. — CWM Profile Number					
d. — CWM Profile Number					

J. Additional Descriptions for Materials Listed Above:
Work Order No. 880726050
RES P.O. No. 28-0631
Emergency Contact - (601) 226-4584

K. Handling Codes for Wastes Listed Above: a. D 51 b. c. d.

15. Special Handling Instructions and Additional Information:
I certify that no absorbent had been added to the above waste which would prohibit it from being land filled. PERRCRA 3004(C-1) When handling wear eye protection and protective equipment such as impervious clothing and gloves.

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name: J. D. Clayton — Signature: J. D. Clayton — Month Day Year: 07 26 88

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name: HG CORKREN — Signature: H G Corkren — Month Day Year: 07 26 88

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name — Signature — Month Day Year

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name: [illegible] — Signature: [illegible] — Month Day Year: [illegible]

HAZARDOUS WASTE MANIFEST

Chemical Waste Management

(As Required By The Alabama Department of Environmental Management)

ease print or type. *(Form designed for use on elite (12-pitch) typewriter.)* 103 Form Approved. OMB No. 2050-0039. Expires 9-30-86

UNIFORM HAZARDOUS WASTE MANIFEST	1. Generator's US EPA ID No. MSD007027543 Manifest Document No. 00103	2. Page 1 of 1	Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
Koppers Company, Inc.
P. O. Box 160
Tie Plant, Ms. 38960

4. Generator's Phone (601) 226-4584

A. State Manifest Document Number: CWMA 414131

B. State Generator's ID

C. State Transporter's ID

D. Transporter's Phone

E. State Transporter's ID

F. Transporter's Phone

G. State Facility's ID: 219-938-7920

H. Facility's Phone: 205/652-9721

5. Transporter 1 Company Name: Dart Transportation Co.
6. US EPA ID Number: OHD009865825

7. Transporter 2 Company Name
8. US EPA ID Number

9. Designated Facility Name and Site Address
CHEMICAL WASTE MANAGEMENT, INC.
Emelle Facility
Alabama Highway 17 at Mile Marker 163
Emelle, Alabama 35459

10. US EPA ID Number: ALD000622464

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. RCRA Hazardous Waste, Solid N.O.S. (K-001) ORM-E NA-9189 CWM Profile Number RES-H-53976	001	DT	42690	P	
b. CWM Profile Number					
c. CWM Profile Number					
d. CWM Profile Number					

J. Additional Descriptions for Materials Listed Above
Work Order No. 8807277044
RES P.O. No. 28-0631
Emergency Contact - (601) 226-4584

K. Handling Codes for Wastes Listed Above
a. D.S1
b.
c.
d.

15. Special Handling Instructions and Additional Information
I certify that no absorbent had been added to the above waste which would prohibit it from being land filled. PERRCRA 3004(C-1) When handling wear eye protection and protective equipment such as impervious clothing and gloves.

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

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Printed/Typed Name	Signature	Month Day Year
J. D. Clayton	J. D. Clayton	07 27 88

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month Day Year
Brady Pate	Brady Pate	07 27 88

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month Day Year

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name	Signature	Month Day Year
B. Mollin	Bill Mollin	[illegible]

HAZARDOUS WASTE MANIFEST

(As Required By The Alabama Department of Environmental Management)

Chemical Waste Management

ase print or type. *(Form designed for use on elite (12-pitch) typewriter.)* 105 Form Approved. OMB No. 2050-0039. Expires 9-30-88

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.: 1SD007027543 | Manifest Document No.: 00105
2. Page 1 of 1

Information in the shaded areas is not required by Federal law.

A. State Manifest Document Number: CWMA 414129

B. State Generator's ID

C. State Transporter's ID

D. Transporter's Phone

E. State Transporter's ID

F. Transporter's Phone

G. State Facility's ID: 215-[illegible]

H. Facility's Phone: 205/652-9721

3. Generator's Name and Mailing Address:
Koppers Company, Inc.
P. O. Box 160
Tie Plant, Ms. 38960

4. Generator's Phone (601) 226-4584

5. Transporter 1 Company Name: Dart Transportation Co.
6. US EPA ID Number: OHD009865825

7. Transporter 2 Company Name:
8. US EPA ID Number:

9. Designated Facility Name and Site Address:
CHEMICAL WASTE MANAGEMENT, INC.
Emelle Facility
Alabama Highway 17 at Mile Marker 163
Emelle, Alabama 35459

10. US EPA ID Number: ALD000622464

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. RCRA Hazardous Waste, Solid N.O.S. (K-001) ORM-E NA-9189 — CWM Profile Number RES-H-53976	001	DT	41560	P	
b. CWM Profile Number					
c. CWM Profile Number					
d. CWM Profile Number					

J. Additional Descriptions for Materials Listed Above

Work Order No. 88
RES P.O. No. 28-0631
Emergency Contact - (601) 226-4584

K. Handling Codes for Wastes Listed Above

a. D 81 c.
b. d.

15. Special Handling Instructions and Additional Information
I certify that no absorbent had been added to the above waste which would prohibit it from being land filled. PERRCRA 3004(C-1) When handling wear eye protection and protective equipment such as impervious clothing and gloves.

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

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Printed/Typed Name: J. D. Clayton | Signature: J. D. Clayton | Month Day Year: 07 2[illegible] 88 8-1-88

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: Tommy Cork[illegible] | Signature: Tommy C. K[illegible] | Month Day Year: 07 2[illegible] 88 8-1-88

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name: | Signature: | Month Day Year:

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name: B[illegible] | Signature: B[illegible] | Month Day Year: [illegible] 88

GENERATOR / TRANSPORTER / FACILITY

EPA Form 8700-22 (Rev. 9-86) Previous edition is obsolete.

HAZARDOUS WASTE MANIFEST

Chemical Waste Management

(As Required By The Alabama Department of Environmental Management)

Please print or type. *(Form designed for use on elite (12-pitch) typewriter.)* 107 Form Approved. OMB No. 2050-0039. Expires 9-3

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. MSD007027543 Manifest Document No. 00107
2. Page 1 of 1
Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
Koppers Company, Inc.
P. O. Box 160
Tie Plant, Ms. 38960
4. Generator's Phone (601) 226-4584

A. State Manifest Document Number CWMA 414137
B. State Generator's ID

5. Transporter 1 Company Name: Dart Transportation Co.
6. US EPA ID Number: OHD009865825

C. State Transporter's ID
D. Transporter's Phone

7. Transporter 2 Company Name
8. US EPA ID Number

E. State Transporter's ID
F. Transporter's Phone

9. Designated Facility Name and Site Address
CHEMICAL WASTE MANAGEMENT, INC.
Emelle Facility
Alabama Highway 17 at Mile Marker 163
Emelle, Alabama 35469
10. US EPA ID Number: ALD000622464

G. State Facility's ID 220-310-7020
H. Facility's Phone 205/652-9721

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. RCRA Hazardous Waste, Solid N.O.S. (K-001) ORM-E NA-9189 CWM Profile Number RES-H-53976	001	DT	51740	P	
b. CWM Profile Number					
c. CWM Profile Number					
d. CWM Profile Number					

J. Additional Descriptions for Materials Listed Above
Work Order No. 880727044
RES P.O. No. 28-0631
Emergency Contact - (601) 226-4584

K. Handling Codes for Wastes Listed Above
a. D 31 c.
b. d.

15. Special Handling Instructions and Additional Information
I certify that no adsorbent had been added to the above waste which would prohibit it from being land filled. FERRCRA 3004(C-1) When handling wear eye protection and protective equipment such as impervious clothing and gloves.

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

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Printed/Typed Name: J. D. Clayton — Signature: J. D. Clayton — Month Day Year: 07 27 88

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: David Michael — Signature: David Michael — Month Day Year: 07 27 88

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name — Signature — Month Day Year

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in item 19.
Printed/Typed Name: Bill [illegible] — Signature: Bill [illegible] — Month Day Year: [illegible]

EPA Form 8700-22 (Rev. 9-86) Previous edition is obsolete

HAZARDOUS WASTE MANIFEST

Chemical Waste Management

(As Required By The Alabama Department of Environmental Management)

ase print or type. *(Form designed for use on elite (12-pitch) typewriter.)* 109 Form Approved. OMB No. 2050-0039. Expires 9-30-88

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.: MSD007027543 — Manifest Document No.: 00027

2. Page 1 of 1

Information in the shaded areas is not required by Federal law.

A. State Manifest Document Number: CWMA 434139

B. State Generator's ID

3. Generator's Name and Mailing Address
Koppers Company, Inc.
P. O. Box 160
Tie Plant, Ms. 38960

4. Generator's Phone (601) 226-4584

C. State Transporter's ID

5. Transporter 1 Company Name: Dart Transportation Co.
6. US EPA ID Number: OHD009865825

D. Transporter's Phone

7. Transporter 2 Company Name:
8. US EPA ID Number:

E. State Transporter's ID

F. Transporter's Phone

9. Designated Facility Name and Site Address
CHEMICAL WASTE MANAGEMENT, INC.
Emelle Facility
Alabama Highway 17 at Mile Marker 163
Emelle, Alabama 35459

10. US EPA ID Number: ALD000622464

G. State Facility's ID: 219-

H. Facility's Phone: 205/652-9721

11. US DOT Description *(Including Proper Shipping Name, Hazard Class, and ID Number)*	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. RCRA Hazardous Waste, Solid N.O.S. (K-001) ORM-E NA-9189 — CWM Profile Number RES-H-53976	001	DT	57250	P	
b. — CWM Profile Number					
c. — CWM Profile Number					
d. — CWM Profile Number					

GENERATOR

J. Additional Descriptions for Materials Listed Above
Work Order No. 880-727-044
RES P.O. No. 28-0631
Emergency Contact - (601) 226-4584

K. Handling Codes for Wastes Listed Above
a. D81 c.
b. d.

15. Special Handling Instructions and Additional Information
I certify that no absorbent had been added to the above waste which would prohibit it from being land filled. FERRCRA 3004(C-1) When handling wear eye protection and protective equipment such as impervious clothing and gloves.

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Printed/Typed Name	Signature	Month Day Year
J. D. Clayton	J. D. Clayton	07 27 88

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month Day Year
DANNY M. CURREN	Danny M. Curren	07 27 88

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month Day Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name	Signature	Month Day Year
[illegible]	[illegible]	[illegible]

EPA Form 8700-22 (Rev. 9-86) Previous edition is obsolete

GENERATOR No. 2 (Must Accompany Shipment)

Chemical Waste Management

HAZARDOUS WASTE MANIFEST

(As Required By The Alabama Department of Environmental Management)

Please print or type. *(Form designed for use on elite (12-pitch) typewriter.)*

Form Approved. OMB No. 2050-0039. Expires 9-3

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.: MSD 007027543 | Manifest Document No.: 00111

2. Page 1 of 1

Information in the shaded areas is not required by Federal law.

A. State Manifest Document Number: CWMA 414141

B. State Generator's ID

C. State Transporter's ID

D. Transporter's Phone

E. State Transporter's ID

F. Transporter's Phone

G. State Facility's ID: 219-[illegible]

H. Facility's Phone: 205/652-9721

3. Generator's Name and Mailing Address:
Koppers Company, Inc.
P. O. Box 160
Tie Plant, Ms. 38960

4. Generator's Phone (601) 226-4584

5. Transporter 1 Company Name: Dart Transportation

6. US EPA ID Number: OHD 098865825

7. Transporter 2 Company Name:

8. US EPA ID Number:

9. Designated Facility Name and Site Address:
CHEMICAL WASTE MANAGEMENT, INC.
Emelle Facility
Alabama Highway 17 at Mile Marker 163
Emelle, Alabama 35459

10. US EPA ID Number: ALD 000622464

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. RCRA Hazardous Waste, Solid N.O.S. (K-001) ORM-E NA 9189 CWM Profile Number RES-H-53976	001	DT	44130	P	
b. CWM Profile Number					
c. CWM Profile Number					
d. CWM Profile Number					

J. Additional Descriptions for Materials Listed Above
Work Order No. 880728049
RES P. O. No. 28-0631
Emergency Contact - (601) 226-4584

K. Handling Codes for Wastes Listed Above
a. D81
b.
c.
d.

15. Special Handling Instructions and Additional Information
I certify that no absorbent had been added to the above waste which would prohibit it from being land filled. PERRCRA 3004(C-1) When handling wear eye protection and protective equipment such as impervious clothing and gloves.

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Printed/Typed Name: J. D. Clayton | Signature: J. D. Clayton | Month Day Year: 07 28 88

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: Willis Hicks | Signature: Willis Hicks | Month Day Year: 07 28 88

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name: | Signature: | Month Day Year:

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name: B[illegible] | Signature: B[illegible] | Month Day Year: [illegible]

GENERATOR / TRANSPORTER / FACILITY

HAZARDOUS WASTE MANIFEST

(As Required By The Alabama Department of Environmental Management)

Please print or type. *(Form designed for use on elite (12-pitch) typewriter.)* 113 Form Approved. OMB No. 2050-0039. Expires 9-30-88

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.: MSD007102754 | Manifest Document No.: B00113
2. Page 1 of 1

Information in the shaded areas is not required by Federal law.

A. State Manifest Document Number: CWMA 414143

B. State Generator's ID

3. Generator's Name and Mailing Address:
Koppers Company, Inc.
P. O. Box 160
Tie Plant, Ms. 38960

4. Generator's Phone (601) 226-4584

5. Transporter 1 Company Name: Dart Transportation
6. US EPA ID Number: OHD009865825

C. State Transporter's ID

D. Transporter's Phone

7. Transporter 2 Company Name:
8. US EPA ID Number:

E. State Transporter's ID

F. Transporter's Phone

9. Designated Facility Name and Site Address:
CHEMICAL WASTE MANAGEMENT, INC.
Emelle Facility
Alabama Highway 17 at Mile Marker 163
Emelle, Alabama 35459

10. US EPA ID Number: ALD000622464

G. State Facility's ID: 219-0-11-020

H. Facility's Phone: 205/652-9721

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. RCRA Hazardous Waste, Solid N.O.S. (K-001) ORM-E NA 9189 — CWM Profile Number RES-H-53976	001	DT	49090	P	
b. CWM Profile Number					
c. CWM Profile Number					
d. CWM Profile Number					

J. Additional Descriptions for Materials Listed Above
Work Order No. 880728049
RES P. O. No. 28-0631
Emergency Contact - (601) 226-4584

K. Handling Codes for Wastes Listed Above
a. OM
b.
c.
d.

15. Special Handling Instructions and Additional Information
I certify that no adsorbent had been added to the above waste which would prohibit it from being land filled. PERRCRA 3004(C-1) When handling wear eye protection and protective equipment such as impervious clothing and gloves.

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

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Printed/Typed Name: J. D. Clayton | Signature: J. D. Clayton | Month Day Year: 07 28 88

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: Bobby Pratt | Signature: Bobby Pratt | Month Day Year: 07 28 88

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name: | Signature: | Month Day Year:

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name: B McKee | Signature: Bric M | Month Day Year:

HAZARDOUS WASTE MANIFEST

(As Required By The Alabama Department of Environmental Management)

Chemical Waste Management

Please print or type (Form designed for use on elite (12-pitch) typewriter.) 115 Form Approved. OMB No. 2050-0039. Expires 9-30-

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. MSD007027543 Manifest Document No. 00115
2. Page 1 of 1

Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
Kerr-McGee Chemical Corp.
P. O. Box 160
Tie Plant, Ms. 38960
4. Generator's Phone (601) 226-4584

A. State Manifest Document Number CWMA 414145
B. State Generator's ID

5. Transporter 1 Company Name: Dart Transportation
6. US EPA ID Number: OHD009865825
C. State Transporter's ID
D. Transporter's Phone

7. Transporter 2 Company Name
8. US EPA ID Number
E. State Transporter's ID
F. Transporter's Phone

9. Designated Facility Name and Site Address
CHEMICAL WASTE MANAGEMENT, INC.
Emelle Facility
Alabama Highway 17 at Mile Marker 163
Emelle, Alabama 35459
10. US EPA ID Number: ALD000622464
G. State Facility's ID: 213-938-2020
H. Facility's Phone: 205/652-9721

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. RCRA Hazardous Waste, Solid N.O.S. (K-001) ORM-E NA 9189 CWM Profile Number RES-H-53976	001	DT	47680	P	
b. CWM Profile Number					
c. CWM Profile Number					
d. CWM Profile Number					

J. Additional Descriptions for Materials Listed Above
Work Order No. 880728049
RES P. O. No. 28-0631
Emergency Contact - (601) 226-4584

K. Handling Codes for Wastes Listed Above
a. DJ
b.
c.
d.

15. Special Handling Instructions and Additional Information
I certify that no absorbent had been added to the above waste which would prohibit it from being land filled. FERRCRA 3004(C-1) When handling wear eye protection and protective equipment such as impervious clothing and gloves.

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment. OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name: J. D. Clayton
Signature: J. D. Clayton
Month Day Year: 07 28 88

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: Brady Pate
Signature: Brady Pate
Month Day Year: 07 28 88

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name
Signature
Month Day Year

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name
Signature
Month Day Year

EPA Form 8700-22 (Rev. 9-86) Previous edition is obsolete.

HAZARDOUS WASTE MANIFEST

(As Required By The Alabama Department of Environmental Management)

Please print or type. *(Form designed for use on elite (12-pitch) typewriter.)*

Form Approved. OMB No. 2050-0039. Expires 9-30-.

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.: MSD007027543 — Manifest Document No.: 00777
2. Page 1 of 1

Information in the shaded areas is not required by Federal law.

A. State Manifest Document Number: CWMA 414147

B. State Generator's ID

3. Generator's Name and Mailing Address
Koppers Company, Inc.
P. O. Box 160
Tie Plant, Ms. 38960

4. Generator's Phone (601) 226-4584

5. Transporter 1 Company Name: Dart Transportation
6. US EPA ID Number: OHD009865825

C. State Transporter's ID

D. Transporter's Phone

7. Transporter 2 Company Name
8. US EPA ID Number

E. State Transporter's ID

F. Transporter's Phone

9. Designated Facility Name and Site Address
CHEMICAL WASTE MANAGEMENT, INC.
Emelle Facility
Alabama Highway 17 at Mile Marker 163
Emelle, Alabama 35459

10. US EPA ID Number: ALD000622464

G. State Facility's ID: 219-328-7020

H. Facility's Phone: 205/652-9721

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. RCRA Hazardous Waste, Solid N.O.S. (K-001) ORM-E NA 9189 — CWM Profile Number RES-H-53976	001	DT	47270	P	
b. CWM Profile Number					
c. CWM Profile Number					
d. CWM Profile Number					

J. Additional Descriptions for Materials Listed Above
Work Order No. 880728049
RES P. O. No. 28-0631
Emergency Contact - (601) 226-4584

K. Handling Codes for Wastes Listed Above
a. D-81
b.
c.
d.

15. Special Handling Instructions and Additional Information
I certify that no absorbent had been added to the above waste which would prohibit it from being land filled. PERRCRA 3004(C-1) When handling wear eye protection and protective equipment such as impervious clothing and gloves.

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name: J. D. Clayton — Signature: J. D. Clayton — Month Day Year: 072888

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: Charles Michael — Signature: Charles Michael — Month Day Year: 072888

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name — Signature — Month Day Year

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name: Lester Burrell — Signature: Lester Burrell — Month Day Year: 072888

GENERATOR — TRANSPORTER — FACILITY

HAZARDOUS WASTE MANIFEST

(As Required By The Alabama Department of Environmental Management)

ease print or type. *(Form designed for use on elite (12-pitch) typewriter.)*

Form Approved. OMB No. 2050-0039. Expires 9-30-88

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.: MSD007027543 — Manifest Document No.: 00717
2. Page 1 of 1

Information in the shaded areas is not required by Federal law.

A. State Manifest Document Number: CWMA 414149

B. State Generator's ID

3. Generator's Name and Mailing Address: Koppers Company, Inc.
P. O. Box 160
Tie Plant, Ms. 38960

4. Generator's Phone (601) 226-4584

5. Transporter 1 Company Name: Dart Transportation
6. US EPA ID Number: OHD009865825

C. State Transporter's ID

D. Transporter's Phone

7. Transporter 2 Company Name
8. US EPA ID Number

E. State Transporter's ID

F. Transporter's Phone

9. Designated Facility Name and Site Address:
CHEMICAL WASTE MANAGEMENT, INC.
Emelle Facility
Alabama Highway 17 at Mile Marker 163
Emelle, Alabama 35459

10. US EPA ID Number: ALD000622464

G. State Facility's ID: 219-938-7820

H. Facility's Phone: 205/652-9721

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. RCRA Hazardous Waste, Solid N.O.S. (K-001) ORM-E NA 9189 CWM Profile Number RES-H-53976	001	DT	53860	P	
b. CWM Profile Number					
c. CWM Profile Number					
d. CWM Profile Number					

J. Additional Descriptions for Materials Listed Above

Work Order No. 88 0728049
RES P. O. No. 28-0631
Emergency Contact - (601) 226-4584

K. Handling Codes for Wastes Listed Above
a. D81
b.
c.
d.

15. Special Handling Instructions and Additional Information
I certify that no absorbent had been added to the above waste which would prohibit it from being land filled. PERRCRA 3004(C-1) When handling wear eye protection and protective equipment such as impervious clothing and gloves.

16 **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name: J. D. Clayton — Signature: J. D. Clayton — Month Day Year: 07 28 88

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: DANNY M. CORKREN — Signature: Danny M. Cork — Month Day Year: 07 28 88

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name — Signature — Month Day Year

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name: Bullock — Signature: Bullock — Month Day Year: 1 1 8 10 8 8

orm 8700-22 (Rev. 9-86) Previous edition is obsolete

OPERATOR CERTIFICATION OF CLOSURE

I, Matthew C. Plautz
(Authorized Representative)

of Beazer Materials and Services, Inc.
436 Seventh Avenue, Pittsburgh, PA 15219
(Name and Address of Facility)

hereby state and certify that, to the best of my knowledge and belief, the

Surface Impoundment System, EPA I.D. #MSD007027543
(Hazardous Waste Management Unit(s))

has been closed in accordance with the Facility's closure plan.

Signature: Matthew C. Plautz — Date: 1/8/90

PROGRAM MGR. – ENVIRONMENTAL SERVICES
Title

DCC #R415

PROFESSIONAL ENGINEER CERTIFICATION OF CLOSURE

I, Michael W. Bollinger, a Professional Engineer registered in the State of Mississippi, hereby certify, to the best of my knowledge and belief, that I have verified closure activities at:

Koppers Industries, Inc.
Grenada Plant
Tie Plant, MS

for the surface impoundment system, EPA I.D. #MSD007027543, owned by Koppers Industries, Inc. and operated by Beazer Materials and Services, Inc. and that closure of the aforementioned facility has been performed in accordance with the facility's closure plan and as noted herein.

Michael W Bollinger	January 3, 1990
Signature	Date
Temporary Permit No. 8907	Mississippi
Professional Engineer License No.	for State of

Keystone Environmental Resources, Inc. 3000 Tech Center Drive

Business Address

Monroeville, Pennsylvania 15146

City/State/Zip Code

(412) 825-9600

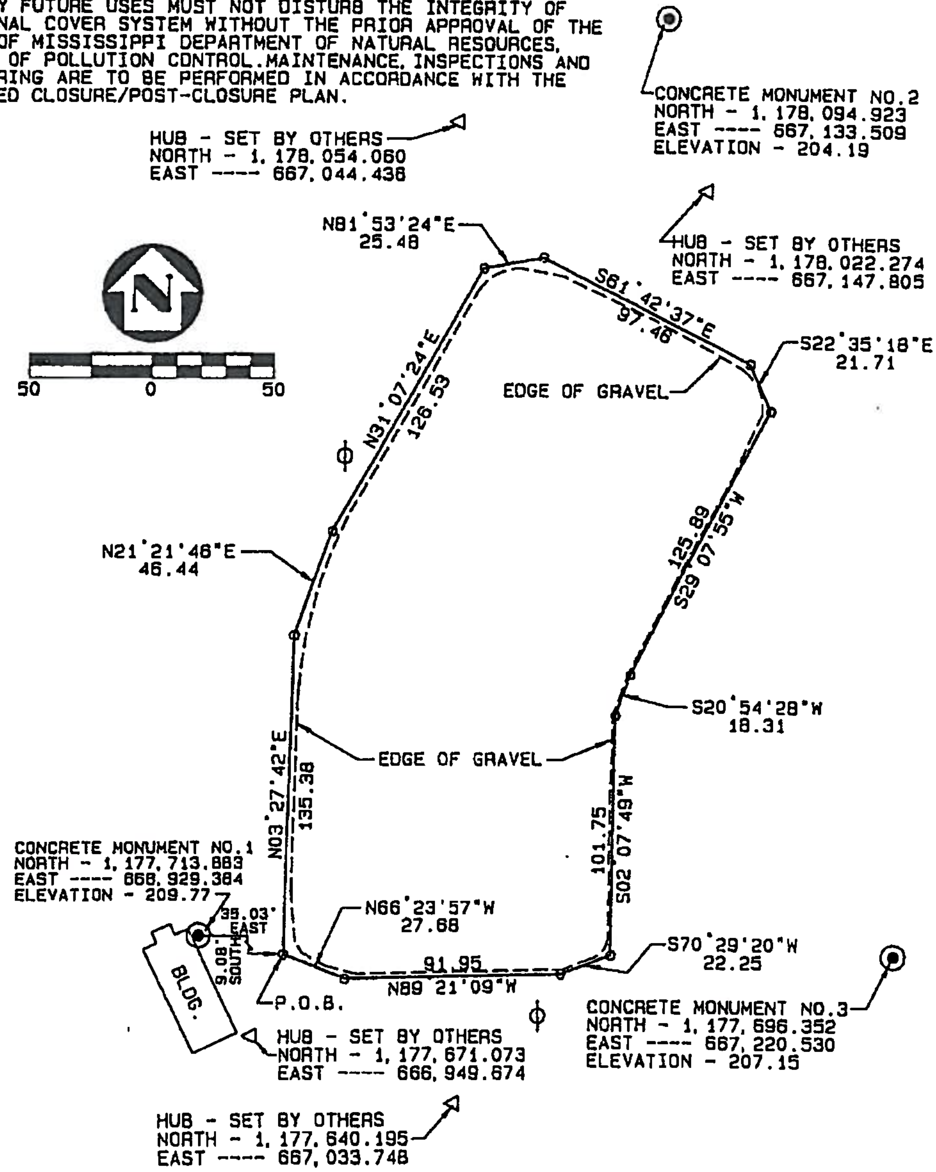
Business Telephone (With Area Code)

DCC #R415

APPENDIX J

SURVEY PLAT

NOTE:
THE AREA DESCRIBED HEREON PREVIOUSLY CONTAINED A WASTE MANAGEMENT UNIT DESIGNATED U.S.EPA IDENTIFICATION NUMBER MSD 007027543. THE USE OF THE DESCRIBED AREA IS RESTRICTED AND ANY FUTURE USES MUST NOT DISTURB THE INTEGRITY OF THE FINAL COVER SYSTEM WITHOUT THE PRIOR APPROVAL OF THE STATE OF MISSISSIPPI DEPARTMENT OF NATURAL RESOURCES, BUREAU OF POLLUTION CONTROL. MAINTENANCE, INSPECTIONS AND MONITORING ARE TO BE PERFORMED IN ACCORDANCE WITH THE APPROVED CLOSURE/POST-CLOSURE PLAN.



-- DESCRIPTION --

A PART OR PARCEL OF SECTION 28, TOWNSHIP 22 NORTH, RANGE 5 EAST, GRENADA COUNTY, MISSISSIPPI AND BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEGINNING AT A POINT THAT IS 9.08 FEET SOUTH AND 35.03 FEET EAST OF CONCRETE MONUMENT NO.1 THENCE RUN NORTH 03°27'42"EAST FOR 135.38 FEET TO A POINT; THENCE RUN NORTH 21°21'46"EAST FOR 46.44 FEET TO A POINT; THENCE RUN NORTH 31°07'24"EAST FOR 126.53 FEET TO A POINT; THENCE RUN NORTH 81°53'24"EAST FOR 25.48 FEET TO A POINT; THENCE RUN SOUTH 61°42'37" EAST FOR 97.46 FEET TO A POINT; THENCE RUN SOUTH 22°35'18"EAST FOR 21.71 FEET TO A POINT; THENCE RUN SOUTH 29°07'55"WEST FOR 125.89 FEET TO A POINT; THENCE RUN SOUTH 20°54'28"WEST FOR 18.31 FEET TO A POINT; THENCE RUN SOUTH 02°07'49"WEST FOR 101.75 FEET TO A POINT; THENCE RUN SOUTH 70°29'20" WEST FOR 22.25 FEET TO A POINT; THENCE RUN NORTH 89°21'09"WEST FOR 91.95 FEET TO A POINT; THENCE RUN NORTH 66°23'57"WEST FOR 27.68 FEET TO THE POINT OF BEGINNING OF HEREIN DESCRIBED PARCEL OF LAND CONTAINING 40,729.681 SQ.FT. OR 0.935 ACRES MORE OR LESS.

I, JACK T. WILLIS, SR., HEREBY CERTIFY THAT I HAVE MADE A SURVEY OF THE LANDS DESCRIBED HEREINABOVE AND THAT THE PLAT AND DESCRIPTION OF SAID LANDS ARE TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.

WITNESS MY SIGNATURE, THE 9 DAY OF February 19 90.

REGISTERED PROFESSIONAL ENGINEER NO. 4028
REGISTERED LAND SURVEYOR NO. 2344
MISSISSIPPI

APPENDIX K

FINANCIAL ASSURANCE MECHANISM FOR POST-CLOSURE

Bank of America

DATE: FEBRUARY 28, 2005

IRREVOCABLE STANDBY LETTER OF CREDIT NUMBER: 3073530

BENEFICIARY
EXECUTIVE DIRECTOR
MISSISSIPPI DEPARTMENT OF
ENVIRONMENTAL QUALITY
2380 HIGHWAY 80 WEST

JACKSON, MS 39204

APPLICANT
BEAZER EAST, INC.
ONE OXFORD CENTRE, SUITE 3000
PITTSBURGH, PA 15219

AMOUNT
USD 732,774.00
SEVEN HUNDRED THIRTY TWO THOUSAND
SEVEN HUNDRED SEVENTY FOUR AND
00/100'S US DOLLARS

EXPIRATION
DECEMBER 31, 2005 AT OUR COUNTERS

DEAR SIR OR MADAM:

WE HEREBY ESTABLISH OUR IRREVOCABLE STANDBY LETTER OF CREDIT NO. 3073530 IN YOUR FAVOR, AT THE REQUEST AND FOR THE ACCOUNT OF BEAZER EAST, INC., ONE OXFORD CENTRE, SUITE 3000, PITTSBURGH, PA 15219, UP TO THE AGGREGATE AMOUNT OF U.S. DOLLARS SEVEN HUNDRED THIRTY TWO THOUSAND SEVEN HUNDRED SEVENTY FOUR ONLY (U.S.$ 732,774.00), AVAILABLE UPON PRESENTATION OF:

(1) YOUR SIGHT DRAFT, BEARING REFERENCE TO THIS LETTER OF CREDIT NO. 3073530, AND

(2) YOUR SIGNED STATEMENT READING AS FOLLOWS: "I CERTIFY THAT THE AMOUNT OF THE DRAFT IS PAYABLE PURSUANT TO REGULATIONS ISSUED UNDER AUTHORITY OF THE RESOURCE CONSERVATION AND RECOVERY ACT OF 1976 AS AMENDED."

THIS LETTER OF CREDIT IS EFFECTIVE AS OF FEBRUARY 28, 2005 AND SHALL EXPIRE ON DECEMBER 31, 2005, BUT SUCH EXPIRATION DATE SHALL BE AUTOMATICALLY EXTENDED FOR A PERIOD OF ONE YEAR ON DECEMBER 31, 2005 AND ON EACH SUCCESSIVE EXPIRATION DATE, UNLESS, AT LEAST 120 DAYS BEFORE THE CURRENT EXPIRATION DATE, WE NOTIFY BOTH YOU AND BEAZER EAST, INC. BY CERTIFIED MAIL THAT WE HAVE DECIDED NOT TO EXTEND THIS LETTER OF CREDIT BEYOND THE CURRENT EXPIRATION DATE. IN THE EVENT YOU

ORIGINAL

Bank of America

THIS IS AN INTEGRAL PART OF LETTER OF CREDIT NUMBER: 3073530

ARE SO NOTIFIED, ANY UNUSED PORTION OF THE CREDIT SHALL BE AVAILABLE UPON PRESENTATION OF YOUR SIGHT DRAFT FOR 120 DAYS AFTER THE DATE OF RECEIPT BY BOTH YOU AND BEAZER EAST, INC., AS SHOWN ON THE SIGNED RETURN RECEIPTS.

WHENEVER THIS LETTER OF CREDIT IS DRAWN ON UNDER AND IN COMPLIANCE WITH THE TERMS OF THIS CREDIT, WE SHALL DULY HONOR SUCH DRAFT UPON PRESENTATION TO US, AND WE SHALL DEPOSIT THE AMOUNT OF THE DRAFT DIRECTLY INTO THE STANDBY TRUST FUND OF BEAZER EAST, INC. IN ACCORDANCE WITH YOUR INSTRUCTIONS.

WE CERTIFY THAT THE WORDING OF THIS LETTER OF CREDIT IS IDENTICAL TO THE WORDING SPECIFIED IN 40 CFR 264.151(D) AS SUCH REGULATIONS WERE CONSTITUTED ON THE DATE SHOWN IMMEDIATELY BELOW.

BANK OF AMERICA, N.A.

STELLA ROSALES

ASSISTANT VICE PRESIDENT

DATE: FEBRUARY 28, 2005

THIS CREDIT IS SUBJECT TO THE UNIFORM CUSTOMS AND PRACTICE FOR DOCUMENTARY CREDITS (1993 REVISION), INTERNATIONAL CHAMBER OF COMMERCE PUBLICATION NO. 500.

ORIGINAL