GRENADA COUNTY - TIE PLANT MS
KOPPERS INC
COMPLIANCE
MSD007027543
CLOSURE PLAN
SURFACE IMPOUNDMENT AI 00876

Koppers Inc

General Information

ID	Branch	SIC	County	Basin	Start	End
876	Energy and Transportation	2491	Grenada	Yazoo River	11/09/1981	

Address

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

Telecommunications

Type	Address or Phone
Work phone number	(662) 226-4584, Ext. 11

Alternate / Historic AI Identifiers

Alt ID	Alt Name	Alt Type	Start Date	End Date
2804300012	Koppers Inc	Air-AIRS AFS	10/12/2000	
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
MSR220005	Koppers Industries, Inc.	GP-Wood Treating	09/25/1992	
MSD007027543	Koppers Industries, Inc.	Hazardous Waste-EPA ID	08/27/1999	
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
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

Regulatory Programs

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	Baseline Stormwater	01/01/1900	
Water	PT CIU	11/14/1995	
Water	PT CIU - Timber Products Processing (Subpart 429)	11/14/1995	
Water	PT SIU	11/14/1995	

Locational Data

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:	SWIMS TerraServer Map It

4/3/2007 11:08:47 AM

Mississippi Department of Environmental Quality
Office of Pollution Control

I-sys 2000 Master Site Detail Report

Site Name: Koppers Industries Inc

PHYSICAL ADDRESS		OTHER INFORMATION	
LINE 1:	Tie Plant Road	MASTER ID:	000876
LINE 2:		COUNTY:	Grenada
LINE 3:		REGION	NRO
MUNICIPALITY:	Tie Plant	SIC 1:	2491
STATE CODE:	MS	AIR TYPE:	TITLE V
ZIP CODE:	38960-	HW TYPE:	TSD
MAILING ADDRESS		SOLID TYPE:	
LINE 1:	PO Box 160	WATER TYPE:	INDUSTRIAL
LINE 2:		BRANCH:	Energy
LINE 3:		ECED CONTACT:	
MUNICIPALITY:	Tie Plant	Collier, Melissa	
STATE CODE:	MS	BASIN:	
ZIP CODE:	38960-		

AIR PROGRAMS ☑ SIP ☐ PSD ☐ NSPS ☐ NESHAPS ☐ MACT

Mississippi Department of Environmental Quality
Office of Pollution Control

Pemits

PROGRAM	PERMIT TYPE	PERMIT #	MDEQ PERMIT CONTACT	ACTIVE
AIR	TITLE V	096000012	Burchfield, David	YES
WATER	PRE-TREATMENT	MSP090300	Collins, Bryan	YES
HAZ. WASTE	TSD	HW8854301		YES
HAZ. WASTE	EPA ID	MSD007027543		YES
HAZ. WASTE	TSD	HW8854301	Stover, Wayne	YES

Compliance Actions

MEDIA	ACTIVITY TYPE	SCHEDULED	COMPLETED	INSPECTED B
HAZ WASTE	Financial Record Review	1/18/00	1/18/00	Twitty, Russ
WATER	CMI - PRETREATMENT			Whittington, Darryail
WATER	CEI - PRETREATMENT	9/30/00		Twitty, Russ
WATER	CEI - NA	9/30/00		Twitty, Russ
HAZ WASTE	Compliance Evaluation Inspection	9/30/00		Twitty, Russ
AIR	State Compliance Inspection	9/30/00		Twitty, Russ
WATER	CEI - NA	3/2/99	3/2/99	Twitty, Russ
HAZ WASTE	Compliance Evaluation Inspection	3/2/99	3/2/99	Twitty, Russ
AIR	State Compliance Inspection	3/2/99	3/2/99	Twitty, Russ

CONSTRUCTION SPECIFICATIONS
FOR
SURFACE IMPOUNDMENT CLOSURE
KOPPERS INDUSTRIES, INC.
GRENADA, MS PLANT

Prepared for:

BEAZER MATERIALS AND SERVICES, INC.
PITTSBURGH, PENNSYLVANIA

Prepared by:

KEYSTONE ENVIRONMENTAL RESOURCES, INC.
440 COLLEGE PARK DRIVE
MONROEVILLE, PA 15146

PROJECT NO. 176975

APRIL 1989

DCC #18

TABLE OF CONTENTS

			Page
1.0	SCOPE OF PROJECT		1-1
	1.1	Definitions	1-1
	1.2	Scope of Work	1-2
	1.3	Location of Work	1-4
2.0	DRAWINGS AND SPECIFICATIONS		2-1
	2.1	Contract Documents	2-1
	2.2	Design Drawings	2-1
	2.3	Reference Documents	2-1
3.0	DETAILED DESCRIPTION		3-1
4.0	SPECIAL CONDITIONS		4-1
	4.1	Execution, Correlation, and Intent of Documents	4-1
	4.2	Coordination and Interpretation	4-1
	4.3	Construction Plan	4-1
	4.4	Conditions Affecting the Work	4-2
	4.5	Care of Owner's Property	4-2
	4.6	Erosion and Sediment Control	4-2
	4.7	Layout of Work	4-3
	4.8	Quantity Surveys	4-4
	4.9	Protection of Monitoring Wells	4-4
	4.10	Site Cleanup	4-4
	4.11	Special Provisions	4-5
	4.12	Soils and Compaction Tests During Construction	4-5
	4.13	Detail Drawings and Instructions	4-6
	4.14	Inspection of Work	4-6
	4.15	Contractor's As-Built Drawings	4-7
	4.16	Health and Safety Requirements	4-7
	4.17	Identification of QA/QC Requirements	4-8
	4.18	Schedule	4-8
	4.19	Site Access and Staging Areas	4-8
	4.20	Protection of Site Facilities	4-8
	4.21	Site Restoration	4-9
	4.22	Insurance Requirements	4-9
	4.23	Protection from Liens	4-9
	4.24	Safety	4-9
	4.25	Licenses and Permits	4-10
	4.26	Materials	4-10
5.0	TECHNICAL SPECIFICATIONS		5-1
	5.1	Site Preparation	5-1
	5.2	Excavation	5-2
	5.3	Unclassified Soil Fill	5-4
	5.4	Compacted Clay Cap	5-6
	5.5	Geotextile	5-8
	5.6	Conducting Zone	5-9
	5.7	Coversoil	5-10
	5.8	Topsoil	5-11
	5.9	Vegetation	5-12
6.0	BASIS OF PAYMENT		6-1

1.0 SCOPE OF PROJECT

1.1 Definitions

a) **Addenda**

"Addenda" are written or graphic instruments issued prior to the receipt of the bids which modify or interpret the Bidding Documents by additions, deletions, clarifications or corrections.

b) **Bidder**

The word "Bidder" refers to the party or parties or company offering to accomplish the work called for in this specification.

c) **Bidding Documents**

The term "Bidding Documents" includes the Notice to Bidders, Instruction to Bidders, Proposal Form, Contract Agreement Forms, Contract General Terms and Conditions, and the Drawings and Specifications, including any Addenda issued prior to the receipt of the bids.

d) **Company or Owner**

The terms "Company" or "Owner" refer to Koppers Industries, Inc.

e) **Contract**

The word "Contract" shall be understood to refer to either a purchase order placed by the Operator and accepted by the Contractor, together with all the Bidding Documents and all other documents referred to in such purchase order, or a formal contract executed by the Operator and the Contractor together with all the Bidding Documents and all other such documents referred to in such formal contract.

f) **Contractor**

The word "Contractor" refers to the party or parties or company contracting with Beazer Materials & Services, Inc. to accomplish the work called for by this specification.

g) **Design Engineer and/or Engineer**

The words "Design Engineer" and "Engineer" refer to the party or parties designated by the Operator to prepare and maintain acceptable design documentation, and to evaluate the quality and quantity of the performed work for compliance with the design documents and/or conformance with the intent of the design.

h) **Operator**

The term "Operator" refers to Beazer Materials & Services, Inc.

i) **Subcontractor**

The word "Subcontractor" refers to the party or parties or company contracting directly with the Contractor and not Beazer Materials & Services, Inc. to furnish the Contractor with any portion of the work called for by this specification.

j) **Work Change Orders**

"Work Change Orders" are written or graphic instruments issued by the Operator after the awarding of the Contract requiring changes or amendments to the work.

1.2 Scope of Work

The work consists of closure of the Operator's surface impoundments at the Owner's Grenada Plant Grenada, Mississippi. The closure includes backfill of the impoundments, construction of a compacted clay cap, installation of a free draining conducting zone, placement of coversoil, placement of topsoil, construction of diversion channels and vegetation of all constructed and disturbed areas.

a) **Scope**

The work consists of furnishing all plant, equipment, materials, labor and supervision, and performing all tasks required for the completion of the surface impoundment cap construction as shown on, or required by,the drawing and/or as specified herein. This shall include all site preparation clearing and grubbing; excavations; fills; obtaining and hauling borrow materials; unclassified fill placement and compaction; clay cap placement and compaction; geotextile procurement and installation; drainage layer construction; coversoil and topsoil placement and compaction; diversion ditch construction; seed bed preparation; seeding,fertilizing and mulching; disposal of project related construction waste materials; site clean up; and all other items required for a complete job.

b) **Diligence**

It shall be the responsibility of the Contractor to safely perform the work in accordance with applicable Owner's and Operator's specifications and, in this regard, the Contractor shall observe the existing features, structures and facilities during his visit to the site and particularly take note of any potential interferences between the construction and the Owner's on going operations. The Contractor shall be responsible for proper sequence and coordination between the various items and areas of work to eliminate possible interferences and assure that the work is accomplished timely, properly, and in a efficient manner.

c) **Completeness**

The work includes all things necessary and incidental to completing all aspects of the work specified herein and/or required by the drawings. The Contractor shall be responsible for the performance of all work described irrespective of the methods and descriptions of the work as express in this specification.

1.3 <u>Location of Work</u>

The work is located at the surface impoundments at the Grenada Plant of Koppers Industries, Inc. in Grenada, Mississippi.

2.0 DRAWINGS AND SPECIFICATIONS

2.1 Contract Documents

The Contract Documents shall be comprised of the General and Special Conditions. Drawings and Health and Safety Plan and documents incorporated by reference. All work conducted under the contract Documents shall conform to the requirements of the Contract Documents and shall fully implement those requirements.

2.2 Design Drawings

The plans and drawings provided by the Operator for use by the Contractor in performing the work are listed below. The drawings do not necessarily show every detail of the required work. It shall be the Contractor's responsibility, prior to bidding, to determine the requirements of a complete job.

The following design drawings show the general, specific, and typical notes, views, and details of the closure construction. These drawings are provided by the Operator to show the extent of the work to be performed and are part of these specifications.

Drawing No.	Drawing Title	Revision/Date
A103986	Surface Impoundment Cap	5/24/88
A103987	Cross Sections and Details	5/24/88

2.3 Reference Documents

The following documents are for reference only, and are provided by the Operator for the sole purpose of affording the Contractor such background information as may be available concerning the intent of the closure construction and regulatory requirements associated therewith.

a) CLOSURE AND POST-CLOSURE PLANS
FOR THE KOPPERS COMPANY, INC.
HAZARDOUS WASTE MANAGEMENT FACILITY
GRENADA, MISSISSIPPI
SURFACE IMPOUNDMENT
April 14, 1987

3.0 DETAILED DESCRIPTION

The Contractor shall comply with the General Conditions and any additional conditions specified by Beazer materials and Services, Inc. and/or as amended and agreed to by both parties.

The Contractor shall quote his bid price for each unit of work as presented on the Bid Summary. Payment will be made for actual quantities of work performed by the Contractor and accepted by the Owner. Payment will be based upon the accepted quantity of work and the unit cost bid for each item.

4.0 SPECIAL CONDITIONS

4.1 Execution, Correlation, and Intent of Documents

The contract documents are complementary and what is called for by any one shall be as binding as if called for by all. The intention of the documents is to include all labor, materials, equipment, supervision, and transportation necessary for the proper execution of the work. Materials or work described in words which so applied have a well-known technical or trade meaning shall be held to refer to such recognized standards.

4.2 Coordination and Interpretation

Use of the drawings and specifications shall be coordinated so as to accomplish the intent of the design. Any conflict between the drawings and specifications noticed by the Contractor shall be brought to the attention of the Design Engineer immediately, and any apparent or actual conflict between the drawings and specifications shall be resolved, in a manner consistent with the intent of the design, by the Design Engineer whose decision shall be final.

4.3 Construction Plan

The Contractor shall prepare a written step-by-step plan and schedule for performing the work and shall submit his plan and schedule to the Operator and Engineer. The plan shall include anticipated manpower deployment, equipment, and equipment utilization and sequence of operations. The Contractor shall obtain the Operator's and Engineer's approval of his plan and schedule before the work is started. However, such approval shall not preclude the Engineer from directing subsequent changes in the sequence of operations to properly complete the work consistent with the drawings and specifications. The Contractor shall keep the Operator and Engineer advised of any changes to his plan and/or schedule as the work progresses.

4.4 Conditions Affecting the Work

The Contractor shall visit the site and take such other steps as may be reasonably necessary to ascertain the nature and location of the work, and the general and local conditions which can affect the work or the cost thereof. Failure to do so will not relieve the Contractor from the responsibility for properly estimating the difficulty or cost of successfully performing the work. The Operator will assume no responsibility for any understanding or representations concerning conditions made by its officers or agents prior to the execution of the contract, unless included in writing in the invitations to bids, the specifications, or related documents.

4.5 Care of Owner's Property

The Contractor shall take all necessary precautions to protect and preserve property adjacent to the project and shall be responsible for damage thereto. Special care shall be exercised by the Contractor to avoid any interference or damage to all operating utilities and plant facilities. Where there is any possibility of interference or damage, the Contractor shall make satisfactory arrangements with the Owner and/or Operator covering the necessary precautions to be used during the performance of the work by the Contractor. These arrangements shall be made before said work is started. Approval by the Owner and/or Operator shall not be consider as releasing the Contractor from any responsibility for the acts of himself or his employees or representatives. The Contractor shall make good any damage to the Owner's property and shall promptly make restitution for, or proceed to repair or otherwise restore such damage or injury to property as may be deemed necessary by the Owner and/or Operator.

4.6 Erosion and Sediment Control

Prior to commencing any work, the Contractor shall prepare a complete Erosion and Sediment Control Plan. The plan shall conform to the requirements of all applicable Federal, State and local regulations and the contractor shall obtain all necessary permits and approvals prior to commencing the work.

4.7 Layout of Work

a) **Operator's Obligation**

The Operator will establish bench marks and horizontal control points at the site.

b) **Contractor's Obligation**

From the bench marks and control points established by the Operator, the Contractor shall complete the layout of the work and shall be responsible for all measurements that may be required for the execution of the work to the locations and limits prescribed in the specifications or on the drawings, subject to such modifications as the Engineer may require to meet changed conditions or as a result of modifications to the contract work.

The Contractor shall furnish, at his own expense, such stakes, templates, platforms, equipment, tools, and material, and all labor as may be required in laying out any part of the work from the bench marks and control points established by the Operator. It shall be the responsibility of the Contractor to maintain and preserve all stakes and other marks established by the Operator or the Engineer until authorized to remove them. If such marks are destroyed, either by the Contractor or through his negligence, prior to their authorized removal, they may be replaced by the Operator or Engineer at his discretion, and the expense of the replacement will be deducted from any amounts due or to become due the Contractor.

c) **Engineer's Prerogative**

The Engineer may require that work be suspended at any time where location and limit marks established by the Contractor are not reasonably adequate to permit checking of the work.

4.8 Quantity Surveys

a) **Operator's Surveys**
The Operator may make original and/or final surveys and/or make computations to determine the quantities of work performed or finally in place.

b) **Contractor's Surveys**
The Contractor shall make such surveys and computations as are necessary to determine the quantities of work performed or placed during each period for which a progress payment is to be made. All original field notes, computations, and other records taken by the Contractor for the purpose of quantity surveys shall be furnished to the Engineer and shall be used to the extent necessary in determining the proper amount of payment due the Contractor. Unless waived in each specific case, quantity surveys made by the Contractor shall be made under the direction of the Engineer.

4.9 Protection of Monitoring Wells

The Contractor shall at all times during his construction operations protect the existing monitoring wells in the vicinity of the work. Several monitoring wells (R-3, R-6, and R-7) are located in areas where interferences with construction activities are likely. These wells must be preserved for long term monitoring of the closed surface impoundments. The Contractor shall include provisions for protection of these wells in his construction plan. Any damage to the wells shall be promptly repaired or if in the opinion of the Engineer the damage cannot be adequately repaired, the well(s) shall be replaced by the Contractor at no expense to the Owner or Operator. Replaced wells shall be constructed to the specification of the Engineer.

4.10 Site Cleanup

All work areas and/or areas disturbed during the course of the work shall be thoroughly cleaned of all refuse, debris, waste, or other unsightly materials or conditions. In general, the site shall be in a clean, orderly condition before final approval of the work is given.

4.11 Special Provisions

a) **Drawings**

The drawings to be used in conjunction with these specifications for the performance of the work are listed in Section 2.1 of these specifications.

b) **Materials Needed**

Any items necessary for the completion of the work which may not be actually indicated on the drawings but which are obviously necessary and usually employed in common practice shall be supplied as a part of the work.

c) **Discrepancies**

Discrepancies between the drawings and field conditions shall be reported immediately to the Engineer.

d) **Precedence**

Figured dimensions must take precedence in all cases over the scale measurements of drawings. Where obvious discrepancies exist, they shall be reported immediately to the Engineer.

4.12 Soils and Compaction Tests During Construction

The Contractor is herein informed that certain soils and/or compaction tests will be performed by the Engineer during construction. There is no intention to delay work under this Contract to perform such tests, but in the event that conditions indicate that the results of such tests are imperative before continuing with the work, it shall be temporarily suspended, at no extra cost to the Operator.

4.13 Detail Drawings and Instructions

a) **Basis of Contract**

The design drawings and the specifications, together with any modifications of either or both which are issued to prospective bidders during the advertising period, shall become the basis of the Contract and have equal force.

b) **Completeness of Work**

It is understood and agreed by the Contractor, that the work herein described is intended to be complete in every detail. The Contractor shall be held to provide all labor and materials necessary for the completion of the entire work described in the Contract Documents and reasonably implied therefrom.

4.14 Inspection of Work

a) **Accommodation**

The Engineer and Operator's authorized inspectors shall at all times have access to the work whenever it is in preparation or progress, and the Contractor shall provide proper facilities for access and for inspection.

b) **Due Notice by Contractor**

If the Contract Documents or the Engineer's instructions require any work to be inspected, tested or approved, the Contractor shall give the Engineer timely notice of its readiness for same. Inspection by the Engineer shall be promptly made.

If any work shall be covered up without acceptance or consent of the Engineer, it must, if required by the Engineer, be uncovered for examination at the Contractor's expense.

c) **Re-examination of Work**

Re-examination of work may be ordered by the Engineer and if so ordered, the work must be uncovered by the Contractor. If such work is found to be in accordance with the Contract Documents, the Operator shall pay the cost of re-examination and replacement. If such work is found not to be in accordance with the Contract Documents, the Contractor shall pay such cost.

4.15 Contractor's As-Built Drawings

a) **Content and Presentation**

The Contractor shall keep an accurate record of all deviations from Contract Drawings and specifications. He shall neatly and correctly record any deviations on the drawings affected and shall keep the drawings available for inspection. An extra set of drawings will be furnished for this purpose.

b) **Certification**

At the completion of the job and before final approval, the Contractor shall make any final corrections to the drawings and certify to the accuracy of each print by signature thereon and deliver same to the Engineer.

4.16 Health and Safety Requirements

The construction shall be accomplished in compliance with the project Health and Safety Plan. The Health and Safety Plan is presented as an attachment to these specifications.

All construction personnel shall have received appropriate training as required by Federal, State, and local regulations. Certificates of health and safety training and physical exams by a medical doctor are required for all on-site workers.

4.17 Identification of QA/QC Requirements

The construction will be monitored by inspections and material testing under the direction of the Certifying Engineer in accordance with the approved closure plan. Acceptance of some portions of the work will be contingent upon satisfactory laboratory test results that will require some additional time. The Contractor shall plan his operations to accommodate the testing and approval procedures. All phases of construction will be documented to ensure that the intent of the design and approved closure plan are fulfilled.

4.18 Schedule

The construction work should be accomplished within 5 weeks. The Contractor shall furnish a detailed work schedule for the review and approval of the Certifying Engineer.

Once approved, the Contractor shall perform the work continuously and diligently to complete the work in accordance with the schedule and as quickly as practical. Site work will be performed between the hours of 7:00 a.m. and 5:00 p.m., or as mutually agreed to by the Owner and Contractor.

4.19 Site Access and Staging Areas

The Contractor will identify the required dimensions of the staging area and relative location with respect to the work. The Owner will arrange for access to the work area and an on-site staging area for the Contractor's equipment, and materials.

Once arranged, the Contractor will limit ingress and egress to or from the work area through the plant along the specified route. In addition, the storage of supplies equipment, and materials will be limited to the arranged staging and project areas.

4.20 Protection of Site Facilities

The Contractor will avoid damage to existing site facilities that are not to be altere under this contract. This shall include buildings, structures, poles, fences, above an below ground utilities, site roadways and materials stored on-site. Any damage t same, shall be repaired by the Owner of the damaged facility. The cost for repairs will be deducted from payments to the Contractor for the completed work.

4.21 Site Restoration

Areas disturbed by the Contractor beyond the actual limits of the construction, shall be restored to near their original condition by the Contractor. The Contractor will perform the work in a manner that minimizes the disturbance to plant areas beyond the areas required for construction. Separate payment for restoration will not be made, such costs shall be included in the prices bid for the work as specified on the Bid Sheet.

4.22 Insurance Requirements

The Contractor shall furnish insurance certificates with his bid which fulfills the requirements of the Owner's "General Conditions."

4.23 Protection from Liens

The Contractor bears full responsibility for the payment of services, materials, supplies, labor, and subcontractor work to complete the Scope of Work. The Contractor shall not assign any liabilities and will protect the Owner from any such liability and/or liens for same.

4.24 Safety

The Contractor shall be responsible for the condition of the project for all authorized on-site workers. In addition, the Contractor is responsible for the safety of his workers and the employment of safe procedures for the accomplishment of the work. This Contractor bears full responsibility for the safety of the work site in compliance with applicable codes, practices, and to fulfill all conditions that might arise.

4.25 Licenses and Permits

The Contractor must be licensed to perform the work at the plant location and to complete the work required by this contract. The Contractor is responsible for obtaining all licenses and/or required permits to accomplish this construction. The Contractor shall comply with all applicable ordinances, codes, regulations, and permit requirements to perform this work. Copies of all required permits shall be maintained on the construction site and as required by the applicable laws, ordinances, codes and/or regulations.

4.26 Materials

The Contractor is required to provide materials that fulfill the requirements stated in these Specifications. Certificates of tests by independent qualified laboratories shall be provided by the Contractor for the proposed materials. In addition, samples of the materials must be furnished to the Certifying Engineer for independent laboratory testing. If the Certifying Engineer determines that the materials do not fulfill the specifications, the Contractor is responsible for obtaining acceptable materials from an alternate source for testing and evaluation. All materials delivered to the site will be from sources approved by the Certifying Engineer for the respective material.

5.0 TECHNICAL SPECIFICATIONS

5.1 Site Preparation

a) **Scope**

The work covered by this section consists of furnishing all plant, equipment, labor, and supervision and performing all operations in connection with clearing the work areas, subgrade preparation, removal of underground piping and site grading as shown on, or required by, the drawings, as specified herein, and/or as directed by the Engineer.

b) **Clearing**

The Contractor shall clear the areas to be occupied by the required excavations and fills and strips 10 feet wide beyond and contiguous to the limits of the excavations and fills. Clearing shall consist of the removal and disposition of all brush and other growth and objects on the ground surface.

c) **Subgrade Preparation**

The Contractor shall prepare the surface impoundment subgrade by proof-rolling the entire surface area with a rubber-tired roller, sheepsfoot roller or other suitable rubber-tired construction equipment. Prior to proof-rolling the subgrade, all standing water shall be removed from the surface impoundment and shall be disposed of as directed by the Engineer. Any soft, saturated or otherwise unstable or unsuitable soils shall reworked, i.e. disked and dried, to the extent required to achieve a stable subbase, as determined by the Engineer. If disking and drying of the subgrade soils fails to achieve an acceptably competent subbase for proof-rolling and subsequent placement and compaction of fill, dry materials, e.g. flyash, kiln dust, or dry soil, may be mixed with the subgrade soils as approved and directed by the Engineer. Only uncontaminated inert materials shall be used to condition the subgrade soils. If man-made materials, e.g. flyash or kiln dust, are proposed for use to condition the subgrade soils, the Contractor shall provide certification from the supplier that the proposed material(s) are inert and non-hazardous. All subgrade conditioning activities shall be performed within the limits of the surface impoundments.

d) **Removal of Underground Piping**

The Contractor shall remove all underground piping within, and ten (10) feet beyond, the limits of the surface impoundment cap. The Contractor shall then seal the ends of the remaining pipe with cement grout for a distance of at least ten (10) feet.

e) **Grading**

The Contractor shall grade the ground surface of all areas disturbed by the Contractor's activities. The extent of grading of the surface of the areas disturbed shall be sufficient to establish reasonably smooth contours and control storm runoff.

5.2 Excavation

a) **Scope**

The work covered by this section consists of furnishing all plant, equipment, labor and supervision, and performing all operations connected with the making of excavations as shown on, or required by, the drawings, as specified herein, and/or as directed by the Engineer.

b) **General Requirements**

All excavation shall be performed to the lines, grades and dimensions shown on the drawings or established by the Engineer. During the progress of the work, as materials and conditions become exposed in the excavations, the Engineer may direct that slopes or dimensions of the excavation be varied to properly accomplish the intent of the design. All necessary precautions shall be taken to preserve the material below and beyond the lines of all excavation in the soundest possible condition. Any damage to the work due to the Contractor's operations shall be repaired at the expense of, and by, the Contractor. Any and all excess excavation for the convenience of the Contractor or overexcavation performed by the Contractor for any purpose or reason, except as may be ordered in writing by the Engineer, and whether or not due to the fault of the Contractor, shall be at the expense of the Contractor. Where required to complete the work, all such excess excavation and overexcavation shall be refilled with materials furnished and placed at the expense of and by the Contractor in a manner satisfactory to the Engineer.

c) <u>Grade Lines</u>

The grade lines and contours shown on the drawings represent the finished surfaces. Slopes shall be neatly trimmed to the line and rate of slope indicated on the drawings and/or in sections or as established by the Engineer.

d) <u>Use and Disposal of Excavated Materials</u>

So far as practicable, as determined by the Engineer, all suitable materials from excavations shall be used in the permanent construction. All suitable materials from the diversion channel excavations, anchor trench excavations and all other excavations shall be incorporated into the permanent construction as part of the unclassified fill zone below the compacted clay barrier layer. **<u>No materials from the excavations shall be used in any of the soil fill zones above the compacted clay barrier layer.</u>** Excavated materials that are unsuitable for or in excess of permanent construction requirements shall be wasted except as described in subpart **3.18 e** below. Waste piles shall be located where they will not interfere harmfully with the natural flow of water and where they will neither detract from the appearance of the completed project nor interfere with access to the site. Areas for disposal of waste or excess material from excavation will be designated by the Operator and/or Owner. All waste piles shall be contoured and trimmed to reasonably regular lines, and vegetated , as directed by the Engineer.

e) <u>Disposal of Visibly Contaminated Materials</u>

All hazardous waste (U. S. EPA designation k001) and visibly contaminated soils were removed from the surface impoundments under a separate contract in August 1988 and it is not expected that any additional hazardous waste or visibly contaminated soils will be encountered in the work cover by this Contract. In the event that suspected hazardous waste and/or visibly contaminated soils are encountered, the Contractor shall immediately cease work in the suspect area and notify the Operator and the Engineer so that provisions can be made to quickly and properly remove and dispose of the material.

5.3 <u>Unclassified Soil Fill</u>

a) <u>Scope</u>

The work covered by this section consists of furnishing all plant, materials, equipment, labor, and supervision, and performing all operations in connection with construction of the unclassified soil fill as shown on, or required by, the drawings, as specified herein and/or as directed by the Engineer.

b) <u>General Description</u>

The unclassified soil fill shall be constructed to the lines, grades and dimensions shown on the drawings or established by the Engineer.

c) <u>Materials</u>

Unclassified soil fill material required in excess of that obtained from the excavations shall consist of clean, uncontaminated, inorganic soil and/or inert materials and shall be reasonably well graded and free of roots, organic matter, stones or rocks larger than six (6) inches in maximum dimension or other deleterious materials. Prior to commencing work, samples of the proposed fill material(s) shall be submitted to the Engineer for testing and approval.

d) <u>Placing</u>

The fill material shall be placed in continuous, approximately horizontal layers not more than eight (8) inches in thickness and shall be compacted by at least four (4) passes of an appropriate roller, mechanical tamper or other methods approved by the Engineer. For cohesive soils, compaction with a sheepsfoot roller or rubber-tired roller would be appropriated. For cohesionless soils, compaction by a crawler tractor weighing not less than 20,000 pounds, or mechanical or vibrating rollers would be appropriate. One pass of the compactor is defined as the number of successive trips which, by means of sufficient overlap, will ensure complete coverage of an entire layer by the compactor. Second and subsequent passes of the compactor shall be performed in a direction perpendicular to the preceding pass. If it is found desirable to compact the fill material more or less than required above to achieve the required degree of compaction, the number of passes shall be changed accordingly as directed by the Engineer.

If cohesive soils are used, the unclassified fill material shall be compacted to a dry unit weight of at least 90 percent of the maximum dry unit weight obtained by the Standard Proctor Test Method for Compaction (ASTM Designation D698), and the placement moisture content shall be maintained within -2 and +3 percent of the corresponding optimum moisture content. If cohesionless soils are used, the unclassified fill material shall be compacted to at least 75 percent relative density as defined by ASTM Designation D2049. Field density tests will be performed on the placed unclassified soil fill at the discretion of the Engineer. The Engineer shall perform such tests and advise the Contractor of the results. The amount and type of compactive effort employed on the unclassified soil fill may be adjusted by the Engineer on the basis of the results of the field density tests.

The surface of the final lift shall be rolled with a smooth drum steel roller to the extent required to achieve a smooth and uniform finished surface.

5.4 Compacted Clay Cap

a) Scope

The work covered by this section consists of furnishing all plant, material, equipment, labor, and supervision, and performing all operations in connection with the construction of a compacted clay cap as shown on, or required by, the drawings, as specified herein and/or as directed by the Engineer.

b) General Description

The compacted clay cap shall be constructed to the lines, grades and dimensions shown on the drawings or established by the Engineer.

c) Material

The Contractor shall obtain all clay soils for construction of the compacted clay cap from the borrow source identified by the Operator and approved by the Engineer. The borrow source is located at:

The Bidder may propose an alternative clay soil borrow source, however, approval of any alternate clay soil borrow source is contingent upon the results of laboratory testing demonstrating that an in-place coefficient of permeability less than $1x10^{-7}$ cm/sec can be achieved for the compacted clay cap and documentation that a sufficient quantity of the proposed clay soil is available to accomplish the required construction. Samples of the proposed alternate clay soil shall be submitted to the Engineer for laboratory testing prior to commencing the work.

d) **Placing**

The clay soil shall be placed in continuous, approximately horizontal layers not more than eight (8) inches in thickness. The clay soil shall be conditioned by disking, harrowing or other methods to break down clay clod size to approximately one (1) inch in maximum dimension and by adjusting the placement moisture content to between the optimum moisture content, as determined by the Standard Proctor Test Method for Compaction (ASTM Designation D698), and three (3) percent above the optimum moisture content. The clay soil shall be compacted by at least six (6) passes of an appropriate sheepsfoot roller, mechanical tamper or other method approved by the Engineer. One pass of the compactor is defined as the number of successive trips which, by means of sufficient overlap, will ensure complete coverage of an entire layer by the compactor. Second and subsequent passes of the compactor shall be performed in a direction perpendicular to the preceding pass. The clay soil fill material shall be compacted to a dry unit weight of at least 95 percent of the maximum dry unit weight obtained by the Standard Proctor Test Method for Compaction (ASTM Designation D698). Field density tests will be performed by the Engineer at a rate of at least one test per 5,000 square feet per lift. The Engineer will notify the Contractor of the results of such tests. Additionally, samples of the compacted clay cap will be obtained by the Engineer at a rate of at least one sample per 10,000 square feet per lift for laboratory permeability testing. The laboratory testing results must indicate that the compacted clay cap has a coefficient of permeability less than 1x10 cm/sec. The Engineer will notify the Contractor of the results of the laboratory permeability tests. The amount and type of compactive effort employed on the clay soil fill may be adjusted by the Engineer on the basis of the results of the field density tests and/or the laboratory permeability tests.

After field density tests are completed or laboratory samples are obtained, the Contractor shall promptly repair any holes or other damage by backfilling with addition clay soil and compacting with mechanical tampers or other suitable methods as approved by the Engineer.

The surface of the final lift shall be rolled with a smooth drum steel roller to the extent required to achieve a smooth and uniform finished surface.

5.5 Geotextile

a) **Scope**

The work covered by this section consists of furnishing all plant, material, equipment, labor, and supervision, and performing all operations in connection with the installation of the geotextiles as shown on, or required by, the drawings, as specified herein and/or as directed by the Engineer.

b) **General Description**

The geotextile shall be installed at the locations and to the limits shown on the drawings or established by the Engineer.

c) **Materials**

The geotextile shall be a non-woven material of eight (8 ounces per square yard minimum weight and shall be "Miraf 180N", "Supac 8NP", "Bidum U34", or an approved alternate.

d) **Installation**

The geotextile shall be installed in accordance with th manufacturer's recommendations unless otherwise specifie herein. Prior to installation the surface of the soil to b protected shall be inspected and any sharp objects or othe projections shall be removed and any surface irregularities shall be trimmed and/or repaired. The ends of the geotextile shall be anchor as shown on, or required by the drawings or as directed by the Engineer. Joining of the sheets of geotextile shall be accomplished by overlaps of at least eighteen (18) inches. When lapping sheets along slopes, the joint shall be constructed by overlaying the upslope sheet over the end of the downslope sheet. Any tears or other damage to the geotextile shall be repaired by underlying affected area with a piece of geotextile which extends a minimum of eighteen (18) inches beyond the damaged area.

5.6 Conducting Zone

a) Scope

The work covered by this section consists of furnishing all plant, material, equipment, labor, and supervision, and performing all operations in connection with the construction of the conducting zone as shown on, or required by, the drawings, as specified herein and/or as directed by the Engineer.

b) General Description

The conducting zone shall be constructed to the lines, grades and dimensions shown on the drawings or established by the Engineer.

c) Materials

The conducting zone shall be constructed of clean, durable, inert, free-draining granular materials relatively free of clay, silt brush, roots, sod or other organic or otherwise unsuitable materials. The gradation of the granular material for the conducting zone shall meet the requirements for Class 4 Mineral Aggregate unless approved otherwise by the Engineer, and shall provide a minimum compacted saturated coefficient of permeability of 1×10^{-2} cm/sec. Samples of the proposed conducting zone granular material shall be submitted to the

Engineer for laboratory testing and approval prior to commencing work.

d) **Placing**
The conducting zone shall be constructed by placing the granular material in a single lift and shall be compacted with at least four (4) passes of a crawler tractor weighing not less than 20,000 pounds or an equivalent vibratory roller. The conducting zone material shall be compacted to a relative density of at least 75 percent as defined by ASTM Designation D2049.

5.7 Coversoil

a) **Scope**
The work covered by this section consists of furnishing all plant, material, equipment, labor, and supervision, and performing all operations in connection with the construction of the coversoil layer as shown on, or required by, the drawings, as specified herein and/or as directed by the Engineer.

b) **General Description**
The coversoil zone shall be constructed to the lines, grades and dimensions shown on the drawings or established by the Engineer.

c) **Materials**
Coversoil shall consist of clean uncontaminated soil and shall be reasonably free of roots, brush, sod, stones or rocks larger than six (6) inches in maximum dimension or other deleterious materials which inhibit,retard or prevent the growth of vegetation.

d) **Placing**
The cover soil shall be placed in continuous, approximately horizontal lifts not more than eight (8) inches in thickness and

shall be compacted by at least four (4) passes of an appropriate roller, mechanical tamper or other methods approved by the Engineer. The coversoil shall be compacted to a dry unit weight of at least 90 percent of the maximum dry unit weight obtained by the Standard Proctor Test Method for Compaction (ASTM Designation D698), and the placement moisture content shall be maintained with five (5) percent of the corresponding optimum moisture content.

5.8 Topsoil

a) **Scope**

The work covered by this section consists of furnishing all plant, material, equipment, labor, and supervision, and performing all operations in connection with the construction of the topsoil layer as shown on, or required by, the drawings, as specified herein and/or as directed by the Engineer.

b) **General Description**

The topsoil zone shall be constructed to the lines, grades and dimensions shown on the drawings or established by the Engineer.

c) **Materials**

Topsoil shall consist of clean uncontaminated loam soil with humus and/or soils unsuitable to support vegetation and shall be reasonably free of roots, brush, sod, stones or rocks larger than six (6) inches in maximum dimension or other deleterious materials which inhibit,retard or prevent the growth of vegetation. Topsoil material shall be tested to determine lime fertilizer and other soil amendment requirements.

d) **Placing**

Topsoil shall be placed on the surface of the coversoil to a thickness of six (6) inches and shall be compacted by one pas of a crawler tractor. When compacting the topsoil, the tracto shall operate by tracking up and down the cap slopes such that the tractor cleat marks are perpendicular to the direction of surface runoff.

5.9 **Vegetation**

a) **Scope**

The work covered by this section consists of furnishing all plant, material, equipment, labor, and supervision, and performing all operations in connection with the seeding of all finished surfaces and all exposed surfaces disturbed by the Contractor's activities as shown on, or required by, the drawings, as specified herein and/or as directed by the Engineer.

b) **General Description**

Vegetation shall consist of preparation and tilling of the seed bed, furnishing and applying lime, fertilizer and other soil amendments, furnishing and sowing of seed and applying mulch to the limits and dimensions shown on the drawings or established by the Engineer.

c) **Lime and Fertilizer**

An initial application of fertilizer and lime shall be incorporatec into the topsoil. Agricultural grade ground limestone shall be applied at the rate determined by the soil tes recommendations. Fertilizer, having a available nutrien analysis of 10-20-10 (nitrogen-phosphorus-potassium), shall b applied at a rate of 800 pounds per acre or the equivalen amount of plant food. All lime and fertilizers shall conform t all applicable state laws.

d) **Preparation of Seed Bed**

The topsoil shall be thoroughly loosened, to a depth of at lea two (2) inches, by disking, harrowing, or other acceptab methods. Tilling shall be performed as soon as possib following topsoil placement and immediately after initial lir and fertilizer application. Seeding shall occur within three (3) days of tilling. All tilling shall be performed in a direction parallel to the contour lines of any sloped surface requiring "Vegetation". All sticks, stones, weeds, roots or other objectionable material exposed as a result of tilling shall be removed from the topsoil. Water may be applied before, during and after seedbed preparation, in order to maintain the proper moisture content in the soil.

e) **Seed**

The Contractor shall furnish the seed mixture consisting of the following:

Variety	Application Rate (lbs/acre)
Bermuda Grass (Common) unhulled	10
Bermuda Grass (Common) hulled	5
Lespedeza (Kobe)	35

All seed shall be furnished in bags or containers labeled in accordance with current rules and regulations of the Arkansas State Plant Board. Bags and/or containers shall be clearly labeled to show name and address of supplier, seed name, lot number, net weight, origin, percent weed content, percentage of purity and percentage of germination. The seed shall not be more than two (2) years old. Germination tests shall be made not more than six (6) months prior to seeding operations and a certificate of such tests shall be furnished to the Engineer. Seed which has become wet, moldy or otherwise damaged in transit or storage will not be acceptable. Legumes shall be inoculated with an approved culture as recommended by the manufacturer, just prior to seeding.

f) **Seeding**

At the rate specified above, the seed shall be uniformly sown over the prepared areas in two applications by broadcasting, hand, or other acceptable seeding methods. One-half the required seed shall be sown in the first seed application. The second seed application shall be performed with the seeder travelling in a direction perpendicular to the direction the seeder travelled during the first seed application. All areas seeded shall be lightly compacted with one pass of a light tractor or a roller weighing not more than 65 pounds per lineal foot of drum.

g) <u>Mulch</u>

Mulch shall consist of straw from treshed rice, oats, wheat, barley or rye, or of wood excelsior, or from hay obtained from grasses and/or legumes. Mulch shall be applied at a rate of 4,000 pounds per acre immediately after seeding and shall be spread uniformly over the entire area by approved power mulching equipment or by other acceptable methods.

h) <u>Asphalt Tack Coat</u>

Immediately following or during the application of the mulch over the seeded areas, an asphalt tack coat shall be applied to bind the mulch together to form a cover mat which will remain in place during normal climatic conditions. Asphalt shall be applied at a rate of approximately 0.05 gallons per square yard.

6.0 BASIS OF PAYMENT

The work shall be paid for on a unit cost basis for all work performed in accordance with these specifications, as shown on the drawings and, authorized and accepted by the Engineer. Pay quantities shall be determined from quantity surveys and as-built surveys of completed portions of the work and will reflect installed or in-place quantities. Items which will be considered for payment are listed in the Bid Summary. The Contractor shall furnish and install all incidental items required to complete the work as described in these specifications and shown in the drawings. The cost of such incident items are to be included in the Bidders quotation.

BID SUMMARY

CLOSURE OF SURFACE IMPOUNDMENTS
BEAZER MATERIALS AND SERVICES, INC.
KOPPERS INDUSTRIES, INC. GRENADA, MISSISSIPPI PLANT
GRENADA, MISSISSIPPI

	Units(1)	Estimated Quantity	Unit Cost	Total
Mobilization/Demobilization	LS	1	$____	$____
Clearing and Grubbing	LS	1	$____	$____
Subgrade Preparation	T&M	N/A	$____	$____
Diversion Channel Excavation	LS	1	$____	$____
Cut and Fill Dike Material	CY	1450	$____	$____
Unclassified Soil Fill	CY	3,800	$____	$____
Compacted Clay Cap	CY	3,100	$____	$____
Backfill (stone protection)	CY	80	$____	$____
Geotextile	SY	4,600	$____	$____
Conducting Zone	CY	1,550	$____	$____
Coversoil	CY	2,325	$____	$____
Topsoil	CY	775	$____	$____
Vegetation	MSF	28	$____	$____

UNIT ABBREVIATIONS

LS - Lump Sum
T&M - Time and Material
CY - Cubic Yards
SY - Square Yards
LF - Lineal Feet
MSF - 1,000 Square Feet

DCC #18

ADDENDUM 1

This addendum replaces Section 5.4, Compacted Clay Cap of the previously issued specifications. All references to the compacted clay cap shown in the drawings or described in the specifications shall refer to the compacted soil-bentonite cap as described in this addendum.

Compacted Soil-Bentonite Cap

a) Scope

The work covered by this section consists of finishing all plant, material, equipment, labor, and supervision, and performing all operations in connection with the construction of a compacted soil-bentonite cap as shown on, or required by, the drawings (identified as "compacted clay cap"), as specified herein and/or as directed by the Engineer.

b) General Description

The compacted soil-bentonite cap shall be constructed to the lines, grades and dimensions shown on the drawings (identified as "compact clay cap") or established by the Engineer.

c) Materials

i) Soil

Soil for use in the compacted soil-bentonite cap shall consist of clean uncontaminated soil free of roots, brush, sod, stones or rocks larger than six (6) inches in maximum dimension or other deleterious materials and shall have the characteristics required by Unified Soil Classification System (USCS) designations CH, CL, or SC (ASTM D-2487). The Contractor shall identify the location of his borrow source in his bid and shall, upon request, coordinate with the Engineer inspection and sampling of the borrow source.

ii) Bentonite

Bentonite for use in the compacted soil-bentonite cap shall conform to the requirements for Volclay Bentonite SG-40 as manufactured by American Colloid Company or an approved alternate. Information concerning Volclay Bentonite SG-40 may be obtained from:

Silver Sales
P.O. Box 253
Shelby, AL 35143
Bill Silver
(205) 669-4535

This information is provided for the convenience of the bidder and does not preclude the use of alternate suppliers or the proposal of alternate materials.

d) Placing

The soil shall be placed in continuous, approximately horizontal layers, not more than six (6) inches in loose thickness. Bentonite shall be uniformly spread over the soil layer at a rate of one pound per square foot (subject to verification by testing of the soil borrow source to establish specific bentonite requirements) by use of an agricultural lime spreader or other equipment or methods approved by the Engineer. The bentonite may also be applied at the appropriate application rate by distributing 100 pound bags of the material in a marked grid pattern. Each square of the grid shall be the proper square footage to be covered by any multiple of 100 pound bags of the material. The bags should be broken open and the material spread evenly within each grid square using hand rakes or other methods to achieve complete and even distribution of the bentonite.

The bentonite shall be thoroughly and evenly mixed throughout the entire six (6) inch depth of the soil layer by use of a rotary tiller or other suitable mixing equipment. The moisture content of the soil-bentonite shall be adjusted to between the optimum moisture content and three (3) percent above the optimum moisture content as determined by the Standard Proctor Test Method for Compaction (ASTM Designation D-698). The soil-bentonite layer shall be compacted by at least six (6) passes of an appropriate sheepsfoot roller, mechanical tamper or other method approved by the engineer. One pass of the compactor is defined as the number of successive trips which, by means of sufficient overlap, will ensure complete coverage of an entire layer by the compactor. Second and subsequent passes of the compactor shall be performed in a direction perpendicular to the preceding pass. The soil-bentonite shall be compacted to a dry unit weight of at least 95 percent of the maximum dry unit weight obtained by the Standard Proctor Test Method for Comparison (ASTM Designation D-698). Field density tests will be performed by the engineer at a rate of at least one test per 5,000 square feet per lift. The engineer will notify the contractor of the results of such tests. Additionally, samples of the compacted soil-bentonite cap will be obtained by the engineer for laboratory permeability testing. The laboratory testing results must indicate the compacted soil-bentonite cap has a coefficient of permeability less than $1x10^{-7}$ cm/sec. The engineer will notify the contractor of the results of the laboratory permeability tests. The amount and type of compactive effort employed on the soil-bentonite fill may be adjusted by the engineer on the basis of the field density tests and/or the laboratory permeability tests.

After field density tests are completed or laboratory samples obtained, the contractor shall promptly repair any notes or other damage by backfilling with additional soil-bentonite and compacting with mechanical tampers or other suitable methods as approved by the engineer.

The surface of the soil-bentonite fill shall be rolled with a smooth drum steel roller at the completion of each day's work activities to seal the surface and prevent moisture/precipitation from damaging the completed portions of the work. The surface of the final lift shall be rolled with a smooth drum steel roller to the extent required to achieve a smooth and uniform finished surface.

VIII. CLOSURE AS A LANDFILL

1.0 Contents of Plan (40 CFR 264.112(b) and 264.310)

Although Koppers will make specific efforts to remove the hazardous waste and contaminated soil from the bottom of the impoundment, 40 CFR 264 requires that a Contingent Closure Plan be prepared to effect closure of the surface impoundment as a disposal unit in the event it is not practical to remove all contaminated soil.

2.0 Waste Removal (264.112(b)(3))

Koppers plans to use the procedures in Section VI - 4.0 for the elimination of the liquid, K001 sludge, and contaminated soil, in order to pursue clean closure. However all waste removal procedures may not be necessary if it is determined to proceed with contingent closure.

3.0 Decontamination Procedures (40 CFR 264.112(b)(4) and 264.114 and 264.310)

Koppers plans to use the decontamination procedures described in Section VII.

*4.0 Final Cover Design and Construction (264.310(a))

If it has been determined that clean closure is not feasible, then closure of the impoundment wil proceed by in situ capping. Capping will consist of four layers. First, a general fill of unclassified soil materials will be placed on a conditioned subgrade. Second, a clay barrier cap will be installed over the unclassified fill. Third, a free draining, granular, vent/underdrain layer will be placed on the clay barrier and fourth, a layer of topsoil will be used to finish grade the impoundment backfill.

Initially, the exposed subgrade within the impoundment area will be proofrolled using a heavy rubber tired or tracked vehicle to stabilize the surface materials and locate any soft areas that need further conditioning to accept compacted fill.

*Deleted and replaced with "Construction Specifications for Surface Impoundment Closure" dated April, 1989.

Areas requiring improvement will be overexcavated, reworked and compacted as required prior to backfilling.

The initial source of fill soil is to be the above grade earth dikes that surround the impoundment excavation. Shrubs, trees, and roots will be cleared and grubbed before cutting the dikes. Inorganic soil from the dike embankments is to be placed in the impoundment, spread in lifts, and compacted. Organic soils and topsoil will be stockpiled for use in the barrier layer. Lifts will be approximately 6 to 8 inches thick. To minimize settlement, soils are to be compacted with equipment that can produce or exceed the Standard Proctor compaction energy. Soils should be within 2 percent (plus or minus) of optimum moisture content to achieve desired density. Each lift will be compacted to 100 percent of the material's maximum dry density as determined by the Standard Proctor Compaction test (ASTM D-698). A field density and moisture content test will be made on each lift to verify that this degree of compaction is achieved. The final lifts are to be graded to the contours shown on drawing A102982, Attachment 10.

A geotextile membrane will be placed on top of the fill material to provide support and protect the impermeable clay layer which will be placed on top of the fill material. This clay layer will be 24 inches thick and will have a minumum permeability 1.0 x 10^{-7} cm/sec and will extend 2 feet beyond the plan limits of the backfill excavation. The layer will be graded such that a 3 percent slope exists from a center line crown. The clay soils will be compacted to 100 percent of maximum dry density (ASTM D-698) at, or above the 2 percent optimum moisture content. Field density and moisture content tests will be conducted on each lift to verify that this degree of compaction is achieved.

A second geotextile membrane will be placed on top of the clay layer as a filter for the 6-inch thick sand drainage and vapor release layer. To collect the lateral drainage, a 6-inch perforated drain pipe will be provided around the periphery of the layer. Appendix C details the calculations that show the efficiency of the liner system. Attachment 10 shows a typical cross-section of the closure cover. Finally, an 18-inch layer of topsoil will be placed on the clay/sand cover. This topsoil layer will also be graded at a minimum of 3 pecent and seeded to prevent erosion of the impoundment cap. The depth of the topsoil layer is sufficient to prevent root penetration of the underlying soil layers.

*5.0 Promotion of Drainage and Minimization of Erosion or Abrasion (40 CFR 264.310(a)(3))

To promote proper drainage of the run-on and run-off at the impoundment area, the top surface of the impoundment backfill will be graded uniformly from the center to blend with the moderately sloped original ground surface. The sheet drainage from the surface of the backfill will then be conducted to existing drain swales around the impoundment area.

The 6-inch diameter perimeter drain in the underlyng sand layer will also discharge into the drain swale. Attachment 10 presents the locations of the drain and its relationship to the existing contours. The existing drainage swales are adequate to handle the increased surface water run-off generated from the capped surface impoundment.

In addition to the perimeter drain for the promotion of proper drainage, erosion control is provided by a vegetated surface. As stated previously, the 18-inch topsoil cover will be seeded. However, prior to seeding the soil must be properly prepared. Pulverized limestone will be applied to the soil in an amount to be determined from analysis of the soil by a qualified soil sampling service. One week after the limestone has been spread, fertilizer will be added. Fertilizer in the amount of 5-10-5 nitrogen, phosphorus and potash, respectively, will be spread at the rate of 30 lb per 1,000 sq. ft., after which a 1/3 inch layer of peat moss or mushroom manure will be added. The fertilized area will then be properly tilled and hand-raked to a smooth, even grade. All stones and dirt clods over 1-inch diameter will be removed from the topsoil.

Seed will be sown on the fertilized area in the quantity of 8 lb per 1,000 sq ft, either mechanically or by hand. Seed mix will be in conformance with the recommendation of a local recognized seed supplier approved by Koppers. The area will then be lightly brushed or raked to provide slight covering over the seed, after which it will be lightly rolled in two directions. All seeded areas

* Deleted and replaced with "Construction Specifications for Surface Impoundment Closure" dated April, 1989.

will be kept constantly wet to a depth of 3 inches for 10 days immediately after seeding. All areas which do not show a prompt catch of grass will be reseeded as felt necessary. This vegetative cover will provide for erosion control. The Grenada weather conditions and the finish grade are such that freeze-thaw effects will not be significant to effect its integrity. As stated in the soil survey for Grenada County, Mississippi, frost penetration in this subtropical region is relatively shallow, with freezing temperatures lasting no longer than one to three days.

Attachment 9 (Section VII)

Clean Closure Details and Designs

- A102981 - Clean Closure Grading Plan
- A102983 - Grading Plans - Sections and Details

Attachment 10 (Section VIII)

Closure as a Landfill Details and Designs

- A102986 - Contingency Plan - Grading Plan
- A102987 - Grading Plans - Sections and Details

Revision as per Permit Board action
May 23, 1989

IX POST-CLOSURE CARE REQUIREMENTS (40 CFR 264.310(b))

The Post-Closure Care Plan for the Koppers facility includes the inspection, monitoring, and maintenenace activities that are to be performed to prevent the post-closure escape of hazardous waste, hazardous waste constituents, leachate, contaminated rainfall runoff or waste decomposition products to ground or surface waters or to the atmosphere. Post-closure maintenance pertains to the closed surface impoundment and groundwater monitoring system, if the wastes cannot be removed upon closure.

1.0 Inspection of Final Cover (40 CFR 264.310(b))

The following features are to be subject to inspection during the post-closure care period.

- Site access and security systems.
- Internal and external road systems.
- Covers (including vegetative cover condition, erosion, settlement, and displacement).
- Runon and runoff control systems.

(See inspection log sheet, Appendix D.)

The wastes at the Grenada site are of a solid nature; therefore, leachate collection/detection equipment and gas collection and control systems are not necessary.

The post-closure care of the closed surface impoundment will be conducted by Koppers during the life of the treating plant's operation. After closure of the treating plant, the post-closure care for the closed facilities at the Grenada site is to be conducted primarily by a post-closure contact person. The designated individual, at the time of preparation of this post-closure plan is J. D. Clayton; home address 752 Hickory Drive, Grenada, MS 38901, and home telephone number (601)226-3090.The contact person is to be responsible for all site inspection, monitoring and maintenance.

The contact person will be provided with necessary inspection equipment by Koppers. This equipment will be used by the contact person to perform the inspection, monitoring and maintenance tasks. Almost all labor and equipment operation will be performed by the contact person. Although additional assistance is not expected, outside assistance may be required if, for some reason, major maintenance activities become necessary. The post-closure cost estimates that are included are based on the assumption that some outside assistance will be necessary through the post-closure period.

The contact person will conduct monthly inspections of the overall site as well as the closed surface impoundment. The contact person will inspect site access and security systems (i.e., fences and gates) on the internal and external road system. For the closed surface impoundment, the contact person will inspect for cover integrity including vegetative cover condition, potential erosion damage and cover subsidence, and runon and runoff control system integrity. The result of the inspections will be placed on an inspection log sheet (see Appendix D).

The monthly inspection frequency is justified because the forces of nature acting on the site are likely to cause relatively slow rates of change on the site. For instance, the most likely natural force to affect change on the site is rainfall runoff. However, even if several large, closely-spaced rainstorms were to cause accelerated erosion at selected closed surface impoundments, the monthly inspection schedule would still allow the contact person sufficient time to initiate remediation of the problem.

2.0 Inspection and Maintenance of the Groundwater Monitoring System (40 CFR 265.310(b)(2))

The following features are to be subject to inspection and maintenance during the post-closure care period.

- Groundwater monitoring wells.
- Monitoring well covers.
- Benchmark integrity.

(See inspection log sheet, Appendix D.)

Any excessive wear to the monitoring well covers will require replacement. The established benchmarks will be inspected, if need be repair work will be conducted to ensure the proper elevation has been retained.

Because of the solid nature of the wastes, no leachate collection detection system or gas ventilation system is necessary.

The contact person will be responsible for maintenance activities of the site. 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 site will be triggered by problems/deficiencies which will be noted in the monthly inspections. Notice of these problems/deficiencies will be noted in the monthly inspection. Notice of the problems/deficiencies may result in initiation of one or more of the following maintenance activities:

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

3.0 Groundwater Monitoring Program (40 CFR 264.91)

During the interim status period, monitoring wells were installed to sample the site groundwater. Descriptions of the site hydrogeology are contained in Section E of the Part B Application. Additional wells may be added to assess site groundwater conditions. Groundwater monitoring will continue to be conducted during the post-closure period as required by RCRA regulations.

It is anticipated that if contingent closure is necessary, the existing groundwater monitoring program at the time of closure will suffice during the post-closure care period.

4.0 Notice in Deed

If closure activities result in the removal of all hazardous wastes, residues and contaminated soil, such that the unit is not classified as a disposal unit, no notice in the deed will be required. Upon certification of closure as a disposal unit, Koppers will add a notification to its deed stating that this land has been used to manage hazardous waste and its use is restricted under 40 CFR 264.120.

In accordance 40 CFR 264.119, within 90 days after the closure is completed, a survey plat will be filed with the authority which has jurisdiction over land use and to the Regional Administrators. The survey plat will indicate the location and dimensions of the filled surface impoundment with respect to surveyed permanent benchmarks.

If, however, clean closure cannot be attained, a record of the type, location, and quantity of hazardous waste disposed of within the surface impoundment will be submitted to the Regional Administration of US EPA, within 60 days after certification of closure. In addition, a certification that the required notation has been recorded in the deed and a copy of the document in which the notation has been placed will be submitted to the Regional Administration of US EPA, within 60 days after certification of closure.

X. CERTIFICATION OF CLOSURE (40 CFR 264.225)

To ensure that the surface impoundment has been closed in accordance with the final approved closure plan, a professional engineer(s) will be present for two-day periods during the removal of all standing water, after the final removal of all excavated soils and at the time of closure certification (which includes certifying the impoundment is properly closed). The following additional procedures will be followed:

1. Closure certification will be submitted to the agency within 60 days after completion of closure.

2. The professional engineers(s) will be provided to present documentation of his credibility.

3. The closure plan will be used as a check list to assure the proper procedures for closure have been incorporated.

4. A survey plot will be submitted no later than the submission of the closure certification, if clean closure cannot be attained.

The following pages 30 through 32 contain sample certifications. These certifications and certifications similar to those have been recommended for certification of closure by the US EPA. The certification on page 30 will be signed by the owner, while the certifications on pages 31 and 32 will be signed by the independent professional engineers(s).

OWNER CERTIFICATION OF CLOSURE

I, ____
(Owner or Operator)

of ____
(Name and Address of Facility)

hereby state and certify that, to the best of my knowledge and belief, the

____
(Hazardous Waste Management Unit(s))

has been closed in accordance with the facility's closure plan, and that closure

was completed on the ____________ day of __________________________, 19___.

______________________________ Signature

____________________ Date

PROFESSIONAL ENGINEER CERTIFICATION OF CLOSURE

I, ______________________________, a certified Professional Engineer hereby
(Name)

certify, to the best of my knowledge and belief, that I have verified that Professional Engineer Closure Certificates were issued for all prior closure activities at:

____
(Name and Address of Facility)

for ____,
(Hazardous Waste Management Unit)

and that I have made visual inspection(s) of the aforementioned facility, and closure of the aforementioned facility has been performed in accordance with the Facility's closure plan.

______________________________ ______________
Signature Date

______________________________ ______________
Professional Engineer License No. For State of

____
Business Address

____
City/State/Zip Code

____
Business Telephone (With Area Code)

PROFESSIONAL ENGINEER CERTIFICATION OF CLEAN

I, ______________________________, a certified Professional Engineer
Name

hereby certify, to the best of my knowledge and belief, that I have verified that Professional Engineer Certificates of Clean were issued for all prior decontamination activities at:

____
(Name and Address of Facility)

for ______________________________________, and that I
(Hazardous Waste Management Unit)

have made visual inspection(s) of the aforementioned facility, and decontamination of the aforementioned facility has been performed in accordance with the decontamination procedures outlined in the Facility's closure plan.

____
Signature

____
Date

____
Professional Engineer License No.

____
For State of

____
Business Address

____
City/State/Zip Code

____
Business Telephone (With Area Code)

XI. CLOSURE COST ESTIMATE (264.142)

Closure cost estimates for the closure of the surface impoundment under clean closure are presented in Appendix E. Closure cost for closure in the event that it is not feasible to remove all contamination is also included in Appendix E. These closure estimates are based on 1987 dollars and will be revised annually to reflect changes in closure cost brought about by inflation. The Department of Commerce's Annual Implicit Price Deflator for Gross National Products will be used to make this adjustment.

XII CERTIFICATION OF POST-CLOSURE CARE (40 CFR 264.120)

To ensure that post-closure care is completed according to the post-closure plan, certification of post closure will be signed by the owner and an independent registered professional engineer. Documentation of the professional engineer's qualification will be provided upon request.

XIII. POST-CLOSURE COST ESTIMATES (40 CFR 264.144)

Post-closure cost estimates for the surface impoundment are presented in Appendix F. Also shown are cost estimates for post-closure care if the impoundment should be closed as a landfill. The post-closure cost estimates are based on 1987 dollars and will be revised annually to reflect changes in the post-closure cost brought about by inflation. The Department of Commerce's Annual Implicit Price Deflator for Gross National Products will be used to make this adjustment.

XIV. FINANCIAL ASSURANCE MECHANISM FOR CLOSURE (40 CFR 264.143)

This plant utilizes the corporate financial test to demonstrate Financial Assurance. A copy of the financial assurance mechanism is provided in Appendix G of this document.

CLOSURE AND POST-CLOSURE PLANS
FOR THE
KOPPERS COMPANY, INC.
HAZARDOUS WASTE MANAGEMENT FACILITY
GRENADA, MISSISSIPPI

SURFACE IMPOUNDMENT
EPA IDENTIFICATION NO. MSD007027543

Submitted to:

MISSISSIPPI DEPARTMENT OF NATURAL RESOURCES

Submitted by:

KOPPERS COMPANY, INC.
Pittsburgh, Pennsylvania 15219

Prepared by:

KEYSTONE ENVIRONMENTAL RESOURCES, INC.
Monroeville, Pennsylvania 15146

April 14, 1987

KEYSTONE
ENVIRONMENTAL RESOURCES, INC.

TABLE OF CONTENTS

CLOSURE AND POST-CLOSURE PLANS FOR SURFACE IMPOUNDMENT

			PAGE
	List of Attachments		iv
I.	**Facility/Contact Information**		1
II.	**Introduction**		2
III.	**General Description**		3
	1.0	Wood Preserving Operations	3
	2.0	Surface Impoundment	4
	3.0	Topographic and Other Maps	4
	4.0	Chemical and Physical Analysis	5
IV.	**Partial and Final Closure Activities**		7
V.	**Closure Performance Standard**		8
VI.	**Contents of Closure Plan**		9
	1.0	Preparation	9
		1.1 Mobilization	9
		1.2 Personnel Protection Area	9
		1.3 Equipment Decontamination Area	9
	2.0	Description of Closure	10
	3.0	Maximum Waste Inventory	10
	4.0	Waste Removal Procedures	11
		4.1 Removal of Standing Water/Oils	11
		4.2 Removal of Waste Inventory	11
	5.0	Closure Schedule	15
		5.1 Closure Schedule	15
		5.2 Extension for Closure	15
VII.	**Decontamination Procedures**		16
	1.0	Soil Investigation	16
		1.1 Background Soil Borings	16
		1.2 Impoundment Soil Sampling	16
		1.3 Soil Sample Anslyses	16
	2.0	Procedures for Cleaning Equipment and Removing Contaminated Soil	18

TABLE OF CONTENTS (con't.)

		PAGE
	3.0 Management of Generated Wastes	18
	4.0 Methods for Sampling and Testing to Demonstrate Success of Decontamination	19
	4.1 Decontamination Area	19
	4.2 Impoundment Area	19
	5.0 Final Closure	19
VIII.	**Closure as a Landfill**	21
	1.0 Contents of Plan	21
	2.0 Waste Removal	21
	3.0 Decontamination Procedures	21
	4.0 Final Cover Design and Construction	21
	5.0 Promotion of Drainage and Minimization of Erosion or Abrasion	23
IX.	**Post-Closure Care Requirements**	25
	1.0 Inspection of Final Cover	25
	2.0 Inspection and Maintenance of the Groundwater Monitoring System	26
	3.0 Groundwater Monitoring Program	28
	4.0 Notice in Deed	28
X.	**Certification of Closure**	29
XI.	**Closure Cost Estimate**	33
XII.	**Certification of Post-Closure Care**	34
XIII.	**Post-Closure Cost Estimate**	35
XIV.	**Financial Assurance Mechanism for Closure**	36

Appendix A Impoundment Study Data
Appendix B QA/QC Plan
Appendix C Design Calculations
Appendix D Post-Closure Inspection Log Sheet
Appendix E Closure Cost Estimates
Appendix F Post-Closure Cost Estimates
Appendix G Financial Assurance Mechanism

LIST OF ATTACHMENTS

Attachment No.	Title	Section
1	Site Plan	III
2	Site Topographic Map	III
3	Surrounding Area Land Use Map	III
4	Wind Rose for Jackson, MS	III
5	Wind Summary Table for Grenada, MS	III
6	Quality Control Specifications for Creosote	III
7	Wood Treating Waste Analyses o Typical Analyses o Grenada K001 Analyses	III
8	Closure Processes and Schedules o Closure Process Schematic o Floating Skimmer o Centrifuge Operation (Typical Process Flow) o Typical Soil Washing Process o Wastewater Pretreatment System Project Schedule o Schedule for Closure	VI
9	Clean Closure Details and Designs o A102981 - Clean Closure Grading Plan o A102983 - Grading Plans - Sections and Details	VII
10	Closure as a Landfill Details and Designs o A102982 - Contingency Plan - Grading Plan o A102983 - Grading Plans - Sections and Details	VIII

I. FACILITY/CONTACT INFORMATION

Owner/operator's name:	Koppers Company, Inc.
EPA Facility ID No.:	MSD007027543
Address:	Grenada Tie Plant, Koppers Co., Inc. P. O. Box 160 Tie Plant, Mississippi 38960
Telephone Number:	(601)226-4584

CONTACTS

Koppers Company Grenada, Mississippi Plant

J. D. Clayton - Plant Manager
Kenny Lindvall - Treating Supervisor
S. C. Blakley - General Foreman

Keystone Environmental Resources, Inc.

C. P. Markle - Environmental Program Manager
R. M. Morosky - Project Manager

Mississippi Department of Natural Resources, Bureau of Pollution Control

G. Payne
J. Hardage

II. INTRODUCTION

This closure plan is submitted in accordance with the requirements of the Mississippi Department of Natural Resources and Federal Regulations 40 CFR Sections 270.14(b)(13), Sections 264.110 through 264.120, Sections 264.197 and 264.228. Where appropriate, regulations are cited throughout the text. The Plan addresses activities associated with closure and post-closure care of the surface impoundment at the Koppers, Grenada facility.

This document also is submitted in compliance with the Mississippi Commission on Natural Resources Order No. 1208-87. Technical review comments received from the MBPC (letter dated January 23, 1987) have been considered, and where appropriate, addressed.

It is imortant to note that hydrogeologic investigative work (report submitted January 22, 1987) concluded that there is no evidence of groundwater impact from operation of the Grenada surface impoundment. This conclusion was concurred with by the MBPC as presented at a February 3, 1987 project meeting and in a letter from Jim Hardage dated February 10, 1987.

III. GENERAL DESCRIPTION

1.0 Wood Preserving Operations

The Koppers Grenada facility is located about 2 2/5 miles south of the Grenada City Line on Vance Road in Grenada County, Mississippi. The hazardous waste facility includes a surface impoundment and a wastewater sprayfield as part of a nondischarge wastewater system. Koppers does not, however, consider the sprayfield to be a RCRA-regulated unit.

The plant uses creosote and pentachlorophenol-in-oil in the pressure treatment of wood products for railroads, utilities, and others. The major product is treated railroad cross ties. Other wood products such as poles and piling are also treated at this plant.

The raw materials include: creosote, petroleum oil, pentachlorophenol and wood. Raw materials and treated products arrive and leave by rail and truck.

Generally, wood comes to the plant presized. It is seasoned at the plant by air drying, steaming or the "Boulton" process. The plant has limited wood working capability to size ties and fabricate to customer specifications.

Once the wood is sized, it is pressure treated in a cylinder. Generally, the wood is loaded onto tram cars which are pushed into the cylinder using a small locomotive, lift truck, or similar equipment. The cylinder door is sealed via a pressure tight door. Treating solution is then pumped into the cylinder with heat and pressure applied. At the end of the process, the excess treating solution is pumped out of the cylinder for reuse. A final vacuum is then pulled and any additional solution is returned for reuse. The vacuum is released and the cylinder door is opened. The trams, loaded with treated wood, are pulled from the cylinder. Wastewater containing wood preserving chemicals results from wood conditioning (steaming/boultanizing) and from storm and utility water in manufacturing areas.

2.0 Surface Impoundment

The surface impoundment was constructed in the mid 1970s. It generates only one type of waste, K001 (bottom sediment sludge from the treatment of wastewaters from wood preserving processes using creosote or pentachlorophenol). The amount and schedule of K001 received, varies with the level of business the treating plant handles. The hydraulic capacity of the surface impoundment is about 748,000 gallons. After a long hydraulic detention time, wastewaters from this process generate a small amount of bottom sediment sludge. The surface impoundment acts as a polishing pond and is preceded by two mechanical oil/water separators and flow equalization which recaptures material for use in the production process. This minimizes the amount of wood preservative that could flow into the surface impoundment.

3.0 Topographic and Other Maps

A map showing the location of the impoundment relative to the plant facilities is enclosed as Attachment 1. A topographic map (1" = 40") showing the overall size and orientation of the surface impoundment is presented as Attachment 2.

The Koppers facility (including the waste management facility) is located in an area generally designated agricultural except for the small village of Tie Plant which is west of the property line. A surrounding area land use map is included as Attachment 3.

The wind rose enclosed as Attachment 4, is for Jackson, Mississippi during January, 1981. The "Wind Summary" table for Grenada, Mississippi Army Airforce Base for August, 1943 to May, 1944 and August, 1945 to November, 1945 is included as Attachment 5.

4.0 Chemical and Physical Analyses

All of the waste associated with this plant are derived from a common source which is the pressure treatment of wood products (primarily railroad ties and telephone poles) with creosote and pentachlorophenol in oil. Solid wastes include, soil contaminated with creosote or pentachlorophenol, unreclaimable preservatives from process storage tanks, and door pit waste from the treatment area. The door-pit waste consists of wood chips, dirt and process residues. The hazardous waste addressed in this plan is (K001) bottom sediment sludge from the treatment of wastewater from wood preserving processes that use creosote and/or pentachlorophenol.

Creosote, followed by pentachlorophenol-in-oil remain the primary wood preservatives used in the United States. Creosote is defined by the industry as a distillation product of coal tar which is produced by destructive distillation of coal. Creosote has a boiling range of 390°F to approximately 750°F. Other quality control specifications such as specific gravity, carbon content, and water content, etc. have been established by the industry and are included as Attachment 6. It is composed principally of higher molecular weight aromatic hydrocarbons in addition to tar acids and bases. The preservative has 200 or more identified components, but less than 20 are present in amounts exceeding 1 percent. Compositions vary with batch lots, depending on coal service and production conditions. The major components of typical samples are phenanthrene (21 percent), fluorene and fluoranthene (each 10 percent), and acenaphthene and pyrene (each about 9 percent).

The chemical analysis of bottom sediment sludge, creosote and pentachlorophenol waste found at the Koppers Grenada treatment facility is basically the same as typical creosote and pentachlorophenol analysis found in available literature. The physical characteristics, however, will change due to the presence of wood chips, wood sugars and chemicals, dirt and thermal thickening of the preservatives. Attachment 7 contains analyses that are typical of wood treating wastes. This attachment also contains results of chemical testing that was performed on K001 samples collected from the Grenada, MS surface impoundment during February 1987. Pertinent physical data from this study are shown in Appendix A.

On the basis of long experience with the above wastes, it is known that they are compatible with each other, are nonreactive, are not ignitable at temperatures less than 140°F, have low vapor pressures, and can be handled with ordinary steel containers, process equipment and materials of construction without corrosive effects.

Attachment 1 (Section III)

Site Plan

Attachment 2 (Section III)

Site Topographic Map

Attachment 3 (Section III)

Surrounding Area Land Use Map

ABSTRACT

BIBLIOGRAPHIC DATA SHEET	1. Report No. NCMPDD-73-01	2.	3. Recipient's Accession No.
4. Title and Subtitle PRELIMINARY EXISTING LAND USE PLAN NORTH CENTRAL PLANNING AND DEVELOPMENT DISTRICT			5. Report Date APRIL, 1973
			6.
7. Author(s) THE PLANNING STAFF OF NCPDD			8. Performing Organization Rept. No.
9. Performing Organization Name and Address NORTH CENTRAL PLANNING AND DEVELOPMENT DISTRICT BOX 668 WINONA, MISSISSIPPI 38967			10. Project/Task/Work Unit No. CPA-MS-04-25-1002
			11. Contract/Grant No. CPA-MS-04-25-1002
12. Sponsoring Organization Name and Address DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT 300 WOODROW WILSON WEST JACKSON MALL JACKSON, MISSISSIPPI 39213			13. Type of Rept. & Period Covered FINAL
			14.
15. Supplementary Notes PREPARED IN COOPERATION WITH THE MISSISSIPPI RESEARCH AND DEVELOPMENT CENTER AND COOPERATING LOCAL GOVERNMENTS.			
16. Abstracts THE PRELIMINARY LAND USE PLAN IS AN INVENTORY OF ALL EXISTING USES SITUATED WITHIN THE SEVEN COUNTY AREA. THE PRELIMINARY LAND USE PLAN WAS PREPARED FOR THE DISTRICT USING THE LAND USE CLASSIFICATIONS ESTABLISHED BY THE R & D CENTER.			
17. Key Words and Document Analysis. 17a. Descriptors 17b. Identifiers/Open-Ended Terms 17c. COSATI Field/Group			
18. Availability Statement LIMITED	19. Security Class (This Report) Unclassified		21. No. of Pages
	20. Security Class (This Page) Unclassified		22. Price

FORM NTIS-35(10-70)

USCOMM-DC 40329-P71

:GEND

TIAL

TRACE NATCHEZ TRACE PARKWAY

55 INTERSTATE HIGHWAY

82 U.S. HIGHWAY

7 STATE HIGHWAY

MAJOR COUNTY ROADS

MAJOR CITY STREETS

COUNTY LINES

CORPORATE LIMITS

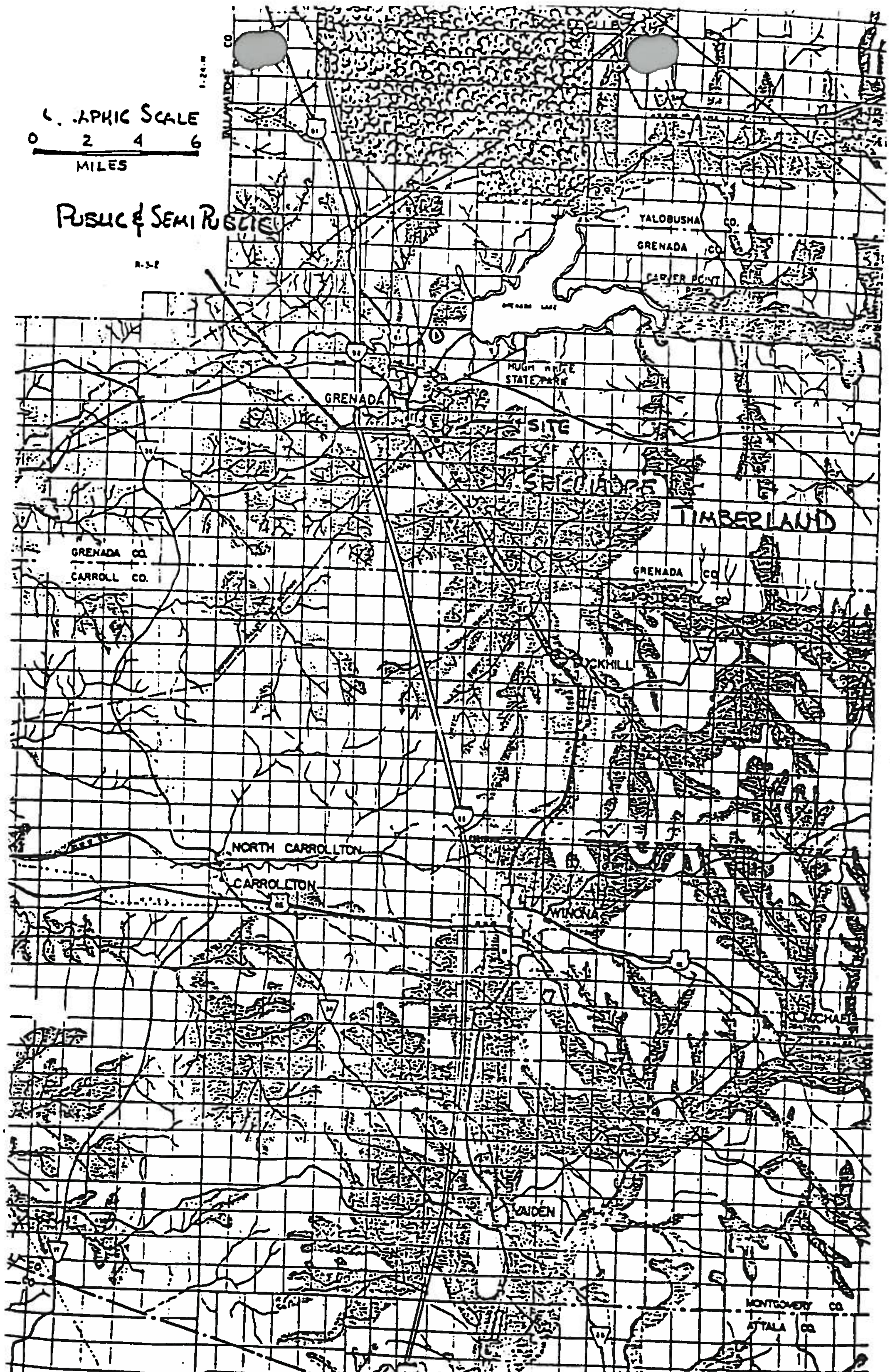
R-3E TOWNSHIP, RANGE, & SECTION LINES

DRAINAGE

ICRR RAILROADS

TRANSMISSION LINES

PIPE LINES



GRAPHIC SCALE
0 2 4 6
MILES
PUBLIC & SEMI PUBLIC
YALOBUSHA CO.
GRENADA CO.
HUGH WHITE STATE PARK
GRENADA
SITE
TIMBERLAND
GRENADA CO.
CARROLL CO.
NORTH CARROLLTON
CARROLLTON
WINONA
VAIDEN
MONTGOMERY CO.
ATTALA CO.

Attachment 4 (Section III)

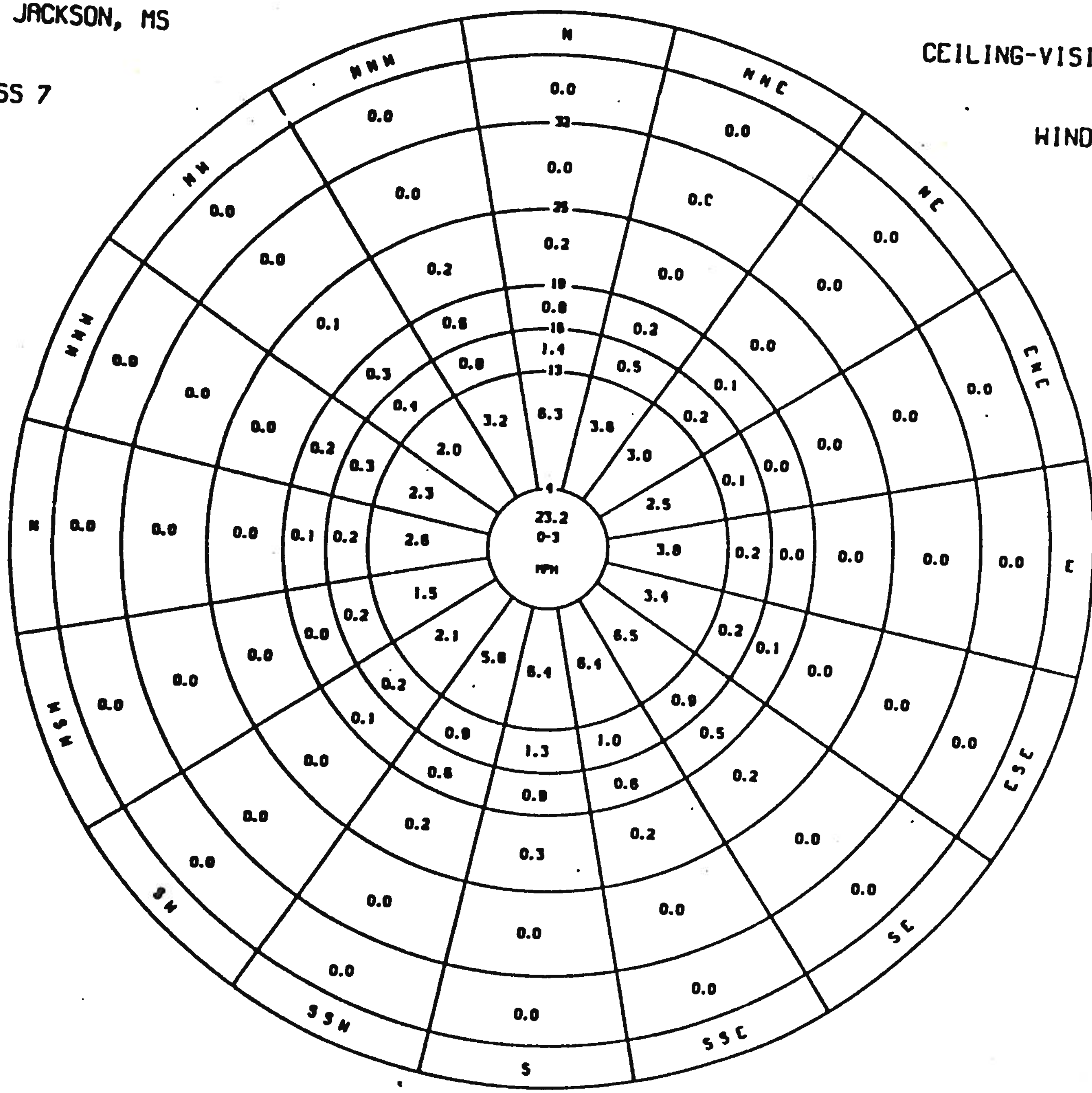
Wind Rose for Jackson, MS

JAN JACKSON, MS

CLASS 7

CEILING-VISIBILITY

WIND GRAPH



Attachment 5 (Section III)

Wind Summary Table for Grenada, MS

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	VEL. / DIR.	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	12	2		5438	XXXX XXXX	8988	XXXX XXXX	48891	
PER CENT →														100.0	XXXXXXXX XXXXXXXX	XXXX XXXX

Attachment 6 (Section III)

Quality Control Specifications for Creosote

TABLE 7.-Physical Properties of Creosote and Its Fractions

	American Wood-Preservers' Association Standards					
	P1-65[a]		P7-72[b]		P13-65[c]	
Water % volume	<1.5		<1.0		<1.5	
Xylene, insoluble, % wt.	<0.5		<0.5		<0.5	
Specific gravity 38/15.5 C						
Whole creosote	>1.050		>1.080		>1.080	
Fraction 235-315 C	>1.027		—		>1.030	
Fraction 315-355 C	>1.095		—		>1.105	
Residue above 355 C	—		—		>1.160	
Distillation, % by wt.	Min.	Max.	Min.	Max.	Min.	Max.
Up to 210 C	—	2.0	—	1.0	—	2.0
235 C	—	12.0	—	10.0	—	12.0
270 C	20.0	40.0	—	—	20.0	40.0
315 C	45.0	65.0	—	—	45.0	65.0
355 C	65.0	82.0	65.0	—	65.0	75.0

Shall remain fluid and crystal free after 3 hours at 5 C.

a For land and fresh water use.
b For brush or spray application.
c For marine (coastal water) use.

From "The Biologic and Economic Assessment of Pentachorophenol, Inorganic Arsenicals and Creosote, Volume 1", by USDA, dated November 4, 1980.

TABLE 8.-American Wood-Preservers' Association specifications for creosote-coal tar solutions[a]

	Grade			
	A	B	C	D
Composition				
Creosote	<80	<70	<60	<50
Coal Tar	—	—	—	—
Water (% by volume)	>3.0	>3.0	>3.0	>3.0
Xylene, insol. (% by wieght)	>2.0	>3.0	>3.5	>4.0
Coke reidue (% by weight)	>5.0	>7.0	>9.0	>11.0
Specific gravity 38/15.5 C	1.06-1.11	1.07-1.12	1.08-1.13	1.09-1.14
Whole oil	1.025	1.025	1.025	1.025
235-315 C	1.085	1.085	1.085	1.085
315-355 C	—	—	—	—
Residue				
Distillation	5	5	5	5
To 210 C	25	25	25	25
To 235 C	—	—	—	—
To 270 C	38	34	32	30
To 315 C	60	56	52	48
To 355 C	—	—	—	—
Residue				

a AWPA Current Book of Standards (P2-68).

TABLE 9.-Comparison of the physical properties of coal tar and creosote

	Creosote[a]	Coke Oven Coal Tar[b]
Benzene insoluble, % wt.	0.99	4.8
Specific gravity 38/15.5 C		
Whole oil	1.102	1.180
Fraction 235-315 C	1.054	——
Fraction 315-355 C	1.133	——
Distillation, % wt.		
Up to 210 C	1.67	1.8
235 C	6.89	7.1
270 C	19.39	18.2
315 C	49.8	28.3
355 C	72.58	41.9
Residue above 355 C	28.67	57.8

a Lorenz and Gjovik, 1972.
b Martin, 1949.

Attachment 7 (Section III)

Wood Treating Waste Analyses

- o Typical Analyses
- o Grenada K001 Analyses

TYPICAL ANALYSIS OF WOOD TREATING WASTE
GENERATED AT OTHER KOPPERS WOOD TREATING PLANTS

WASTE CHARACTERISTICS

The hazardous waste handled at this facility include: bottom sediment sludges from the treatment of wood preserving wastewater (K001) that contain creosote and/or pentachlorophenol/creosote (U051) and pentachlorophenol (F027). This Section of the Application contains analysis of samples collected at other of Koppers facilities which have similar processes.

EPA K001	Florence, SC	- sample of 01/07/82
U051 - Creosote	Salisbury, MD	- sample of 05/16/80
	Charleston, SC	- sample of 11/12/76
	Montgomery, AL	- sample of 12/01/76
EP Toxicity of Process	- Salisbury, MD	09/14/79
	- Salisbury, MD	03/05/80
	- Salisbury, MD	06/11/80
F027 - Pentachlorophenol	- Charleston, SC	11/12/76

DATE: 01-17-85
REVISION NO: 0

1. EPA NUMBER K001 - Typical analysis from Florence, SC and other Koppers facilities.

Date of Sample	Sample	Plant
1-7-82	FSC-139	Florence

Parameters *	
pH	4.7
Total Organic/Carbon	1560
Phenols	255
Nitrate N	2.2
Conductivity, µmhos/cm	910
Arsenic (As)	4.6
Barium (Ba)	4.6
Cadmium (Cd)	1.3
Chloride (Cl)	32
Chromium (Cr) Total	17
(Cr^6) Hexavalent	<0.1
Fluoride (F)	0.75
Iron (Fe) Total	760
Lead (Pb)	1.3
Manganese (Mn)	22
Mercury (Hg)	0.32
Selenium (Se)	<0.01
Silver (Ag)	<0.1
Solium (Na)	79
Sulfate (SO_4)	12

*Units are mg/l except for pH.

2. Date of Samples

Date of Samples	Sample	Plant
11-12-76	CSC-95	Charleston
12- 1-76	MG-96	Montgomery
5-16-80	-	Salisbury

Creosote Process		Range	Average
Water (sample heated to 103°C)		11 - 27%	18%
Solids	Fixed at 550°C	9 - 13%	11%
	Volatile at 550°C	60 - 76%	66%
Creosote		30 - 66%	43%
Petroleum Oil		0 - 2%	1%

Date of Sample	Plant
9-14-79	Salisbury

Creosote Process
EPA Leachate Test in mg/l

Parameters	
Arsenic (As)	0.171
Cadmium (Cd)	<0.01
Chem. Oxygen Dem. (O_2)	1185
Chromium Total (Cr)	0.15
Copper (Cu)	0.07
Iron Total (Fe)	51
Lead (Pb)	<0.05
Manganese (Mn)	1.7
Mercury (Hg), µg/l	0.3
Nickel (Ni)	0.75
Phenolic Cpds. (Phenol)	15.8
Solvent Extract (Oil) Method: Freon	9
Zinc (Zn)	0.56
Silver (Ag)	<0.02
Selenium (Se)	<0.005
Thallium (Ti)	0.1
Beryllium (Be)	<0.02
Antimony (Sb)	<0.1

Date of Sample	Sample	Plant
11-12-76	CSC-96	Charleston
11-12-76	CSC-97	Charleston

Pentachlorophenol Process		Range	Average
Water (Sample heated to 103°C)		30 - 37%	34%
Solids	Fixed at 550°C	1 - 3%	2%
	Volatile at 550°C	62 - 67%	65%
Pentachlorophenol		26,400 → 40,000 mg/kg	32,200 mg/kg
		or	or
		2.6 - 4.0%	3.3%

DATE: 01-17-85
REVISION NO: 0

3-5-80 SM-173 Salisbury Creosote (SM-163)

Parameters	As-Received mg/kg	Leachate from mg/liter
Antimony	<0.2	<0.1
Arsenic	21	0.13
Beryllium	0.05	<0.02
Cadmium	0.4	<0.01
Chromium	58	0.10
Copper	96	0.16
Iron	4880	11
Lead	33	<0.05
Manganese	100	0.90
Mercury	0.18	0.0003
Nickel	10	0.09
Selenium	0.3	<0.005
Silver	0.04	<0.02
Thallium	0.7	<0.1
Zinc	60	1.2

6-11-80 SM-160 Salisbury AL No. 77577

Parameters	Weight Percent
Low Boilers (11)	0.9
Naphthalene	3.3
2-Methylnaphthalene	2.2
1-Methylnaphthalene	1.1
Biphenyl*	0.8
Acenaphthene	2.1
Dibenzofuran	1.4
Fluorene	1.9
Phenanthrene and/or Anthracene	4.3
Carbazole	0.6
Methylphenanthrenes (3)	0.4
Fluoranthene	1.4
Pyrene	1.1
Chrysene	0.3
Unknowns (9)	1.6

*Any 2,6-dimethylnaphthalene present would be ineluded with the value reported for biphenyl.

ANALYTICAL DATA SUMMARY
KOPPERS COMPANY, INC
GRENADA, MISSISSIPPI SITE

Bottom Sediment Sludge Analytical Results
ug/Kg

	C-1	C-2
PAH:		
Acenaphthane	1230000	2240000
Acenaphthylene	581000	755000
Anthracene	682000	1700000
Benzo(a)anthracene	236000	861000
Benzo(a)pyrene	183000	457000
Benzo(b)fluoranthene	229000	722000
Benzo(g,h,i)perylene	< 2500	117000
Benzo(k)fluoranthene	< 2500	< 2500
Chrysene	445000	846000
Dibenz(a,h)anthracene	< 2500	< 2500
Fluoranthene	2450000	6030000
Fluorene	1280000	3050000
Indeno(123-cd)pyrene	58300	132000
Phenanthrene	5250000	13500000
Pyrene	1640000	3990000
Other Polynuclear Aromatic Compounds Tested:		
Carbazole	345000	626000
Naphthalene	2290000	537000
Phenols:		
4-Nitrophenol	< 20000	5144000469
2,3,5,6Tet-Cl-phenol	< 20000	13302000
2,4-Dinitrophenol	< 20000	10649000
2,4,6Trichlorophenol	835960	1990800
4Chloro3methylphenol	1075430	1393700
2,4-Dichlorophenol	106420	< 25000
2,4-Dimethylphenol	72720	< 25000
2-Nitrophenol	67240	56200
Phenol	122360	153300
2-Chlorophenol	20400	< 25000
Pentachlorophenol	16107600	12123000
4,6-Dinitro-o-cresol	< 20000	< 50000

IV. PARTIAL AND FINAL CLOSURE ACTIVITIES (40 CFR 264-112(a)(1))

Koppers will close the surface impoundment prior to November 8, 1988 as mandated under RCRA. The closure process considers removal of all liquids, K001 sediment, and, if feasible, contaminated underlying soil. Step-by-step tasks are detailed, to the extent possible, throughout the following sections. These tasks relate to both clean and contingent closure and are detailed enough to provide for reasonable schedule and closure cost development.

V. CLOSURE PERFORMANCE STANDARD (40 CFR 264.111)

Koppers will close the surface impoundment in a manner that 1) minimizes the need for the 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 groundwaters or surface waters or to the atmosphere. In general, Koppers plans to achieve this performance standard by removing and treating surface impoundment wastewaters and also removing contaminated bottom sludges and contaminated soil (if feasible) in the surface impoundment. Koppers plans to continue the groundwater monitoring program (in effect at the time of closure) to document any change in groundwater quality at the site if closure as a landfill is required.

VI. CONTENTS OF CLOSURE PLAN (40 CFR 264.112 (b))

Following the final design of the site work and the installation of the new wastewater pretreatment facility, a contract will be prepared for the closure of the impoundment. Koppers will designate an on-site Project Manager to coordinate the work and certify that all work is done in accordance with the regulatory agency approved Closure Plan. The closure procedure will consist of the following sections described below.

1.0 Preparation

1.1 Mobilization

Once the design has been completed, bids received and contract awarded for the site work, the mobilization of all equipment to be used for closing the surface impoundment will occur.

1.2 Personnel Protection Area

Personnel protection area, at a minimum, will include a clean change area, lockers and shower facilities for all personnel who will be handling waste materials. The workers entering the "Contaminated Zone" (surface impoundment construction/work area) must wear protective boots, coveralls and gloves. The work will start in Level "D" protection and be upgraded to Level "C" if necessary.

All workers will high-pressure wash or dispose of their boots and gloves before leaving the contamination area. The field workers will comply with appropriate safety plans while in the work areas. Those plans will be a contract requirement.

1.3 Equipment Decontamination Area

The work site will be considered a "Contamination Zone" (work area). The "Decontamination Area" is shown in Attachment 1 (Section III) and will be used for the decontamination of the vehicles. The equipment will not pass from the work area to the clean area without proper decontamination procedures being implemented. The contaminated wash water will be collected as necessary and treated on-site.

The decontamination area will be approximately 50 feet long by 50 feet wide. The area will be lined with a 30 mil hypalon liner or equivalent. The liner will be protected from puncture by placing a geotextile fabric under as well as over the liner. A layer of 12-inch bankun gravel will be placed to further protect the liner and provide a water flow zone. The washings from the decontamination area will be directed to a temporary sump. A portable pump will remove the washings for on-site management.

2.0 Description of Closure (40 CFR 264.112 (a)(b))

The following statements provide a general summary of closure activities. Closure of the surface impoundment at the Koppers Grenada site will include removal of all standing water/oil and waste residues. This will ensure that after closure, the closed area will require minimal maintenance. After removal of the water/oils and waste residues, the area will be backfilled and regraded. Placement of a final vegetative cover will be provided to prevent erosion of the clean closed area.

3.0 Maximum Waste Inventory (40 CFR 264.112(a)(2))

The impoundment is an irregular shaped rectangle which roughly measures 295 ft. x 115 ft. based on inside top of dike measurements. The bottom of the impoundment is about 7 ft. below the top of the dike (berm) with side slopes of about 6 horizontal to 1 vertical (6:1). The gross surface area at top of dike is about 34,000 sq. ft. The maximum hydraulic volume is about 100,000 cubic feet (748,000 gallons), assuming 2 feet of freeboard.

Koppers has estimated 2,500 pounds or 312 gallons (100 percent solids) of sludge may be collected each year and stored on the bottom of the impoundment. Based on a recent study, at the plant (March 1987), the average depth of material in the impoundment is estimated at 10 inches. The average bottom surface area has been estimated at 21,000 square feet. Therefore, total sludge volume is currently estimated to be 650 cubic yards. However, the percent of solids of the sludge was not determined. A summary of sludge measurements is presented in Appendix A.

4.0 Waste Removal Procedures (40 CFR 264.112(b)(3) and 264.228(a))

After the new wastewater pretreatment facility is operational and on-line and the flow of wastewater to the impoundment has been stopped, the K001 bottom sediments in the impoundment will be allowed to settle quietly for at least 30 days. Subsequent waste removal procedures will proceed as depicted in the closure process schematic (Attachment 8) and discussed below.

4.1 Removal of Standing Water/Oils

Prior to initiation of closure, the fluid level in the impoundment will be lowered as much as feasible. This will minimize the amount of water to be removed once closure starts. A floating skimmer (similar to that currently used at the plant and/or shown in Attachment 8) will be used to remove remaining standing water from the surface impoundment once closure begins. A portion of the water will be sprayed on the existing sprayfield in an amount such that it will not exceed the maximum design application of 120 gallons per minute in 15 minute intervals. The remaining volume of water will be pumped to the new pretreatment system at the plant for ultimate disposal to the POTW.

The impoundment water level will be lowered until it is within approximately 1 foot of the anticipated sludge/oil layer. At that point, discharge to the sprayfield will be discontinued, but pumping to the wastewater pretreatment facility will continue until the level reaches the sludge and oil layers. The skimmer is designed to allow the adjustment of the depth of liquid withdrawal from the surface impoundment, and will be used to prevent the accidental direct application of soild waste materials to the sprayfield.

4.2 Removal of Waste Inventory

Pumpable oils and sludges and visually contaminated soils will be centralized in one area of the impoundment and then removed.

Four options are anticipated for management of these materials based upon conditions encountered and by evaluation of these materials. Evaluation will entail determination of volume, BTU values, and/or other factors. The four options, as shown in the Closure Process Schematic in Attachment 8, are:

(1) All or a portion of the materials will be managed by ultimate dispostion to an approved hazardous waste management facility.

(2) Materials with a HHV greater than 5,000 BTU per pound, and also meeting other set criteria, will be burned in the plant boiler as fuel for energy recovery.

(3) All or a portion of the materials will be transferred to a centrifuge process where separation of the solids, water and preservatives will occur. At the present time, this process is expected to be a semi-portable installation. However, the possibility remains that a permanent centrifuge will be installed at the plant prior to closure. Note: The centrifuge process unit is a waste minimization technology directly tied into the wood preserving processes. The process returns raw materials to the head of the original on-site manufacturing process that generated the waste. This clearly satisfies the requirements for reuse. In any installation of the centrifuge process, a curbed and sumped work area will be employed to address potential spills. Again, the centrifuge process is a wood preserving recovery/reuse/minimization technology and is not directly associated with the closure activities.

(4) Materials with a HHV of less than 5,000 BTU per pound will be decontaminated on-site by a soil washing process. In general, this process is expected to clean materials to levels that are environmentally acceptable.

The first two options are self explanatory. If the total volume or concentration of oils in the sludge and contaminated soils is not of a sufficient quantity to justify the use of the decanter centrifuge process, then the material will be considered for burning. Only those materials with a wet heating value greater than 5,000 BTU per pound will be used in the plant boiler as fuel for energy recovery.

The third option addresses the centrifuge process. A typical process is shown in Attachment 8 and would consist of:

- o Loading the batch tank for gross filtration and homogenization.
- o Heat to operating temperature of wood preserving process (approximately 120°F).
- o Polymer addition to aid in dewatering and pH adjustment (optional).
- o Decanter centrifuge operation to separate liquids and solids.

The resultant phases will be handled as follows:

- o The solids will be managed by disposition via the plant boiler (if HHV greater than 5,000 BTU/lb) or (if HHV less than 5,000 BTU/lb) to the soil washing process or a licensed hazardous waste managment facility.
- o Dewatering of the recovered preservative will occur in creosote dewatering equipment normally employed in the wood preserving process which includes the creosote dehydrator and wastewater managment system. Secondary, centrifugation, with optional pH and polymer enhancement, may be utlized if needed. Pretreated wastewater will be sent to the POTW.

Attachment 8 presents a schematic of the centrifuge process. The entire process can come completely equipped as a mobile unit with containment design. If the centrifuge is permanent (on-site), then applicable safeguards will be used for materials handling. For either installation, a curbed and sumped work area will be part of the operation process.

Waste materials handled via the fourth option will be decontaminated on-site, if feasible. Sludges and soils having a heating value less than 5,000 BTU per pound will undergo on-site decontamination via soil washing processes. The materials will be washed to attempt to remove contaminants to acceptable environmental levels. A typical soil washing process than can be used, is presented in Attachment 8. The process is designed to remove contaminants from soils and separate oils from water. Safety and spill control measures will be incorporated. The exact location of the process has not been decided upon; however, the work area will be curbed and sumped.

The waste materials which are to be disposed of off-site will be placed in lined/sealed sump trailers or bulk lined storage bins, which meet transportation requirements of the D.O.T. and EPA and will be sent to one of the following EPA-permitted hazardous waste management facilities:

- SCA Chemical Services, Inc.
  (Secure Hazardous Waste Landfill)
  Route 1, Box 55
  Pinewood, SC 29125
  EPA I.D. #SCD070375985

- CECOS International
  (Secure Hazardous Waste Landfill)
  27004 South Frost Road
  Livingston, LA 70754
  EPA I.D. #LA000618298

- Caldwell Systems
  (Incinerator)
  P. O. Drawer 1018
  Lenoir, NC 28645
  EPA I.D. #SCD086871282

- Stablix South Carolina, Inc.
  (Incinerator)
  Route 5 Vernsdale Road
  Rock Hill, SC 29731
  EPA I.D. #SCD0444423

5.0 Closure Schedule (40 CFR 264.112(b)(6)))

5.1 Closure Schedule

As of the date of preparation of this revised document, an exact date has not been set for closure of the facility.

Closure initiation is dependent upon POTW hook-up, construction, and start-up of the Koppers Grenada watewater pretreatment plant. The schedule for this activity is contained in Attachment 8. The surface impoundment's closure activities are to be initiated within 30 days of final discharge to the impoundment, i.e. within 30 days of start-up completion. Closure task durations are also contained in Attachment 8.

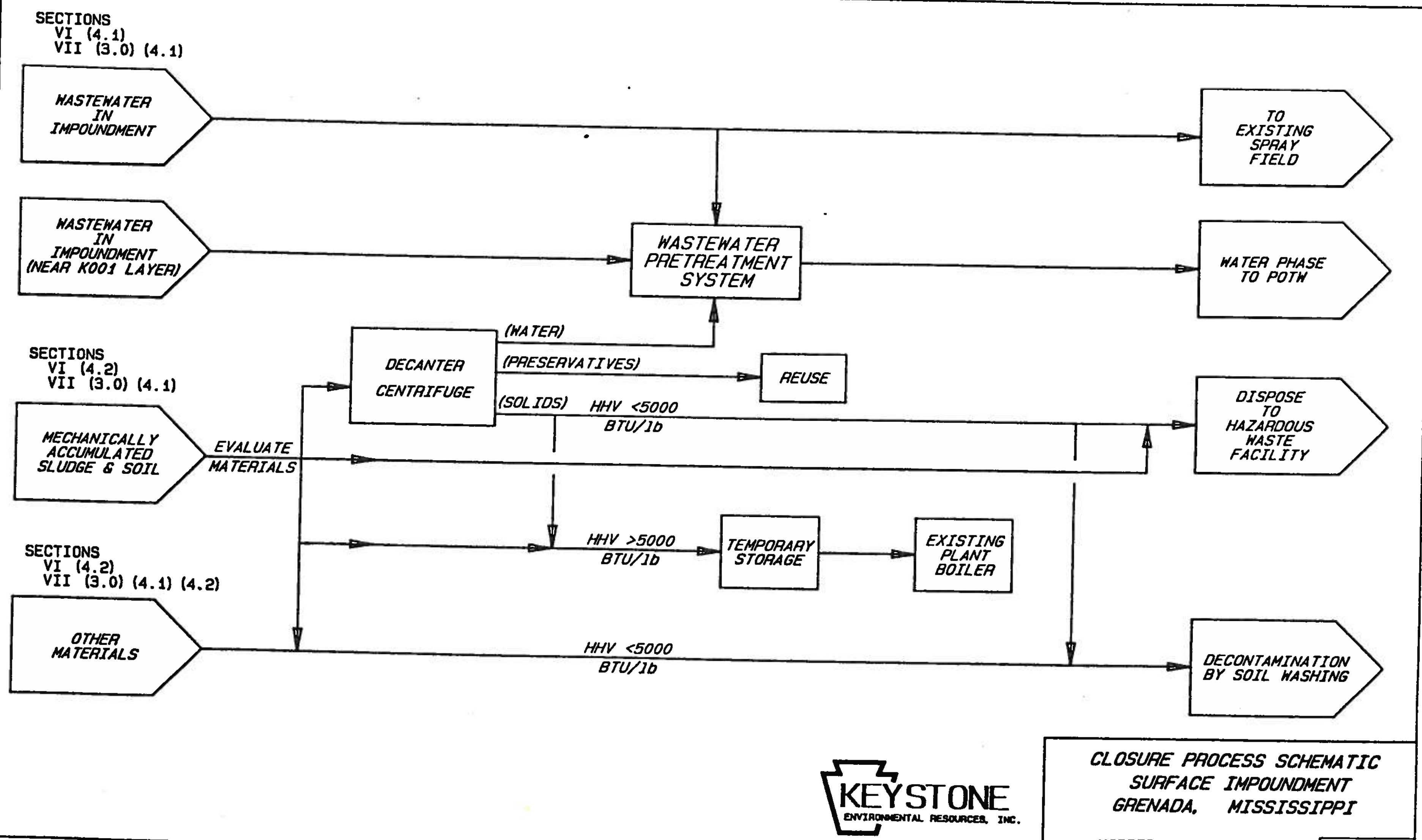
5.2 Extension for Closure

The exact amount and condition of materials and subsoil conditions encountered during the surface impoundment closure will impact the removal/work effort and could thereby affect the schedule. Dewatering and sludge drying depends on weather conditions. At the present time, conditions to be encountered during closure appear to make it necessary to extend the time period for removal, disposal and/or decontamination of this hazardous waste facility beyond 180 days. Once the closure procedures detailed herein are reviewed and aproved, and the task durations are determined to be accurate then it is apparent that an extension will be necessary. Koppers subsequently will request such extension for closure from the Mississippi Department of Natural Resources.

Attachment 8 (Section VI)

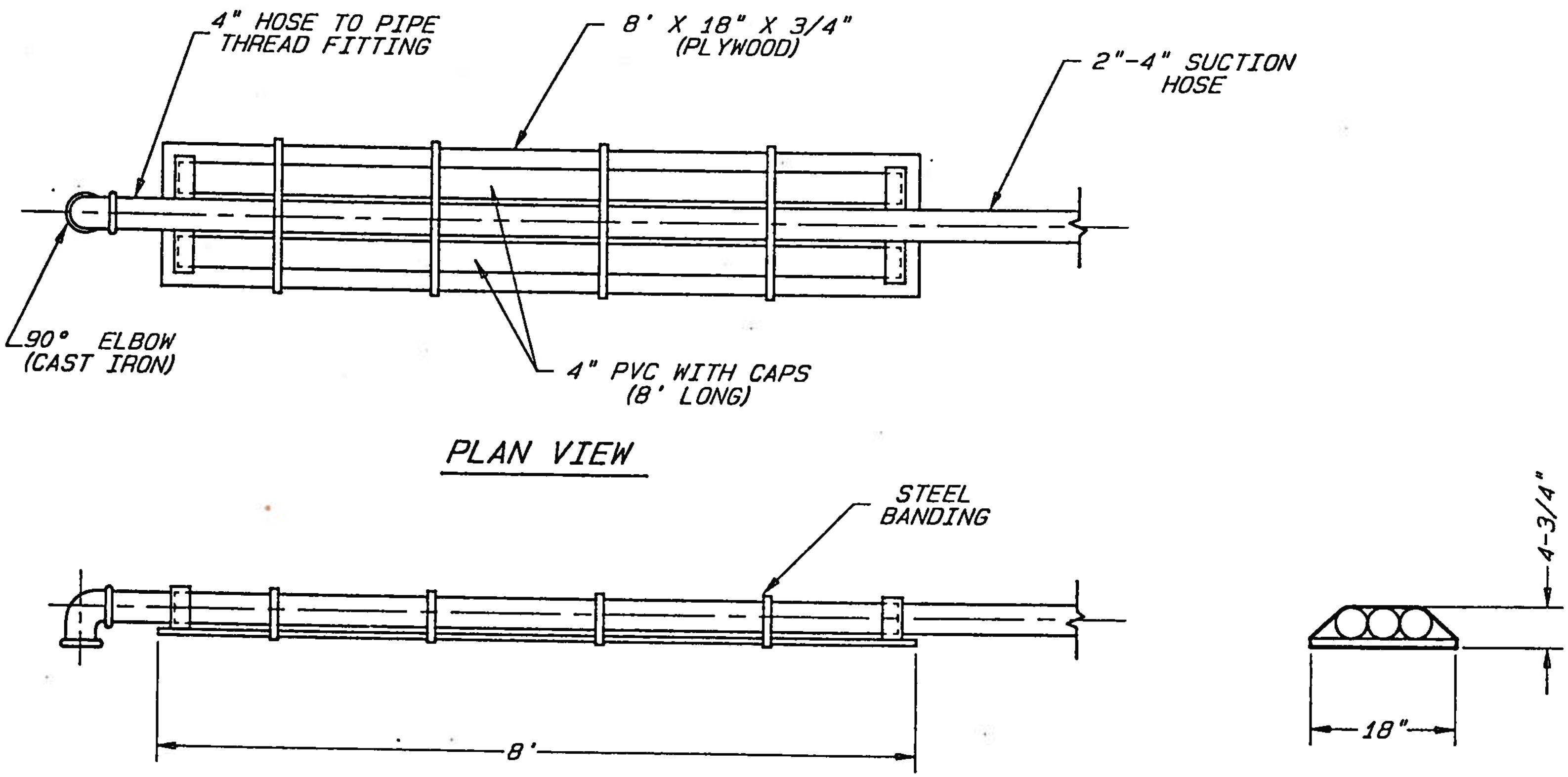
Closure Processes and Schedules

- Closure Process Schematic
- Floating Skimmer
- Centrifuge Operation (Typical Process Flow)
- Typical Soil Washing Process
- Wastewater Pretreatment System Project Schedule
- Schedule for Closure



CLOSURE PROCESS SCHEMATIC
SURFACE IMPOUNDMENT
GRENADA, MISSISSIPPI

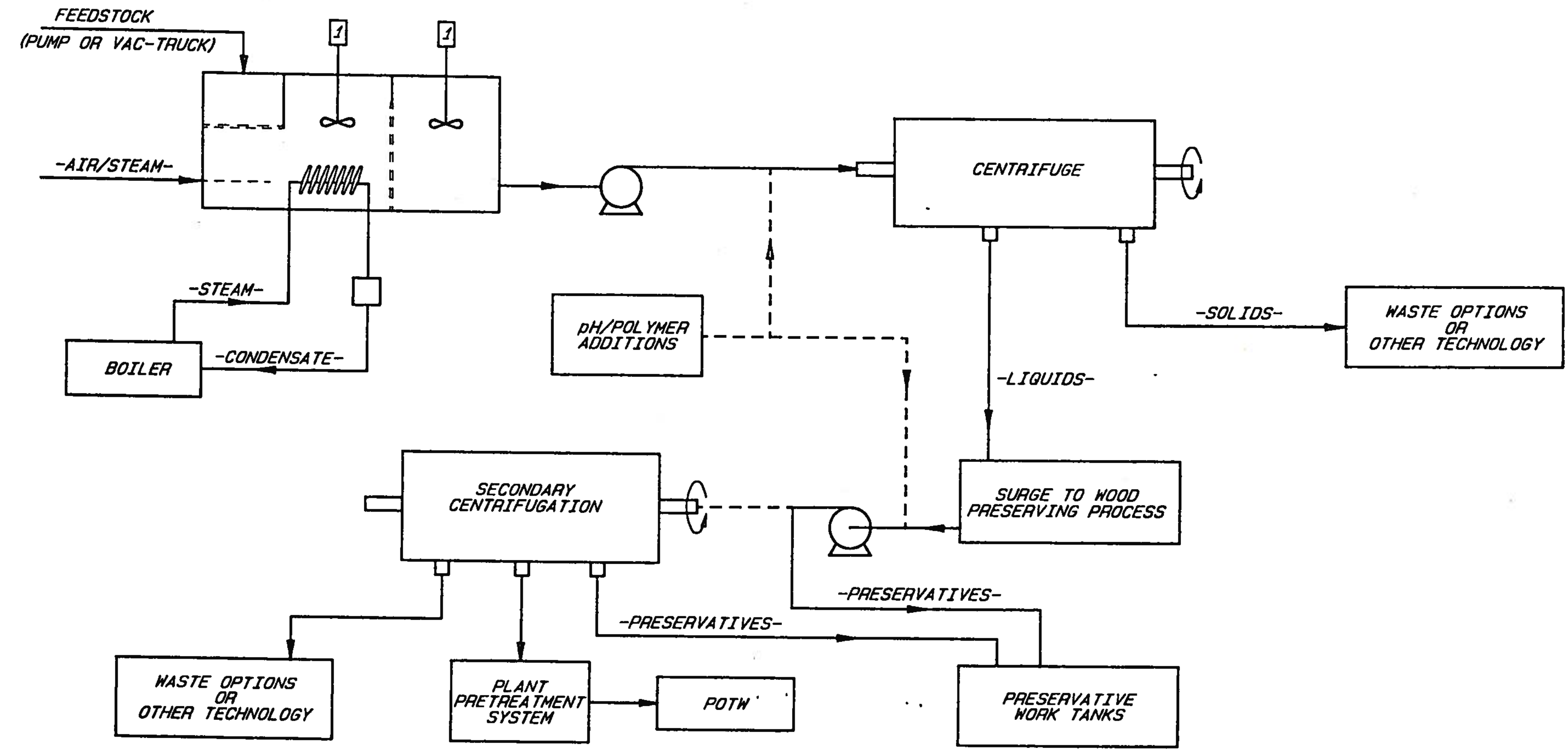
KOPPERS COMPANY INC. C67578



KEYSTONE ENVIRONMENTAL RESOURCES, INC.

FLOATING SKIMMER
GRENADA, MISSISSIPPI

KOPPERS COMPANY, INC. C67582



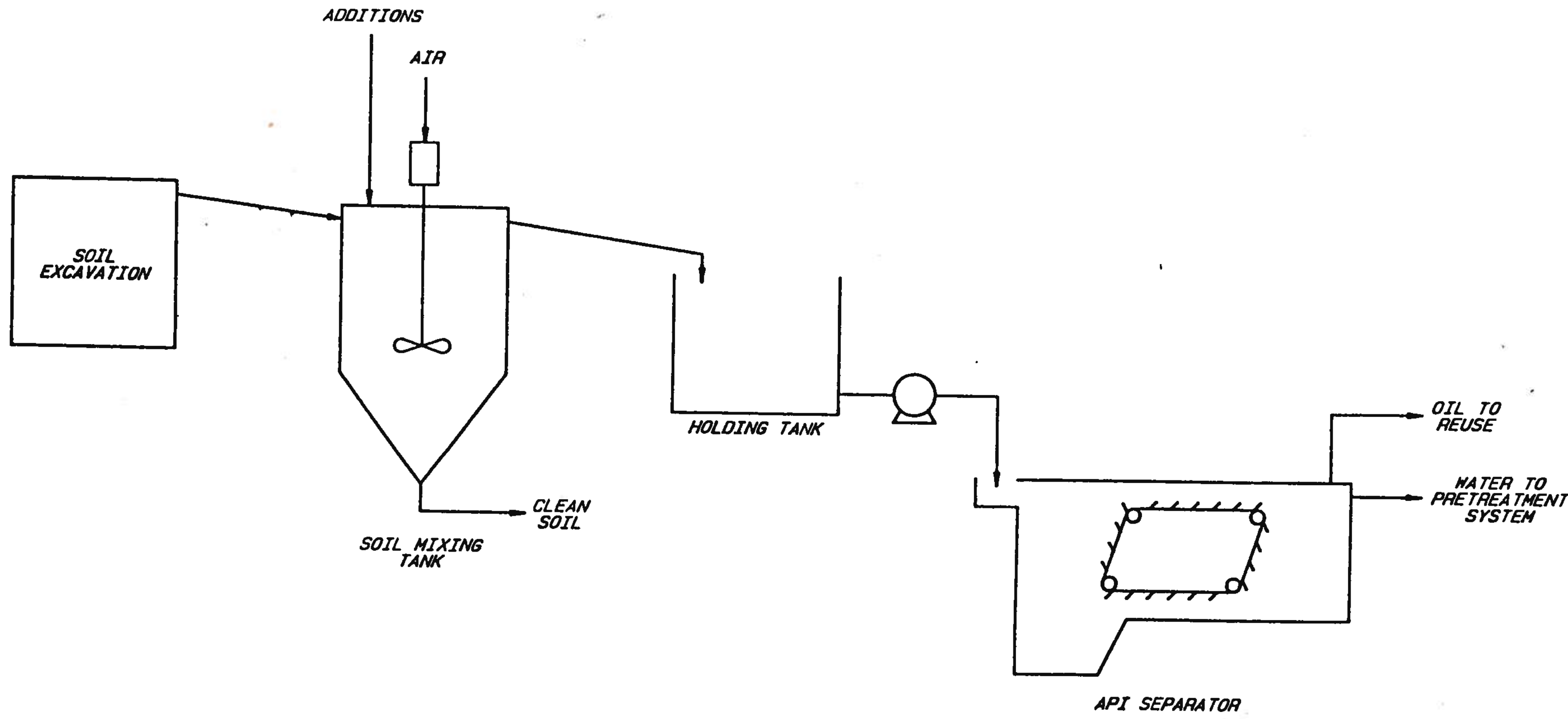
NOTES:

1. ALL WASTE WATER WILL BE SENT TO PRETREATMENT SYSTEM.
2. RECOVERED PRESERVATIVES WILL BE REUSED.
3. SOLIDS WILL BE BURNED IF HHV > 5000 BTU/# OR OTHERWISED MANAGED.

KEYSTONE ENVIRONMENTAL RESOURCES, INC.

CENTRIFUGE OPERATION
(TYPICAL PROCESS FLOW)
GRENADA, MISSISSIPPI

KOPPERS COMPANY INC. C67581

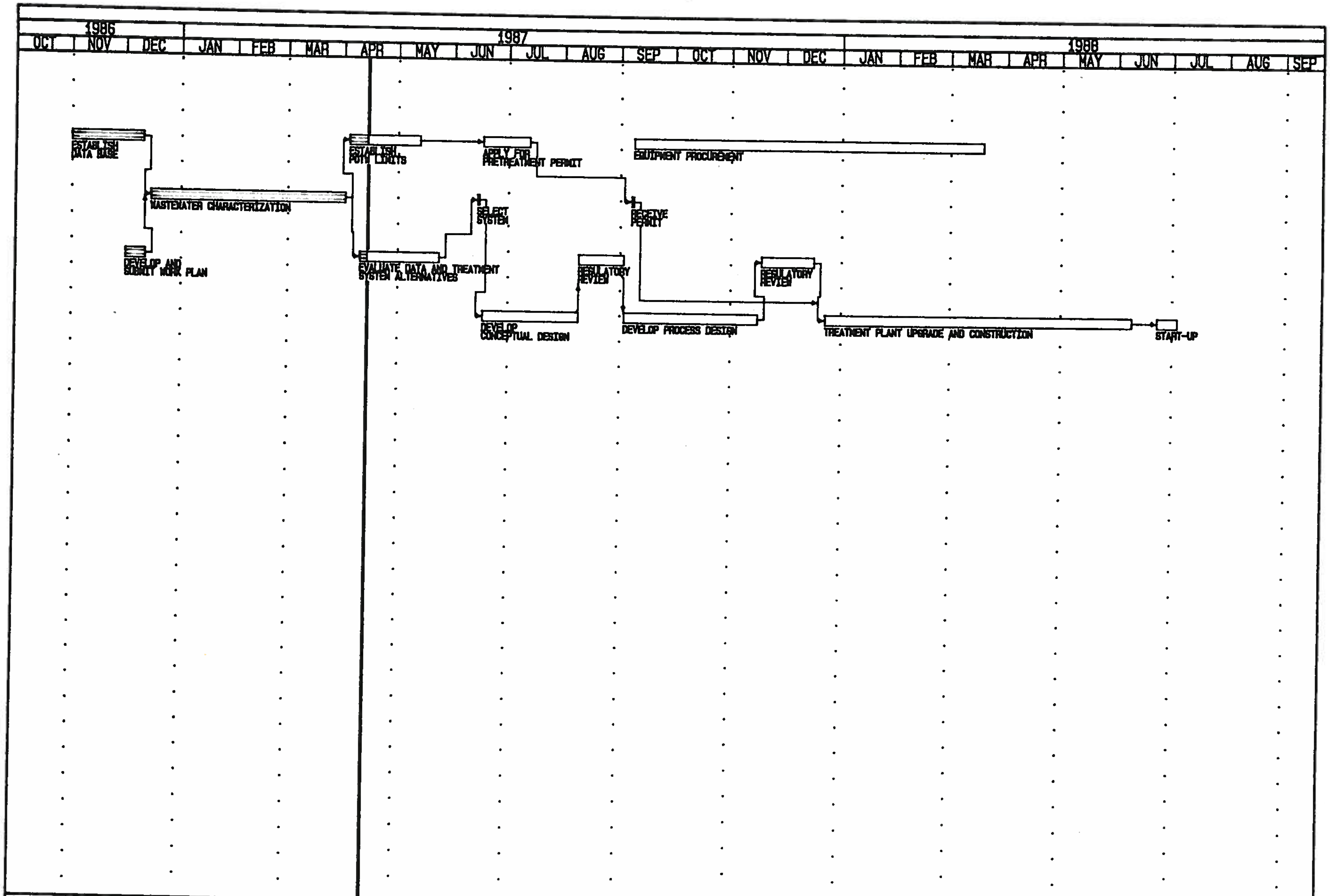


KEYSTONE ENVIRONMENTAL RESOURCES, INC.

TYPICAL SOIL WASHING PROCESS

GRENADA, MISSISSIPPI

KOPPERS COMPANY, INC. C67575



Legend:
Activity Bar/Early Dates
Critical Activity
Progress Bar

1984, 1985, 1986

Project Start : 1NOV86
Project Finish:

GRENADA, MISSISSIPPI
184733
PROJECT SCHEDULE

Sheet 1 of 1

Data Date: 14APR87
Plot Date: 13APR87

PREPARED BY: R. NOROSKY

Date	Revision	Checked	Approved

SCHEDULE FOR CLOSURE

Wastewater Pretreatment System Start-Up and Final Receipt of Waste	Day O
Quiet Settling	30 Days
Dewatering	90 Days
Accumulate, Evaluate and Remove K001 and Contaminated Soil	75 Days
Soil Sampling/Analysis	60 Days
Removal of Contaminated Soil (if feasible)	30 Days
Soil Sampling/Analysis (if necessary)	60 Days
Backfill, Cover, Seed and Decontaminate Equipment	60 Days
Completion of Certification	30 Days
Estimated Total	435 Days

Notes:
There are no durations shown for disposal/treatment of contaminated materials. These materials will be managed so as not to significantly impact the closure schedule.

VII. DECONTAMINATION PROCEDURES (40 CFR 264.112(b)(4), 264.228)

1.0 Soil Investigation (40 CFR 264.112(b)(4) and 264.228(a))

Once all water/oil, K001 sludges and visually contaminated soils are removed from the impoundment, soil sampling will be performed as necessary and appropriate to determine the existance of hazardous contaminants. The following soils testing procedures are planned:

1.1 Background Soil Borings

At least four soil borings approximately 4 feet deep are to be augered in an area unaffected by plant operations. Samples are to be taken continuously for the entire depth of the boring. These borings are to be composited and the composite sample is to be used as the background soil sample. The exact locations(s) will be determined during detailed field reconnaissance planned for completion during 1987.

1.2 Impoundment Soil Sampling

Soil samples are to be taken via augering from at least four representative locations in the impoundment bottom. Each hole is expected to be approximately 4 feet deep and soil samples are to be collected to represent the entire section. Grab samples are to be taken at each hole at 1-foot intervals. The field sampling will be managed by an environmental professional familiar with standard sampling and analysis protocol. The supervisor at the site will be alerted to unexpected conditions and will make any needed adjustments to the protocol of the investigation.

1.3 Soil Sample Analyses

If necessary and appropriate, Koppers plans on conducting the chemical analyses on all soil samples, including the composite background sample (see Table 1).

TABLE 1

ANALYTICAL PARAMETERS FOR SOIL SAMPLES
KOPPERS COMPANY, INC.
GRENADA, MS PLANT

pH	trichlorophenols
conductivity	tetrachlorophenols
Total Organic Carbon (TOC)	chrysene
Chemical Oxygen Demand (COD)	naphthalene
phenol	fluoroanthene
pentachlorophenol	benzo(b)fluoranthene
2-chlorophenol	benzo(a)anthracene
p-chloro-m-cresol	dibenzo(a)anthracene
2,4-dimethylphenol	acenaphtalene
2,4-dinitrophenol	indeno(1,2,3-cd)pyrene
	benzo(a)pyrene

All laboratory analysis techniques shall conform to "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods" U.S. EPA SW-846, 2nd Edition, July 1984 and 40 CFR 261 Appendix III - Chemical Analysis Test Methods. The laboratory QA/QC procdures in Appendix B will be followed for the analyses of all samples.

The analytical results of the impoundment soil samples will be compared to the results of the background sample to determine if further excavation is necessary. If the contamination levels of the grab samples are appreciably above the background level, then further excavation and analysis may be required. If it is determined that contaminated soils cannot be feasibly removed at closure, the Contingent Closure Plan requirements (Section VIII, Closure as a Landfill) may apply to this facility.

2.0 Procedures for Cleaning Equipment and Removing Contaminated Soils (40 CFR 264.112(b)(4) and 264.228(a))

After the contaminated soils have been removed and the soil investigations completed, the following equipment will require decontamination: augering equipment, pipelines and pumps, backhoes, front-end loader, and personal safety equipment. This equipment will be decontaminated by scraping and flushing. A nonfoaming detergent and water wash followed by water rinsing and steam cleaning (where appropriate) will be utilized. Sampling equipment will be decontaminated as appropriate between each use.

3.0 Management of Generated Wastes (40 CFR 264.114 and 264.228(b))

All remaining soils that were determined to be hazardous during this investigation and an estimated 8 cubic yards of solid materials (scraped from the construction equipment) will be washed or disposed of as a hazardous waste. Flushing and steam cleaning of the constuction equipment will generate an estimated 5,000 gallons of wastewater. The wastewater will be treated in the wastewater pretreatment facility and discharged to the POTW. All protective clothing worn during closure will be managed as hazardous waste.

4.0 Methods for Sampling and Testing to Demonstrate Success of Decontamination (40 CFR 264.112(b)(4) and 264.228(b))

4.1 Decontamination Area

After all the closure activities at the surface impoundment are completed, materials in this area will be managed as appropriate.

4.2 Impoundment Area

Prior to backfilling and regrading of the impoundment area, a final set of soil samples will be taken from the four previous sampling locations and analyzed (Table 1) to verify that decontamination has occurred. The results will be compared to background. This will assure that all contaminated soils have been removed (washed or disposed) and clean closure can occur. Procedures will follow those previously described in Section 1.0.

5.0 Final Closure (40 CFR 264.228 (a)(2) and 264.310(a))

After documented verification of subgrade decontamination in the surface impoundment, the existing perimeter fence will be removed and the surrounding earth berms will be excavated to the lines shown on drawing A102983 in Attachment 9. During berm removal, topsoil and other unsuitable materials will be segregated, and the clean soil materials will be blended as unclassified fill for impoundment grading. All additional clean soil fill for regrading will be obtained from an approved off-site backfill source.

Impoundment backfill will consist of two layers, unclassified soil fill and topsoil. The unclassified fill will be placed in eight inch lifts, compacted with sufficient energy to achieve 95 percent of maximum laboratory density as defined by ASTM D-698. Field density tests will be performed on each lift to verify the above density. The top surface of the fill will be crowned about the center of the impoundment as shown on drawings A102981 and A102983 to slope uniformly to the perimeter at a minimum gradient of three percent.

Immediately following fill placement, an 18-inch minimum thickness of topsoil material will be laced to the finished lines and grades shown on the above drawings. During grading and topsoil placement, the monitoring wells adjacent to the impoundment will be protected. Following topsoil placement, the exposed surface will be raked, seeded and mulched as described in Section VIII, 5.0 to minimize erosion and maintenance.

Attachment 9 (Section VII)

Clean Closure Details and Designs

- A102981 - Clean Closure Grading Plan
- A102983 - Grading Plans - Sections and Details

VIII. CLOSURE AS A LANDFILL

1.0 Contents of Plan (40 CFR 264.112(b) and 264.310)

Although Koppers will make specific efforts to remove the hazardous waste and contaminated soil from the bottom of the impoundment, 40 CFR 264 requires that a Contingent Closure Plan be prepared to effect closure of the surface impoundment as a disposal unit in the event it is not practical to remove all contaminated soil.

2.0 Waste Removal (264.112(b)(3))

Koppers plans to use the procedures in Section VI - 4.0 for the elimination of the liquid, K001 sludge, and contaminated soil, in order to pursue clean closure. However all waste removal procedures may not be necessary if it is determined to proceed with contingent closure.

3.0 Decontamination Procedures (40 CFR 264.112(b)(4) and 264.114 and 264.310)

Koppers plans to use the decontamination procedures described in Section VII.

4.0 Final Cover Design and Construction (264.310(a))

If it has been determined that clean closure is not feasible, then closure of the impoundment wil proceed by in situ capping. Capping will consist of four layers. First, a general fill of unclassified soil materials will be placed on a conditioned subgrade. Second, a clay barrier cap will be installed over the unclassified fill. Third, a free draining, granular, vent/underdrain layer will be placed on the clay barrier and fourth, a layer of topsoil will be used to finish grade the impoundment backfill.

Initially, the exposed subgrade within the impoundment area will be proofrolled using a heavy rubber tired or tracked vehicle to stabilize the surface materials and locate any soft areas that need further conditioning to accept compacted fill.

Areas requiring improvement will be overexcavated, reworked and compacted as required prior to backfilling.

The initial source of fill soil is to be the above grade earth dikes that surround the impoundment excavation. Shrubs, trees, and roots will be cleared and grubbed before cutting the dikes. Inorganic soil from the dike embankments is to be placed in the impoundment, spread in lifts, and compacted. Organic soils and topsoil will be stockpiled for use in the barrier layer. Lifts will be approximately 6 to 8 inches thick. To minimize settlement, soils are to be compacted with equipment that can produce or exceed the Standard Proctor compaction energy. Soils should be within 2 percent (plus or minus) of optimum moisture content to achieve desired density. Each lift will be compacted to 100 percent of the material's maximum dry density as determined by the Standard Proctor Compaction test (ASTM D-698). A field density and moisture content test will be made on each lift to verify that this degree of compaction is achieved. The final lifts are to be graded to the contours shown on drawing A102982, Attachment 10.

A geotextile membrane will be placed on top of the fill material to provide support and protect the impermeable clay layer which will be placed on top of the fill material. This clay layer will be 24 inches thick and will have a minumum permeability 1.0 x 10^{-7} cm/sec and will extend 2 feet beyond the plan limits of the backfill excavation. The layer will be graded such that a 3 percent slope exists from a center line crown. The clay soils will be compacted to 100 percent of maximum dry density (ASTM D-698) at, or above the 2 percent optimum moisture content. Field density and moisture content tests will be conducted on each lift to verify that this degree of compaction is achieved.

A second geotextile membrane will be placed on top of the clay layer as a filter for the 6-inch thick sand drainage and vapor release layer. To collect the lateral drainage, a 6-inch perforated drain pipe will be provided around the periphery of the layer. Appendix C details the calculations that show the efficiency of the liner system. Attachment 10 shows a typical cross-section of the closure cover. Finally, an 18-inch layer of topsoil will be placed on the clay/sand cover. This topsoil layer will also be graded at a minimum of 3 pecent and seeded to prevent erosion of the impoundment cap. The depth of the topsoil layer is sufficient to prevent root penetration of the underlying soil layers.

5.0 Promotion of Drainage and Minimization of Erosion or Abrasion (40 CFR 264.310(a)(3))

To promote proper drainage of the run-on and run-off at the impoundment area, the top surface of the impoundment backfill will be graded uniformly from the center to blend with the moderately sloped original ground surface. The sheet drainage from the surface of the backfill will then be conducted to existing drain swales around the impoundment area.

The 6-inch diameter perimeter drain in the underlyng sand layer will also discharge into the drain swale. Attachment 10 presents the locations of the drain and its relationship to the existing contours. The existing drainage swales are adequate to handle the increased surface water run-off generated from the capped surface impoundment.

In addition to the perimeter drain for the promotion of proper drainage, erosion control is provided by a vegetated surface. As stated previously, the 18-inch topsoil cover will be seeded. However, prior to seeding the soil must be properly prepared. Pulverized limestone will be applied to the soil in an amount to be determined from analysis of the soil by a qualified soil sampling service. One week after the limestone has been spread, fertilizer will be added. Fertilizer in the amount of 5-10-5 nitrogen, phosphorus and potash, respectively, will be spread at the rate of 30 lb per 1,000 sq. ft., after which a 1/3 inch layer of peat moss or mushroom manure will be added. The fertilized area will then be properly tilled and hand-raked to a smooth, even grade. All stones and dirt clods over 1-inch diameter will be removed from the topsoil.

Seed will be sown on the fertilized area in the quantity of 8 lb per 1,000 sq ft, either mechanically or by hand. Seed mix will be in conformance with the recommendation of a local recognized seed supplier approved by Koppers. The area will then be lightly brushed or raked to provide slight covering over the seed, after which it will be lightly rolled in two directions. All seeded areas will be kept constantly wet to a depth of 3 inches for 10 days immediately after seeding. All areas which do not show a prompt catch of grass will be reseeded as felt necessary. This vegetative cover will provide for erosion control. The Grenada weather conditions and the finish grade are such that freeze-thaw effects will not be significant to effect its integrity. As stated in the soil survey for Grenada County, Mississippi, frost penetration in this subtropical region is relatively shallow, with freezing temperatures lasting no longer than one to three days.

Attachment 10 (Section VIII)

Closure as a Landfill Details and Designs

- A102982 - Contingency Plan - Grading Plan
- A102983 - Grading Plans - Sections and Details

IX POST-CLOSURE CARE REQUIREMENTS (40 CFR 264.310(b))

The Post-Closure Care Plan for the Koppers facility includes the inspection, monitoring, and maintenenace activities that are to be performed to prevent the post-closure escape of hazardous waste, hazardous waste constituents, leachate, contaminated rainfall runoff or waste decomposition products to ground or surface waters or to the atmosphere. Post-closure maintenance pertains to the closed surface impoundment and groundwater monitoring system, if the wastes cannot be removed upon closure.

1.0 Inspection of Final Cover (40 CFR 264.310(b))

The following features are to be subject to inspection during the post-closure care period.

- Site access and security systems.
- Internal and external road systems.
- Covers (including vegetative cover condition, erosion, settlement, and displacement).
- Runon and runoff control systems.

(See inspection log sheet, Appendix D.)

The wastes at the Grenada site are of a solid nature; therefore, leachate collection/detection equipment and gas collection and control systems are not necessary.

The post-closure care of the closed surface impoundment will be conducted by Koppers during the life of the treating plant's operation. After closure of the treating plant, the post-closure care for the closed facilities at the Grenada site is to be conducted primarily by a post-closure contact person. The designated individual, at the time of preparation of this post-closure plan is J. D. Clayton; home address 752 Hickory Drive, Grenada, MS 38901, and home telephone number (601)226-3090.The contact person is to be responsible for all site inspection, monitoring and maintenance.

The contact person will be provided with necessary inspection equipment by Koppers. This equipment will be used by the contact person to perform the inspection, monitoring and maintenance tasks. Almost all labor and equipment operation will be performed by the contact person. Although additional assistance is not expected, outside assistance may be required if, for some reason, major maintenance activities become necessary. The post-closure cost estimates that are included are based on the assumption that some outside assistance will be necessary through the post-closure period.

The contact person will conduct monthly inspections of the overall site as well as the closed surface impoundment. The contact person will inspect site access and security systems (i.e., fences and gates) on the internal and external road system. For the closed surface impoundment, the contact person will inspect for cover integrity including vegetative cover condition, potential erosion damage and cover subsidence, and runon and runoff control system integrity. The result of the inspections will be placed on an inspection log sheet (see Appendix D).

The monthly inspection frequency is justified because the forces of nature acting on the site are likely to cause relatively slow rates of change on the site. For instance, the most likely natural force to affect change on the site is rainfall runoff. However, even if several large, closely-spaced rainstorms were to cause accelerated erosion at selected closed surface impoundments, the monthly inspection schedule would still allow the contact person sufficient time to initiate remediation of the problem.

2.0 Inspection and Maintenance of the Groundwater Monitoring System (40 CFR 265.310(b)(2))

The following features are to be subject to inspection and maintenance during the post-closure care period.

- Groundwater monitoring wells.
- Monitoring well covers.
- Benchmark integrity.

(See inspection log sheet, Appendix D.)

Any excessive wear to the monitoring well covers will require replacement. The established benchmarks will be inspected, if need be repair work will be conducted to ensure the proper elevation has been retained.

Because of the solid nature of the wastes, no leachate collection detection system or gas ventilation system is necessary.

The contact person will be responsible for maintenance activities of the site. 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 site will be triggered by problems/deficiencies which will be noted in the monthly inspections. Notice of these problems/deficiencies will be noted in the monthly inspection. Notice of the problems/deficiencies may result in initiation of one or more of the following maintenance activities:

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

3.0 Groundwater Monitoring Program (40 CFR 264.91)

During the interim status period, monitoring wells were installed to sample the site groundwater. Descriptions of the site hydrogeology are contained in Section E of the Part B Application. Additional wells may be added to assess site groundwater conditions. Groundwater monitoring will continue to be conducted during the post-closure period as required by RCRA regulations.

It is anticipated that if contingent closure is necessary, the existing groundwater monitoring program at the time of closure will suffice during the post-closure care period.

4.0 Notice in Deed

If closure activities result in the removal of all hazardous wastes, residues and contaminated soil, such that the unit is not classified as a disposal unit, no notice in the deed will be required. Upon certification of closure as a disposal unit, Koppers will add a notification to its deed stating that this land has been used to manage hazardous waste and its use is restricted under 40 CFR 264.120.

In accordance 40 CFR 264.119, within 90 days after the closure is completed, a survey plat will be filed with the authority which has jurisdiction over land use and to the Regional Administrators. The survey plat will indicate the location and dimensions of the filled surface impoundment with respect to surveyed permanent benchmarks.

If, however, clean closure cannot be attained, a record of the type, location, and quantity of hazardous waste disposed of within the surface impoundment will be submitted to the Regional Administration of US EPA, within 60 days after certification of closure. In addition, a certification that the required notation has been recorded in the deed and a copy of the document in which the notation has been placed will be submitted to the Regional Administration of US EPA, within 60 days after certification of closure.

X. CERTIFICATION OF CLOSURE (40 CFR 264.225)

To ensure that the surface impoundment has been closed in accordance with the final approved closure plan, a professional engineer(s) will be present for two-day periods during the removal of all standing water, after the final removal of all excavated soils and at the time of closure certification (which includes certifying the impoundment is properly closed). The following additional procedures will be followed:

1. Closure certification will be submitted to the agency within 60 days after completion of closure.

2. The professional engineers(s) will be provided to present documentation of his credibility.

3. The closure plan will be used as a check list to assure the proper procedures for closure have been incorporated.

4. A survey plot will be submitted no later than the submission of the closure certification, if clean closure cannot be attained.

The following pages 30 through 32 contain sample certifications. These certifications and certifications similar to those have been recommended for certification of closure by the US EPA. The certification on page 30 will be signed by the owner, while the certifications on pages 31 and 32 will be signed by the independent professional engineers(s).

OWNER CERTIFICATION OF CLOSURE

I, ____
(Owner or Operator)

of ____
(Name and Address of Facility)

hereby state and certify that, to the best of my knowledge and belief, the

____
(Hazardous Waste Management Unit(s))

has been closed in accordance with the facility's closure plan, and that closure was completed on the __________ day of ______________________, 19___.

______________________________ Signature

____________________ Date

PROFESSIONAL ENGINEER CERTIFICATION OF CLOSURE

I, ______________________________, a certified Professional Engineer hereby
(Name)

certify, to the best of my knowledge and belief, that I have verified that Professional Engineer Closure Certificates were issued for all prior closure activities at:

____
(Name and Address of Facility)

for ____,
(Hazardous Waste Management Unit)

and that I have made visual inspection(s) of the aforementioned facility, and closure of the aforementioned facility has been performed in accordance with the Facility's closure plan.

______________________________ ______________
Signature Date

______________________________ ______________
Professional Engineer License No. For State of

____
Business Address

____
City/State/Zip Code

____
Business Telephone (With Area Code)

PROFESSIONAL ENGINEER CERTIFICATION OF CLEAN

I, ______________________________________, a certified Professional Engineer
Name

hereby certify, to the best of my knowledge and belief, that I have verified that Professional Engineer Certificates of Clean were issued for all prior decontamination activities at:

____
(Name and Address of Facility)

for ____, and that I
(Hazardous Waste Management Unit)

have made visual inspection(s) of the aforementioned facility, and decontamination of the aforementioned facility has been performed in accordance with the decontamination procedures outlined in the Facility's closure plan.

______________________________ ______________________
Signature Date

______________________________ ______________________
Professional Engineer License No. For State of

____
Business Address

____
City/State/Zip Code

____
Business Telephone (With Area Code)

XI. CLOSURE COST ESTIMATE (264.142)

Closure cost estimates for the closure of the surface impoundment under clean closure are presented in Appendix E. Closure cost for closure in the event that it is not feasible to remove all contamination is also included in Appendix E. These closure estimates are based on 1987 dollars and will be revised annually to reflect changes in closure cost brought about by inflation. The Department of Commerce's Annual Implicit Price Deflator for Gross National Products will be used to make this adjustment.

XII CERTIFICATION OF POST-CLOSURE CARE (40 CFR 264.120)

To ensure that post-closure care is completed according to the post-closure plan, certification of post closure will be signed by the owner and an independent registered professional engineer. Documentation of the professional engineer's qualification will be provided upon request.

XIII. POST-CLOSURE COST ESTIMATES (40 CFR 264.144)

Post-closure cost estimates for the surface impoundment are presented in Appendix F. Also shown are cost estimates for post-closure care if the impoundment should be closed as a landfill. The post-closure cost estimates are based on 1987 dollars and will be revised annually to reflect changes in the post-closure cost brought about by inflation. The Department of Commerce's Annual Implicit Price Deflator for Gross National Products will be used to make this adjustment.

XIV. FINANCIAL ASSURANCE MECHANISM FOR CLOSURE (40 CFR 264.143)

This plant utilizes the corporate financial test to demonstrate Financial Assurance. A copy of the financial assurance mechanism is provided in Appendix G of this document.

APPENDIX A

Impoundment Study Data

SURFACE IMPOUNDMENT STUDY
GRENADA, MS
2-25-87

Base Line: A,-B
Length: 68.5
Position Reference: A, to R-9 18.0 ft
B, to R-8 43.0 ft

Line B-C, Measured 278 ft
Line C-D, Measured 68.5 ft
Line A-d, Assumed 278 ft
All angles 90°

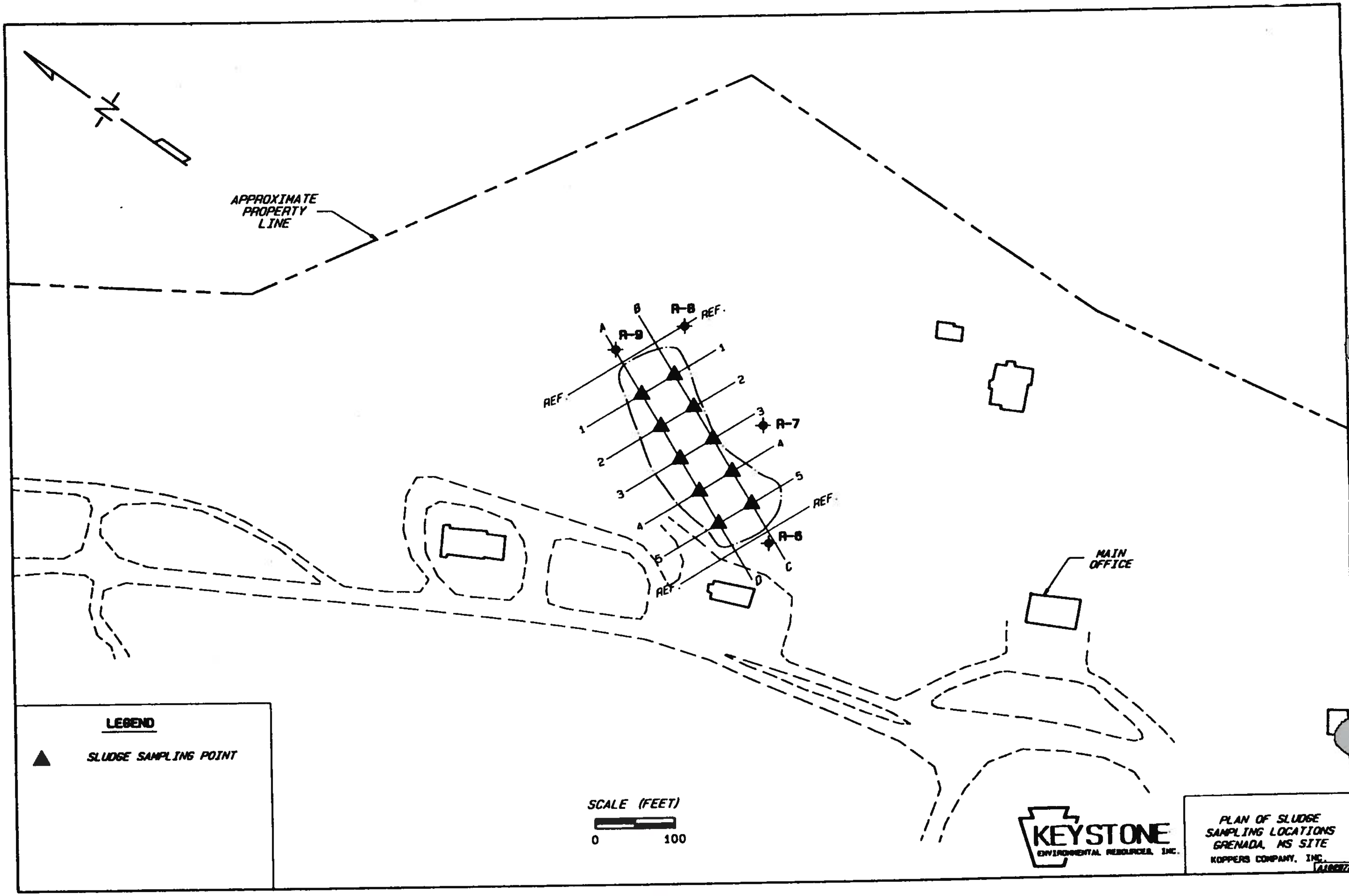
Line A-B Measured from B 48.5 ft
Line C-D Measured from C 48.5 ft
Line A-3 Assumed 278 ft

Point(1)	Depth to Sludge(2) (ft)	Thickness of Sludge(3) (ft)
A-D-1	5	0.8
A-D-2	5	0.8
A-D-3	4.8	1.2
A-D-4	5.0	0.9
A-D-5	4.0	0.8
B-C-1	4.5	0.5
B-C-2	3.6	1.0
B-C-3	2.5	0.0
B-C-4	4.0	0.8
B-C-5	4.2	1.0

(1) Sampling points located along Line A-D and Line B-C with spacing of 47.5 feet between points. Points are referenced to Line A-B.

(2) Measured from water level in impoundment.

(3) Measured to clay bottom of impoundment.



APPROXIMATE PROPERTY LINE
A
B
R-9
R-8
REF.
1
2
3
4
5
R-7
R-6
C
D
MAIN OFFICE
LEGEND
SLUDGE SAMPLING POINT
SCALE (FEET)
0
100
KEYSTONE
ENVIRONMENTAL RESOURCES, INC.
PLAN OF SLUDGE
SAMPLING LOCATIONS
GRENADA, MS SITE
KOPPERS COMPANY, INC.

APPENDIX B

QA/QC Plan

CLOSURE PLAN FOR THE SURFACE IMPOUNDMENT

AT

KOPPERS COMPANY, INC.

GRENADA, MISSISSIPPI SITE

PROJECT QUALITY ASSURANCE PLAN

Prepared by:

Keystone Environmental Resources, Inc.
Spectrix / Monroeville Division

April 14, 1987

176900-00

TABLE OF CONTENTS

1.0 INTRODUCTION

2.0 PROJECT DESCRIPTION

3.0 PROJECT ORGANIZATION AND RESPONSIBILITY

4.0 QA OBJECTIVES FOR MEASUREMENT DATA

5.0 SAMPLING PROCEDURES

6.0 SAMPLE CUSTODY

7.0 CALIBRATION CONTROLS AND FREQUENCY

8.0 ANALYTICAL PROCEDURES

9.0 DATA REDUCTION VALIDATION AND REPORTING

10.0 FIELD AND LABORATORY QUALITY CONTROL CHECKS

11.0 PERFORMANCE AND SYSTEM AUDITS

12.0 PREVENTIVE MAINTENANCE

13.0 PROCEDURES USED TO ASSESS DATA PRECISION, ACCURACY, AND COMPLETENESS

14.0 CORRECTIVE ACTION

15.0 QA REPORTS TO MANAGEMENT

16.0 PERSONNEL QUALIFICATION, RESUMES

1.0 INTRODUCTION

Koppers Company, Inc. is submitting a closure plan for the surface impoundment at its Grenada, Mississippi site. Provisions of the closure plan require the preparation of a Project Quality Assurance (QA) Plan for the required sampling and analyses. This plan presents, in specific terms, the policies, organizational objectives, functional activities, and specific quality control (QC) activities designed to achieve the data quality goals as stated for the project.

2.0 PROJECT DESCRIPTION

The Koppers Company, Inc.'s Grenada plant uses creosote and pentachlorophenol (PCP)-in-oil in the pressure treatment of wood products for railroads, utilities, and other companies. The plant's major product is treated railroad cross ties.

The proposed groundwater and soil analyses are part of a closure and post closure plan for the surface impoundment at the Koppers Company, Inc.'s Grenada plant. These analyses will be used to ascertain whether clean closure has been accomplished or whether continued monitoring is necessary. The following list of parameters have been determined for analyses:

groundwater	soil
pH	pH
specific conductance	specific conductance
TOC	TOC
TDS	phenols
phenols	polynuclear aromatic hydrocarbons
polynuclear aromatic hydrocarbons	

3.0 PROJECT ORGANIZATION AND RESPONSIBILITY

An organizational chart showing discipline leaders for the Spectrix/ Monroeville Laboratory is presented in Figure 3.1.

The Laboratory Manager is responsible foe effective day-to-day management of the laboratory staff as well as direct communication and liaison with the client. The laboratory Manager's specific QA function is to oversee all project procedures and QA/QC procedures used in conjunction with the project.

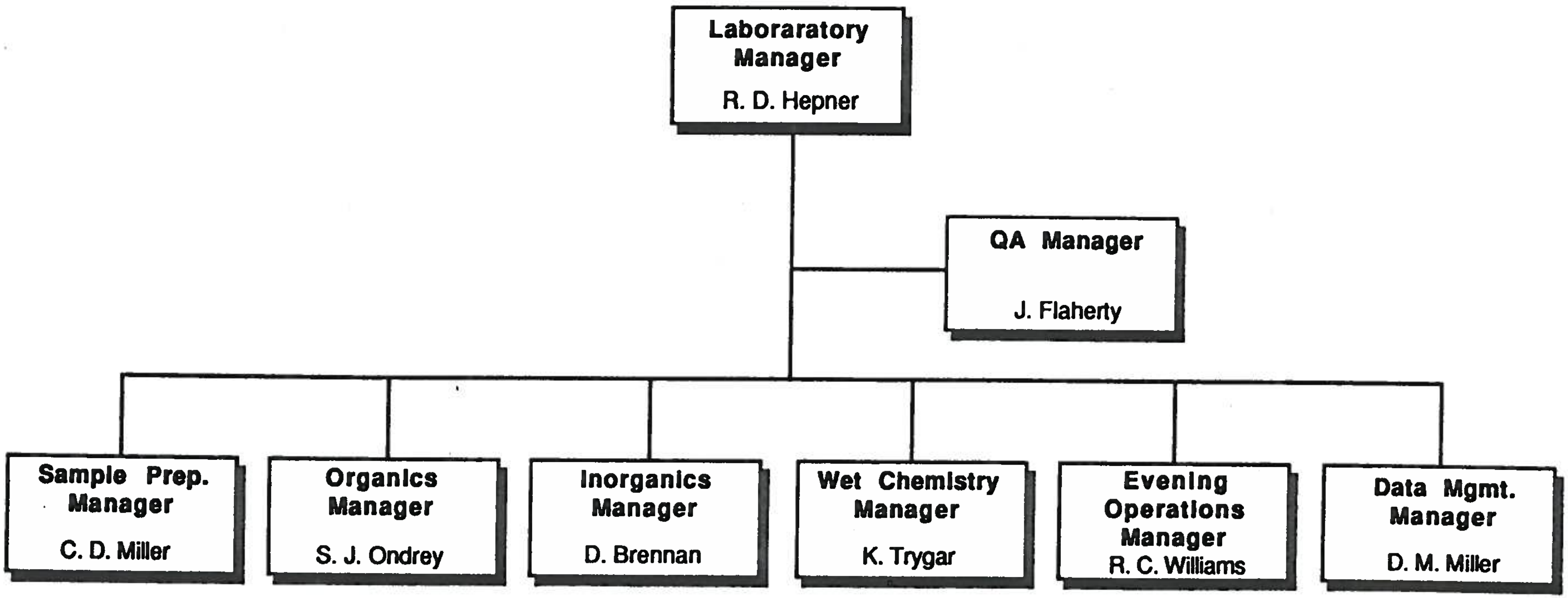
The laboratory QA Officer ensures that specific QA and primary technical operations are coordinated efficiently for the project. The laboratory QA Officer works independent of the laboratory staff and is responsible for the following:

1) Approval of all QA/QC procedures;
2) Development of the QA plan and defining the QA objectives;
3) Performance and System audits as specified in the QA plan;
4) Review and validation of laboratory data;
5) Introduction of performance evaluation samples as needed;
6) To be the official organizational contact for all QA matters for the project;
7) To actively identify and respond to QA needs, resolve problems, and answer requests for guidance or assistance;
8) Maintenance of all project QA records and assembly of project QA data for inspection by project management.

The Section Managers are responsible for provision of consistent and accurate laboratory data and technical reports produced by the personnel under their supervision. These individuals are responsible for ensuring that all personnel under their direction are knowledgeable of the QA/QC requirements of this project.

Spectrix - Monroeville

Organization Chart



KEYSTONE ENVIRONMENTAL RESOURCES, INC.

Figure 3 - 1

4.0 QA OBJECTIVES FOR MEASUREMENT DATA

Analyses performed for this project will use standard EPA analytical procedures. EPA precision and accuracy data will be used as the basis for developing acceptance criteria for assessing the precision and accuracy of the generated data. The criteria to be used in this project are given in Table 4.1. A minimum percent completeness (defined in Section 13.0) for each parameter is 75. The following is a brief description of the terms which appear in Table 4.1.

Reference: The reference of the standard analytical methodology used for each procedure.

Experimental Matrix: The type of matrix that will be used for spikes and duplicates and the target concentration level for each spike.

Precision: Evaluated based on the relative percent difference (RPD) of duplicate spikes. Both precision and RPD are defined in Section 13.1.

Accuracy: Evaluated based on the present recovery of each spike (see Section 13.2 for definition).

Detection Limit: Typical lowest reportable concentration.

TABLE 4-1

SUMMARY OF DETECTION LIMITS, PRECISION, AND ACCURACY - GROUNDWATER

Parameter	Reference	Detection Limit	Experimental Matrix (Spiking Level)	Precision (RPD)	Accuracy (Percent Recovery)
TOC	EPA 415.2	1.00 mg/l	water spiked with potassium hydrogen phthalate (20 mg/l TOC)	9	85-115
TDS	EPA 160.1	1.0 mg/l	*	15	*
pentachlorophenol (PCP)	EPA 604	1.00 ug/l	water spiked with PCP (100 ug/l)	50	9-103
phenol	EPA 604	1.00 ug/l	water spiked with phenol (100 ug/l)	42	12-89
2-chlorophenol	EPA 604	1,00 ug/l	water spiked with 2-chlorophenol (100 ug/l)	40	27-123
4-chloro-3-methylphenol	EPA 604	1.00 ug/l	water spiked with 4-chloro-3-methylphenol (100 ug/l)	42	23-97
4-nitrophenol	EPA 604	1.00 ug/l	water spiked with 4-nitrophenol (100 ug/l)	50	10-80
Acenaphthene	EPA 610	0.25 ug/l	water spiked with acenaphthene (50 ug/l)	31	46-118
Pyrene	EPA 610	0.25 ug/l	water spiked with pyrene (50 ug/l)	31	22-100
Naphthalene	EPA 610	0.50 ug/l	water spiked with naphthalene (50 ug/l)	40	40-140
benzo(k)fluoranthene	EPA 610	0.25 ug/l	water spiked with benzo(k) fluoranthene (50 ug/l)	50	40-140

*TOC soil samples and TDS water samples are not routinely spiked; duplicate samples are analyzed to determine precision.

Compounds considered as representative of each class of organics are chosen for spiking purposes. All compounds determined by EPA methods 604 and 610 are listed in Table 4-3.

TABLE 4-2

SUMMARY OF DETECTION LIMITS, PRECISION, AND ACCURACY - SOIL

Parameter	Reference	Detection Limit	Experimental Matrix (Spiking Level)	Precision (RPD)	Accuracy (Percent Recovery)
TOC	Walkey-Black	0.003%	*	15	*
pentachlorophenol (PCP)	EPA 8040	100 ug/kg	soil spiked with PCP (10,000 ug/kg)	50	9-103
phenol	EPA 8040	100 ug/kg	soil spiked with phenol (10,000 ug/kg)	42	12-89
2-chlorophenol	EPA 8040	100 ug/kg	soil spiked with 2-chlorophenol (10,000 ug/kg)	40	27-123
4-chloro-3-methylphenol	EPA 8040	100 ug/kg	soil spiked with 4-chloro-3-methylphenol (10,000 ug/kg)	42	23-97
4-nitrophenol	EPA 8040	100 ug/kg	soil spiked with 4-nitrophenol (10,000 ug/kg)	50	10-80
Acenaphthene	EPA 8310	25 ug/kg	soil spiked with acenaphthene (5,000 ug/kg)	31	46-118
Pyrene	EPA 8310	25 ug/kg	soil spiked with pyrene (5,000 ug/kg)	31	22-100
Naphthalene	EPA 8310	50 ug/kg	soil spiked with naphthalene (5,000 ug/kg)	40	40-140
Benzo(k)fluroanthene	EPA 8310	25 ug/kg	soil spiked with benzo(k)-fluoranthene (5,000 ug/kg)	50	40-140

*TOC soil samples and TDS water samples are not routinely spiked; duplicate samples are analyzed to determine precision.

Compounds considered as representative of each class of organics are chosen for spiking purposes. All compounds determined by EPA methods 604 and 610 are listed in Table 4-3.

TABLE 4-3

COMPOUNDS DETERMINED BY EPA METHODS 604/8040 and 610/8310

Method 604/8040 Compounds

2-Chlorophenol
2-Nitrophenol
Phenol
2,4-Dimethylphenol
2,4-Dichlorophenol
2,4,6-Trichlorophenol
4-Chloro-3-methylphenol
2-4-Dinitrophenol
2-Methyl-4,6-dinitrophenol
Pentachlorophenol
4-Nitrophenol
2,3,5,6-Tetrachlorophenol

Method 610/8310 Compounds

Acenaphthene
Acenaphthylene
Anthracene
Benzo(a)anthracene
Benzo(a)pyrene
Benzo(b)fluoranthene
Benzo(g,h,i)perylene
Benzo(k)fluoranthene
Carbazole
Chrysene
Dibenzo(a,h)anthracene
Fluoranthene
Fluorene
Indeno(1,2,3-cd)pyrene
Naphthalene
Phenanthrene
Pyrene

References for Tables 4-1 to 4-3

Methods for the Chemical Analysis of Water + Wastes, EPA 600/4-79-20

Federal Register, Vol.49, No. 209, October 26, 1984

Test Methods for Evaluating Solid Waste, EPA-SW-846, second edition, July 1982 and 1984 addendum

5.0 SAMPLING PROCEDURES

A complete description of sampling procedures is provided in a separate Sampling Plan document. This section details the procedures to be used for preparing and labeling containers, preservation, and holding times. It also details Q.C. procedures for sampling soil.

5.1 Preparation

Prior to any field investigation involving the collection of laboratory samples, a sample analysis request sheet is submitted to the laboratory. This form contains pertinent information regarding the location, number, and type of samples to be collected as well as the specific analyses to be performed. (See Figure 5.1).

All new sample bottles with screw-type lids are used for holding and shipping samples. Table 5.1 describes the type of container and cleaning procedure. No preservatives are required for soil samples. The bottles are then labeled with color-coded labels to identify the site and specific parameters associated with that container.

The cleanliness of a batch of precleaned bottles is verified by the use of a trip blank. The trip blank is prepared by filling a batch of precleaned bottles deionized water. The bottles are transported to the site and returned to the laboratory in the same manner used for the samples. The trip blank is subjected to the same analyses as the samples. Any contaminants found in the trip blank could be attributed to a) interaction between the sample and the container, b) contaminated deionized water, or c) a handling procedure which alters the sample. One trip blank per sampling event is collected.

The EPA recommended holding times for analyzing samples are given in Table 5.2. Results from analyses performed after the given time period should be considered suspect.

5.2 Field Sampling

The following procedures are followed when sampling soil:

1. Prior to sampling, surface vegetation, rocks, leaves, and debris will be removed where appropriate.
2. Appropriate point sampling or compositing techniques, as defined in the project sampling plan, will be used to ensure that the sample is representative of the area sampled and the type of information (e.g., depth of contamination) desired.
3. Soil samples will be placed in a glass wide-mouth jar with Teflon^R-lined lid. Sample containers will be labeled with a preprinted label, chilled to 4 ^oC, and shipped to the laboratory for analysis.
4. Sampling equipment will be thoroughly cleaned between sampling locations with uncontaminated water or steam. Sampling equipment will be rinsed with acetone and hexane after steam cleaning and allowed to air dry. The acetone and hexane rinses will not be allowed to contaminate the

ground or samples.

5. The method for mixing of subsamples in the field to form a composite sample will be detailed in the Sampling Plan. No plastic should be allowed to contact soil samples requiring organic analysis to avoid phthalate contamination.

Groundwater

1. All observations and pertinent data developed during groundwater sampling are recorded in the field notebook.
2. The depth to water is measured and recorded in the field notebook immediately prior to sampling.
3. In order to remove stagnant water and flush the well, three casing volumes of water are removed from each well before sampling. If the well goes dry before three casing volumes are removed, the well is allowed to recover and then sampled.
4. In order to protect the wells from cross contamination during sampling, a separate bailer is attached to each well. All sampling equipment will be kept off contaminated soil.
5. To verify that no contaminants are introduced from sampling equipment, a field blank is collected by filling or pumping deionized water through the sampling device and analyzing for compounds of interest. One field blank per sampling day is collected.

FIGURE 5.1

ANALYTICAL REQUEST FORM

TO: D. M. Miller, MSTC
FROM: ________

PROJ. ENG./SCIENTIST: ________
COPY REPORTS TO: ________
PLANT/STUDY: ________
PLANT #: ________
PHASE #: ________
COST CODE #: ________

REQUESTED TURNAROUND TIME: ________

STUDY DESCRIPTION:		SAMPLE TYPE:		METHOD:	EXTRACTIONS:
Hydrostudy	Drinking Water	Soil	Surface Water	Composite	Total
RCRA Permitting	NPDES Permitting	Sludge	Process Water	Grab	EP-Toxicity
Characterization	RIFS	Residue		Bailer	TCLP
Treatability Study	Other:________	Groundwater		Pump	ASTM

ANALYSES REQUIRED

PARAMETER	LIMS	PARAMETER	LIMS	PARAMETER	LIM
1. pH (by EAL)	PH	26. SOLIDS		45. Arsenic(As)	AS
2. pH (FIELD)	PHF	Dissolved	TDS or	46. Barium(Ba)	BA
3. Conductivity	COND	(T-F-V)	DS	47. Beryllium(Be)	BE
(by EAL)		Evaporated	TDS or	48. Boron(B)	B
4. Conductivity	CONDF	(T-F-V)	ES	49. Cadmium (Cd)	CD
(FIELD)		Suspended	TSS or	50. Calcium (Ca)	CA
5. Acidity-(Total)	ACID	(T-F-V)	SS	51. Chromium (Cr)	
6. Alkalinity	ALK	27. Sulfate	SO4	Total	CR
7. Bicarbonate	HCO3	28. Sulfite	SO3	Hexavalent	CR6
8. Carbonate	CO3	29. Sulfide	S	52. Copper (Cu)	CU
9. Color	COLOR	30. Cyanide		53. Iron-Total(Fe)	FE
10. Chloride	CL	Total	CN	54. Ferrous Iron	FE:
11. BOD-T	BOD5	Amenable	CNAM	55. Lead (Pb)	PB
12. BOD-S	BOD5S	Free	CNF	56. Magnesium(Mg)	MG
13. COD-T	COD	31. Thiocyanate	SCN	57. Manganese(Mn)	MN
14. COD-S	CODS	32. Oil & Grease	OILS	58. Mercury(Hg)	HG
15. Fluoride	F	ORGANICS		59. Molybdenum(Mo)	MO
16. Hardness	HARD	33. Carbon (TOC)	TOC	60. Nickel(Ni)	NI
17. Ammonia as N	NH3N	34. Halogens (TOX)	TOX	61. Potassium(k)	K
18. Nitrate as N	NO3N	35. Phenol	PHNOL	62. Selenium(Se)	SE
19. Nitrite as N	NO2N	36. PCP	PCP	63. Silver(Ag)	AG
20. Kjeldahl - Nitrogen	TKN	37. PCB	PCB	64. Sodium(Na)	NA
		38. PAH	PAH	65. Thallium(Tl)	TL
21. Organic - Nitrogen	ORGN	39. Purgeable Aromatics	PAR	66. Tin(Sn)	SN
				67. Titanium(Ti)	TI
22. Phosphorous - Total	PO4	40. Purgeable Hydrocarbons	PHAL	68. Zinc(Zn)	ZN
				MISCELLANEOUS	
23. Phosphorous - ortho	PO4O	41. Acid Extractable Phenolics(EPA 604)	AEP	69. Radiation	RA
				70. Bacteria	CO
24. Phosphorous - Total Dissolved	PO4TD	42. Surfactants	MBAS	71. ~~K-001~~	
		METALS		72. Priority Pollutants (VOA,BN,AE,Pest Her Metals)	
25. Turbidity	TURB	43. Aluminum (Al)	AL		
		44. Antimony (Sb)	SB		
				73. Other________	

SPECIAL INSTRUCTIONS

____

____

____

6.0 SAMPLE CUSTODY

The primary objective of sample custody is to create an accurate written verified record, which can be used to trace the possession and handling of the samples from the moment of collection through data analysis and reporting. A sample is under custody if:

a. it is in your possession, or
b. it is in your view, after being in your possession, or
c. it was in your possession and you locked it up, or
d. it is in a designated secure area.

6.1 Field Sample Documentation

The field sampler will be personally responsible for the care and custody of the samples collected until they are properly transferred or dispatched. Samples will be accompanied by a Chain-of-Custody Record (see figure 6.1). When transferring the possession of samples, the individuals relinquishing and receiving will sign, date, and note the time on the Record. Samples will be packaged properly for shipment and dispatched to the appropriate laboratory for analysis, with a separate custody record accompanying each shipment. Shipping containers will be taped and sealed for shipment to the laboratory.

6.2 Laboratory Sample Documentation

Upon arrival in the laboratory, samples will be checked in by the Sample/Analysis Coordinator or his designate. All samples contained in the shipment will be compared to the Chain-of-Custody Record to ensure that all designated samples have been received. He will then check all samples for correct preservation and sample condition. Any abnormalities will be noted and recorded on the Chain-of-Custody Record.

The Sample/Analysis Coordinator will also examine whether the sample seal is intact or broken, since a broken seal may mean tampering and would make results inadmissible in court as evidence.

The Environmental Analysis Laboratory's LIMS (Laboratory Information Management System) computer is an integral part of the sample custody procedure. Upon verification of sample receipt at the laboratory, the Sample/Analysis Coordinator will assign a unique eight character ID number to the sample for entry into the LIMS computer. The first two characters reference the year, the next two the month, and the last four the actual number of samples received. For example:

Year	Month	Sample Number
87	02	0050

The computer will reference analyses from a pre-defined project code. It also monitors the progress of samples through the laboratory, tracking dates of analyses, results of analyses, and technicians performing analyses.

Once a sample is logged in, it is transferred to a walk-in coldroom for storage. All Chain-of-Custody records will be kept on file by the Sample/Analysis Coordinator.

FIGURE 6.

CUSTODY RECORD

PLANT CODE	PROJECT NAME						NUMBER OF CONTAINERS							REMARKS OR OBSERVATIONS
SAMPLERS (Signature)														
STA. NO.	DATE	TIME	COMP.	GRAB	WELL	STATION LOCATION								

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Relinquished by: (Signature)	Date	Time	Received by: (Signature)
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Relinquished by: (Signature)	Date	Time	Received by: (Signature)
Relinquished by: (Signature)	Date	Time	Received for Laboratory by: (Signature)	Date	Time	Remarks:	

DISTRIBUTION: Original accompanies shipment; Copy to Coordinator Field Files.

7.0 CALIBRATION CONTROLS AND FREQUENCY

All laboratory and field equipment are calibrated before use to ensure proper operating conditions. The following procedures are utilized for this purpose.

7.1 Laboratory Equipment

Organics by Liquid Chromatography or Gas Chromatography - Polynuclear Aromatics

a) prepare a standard curve consisting of a reagent blank and three calibration standards. To verify linearity, the regression coefficient must be > 0.995.

b) analyze the reagent blank and mid-range standard after every five samples; if any contaminants are found in the reagent blank, or if the mid-range standard differs from the true value by more than 20%, the previous results are invalidated.

c) if an undiluted sample falls outside the upper range of the standard curve, it must be diluted and reanalyzed; if the diluted sample gives a result less than five times the method detection limit, the sample must be reanalyzed at a lesser dilution.

TOC Analyzer

a) calibrate instrument with a standard at 400 mg/L.

b) verify linearity with standards at 100 mg/L, 40 mg/L, 10 mg/L, 1 mg/L and a reagent blank.

c) the standard calibration is next checked with an outside reference standard (EPA or ERA); the result must be within the acceptable range provided with the reference sample before any actual samples are processed.

d) analyze the reagent blank and 40 mg/L standard after every 10 samples; subtract the reagent blank value from each of the preceding samples. The 40 mg/L standard must agree within +10% of the true value or the preceding samples are invalidated.

e) if an undiluted sample reads greater than 400 mg/L it must be diluted and reanalyzed; if the diluted sample reads less than 20 mg/L, the sample must be reanalyzed at a lesser dilution.

7.2 Field Instrumentation

pH meter - The initial calibration is performed with three standard buffer solutions reading pH 4.0, 7.0, and 9.0. The calibration is checked after every ten samples. In addition, the meter is checked prior to use with an outside calibration reference standard.

conductivity meter - The conductivity meter used does not have an designated calibration knob. The meter is checked prior to use with an outside calibration standard.

A copy of a field instrument calibration sheet is given in Figure 7.1.

pH METER

Project: ____________________ Date: ______

Meter: ____________________

	Meter Reading	Buffer Solutions 4	7	9	Standard 6.5	Operator Initials
Initial Calibration	unadjusted					
	adjusted					
Calibration Check	unadjusted					
	adjusted					
	unadjusted					
	adjusted					
	unadjusted					
	adjusted					
Final Calibration	unadjusted					
	adjusted					

Calibration checks should be made after every 10 readings using the pH 7 buffer solution (unadjusted reading). If readings are within .1 unit of the solution no calibration adjustment is made, if greater than .1 a complete calibration is necessary (adjusted reading), if greater than .2 do a complete calibration and increase the frequency of calibration checks.

Operator Signature: ____________________

CONDUCTIVITY METER

Project: ____________________ Date: ______

Meter: ____________________

Is meter temperature compensated, (if no, see temp. adjustment) ______ Yes ______ No

Temperature Adjustments:

25°C - If the temperature of the sample is below 25°C, add 2% of the reading per degree.

25°C - If the temperature is above 25°C, subtract 2% of the reading per degree.

Standard (umhos/cm)	Meter Reading	Disregard if meter is temperature compensated: Sample Temp above or below 25°C (y or N)	If Y, add or subtract temp. adjustment to meter reading
1. 300	______	______	Make sure adjusted readings are recorded on field sheet
2. 300	______	______	
3. 300	______	______	

Operator Signature

8.0 ANALYTICAL PROCEDURES

The exact analytical procedures used are referenced in Table 4-1.

9.0 DATA REDUCTION, VALIDATION, AND REPORTING

9.1 Data Reduction

All data are calculated from standard curves which are prepared immediately prior to analysis. The exact procedures used for curve preparation were discussed in Section 7.4. The curves are made by fitting the raw data to a standard linear regression equation. In order to verify that the curves are within the linear working range of the method, the calculated regression coefficient must be $\geq$ 0.995. The accuracy of the curve is checked immediately after preparation and periodically during sample analysis by the analysis of standard reference material. The exact frequency was given in Section 7.1. Samples are diluted so that they fall into the linear working range of the curve. Results are then calculated directly from the curve taking any dilution factors into account.

9.2 Data Validation

All data is validated by the QA Officer prior to reporting. The following procedures are used:

1) Standard curve is prepared prior to sample analysis
2) Standard regression coefficient is > 0.995
3) Standard reference materials are analyzed at proper frequency with acceptable results
4) Reagent blanks are analyzed at the proper frequency
5) Precision requirements of this plan are met.
6) Accuracy requirements of this plan are met
7) Completeness requirements of this plan are met
8) Samples are analyzed within the proper holding time

9) All calculations are verified as correct
10) Proper units are reported
11) Proper methodology was used

The QA Officer will sign all raw data to verify that it is valid before reporting.

9.3 Data Reporting

Once data has been validated, it is returned to the laboratory technician who performed the analyses. The technician enters the result, data analyzed, method used, and his/her initials into the LIMS system where it is stored prior to reporting. When all analyses are completed the laboratory will issue a final report. The QA Officer will check the final report to ensure that no errors have been made in transcription from the raw data. He will then issue the report to the Laboratory Manager for distribution.

10.0 FIELD AND LABORATORY QUALITY CONTROL CHECKS

For analyses conducted on this project, the following QC checks will apply:

1) Standard curves are prepared and validated according to the procedures specified in this plan.
2) For all analyses, at least 10 percent of the samples are replicate spikes. Precision and accuracy of the data is calculated from the replicate spike results as described in Section 12 and compared to the criteria specified in Section 4.0.
3) Trip blanks are analyzed as specified in the plan to help identify possible sources of contamination.
4) A method blank is run with each set of analyses. Usually, compound responses observed in the method blank are subtracted from sample responses. Compounds present at a level greater than the detection limit are investigated to determine the source of contamination.
5) The detection limits determined for each parameter are checked to ensure that they meet the limits specified in Section 4.0.
6) 2-Methylnaphthalene is used as a surrogate spike in the analysis of PAHs by EPA method 8310. The acceptable recoveries in soil are from 30 - 130%.

11.0 PERFORMANCE AND SYSTEM AUDITS

Two types of audit procedures are used to assess and document performance; system audits and performance audits.

11.1 System Audits

System audits are performed by the Project QA Officer on a monthly basis. Audits cover field sheets, chain-of-custody records, laboratory notebooks, sample log-in, dispensing, and labeling, updating QC criteria and methodologies.

11.2 Performance Audits

Performance audits involve the analysis of check samples. Performance evaluation (PE) samples are periodically submitted with routine samples as blind samples. Results are documented by the Project QA Officer.

12.0 Preventive Maintenance

All major instruments are under service contract so that trained professionals are available on call to minimize instrument downtime. The following routine maintenance is performed in house to prevent problems from occurring.

Liquid Chromatographs

The high-pressure liquid chromatographs will have pump check valves replaced every 3 months and pump seals replaced as needed. The pumps will be tested for flow rate accuracy before each lot of samples is analyzed. Analytical columns will be protected by use of 3 to 5 cm. pellicular guard columns.

Gas Chromatographs

Gas chromatograph septa are changed daily. In addition, detectors are periodically cleaned and columns are replaced when instrument response deteriorates.

TOC Analyzer

The pump tubing and tin scrubber are periodically changed. In addition the infrared detector is cleaned and recalibrated twice a year.

13.0 PROCEDURES USED TO ASSESS DATA PRECISION, ACCURACY AND COMPLETENESS

The following methods are used to assess the validity of the generated data.

13.1 Precision

Precision is a measure of agreement among individual measurements of the same property, under prescribed similar conditions. Precision is assessed by calculating the relative percent difference (RPD) of replicate spike samples as follows:

$$RPD = \frac{|R1 - R2|}{(R1 + R2)/2} \times 100$$

R1 = % result of spike 1

R2 = % result of spike 2

13.2 Accuracy

Accuracy is a measure of the closeness of an individual measurement to the true value. Accuracy is measured by calculating the percent recovery (R) of known levels of spike compounds as follows:

$$R = \frac{\text{determined value of spiked sample}}{\text{theoretical value of spiked sample}} \times 100$$

theoretical value of spiked sample =

(conc sample)(% sample) + (conc spike)(% spike)

13.3 Completeness

Completeness is a measure of the amount of valid data obtained from a measurement system, expressed as a percentage of the number of valid measurements that should have been collected. It is calculated as follows:

$$\text{completeness (\%)} = \frac{\text{\# of valid values reported}}{\text{\# of samples analyzed}} \times 100$$

The minimum completeness for each parameter in this project is 75%.

14.0 CORRECTIVE ACTION

Corrective action is necessary when any section of the QA plan is not followed as specified. The following is a summary of required actions to be followed during any routine investigation.

a. Sample analysis request sheet is sent to laboratory.
b. Bottles are cleaned and prepared as necessary.
c. Samples are collected as specified in the Sampling Plan.
d. Field measurements are conducted and calibrations documented.
e. Samples and blanks are shipped with chain-of-custody record.
f. Samples are received at laboratory and chain-of-custody verified.
g. Samples are given unique number and logged into LIMS system.
h. Samples to receive QC analysis are randomly selected.
i. Samples are properly stored prior to analysis.
j. Laboratory instruments are standardized or calibrated as appropriate.
k. Sample analyses and internal QC checks are performed.
l. All QC procedures are verified.
m. Samples and results are reported.

If any of the above actions are not performed or performed incorrectly, the person(s) responsible will be notified to take the appropriate corrective action.

15.0 QA REPORTS TO MANAGEMENT

This QA plan provides a documentable mechanism for the assurance of quality work projects. Audit reports (Section 9.0) will be provided to management as a means of tracking program performance.

16.0 PERSONNEL QUALIFICATIONS, RESUMES

ROBERT D. HEPNER
2839 Beechwood Boulevard
Pittsburgh, Pennsylvania 15217

Home Phone: 412-521-0696
Office Phone: 412-733-9422

PERSONAL DATA:

Date of Birth:	May 7, 1926
Marital Status:	Married (2 children)
Military:	U. S. Air Force - 1944-45, Honorable Discharge
Height:	6'1"
Weight:	182 lbs.

EDUCATION:

University of Pittsburgh, 1949, B.S. Degree, Double Majors in Chemistry and Biological Sciences, Minor in History.

ADDITIONAL EDUCATION:

1951 - Carnegie-Mellon University, Graduate Courses in Chemistry and Mathematics.

1958 - University of Pittsburgh, Graduate Work in Graduate School of Business Administration.

1966 - U.S. Public Health Service, Source Sampling for Atmospheric Pollutants.

1967 - Manufacturing Chemists Association, Technical Seminar, Water Pollution Control in the Chemical Industry.

1968 - National Alliance of Businessmen, Supervision of Minority Employees.

1969 Manufacturing Chemists Association, Advanced Seminar in Water Pollution Control in the Chemical Industry.

1971 - Alexander Hamilton Institute, Certificate for Completion of Modern Business Program.

1972 - Virginia Polytechnic Institute, Technical Workshop on Biological Assessment of Water Quality.

1975 - American Management Association, Fundamentals of Management for Research and Development Supervisors.

1976 - University of Pittsburgh, Human Relations for Managers.

1976 - American Management Association, Supervision of Scientists, Engineers and the Technical Staff.

1979 - Massachusetts Institute of Technology, The Use of Gas Chromatography/Mass Spectrometry in Environmental Analysis.

1979 - University of Pittsburgh, Informal Course in Computer Technology.

PROFESSIONAL ORGANIZATIONS:

American Society for Testing and Materials
American Chemical Society
Water Pollution Control Federation
Water Pollution Control Association of Pennsylvania

PUBLICATIONS:

"Determination of para-Cresol in Industrial Waste Waters," R. D. Hepner and G. R. Tallon, Analytical Chemistry, 30, 1521 (1958).

"Coke Plant Effluent Treatment Investigations," C. W. Fisher, R. D. Hepner, and G. R. Tallon, Blast Furnace and Steel Plant, May 1970.

WORK EXPERIENCE:

October 1986 - Present: KEYSTONE ENVIRONMENTAL RESOURCES, INC., Laboratory Director, Spectrix-Monroeville Laboratory.

July 1982 - September 1986: KOPPERS COMPANY, INC., Section Manager, Environmental Analysis Laboratory, Environmental Resources Department.

1979 - June 1982: KOPPERS COMPANY, INC., Group Manager, Water and Wastewater Analysis Laboratory, Water Quality Engineering Section, Environmental Resources and Occupational Health Department.

1966 - 1979: KOPPERS COMPANY, INC., Senior Scientist, Research Department.

1953 - 1966: KOPPERS COMPANY, INC., Scientist, Research Department.

1951 - 1953: VITRO CORPORATION OF AMERICA, Analytical Chemist.

1950 - 1951: CARNEGIE-MELLON UNIVERSITY, Electrochemical Analyst, Metals Research Laboratory.

Name: John M. Flaherty
Address: 143 Brookmeade Drive
Pittsburgh, PA 15237

Home Phone: 412-366-3725
Office Phone: 412-733-9413

PERSONAL DATA

Date of Birth: 10/1/59
Marital Status: Married - 2 Children

EDUCATION

High School:
West Mifflin North High School, Diploma, 1977

College or University:
University of Pittsburgh, B.S. Chemistry, 1980

ADDITIONAL EDUCATION

Graduate Courses - University of Pittsburgh - Separation Sciences, Quantum Mechanics, Chemical & Physical Kinetics, and Atomic Spectroscopy

Transportation Skills Seminar - Packaging and Handling of Toxic Waste

Perkin-Elmer Corporation - LIMS 2000 Key Personnel Training Program

PROFESSIONAL ORGANIZATIONS

American Chemical Society
Western Pennsylvania Water Pollution Control Association

WORK EXPERIENCE

1986 - Present
Keystone Environmental Resources, Inc.
Quality Assurance Manager

1985 - 1986
Koppers Company, Inc.
QA/QC Coordinator

1983 - 1985
Microbac Laboratories, Inc.
Laboratory Director

1982 - 1983
Microbac Laboratories, Inc.
Supervisor/Chief Chemist

1981 - 1982
Microbac Laboratories, Inc.
Water Department Supervisor

Resume

Name: Stephen Joseph Ondrey

Address: 499 McMahon Drive
N. Huntingdon, PA 15642

Telephone: (412) 863-9143 (home)
(412) 733-9495 (work)

Personal: Married, three children
Health, excellent

Birth Date: 6/12/47

Education: 1965-1972 - University of Pittsburgh
B.S. Chemistry

1963-1965 - Forbes Trail Area Technical School - Two-year course in Chemical Technology.

Work Experience:

December 1986-Present: Keystone Environmental Resources, Inc., 440 College Park Drive, Monroeville, PA 15146 (a wholly-owned subsidiary of Koppers Company, Inc. As Senior Scientist-Supervisor, I supervise the Organic Analysis Laboratory which consists of four gas chromatographs for analysis of samples via all of the EPA Standard Methods

March 1968-November 1986: Koppers Company, Inc., Science and Technology Center, 440 College Park Drive, Monroeville, PA 15146.

Scientist - June 1973-November 1986, Chromatographic Analysis Section. Prepared gas chromatographic columns and developed GC techniques for research, pilot plant, quality control and environmental samples; implemented a liquid chromatographic technique for the analysis of polynuclear aromatic hydrocarbons in both liquid and soil samples; also ordered all supplies and supervised technicians' analyses and reports.

Assistant Scientist - May 1972-June 1973, Chemical Analysis Section. Used traditional wet chemical techniques for the analysis of samples as described above.

Name: David F. Brennan
Address: 722 Savannah Avenue
Pittsburgh, PA 15221

Home Phone: (412) 244-8688
Office Phone: (412) 733-9514

PERSONAL DATA

Date of Birth: May 16, 1958
Marital Status: Single

EDUCATION

High School:
North Hills High School

College or University:
Indiana University of Pennsylvania
B.S. Biology 1980
Minor - Chemistry

PROFESSIONAL ORGANIZATIONS

Society of Analytical Chemists of Pittsburgh
Spectroscopy Society of Pittsburgh

WORK EXPERIENCE

March 1987 - Present
Keystone Environmental Resources, Inc.
Manager for Inorganics Laboratory

September 1984 - March 1987
International Technology Corporation
Group Leader, Metals Section

Name: Katherine Trygar
Address: 3787 K Logans Ferry Road
Pittsburgh, Pennsylvania 15239

Home Phone: 412-733-5106
Office Phone: 412-733-9429

PERSONAL DATA

Date of Birth: 8/5/50
Marital Status: Divorced

EDUCATION

High School:

St. Thomas District High School, Diploma, 1968

College or University:

Indiana University of Pennsylvania
Attended Three Years 1968 - 1971
Major: Elementary Education, Math Concentrate

Westmoreland County Community College
Associate Degree, Magna Cum Laude, 1979
Conservation/Environmental Technology

ADDITIONAL EDUCATION

University of Pittsburgh, Spring, 1982
Introduction to Fortran

Perkin-Elmer, Rockville, Maryland, 1982
Atomic Spectroscoppy

Alpkem, Clackamas, Oregon, 1985
Auto Analyzer II

Alpkem, Clackamas, Oregon, 1986
Rapid Flow Analysis

Telecation Associates, 1986
Graphite Furnace, Atomic Absorption
Spectroscopy, Inductively Coupled
Plasma Atomic Emission
Spectroscopy

Pennsylvania State University, 1987
Improving Interpersonal Communications and Relations
Time Management

Currently Attending
Carlow College, 1985 - Present
Senior - B.S. in Business Management

WORK EXPERIENCE

August 1979 - Present
Spectrix, Monroeville
- 8/30/79 - Grade 12 Environmental Laboratory Assistant
- 9/1/80 - Grade 14 Environmental Laboratory Technician
- 9/1/84 - Grade 16 Environmental Senior laboratory Technician
- 10/1/86 - Grade 16 General Chemistry Department Manager

September 1978 - May 1979
Westmoreland County Community College
Environmental Lab Assistant

September 1977 - November 1979
Hempfield Township
Arts and Crafts Instructor

May 1972 - July 1977
J. C. Penny Company, Inc.
Customer Service representative

Summers 1968 - 1970
Sales Clerk for Various Retail Stores

Name:	Charles D. Miller, Jr.	**Home Phone:** 412-795-4846
Address:	2263 Chapparal Drive	**Office Phone:** 412-733-9440
	Pittsburgh, PA 15239	

PERSONAL DATA

Date of Birth: 7/12/52
Marital Status: Married - 3 Children

EDUCATION

High School:
Plum Senior High School, Graduated 1970

College or University:
Edinboro State College, 1970 - 1971, Major (Education)
Boyce Community College 1976 - 1979, Major (Environmental Technology)

ADDITIONAL EDUCATION

1. U.S. EPA Quality Assurance Course (Cincinnati, Ohio, March 17-21, 1980)
2. OSHA Hazard Communication Standard & RCRA Compliance Training Work Shop (1986)
3. Penn State Management Development Program (May 6-9, 1986)

WORK EXPERIENCE

September 1972 - Present
Koppers Company, Inc
- A. Mail Room until 6/4/73
- B. Environmental Section 6/4/73 - Present)
    1. Grade Levels 12, 14 (6/4/73 - Present)
    2. Grade Level 16 (9/1/80)
    3. Manager of Extractions Lab (1986 - Present)

June - September 1972
Bacharach Instrument Company

Name:	Robert C. Williams	**Home Phone:**	412-922-2175
Address:	186 Chartiers Avenue Pittsburgh, Pennsylvania 15205	**Office Phone:**	412-733-9418

PERSONAL DATA

Date of Birth: 2/27/50
Marital Status: Single

EDUCATION

High School:
North Clarion County High School, 1968

Associate:
Electronics; Allegheny Technical Institute, 1971

College or University:
Carnegie-Mellon University, B.S., 1978

Graduate School:
Carnegie-Mellon University, Candidate for M.S.

WORK EXPERIENCE

2/10/86 - Present
Keystone Environmental Resources, Inc.
Evening Shift Manager

7/1/85 - 2/10/86
Microbac Laboratories

9/1/78 - 7/1/85
Bankson Engineers, Inc.

Name: David M. Miller
Address: 325 Windy Hill Lane
Apollo, Pa. 15613

Home Phone: (412)478-4606
Office Phone: (412)733-9441

PERSONAL DATA

Date of Birth: 04/24/55
Marital Status: married

EDUCATION

High School: Churchill Area High School
College : A.B. Dordt College
Sioux Center, Iowa 51250
Major: Biology/Chemistry

ADDITIONAL EDUCATION

Calculus, Engineering Physics, Scientific Programming
Community College of Allegheny County

JOB RELATED TRAINING

Atomic Spectroscopy	Perkin-Elmer	May 1981
ICP Emissions Spectroscopy	Perkin-Elmer	June 1985
LIMS Training	Perkin-Elmer	Aug. 1985
RFA/RFAC Trainig	Alpkem Corp.	Dec. 1985
Management Development Prog.	Penn State	May 1986
LIMS User Interface Course	Perkin-Elmer	June 1986
Face to Face Selling	The Forum Corp.	July 1986
LIMS System Manager Training	Perkin-Elmer	Feb. 1987

PROFESSIONAL ORGANIZATIONS

NALMS- North American Lake Management Society

WORK EXPERIENCE

Aug. 1979-present
Koppers Company, Inc.
Keystone Environmental Resources, Inc.
Spectrix Monroeville
Positions held: Environmental Technician
Instrumental Analysis Lab Supervisor
Inorganic Chemistry Lab Supervisor
Data Management Group Manager

Aug. 1977-June 1979
Lansing Christian School
3660 Randolph Street
Lansing, Illinois
Positions held: Junior High School Science Teacher
Science Department Chairman

Sept. 1976-June 1977
Supreme Packing Company
US 75 South
Sioux Center, Iowa 51250
Position: Chemist

APPENDIX C

Design Calculations

APPENDIX D

Post-Closure Inspection Log Sheet

POST-CLOSURE INSPECTION LOG SHEET

Inspector's Name/Title ______________________

Date of Inspection ______________________

(month/day/year)

Time of Inspection ______________________

Item	Types of Problems	Status ( ) Acceptable/Unacceptable	Observations	Date and nature of repairs/remedial actio
Backfilled Cover	Depressions, cracks or erosion			
Final Vegetative Cover	Depressions, cracks or erosion and barren spots, grass cutting			
Benchmarks	Deterioration, cracks or depression			
Groundwater Monitoring Wells	Concrete collar needs replaced, signs of cracks, replacement of exposed casing and cap			
Security	Fence broken or deteriorated			
Run-off/Run-on	Water Ponding			
Signs	Detroyed or damaged			

APPENDIX E

Closure Cost Estimates
(Clean and Non-Clean)

COST ESTIMATE FOR NON-CLEAN CLOSURE
OF
SURFACE IMPOUNDMENT
KOPPERS COMPANY, INC.
GRENADA, MS

Item	Quantity	Installed* Unit Cost	Cost**
1) Mobilization and Demobilization	Lump sum		$ 12,000
2) Clear and Grub	1 acre	$ 2000.00	2,000
3) Remove Fence	800 linear feet	1.50	1,200
4) Sludge Removal, Centrifugation and Disposal	Lump sum	-	100,000
5) Contaminated Soil Excavation and Disposal	860 cubic yards	220.00	189,200
6) Soil Washing	1800 cubic yards	70.00	126,000
7) Cut and Fill Dike Material	900 cubic yards	4.20	3,780
8) Compacted Impoundment Backfill (Local Material)	3100 cubic yards	5.60	17,360
9) Soil Barrier (borrow, haul 1 mile, compact)	2240 cubic yards	10.50	23,520
10) Perimeter-drain	1800 lineal feet	8.00	14,400
11) Vegetative Layer (Borrow, haul 1 mile, compact)	2150 cubic yards	10.20	21,930
12) Decontamination			16,000
13) Seeding and Mulching	56,000 square feet	0.05	2,800
		Construction Subtotal	**$530,190**
Quality Control	50 days x 8 hrs/day	45.00 per hr.	18,000
Testing and Inspection	25 days x 8 hrs/day	45.00 per hr.	9,000
Engineering Certification	20 days x 8 hrs/day	80.00 per hr.	12,800
Expenses			8,800
Administration (10%)			53,000
Contingency (30%)			159,000
		Total Closure Cost	**$790,810**

* Includes Contractor's Overhead and Profit

** 1986 Dollars

Note: Items 4, 5, and 6 may not be included for non-clean closure.

COST ESTIMATE FOR CLEAN CLOSURE
OF
SURFACE IMPOUNDMENT
KOPPERS COMPANY, INC.
GRENADA, MS

Item	Quantity	Installed* Unit Cost	Cost**
1) Mobilization and Demobilization	Lump sum		$ 12,000
2) Clear and Grub	1 acre	$ 2000.00	2,000
3) Remove Fence	800 linear feet	1.50	1,200
4) Sludge Removal, Centrifugation and Disposal	Lump sum	-	100,000
5) Contaminated Soil Excavation and Disposal	860 cubic yards	220.00	189,200
6) Soil Washing	1800 cubic yards	70.00	126,000
7) Cut and Fill Dike Material	900 cubic yards	4.20	3,780
8) Compacted Impoundment Backfill (Local Material)	5100 cubic yards	5.60	28,560
9) Decontamination			16,000
10) Seeding and Mulching	56,000 square feet	0.05	2,800
		Construction Subtotal	**$481,540**
Quality Control Testing and Inspection	50 days x 8 hrs/day	45.00 per hr.	18,000
Engineering Certification	25 days x 8 hrs/day	45.00 per hr.	9,000
	15 days x 8 hrs/day	80.00 per hr.	9,600
Expenses			7,200
Administration (10%)			48,150
Contingency (30%)			144,460
		Total Closure Cost	**$717,950**

* Includes Contractor's Overhead and Profit
** 1986 Dollars

APPENDIX F

Post-Closure Cost Estimates
(Clean and Non-Clean Closure)

COST ESTIMATE FOR POST-CLOSURE WITH CLEAN CLOSURE
SURFACE IMPOUNDMENT
KOPPERS COMPANY, INC.
GRENADA, MS

Item	Quantity	Unit Cost ($)	Cost ($)*
1. QUARTERLY INSPECTION			
a. Technician	32 hours	35	1,1[illegible]
b. Engineer	16 hours	60	1,0[illegible]
c. Misc. Expenses		Lump Sum	600
2. MAINTENANCE			
a. Mowing (1.5 acres, 4 times/year)		25 per acre	150
b. Seeding	1000 Sq.Ft.	0.05	50
c. Fertilizing	1.5 acres	300	450
d. Erosion Repair	25 Cu.Yd.	5.60	140
TOTAL COST PER YEAR			3,510
POST-CLOSURE COST (30 years)			105,300
POST-CLOSURE CONTINGENCY (15 percent)			15,800
TOTAL POST-CLOSURE COST			121,100

*1986 Dollars

COST ESTIMATE FOR POST-CLOSURE WITH NON-CLEAN CLOSURE
SURFACE IMPOUNDMENT
KOPPERS COMPANY, INC.
GRENADA, MS

Item	Quantity	Unit Cost ($)	Cost ($)*
1. QUARTERLY INSPECTION			
a. Technician	32 hours	35	1,12[illegible]
b. Engineer	16 hours	60	1,00[illegible]
c. Misc. Expenses		Lump Sum	60[illegible]
2. MAINTENANCE			
a. Mowing (1.5 acres, 4 times/year)		25 per acre	150
b. Seeding	1000 Sq.Ft.	0.05	50
c. Fertilizing	1.5 acres	300	450
d. Erosion Repair	25 Cu.Yd.	5.60	140
3. QUARTERLY MONITORING			
a. Sampling and Analyses	20 Samples	550	11,000
b. Technician	50 Hours	35	1,750
TOTAL COST PER YEAR			16,260
POST-CLOSURE COST (30 years)			487,80[illegible]
POST-CLOSURE CONTINGENCY (15 percent)			73,200
TOTAL POST-CLOSURE COST			561,000

*1986 Dollars

APPENDIX G

Financial Assurance Mechanism

Koppers Company, Inc., Science a[illegible]nology
436 Seventh Avenue, Pittsburgh, P[illegible]19
Telephone 412-227-2000

KOPPERS

CERTIFIED MAIL

March 27, 1987

Colonel Charlie L. Blalock
Executive Director
Mississippi Department of Natural
  Resources
P. O. Box 10385
Jackson, MS 39209

RE: RCRA Financial Requirements

Dear Colonel Blalock:

Enclosed is a letter from Koppers Company, Inc., Chief Financial Officer concerning RCRA Financial Requirements for 1986. Also enclosed is our certified public accountant's report on examination of Koppers' Financial Statement for the latest completed fiscal year. The enclosed 1986 Annual Report contains the SEC Form 10-K for the fiscal year ending December 31, 1986.

If you have any questions concerning this submission, please contact me at the above telephone number and address.

Sincerely yours,

Terence P. Kirchner
Environmental Engineer
Regulatory Affairs Section
Keystone Environmental Resources
for Koppers Company, Inc.

TPK/s

Enclosure

Koppers Company, Inc., Financial Services
436 Seventh Avenue, Pittsburgh, P[illegible]9
Telephone 412-227-2185

KOPPERS

Thomas M. St. Clair
Vice President, Treasurer and
Chief Financial Officer

March 27, 1987

Executive Director
Mississippi Department of Natural Resources
P. O. Box 10385
Jackson, Mississippi 39209

RE: Financial Assurances

Dear Sir or Madam:

I am the Chief Financial Officer of Koppers Company, Inc., 436 Seventh Avenue, Pittsburgh, Pennsylvania 15219. This letter is in support of the use of the financial test to demonstrate financial responsibility for closure and/or post-closure care and liability coverage as specified in Subpart H of the Mississippi Hazardous Waste Regulations Parts 264 and 265.

The owner or operator identified above is the owner or operator of the following facilities for which liability coverage is being demonstrated through the financial test specified in Subpart H of the Mississippi Hazardous Waste Regulations Parts 264 and 265:

MSD 007027543
Grenada Plant
Koppers Company, Inc.
P.O. Box 160
Grenada, Mississippi 38960

1. The owner or operator identified above owns or operates the following facilities for which financial assurance for closure or post-closure care is demonstrated through the financial test specified in Subpart H of the Mississippi Hazardous Waste Regulations Parts 264 and 265. The current closure and/or post-closure cost estimates covered by the test are shown for each facility.

	Current Estimates		
Plant and ID No.	Closure Cost	Post-Closure Cost	Total Cost
MSD 007027543 Grenada Plant Koppers Company, Inc. P.O. Box 160 Grenada, MS 38960	$214,469	$140,056	$354,525

2. The owner or operator identified above guarantees, through the corporate guarantee specified in Subpart H of the Mississippi Hazardous Waste Regulations Parts 264 and 265, the closure and post-closure care of the following facilities owned or operated by its subsidiaries. The current cost estimates for the closure or post-closure care so guaranteed are shown for each facility:

Plant and ID No.	Current Estimates: Closure Cost	Post-Closure Cost	Total Cost
NONE			

3. In states where DNR is not administering the financial requirements of Subpart H of the Mississippi Hazardous Waste Regulations Parts 264 and 265, this owner or operator is demonstrating financial assurance for the closure or post-closure care of the following facilities through the use of a test equivalent or substantially equivalent to the financial test specified in Subpart H of the Mississippi Hazardous Waste Regulations Parts 264 and 265. The current closure and/or post-closure cost estimates covered by such a test are shown for each facility:

Plant and ID No.	Current Estimates: Closure Cost	Post-Closure Cost	Total Cost
See Attachment A and B	$9,646,049	$1,448,820	$11,094,869

4. The owner or operator identified above owns or operates the following hazardous waste management facilities for which financial assurance for closure or, if a disposal facility, post-closure care, is <u>not</u> demonstrated either to EPA or a State through the financial test or any other financial assurance mechanism specified in Subpart H of the Mississippi Hazardous Waste Regulations Parts 264 and 265 or equivalent or substantially equivalent State mechanisms. The current closure and/or post-closure cost estimates not covered by such financial assurance are shown for each facility:

Plant and ID No.	Current Estimates: Closure Cost	Post-Closure Cost	Total Cost
NONE			

This owner or operator is required to file a Form 10-K with the Securities and Exchange Commission (SEC) for the latest fiscal year.

The fiscal year of this owner or operator ends on December 31. The figures for the following items marked with an asterisk are derived from this owner's or operator's independently audited, year-end financial statements for the latest completed fiscal year, ended December 31, 1986.

ALTERNATIVE I

1.	Sum of current closure and post-closure cost estimates (total of all cost estimates listed above)	$ 11,094,869	
2.	Amount of annual aggregate liability coverage to be demonstrated	$ 8,000,000	
3.	Sum of lines 1 and 2	$ 19,094,869	
*4.	Total liabilities	$522,475,000	
*5.	Tangible net worth	$475,580,000	
*6.	Net worth	$494,149,000	
*7.	Current assets	$455,659,000	
*8.	Current liabilities	$278,743,000	
9.	Net working capital	$176,916,000	
*10.	The sum of net income plus depreciation, depletion and amortization	$159,420,000	
*11.	Total assets in U.S.	Not Applicable	
		Yes	**No**
12.	Is line 5 at least $10 million	x	
13.	Is line 5 at least 6 times line 3?	x	
14.	Is line 9 at least 6 times line 3?	x	
*15.	Are at least 90% of assets located in the US? If not, complete line 16	x	
16.	Is line 11 at least 6 times line 3?	Not Applicable	
17.	Is line 4 divided by line 6 less than 2.0?	x	
18.	Is line 10 divided by line 4 greater than 0.1?	x	
19.	Is line 7 divided by line 8 greater than 1.5?	x	

I hereby certify that the wording of this letter is identical to the wording specified in Subpart H of the Mississippi Hazardous Waste Regulations as such regulations were constituted on the date shown immediately below.

Yours very truly,

T. M. St. Clair

T. M. St. Clair
Vice President, Treasurer and
Chief Financial Officer
March 27, 1987

A MEMBER OF ARTHUR YOUNG INTERNATIONAL

Arthur Young

2400 Koppers Building
Pittsburgh, Pennsylvania 15219-1858
Telephone: (412) 288-4400
Telex: WU 86-6133

March 27, 1987

Executive Director
Mississippi Department of Natural Resources
P.O. Box 10385
Jackson, MS 39209

Gentlemen:

We have examined the consolidated balance sheet of Koppers Company, Inc. and subsidiaries at December 31, 1986 and the related consolidated statements of operations, changes in financial position and shareholders' equity other than redeemable convertible preference stock for the year then ended, and have issued our report thereon dated January 26, 1987. Our examination was made in accordance with generally accepted auditing standards and, accordingly, included such tests of the accounting records and such other auditing procedures as we considered necessary in the circumstances.

Pursuant to the provisions of Environment Protection Agency Regulation Subpart H of 40 CFR Parts 264 and 265 and specific state regulations, where applicable, the chief financial officer, T. M. St. Clair, has prepared a letter dated March 27, 1987 demonstrating both liability coverage and assurance of closure and post-closure care. Certain data set forth in that letter is identified with an asterisk as having been derived from the independently audited, year-end financial statements. We have compared such data to the Company's consolidated financial statements contained in the 1986 Form 10-K.

In connection with the procedure referred to above, nothing came to our attention which caused us to believe that the financial data contained in the above-mentioned letter should be adjusted.

Very truly yours,

Arthur Young & Company

ATTACHMENTS A & B

KOPPERS COMPANY, INC.

SUMMARY OF TSD FACILITY

INFORMATION FOR KOPPERS COMPANY, INC.

TO ACCOMPANY FINANCIAL ASSURANCE SUBMISSION

OF MARCH 27, 1987

Prepared by:
Keystone Environmental Resources for
Koppers Company, Inc.
March 27, 1987

ATTACHMENT A
1985 RCRA FINANICAL ASSURANCE REPORT
KOPPERS COMPANY, INC.
Pittsburgh, Pennsylvania 15219

December 31, 1986

This report identifies both Closure and Post Closure Costs for Koppers' facilities that were storage, treatment or disposal facilities for purposes of hazardous waste management in 1985. Facilities are listed according to states.

Facility Location	Cost Estimates 1986 Closure	Cost Estimates 1986 Post Closure
Woodward Coke P.O.Box 100 Dolomite, Alabama, 35061 ALD 000771949	$ 21,567 Total Cost = $ 25,468	$ 3,901
Woodward Tar P.O.Box 100 Dolomite, Alabama, 35061 ALD 085765808	$ 40,271 Total Cost = $ 43,916	$ 3,645
Montgomery Plant P.O. Box 510 Montgomery, Alabama, 36101 ALD 004009403	$ 12,373 Total Cost = $ 12,373	$ 0.00
Little Rock Plant P.O. Box 3231 North Little Rock, Arkansas, 72117 ARD 006344824	$ 227,280 Total Cost = $ 227,280	$ 0.00
Commerce Plant P.O. Box 22066 Los Angeles, California, 90022 CAD 004937793	$ 17,746 Total Cost = $ 17,746	$ 0.00
Oxnard Plant 5980 Arcturus Avenue Oxnard, California, 93033 CAD 087163267	$ 23,283 Total Cost = $ 23,283	$ 0.00
Cal-Richmond Plant 3501 Collins Avenue Richmond, California, 94806 CAD 043242718	$ 9,044 Total Cost = $ 9,044	$ 0.00
Feather River Plant P.O.Box 351 Oroville, California, 95965 CAD 009112087	$2,391,433 Total Cost = $2,393,498	$ 2,065

ATTACHMENT A - 1986 COSTS

Facility Location	Cost Estimates 1986 Closure		1986 Post Closure
Valparaiso Plant P.O.Box 104 Valparaiso, Indiana, 46383 IND 000781609	$ 10,435 Total Cost =	 $ 10,435	$ 0.00
Guthrie Plant P.O. Box 8 Guthrie, Kentucky, 42234 KYD 006383392	$ 96,749 Total Cost =	 $ 96,749	$ 0.00
Salisbury Plant P.O. Box 2217 Salisbury, Maryland, 21801 MDD 05650680	$ 22,081 Total Cost =	 $ 22,081	$ 0.00
Grenada Plant P.O. Box 160 Grenada, Mississippi, 38960 MSD 007027543	$ 214,469 Total Cost =	 $ 354,525	$ 140,056
Kansas City Plant P.O. Box 8057 Kansas City, Missouri, 64129 MOD 007146517	$ 7,491 Total Cost =	 $ 7,491	$ 0.00
Nashua P.O.Box 488 Nashua, NH, 03061 NHD 001084979	$ 3,660 Total Cost =	 $ 3,660	$ 0.00
Orrville Product Devleopment P.O. Box 905 Orrville, Ohio, 44667 OHD 068911494	$ 8,060 Total Cost =	 $ 8,060	$ 0.00
Youngstown Plant P.O.Box 1137 Youngstown, Ohio, 44501 OHD 004198784	$ 17,018 Total Cost =	 $ 17,018	$ 0.00
Parr - East 18400 Syracuse Avenue Cleveland, Ohio, 44110 OHD 004179180	$ 4,690 Total Cost =	 $ 4,690	$ 0.00

ATTACHMENT A - 1986 COSTS

Facility Location	Cost Estimates 1986 Closure	 1986 Post Closure
Parr - West 5151 Denison Avenue Cleveland, Ohio, 44102 OHD 060431947	$ 17,660 Total Cost = $ 17,660	$ 0.00
Florence Plant P.O. Box 1725 Florence, South Carolina, 29503 SCD 003353026	$ 977,909 Total Cost = $1,521,192	$ 543,283
Irving Plant 801 E. Lee Street Irving, Texas, 75060 TXD 053126785	$ 40,046 Total Cost = $ 40,046	$ 0.00
Houston Tar Plant P.O.Box 96150 Houston, Texas, 77015 TXD 008089021	$ 18,153 Total Cost = $ 18,153	$ 0.00
Richmond Plant 4005 Charles City Road Richmond, Virginia, 23231 VAD 003121977	$ 224,311 Total Cost = $ 449,475	$ 225,164
Roanoke Plant P.O. Box 792 Salem, Virginia, 24153 VAD 003125770	$ 385,173 Total Cost = $ 748,173	$ 363,000
Follansbee Plant P.O.Box M Follansbee, West Virginia, 26037 WVD 004336749	$ 71,120 Total Cost = $ 71,120	$ 0.00
Follansbee Landfill P.O.Box M Follansbee, West Virginia, 26037 WVD 550010144	$1,990,000 Total Cost = $2,044,000	$ 54,000
Green Spring Plant P.O. Box 98 Green Spring, West Virginia, 26722 WVD 003080959	$ 412,823 Total Cost = $ 415,823	$ 3,000

Total Closure Cost Attachment A	= $ 9,646,049
Total Post Closure Cost Attachment A	= $ 1,448,820
Total Costs	**= $11,094,869**

ATTACHMENT B
HAZARDOUS WASTE FACILITIES ASSURED BY BONDS
KOPPERS COMPANY, INC.
Pittsburgh, Pennsylvnia 15219

December 31, 1986

This Attachment identifies both Closure and Post Closure Costs for Koppers' facilities that were storage, treatment or disposal facilities for purposes of hazardous waste management that have bonds as the form of financial assurance in 1985. Facilities are listed according to states. These facilities are excluded from Financial Assurance Tests given to states and USEPA Regional Offices.

ATTACHMENT B- 1986 COSTS

Facility Location	Cost Estimates 1986 Closure	1986 Post Closure
Garwood Plant P.O. Box 729 Westfield, New Jersey, 07091 NJD 002164705	$ 49,230 Total Cost = $ 49,230	$ 0.00
Newark Plant 480 Frelinghuysen Avenue Newark, New Jersey, 07114 NJD 002149789	$ 40,526 Total Cost = $ 40,526	$ 0.00
Port Newark Plant Maritime & Tyler Streets Port Newark, New Jersey, 07114 NJD 000542282	$ 23,626 Total Cost = $ 23,626	$ 0.00
Oak Creek Plant P.O.Box 6 Oak Creek, Wisconsin, 53154 WID 057163941	$ 11,688 Total Cost = $11,688	$ 0.00
Superior Plant P.O. Box 397 Superior, Wisconsin, 54880 WID 006179493	$ 180,351 Total Cost = $180,351	$ 0.00

ATTACHMENT B

Facility Location	Cost Estimates 1986 Closure		1986 Post Closure
Verona Research 15 Plum Street Verona, Pennsylvania, 15147 PAD 000647339	$ 8,633 Total Cost =	$ 8,633	$ 0.00
Susquehanna Plant P.O.Box 189 Montgomery, Pennsylvania, 17752 PAD 056723265	$ 153,960 Total Cost =	$153,960	$ 0.00
Science & Technology Center 440 College Park Drive Monroeville, Pennsylvania, 15146 PAD 082245754	$ 5,878 Total Cost =	$ 5,878	$ 0.00

TABLE 5-1

SAMPLE CONTAINER CLEANING PROCEDURES AND PRESERVATION

Analysis/Parameter	Preservative	Cleaning Procedures
Phenols, PAH (groundwater)	none	1
TOC (groundwater)	$NaHSO_4$ to pH 2	2
Soil Samples (all parameters) and TDS (groundwater)	none	2

*1. Use new bottle; rinse with (pesticide grade) acetone; rinse with (pesticide grade) hexane; air dry.

2. No cleaning required. Use new bottle.

TABLE 5-2

HOLDING TIMES

Parameter	Holding Time (water samples)	Holding Time (soil samples)
TDS	7 days	---
PAH/phenols	7 days (until extraction) 40 days (ntil completion)	10 days (until extraction) 40 days (until completion)
TOC	28 days	28 days

PROOF OF PUBLICATION

THE STATE OF MISSISSIPPI

HINDS COUNTY

PASTE PROOF HERE

JOINT PUBLIC NOTICE
Mississippi Natural Resources
Permit Board
P.O. Box 10385
Jackson, Mississippi 3209
(601) 961-5171
In Conjunction With The
U.S. Environmental
Protection Agency
Region IV, Residuals
Management Branch
345 Courtland Street, N.E.
Atlanta, Georgia 30365
(404) 346-7[illegible]

NOTICE OF PROPOSED ISSUANCE OF A PERMIT TO OPERATE A HAZARDOUS WASTE SURFACE IMPOUNDMENT UNDER THE RESOURCE, CONSERVATION, AND RECOVERY ACT (RCRA), AS AMENDED BY THE HAZARDOUS AND SOLID WASTE AMENDMENTS OF 1984, TO KOPPERS COMPANY, INC. IN TIE PLANT, MISSISSIPPI.

Koppers Company, Inc., has submitted an application to the Mississippi Department of Natural Resources and EPA to treat and/or store hazardous waste in a surface impoundment at its facility located at the town of Tie Plant near Grenada, Mississippi. The Mississippi Natural Resources Permit Board and EPA, after reviewing the application and pertinent standards and regulations, have tentatively determined that a permit should be issued. This action is being proposed since the Board and EPA have determined that the surface impoundment unit can be operated in a manner that will be protective of public health and the environment.

Persons wishing to comment on the Board's and EPA's tentative decision are invited to submit comments at the above address no later than May 15, 1988. All comments received by that day will be considered in the formulation of a final decision to issue this permit. Additionally, a public hearing will be held if requested or if there is a significant degree of public interest in the proposed permit. [illegible]

[illegible]

PERSONALLY appeared before me, the undersigned notary public in and for Hinds County, Mississippi,

Iris Speights,

an authorized clerk of THE CLARION-LEDGER, a daily newspaper as defined and prescribed in Sections 13-3-31 and 13-3-32, of the Mississippi Code of 1972, as amended, who, being duly sworn, states that the notice, a true copy of which is hereto attached, appeared in the issues of said newspaper as follows:

Date March 31, 19 88

Date ____________, 19____

Date ____________, 19____

Date ____________, 19____

Date ____________, 19____

Number of Lines 278

Published 1 Times

Total $ 90.96

Signed Iris Speights
Authorized Clerk
of The Clarion-Ledger

SWORN [illegible] before me the 31 day of March,

19 88

Marie Mello
Notary Public

My Com[illegible]

My Commission [illegible]

(Seal)

FILE COPY

March 25, 1988

The Daily Sentinel-Star
Legal Services
158 South Green Street
P. O. Box 907
Grenada, Mississippi 38901

Dear Sir:

Enclosed herewith is a legal notice to be published in your newspaper on March 31, 1988.

Please furnish this office with statement and proof of publication in duplicate.

Sincerely,

David J. Bockelmann
Hazardous Waste Division

DJB:sae
Enclosure
cc: Mr. James H. Scarbrough, EPA
Ms. Terry Bailey, BPC

FILE COPY

March 25, 1988

The Clarion Ledger
Legal Services
311 East Pearl Street
Jackson, Mississippi 39205

Dear Sir:

Enclosed herewith is a legal notice to be published in your newspaper on March 31, 1988.

Please furnish this office with statement and proof of publication in duplicate.

Sincerely,

David J. Bockelmann
Hazardous Waste Division

DJB:sae
Enclosure
cc: Mr. James H. Scarbrough, EPA
    Ms. Terry Bailey, BPC

FILE COPY

March 25, 1988

WYKC-AM
Highway 8 West
P. O. Box 946
Grenada, Mississippi 38901

Gentlemen:

Enclosed herewith is a legal notice to be broadcast on your station twice daily for three (3) consecutive days beginning March 31, 1988.

Please furnish this office with a statement in duplicate for the six (6) thirty-second announcements. The statement should include either the airing in full or another means of identification for the particular ad.

Sincerely,

David J. Bockelmann
Hazardous Waste Division

DJB:sae
Enclosure
cc: Mr. James H. Scarbrough, EPA
Ms. Terry Bailey, BPC

FILE COPY

RADIO ANNOUNCEMENT

THE MISSISSIPPI DEPARTMENT OF NATURAL RESOURCES AND THE U.S. EPA ANNOUNCE THE AVAILABILITY OF INFORMATION RELATED TO THE PROPOSED ISSUANCE OF A HAZARDOUS WASTE OPERATING AND SOLID WASTE MANAGEMENT UNIT PERMIT TO KOPPERS COMPANY, INC., TIE PLANT, MISSISSIPPI. THE DEPARTMENT AND EPA ARE ACCEPTING COMMENTS UNTIL MAY 15, 1988, AND WILL HOLD A PUBLIC HEARING IF SIGNIFICANT INTEREST IS SHOWN. IF YOU HAVE ANY QUESTIONS, CONTACT CHARLES ESTES AT (601) 961-5171.

FILE COPY

JOINT PUBLIC NOTICE

Mississippi Natural Resources Permit Board
P. O. Box 10385
Jackson, Mississippi 39209
(601) 961-5171

In Conjunction With The

U.S. Environmental Protection Agency
Region IV, Residuals Management Branch
345 Courtland Street, N. E.
Atlanta, Georgia 30365
(404) 347-7554

NOTICE OF PROPOSED ISSUANCE OF A PERMIT TO OPERATE A HAZARDOUS WASTE SURFACE IMPOUNDMENT UNDER THE RESOURCE CONSERVATION AND RECOVERY ACT (RCRA), AS AMENDED BY THE HAZARDOUS AND SOLID WASTE AMENDMENTS OF 1984, TO KOPPERS COMPANY, INC., IN TIE PLANT, MISSISSIPPI.

Koppers Company, Inc. has submitted an application to the Mississippi Department of Natural Resources and EPA to treat and/or store hazardous waste in a surface impoundment at its facility located at the town of Tie Plant near Grenada, Mississippi. The Mississippi Natural Resources Permit Board and EPA, after reviewing the application and pertinent standards and regulations, have tentatively determined that a permit should be issued. This action is being proposed since the Board and EPA have determined that the surface impoundment unit can be operated in a manner that will be protective of public health and the environment.

Persons wishing to comment on the Board's and EPA's tentative decision are invited to submit comments at the above address no later than May 15, 1988. All comments received by that day will be considered in the formulation of a final decision to issue the permit. Additionally, a public hearing will be held if requested or if there is a significant degree of public interest in the proposed permit. If a public hearing is held, the time and place of the hearing will be published in The Daily Sentinel-Star on May 20, 1988. However, even if a hearing is not held, all written comments will be considered in formulating a final decision.

On November 8, 1984, President Reagan signed the Hazardous and Solid Waste Amendments of 1984. These amendments to the Resource Conservation and Recovery Act have a number of provisions affecting hazardous waste permitting that are immediately effective for any facilities whose RCRA hazardous waste permit had not been issued as of November 8, 1984. In addition, the provisions are applicable in all states whether or not the state has received interim or final authorization under RCRA.

The State of Mississippi has been granted authorization for those portions of the RCRA Hazardous Waste Program that were in effect prior to the passage of the Hazardous and Solid Waste Amendments of 1984. Until Mississippi has made the necessary program revisions and received authorization from the Environmental Protection Agency (EPA) for the provisions of the 1984 amendments, EPA will administer the requirements of the 1984 amendments.

EPA has determined that Koppers Company, Inc. is subject to sections of the Amendments pertaining to prior/continuing releases from solid waste management units. EPA proposes to issue a permit to Koppers for the applicable Amendments.

Koppers Company, Inc. treats and/or stores K001 hazardous waste in a surface impoundment unit. The draft RCRA permit contains procedures for operating, maintaining and monitoring of the surface impoundment unit.

The draft permit also includes procedures for Koppers Company, Inc. to investigate potential releases from solid waste management units located on Koppers' property. If releases of hazardous constituents from solid waste management units have occurred, Koppers must perform corrective action according to the procedures stated in the permit. Koppers submitted a permit application to operate the surface impoundment unit under RCRA. Mississippi Department of Natural Resources (MDNR) in conjunction with the EPA reviewed the initial application and sent comments to Koppers. Koppers revised the application and submitted it to MDNR and EPA. The revised application was determined to be complete under 40 CFR and MHWMR Part 270, and is being placed before the public for a 45-day comment period.

Copies of the fact sheet and draft hazardous waste management permits, are available for public inspection Monday through Friday, except legal holidays, during the hours indicated at the following locations:

U. S. Environmental Protection Agency
345 Courtland Street, N. E.
Atlanta, Georgia 30365
(404) 347-7554
Office Hours: 8:00 a.m. to 5:00 p.m.

Mississippi Department of Natural Resources
2380 Highway 80 West
Jackson, Mississippi 39209
(601) 961-5171
Office Hours: 8:00 a.m. to 5:00 p.m.

Elizabeth Jones Library
320 South Line
Grenada, Mississippi
(601) 226-2072
Office Hours: Monday-Saturday, 10:00 a.m. to 5:30 p.m.

Copies may be obtained by contacting Ms. Suzanne Potter, U. S. Environmental Protection Agency, or Mr. Charles Estes, MDNR, at the above address. A nominal fee for copying and/or mailing may be charged. Arrangements for copying should be made in advance.

The administrative record, which includes the material listed above as well as all other data submitted by the applicant, is available at the U. S. Environmental Protection Agency and the Mississippi Department of Natural Resources at the above address during the hours listed.

A 45-day comment period begins March 31, 1988, and ends at 5:00 p.m., May 15, 1988. The comment period and the hearing are to provide an opportunity to comment upon the proposed issuance of the RCRA permit to operate a hazardous waste management unit at Koppers Company, Inc.

Persons wishing to comment upon the permit application or the proposed permit conditions should submit such requests or comments in writing. Copies of comments regarding the State Hazardous Waste permit should be sent to the Mississippi Department of Natural Resources, ATTENTION: Mr. Charles Estes at the above address. Copies of comments regarding the Federal RCRA permit should be sent to the Environmental Protection Agency, ATTENTION: Ms. Suzanne Potter at the above address.

All comments received during the public comment period or at the hearing, if held, will be considered in the formulation of final determinations regarding the permits. After consideration of all written and oral comments, the requirements and policies in RCRA, and appropriate regulations, the EPA Regional Administrator and the State Director will make their decisions regarding permit issuance. All persons submitting comments will be notified by the EPA Regional Administrator and the State Director of the final permit decisions. If the determinations are substantially changed, the EPA Regional Administrator and the State Director will issue a joint public notice indicating the revised determinations.

This notice is hereby given this March 31, 1988, by authorization of the Mississippi Department of Natural Resources and the U. S. Environmental Protection Agency.

J. I. Palmer, Jr.
Executive Director
Mississippi Department of Natural Resources

Greer Tidwell
Regional Administrator
U. S. Environmental Protection Agency

FACT SHEET
KOPPERS COMPANY, INC.
EPA ID NO. MSD007027543
MARCH 31, 1988

This fact sheet is developed pursuant to Mississippi Hazardous Waste Management Regulations (MHWMR), Section 124.8. This fact sheet is intended to support the conditions set forth in the draft permit for the above facility.

Description of Facility

Koppers Company, Inc. in Grenada (a wood treating facility) operates a surface impoundment in which they treat and store K001 hazardous waste. No groundwater contamination has been found to exist from the surface impoundment unit. Koppers Company, Inc. will continue to provide groundwater monitoring, under a detection monitoring program as required by MHWMR Section 264.91 and 264.98, until the surface impoundment unit is closed and will provide post closure and groundwater monitoring for thirty years after closure of the surface impoundment unit.

Description of Waste

The only waste which is authorized to be treated or stored under this permit is K001 which is bottom sediment sludge from the treatment of wastewaters from wood preserving processes that use creosote and/or pentachlorophenol.

Procedures for Permit Issuance

As described in the public notice, persons interested in commenting on this permit should submit written comments to:

Mississippi Pollution Control Board
Mississippi Department of Natural Resources
P. O. Box 10385
Jackson, Mississippi 39209

This permit shall be issued in conformance with MHWMR Parts 270 and 124. The comment period for this permit begins on March 31, 1988 and ends on May 15, 1988. A hearing will be scheduled if the Permit Board finds a significant degree of public interest. If a hearing is held, all comments entered into the record, either orally or written, will be considered by the Permit Board before final disposition of the draft permit modification is made. Public participation in the permit process is encouraged. For additional information, please contact Chuck Estes at (601) 961-5171.

Basis for Draft Operating Permit Conditions

The following discussion is a summary of the basis for the conditions in the permit. This discussion is organized such that the reviewer may cross reference conditions of the permit to this discussion.

PART I - STANDARD CONDITIONS

The standard conditions for the permit are taken directly from MHWMR Parts 270 and 264.

PART II - GENERAL FACILITY CONDITIONS

A. Design and Operation

The Permittee is required to operate the facility to prevent fires, explosions and releases of hazardous waste. Hazardous waste may only be stored in the areas described in the permit.

B. General Waste Analysis

The Permittee is required to comply with MHWMR Section 264.13 and is required to follow the submitted Waste Analysis Plan.

C. Security

The Permittee is required to comply with MHWMR Section 264.14 and to maintain the security system described in the permit application.

D. Inspection

The Permittee is required to comply with MHWMR Section 264.15 and follow the submitted inspection schedule.

E. Training

The Permittee is required to comply with MHWMR Section 264.16 and conduct the submitted training program.

F. Preparedness and Prevention

The Permittee must equip the facility with all the equipment described in the permit application, including communication and alarm systems, and must maintain it, as required by MHWMR Sections 264.32, 264.33, and 264,34.

The Permittee is required to comply with MHWMR Section 264.37 and shall attempt to maintain preparedness and prevention arrangements with State and local authorities.

G. Contingency Plan

The Permittee must follow the submitted contingency plan whenever human health or the environment is threatened.

H. Recordkeeping and Recording

The Permittee is required to comply with MHWMR Section 264.73 and follow all recordkeeping and reporting requirements.

I. Closure

The Permittee is required to comply with MHWMR Sections 264.111 through 264.116 and 264.228 and shall close the surface impoundment unit in accordance with the submitted closure plan.

J. Post Closure

The Permittee is required to comply with MHWMR Sections 264.117 through 264.119 and 264.228 and shall follow the submitted Post-Closure Plan and conduct post-closure care for at least thirty (30) years after closure.

K. Cost Estimate for Facility Closure

The Permittee must retain and update the closure cost estimate for the facility.

L. Cost Estimate for Facility Post-Closure

The Permittee must retain and update the post-closure cost estimate for the facility.

M. Financial Assurance for Facility Closure

The Permittee must demonstrate continuous compliance with the financial assurance requirements for closure in MHWMR Section 264.143 or 264.146.

N. Financial Assurance for Facility Post-Closure

The Permittee must demonstrate continuous compliance with the financial assurance requirements for post-closure in MHWMR Section 264.145 or 264.146.

O. Liability Requirements

The Permittee must demonstrate continuous compliance with the liability coverage requirements of MHWMR Sections 264.147(a) and (b).

P. Incapacity of Owners or Operators, Guarantors, or Financial Institutions

The Permittee must comply with MHWMR Section 264.148 whenever necessary.

Q. Waste Minimization Certification

The Permittee is required to comply with MHWMR Section 264.73(b)(9) and conduct a program to reduce the volume and toxicity of hazardous waste generated at the facility.

PART III - STORAGE AND/OR TREATMENT IN THE SURFACE IMPOUNDMENT

A. Waste Identification

Subject to the terms of the permit, the Permittee may store and/or treat K001 waste.

B. Design of the Surface Impoundment

The Permittee is required to comply with MHWMR Sections 264.111(f),(g) and 264.221 and operate and maintain the surface impoundment to prevent overfilling and to assure structural integrity.

C. General Operating Procedures

The Permittee must conduct weekly inspections of the surface impoundment.

D. Surface Impoundments Removed from Service

The Permittee must remove the surface impoundment from service if there is a leak or a drop in the fluid level.

E. Special Requirements for Ignitable or Reactive Wastes

The Permittee must not place ignitable or reactive wastes in the surface impoundment unless the conditions of MHWMR Section 264.229 are satisfied.

F. Special Requirements for Incompatible Wastes

The Permittee must not place incompatible wastes in the surface impoundment unless MHWMR Section 264.230 is complied with.

G. Closure Requirements

The Permittee must close the surface impoundment according to the submitted Closure Plan and must begin implementation of the Closure Plan on or before November 8, 1988.

H. Post-Closure Requirements

The Permittee is required to comply with the post-closure requirements of MHWMR Section 264.228 if the surface impoundment is closed with any hazardous wastes or hazardous constituents left in place.

PART IV - GROUNDWATER PROTECTION

This part establishes the conditions and regulations required to provide groundwater monitoring and protection during the operation of the surface impoundment and during the closure and post-closure periods. These standards were developed from the Permit Application and all the required information there-in. The information was site specific and these conditions are site specific.

KOPPERS/BEAZER
GRENADA, MS
MSD007027543

CLOSURE PLAN:

	BOILER ASH LANDFARM	IMPOUNDMENT	SPRAY FIELD
Public Notice	2-3-89	3-31-88	
Approved	5-23-89	6-28-88	
Certify Closed	6-29-90	1-9-90	
Verify Closed	12-11-90	12-11-90	

STATE OF MISSISSIPPI

DEPARTMENT OF ENVIRONMENTAL QUALITY

RAY MABUS
GOVERNOR

July 8, 1991

CERTIFIED MAIL NO. P 675 195 859

Mr. James A. Werling
Beazer East, Inc.
436 Seventh Avenue
Pittsburg, PA 15219

RE: Comprehensive Groundwater Monitoring Inspection
Koppers Industries, Inc.
Tie Plant, MS

Dear Mr. Werling:

Enclosed please find a Comprehensive Monitoring Inspection report and checklist completed as a part of the Comprehensive Monitoring Evaluation (CME) conducted December 11, 1990, at Koppers Industries, Inc. in Tie Plant, Mississippi. The Compliance Evaluation Inspection portion of the CME was mailed to Beazer under separate cover.

No violations were observed during the groundwater monitoring inspection. However, on the day of the inspection, monitoring well R-6 was noted to be damaged. This well should be properly plugged and abandoned to prevent possible migration of contaminants to the groundwater. In addition, samples for metals analysis should be analyzed for both total and dissolved constituents, as maximum concentration limits (MCLs) for groundwater are established using total concentrations.

If you have questions concerning this matter, please contact Mr. David Pentecost at (601) 961-5171.

Sincerely,

Thad Hopper/By David C. Pentecost

Thad Hopper
Hazardous Waste Division

TH:DP:lfc

Enclosure

cc: Mr. James H. Scarbrough, EPA
Mr. J. D. Clayton, Koppers Industries, Inc. Tie Plant, MS

COMPREHENSIVE GROUNDWATER MONITORING EVALUATION
KOPPERS INDUSTRIES, INC.
TIE PLANT, MISSISSIPPI
DECEMBER 11,1990

AUTHOR: THAD HOPPER

TABLE OF CONTENTS

Comprehensive Groundwater Monitoring Evaluation

	Page
List of Figures	ii
List of Tables	iii
Introduction	1
Background	1
Facility/Locale	1
RCRA Regulated Units	4
Site Geology and Hydrology	7
Evaluation of the Groundwater Monitoring Program	10
General Groundwater Monitoring Requirements	10
Sampling and Analysis Procedures	11
Data Evaluation	17
Conclusions	21
Appendix A	
CME Checklist	
Appendix B	
1990 4th Quarter Groundwater Monitoring Analysis	
Appendix C	
Well Completion Diagrams	
Appendix D	
Field Data Sheets	

LIST OF TABLES

TABLE		PAGE
1	List of SWMUs	5
2	Hydraulic Gradients	10
3	Monitoring Well Physical Data	12
4	List of Monitored Parameters	16
5	1990 Total Acid-Extractable Phenolics	18
6	1990 Total Polynuclear Aromatic Hydrocarbons (PAHs)	19
7	Volatile Organic Compounds	20

LIST OF FIGURES

FIGURE		PAGE
1	Facility Location Map	2
2	Site Map	3
3	SWMU Map	6
4	Regional Geologic Cross Section	8
5	Potentiometric Map 4th Quarter 1990	9
6	Well Location Map	15

INTRODUCTION

On December 11, 1990, Mr. Thad Hopper, Mississippi Department of Environmental Quality - Office of Pollution Control- Hazardous Waste Division, conducted a Comprehensive Groundwater Monitoring Evaluation (CME) and a Compliance Evaluation Inspection (CEI) at the Koppers Industries, Inc. facility located at Tie Plant, Mississippi. The facility was represented by Mr. Gary McClelland, General Yard Foreman. The CME was conducted to evaluate compliance with respect to Mississippi Hazardous Waste Management Regulations (MHWMR) Part 264, Subpart F and Mississippi Hazard Waste Management Permit (MHWMP) HW-88-543-01. The CEI was conducted to determine the facility's overall compliance with applicable MHWMR and MHWMP HW-88-543-01.

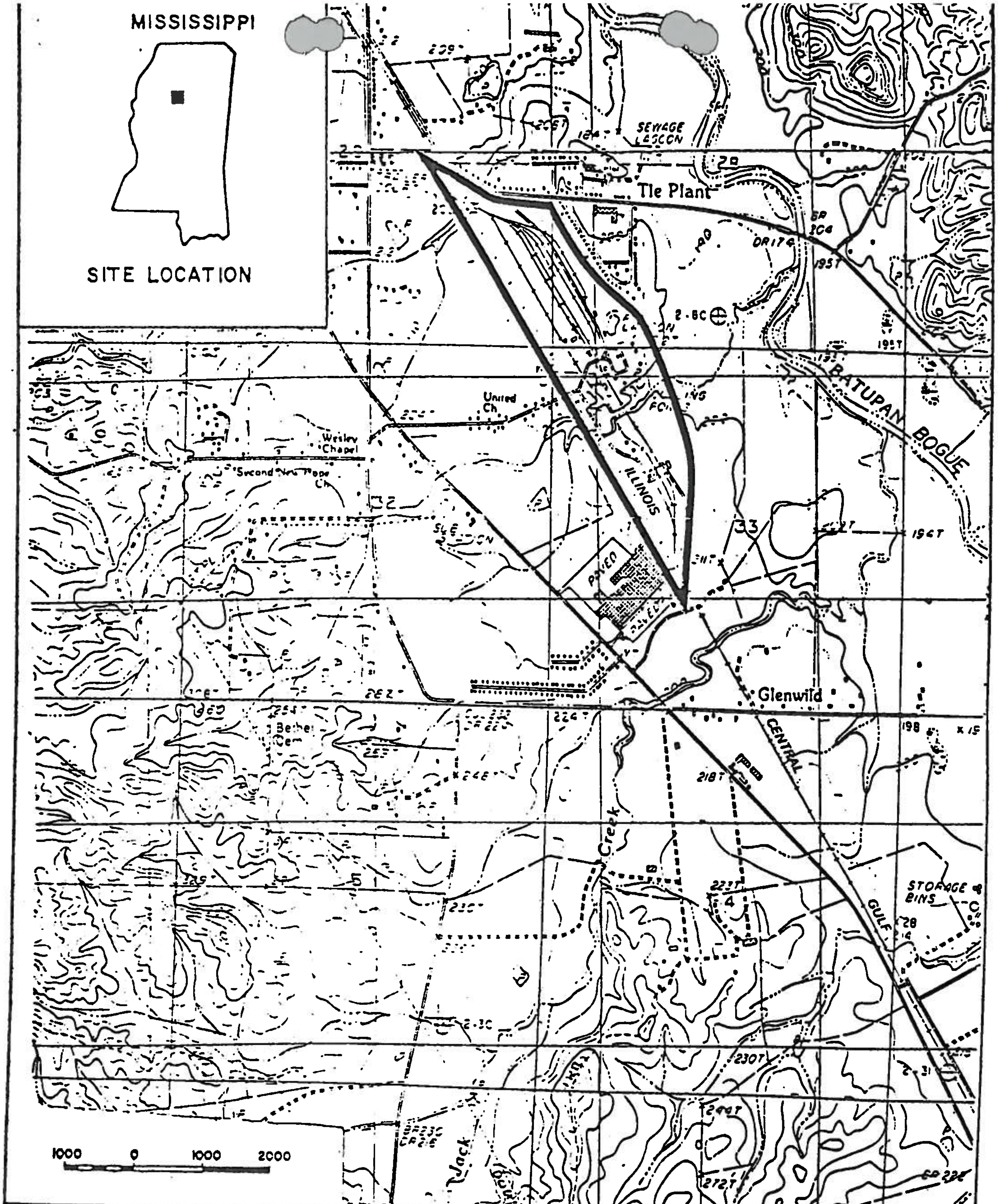
BACKGROUND

Facility/Locale

Koppers Industries, Inc. operates a wood treating facility at Tie Plant, near Grenada, Mississippi. A wood treating plant has been operating at the site since 1904 when Ayer and Lord Tie Company constructed a treatment facility for railroad and cross ties. The deed was transferred to Koppers Company, Inc. on November 9, 1944. Koppers Company, Inc. was acquired by Beazer Materials and Services, Inc. (BMS) on December 28, 1988. BMS sold the division, of which the Mississippi plant was a part, to a separate management group to form Koppers Industries, Inc. (KII). In April, 1990, BMS changed its' name to Beazer East, Inc. (BEI). Beazer East, Inc. provides financial assurance for post-closure care.

Consisting of approximately 171 acres, the wood treating plant is located approximately five miles southeast of Grenada, Mississippi, between State Highway 51 and Bogue Creek (Batupan Bogue). West and northeast of the plant is a small residential community (Tie Plant). Farm lands lie to the southeast, and Lennox Air Conditioning and Refrigeration Company is located to the southwest. The Western boundary of the plant is formed by the Illinois Central and Gulf Railroad. Figure 1 is a facility location map. Figure 2 is a site map of the KII facility. The treatment area, including the cylinders and tank farm is in the center of the plant. Treated materials are stored in both the northern and southern portions of the plant.

KII pressure treats railroad ties, poles, and lumber with creosote and pentachlorophenol. A 60/40 creosote solution, grade one creosote, and pentachlorophenol mixed with number 2 diesel fuel are used as preservatives. The facility operates five retorts. Two of the these are used to treat wood with a 8.5% mixture of pentachlorophenol in #2 diesel fuel, and two use a 60/40 creosote solution or grade one creosote. One retort is used only for steam conditioning of wood products. Untreated material arrives presized and is seasoned by air drying, steaming, or the Boulton process. Once seasoned, the wood undergoes pressure treatment. After the wood has been pressure treated, the preservative is blown back out of the retort to the work tanks. A vacuum is then applied to the retort to minimize the amount of drippage from the wood. The charge is



APPROXIMATE PROPERTY BOUNDRY OF KOPPERS COMPANY, INC.

KOPPERS COMPANY, INC.

Figure 1. Facility Location

SOURCE: USGS TIE PLANT QUADRANGLE

C.C. JOHNSON & MALHOTRA, P.C.

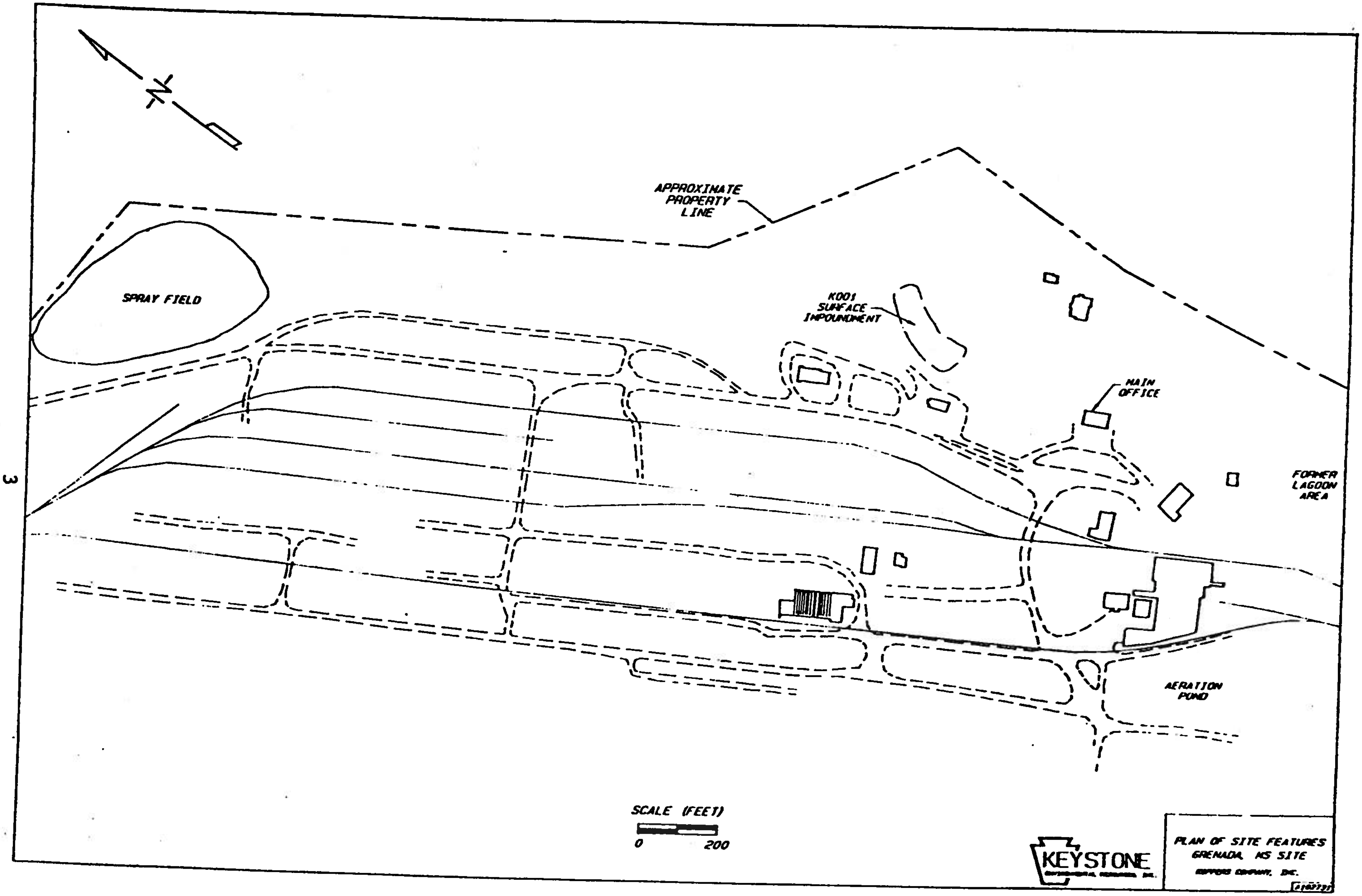

APPROXIMATE
PROPERTY
LINE
SPRAY FIELD
K001
SURFACE
IMPOUNDMENT
MAIN
OFFICE
FORMER
LAGOON
AREA
AERATION
POND
N
SCALE (FEET)
0
200
KEYSTONE
PLAN OF SITE FEATURES
GRENADA, MS SITE
KOPPERS COMPANY, INC.

FIGURE 2.

then pulled and allowed to cool on the drip tracks before being stored in the yard. A concrete-lined basement pit collects creosote or pentachlorophenol left in the retort. Sludges are shoveled into the drums and accumulated in the "Fuel Additive Program" for the plant boiler. On May 22, 1991, KII submitted a notification form as a burner of these sludges, newly regulated (June 6, 1991) hazardous wastes codes F032 and F034.

RCRA Regulated Units

KII is classified as a large quantity generator. The facility generates bottom sediment sludge from the treatment of wastewaters from wood preserving processes that use creosote and/or pentachlorophenol (K001), waste creosote (U051), and waste pentachlorophenol (F027). The facility has five hazardous waste management units: a less than 90 day container storage area, an industrial boiler fueled by hazardous waste, a storage area for hazardous wastes to be used in the boiler, a closed surface impoundment, and a boiler ash landfill. Drums of both hazardous and nonhazardous waste are stored in the container storage area which is the responsibility of KII.

The closed surface impoundment has remained the responsibility of BEI. This unit operated as part of the facility's wastewater treatment system and managed K001 listed hazardous waste from 1975(?) to mid 1985. Hazardous Waste Management Permit (HWMP) HW-88-543-01 was issued on June 28, 1988, for post-closure care and detection monitoring. The unit was certified closed according to the closure plan impoundment approved in the HWMP, January 3, 1990.

A boiler ash landfarm (BALF) received ash produced form the operation of a boiler for the conversion of wood and various wastes into steam. Prior to October, 1986, these included K001, U051, and F027 listed hazardous wastes. The ash generated from this process is a listed hazardous waste. These wastes are no longer used as fuel for the boiler, and ash is now disposed of in the Grenada County sanitary landfill. The BALF was certified closed on June 27, 1990. A groundwater quality assessment is being conducted in the area of the BALF to address off-site contamination. Once the off-site assessment is complete, this unit will be incorporated into the existing permit.

In addition to the five regulated units, ten solid waste management units (SWMUs) are under investigation (Table 1, Figure 3). These are being addressed under the 1984 Hazardous and Solid Waste Amendments (HSWA) portion of the RCRA permit issued on June 14, 1988, by EPA. A RFI Phase II Workplan submitted by KII is was approved on May 26, 1991,by EPA and the State. Submission of the RFI workplan also constitutes compliance with Mississippi Commission of Environmental Quality Order No. 1208-07 requiring investigation of releases from SWMUS. Other permits issued to the facility include Mississippi Air Operating Permit No. 0960-00012 for operation of the plant boiler and Mississippi Industrial Pretreatment permit PT90300 to discharge water into the Grenada POTW.

TABLE 1

SOLID WASTE MANAGEMENT UNITS
KOPPERS COMPANY
GRENADA, MISSISSIPPI

Area of Concern	Period of Operation	Types of Wastes Stored Disposed or Spilled
SWMU 1 OIL/WATER SEPARATOR	At least 1975 to present	Creosote, no. 2 diesel fuel, pentachlorophenol and oil wastes.
SWMU 2 SURFACE LAGOON	Same as 1	Same as 1
SWMU 3 SPRAY IRRIGATION FIELD	Same as 1	Same as 1
SWMU 4 BOILER	At least 1975 to present	Creosote wastes, pentachlorophenol wastes, contaminated soils, bottom sediments, and unreclaimable oil.
SWMU 5 LAND FARM	At least 1979 to 1980 to present	K001 bottom sediments boiler ash.
SWMU 6 PROCESS COOLING PONDS	At least 1970 to present	Unknown.
SWMU 7 CONTAINER STORAGE AREA	1980 to present	Creosote, pentachlorophenol, bottom sediments, contaminated soils, and unreclaimable oil.
SWMU 8 DRIP TRACK AREA	1979 to present	Creosote, no. 2 diesel fuel, pentachlorophenol and oil wastes.
SWMU 9 CHEMICAL UNLOADING AREA	At least 1975 to present	Creosote, no. 2 diesel fuel.
SWMU 10 UNDERGROUND STORAGE TANK	At least 1970 to present	Unknown, possibly creosote, pentachlorophenol contaminated run-off.
SWMU 11 ABANDONED WASTE TREATMENT SYSTEM	At least 1970 to about 1980	Creosote, no. 2 diesel fuel, pentachlorophenol and oil.
SWMU 12 NORTH WASTE PILES (2 Piles)	Unknown	Construction debris, treated and untreated scrap wood, railroad iron, scrap metal, rubber tires, other inert materials.
SWMU 13 SOUTH WASTE PILES (2 Piles)	Unknown	Untreated wood, empty railroad spike drums.

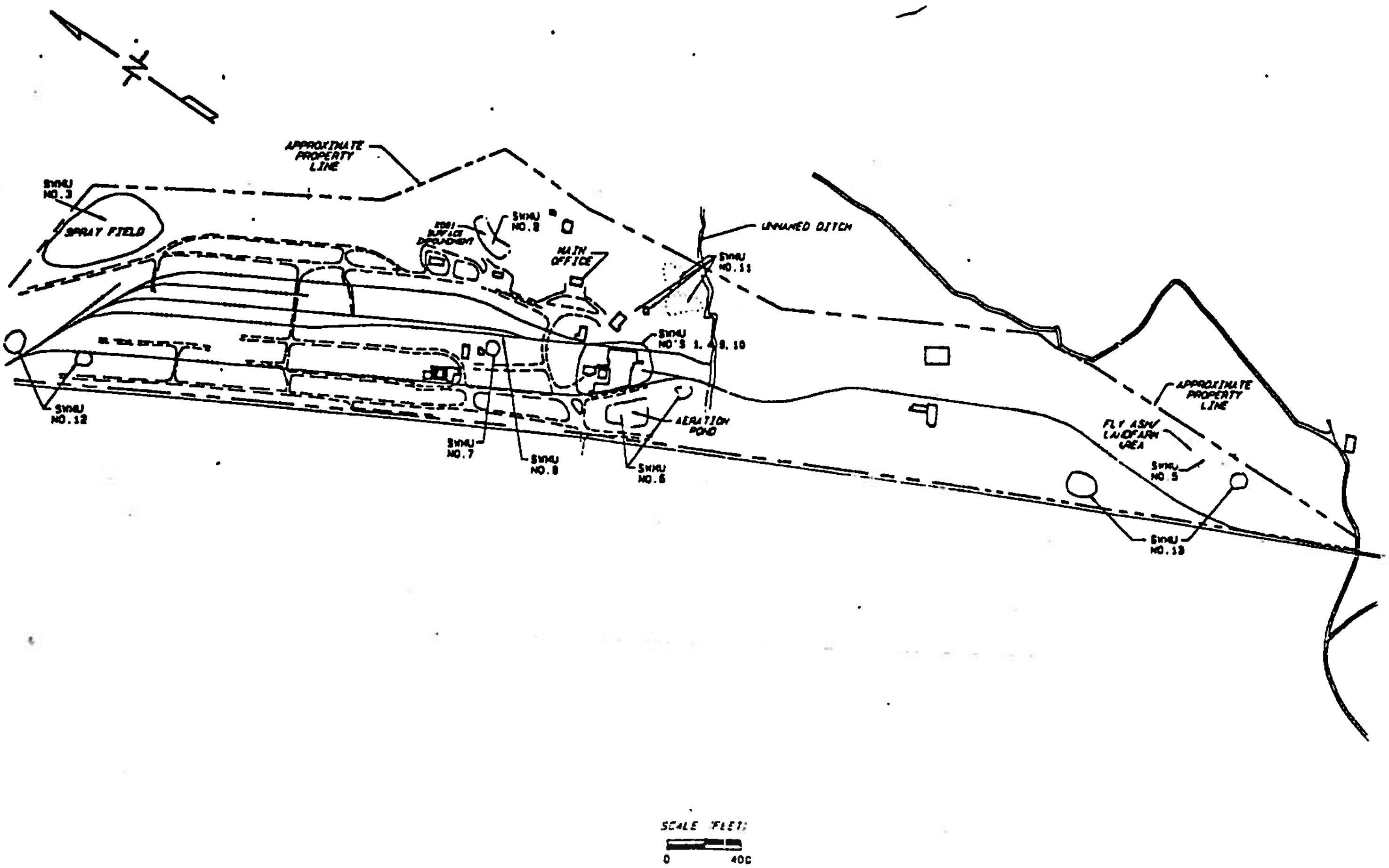


FIGURE 3. Location of SWMUs

Wastewaters from the surface impoundment were irrigated on a 3 acre sprayfield (Figure 2) from 1975(?) to 1988. The sprayfield is designated as SWMU 3, but because the unit did not generate listed K001 hazardous waste, by definition, the unit falls outside of the RFI workplan. The sprayfield is undergoing closure as a separate unit. Closure activities began April 1, 1991, and include dismantling of the spray heads and riser, plowing and seeding of to promote vegetative biodegradation, and soil sampling for wood treating constituents 180 days after seeding. A closure report is due 270 days from initiation of closure activities.

Site Geology and Hydrology

The Koppers site is located in Grenada County in north-central Mississippi. Grenada County is drained by the Yalobusha River and its tributaries and can be subdivided into three physiographic areas, trending north-south. From west to east these are the Mississippi River alluvial plain, the loessal hills, and part of the coastal plain east of the hills. The KII site is located in the loessal hills extending through the middle of the county. This area ranges from nearly flat to steep. Local soils are loess derived and silty.

Stratigraphic formations ranging in age from Upper Cretaceous to Holocene age are exposed in the area. Deposits trend north-south and regional dip is westward toward the axis of the Mississippi embayment, the regional controlling structure.

In Grenada County, Tertiary aquifers constitute the primary groundwater supply. In ascending order, these are the Lower Wilcox, Meridian Upper, Wilcox, Tallahatta-Winona, and the Sparta Sand. The upper most aquifer in the Tie Plant area is Tallahatta-Winona aquifer which is part of the Eocene age Claiborne Group (see Figure 4). Regional flow in the Tallahatta-Winona aquifer is westerly toward the Mississippi Alluvial Plain. The Batupan Bogue, located approximately 3/4 mile east of the site, controls surface drainage in the area, and may act as a local groundwater discharge point.

At most drilling locations on the site, clays and silts are present near the surface to depths from 8 to 12 feet below surface. Beneath the surficial deposits is a sand unit containing discontinuous lenses three to five feet thick of clay and silt. Shallow monitoring wells in place at the site are completed within the sand layer at depths varying form 20 to 34 feet. Deep wells adjacent to existing shallow wells are screened ten feet below he bottom of the screen in the shallow well. The deepest boring extends to 145 feet without encountering a confining unit.

The Koppers plant supply well (installed in 1961) has a total depth of 310 feet and was installed in a 510 feet borehole. The driller's log indicates that the sand extends to a depth of 210 and then appears to be underlain by finer grained material. The supply well produces from the Meridian-Upper Wilcox, which extends to a depth approximately 500 feet in Grenada County.

Potentiometric maps produced from groundwater elevation data indicate that groundwater flow is generally east except in the southern portion of the facility where flows are in the northern direction (Figure 5). Well nests, in some cases, indicate significant differences in water levels between

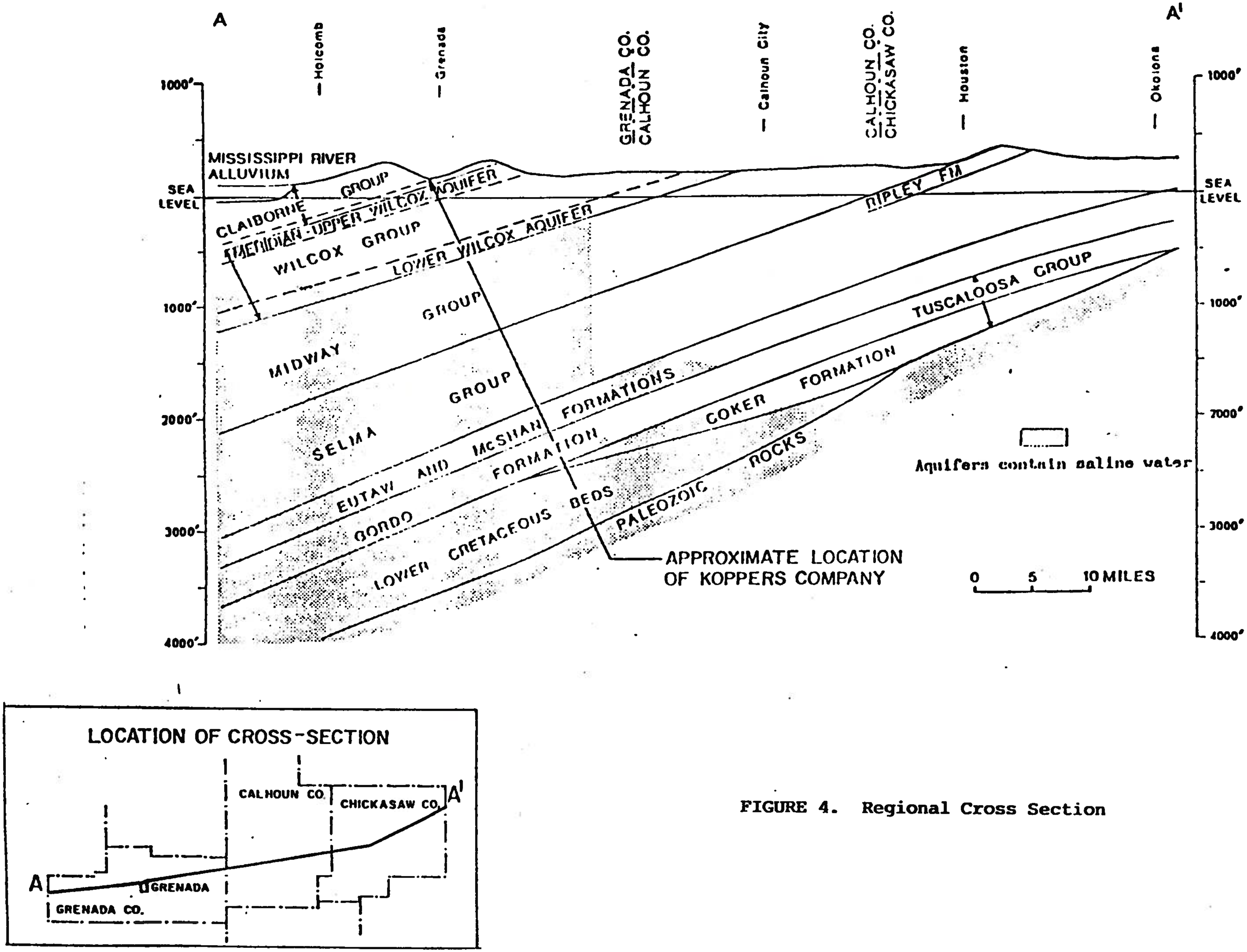


FIGURE 4. Regional Cross Section

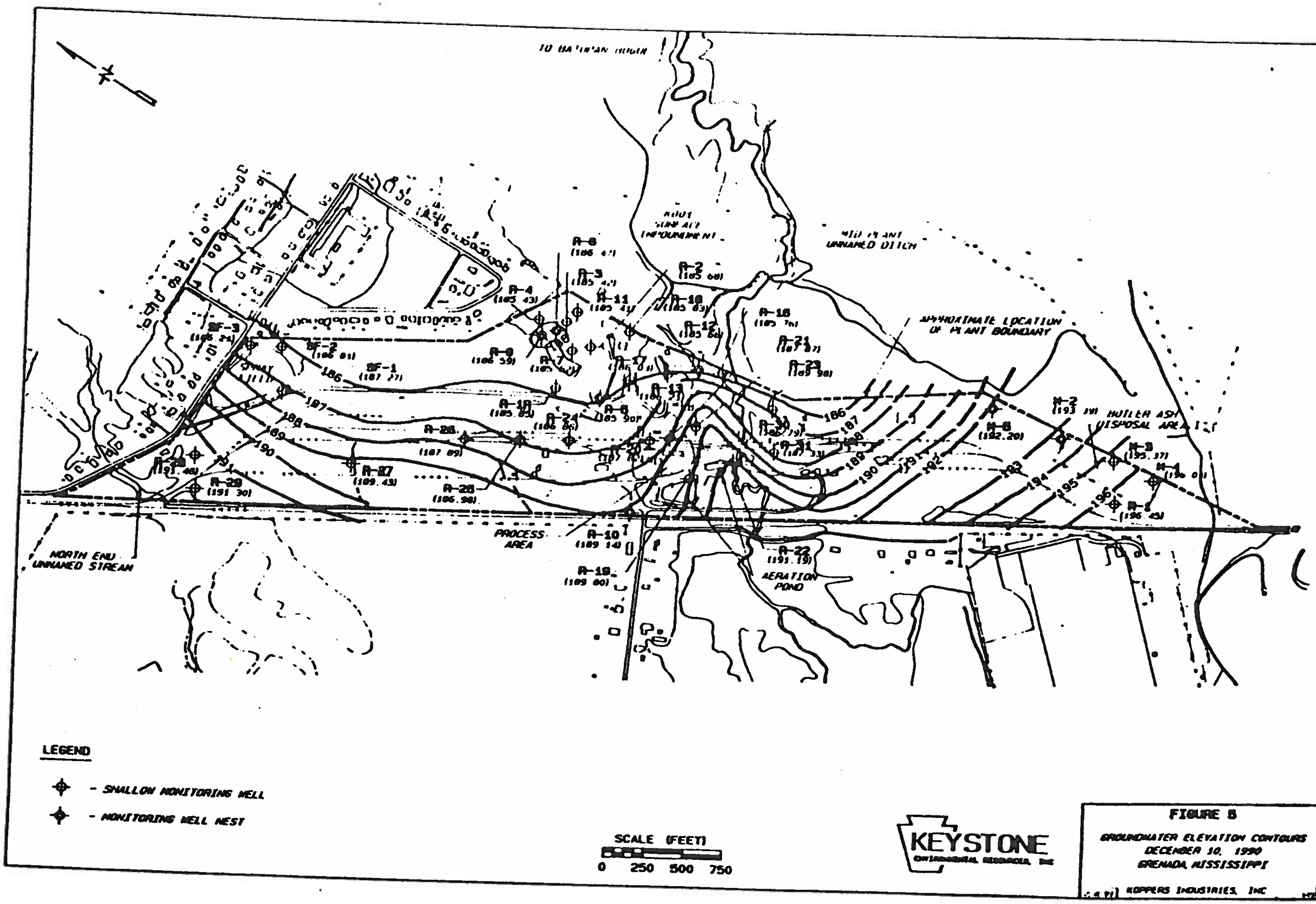


FIGURE 5. 4th Quarter Potentiometric Map

shallow wells and deep wells. Both downward and upward localized vertical gradients are apparent been at the site. Discontinuous clay lenses may cause these localized reversals in gradients.

Slug tests were conducted in nine monitoring wells on December 22, 1986. An average hydraulic conductivity of 2.8 ft/day was calculated from this data. Calculated hydraulic gradients for the north portion and southern portion of the facility are given in Table 2. Using these values and an effective porosity of 30%, the groundwater flow velocity is estimated to be 0.054 feet/day or 20.0 feet/year.

TABLE 2

	Northern Segment (ft/ft)	Southern Segment (ft/ft)
First Quarter	0.0061	0.0065
Second Quarter	0.0072	0.0036
Third Quarter	0.0059	0.0052
Fourth Quarter	0.0060	0.0056
Average	0.0063	0.0052

EVALUATION OF THE GROUNDWATER MONITORING PROGRAM

The following evaluation of the groundwater monitoring program at KII is based on documents submitted by the facility and on the Comprehensive Groundwater Monitoring Evaluation (CME) Inspection. The CME checklist is included as Appendix A to this report. This evaluation addresses the requirements of MHWMR Part 264, Subpart F.

MHWMR 264.97 (a)-(c)
General Groundwater Monitoring Requirements

An interim status monitoring program was instituted for the surface impoundment at KII in 1982. Four groundwater monitoring wells (R-1 through R-4) were installed in March, 1982. Analyses were performed on samples from these wells in 1982 and 1983. In 1984, the Mississippi Bureau of Pollution Control (MBPC) determined that the monitoring program was inadequate to meet regulatory requirements and requested that additional monitoring wells be installed at upgradient and downgradient locations.

During July, 1984, monitoring wells R-6 through R-9 were installed and a bimonthly sampling and analysis program was initiated. Although groundwater flow data indicated that wells R-5 and R-6 were upgradient of the facility, background water quality data was not observed. Therefore, a piezometer investigation was initiated in July, 1986 to define groundwater flow. This study determined that groundwater flow was to the east-northeast. In October and November 1986, five additional monitoring wells were installed. Wells R-10 and R-10B were installed at locations capable of providing ambient groundwater quality data and R-8B was located to provide groundwater quality data at depth, downgradient of the impoundment.

Results of sampling in 1986, indicated elevated constituents parameters present in R-5 and R-6. These elevated levels were attributed to operations upgradient of the surface impoundment. R-10 and R-10B also displayed phenol concentrations above the detection limit.

A RCRA facility assessment (RFA) was conducted in 1987 identifying 13 solid waste management units (Table 2, Figure 3). Three of these units - the surface impoundment (SWMU 2), the spray irrigation field (SWMU 3), and the boiler ash landfarm (SWMU 5) are regulated by the State and are not required to have an RFI performed under the EPA issued HSWA Permit signed June 28, 1988. A revised RFI workplan submitted January 11, 1991, was approved on March 26, 1991, and is currently being implemented.

As of February, 1991, a total of 46 monitoring wells were in place at the site. These include monitoring wells for the surface impoundment, boiler ash landfarm, spray field and solid waste management units. Table 3 gives a summary of well completion data and Figure 6 indicates well locations as of February, 1991. Site related constituents have been detected in both shallow and deep wells (Appendix B).

Installation of monitoring wells has been accomplished by use of both hollow stem auger and mud rotary drilling method. Monitoring wells are constructed of 2-inch inside diameter flush-joint PVC casing and a 10-foot section of 0.010-inch slot 2-inch diameter PVC screen. Medium to coarse grain sand was placed in the annulus around the screen to act as formation stabilizer packing. This sand extends approximately 2-feet above the top of the screened interval. Except in wells R-1 through R-4, a pelletized bentonite seal is above the sand to seal off the screened interval. The annular space overlying the sand packing in wells R-1 through R-4 was backfilled with auger cuttings which extend to within five feet of the surface. The remaining annular space in all wells is sealed with a cement/bentonite grout. At the surface, a protective steal casing with locking cap is in place around the the PVC casing. A sloping cement collar helps prevent water infiltration and ponding near the well casing. During well development approximately three casing volumes of water were purged by airlift method or dedicated bailers. Well completion diagrams are given in Appendix C.

MHWMR 264.97 (d)-(h)
Sampling and Analysis Procedures

During the inspection, sampling of R-7 and R-8, downgradient of the surface impoundment, was observed. The facility's RCRA Permit specifies that samples be collected on a semi-annual basis at the surface impoundment from downgradient wells R-7, R-8, R-8B, R-9, R-9C, R-9D, and upgradient wells R-1R and R-10 (A-series wells are equivalent to non-letter designated wells, i.e. R-8 = R-8A). In 1990, Koppers performed monitoring on a quarterly basis to establish background mean values and variance for indicator parameters. Table 4 lists monitoring parameters specified in the permit. Kopper's consultant, Keystone Environmental Resources, Inc., followed the sampling and analysis plan contained in Appendix E of the Facility's RCRA Permit.

TABLE 3

MONITORING WELL PHYSICAL DATA SUMMARY

KOPPERS INDUSTRIES, INC.
GRENADA, MISSISSIPPI

Well No.	Installation Date	Well Screen Type	Screened Interval Depth-Ft.	Screened Interval Material	PVC Measuring Point Elevation (Ft. above MSL)
R-1	3/82	2" PVC	20-30	Sand	210.81
R-1R	3/89	2" PVC	19.5-20.5	Sand	210.87
R-2	3/82	2" PVC	20-30	Sand	209.26
R-3	3/82	2" PVC	20-30	Sand	206.96
R-4	3/82	2" PVC	20-30	Sand	206.06
R-5	7/84	2" PVC	21-31	Sand	211.84
R-5B	8/88	2" PVC	41-51	Sand/Silty Clay	212.18
R-6	7/84	2" PVC	21-31	Sand/Clay and Silt	213.04
R-7	7/84	2" PVC	21-31	Sand	210.98
R-8	7/84	2" PVC	21-31	Sand	214.53
R-8B	11/86	2" PVC	36-46	Clay and Silt/Sand	208.98
R-9	7/84	2" PVC	21-31	Sand	213.66
R-9C	8/87	2" PVC	50.5-60.5	Sand	216.00
R-9D	8/87	2" PVC	77.2-87.2	Sand	216.07
R-10	11/86	2" PVC	17-27	Clayey Silt/Clay	208.78
R-10B	11/86	2" PVC	37-47	Sand	208.94

NOTES:

(1) Wells R-14 and R-15 which had been proposed for the Phase I RFI (SWMU Investigation) were not installed as off-site access was not permitted.

(2) Well R-1R has replaced well R-1, which was decommissioned in March 1989.

TABLE 3 (Cont'd)

MONITORING WELL PHYSICAL DATA SUMMARY

KOPPERS INDUSTRIES, INC.
GRENADA, MISSISSIPPI

Well No.	Installation Date	Well Screen Type	Screened Interval Depth-Ft.	Screened Interval Material	PVC Measuring Point Elevation (Ft. above MSL)
R-11	11/86	2" PVC	15-25	Sand	203.74
R-12	11/86	2" PVC	10-20	Sand	200.71
R-12B	8/88	2" PVC	31-41	Sand	201.28
R-13	8/88	2" PVC	21-31	Sand	216.69
R-16	8/88	2" PVC	10.5-20.5	Sand/Clayey Silt	199.44
R-17	8/88	2" PVC	19.5-29.5	Sand	213.03
R-18	8/88	2" PVC	21-31	Sand	212.82
R-19	8/88	2" PVC	17-27	Sand/Silt	212.77
R-20	8/88	2" PVC	22-32	Sand	214.10
R-21	8/88	2" PVC	18-28	Sand	211.89
R-22	8/88	2" PVC	18-28	Sand/Clayey Silt	213.19
R-23	8/88	2" PVC	12-22	Sand	205.50
R-24	8/88	2" PVC	22-32	Sand	211.76
R-25	8/88	2" PVC	21-31	Sand	211.54
R-26	8/88	2" PVC	23-33	Sand/Silty Clay	211.85
R-27	8/88	2" PVC	13-23	Sand/Silty Clay	210.05

NOTES:

(1) Wells R-14 and R-15 which had been proposed for the Phase I RFI (SWMU Investigation) were not installed as off-site access was not permitted.

(2) Well R-1R has replaced well R-1, which was decommissioned in March 1989.

TABLE 3 (Cont'd)

MONITORING WELL PHYSICAL DATA SUMMARY

KOPPERS INDUSTRIES, INC. GRENADA, MISSISSIPPI

Well No.	Installation Date	Well Screen Type	Screened Interval Depth-Ft.	Screened Interval Material	PVC Measuring Point Elevation (Ft. above MSL)
R-28	8/88	2" PVC	17-27	Sand	207.89
R-29	8/88	2" PVC	18-28	Sand	206.78
R-30	8/88	2" PVC	19-29	Sand	210.55
R-31	8/88	2" PVC	24-34	Sand	214.09
M-1	12/87	2" PVC	16-26	Sand	215.00
M-2	12/87	2" PVC	17.5-27.5	Sand	215.28
M-2B	10/89	2" PVC	37.5-47.5	Clay and Silt/Sand	215.25
M-3	12/87	2" PVC	20-30	Sand/Silt to Silt and Clay	216.83
M-4	12/87	2" PVC	17.5-27.5	Sand/Silt and Clay	215.86
M-5	10/89	2" PVC	17.5-27.5	Clay and Silt/Sand	214.37
M-5B	10/89	2" PVC	40-50	Silty Clay/Sand	214.50
SF-1	8/85	2" PVC	17.5-27.5	Sand and Silt	212.74
SF-2	8/85	2" PVC	20-30	Sand and Silt	211.04
SF-3	8/85	2" PVC	16-26	Sand	211.09
SF-4	8/85	2" PVC	20-30	Sand/Silty Clay	212.19

NOTES:

(1) Wells R-14 and R-15 which had been proposed for the Phase I RFI (SWMU Investigation) were not installed as off-site access was not permitted.

(2) Well R-1R has replaced well R-1, which was decommissioned in March 1989.

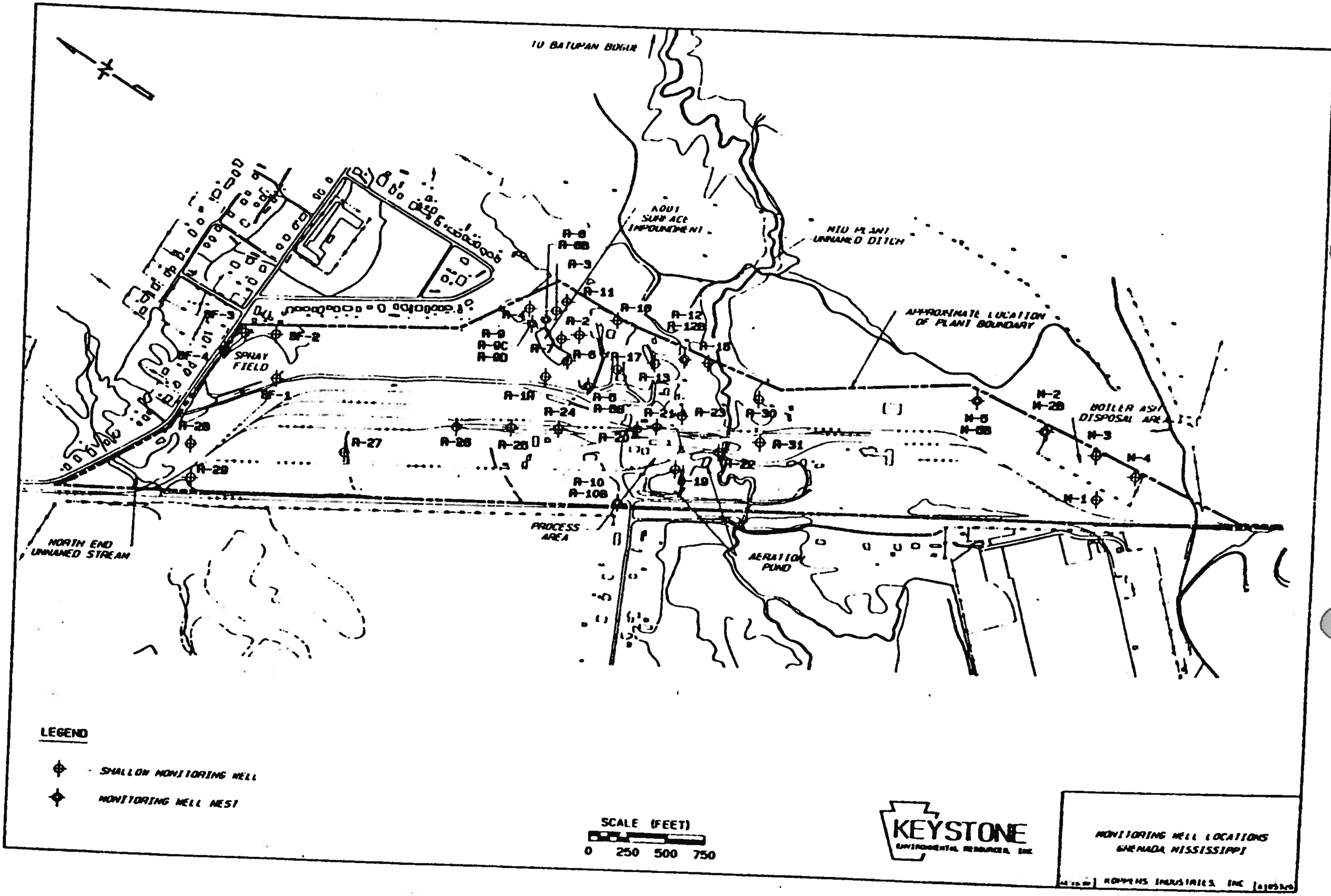


FIGURE 6. Monitoring Well System

TABLE 4 - MONITORED PARAMETERS

Constituents

Napthalene
Acenapthalene
Fluoranthene
Pentachlorophenol
2,4 Dinitrophenol
2,3,4,6-Tetrachlorophenol
2,4,6-Trichlorophenol
2,4-Dichlorophenol
2,4-Dimethylphenol
2-Chlorophenol
2-Nitrophenol
2-Methyl-4,6-Dinitrophenol
4-Nitrophenol
Phenol
Acenaphthene
Benzo(a)anthracene
Benzo(a)pyrene
Benzo(b)fluoranthene
Benzo(g,h,i)perylene
Benzo(k)fluoranthene
Chrysene
Dibenz(a,h)anthracene
Fluorene
Phenanthrene
Ideno(123-cd)pyrene
Pyrene
Bis(2-ethylhexyl)phthalat
Chromium
Mercury

Prior to sample collection static water levels and total well depths were measured in each well using an electronic oil/water interface probe. Water level measurements were recorded to an accuracy of 0.01 foot and well depths were measured to the nearest 0.1 foot. Wells were then purged by removing a minimum of three casing volumes of water. Some wells are purged to dryness before three well volumes are removed according to sampling personnel (R-10A and M-2). Purge water was disposed of in the facility's wastewater treatment system. Laboratory-cleaned, stainless steel bailers were used to sample and purge the wells. QA/QC procedures include requirements for at least one trip blank per sampling event and a minimum of one field blank per day of sampling.

Plastic sheeting was placed around each well before sampling. Collected samples were split for field measurement of pH, temperature and specific conductivity. Sample bottles were provided by the laboratory with appropriate preservatives added. All samples were properly labeled and chain of custody procedures were followed.

Field data sheets are completed for each well (Appendix D). Wells R-16, R-20, and R-25 were noted to contain product at the bottom. Well R-6 is damaged and total depth could not be measured. Compliance wells were in good condition on the day of the inspection.

Data Evaluation

Koppers is currently in a detection monitoring mode. Tables 5, 6, and 7 indicate 1990 Total Acid-Extractable Phenolics, Total Polynuclear Aromatic Hydrocarbons (PAHs), and Volatile Organic Compounds detected in groundwater respectively. Appendix B gives the complete results of the 1990 4th quarter monitoring event. The Behrens-Fisher method of statistical analysis is stipulated by the permit to be used in determination of variance from the background mean values for each parameter. Koppers has submitted an alternate method of statistical analysis as a background mean value can not be established by th Behrens-Fisher method due to the large number of non-detects. The Poisson method was used to compare the concentrations of five parameters (naphthalene, acenaphthalene, fluoranthene, 2,4-dinitrophenol, and pentachlorophenol) in background well R-10 to the concentrations in the six downgradient well for the surface impoundment. Application of this method indicates no evidence of significant difference for any of the compliance wells with respect to the five constituents which Koppers applied to this method. In addition to K001 constituents detected, chromium was detected in wells R-1R, R-8A, R-9A, and R-10A at 78.7 ug/l, 120 ug/l, 89.4 ug/l, and 61.1 ug/l respectively. The MCL for chromium is 50 ug/l.

TABLE 5

1990 TOTAL ACID-EXTRACTABLE PHENOLICS (ug/L)

KOPPERS INDUSTRIES, INC.
GRENADA, MISSISSIPPI

WELL	FIRST QUARTER	SECOND QUARTER	THIRD QUARTER	FOURTH QUARTER
SURFACE IMPOUNDMENT				
R-1R	0.64	1.06	2.00 ND* 0.71**	4.29 5.60* 6.10**
R-7	0.63	0.58	2.51 3.52*	3.31 19.67*
R-8	1.07	1.06	2.01 0.88*	10.77 3.73*
R-8B	1.54	0.67	1.97 0.85*	5.49 250.53*
R-9	ND	1.44	45.38 3.20*	7.17 11.53*
R-9C	ND	0.57	70.34 26.94*	18.11
R-9D	0.77	0.63	20.07 10.52*	8.77 7.04*
R-10	ND	1.74	5.90 42.97* 18.97**	3.11 2.36* 2.71**
Field blank	0.74	ND ND	22.55 4.05*	1.09
Trip blank	—	ND	3.80	ND
BOILER ASH DISPOSAL AREA				
M-1	—	305.15	2.25	6.03
M-2	—	122.29	21.00	27.92
M-3	—	2.13	5.23	2.13
M-4	—	69.06	3.95	5.08
Field blank	—	ND	ND	6.04
Trip blank	—	ND	ND	0.95

NOTES:

1) — Indicates no sample collected for RCRA Monitoring.
2) ND - Indicates the parameter was not detected.
3) * - First replicate sample.
4) ** - Second replicate sample.
5) Individual phenolics constituents which were below detection limit were counterd as zero for summation purposes.

TABLE 6

1990 TOTAL POLYNUCLEAR AROMATIC HYDROCARBONS (ug/L)

KOPPERS INDUSTRIES, INC.
GRENADA, MISSISSIPPI

WELL	FIRST QUARTER	SECOND QUARTER	THIRD QUARTER	FOURTH QUARTER
SURFACE IMPOUNDMENT				
R-1R	ND	4.80	5.78 2.64* 6.39**	1.94 0.85* 1.18**
R-7	ND	3.26	5.13 51.6*	0.31 0.38*
R-8	ND	ND	2.46 ND*	0.88 2.15*
R-8B	5 06	8.10	2.90 2.84*	5.13 0.63*
R-9	ND	1.77	5.31 1.43*	0.10 0.09*
R-9C	ND	ND	ND ND*	5.08
R-9D	ND	0.23	ND ND*	0.12 0.14*
R-10A	1.09	1.23	0.03 0.10* 0.10**	1.76 1.18* 0.85**
Field blank	ND	7.91	0.07	0.06
Trip blank	—	ND	0.05	1.08
BOILER ASH DISPOSAL AREA				
M-1	—	52.00	0.02	1.28
M-2	—	2.13	2.65	4.6
M-3	—	0.23	0.03	0.68
M-4	—	6.91	0.04	3.73
Field blank	—	ND	ND	0.08
Trip blank	—	ND	ND	0.09

NOTES:

1) — Indicates no sample collected for RCRA Monitoring.
2) ND - Indicates the parameter was not detected.
3) * - First replicate sample.
4) ** - Second replicate sample.
5) Individual PAH constituents which were below the detection limit were counted as zero for summation.

TABLE 7

1990 VOLATILE ORGANIC COMPOUNDS DETECTED IN GROUNDWATER

KOPPERS INDUSTRIES, INC.
GRENADA, MISSISSIPPI

WELLS		M-1	M-2	M-3	M-4
	(UNIT)		2ND QUARTER		
trans-1,2-dichloroethene	ug/L	ND	ND	82.4	306
trichloroethene	ug/L	ND	ND	2750	2030
			3RD QUARTER		
trans-1,2-dichloroethene	ug/L	ND	ND	67	150
trichloroethene	ug/L	ND	ND	2890	3080
			4TH QUARTER		
trans-1,2-dichloroethene	ug/L	ND	ND	80.6	212
trichloroethene	ug/L	ND	ND	2510	4020

CONCLUSIONS

No violations were noted during the observed sampling event at the facility. The sampling and analysis plan contained in the RCRA Permit was followed, and the sampling crew was knowledgeable of proper sampling technique. Samples for metals analysis should be collected and analyzed for both total and dissolved constituents, however. While all wells specified in the permit were in good condition, damaged well R-6 should be properly plugged and abandoned to prevent possible migration of contaminants to the groundwater.

Since four quarters of statistical data are not available for constituents added to the detection monitoring program, as modified by MDEQ on February 3, 1990 (see Table 4), use of the statistical method proposed by Koppers may not yet be approved. However, as contamination appears to be wide spread at this site (as evidenced by constituent levels detected in background wells and free product detected in wells near the process area-R-16, R-20,and R-25) and as groundwater flow direction is from areas of high contamination - toward the regulated unit, the establishment of a site specific groundwater protection standard (GWPS) for each constituent may be more appropriate than applying such statistical comparisons. Analytical method detection limits, MCLs, or maximum constituent concentrations derived from health based risk assessment calculations may be the basis for the GWPS.

RCRA Inspection Report

1. Inspector and Author of Report

   Thad Hopper, Mississippi Office of Pollution Control (OPC)

2. Facility Information

   Koppers Industries, Inc. (Beazer East, Inc.)
   P.O. Box 160
   Tie Plant, Mississippi 38960

3. Responsible Company Official

   Mr. J. D. "Rock" Clayton, Plant Manager, Kopper Industries, Inc. (KII)

4. Inspection Participants

   Mr. Thad Hopper, OPC
   Mr. Gary McLelland, General Yard Foreman, KII

5. Date and Time of Inspection

   December 11, 1990 11:00 a.m. CST

6. Applicable Regulations

   Mississippi Hazardous Waste Management Regulations (MHWMR) Parts 262, 264, 268, and Mississippi Hazardous Waste Management Permit No. 88-543-01.

7. Purpose of Inspection

   A Comprehebsive Monitoring Evaluation (CME) was performed. This report addresses the Compliance Evaluation Inspection (CEI) portion of the CME. The CEI was conducted to determine the facility's overall compliance with applicable Mississippi Hazardous Waste Management Regulations and the facility's Hazardous Waste Management Permit. Evaluation of the facility's comliance with applicable groundwater monitoring requirements of MHWMR Part 264, Subpart F, and MHWMP 88-543-01 will be forwarded under a separate cover letter.

8. Facility Description

   KII is a wood treating facility located in Tie Plant, Mississippi, which is approximately five miles southeast of Grenada, Mississippi. The facility uses creosote and pentachlorophenol to treat wood products for railroads, construction industries, utilities, and others. Ties, poles, and lumber are received mainly by rail and are stored onsite.

Koppers Company, Inc. was acquired by Beazer Materials and Services (BMS) on December 28, 1988. BMS subsequently sold the division, of which the Tie Plant Mississippi plant was a part, to a management group to form Koppers Industries, Inc (KII). In April, 1990, BMS changed its name to Beazer East, Inc (BEI). RCRA regulated units at the faciltiy consist of a closed surface impoundment, a less than 90 day hazardous waste storage area, and a boiler ash landfarm. KII is a generator with a less than 90 day hazardous waste storage area, and owner of the closed surface impoundment and boiler ash landfarm (BALF). BEI is the operator of the surface impoundment and BALF. Beazer East, Inc. provides financial assurances for post-closure.

The facility has been issued a full RCRA permit. The state issued MHWMP No. 88-543-01 on June 28, 1988, for post-closure care of the surface impoundment. EPA issued the 1984 Hazardous and Solid Waste Amendments (HSWA) portion of the RCRA permit June 14, 1988, requiring KII to investigate releases of hazardous waste or hazardous constitiuents from solid waste management units. Other permits issued to the facility include Mississippi Air Operating Permit No. 0960-00012 for operation of the plant's boiler and Mississippi Industrial Pretreatment permit PT90300 to discharge wastewater into the Grenada POTW.

Hazardous wastes which are generated and stored at the facility are bottom sediment sludge from the treatment of wastewaters from wood preserving processes that use creosote and/or pentachlorophenol (KOO1), waste creosote (UO51), and waste pentachlorophenol (FO27). Both hazardous and nonhazardous are stored in the less than 90 day storage area.

The closed surface impoundment was formerly part of the wastewater treatment system and handled KOO1 listed hazardous waste. The unit was certified closed on January 3, 1990 and is now in post-closure. KOO1 constituents have been detected in monitoring wells upgradient and downgradient of the surface impoundment. Wastewater is currently routed through an oil/water separator and an activated sludge treatment system, before being discharged to the City of Grenada POTW.

Prior to October, 1987, KOO1, UO51, and FO27 wastes were burned in a boiler (for thermal conversion of wood and various wastes to steam). The ash from this processs is a hazardous waste. Before October 27, 1987, these ashes were deposited at a boiler ash landfarm (BALF). Waste sludge from two surface impoundments (which closed prior to November, 1980, and are now SWMUS) was also landfarmed at this site. The BALF was certified closed on June 27, 1990, and a groundwater quality assessment is being conducted to address off-site contamination. Once the off-site assessment is complete, the BALF will be incorproated into the existing RCRA permit. KOO1, UO51, and FO27 are no longer burned as fuel for the boiler. The facility now uses a mixture of process creosote (bottoms from work tanks) referred to as "fuel additive", wood chips and wood debris. The ash is deposited in the county sanitary landfill.

In addition to the regulated units at the facility, 13 SWMUS have been identified. A PHASE II RCRA Facility Investigation (RFI) report submitted by KII to assess the extent of releases from SWMUS is now under review by the state and EPA. Submission of this workplan also constitues compliance with Mississippi Commission of Environmental Quality Order No. 1208-87 requiring investigations of releases from SWMUS.

9. Findings

A visual site inspection, record review, and an evaluation of the groundwater monitoring system (including observation of sampling at monitoring wells R-7 and R-8), were conducted at the facility. Results of the groundwater portion of the CME will be submitted under a separte cover letter.

The less than 90 day storage area contained only bulk, cyrstalline pentachlorophenol product. Appropriate warning signs were in place. The cap of the closed surface impoundment was intact, with no settling or erosion noted, and monitoring wells associatied with the impoundment appeared in good condition. The impoundment area was unfenced, and no facility-wide means of security is provided. Attachment I, Post-Closure plans, requires security to be maintained, and Appendix D to Attachment I, the Post-Closure care checklist, includes a fence and signs to be routinely inspected. Monitoring wells for the BALF were in good condition, and no erosion or settling of the cap was observed. The BALF was also unfenced; however, the approved closure plan did not include security provisions.

Several piles of soil, removed during installation of a new drip track and excavated during remedial activities were noted in the southern portion of the facility. Some of this soil was being stored under a shed, while other piles had been placed on plastic, but were exposed to the elements.

Records reviewed included inspection reports, personnel training, waste manifests, financial and liability assurance documents, closure and post-closure plans, contingency plans, the RCRA permit, and groundwater analytical data. All records were complete and up to date with the exception of post-closure inspection records for the surface impoundment. The inspection schedule currently completed is for an operating surface impoundment and is not the form stipulated in the RCRA permit.

10. Conclusions

The facility was in apparent violation of the following Mississippi Hazardous Waste Management Regulations and Conditions of the facility's RCRA permit:

MHWMR 264.14 and MHWMP 88-543-01 Attachment I (Post-Closure Requirements) and Appendix D. Failure to maintain security devices. No signs posted or fence installed.

MHWMR 264.15 and MHWMP 88-543-01 Attachment I, Appendix D. Failure to follow the Post-Closure inspection form developed for Post-Closure care maintenance.

In addition, a report should be submitted detailing facts concerning the soil piles stored in the southern portion of the facility. This report should include approximate amount of material stored, material source location, and results of analytical testing, length of time material has been stored, and proposed final disposition. If the material has not been analyzed for TCLP characteristics, this test should be performed and the results submitted.

11. Signed

Thad Hogue 1-13-91

12. Approval

Wm Stephen Spengler 1/23/91

cc: Mr. James H. Scarbrough, EPA
Ms. Jane M. Patarcity, Beazer East, Inc.

RCRA Inspection Report

1. Inspector and Author of Report

   Gail Macalusa
   Environmental Engineer
   Bureau of Pollution Control

2. Facility Information

   Koppers Industries, Inc. (Beazer Materials & Services)
   P.O. Box 160
   Tie Plant, Mississippi 38960

3. Responsible Company Official

   Mr. J. D. "Rock" Clayton, Plant Manager
   Koppers Industries, Inc. (KII)

4. Inspection Participants

   Mr. J. D. "Rock" Clayton, KII
   Mr. Gary McClelland, KII
   Ms. Gail Macalusa, BPC

5. Date and Time of Inspections

   February 22, 1990; 10:00 a.m. CST

6. Applicable Requirements

   Mississippi Hazardous Waste Management Regulations (MHWMR) Parts 262, 264, 265, and 268 and Mississippi Hazardous Waste Management Permit No. 88-543-01.

7. Purpose of Inspection

   This was a Compliance Evaluation Inspection (CEI) to determine the facility's overall compliance with applicable regulations and the facility's MHWMR Permit.

8. Facility Description

   KII is located in Tie Plant, Mississippi, which is approximately five miles southeast of Grenada, Mississippi. The facility is a wood treating facility which uses creosote and pentachlorphenol in the pressure treatment of wood products for railroads, construction industry, utilities, and others. Raw material and product arrive and leave by rail and truck.

   Koppers Company, Inc. was acquired by Beazer Materials and Services, Inc. (BMS) on December 28, 1988. BMS sold the division, of which the Grenada, Mississippi plant was a part, to a management group to form Koppers Industries, Inc. (KII).

KII is a generator with a less than 90 day storage area, and owner of the surface impoundment and boiler ash landfarm (BALF). BMS is the operator of the surface impoundment and BALF.

The surface impoundment is permitted and has been modified to reflect KII as owner and BMS as operator. The unit was certified closed on January 3, 1990, and is now in post-closure. K001 constituents have been detected at significant levels in both the upgradient and downgradient wells. The process area has been classified as a SMU, and is located upgradient to the surface impoundment, close to the upgradient well. This area may be the source of contamination. The Mississippi Department of Environmental Quality requested BMS to submit a workplan, in accordance with Mississippi Commission Order No. 1208-87, for a facility-wide assessment to fully characterize the extent of contamination. The workplan was submitted in January, 1990, and is currently under review by MDEQ and EPA.

The BALF is scheduled to be certified closed by June 1, 1990. Currently, a groundwater quality assessment is being conducted, in the area of the BALF, to address off-site contamination. The MDEQ is awaiting the results of the assessment before proceeding to include this unit in the existing permit.

The hazardous wastes which are generated and stored at the facility are bottom sediment sludge from the treatment of wastewaters from wood preserving processes that use creosote and/or pentachlorophenol (K001). Waste creosote (U051) and certain waste pentachlorophenol (F027) are also managed at times. The surface impoundment was formerly operated as a wastewater treatment lagoon and generated the listed hazardous waste K001. Currently, the wastewater is being routed through the wastewater treatment plant, which consists of an oil/water separator and an activated sludge system, before being discharged to the City of Grenada POTW. Prior to October, 1987; K001, U051, and F027 wastes were burned in a boiler (used for thermal conversion of wood and various wastes to steam). The ash from burning these wastes is a hazardous waste. These ashes were deposited at the boiler ash landfarm prior to July, 1987. K001, U051, and F027 wastes are no longer used as fuel for the boiler. Ash from the boiler is now disposed of in the county sanitary landfill. Waste sludge from two impoundments (which closed prior to November 19, 1980, and are now SMU's) was landfarmed at this site prior to the ash disposal. Currently, the boiler ash landfarm is being capped with the waste in place.

9. Findings

A record review was conducted at the facility. Records reviewed included inspection reports, personnel training, waste manifests on received and shipped wastes, financial and liability assurance documents, closure and post-closure plans, the facility contingency plan, and the permit. All records appeared to be complete and up-to-date, with the exception of the groundwater data. Records of monitoring, testing, and analytical data are not maintained at the facility. According to Mr. Clayton, groundwater data is retained by BMS. This is an apparent violation of Permit Condition IV.H.1. and MHWMR 265.73(b)(6).

A visual site inspection of the storage area, the landfarm, and the capped surface impoundment was conducted. The less than 90 day container/drum storage area contained only non-hazardous waste (bottom creosote sludge from the work tanks at the Little Rock, Arkansas plant) at the time of inspection. Warning signs were visible from every approach. The fence surrounding the landfarm has been removed for closure activities. The monitoring well that had been damaged during closure of the surface impoundment (R-8B) has been repaired.

10. Conclusions

The facility is in apparent violation of Permit Condition IV.H.1., and MHWMR 265.73(b)(6) - failure to maintain monitoring, testing, and analytical data at the facility.

11. Signed

Wm. Stephen Spengler for/Gail Mauldin   3/20/90
Date

12. Approval

Wm. Stephen Spengler   3/20/90
Date

GM-23:lr

Beazer Materials and Ser[illegible] Inc.
A Member of THE BEAZ[illegible]UP
Environmental Services
436 Seventh Avenue, Pittsburgh, PA 15219
Phone: 412-227-2500 Fax: 412-227-2950

Beazer

RECEIVED
FEB 23 REC'D
Dept. of Environmental Quality
Bureau of Pollution Control

February 20, 1990

Mr. James Dale Beck
President, Board of Supervisors
Grenada County
P.O. Box 1208
Grenada, MS 38901

Re: Koppers Industries, Inc.
Grenada, Ms Facility
MSD 007 027 543

Dear Mr. Beck:

Beazer Materials and Services, Inc., as operator of the closed surface impoundment hazardous waste management unit at the above-referenced facility and in accordance with Mississippi law, has prepared the enclosed Certificate of Survey. The survey contains a notification that the use of the described area is restricted.

Please call if you have any questions.

Sincerely,

Matthew C. Plautz

Matthew C. Plautz, P.E.
Program Manager-Environmental Services

MCP/cr
Enclosure
cc: R. Hamilton (w/o enclosure)
B. Nolan (w/o enclosure)
R. Yocius [Keystone] (w/o enclosure)
J. Clayton [KII] (Refer to Closure Report for survey copy)
J. Batchelder [KII] (Refer to Closure Report for survey copy)
W. Spengler [MSDNR] (Refer to Closure Report for survey copy)

Writer's Direct Dial 412-227-2379

Beazer Materials and Se[illegible] Inc.
A Member of THE BEAZ[illegible]OUP
Environmental Services
436 Seventh Avenue, Pittsburgh, PA 15219
Phone: 412-227-2500 Fax: 412-227-2950

Beazer

RECEIVED
JAN 18 RECD
Dept. of Environmental Quality
Bureau of Pollution Control

January 15, 1990

DIVISION OF SOLID WASTE
REVIEWED BY DM
DATE
COMMENTS sent to
EPA

Ms. Gail Macalusa
Mississippi Department of
Natural Resources
Bureau of Pollution Control
PO Box 10385
2380 Highway 80 West
Jackson, MS 39209

Re: Surface Impoundment Closure
Final Survey Plat
Koppers Industries Inc.
Tie Plant, MS
MSD 007 027 543

Dear Ms. Macalusa:

Enclosed please find two copies of the Final Survey Plat for the surface impoundment for the above referenced facility. The plat should be inserted into Section 4.0 of the Closure Construction Report previously submitted to your offices.

Please call if you should require additional information .

Sincerely,

Matthew C. Plautz

Matthew C. Plautz, P.E.
Program Manager-Environmental Services

MCP/cr
Enclosures
cc: B. Nolan [w/o enclosure]
M. Bollinger (Keystone) [w/o enclosure]
J. Batchelder (KII)
J.D. Clayton (KII)

Writer's Direct Dial 412-227-2952

Beazer Materials and Se Inc.
A Member of THE BEAZ UP
Environmental Services
436 Sevent Ave e, Pittsburgh, PA 15219
Phone: 41-227-2 00 Fax: 412-227-2950

Beazer

January 9, 1990 FEDERAL EXPRESS

Ms. Gail Macalusa
Mississippi Department of Natural Resources
Bureau of Pollution Control
2380 Highway 80 West
Jackson, MS 39204

Re: Koppers Industries, Inc.
Grenada, Mississippi
MSD 007 027 543

Dear Ms. Macalusa:

Beazer Materials and Services, Inc. (BM&S) has completed the closure of the surface impoundment system at the above-referenced facility in accordance with the approved closure plan, as amended. Enclosed please find two copies of the "Closure Construction Documentation Report" which includes a detailed description of closure activities and contains the Engineer's and Owner/Operator's certifications of closure. Please note that we have not as yet received the final survey of the unit and will forward this to your attention when received (expected later this week).

Please call if you should have any questions with respect to this report.

Sincerely,

Matthew C. Plautz /DRK

Matthew C. Plautz, P.E.
Program Manager-Environmental Services

MCP/cr
Enclosures
cc: R. Hamilton (w/o enclosure)
B. Nolan (w/o enclosure)
D. Kerschner (w/o enclosure)
J. Batchelder [KII]
J. Clayton [KII]
M. Bollinger [Keystone] (w/o enclosure)

DIVISION OF SOLID WASTE
REVIEWED BY DM
DATE 1/11/90
COMMENTS sent to EPA

Writer's Direct Dial 412-227-2952

Beazer Materials and Services, Inc.
A Member of THE BEAZER GROUP
Environmental Services
436 Seventh Avenue, Pittsburgh, PA 15219
Phone: 412-227-2500 Fax: 412-227-2950

Beazer

RECEIVED
NOV 10 1989
DEPARTMENT OF ENVIRONMENTAL QUALITY

November 8, 1989

Ms. Gail Macalusa
Mississippi Department of
Natural Resources
2380 Highway 80 West
P.O. Box 10385
Jackson, MS 39209

Re: RCRA Closure Schedules
Koppers Industries, Inc.
Grenada, Mississippi Facility
MSD 007 027 543

Dear Ms. Macalusa:

As requested by MSDNR, Beazer Materials and Services, Inc. (BM&S) has prepared the following summary of schedule information associated with the closure of the surface impoundment and boiler ash landfarm at the above-referenced facility. I apologize for not sending this information to you sooner.

Surface Impoundment - On June 28, 1988, Koppers Company, Inc. (Koppers), now BM&S, was issued a hazardous waste management permit (No. 88-543-01) which included an approved closure plan and estimated schedule. The schedule for closure estimated a total duration of 435 days from initiation. Although the upgraded wastewater pretreatment system did not become fully operational until March 1989, the facility ceased the continued use of the impoundment on or about August 7, 1988 in advance of the land disposal prohibition of EPA hazardous waste K001. At about that time, Koppers had initiated the removal of K001 sludge resident in the impoundment. Assuming that August 8, 1988 coincides with "Day 0" of the schedule, completion of closure was therefore expected on or before September 6, 1989. Certain events have transpired which have delayed the project as outlined below. In addition, a chronological history of the closure through September 21, 1989 was sent to your attention on October 6, 1989.

1. Closure Plan Modification - A letter dated April 13, 1989 was sent by BM&S to MSDNR requesting a Class I modification incorporating a change in the closure cap configuration which was better engineered and protective than the original. On June 9, 1989, BM&S received notice from MSDNR that the modification had been approved. During this time period a significant quantity of rainwater had accumulated in the

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impoundments which required pumping to the Grenada POTW (under a limited hydraulic loading rate) over a time period of approximately 30 days before closure activities could be resumed. This down-time was not anticipated in the original closure schedule.

Total delay: Modification approval = 57 days
Pumping rainwater = 30 days
Total Delay = 87 days

2. Closure Execution: Due to the characteristics of the borrow material, bentonite was added to the soil to obtain a permeability of less than 1 x 10^{-7} cm/sec. Field placement and subsequent permeability tests for the first soil-bentonite life failed these minimum permeability requirements and necessitated removal of the lift, modification to soil-bentonite mix ratios and replacement of the first lift. The total delay caused by this activity was approximately 14 days. Weather conditions during September and October 1989 have not been ideal for soil working activities resulting in additional delays of undetermined duration. The final seeding of the completed cap occurred during the week ending November 3, 1989 corresponding with the completion of field activities.

Total delay: 14 days (plus undetermined weather delays)

Therefore, the total determined delays amount to approximately 101 days (excluding undetermined weather delays), which changes the anticipated date of final closure from September 6, 1989 to December 16, 1989. Closure activities remaining involve the final survey of the closed impoundment and preparation of survey plat and deed restriction package and preparation of a thorough construction documentation report which will include the engineers and owner/operator certifications, and as-built drawings. BM&S anticipates that this report will be submitted to MSDNR on or before December 16, 1989, dependent upon the timely submittal of the final survey for inclusion in the construction documentation report. BM&S has strived to execute this important project in an expeditious and technically sound manner.

Boiler Ash Landfarm - The closure plan for the boiler ash landfarm was submitted to MSDNR in December 1987 in satisfaction of amended Agreed Order 1280-87. The closure plan stipulated closure of the unit as a landfill. On June 9, 1989, BM&S received notice from MSDNR that the closure plan had been approved by the Mississippi Natural Resources Permit Board. The approved closure plan included an estimated schedule of approximately 8 months. This schedule assumed approval of the closure plan on April 3, 1988 in its development. Because the closure plan was not approved until June 9, 1989, the modified estimated completion date for closure activities is February 9, 1990.

BM&S is currently in the process of finalizing the construction specifications for bidding the project. The actual letting of the contract is expected by late November 1989. Construction activities are estimated to take approximately three months and preparation of the final construction report including certifications another month for a total of four months. BM&S is therefore requesting an extension of the completion date for closure activities from February 9, 1990 to April 15, 1990. This new projected closure completion date is contingent upon suitable weather conditions and/or other factors that may cause delays. BM&S will promptly notify MSDNR of any changes to this schedule attributable to delays. BM&S believes that the additional time is necessary to perform the closure project under strict adherence to the approved closure plan.

I trust that this information satisfies your needs at this time. Please do not hesitate to call if you should have any questions.

Sincerely,

Matthew C. Plautz

Matthew C. Plautz, P.E.
Program Manager-Environmental Services

MCP/cr
cc: B. Nolan
J. D. Clayton (KII)
J. Batchelder (KII)
S. Spengler (MSDNR)
M. Bollinger (Keystone)

Beazer Materials and Se[illegible], Inc.
A Member of THE BEA[illegible]ROUP
Environmental Services
436 Seventh Avenue, Pittsburgh, PA 15219
Phone: 412-227-2500 Fax: 412-227-2950

Beazer

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NOV - 7 1989
Dept. of Environmental Quality
Bureau of Pollution Control

November 2, 1989

permit and proposal (with revised part A + proposed compliance monitoring) is in permit file 10/27/89

FEDERAL EXPRESS

Ms. Gail Macalusa
Hazardous Waste Division
Mississippi Department of
Natural Resources
Bureau of Pollution Control
P. O. Box 10385
Jackson, MS 39289-0385

[illegible] Plan is in side pocket of Permit

RE: RCRA Issues
Koppers Industries, Inc.
Tie Plant, Mississippi
MSD 007027543

Dear Ms. Macalusa:

In accordance with your September 26, 1989 letter and our October 16, 1989 meeting in your offices, Beazer Materials and Services, Inc. (BM&S) is submitting a draft Engineering Feasibility Plan for Corrective Action under Hazardous Waste Management Permit No. 88-543-01, which was issued by MDNR for the surface impoundment at the above-referenced facility.

Please call if you have any questions or comments.

Sincerely,

Matthew C. Plautz

Matthew C. Plautz, P.E.
Program Manager-Environmental Services

MCP/jls

Enclosure

cc: B. S. Nolan (BM&S) [w/o enclosure]
R. Anderson (Keystone) [w/o enclosure]
J. Batchelder (KII)
J. Clayton (KII)
S. Spengler (MDNR) [w/o enclosure]

Writer's Direct Dial 412-227-2952

Beazer Materials and Se[illegible]Inc.
A Member of THE BEA[illegible] GROUP
Environmental Services
436 Seventh Avenue, Pittsburgh, PA 15219
Phone: 412-227-2500 Fax: 412-227-2950

RECEIVED
OCT 11 1989
Dept. of Environmental Quality
Bureau of Pollution Control

October 6, 1989

Ms. Gail Macalusa
Hazardous Waste Division
Mississippi Department of
Natural Resources
Bureau of Pollution Control
Post Office Box 10385
Jackson, MS 39289-0385

Re: RCRA Issues
Koppers Industries, Inc.
Tie Plant, MS Facility
MSD007027543

Dear Ms. Macalusa:

Beazer Materials and Services, Inc. (BM&S), formerly Koppers Company, Inc., is in receipt of your letter dated September 26, 1989 relating to the submittal of a permit modification for the surface impoundment and an amended Part A application. This letter was received by BM&S on October 2, 1989.

On May 3, 1989, BM&S notified the MDNR that the surface impoundment may be affecting groundwater quality. Please be aware that this notification was specifically related to sampling events for the first and second quarters of 1988. On June 28, 1988 a Hazardous Waste Management Permit (No. 88-543-01) was issued to Koppers Company, Inc. which contained provisions to conduct a groundwater detection monitoring program (see Part IV of permit). The program consisted of monitoring the following wells at the identified frequency for the monitoring parameters consisting of naphthalene, acenaphthylene, fluoranthene, pentachlorophenol and 2,4-Dinitrophenol (Section IV.E.1):

- o Compliance Point Wells (R-7, R-8A, R-8B, R9A, R9C, and R-9D) at least semiannually (Section IV.6.1)

Writer's Direct Dial ____________

- o Background wells (R-1 replacement and R-10) on a quarterly basis for one year to determine a mean value (Section IV.E.2) and semi-annually thereafter (Section IV.E.3)

For evaluating the data generated from this program, Section IV.G.5 of the permit states that "After (emphasis added) the background mean value has been established for each constituent in accordance with Condition IV.E.2, the Permittee shall then determine whether there as been a statistically significant increase for any constituent over its background value...". Because the year required to develop a background value ended in June 1989, we could not possibly have provided notification in accordance with our operating permit.

BM&S did conduct a complete Appendix IX Sampling (conducted on June 21, 1989) for both the surface impoundment and boiler ash landfarm monitoring well networks. We have just received the full Appendix IX sampling results and after reduction to a reasonable summary format will submit these results to your attention. Based on a cursory review of the data, no additional hazardous constituents were discovered other than common laboratory or sampling related compounds (eg. acetone and bis(2-ethylhexyl) phthalate) for the surface impoundment monitoring wells. The following constitutes a summary of the results for total acid extractable phenolics (TAEP) and total polynuclear aromatic hydrocarbons (TPAH) for the June 1989 sampling round:

Well No.	TAEP[1]	TPAH[1]
R-1	2.36	8.05
R-7	1.14	0.54
R-8A	3.04	0.93
R-88	2.79	0.40
R-9A	2.13	1.65
R-9C	0.72	0.42
R-9D	3.86	0.31
R-10A	4.57	0.39

[1]All results are in micrograms per liter (ug/l)

A review of these results indicates that the constituent levels identified in background wells R-1 and R-10A are very similar or greater than those noted for the compliance point wells.

BM&S will, however, be submitting a permit modification to conduct a compliance monitoring program and will attempt to supply this by October 12, 1989 to be responsive to your request. We are planning on incorporating the results of the Appendix IX sampling into the program as a matter of efficiency. A feasibility plan for corrective action will also be forwarded to your attention by October 30, 1989. At this time, it does not appear that a Corrective Action Program is warranted, pending more extensive review of the analytical database available.

As promised in my letter dated September 21, 1989 to Mr. Stephen Spengler, P.E. of your office I have enclosed a chronological history of the surface impoundment closure at the Grenada facility. This history was prepared by Keystone Environmental Resources, Inc., our engineer on the project.

The condition of several monitoring wells at the Grenada facility were brought to my attention by field personnel conducting groundwater sampling during the later part of September 1989. As required under Condition IV.C.2 of Permit No. 88-543-01, BM&S is notifying MDNR that Wells R-8, R-8B and R-9 were either disturbed or damaged during surface impoundment closure activities. These wells will be repaired or replaced within 30 days. In addition Wells R-25 and R-26 installed during the RFI study have been covered or damaged by plant operations. BM&S plans on abandoning these wells by grouting to ground surface during the same time period in which Wells R-8, R-9 and R-8B are being repaired or replaced. Your concurrence on the abandonment issue is therefore requested.

If you should have any questions or require additional information, please do not hesitate to call.

Sincerely,

Matthew C. Plautz

Matthew C. Plautz, P.E.
Program Manager-Environmental Services

MCP/cr
Enclosure
cc: R. Hamilton
B. Nolan - w/o Enclosure
R. Anderson (Keystone)
J. Batchelder (KII)
J. Clayton (KII)
S. Spengler (MS DNR)

BEAZER MATERIALS & SERVICES, INC.
KOPPERS INDUSTRIES, INC. GRENADA, MS PLANT
CHRONOLOGICAL HISTORY OF SURFACE IMPOUNDMENT CLOSURE

DATE	EVENT
July 1988	Closure plan approved.
March 17, 1989	Construction bid documents completed.
March 22, 1989	Pre-bid meeting.
April 5, 1989	Soil-bentonite addendum issued to bidders.
April 11, 1989	Bids received.
April 13, 1989	Letter requesting Class I modification of the closure cap design submitted.
April 18, 1989	Meeting with Bureau of Pollution Control to discuss proposed modification to closure cap design.
April 27, 1989	Meeting with Bureau of Pollution Control, Industrial Pretreatment Division to discuss discharge of accumulated rainwater to the Grenada POTW.
May 5, 1989	Letter, dated May 2, 1989, received from Louis Lavallee, Chief Industrial Pretreatment Division, Bureau of Pollution Control, granting approval to discharge accumulated rainwater to the Grenada POTW.
May 11, 1989	Letter, dated May 8, 1989, received from Kaleel Rahaim, Hazardous Waste Division, Bureau of Pollution Control, acknowledgeable the request for Class I modification, requesting additional information/ clarifications and outlining additional procedures to modify the permit.
May 18, 1989	Response to May 8, 1989 letter sent to Kaleel Rahaim.
May 22, 1989	Purchase order issued to Green & Green Construction Company for closure construction.
June 9, 1989	Letter, dated June 1, 1989, received from Charles Chisolm, Bureau Director, stating that the request for a permit modification had been approved by the Mississippi Natural Resources Permit Board on May 23, 1989.
June 19, 1989	Koppers Industries, Inc. personnel began pumping rainwater from the surface impoundment to the Grenada POTW.

June 26-30, 1989	40-hour Hazardous Waste Operations and Emergency Response training conducted for the contractor's personnel.
July 18, 1989	Completed removal of rainwater from the surface impoundment.
July 19, 1989	Began subgrade preparation work.
July 22, 1989	Completed subgrade preparation work.
July 22, 1989	Began placement of unclassified fill.
July 29, 1989	Completed placement of unclassified fill.
July 30, 1989	Began placement of first lift of the soil-bentonite cap.
July 31, 1989	Completed first lift of soil-bentonite cap. Obtained two "undisturbed" samples of the cap for laboratory permeability testing.
August 7, 1989	Received laboratory permeability test results for first lift of the soil-bentonite cap. The results indicated that the permeability of the lift exceeded the 1 x 10^{-7} cm/sec requirement. Resampled and retested the borrow source and as a result modified the bentonite addition rate and changed soil borrow source.
August 8, 1989	Started new soil-bentonite lift to replace the substandard lift.
August 12, 1989	Completed new first lift of soil-bentonite cap. Obtained two "undisturbed" samples of the cap for laboratory permeability testing.
August 17, 1989	Received laboratory permeability test results for new first lift of the soil-bentonite cap indicating the lift met the permeability requirement.
August 18, 1989	Started second soil-bentonite lift.
August 22, 1989	Completed second lift of soil-bentonite cap. Obtained two "undisturbed" samples of the cap for laboratory permeability testing.
August 28, 1989	Received laboratory permeability test results for second lift of the soil-bentonite cap indicating the lift met the permeability requirement.
August 29, 1989	Started third soil-bentonite lift.
September 1, 1989	Completed third lift of soil-bentonite cap. Obtained two "undisturbed" samples of the cap for laboratory permeability testing.

September 8, 1989	Received laboratory permeability test results for third lift of the soil-bentonite cap indicating the lift met the permeability requirement.
September 9, 1989	Started fourth soil-bentonite lift.
September 12, 1989	Completed fourth lift of soil-bentonite cap. Obtained two "undisturbed" samples of the cap for laboratory permeability testing.
September 19, 1989	Received laboratory permeability test results for fourth lift of the soil-bentonite cap indicating the lift met the permeability requirement.
September 21, 1989	Began final grading of the soil-bentonite cap and preparation for placement of the conducting zone.

Beazer Materials and Ser[illegible] Inc.
A Member of THE BEAZ[illegible]UP
Environmental Services
436 Seventh Avenue, Pittsburgh, PA 15219
Phone: 412-227-2500 Fax: 412-227-2950

SEP 26 1989
DNR-BPC

September 21, 1989

Mr. William Stephen Spengler, P.E.
Coordinator, RCRA TSD Branch
Hazardous Waste Division
Mississippi Department of
Natural Resources
2380 Highway 80 West
Jackson, MS 39309

Re: RCRA Issues
Koppers Industries, Inc.
Tie Plant, MS Facility

Dear Mr. Spengler:

I would like to take this opportunity to bring you up to date with several activities either underway or planned for the above referenced facility. The following constitutes a brief summary of these activities.

- Surface Impoundment - The final cap components for closure of the surface impoundment are currently being placed. Closure activities were severely delayed by heavy rains in late spring/early summer and subsequently by the field contractor's ability to process the accumulated rainwater based on the City of Grenada POTW capacity and operating constraints. I have asked Keystone Environmental Resources (Keystone), our engineer on the project, to develop a history and will forward this to you upon completion.

  We have not as yet received the Appendix IX results from the groundwater sampling round completed in June, 1989 and will submit those to you when available. At that time we will also submit a permit modification to initiate a compliance monitoring program, as necessary. A new upgradient monitoring well was installed in March, 1989.

- Boiler Ash Landfarm - We are currently finalizing a construction bid package to initiate closure of the boiler ash landfarm in accordance with the approved closure plan. Closure will commence in the near future.

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The Groundwater Quality Assessment is scheduled to begin in October, 1989 pending receipt of appropriate access agreements for construction of wells on off-site property locations.

As discussed above, we have not as yet received the Appendix IX results from the groundwater sampling round completed in June, 1989 and will submit those to you when available.

o <u>Groundwater Treatment Residuals</u> - It has been recently brought to my attention that the following shipments of non-hazardous wastes were burned at the Grenada boiler (copies of shipping documents attached):

Date	#Drums
1/17/89	76
2/6/89	61

These manifests were included with the ones ~~sent to~~ Kalal (MBR) on May 3, 1. They were penalized for these

These wastes originated at a closed wood preserving site previously operated by Koppers Company, Inc. in Nashua, New Hampshire. Beazer Materials and Services, Inc. (BM&S) is conducting an environmental site remediation at the facility pursuant to an Administrative Order with the State of New Hampshire. The remediation program consists, in part, of pumping of contaminated groundwater and subsequent treatment in a groundwater treatment system. The groundwater treatment residuals generated from this system met the specifications for the boiler Fuel Additive Program and therefore were shipped to the Grenada boiler as detailed above. The characterization of these materials has been raised as an issue by the State of New Haqmpshire. BM&S has therefore decided to discontinue future shipments to Grenada. In any event, the materials in question were processed during the time frame in which BM&S and MSDNR were negotiating on Agreed Order (No. 1598-89) finalized on June 23, 1989 which resolved the oil/water separator characterization issue and obligated BM&S to assess the impacts, if any, from placing the boiler ash at the Grenada County Landfill.

wastes in the June 23, 1989 agreed order.

BM&S is making a concerted effort at being responsive to regulatory compliance issues at both the state and federal levels. If you should have any questions, please do not hesitate to call.

Sincerely,

Matthew C. Plautz

Matthew C. Plautz, P.E.
Program Manager-Environmental Services

MCP/cr
cc: Gail Macalusa (MSDNR)
B. Nolan
S. Craig
D. Calland, Esquire (Babst/Calland)
J. Batchelder (KII)
J. D. Clayton (KII)

SHIPPING DOCUMENT
For Tracking Purposes

Shipper's Name & Mailing Address
Koppers Co INC.
Hillsferry Road
NASHUA, N.H. 03061
Phone: (603) 880-8345

Mailing Address
Koppers Co INC
P.O. Box 3485
NASHUA, N.H.
03061

Transporter Company Name
FRANKLIN PUMPING SERVICE INC.
P.O. BOX 617
INDUSTRIAL ROAD
WRENTHAM, MA. 02093
Phone: (508 384-6151

Designated Facility Name and Site Address
Koppers Co INC
TIE PLANT ROAD
TIE PLANT, MS 38960
Phone: (601) 226-4584

U.S. DOT DESCRIPTION (INCLUDING PROPER SHIPPING NAME, HAZARD CODE, AND ID NO.)	CONTAINERS NO.	CONTAINERS TYPE	TOTAL QUANTITY	UNIT WT/VOL
a. Nonhazardous process waste containing used creosote	76	DRUMS 17-H	76	40,000
b.				
c.				

Addition Descriptions for Materials Listed Above
RQ HAZARDOUS Substance, (solid) N.O.S. ORM-E
NA 9188 (contains creosote)

Special Handling Instructions gloves + goggles

SHIPPER ACKNOWLEDGEMENT OF RELEASE OF MATERIALS

Print/Type Name	Signature	Month	Day	Year
Paul S. Kilchenstein	Paul S. Kilchenstein	01	17	89

TRANSPORTER ACKNOWLEDGMENT OF RECEIPT OF MATERIALS

Print/Type Name	Signature	Month	Day	Year
RON McGRATH	R McGrath	01	17	89

FACILITY ACKNOWLEDGEMENT OF RECEIPT OF MATERIALS

Print/Type Name	Signature	Month	Day	Year
GARY E. MCCLELLAND	Gary E. McClelland	01	19	89

SHIPPING DOCUMENT
For Tracking Purposes

Shipper's Name & Mailing Address
Koppers Company INC
Hillsferry Road
NASHUA, N.H. 03061
Phone: (603) 880-8345

MAILING Address: Koppers Co INC
P.O. Box 3485
NASHUA N.H.
03061-3485

Transporter Company Name
FRANKLIN PUMPING Service INC.
P.O. BOX 617
INDUSTRIAL ROAD
WRENTHAM, MA. 02093
Phone: (508) 384-6151
EPA ID # MAD0 84814136

Designated Facility Name and Site Address
Koppers Co INC
TIE PLANT Road
TIE PLANT, MS 38960
Phone: (601) 226-4584
EPA ID # MSD 007027543

U.S. DOT DESCRIPTION (INCLUDING PROPER SHIPPING NAME, HAZARD CODE, AND ID NO.)	CONTAINERS NO.	CONTAINERS TYPE	TOTAL QUANTITY	UNIT WT/VOL
a. NON HAZARDOUS process waste containing used creosote	61	DRUMS 17-H	61	Approx 30,000 lbs
b.				30,640 2-8-89 GM
c.				

Addition Descriptions for Materials Listed Above
RQ HAZARDOUS Substance, (solid) N.O.S. ORM-E
NA-9188 (CONTAINS CREOSOTE)

Special Handling Instructions
When handling, wear protective equipment such as impervious gloves and eye protection NON-HAZARDOUS WASTE - For tracking purposes only

SHIPPER ACKNOWLEDGEMENT OF RELEASE OF MATERIALS

Print/Type Name	Signature	Month	Day	Year
Paul S. Kilchenstein	Paul S. Kilchenstein	02	06	89

TRANSPORTER ACKNOWLEDGMENT OF RECEIPT OF MATERIALS

Print/Type Name	Signature	Month	Day	Year
RON Mc GRATH	Ron McGrath	02	06	89

FACILITY ACKNOWLEDGEMENT OF RECEIPT OF MATERIALS

Print/Type Name	Signature	Month	Day	Year
GARY E. MCCLELLAND	Gary E. McClelland	02	08	89

FORM 179600 REV: 0 DATE: 9-12-88

Beazer Materials and Services, Inc.
A Member of THE BEAZ[illegible]UP
Environmental Services
436 Seventh Avenue, Pittsburgh, PA 15219
Phone: 412-227-2500 Fax: 412-227-2042

July 14, 1989

RECEIVED
JUL 18 1989
Dept. of Natural Resources
Bureau of Pollution Control

Mr. David Malchow
Environmental Labs, Inc.
P. O. Drawer 2309
Gulfport, MS 39505

Dear Mr. Malchow:

Beazer Materials and Services, Inc. (BM&S) is operator of a surface impoundment at the Koppers Industries, Inc. wood treating plant in Tie Plant, Mississippi. The surface impoundment is operated under Mississippi Hazardous Waste Management Permit Number 88-543-01 (MSD 007027543).

On April 13, 1989 we notified the Director of our intent to modify the closure plan for the surface impoundment. The modifications involved a revised construction of the closure cap that is of a more conservative design than the permitted design. This would provide more protection for human health and the environment. This modification was determined to be a Class I modification. On May 23, 1989, the Mississippi Natural Resources Permit Board approved the requested modifications.

In accordance with MHWMR 270.42(a), we hereby provide notification of this action. Should you have any questions, please contact me at the number indicated below.

Sincerely,

Matthew C. Plautz

Matthew C. Plautz, P.E.
Program Manager-Environmental Services

MCP/cr
cc: B. Nolan
R. Clayton
K. Rahaim (MSDNR)

DIVISION OF SOLID WASTE
REVIEWED BY KR
DATE 7/18/89
COMMENTS Copy sent to EPA
7/18/89

Writer's Direct Dial 227-2952

Beazer Materials and Services, Inc.
A Member of THE BEAZER GROUP
Environmental Services
436 Seventh Avenue, Pittsburgh, PA 15219
Phone: 412-227-2500 Fax: 412-227-2042

Beazer

July 14, 1989

RECEIVED
JUL 18 1989
Dept. of Natural Resources
Bureau of Pollution Control

Mr. David Malchow
Environmental Labs, Inc.
P. O. Drawer 2309
Gulfport, MS 39505

Dear Mr. Malchow:

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In accordance with MHWMR 270.42(a), we hereby provide notification of this action. Should you have any questions, please contact me at the number indicated below.

Sincerely,

Matthew C. Plautz

Matthew C. Plautz, P.E.
Program Manager-Environmental Services

MCP/cr
cc: B. Nolan
R. Clayton
K. Rahaim (MSDNR)

DIVISION OF SOLID WASTE
REVIEWED BY KR
DATE 7/18/89
COMMENTS Copy sent to EPA
7/18/89

Writer's Direct Dial 227-2952

1. ?
or
Beazer

Beazer Materials and Se[illegible] Inc.
A Member of THE BEA[illegible] UP
Environmental Services
436 Seventh Avenue, Pittsburgh, PA 1521[illegible]
Phone: 412-227-2500 Fax: 412-2[illegible]7-2042

Beazer

RECEIVED
MAY - 4 1989
Dept. of Natural Resources
Bureau of Pollution Control

May 3, 1989

FEDERAL EXPRESS

DIVISION OF SOLID WASTE
REVIEWED BY KR
DATE 5/4/89
COMMENTS Copy sent to EPA
by Beazer

Mr. Kaleel Rahaim
Mississippi Department of Natural Resources
Bureau of Pollution Control
Hazardous Waste Division
2380 Highway 80 West
Jackson, MS 39204

Re: RCRA Issues
Koppers Industries, Inc. Facility
Grenada, Mississippi
MSD 007027543

Dear Mr. Rahaim:

The following information, together with the enclosed materials, constitutes our response to several outstanding RCRA issues for the Koppers Industries, Inc. facility at Tie Plant, Mississippi. These issues include:

- o Formal notification that the surface impoundment may be affecting groundwater quality.
- o Formal notification that the boiler ash landfarm may be affecting groundwater quality.
- o Compilation of all waste manifests for drums received from off-site facilities for use as fuel additive in the boiler at the Grenada facility from January 1987 to date.
- o Chronological history related to the disposition of the EPA Hazardous Waste Code U051 drums.
- o Requested process information specific to the operation of oil/water separator units of all off-site facilities sending process wastes to Grenada for processing in the facility boiler.

The following paragraphs discuss each issue in greater detail.

Surface Impoundment Groundwater Monitoring Program - In accordance with MHWMR 294.98(h)(i), Beazer Materials and Services, Inc. (BMS) has determined that the surface impoundment may be affecting groundwater quality. This notification relates specifically to the first and second quarters of 1988. Subsequent sampling events confirmed the basis of this

Writer's Direct Dial 227-2952

determination. The surface impoundment received a RCRA Part B operating permit on June 28, 1988 which contained provisions to conduct a detection monitoring program. The statistically significant increases and a groundwater quality summary for other monitored constituents for 1988 were provided to MSDNR in the annual report submitted March 1, 1989.

Pursuant to the conditions of the operating permit and in accordance with MHWMR 264.98, BMS will perform the following activities at the specified schedule:

	Activity	Regulatory Citation	Date
1.	Agency Notification	MHWMR 264.98(h)(1)	Upon Agency Receipt
2.	Appendix IX Sampling	MHWMR 264.96(h)(2)	+30 days
3.	Application for Permit Modification (Compliance Monitoring)	MHWMR 264.96(h)(4)	+90 days
4.	Engineering Feasibility Study for Necessary Corrective Action	MHWMR 264.98(h)(5)	+180 days

Oct 27

The components of the compliance monitoring program will meet the requirements of MHWMR 264.99; any warranted corrective action program will meet the regulatory requirements of MHWMR 264.100.

The surface impoundment is currently undergoing closure, with final closure activities scheduled for initiation upon approval of MSDNR of minor modifications to the closure plan.

Boiler Ash Landfarm Groundwater Monitoring Program - In accordance with MHWMR 265.93(d)(1), BMS has determined that the boiler ash landfarm may be affecting groundwater quality. The landfarm is currently operating under a groundwater monitoring program under interim status. A closure plan and post-closure application were previously submitted to MSDNR and are currently under review.

submitted

BMS will submit a Groundwater Quality Assessment Plan (GWQAP) in response to this notification, within 15 days as required under MHWMR 265.93(d)(2). The GWQAP will expand upon the groundwater quality assessment outline previously presented to MSDNR and included in this submittal as Attachment A. BMS, however, would like to reserve the right to later incorporate the groundwater quality assessment program in the RFI/CMS process.

Boiler Feed Waste Manifests - As requested in your letter dated April 21, 1989, BMS has provided copies of all manifests for drums received at the Grenada facility from off-site facilities since January 1987. These are included as Attachment B. In addition, the following is a listing of typical wastes generated on-site during that same period and used as fuel additive:

- o process cylinder residuals
- o work tank sludges
- o door pit sludges

U051 Drums - Koppers Company, Inc. submitted a check on November 21, 1988 in the amount of $6,000 in settlement per the Agreed Order No. 1478-88, which included the storage of U051 drums for longer than 90 days. Attachment C provides a chronological summary of actions taken since that date prepared by Rollins Chempak, Inc. (Rollins). Rollins held a national contract with Koppers Company, Inc. during this time frame and was charged with responsibility for disposing of this material. Also, on April 26, 1989, I gave you a copy of our supplemental response to EPA IV's request for additional information regarding our original Soft Hammer Certification/Demonstration Information letter which highlights some of our efforts to locate a proper TSDF for identical wastes. This initial letter was received by Region IV on November 4, 1988.

Oil/Water Separator Process Information - I have attempted to track down useful information relative to the operation of oil/water separators at the wood treating facilities which sent nonhazardous process waste to Grenada, Mississippi. My efforts have not been entirely successful due to the fact that many of these facilities are extremely old (eg. Carbondale ca. 1902) and working engineering prints are not available. BMS requests that additional time be provided for us to better respond to your request. I will keep you abreast of the status of this effort.

We trust that this information satisfies your requirements at this time. As a peripheral issue, I will let you know when the next monitoring sampling event is scheduled so that MSDNR can prepare to conduct a Comprehensive Monitoring Evaluation.

If you should have any questions or comments, please do not hesitate to contact me.

Sincerely,

Matthew C. Plautz

Matthew C. Plautz, P.E.
Program Manager-Environmental Services

MCP/CR
Attachments
cc: J. H. Scarbrough (US EPA IV)
W. S. Spengler (MS DNR)
J. R. Batchelder (KII) [w/o attachments]
R. G. Hamilton (BMS) [w/o attachments]
B. S. Nolan (BMS) [w/o attachments]
R. J. Anderson (Keystone)
J. D. Clayton (KII)

Koppers

Beazer Materials and Servi[illegible]c.
A Member of THE BEAZ[illegible]P
Environmental Services
436 Seventh Avenue, Pittsburgh, PA 15219
Phone: 412-227-2500 Fax: 412-227-2042

Beazer

April 13, 1989 FEDERAL EXPRESS

Mr. Kaleel Rahaim
Hazardous Waste Division
Mississippi Department of
Natural Resources
Post Office Box 10385
2380 Highway 80 West
Jackson, MS 39209

Re: Grenada, MS Facility

Dear Mr. Rahaim:

As the operator of the surface impoundment at the Koppers Industries, Inc. Grenada, Mississippi facility, Beazer Materials and Services, Inc. (BMS) is requesting that MDNR and EPA review the revised construction specifications and plans enclosed for approval. Please distribute these as you see appropriate. The revised documents modify the approved closure plan which is included in the June 28, 1988 RCRA operating permit for the surface impoundment. It is our understanding, through recent communication with you, that approval of these revisions would constitute a minor modification.

The following changes were incorporated in the revised plan:

1. The drainage layer beneath the vegetative cover layer is now "daylighted", or exposed to the atmosphere, at the toe of the cap. This will promote effective drainage of precipitation that will infiltrate through the vegetative cover. Additionally, the construction of drainage layer is better facilitated than the original plan, which called for a drainage layer below grade with a series of PVC drainage pipes to be discharged through two discreet discharge points, some distance from the impoundments. The original plan would have required stringent control of invert elevations during construction.

2. Although not specifically a modification to closure, it is believed that during the construction of the cap that well clusters R-8 and R-9 may be impacted. BMS plans on abandoning and replacing these wells in accordance with the provisions of the Groundwater Protection Section of the operating permit. This impact may have also occurred during construction of the cap contained in the original closure plan.

Writer's Direct Dial 227-2952

Other than those changes listed above, the revised plans and specifications do not alter the approach to closure of the surface impoundments and actually provide a more advanced, engineered cap. The revisions do not alter in any manner the post closure care provisions of the operating permit.

BMS is prepared to initiate final closure activities as soon as notice of agency approval of the enclosed plan is received. Due to the unusually wet winter season, precipitation has accumulated in the impoundments, which will require special management. This, as well as other site specific factors, will delay the estimated schedule for completion of closure. BMS is making every attempt to accelerate activities to achieve final closure. Your prompt attention to this matter will assist us in this respect.

Should you have any questions, comments, or concerns regarding these revisions, please call me.

Sincerely,

Matthew C. Plautz

Matthew C. Plautz, P.E.
Program Manager-Environmental Services

MCP/cr
Enclosures - (3)
cc: B. Nolan (w/o enclosures)
R. Hamilton (w/o enclosures)
J. Batchelder (w/o enclosures)
R. Anderson (w/o enclosures)
R. Clayton (w/o enclosures)

RCRA Inspection Report

1. Inspector and Author of Report

   David J. Bockelmann
   Environmental Scientist

2. Facility Information

   Koppers Company, Inc.
   P. O. Box 160
   Tie Plant, Mississippi 38960
   MSD007027543

3. Responsible Company Official

   Mr. J. D. "Rock" Clayton, Plant Manager

4. Inspection Participants

   Mr. David J. Bockelmann, BPC
   Ms. Karen McKinney, EPA
   Mr. Leo Romanowski, EPA
   Mr. J. D. "Rock" Clayton, Koppers
   Mr. Gary McClelland, Koppers

5. Date and Time of Inspections

   December 12, 1988 - 9:15 a.m. CST

6. Applicable Requirements

   Mississippi Hazardous Waste Management Regulations (MWHMR) Parts 262, 264, 265, and 268. Mississippi Hazardous Waste Management Permit No. 88-543-01.

7. Purpose of Inspection

   This was a Compliance Evaluation Inspection to determine the facility's overall compliance with the applicable interim status regulations and with the facility's Hazardous Waste Management Permit No. 88-543-01 which covers the operation, closure and post-closure requirements for the facility's surface impoundment.

8. Facility Description

   Koppers Company, Inc. is located in the Town of Tie Plant which is approximately 5 miles southeast of Grenada, Mississippi. The facility uses creosote and oil borne pentachlorophenol in the pressure treatment of wood products for railroads, utilities and others.

The primary product is treated railroad cross-ties. Raw materials and treated products arrive and leave by rail and truck. The hazardous wastes which are generated, treated, stored and, in the past, disposed of at the facility are bottom sediment sludge from the treatment of wastewaters from wood preserving processes that use creosote and/or pentachlorphenol (K001), waste creosote (U051), and certain waste pentachlorophenol (F027). The facility has four hazardous waste management units which are a less than 90 day container/drum storage building, a surface impoundment, a spray irrigation field, and a boiler ash landfarm. A permit for the operation of the surface impoundment was issued on June 28, 1988. State administrative orders requiring the submittal of Part B permit applications for the spray irrigation field and the boiler ash landfarm were also issued on July 22 and 29, 1988. A Part B permit application for the boiler ash landfarm was received by the Bureau on November 9, 1988. The administrative order requiring the submittal of a Part B permit application for the spray irrigation field is currently under appeal by the facility.

The facility is currently in the process of closing the surface impoundment which was operated as a wastewater treatment lagoon and generated the listed hazardous waste K001. Treatment of wastewater in the surface impoundment was preceeded by a flow equalization tank, a pentachlorophenol and oil separator where pentachlorphenol and oil are recovered and recycled, a creosote separator where creosote is recovered and recycled, and a flocculation system. Since the start of closure at the surface impoundment, the facility has been disposing of their wastewater by pumping it to a series of two 10,000 gallon railroad tank cars where the wastewater is heated and evaporated to the atmosphere. The facility is currently in the process of constructing a wastewater pretreatment system and obtaining a Pretreatment permit to discharge the treated wastewater to the City of Grenada POTW.

The spray irrigation field was the final stage in the facility's wastewater treatment system. It is approximately four acres in size and is surrounded by a low berm for run-on/run-off control. The spray irrigation field received effluent from the surface impoundment which was land applied via six spray irrigation nozzles. The field is covered with non-food chain vegetation and was operated as a land treatment unit for the biodegredation of effluent from the surface impoundment prior to the start of closure at the surface impoundment.

The facility operates a boiler for the thermal conversion of wood and various wastes into steam. Prior to October of 1986 these wastes included the listed hazardous wastes K001, U051 and F027. The ash generated from this process is a listed hazardous waste and, prior to July, 1987, was land disposed on the boiler ash landfarm located in the southern portion of the facility. Prior to November 19, 1980, two old surface impoundments located in the central portion of the facility were closed and the waste sludge removed during closure was also disposed of at the boiler ash landfarm area. The facility currently operates the boiler burning wood and various wastes associated with wood treating operations. These wastes have been reported by the facility to be non-hazardous. The ash generated from this process is currently being disposed of at a local sanitary landfill. During this inspection it was found that the facility has apparently burned listed hazardous wastes along with non-hazardous wastes in the boiler and that the ash generated from the burning of these apparently hazardous wastes was also disposed of at the local sanitary landfill.

The facility operates a less than 90 day container/drum storage building located near the process area. The building is used to store drums of both hazardous and non-hazardous waste.

9. Findings

An inspection and review of the facility's records was conducted. These records included inspection logs, personnel training records, waste manifests, groundwater monitoring records and reports, financial assurance and liability insurance records, closure plans and the facility contingency plan.

The facility's inspection logs, personnel training records, closure plan and contingency plan were reviewed and found to be up-to-date and in compliance.

The facility utilizes the corporate financial test to demonstrate financial assurance for closure/ post-closure and liability insurance. This is currently being revised to include closure/post-closure costs and liability insurance for the boiler ash landfarm and will be resubmitted as soon as it is available.

A review of the facility's 1988 groundwater monitoring and analysis records for the surface impoundment, boiler ash landfarm and spray irrigation field was conducted. This review included data submitted by

Koppers as well as groundwater analytical data collected by U.S. EPA in May, 1988. The findings of this review with respect to each unit is outlined below.

Surface Impoundment. The facility was issued Hazardous Waste Management Permit No. 88-543-01 for the surface impoundment on June 28, 1988. Prior to this date the surface impoundment was regulated under the interim status standards contained within MHWMR Part 265. The first and second quarters of groundwater data were submitted under MHWMR Part 265 and the third and fourth quarters of groundwater data were submitted under the permit requirements. A review of this data found that no statistical analyses were reported. Site specific constituents were analyzed for during all four quarters. These showed constituent concentration levels above method 8270 detection limit, listed in SW-846, for wells R-1, R-10A, R-7, R-8A, R-9C and R-90 in the first quarter and well R-1 in the second, third and fourth quarters. In the absence of any statistical analyses, this data can only be interpreted as evidence of groundwater contamination at the surface impoundment.

Permit Condition IV.C.3. required that upgradient well R-1, which was improperly constructed, be replaced with a properly constructed well within thirty days of the effective date of the permit; this well has not yet been replaced. Additionally, because well R-1 is improperly constructed, the analytical data from it cannot be reliably evaluated.

Boiler Ash Landfarm. Groundwater monitoring at the boiler ash landfarm was first started in 1988. Monitoring was done on an accelerated schedule with one sampling event per month during February, March, April and May. A fifth sampling event was also conducted in July. A review of this data found that no MHWMR Part 265 Appendix III parameters or EPA interim primary drinking water standards were analyzed for during the first year sampling events as required by MHWMR 265.92(c)(1). The indicator parameter of Total Organic Halogen (TOX) was not included in any of the five rounds of analytical data or in the statistical analysis submitted for the fifth round sampling event, as required by MHWMR 265.92(c)(1), 265.92(d)(2), and 265.93(b). Site specific constituents were also analyzed for and reported at the boiler ash landfarm. Low level concentrations of nearly all the site specific polynuclear aeromatic hydrocarbons (PAH's) were repoted in all three downgradient wells during the first, second, third, and fifth round sampling events. Low level concentrations of a few of the phenolic compounds were reported for the first, third, fourth and fifth round sampling events, no phenolic compounds were reported as being analyzed for in the second round event. Additionally, the U.S. EPA sampling event conducted in May, 1988, found the following constituent concentrations in downgradient well MW-3: 1600 ppb trichloroethene, 57 ppb cis - 1,2-dichloroethene, 6.5 ppb carbon disulfide and 1.6 ppb chloroform. From all of the data presented, it appears that there is groundwater contamination at the boiler ash landfarm. Because of the concentration levels reported for trichloroethene and cis - 1,2-dichloroethene, it is recommended that an analysis for these two constituents be included in all future sampling events at the boiler ash landfarm.

Spray Irrigation Field. The spray irrigation field is considered by the State of Mississippi to be a regulated hazardous waste management unit, Koppers is currently contesting this position.

Groundwater at the sprayfield was sampled on a quarterly basis during 1988. A review of this data found that no statistical analyses were submitted for any of the four quarters. Site specific constituents were analyzed for during all four quarters. These showed constituent concentration levels above method 8270 detection limit listed in SW-846 for wells SF-3 and SF-4 in the first quarter, well SF-2 in the second quarter and well SF-4 in the fourth quarter. In the absence of any statistical analyses, this data can only be interpreted as evidence of groundwater contamination at the surface impoundment.

A review of the facility's waste manifests for 1988 was also conducted. These manifests were for wastes which were shipped to the Koppers Grenada facility to be burned in the facility's boiler in conjunction with their fuel additives program. The ash generated from this process is currently disposed of at a local county landfill. A review of these manifests, and the waste analysis sheets for each manifest, found that several of the manifests were for wastes which appear to be hazardous waste. The following is an outline of these manifests:

Manifest Doc. No.	Source[1] of Waste	No. of Containers	Total Quantity (lbs)	Date of Receipt
67212	Creosote Process Sludge from oil & water separator	75	41,200	7/22/88
67213	As described above	74	40,947	7/30/88

67214	As described above	83	46,940	8/9/88
00182	PCP Separator	48	30,260	8/24/88

1 Source description is taken from the waste analysis sheet for each individual manifest.

It appears from the source descriptions that these wastes are a K001 hazardous waste which is defined as "bottom sediment sludge from the treatment of wastewaters from wood preserving processes that use creosote and/or pentachlorphenol". Creosote or pentachlorophenol sludges from a wastewater separator would fit into this definition and would be classified as a K001 hazardous waste. The ash generated from the burning of a hazardous waste is also a hazardous waste. This being the case, Koppers appears to have improperly transported and disposed of K001 hazardous waste at the local Grenada County landfill. Additionally, all K001 hazardous wastes disposed of after August 8, 1988, would have been subject to the land disposal restrictions contained within MHWMR Part 268.

Following the record review a visual site inspection of the facility was conducted. The site inspection included the less than 90 day container/drum storage building, the surface impoundment, the spray irrigation field and the boiler ash landfarm.

The less than 90 day container/drum storage building contained 34 drums labeled as non-hazardous and 6 drums labeled as containing U051 hazardous waste. Four of these drums had an accumulation date of November 19, 1987, and the other 2 drums had an accumulation date of March 10, 1988. All six drums containing U051 hazardous waste had been stored for longer than 90 days.

The surface impoundment was inspected and is in the process of being closed. Sludges and associated soils had been removed. No closure activities were being conducted at the time of the inspection. A gap in the fence around the surface impoundment, created to allow the entrance of equipment for sludge and soil removal, should be closed until such time as closure activities resume.

The spray irrigation field was inspected. It is recommended that additional signs warning against unauthorized entry be placed along the east side fence line. It is further recommendedd that the gate be repaired as well as the west side fence line where some small trees and limbs have fallen across the fence. The facility ceased operation of the spray irrigation field after wastewaters were removed from the surface impoundment and closure of the surface impoundment was initiated.

An inspection of the boiler ash landfarm found that contaminated soils removed from various facility process areas was being stored here on top of plastic. It is recommended that these soils not be stored in the boiler ash landfarm area.

10. Conclusions

Koppers Company, Inc. is in apparent violation of the following requirements of the applicable Mississippi Hazardous Waste Management Regulations and the requirements of Mississippi Hazardous Waste Management Permit No. 88-543-01:

(a) MHWMR 265.93 - Preparation, Evaluation, and Response - The facility has failed to perform the required statistical analyses at the surface impoundment and at the spray irrigation field and has failed to properly notify the Executive Director of the existence of groundwater contamination at these sites as required. Additionally, the facility has failed to properly notify the Executive Director of the existence of groundwater contamination at the boiler ash landfarm.

(b) MHWMR 264.71 and 264.72 - The facility failed to note and failed to report a significant manifest discrepancy in that K001 hazardous waste was brought on-site under manifests which described it as non-hazardous process waste containing used creosote or non-hazardous process waste containing used pentachlorophenol. (Note: This waste was subsequently burned in the facility's boiler)

(c) MHWMR Part 262 Subparts A, B and C - The facility improperly transported hazardous waste ash, derived from the burning of K001 hazardous waste in their boiler, to a facility, the local Grenada County landfill, which did not have an EPA identification number and was not permitted to dispose of hazardous waste. In addition, the facility had no records of these shipments being properly manifested, labeled or marked as required.

(d) MHWMR Part 268 - The facility did not have any records or certifications that would have shown that the two shipments of waste (identified by Manifest Document Nos. 67214 and 00182) received on-site after August 8, 1988, the effective date of land disposal restriction treatment standards for K001 hazardous waste, would have met the land disposal restriction treatment standard for K001 prior to disposal as required.

(e) MHWMR 262.34 - The facility stored six drums of U051 hazardous waste at its less than 90 day container/drum storage building for longer than 90 days.

(f) MHWMR 264.14 - The facility did not maintain an adequate and continuous barrier around the permitted closing surface impoundment.

(g) MHWMR 265.302 - The facility failed to provide adequate run-on/run-off control and wind dispersal control systems for the boiler ash landfarm.

(h) Koppers needs to address the issue in Permit Condition IV.C.3. requiring that upgradient well R-1 be replaced with a properly constructed well.

(i) MHWMR 265.92 - Sampling and Analysis - The facility failed to analyze groundwater samples from the Boiler Ash Landfarm Monitoring wells for the indicator parameter of Total Organic Halogen (TOX) as required.

11. Recommendations are listed as follows:

Koppers need to break out their closure and post-closure cost estimates into specific units instead of lum sum. This would insure that all unit cost estimates are updated accordingly.

12. Signed

David J. Dockham

13. Approval

Wm Slayton Speyer 3/3/89

cc: Mr. James H. Scarbrough, EPA

ORD OF TELEPHONE CONVERSA

Name of firm or party: Koppers (BM&S)

Address: Grenada, Ms.

Contact: Matt Plautz

Phone:

Matt called concerning update on our comments concerning modification of their closure plan for the surface impoundment at their Grenada, Ms. facility.

My comments were as follows:

1) Based upon discussions with Dave Bockelmann and Leo Romanowski at EPA, this should be considered a minor modification since the construction of the proposed cap is more conservative than the permitted cap. Matt indicated that as far as he knew, all other conditions of the permitted plan would apply

2) I asked that he send the department written notification of his proposed modification along with prints.

3) Matt asked about timetable for approval of the modification. I told him we would

away

Khaled Rahman

Signature

4/10/85

Date

told him I would review this and respond around 4/10/89.

VR

RD OF TELEPHONE CONVERSA

Name of firm or party: Koppers (BM&S) - Grenada, Mississippi

Address: Grenada, Ms.

Contact: Matt Plautz - Pittsburg (BM&S)

Phone: (412) 227-2952

Matt called and wanted to review two points concerning Koppers - Grenada Closure Plan for the surface impoundment.

1) Construction of the cap over the surface impoundment will probably destroy 5 wells immediately adjacent to the closing impoundment. Matt wanted to know what procedure to use in amending the plan to indicate that these wells would be abandoned and rebuilt within 10' of the original wells.

2) Bids have been let on the RCRA Type Cap in the new revised closure plan. Matt indicated that they would prefer to go with that cap. He wanted to know how complicated the modification process was to approve use of that construction. I

(over)

Signature: Khalil Rahman

Date: 4/6/89

RCRA SITE INSPECTION

1) Inspector and Author of Report

Karen McKinney
Environmental Engineer

2) Facility Information

Koppers Company, Inc.,
MSD 007 027 543
P.O. Box 160
Tie Plant, MS 38960

3) Responsible Official

J.D. (Rock) Clayton, Plant Manager

4) Inspection Participants

Karen McKinney, USEPA
Leo Romanowski, USEPA
Dave Bockelmann, MSDNR
J.D. (Rock) Clayton, Koppers

5) Date and Time of Inspection

December 12, 1988 - 9:15 a.m. CST

6) Applicable Regulations

Mississippi Hazardous Waste Management Regulations (MHWMR) Sections 262, 264, and 265 (adopted by reference and therefore cited herein as 40 CFR).

7) Purpose of Inspection

This inspection was a USEPA Compliance Evaluation Inspection (CEI) to determine the facility's overall compliance with the applicable regulations.

8) Facility Description

The Koppers Tie Plant facility is located about five miles southeast of Grenada, Mississippi. The facility uses creosote and pentachlorophenol-in-oil in the pressure treatment of wood products for railroad ties, utility poles and pilings. The hazardous wastes produced by this facility are K001, U051, and F027 and consist of bottom sediment sludge from the treatment of wastewater from wood preserving processes that use creosote and/or pentachlorophenol (K001), and waste creosote (U051), or certain waste pentachlorophenol (F027). The regulated waste management units at the facility are a drum storage area, a surface impoundment, an ash landfarm, and a sprayfield. The facility has an operating permit issued by the Mississippi Commission for the use of the surface impoundment. The surface impoundment is in the process of closure.

The surface impoundment was used as a wastewater treatment lagoon. It is about one-half acre in size and had a maximum operating depth of about seven feet. The surface impoundment generated K001 (bottom sediment sludge from the treatment of wastewaters from wood preserving processes using creosote or pentachlorophenol). The surface impoundment was preceded by a mechanical oil/water separator and flow equalization which recaptures product and minimizes the amount of creosote which flows into the impoundment and becomes waste. Wastewater from the impoundment was pumped to a sprayfield for treatment. The facility is in the process of closing the impoundment. The impoundment has been dewatered and has had 3,032 tons of soil and sludge removed. Koppers is awaiting test results for clean closure.

The wastewater from the treating process is now pumped into two 10,000 gallon railcar tanks equipped with heating coils. The water is evaporated by the heating coils and any sludge generated is recycled back into the process.

Effluent from the surface impoundment was periodically pumped to the sprayfield. The sprayfield is located on the north-northwest section of the property. It is about four acres in size and surrounded by a low berm that controls run-on/run-off. The field is covered with non-food-chain vegetation. The frequency of pumping depended upon water levels within the surface impoundment and climatic conditions. Spraying did not occur during rainfall.

Koppers operates a boiler at its facility for the conversion of thermal wood and various wastes into steam. These wastes included the listed hazardous wastes K001, U051, and F027. The ash generated from the operation of the boiler was placed on a landfarm until 1987. The landfarm had been used, prior to November 19, 1980, for the disposal of wood treating process wastes which came from old surface impoundments that had been closed. The ash is a listed hazardous waste thereby making the ash landfarm a regulated land disposal unit. Koppers stopped burning the hazardous waste in July of 1987. The facility still burns non-hazardous waste in the boiler which comes from the process areas (cleaning of the treatment cylinders and door pit areas, etc.) and disposes of the ash at a local landfill.

The facility operates a less than 90-day storage building located in the process area. Koppers previously had interim status for a storage area located near the holding tanks. This area was used only once and is no longer in use. It has been certified closed. The building stores drums containing the non-hazardous waste which is used in the boiler and hazardous waste which is stored until it is shipped off-site.

9) Findings

A record review of the inspection logs, personnel training records, manifests, closure plans, groundwater monitoring records, and the contingency plan was conducted. Records were kept back to 1981. The inspection logs were kept in proper order. Inspections were conducted at the sprayfield, surface impoundment, ash landfarm, and the drum the storage building. The personnel training records were maintained for three years or more. Closure plans and the contingency plan were kept at the facility. Financial assurance and liability records were inspected and found to be in compliance. The closure cost estimate for all regulated units was updated in March of 1988. It was suggested that the cost estimate be broken out by units instead of a lump sum.

In reviewing the manifests and waste analysis records, it was discovered that Koppers had received hazardous waste (K001) from another Koppers facility and had burned it in the boiler. The ash was sent to a local landfill. The waste was classified as non-hazardous on the manifest and was received on July 29,1988 and August 15, 1988. The sludge came from creosote blowdown tanks, PCP separators, and something referred to as basement sediment and is therefore considered K001.

The groundwater monitoring records were reviewed. The records were kept for three years for the surface impoundment and sprayfield. Groundwater monitoring began at the ash landfarm in February of 1988.

An inspection of the operating area and regulated units followed the record review. The first area looked at was the less than 90-day storage area. Six drums of hazardous waste (U051) were being stored at the time of the inspection. Four of the drums have been stored since November 18, 1987 and two since March 10, 1988. The storage of these drums exceed the 90 days allowed in 40 CFR Part 262.34. This was noted as a violation at the May 16, 1988 inspection. The facility has had an adequate amount of time to dispose of the drums. The facility has therefore operated a storage facility without having an operating permit or interim status and must close the unit.

The next area seen was the process area which includes the treatment cylinders, creosote tanks, and the boiler. An area inside the concrete wall surrounding the creosote tanks used to be the facility's interim storage area. This area was used only once since it became too difficult to lift the drums over the wall to store and remove them. The facility has since closed out this unit. Additionally the concrete pad near the boiler was used to store hazardous waste before it was burned. It has since been cleaned and decontaminated.

The ash landfarm is a land disposal unit and is therefore subject to the landfill regulations (Subpart N of 40 CFR). The unit is surrounded by a three-strand barb-wire fence which is inadequate security for a landfill. There is plastic sheeting covering the ash landfarm that is being used for wind dispersal control. There was ponding on top of the plastic, bare patches not covered by the plastic, and the plastic did not extend to all sides. Additionally, soils from cleanup activities around the plant were placed on top of the plastic. There are four groundwater monitoring wells for the ash landfarm.

The facility has begun closure at the surface impoundment. The impoundment has been dewatered and had soils and sludges removed. Closure activities began in July of 1988. Closure has been halted until results from soil testing are received. The front portion of the fence had been removed during closure operations. During periods of inactive closure the fence needs to be reinstalled. There are eight groundwater monitoring wells for the surface impoundment.

The sprayfield has four groundwater monitoring wells and is surrounded by a three-strand barb-wire fence. The gate was locked but held on the post by one strand of wire. The gate needs to be better secured to the fence posts. More signs are needed around the sprayfield so that they can be seen from any approach. The sprayfield ceased receiving wastewater from the impoundment in July, 1988 and has had all spray nozzles removed. There is still brownish-black soils and dead vegetation surrounding the area where the nozzles were. There is a berm surrounding the sprayfield for run-on/run-off control.

10) Conclusions

Koppers has violated the following requirements of the applicable regulations:

40 CFR Part 262.12(c) - The facility must not offer his hazardous waste to transporters or to treatment, storage, or disposal facilities that have not received an EPA identification number.

40 CFR Part 262 Subpart B - The Manifest
40 CFR Part 262 Subpart C - Pre-transport Requirements
40 CFR Part 262 Subpart D - Recordkeeping and Reporting

These four violations address the disposal of hazardous waste boiler ash (K001) at a local landfill when sludge from the separator and blowdown tank was burned in the boiler.

✓ 40 CFR Part 264.14 - Security - The front portion of the fence surrounding the surface impoundment had been removed to implement closure. However, at the time of the inspection, closure activities had been suspended for several months. Therefore, a temporary fence should be placed there to prevent unknowing entry to the surface impoundment until closure activities are resumed.

✓ 40 CFR Part 265.14 - Security - There needs to be more signs located around the sprayfield so as to be seen from all approaches. Additionally, the gate to the sprayfield needs to be repaired.

40 CFR Part 265 Subpart G - Closure and Post-closure Care - The facility has failed to close the sprayfield.

The state has addressed this violation with an Administrative Order which is under appeal.

40 CFR Part 265.302 - General Operating Requirements - The facility has failed to provide adequate run-on/run-off control and wind dispersal control systems for the ash landfarm.

Section 3005 - Solid Waste Disposal Act - Permits for Treatment, Storage, or Disposal of Hazardous Waste - The facility has operated a storage area without having a permit or interim status. The facility must close this unit in accordance with the regulations.

Additionally, the facility has operated the sprayfield without having interim status or a permit. This violation has been addressed by the state and is currently under appeal.

11) Recommendations

Koppers needs to break out their closure and post-closure cost estimates into specific units instead of lump sum. This would ensure that all unit cost estimates are updated accordingly.

Koppers is fast approaching the 180 days allowed for closure of the surface impoundment and needs to either meet the deadline or request an extension.

Koppers needs to provide documentation as to where the waste is coming from that is being burned in the boiler. This is to ensure that only non-hazardous waste is being burned. The facility may need to conduct analysis or certifications of all wastes received.

12) Signed

Karen McKinney
Inspector

Jan 26
Date

13) Concurrence

for
Doyle T. Brittain, Chief
West Compliance Unit

01/27/89
Date

Approval

Allan E. Antley
Allan E. Antley, Chief
Waste Compliance Unit

1/30/89
Date

MISSISSIPPI DEPARTMENT OF NATURAL RESOURCES
Bureau of Pollution Control
P. O. Box 10385
Jackson, Mississippi 39209
(601) 961-5171

MEMORANDUM

TO: Koppers File

FROM: Dave Bockelmann

Through: Karen McKinney, EPA, Leo Romanowski, EPA

DATE: July 1, 1988

REFERENCE: June 15, 1988, meeting between Mississippi Department of Natural Resources personnel and personnel from Koppers Company, Inc. and Keystone Environmental Resources, Inc.

ATTENDEES: Sam Mabry, MSDNR
Art Prestage, MSDNR
Steve Spengler, MSDNR
Dave Bockelmann, MSDNR
Robert Anderson, Keystone
Dave King, Keystone
J. D. "Rock" Clayton, Koppers

A copy of the meeting agenda is attached. The following items were addressed during the meeting:

1. Surface Impoundment

   a. Koppers submitted an updated schedule for the completion and hook-up of their pretreatment system to the city POTW. A copy of this is attached and has been included in the permit.

   b. MSDNR requested Koppers to submit an updated closure schedule for the surface impoundment. An updated schedule as well as a revised closure plan was received on June 13, 1988, and was forwarded to EPA on June 24, 1988.

   c. An order will be issued requiring Koppers to submit a contingency plan for closure of the surface impoundment if their pretreatment system is not completed or permitted by November 8, 1988. Additionally, Koppers was informed that if the Land Ban Regulations are adopted as is, they will have to cease use of the surface impoundment on August 8, 1988. Koppers said that if this happened they would shut the plant down until their pretreatment system is permitted and completed.

2. Boiler Ash Landfarm

   a. Koppers did not have their groundwater sampling results; however, they did say that the results showed that there is groundwater contamination in this area. This is consistent with EPA sampling results from a CDEI performed on May 2 to 5, 1988.

   b. An order will be issued requiring Koppers to submit an updated Part A which includes the boiler ash landfarm and a Part B which addresses compliance monitoring and corrective action. MSDNR will move to review and public notice the existing closure plan and close this unit under interim status.

3. Spray Irrigation Field

   a. After reviewing the existing data on the spray field, Koppers was informed that both the Bureau and EPA considered it a RCRA regulated hazardous waste management unit.

   b. An order will be issued requiring Koppers to submit an updated Part A which includes the spray field and a Part B which includes post-closure care. Additionally, Koppers was informed that they would have to cease using the spray field on August 8, 1988, if Land Ban restrictions for K001 are adopted as proposed.

4. Unnamed Ditch

   a. Reviewed existing data on the contamination in and adjacent to this unit.

   b. An order will be issued requiring Koppers to place absorbent booms across the stream to prevent the off-site movement of contamination in the surface water. Additional assessment will be performed during the RFI.

5. RFA/RFI

   a. Discussed EPA letter of June 10, 1988, and the comments contained in that letter. MSDNR and Koppers agreed that the well recommended in comment number 5 was not necessary. MSDNR will send a letter to Koppers addressing the RFI, EPA comments and items 6 and 7 of Commission Order 1208-87.

6. Boiler and Boiler Ash

a. Koppers will submit a more detailed schedule of events concerning the switch-over from burning hazardous to non-hazardous waste in the boiler.

DB:lr

SCHEDULE FOR WASTEWATER
PRETREATMENT SYSTEM
KOPPERS COMPANY, INC.
TREATED WOOD PRODUCTS
GRENADA, MISSISSIPPI

Begin Construction	July 23, 1988
Finish Construction	October 13, 1988
Process Start-up (cease using surface impoundment)	October 19, 1988
Full Operation	November 2, 1988

MEETING AGENDA

Koppers Company, Inc.

June 15, 1988

1.) Surface Impoundment Permit.

    a.) Submittal of schedule for completion of pretreatment system and hook-up to POTW.

    b.) Submittal of updated schedule for closure.

    c.) Contingency plan for closure if pretreatment system is not permitted or completed by November 8, 1988.

2. Boiler Ash Landfarm.

    a.) Review groundwater sampling results.

    b.) Closure & Post-Closure requirements.

        1) Submittal of updated Part A.

        2) Submittal of Part B.

3. Spray Irrigation Field

    a.) Review existing data.

    b.) Closure & Post-Closure requirements.

        1) Submittal of updated Part A

        2) Submittal of Part B

4. Unnamed Ditch

    a.) Review existing data.

    b.) Discuss interim measures for remediating contamination.

5. RFA/RFI for Solid Waste Management Units.

    a.) EPA letter and comments

6. Boiler & Boiler ash

RCRA INSPECTION REPORT

1. Inspector and Author of Report

   David J. Bockelmann
   Environmental Scientist

2. Facility Information

   Koppers Company, Inc.
   MSD007027543
   P. O. Box 160
   Tie Plant, Mississippi 38960

3. Responsible Company Official

   J. D. "Rock" Clayton, Plant Manager
   Dave King, Environmental Coordinator - Keystone

4. Inspection Participants

   Dave Bockelmann, MSDNR
   Karen McKinney, USEPA
   J. D. "Rock" Clayton, Koppers
   Dave King, Keystone

5. Date and Time of Inspections

   May 16, 1988 - 9:15 a.m. CST

6. Applicable Regulations

   Mississippi Hazardous Waste Management Regulations 262 and 265.

7. Purpose of Inspection

   This was a Compliance Evaluation Inspection to determine the facility's overall compliance with the applicable interim status regulations.

8. Facility Description

   Koppers Company, Inc. is located in the Town of Tie Plant which is approximately 5 miles southeast of Grenada, Mississippi. The facility uses creosote and oil borne pentachlorophenol in the pressure treatment of wood products for railroads, utilities and others. The primary product is treated railroad cross-ties. Raw materials and treated products arrive and leave by rail and truck.

The hazardous wastes which are generated, treated, stored, and/or disposed of at the facility are bottom sediment sludge from the treatment of wastewaters from wood preserving processes that use creosote and/or pentachlorophenol (K001), waste creosote (U051), and certain waste pentachlorophenol (F027). The facility has four hazardous waste management units which are a less than 90 day container/drum storage area, a surface impoundment, a spray irrigation field, and a boiler ash landfarm. At the time of this inspection a permit for the operation of the surface impoundment was under review and was subsequently issued on June 28, 1988. Orders requiring the submittal of Part B permit applications for the spray irrigation field and the boiler ash landfarm were also issued on July 22 and 29, 1988.

The facility currently operates a surface impoundment which is approximately 0.78 acres in size and has an operating depth of about 6-7 feet. The surface impoundment is operated as a wastewater treatment lagoon and generates the listed hazardous waste K001. Treatment of wastewater in the surface impoundment is preceded by a flow equalization tank, a pentachlorophenol and oil separator where pentachlorophenol and oil are recovered and recycled, a creosote separator where creosote is recovered and recycled, and flocculation. Closure of the surface impoundment will begin on or before November 8, 1988.

The spray irrigation field is the final stage in the facility's wastewater treatment system. It is approximately four acres in size and is surrounded by a low berm for run-on/run-off control. The spray irrigation field receives effluent from the surface impoundment which is land applied via six spray irrigation nozzles. The field is covered with non-food chain vegetation and is operated as a land treatment unit for the biodegradation of effluent from the surface impoundment.

The facility operates a boiler for the thermal conversion of wood and various wastes into steam. Prior to October of 1986 these wastes included the listed hazardous wastes K001, U051, and F027. The ash generated from this process is a listed hazardous waste and, prior to July, 1987, was land disposed on the boiler ash landfarm located in the southern portion of the facility. The facility still operates the boiler, burning wood and non-hazardous wastes which come from the process areas (cleaning of the treatment cylinders and door pit areas, etc.) and disposes of the ash at a local landfill. Prior to November 19, 1980, two old surface impoundments located in the central portion of the facility were closed and the waste sludge removed during closure was disposed of at the boiler ash landfarm area.

The facility operates a less than 90 day container/drum storage building located near the process area. The building is used to store drums of non-hazardous waste which is burned in the boiler and drums of hazardous waste prior to being shipped off-site.

9. Findings

An inspection and review of the facility's records was conducted. These records included inspection logs, personnel training records, waste manifests, groundwater monitoring records, financial assurance and liability insurance records, closure plans and a facility contingency plan. Records at the facility were kept back to 1981.

Waste manifests, financial assurance and liability insurance records, closure plans and the facility contingency plan were reviewed and found to be in compliance.

A review of the groundwater monitoring records for the surface impoundment and the spray irrigation field found that these records were kept for 3 years and were up-to-date. Groundwater monitoring at the boiler ash landfarm began in February, 1988. Results of this monitoring were not yet available.

A review of the personnel training records found that they were kept for 3 years and were up-to-date for all employees with the exception of Mr. Monroe Harper who had not received a training review in 1987. Mr Harper needs to receive a training review and have his training record updated.

A review of the inspection logs found that they were up-to-date and kept in proper order. However, it is recommended that the following additions be included in the inspection logs. The inspection log for the surface impoundment should include notations for inspecting the fence and signs. The inspection log for the less than 90-day container/drum storage building should include notations for inspecting the conditions of the drums and should note when no drums are being stored. The inspection log for the boiler ash landfarm should be more specific and include notations for inspecting the fence, signs, evidence of releases (from run-off or wind dispersal) and comments on general site conditions.

Following the record review a visual site inspection of the facility was conducted. The site inspection included the less than 90-day container/drum storage building, the facility process area, the boiler ash landfarm, the surface impoundment and the spray irrigation field.

The less than 90-day container/drum storage building contained 6 drums of hazardous waste (U051). Hazardous waste labels were attached to the drums; however, no accumulation dates were recorded on the drums. The storage building also contained 74 drums of non-hazardous waste which is burned in the facility's boiler.

The next area inspected was the facility process area which includes the treatment cylinders, process tanks and the boiler. A concrete pad adjacent to the boiler feed hopper contained drums of non-hazardous waste which is fed into the boiler and burned along with scrap wood chips. Prior to October, 1986, this pad was operated as a less than 90-day container/drum storage area for hazardous waste which was burned in the boiler. There was no record of this pad having been cleaned-up or decontaminated after the facility ceased storing hazardous waste drums on the concrete pad. This area needs to be closed in accordance with Mississippi Hazardous Waste Management Regulation (MHWMR) 265.111 and 265.114 and the closure procedure documented. In addition, there were no records available to document the clean out or decontamination of the boiler in changing over from burning hazardous waste to burning non-hazardous waste. However, in subsequent conversations and meetings with Mr. Rob Anderson (Keystone Environmental Resources, Inc.) and Mr. Rock Clayton (Plant Manager, Koppers Company, Inc.) the following information concerning the boiler change over was presented. Koppers stopped receiving and stopped burning hazardous waste in the boiler in October, 1986. The boiler was shut down at 3:00 p.m. on April 13, 1987. The boiler fire box was cleaned out and all the fire brick within the fire box was replaced. The ash collection system and the ash collection bins were emptied and cleaned out. The boiler started back up burning non-hazardous waste on May 7, 1987. In July, 1987, the facility stopped placing ash on the boiler ash landfarm and began disposing of it at a local landfill.

The facility's Part A listed an area within a concrete wall which surrounds the process tanks as an interim status container/drum storage area. However, Mr. Dave King (Keystone Environmental Resources, Inc.) and Mr. Rock Clayton (Plant Manager, Koppers Company, Inc.) explained that this area was never actively used because of the difficulty in placing and retrieving drums over the concrete wall which is approximately 3 feet high. The facility needs to document that this area was never actively used, that no spills from containers/drums occurred, and that the area was effectively closed by the removal of any containers/drums that were originally placed there.

The boiler ash landfarm is located in the southern portion of the facility and has not been used since July, 1987. Prior to July, 1987, it was operated as a hazardous waste landfill and as such is subject to the regulations governing landfills (Subpart N of Part 265 of the Mississippi Hazardous Waste Management Regulations - MHWMR). The boiler ash landfarm is not managed to control run-on/run-off or the dispersal of the ash by wind. Some of the ash from the unit could be seen on a facility road running along the outside of the unit. Additionally, the unit is surrounded by a three-strand barbed wire fence which is inadequate security for a landfill. Additional signs are needed and the gate at the northern part of the unit did not have a lock to prevent entry. The unit has one background and three downgradient monitoring wells.

The surface impoundment is located in the east central portion of the facility and is surrounded by a fence on all sides.

Additional signs are necessary so that they can be seen from all approaches. The facility has received an operating permit for the surface impoundment and will be required to close the surface impoundment on or before November 8, 1988. The unit has two background and six downgradient monitoring wells.

The spray irrigation field is located at the northern end of the facility and consists of six spray irrigation nozzles and is surrounded by a low berm to control run-on/run-off. Access is controlled by a three-strand barbed wire fence which is in poor condition near the sprayfield gate. The fence near the gate has apparently been knocked down due to the placement and removal of material from a scrap pile which is located within the sprayfield fence. The fence in this area needs to be repaired and it is recommended that the scrap pile be removed. The northern portion of the sprayfield perimeter is bounded by a public road and a residential area. The fence along the northern perimeter of the sprayfield is inadequate security because of the proximity of the public road and residential area. Extra signs are also needed so that they can be easily seen from all approaches. The unit has one background and three downgradient monitoring wells.

Koppers contends that the spray irrigation field is not a regulated unit and has operated it without having interim status. Subsequent to this inspection, an Administrative Order has been issued to Koppers requiring them to submit a complete Part B post-closure permit application for the spray irrigation field.

10. <u>Conclusions</u>

Koppers is in apparent violation of the following requirements of the applicable regulations:

1. MHWMR Part 262.34 - Accumulation Time - Koppers operates a less than 90-day container/drum storage building. Six drums of hazardous waste were being stored at the time of the inspection. These drums contained hazardous waste labels but no accumulation dates were recorded on the labels as required.

2. MHWMR Part 265.14 - Security - The facility has inadequate fencing surrounding the boiler ash landfarm. Since the boiler ash landfarm is not located within the operating portion of the facility it needs to have better security to prevent unknowing entry. Additionally, there is no lock on the gate at the boiler ash landfarm.

   That portion of the fence that extends along the northern perimeter of the spray irrigation field and is adjacent to the public road and residential area is inadequate security to prevent unknowing entry to the unit. Additional signs are also needed so that they can be easily seen from all approaches to the unit.

3. MHWMR Part 265 Subpart G - Closure and Post-Closure Care - The facility has not documented the closure of the original interim status container storage area (located within the concrete wall that surrounds the process tanks). The facility has not closed the less than 90-day container/drum storage area that was located on the concrete pad adjacent to the boiler feed hopper (this area is presently being used for non-hazardous storage). The facility has not closed the spray irrigation field (still being operated) or the boiler ash landfarm.

   Subsequent to this inspection Administrative Order 1440-88 has been issued, which contains a closure schedule for the spray irrigation field.

4. MHWMR Part 265 Subpart N - Landfills - The facility's boiler ash landfarm has been operated as a landfill and therefore must comply with the landfill requirements. The facility has not provided run-on/run-off control or means to control wind dispersal of the ash.

5. Section 3005 Solid Waste Disposal Act - Permit for Treatment, Storage, or Disposal of Hazardous Waste - The facility has operated the spray irrigation field without ever having interim status. The original Part A submitted in 1980 did not include the spray irrigation field and the facility has not submitted a Part B permit application to operate this unit.

   Subsequent to this inspection, Administrative Orders 1438-88 and 1440-88 have been issued requiring the facility to submit Part B permit applications for both the spray irrigation field and the boiler ash landfarm.

11. Signed

Inspector

12. Approval

DIVISION OF SOLID WASTE

REVIEWED BY

DATE

COMMENTS

cc: Mr James H. Scarbrough, EPA

Leo's comments on Koppers & my comments on Leo's comments [illegible]

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

345 COURTLAND STREET
ATLANTA, GEORGIA 30365

RECEIVED
MAR 23 1988
Dept. of Natural Resources
Bureau of Pollution Control

MAR 18 1988

4WD-RCRA

Mr. Charles Estes, P.E., Coordinator
Hazardous Waste Division
Mississippi Department of Natural
  Resources
Bureau of Pollution Control
P. O. Box 10385
Jackson, Mississippi 39209

RE: Draft Operating Permit (Surface Impoundment)
Koppers Company, Inc., Grenada, Mississippi
EPA I.D. Number MSD 007 027 543

Dear Mr. Estes:

EPA has completed its review of the Mississippi Department of Natural Resources (MDNR) draft RCRA operating permit for Koppers' surface impoundment. This draft operating permit was transmitted to EPA via a February 25, 1988, cover letter by Mr. David Bockelman of the MDNR. Based on this review, EPA has determined that certain clarifications of the submittal are required.

In addition to requesting a few missing maps and figures, major review comments (Attachment I) require discussion within the draft permit of the following eight (8) items:

- Justification for selecting site specific indicators for the detection of groundwater contamination
- Regulatory status and groundwater monitoring of the sprayfield
- Closure plan for the ash pile
- Koppers delisting petition for their boiler ash
- Quantity of K001 hazardous waste sludge and size of the surface impoundment to be regulated by this permit
- Possible revision of the Part A Application
- Anticipated closure date for the surface impoundment
- Written certification of both Part A and Part B documentation and attachments by a responsible Koppers corporate officer

EPA anticipates that a response to these review comments can readily be prepared for inclusion into the draft permit. Therefore, the MDNR should proceed, as agreed, with a joint State of Mississippi/EPA public notice (of permit issuance) by March 31, 1988. The HSWA (EPA) portion of the permit is currently being prepared for your review prior to joint public notice.

If you have any questions on this matter, please contact Mr. Leo Romanowski, Jr., at (404)347-3433.

Sincerely yours,

James H. Scarbrough, P.E.
Chief, RCRA Branch
Waste Management Division

Enclosure

ATTACHMENT I

Technical Adequacy Review Comments
for Draft Operating Permit
Koppers Company, Inc.
EPA I.D. Number MSD 007 027 543

Location in MDNR Permit	Review Comments
Part I - Standard Conditions	
Front Cover, I.D.3., I.D.7., etc.	1. Identify the relationship between the Director, Executive Director, and the Director, Bureau of Pollution Control, MDNR. ✓ Done
I.A.	2. The regulated unit needs to be specifically identified very early within the permit dialogue. Provide the approximate size, location, and waste loading (cubic feet of K001 sludge). N/A ✓ Done
Part II - General Facility Conditions	
II.F.1.	3. Referenced section F-3a does not exist. Need to clarify. ✓ Included
Part III - Storage and/or Treatment in the Surface Impoundment	
III.A.1.	4. Clarify this statement to indicate that the regulated K001 wastes are listed in Attachment A. ✓ Done
III.A.2. This discrepancy resulted from comparing "dry" vs "wet" sludge volumes + weights.	5. The maximum quantity of waste, 2500 pounds, which may be stored/treated in the surface impoundment is very much less than the quantity of K001 sludge which Koppers estimates to be present. Koppers estimated (Maximum Waste Inventory, Section VI 3.0 of the Closure Plan) that the surface impoundment currently contains 10 inches of bottom K001 sludge with a total estimated volume of 650 yd^3. Assuming a sludge density of 100-130 lb/ft^3, the weight of the bottom sludge presently within the surface impoundment is approximately 1,755,000 pounds. This weight exceeds the draft permit maximum quantity of waste by a factor of 700. Please correct this discrepancy by revising the Part A Application (Attachment A). ✓ Done Part A Revised Reworded condition III.A.2

Location in MDNR Permit		Review Comments	
III.D.1.	6.	Add "an uncontrolled and sudden" in front of "drop in the water level".	✓ Done

Part IV - Groundwater Protection

IV.C.1.	7.	Provide a copy of Figure E-1 which was not included. Figure E-1 should be the "Site Topographic Map with Monitoring Well Locations and Showing Point of Compliance." Specifically, identify the upgradient well, the compliance point wells as required by CFR 264.95 and 264.98, and the property boundaries.	✓ Done
IV.E.1.	8.	For a detection monitoring program, the owner/operator must monitor for specific indicator parameters (CFR 264.98(a)). As identified in Section E-5a of the permit, the analytical parameters capable of determining groundwater impact from creosote and pentachlorophenol processes are:	✓ Done

A sentence was added to the permit explaining this and the justification was added to the file by memos.

Note: The memo was not forwarded to EPA.

pH
Specific Conductance
Total Dissolved Solids
Total Organic Carbon
Pentachlorophenol
Polynuclear Aromatic Hydrocarbons
Total Phenols
Total Organic Halogen

Provide justification for restricting the groundwater monitoring parameters in Permit Section IV.E.1. to the specific site indicators of napthalene, acenapthalene fluoranthene, pentachlorophenol and 2,4 dinitrophenol.

Since the Koppers' plant manager indicated (see March 1987 RFA p. 2-1) a "different chemical process was used in the past (prior to 1970)", it is recommended that groundwater monitoring also include analyses for chromium, arsenic, and copper. ✓ Not Done

The CCA process was never used while the present surface impoundment was in use. Monitoring for CCA was addressed in some detail in my SWMU comments. These were sent to EPA by my transmittal letter dated 2-29-88

Location in MDNR Permit		Review Comments
IV.F.1. This is addressed in condition IV.H.2.b.	9.	Verify that the Director of the Department of Natural Resources is to be notified when groundwater analyses exceed background levels. ✓
IV.H.2.f.	10.	Identify the authority (Executive Director?) to whom the Permittee must successfully demonstrate. ✓ Done

Attachment A - Part A Application

Page 1 of 5	11.	Verify the Process Design Capacity of 19,545 gallons. Attachment B, page B-3 indicates the surface impoundment has a hydraulic capacity of 748,000 gallons. Additionally, in the Closure/Post-Closure Plan (Attachment I, Section VI.3.0), Koppers has estimated the total yearly sludge collection at 2500 pounds or 312 gallons. Koppers also determined that the current 10 inches of impoundment sludge represents approximately 650 cubic yards. Please clarify the correct estimate of hazardous waste to be regulated in the surface impoundment. Use the Part A Application (Section IV) to describe the currently impounded waste and the estimated annual quantity of waste. ✓ Done Part A Ammend
Figure A-1 No other areal photo available.	12.	This aerial photo is inadequate. Provide a photo of the facility which clearly delineates all existing structures, existing treatment, storage and disposal areas; and sites of future treatment, storage, and disposal (CFR 270.13(k)(9)(1)). ✓ Not Done
Not provided		Provide a scale drawing of the facility showing the location of all past, present, and future treatment, storage and disposal areas. Indicate the legal boundary of the property on the drawing and/or the aerial photo. ✓

☆ Fig. E-1 shows surface impoundment + E/W property lines. The only thing that should be necessary for this part of the Permit is the S.I. and nearby property lines. Past TSD areas should have been included in HSWA Permit. The site plan in Attach. I shows S.I., spray field + container storage bldg. and property line for the N ½ of facility. Only thing not covered is the ash landfarm. This could be included in addendum to Permit.

Location in MDNR Permit		Review Comments
Attachment B - Facility Description		
B-1	13.	Clear up any regulatory confusion by providing a historical discussion concerning: ✓
		a. wastewater sprayfield status and groundwater monitoring
		b. closure plan for the ash pile
		c. status of Koppers delisting petition for their boiler ash
Attachment C - Waste Characteristics		
p. 2 This Table was included but was mislabeled.	14.	Section C, Table 2 is missing. Provide this list of facilities which are expected to ship qualified waste to the Koppers (Grenada) plant. ✓ Done
pp. 2 and 15	15.	Reference to Attachment 5 as a QA/QC program appears to be in error. Please correct. ✓ corrected Attachment is correct Attachme
This needs to be done →		Provide a legible copy of Attachment 1 (Section C). Not Done
		Table of Contents requires section labels and the page numbers past page 16 need to be corrected. ✓ Done
		Attachments No. 3 and No. 7 are missing and Attachments No. 4 through No. 6 are mislabled in the Table of Contents. ✓ correcte
p. 44	16.	Correctly label this table as Table 3. ✓ correct
Attachment E - Groundwater Monitoring		
Figure E-1	17.	This figure is missing. Provide a site plan map detailing the detection monitoring system. Specifically, indicate the compliance point boundary, background wells, upgradient wells, regulated units and the hazardous waste management area. ✓ Includ

Told Leo that this information would be included in the appropriate addendums to the Permit.

Background wells, upgradient + downgradient wells are defined in Part IV.

Note: The definition of the wells in Part IV could be clearer.

Location in MDNR Permit		Review Comments
Attachment I - Closure/Post-Closure Plans for Surface Impoundment		
Section VI 5.0 At this time (5-17-88) final hook-up to the POTW has not been approved but is very close to being approved. All that remains undecided is where Koppers will tie into the POTW. Anticipated schedule of completion should be close to those dates shown in Attach. 8 - perhaps a month or two later, or three.	18.	The closure schedule and critical flow path project schedule (Attachment 8) indicate that the construction of the pretreatment plant upgrade has been ongoing through 1st - 2nd quarters 1988. Since these schedules were projected almost one year ago, an updated schedule of the construction and start-up dates is required. ✓
Section VI Attachment 8 This is addressed in Conditions II.I and III.G.	19.	Identify the anticipated dates (month/yr) for the actual closure and closure certification of the surface impoundment.
Certification	20.	Koppers Company, Inc. should provide written certification by a responsible corporate officer that this document and all attachments (Part A and Part B Applications) are accurate and complete. This certification should conform with the wording as provided in CFR 270.11(d). ✓ Included

My Comments on Leo's Comments DJB

Comment #

✓3 - Find & include Sec F-3A (II.F.1) Done

✓4 - III.A.1 - I think this statement is OK (K001 constituents - App. VII or not listed in Attach A

✓5 - III.A.2 - List max waste in lbs & max. annual application rate of 2500 lbs.

✓6 - III.D.1. (Revised)

✓7 - IV.C.1 Included Fig. E.1.
- E & W Property lines are shown
- Monitor Well Locations are shown
- Background & Compliance point wells are defined in Part IV of the Permit
- Point of Compliance is shown.

✓8 - IV.E.1 - pH, Spc. Cond., TDS, TOH, TOC are subject to too many variables and therefore, their use results in an excessive number of false & misleading positives. The use of indicator parameters specific to the site will (264.98(c)) ~~give~~ provide a monitoring program that is geared directly to detection of contamination from the S.I. without the negative aspect of having to deal with false positives.
- The use of CCA has never been associated with the surface impoundment and therefore it is not recommended to monitor for CCA. (Should be covered in SWMU Permit)

✓ 9 — IV. F.1 This verification is listed under Condition IV H.2.b of the Permit

✓ 10 — IV. H.2.F. Revised

✓ 11. — Will do Done

✓ 12 — Fig A-1 This is the only aerial photo we ~~have~~ - adequately shows ~~surface~~ impoundment. It is not necessary to show all facility sites - this is a permit for the S.I. only.

✓ 12a) — This should be under SWMU permit - Legal boundary shown on Fig E-1 and on Site Plan Map Attach 1 - Sec. III of Attach I

✓ — 13 — Not applicable to the S.I - would probably only cause more confusion as to what is being regulated.

✓ 14 — This Table is included and has been changed to Table 3

15 — ✓ Need to change Attach 5 ⇐ This is ^now^ Attach < changed

- Need to provide legible copy of Attach 1
- Need Section Labels + page corrections
- Attach. No. 3 is included Water Treatment Chemical (Floculant)
- Attach. 7 is included - Sampling Procedures for H.W. Streams.
- Attach 3-6 in Table of Contents are mislabeled

✓ 16 Table 3 Changed

✓ 17 Fig E-1 ~~has~~ has been included - all H.W.M.U are included, E+W plant boundaries are shown

✓ 18 Why?

✓ 19 Don't know - will cease to be used on or before Nov. 8, 88

✓ 20 Found & will include

KEYSTONE
ENVIRONMENTAL RESOURCES, INC.

440 College Park Dr., Monroeville, PA 15146

April 14, 1987

RECEIVED
APR 1 1987
DEPT. OF NATURAL RESOURCES
BUREAU OF [illegible] CONTROL

Mr. Gary Payne
Mississippi Department of
Natural Resources
2380 Highway 80 West
Southport Center
Jackson, MS 39204

Re: Document Transmittal
Part B Permit Application
Closure and Post-Closure Plans
Surface Impoundment
Koppers Company, Inc.
Grenada, Mississippi Plant
EPA ID No. MSD007027543
Project No. 176900

Dear Mr. Payne:

Enclosed are three copies of each of the two above-referenced documents regarding RCRA requirements for the surface impoundment at the Koppers Company, Inc. Grenada, Mississippi plant. This submittal is in compliance with item No. 1 of the Mississippi Commission of Natural Resources Order No. 1208-87.

Please be advised that one of the Part B Applications is an original, signed by Mr. James Batchelder, Vice President of Koppers. The documents are complete with the exception of Attachments 9 and 10 and Appendix C of the Closure and Post-Closure Plans. These items will be forwarded to you under separate cover on April 15, 1987.

Documents enclosed herein were prepared by Keystone Environmental Resources, Inc., on behalf of Koppers. Guidance was provided by review of the following major items:

Part B Application:

(1) Application Checklist - Provided by EPA Region III (enclosed).

(2) RCRA Facility Assessment Guidance - October, 1986. - Provided by J. Hardage (transmittal dated March 25, 1987).

(3) Grenada Plant Container Storage Building Part B Application.

(4) Grenada Plant Part B Application for the surface impoundment and spray field (revised January, 1986 with recodification).

(5) Specific items relating to groundwater monitoring as detailed in a letter from J. Hardage to R. Morosky dated March 30, 1987.

Closure and Post-Closure Plans:

(6) Items (1) and (2) listed above and pertinent sections of 40 CFR 264.

(7) Grenada Plant Closure Plan submittal (dated November, 1986) for the surface impoundment and spray field.

(8) MBPC technical comments of the Closure Plan (transmittal dated January 23, 1987).

Other references are specified in various sections of the two documents.

Guidance addressed in these documents, plus information obtained by on-site investigative work completed during the last five months, has helped to generate appropriate responses to the regulatory requirements. The majority of this information is in regard to the site hydrogeology (Section E of the Part B Application).

Koppers response to specific items contained in the MBPC closure plan technical review is as complete as technically feasible at the present time. Comments contained in General Closure Requirements (A1.5, 1.7 and 1.8) have not been addressed since it has been determined not to pursue these procedures during closure. The format of the Closure and Post-Closure plans follows a logical progression using 40 CFR 264 as guidance.

If there are any comments or questions regarding the enclosed documents, please advise.

Sincerely,

C. P. Markle/pb

C. P. Markle
Environmental Program Manager

CPM:da
Enclosures:
RCRA Part B Application
Closure and Post-Closure Plans

cc: J. R. Batchelder
C. L. Blalock, MS DNR (w/o enclosures)
J. Blundon
J. D. Clayton
C. A. Cramer
R. M. Morosky

FILE COPY

January 14, 1987

Mr. J. R. Batchelder
Vice-President and Manager
Technical and Environmental Services
Tar and Wood Products Sector
Koppers Company, Inc.
436 Seventh Avenue
Pittsburgh, Pennsylvania 15219

Dear Mr. Batchelder:

On November 17, 1986, the Bureau of Pollution Control received the Closure Plan for the hazardous waste surface impoundment at the Koppers facility in Grenada, Mississippi, submitted in response to Mississippi Commission on Natural Resources Order No. 1040-86, as amended. Our comments on technical deficiencies in the plan are being mailed to you under separate cover.

In meetings and telephone discussions with Bureau staff in August and September, 1986, Mr. Charles Brush of Koppers had discussed a Closure Plan which would allow the company to cease discharge of wastewater into the hazardous waste surface impoundment by August, 1987. Based on this proposed conceptual schedule, the Bureau determined that Koppers could be allowed to submit an application (Part B) for a hazardous waste post-closure permit, rather than an operating permit, for the impoundment.

The plan submitted on November 17, 1986, fails to specify when discharge of wastewater into the impoundment will cease. However, the plan indicates (see copies, pages I-2 and I-10 of the plan, enclosed) such discharge may continue until November 6, 1989. Such a schedule is completely inconsistent with the Bureau and EPA permitting philosophy upon which the other requirements in Commission Order No. 1040-86, as amended, were based. Unless Koppers can start closure of the surface impoundment by much earlier than the date proposed in the Closure Plan, the company will be required to proceed at once to prepare a permit application (Part B) for an operating permit, rather than the Part B for a post-closure permit required in Order No. 1040, as amended. In addition, an earlier submittal of the complete application than had been contemplated will be required under an amended Commission Order. Continued operation of the impoundment beyond early 1988 without a hazardous waste operating permit is not acceptable.

It is necessary that Koppers schedule a meeting with the Bureau no later than February 6, 1987, to discuss the impoundment closure schedule and permit application options, and to demonstrate that the closure schedule submitted does not constitute failure to comply with Order No. 1040, as amended. Failure to comply with a Commission Order is, of course, grounds for an administrative penalty.

Mr. J. R. Batchelder
January 14, 1987
Page -2-

At this meeting it will also be necessary to discuss Koppers' application of boiler ash to a land treatment unit which has neither a permit nor interim status to receive hazardous waste.

Please contact me at 601/961-5171 during the week of January 12-16, 1987, to schedule this meeting.

Sincerely,

Sam Mabry, Director
Hazardous Waste Division

SM:els
cc: Mr. Cyrus Markle
Mr. R. M. Morosky
Mr. James Scarbrough, EPA

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SE/SM

3. Article Addressed to: JC
Mr. R. M. Morosky
440 College Park Dr.
Monroeville, PA 15146

4. Type of Service: JC
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Article Number
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DOMESTIC RETURN RECEIPT

LAW ENVIRONMENTAL SERVICES
DIVISION OF LAW ENGINEERING TESTING COMPANY
2749 DELK ROAD, S.E.
MARIETTA, GEORGIA 30067
(404) 952-9005

December 16, 1986

Mr. Charles L. Blalock
Executive Director
Mississippi Department of Natural Resources
2380 Highway 80 West
Jackson, Mississippi 39204

Attention: Mr. Samuel Mabry
Environmental Program Administrator

Subject: Koppers Company, Inc.
Grenada, Mississippi Closure Plan
U.S. EPA I.D.#MSD007027543
LES Project No. EC6353.10

Dear Mr. Mabry:

On November 14, 1986, Law Environmental Services submitted the Closure Plan for the Koppers Company, Inc. surface impoundment and sprayfield. Upon subsequent review, minor revisions were made to both the text and Closure Cost Estimates (Attachments I-5, I-6, and I-7). The revised sections are so noted in the upper right hand corner of each page.

Should you have any questions concerning this revision, please contact Mr. Cyrus Markle, ((412) 227-2000) Room 901, Koppers Building, Pittsburgh, Pennsylvania 15219.

Sincerely yours,

LAW ENVIRONMENTAL SERVICES

J. Brad Peebles

J. Brad Peebles, Ph.D.
Environmental Scientist

James L. Studer

James L. Studer, P.E.
Senior Geotechnical Engineer

JBP:JLS:bfw

cc: U.S. EPA/James Scarbrough
Mr. Cyrus Markle

Addendum Re: Spray Field

EPA has indicated that this unit is a "regulated" RCRA unit. Koppers has contested this interpretation from the beginning and are apparently prepared again to legally contest this interpretation if a penalty should be applied. However, they have agreed that it is a solid waste management unit (SWMU), and they would be willing to address it in the present closure plan for the impoundment and the post closure Part B application as appropriate if directed by us.

Site inspection by my staff indicate the spray irrigation site is completely vegetated and has no visible sludge accumulation on the top several inches of soil. Previous sampling indicates K001 contaminants in very small measurable quantities. We will therefore direct Koppers to address this spray field as a RCRA unit in the post closure Part B application and the closure plan for the impoundment.

this was part of an information package sent to EPA during negotiations with Koppers in the fall of 1986.

GH

LAW ENVIRONMENTAL SERVICES
DIVISION OF LAW ENGINEERING TESTING COMPANY
2749 DELK ROAD, S.E.
MARIETTA, GEORGIA 30067
(404) 952-9005

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NOV 17 1986
DEPT. OF NATURAL RESOURCE
BUREAU OF POLLUTION CONTROL

November 14, 1986

Mr. Charles L. Blalock
Executive Director
Mississippi Department of Natural Resources
2380 Highway 80 West
Jackson, Mississippi 39204

Attention: Mr. Samuel Mabry
Environmental Program Administrator

Subject: Koppers Company, Inc.
Grenada, Mississippi Closure Plan
U.S. EPA I.D.#MSD007027543
LES Project No. EC6353.10

Dear Mr. Mabry:

In compliance with the Commission on Natural Resources' Amendment to Order No. 1040-86 Law Environmental Services on behalf of Koppers Company, Inc., herewith submits the Closure Plan for the facilities surface impoundment and sprayfield.

Should you have any questions concerning this submission, please contact Mr. Cyrus Markle, ((412) 227-2000) Room 901, Koppers Building, Pittsburgh, Pennsylvania 15219.

Sincerely yours,

LAW ENVIRONMENTAL SERVICES

J. Brad Peebles, Ph.D.
Environmental Scientist

James L. Studer, P.E.
Senior Geotechnical Engineer

JBP:JLS:lsm

cc: U.S. EPA/James Scarbrough
Mr. Cyrus Markle

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

345 COURTLAND STREET
ATLANTA, GEORGIA 30365

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SEP 15 1986
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BUREAU OF ... CONTROL

SEP 11 1986

4WD-RM

Mr. Sam Mabry, Director
Division of Solid/Hazardous
Waste Management
Post Office Box 10385
2380 Highway West
Jackson, Mississippi 39209

Re: Koppers Company, Grenada, Mississippi

Dear Mr. Mabry:

Reference is made to the conference call between EPA and Mississippi on September 9, 1986 regarding Koppers Company, Grenada, Mississippi. Specifically, you requested EPA's written interpretation of the regulatory status of the Koppers Company if they submit a closure plan and withdraw their Part B application.

If Koppers intends to close in lieu of maintaining active status of their surface impoundment, they should be advised to submit a formal letter of intent to close the unit. The closure plan should be submitted within a reasonable time; and the hazardous waste application should be revised to a post-closure application. If the closure plan is submitted within a reasonable timeframe, the facility could continue to manage hazardous waste in the unit until the State approved the closure plan. Approval of the closure plan is generally accomplished within 180 days from submittal by the facility.

The facility would retain interim status unless the State terminates interim status as provided in §270.10(e)(5). Failure to furnish a requested Part B application on time, or to furnish in full the information required by the Part B application, is grounds for termination of interim status under Part 124. The owner or operator would then be required to submit a closure plan no later than 15 days after termination of interim status under §265.112(c)(1).

The second item discussed by the State during the call was the tentative schedule being implemented in a Commission Order under development for Koppers. The schedule stipulated that the closure plan would be submitted December 15, 1986; and the post-closure application would be submitted January 1988. Although this was a tentative schedule, sixteen months is an excessive length of time for revising the current Part B application to a post-closure application. Three months would be an appropriate time-frame to revise the application. The delay in submittal of the closure plan should also be evaluated by the State.

Lastly, the sprayfield at Koppers is a regulated unit under the State's hazardous waste regulations. The decision made on the Brown Wood case does not apply to other facilities; Mississippi has previously received the legal interpretation on this.

If you have questions or comments in this matter, please call me at 404/347-3016.

Sincerely yours,

James H. Scarbrough

James H. Scarbrough, P.E., Chief
Residuals Management Branch
Waste Management Division