#### **VOLUME 1**

HAZARDOUS WASTE MANAGEMENT PERMIT KOPPERS INDUSTRIES, INC. TIE PLANT, MISSISSIPPI GRENADA COUNTY MSD 007 027 543 STATE OF MISSISSIPPI

#### ARDOUS WASTE MANAGEMENT STATE OF MISSISSIPPI THIS CERTIFIES THAT PERMIT

KOPPERS INDUSTRIES INC. (OWNER) BEAZER EAST, INC. (OPERATOR) ID NO. MSD 007 027 543 Tie Plant, Mississippi

surface impoundment. is hereby authorized to conduct post-closure care of its closed hazardous waste

and particularly Section 17-17-27 thereof, and rules adopted and promulgated Regulations, and associated conditions included therein. enforce all thereunder, all of which authorize the Department of Environmental Quality to This permit is issued under the authority of the Mississippi Solid Waste Disposal Law, applicable requirements under the Mississippi Hazardous Waste

Effective: **8** <u>88</u>

MISSISSIPPI EIYVĮRONMEN QUALITY PERMIT BOARD

MISSISSIPFI CHIEF, EN OFFIGE OF POLLUTION CONTROL TROMMENTAL PERMITS DIVISION

Expires: September 30/2009

Permit No. HW-88-543-01

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MODULE I -GENERAL PERMIT CONDITIONS

#### I.A. **EFFECT OF PERMIT**

compliance, for purposes of enforcement, with Mississippi Solid Waste Disposal Law (MSWDL) issued or any action brought under Sections 3008(a), 3008(h), 3013, or 7003 of RCRA; Sections explosives. Compliance with the terms of this Permit does not constitute a defense to any order other Federal, State, and/or local laws and/or regulations governing the treatment and handling of private rights, any infringement of state or local law or regulations, or preclude compliance with any exclusive privilege; nor does it authorize any injury to persons or property, any invasion of other of 1974, as amended. Issuance of this Permit does not convey any property rights of any sort or any Management Regulation (MHWMR) 270.4, compliance with this Permit generally constitutes impoundment in accordance with the conditions of this. Subject to Mississippi Hazardous Waste protection of public health or the environment. [MHWMR 270.4, 270.30(g)] of 1980 (42 U.S.C. 9601 et seq., commonly known as CERCLA), or any other law providing for 106(a), 104 or 107 of the Comprehensive Environmental Response, Compensation, and Liability Act The Permittee is required to conduct post-closure activities for a hazardous waste surface

#### I.B. PERMIT ACTIONS

## I.B.1 Permit Modification, Revocation and Reissuance, and Termination

revocation and reissuance, or termination, or the notification of planned changes or in MHWMR 270.41, 270.42, and 270.43. The filing of a request for a permit modification, enforceability of any permit condition. [MHWMR 270.4(a) and 270.30(f)] anticipated noncompliance on the part of the Permittee, does not stay the applicability or This Permit may be modified, revoked and reissued, or terminated for cause, as specified

#### I.B.2 Permit Renewal

state of control and measurement technology, as well as changes in applicable regulations This Permit may be renewed as specified in MHWMR 270.30(b) and Permit Condition [MHWMR 270.30(b), HSWA Sec. 212] Review of any application for a Permit renewal shall consider improvements in the

#### IC SEVERABILITY

of any provision of this Permit to any circumstance is held invalid, the application of such provision The provisions of this Permit are severable, and if any provision of this Permit, or the application

to other circumstances and the remainder of this Permit shall not be affected thereby. [MHWMR 124.16(a)]

#### I.D. DEFINITIONS

meaning of the term. "Director" means the Executive Director of the Mississippi Department of terms are not defined in the regulations or the Permit, the meaning associated with such terms shall For purposes of this Permit, terms used herein shall have the same meaning as those in MHWMR Parts 124, 260, 264, 266, 268, and 270, unless this Permit specifically provides otherwise; where Environmental Quality, or his designee or authorized representative. be defined by a standard dictionary reference or the generally accepted scientific or industrial

- I.D.1 of hazardous constituents determined to be indicators for the protection of human "Action levels" for the purposes of this permit are health-based concentrations health and/or the environment
- I.D.2 of concern may require investigations and remedial action as required under MHWMR 270.32(b)(2) in order to ensure adequate protection of human health Section 3005(c)(3) of the Resource Conservation and Recovery Act and pose a current or potential threat to human health or the environment. Such areas is not from a solid waste management unit and is determined by the Director to and the environment. having a probable release of a hazardous waste or hazardous constituent which The term "area of concern" (AOC) for purposes of this permit includes any area
- I.D.3 action" as provided in MHWMR 264.100. "Corrective Action" for the purposes of this permit, may include "corrective
- I.D.4 corrective action requirements at the facility. used for the management of remediation wastes pursuant to implementing such under MHWMR264.101 and RCRA section 3008(h). A CAMU shall only be 264 Subpart S, for the purpose of implementing corrective action requirements includes any area within a facility that is designated by the Director under part A "Corrective Action Management Unit" (CAMU) for purposes of this permit,
- I.D.5 required under MHWMR 264.101. Corrective measures may address releases to air, soils, surface water or groundwater. at the facility, regardless of the time at which waste was placed in the unit, as hazardous waste or hazardous constituents from any solid waste management unit necessary to protect human health and the environment for all releases of "Corrective measures" for purposes of this permit, include all corrective action

- I.D.6 "Director" means the Executive Director of the Mississippi Department of Environmental Quality, or his designee or authorized representative
- I.D.7 determined by the MHWMR. background concentrations indicative of the region, whichever is appropriate as in the environmental media being investigated are above detection limits or horizontal and vertical area in which the concentrations of hazardous constituents "Extent of contamination" for the purposes of this permit is defined as the
- I.D.8 storage, or disposal operational units (e.g. one or more landfills, surface impoundments, or combination of them). For the purposes of implementing corrective action under MHWMR264.101, a facility includes all contiguous Subtitle C of RCRA. property under the control of the owner or operator seeking a permit under disposing of hazardous waste. other appurtenances, and improvements on the land, used for treating, storing, or "Facility" for purposes of this permit includes all contiguous land, and structures, A facility may consist of several treatment,
- I.D.9 in MHWMR Part 261 Appendix VIII and Part 264 Appendix IX. A "hazardous constituent" for purposes of this permit are those substances listed
- I.D.10 action remedies are evaluated and, if necessary, implemented. "Interim Measures" for purposes of this permit are actions necessary to minimize human and environmental exposure to contaminants while long-term corrective or prevent the further migration of contaminants and limit actual or potential
- I.D.11 vault or bunker intended for disposal purposes. treatment facility, salt dome formation, underground mine or cave, or concrete to, placement in a landfill, surface impoundment, waste pile, injection well, land placement in or on the land except for a CAMU and includes, but is not limited "Land Disposal" for purposes of this permit and MHWMR Part 268 means
- I.D.12 or a corrective action management unit. well, a salt dome formation, a salt bed formation, an underground mine, a cave, pile, a land treatment facility, a surface impoundment, an underground injection a facility where hazardous waste is placed in or on the land and which is not a "Landfill" for the purposes of this permit includes any disposal facility or part of
- I.D.13 or disposing into the environment of any hazardous waste or hazardous pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, A "release" for purposes of this permit includes any spilling, leaking, pumping,

constituents.

- I.D.14 originate only from within the facility boundary, but may include waste managed and RCRA section 3008(h). For a given facility, remediation wastes may purpose of implementing corrective action requirements under MHWMR264.101 themselves exhibit a hazardous waste characteristic, that are managed for the sediments) and debris, which contain listed hazardous wastes or which hazardous wastes, and all media (including groundwater, surface water, soils, and "Remediation waste" for the purposes of this permit includes all solid and in implementing RCRA sections 3004(v) or 3008(h) for releases beyond the facility boundary.
- I.D.15 special nuclear, or by-product material as defined by the Atomic Energy Act of of the Federal Water Pollution Control Act, as amended (86 Stat. 880), or source, industrial discharges which are point sources subject to permits under section 402 domestic sewage, or solid or dissolved materials in irrigation return flows or resulting from industrial, commercial, mining, and agricultural operations, and material, including solid, liquid, semisolid, or contained gaseous material 1954, as amended (68 Stat. 923). from community activities, but does not include solid or dissolved material in water supply treatment plant, or air pollution control facility and other discarded "Solid waste" means any garbage, refuse, sludge from a waste treatment plant,
- I.D.16 activities (e.g. product or process spills). immediately remediated and cannot be linked to solid waste management waste or hazardous constituents, excluding one-time accidental spills that are that have been contaminated by routine and systematic releases of hazardous management units are also solid waste management units. SWMUs include areas for the management of solid waste. solid waste at any time, irrespective of whether the unit is or ever was intended A "solid waste management unit" (SWMU) for the purposes of this permit includes any unit which has been used for the treatment, storage, or disposal of RCRA regulated hazardous waste
- I.D.17 by the MHWMR, such units must conform to specific standards, and may only tanks and/or container storage areas used solely for treatment or storage of A "Temporary Unit" (TU) for the purposes of this permit includes any temporary be in operation for a period of time as specified in this permit. hazardous remediation wastes during specific remediation activities. Designated
- I.D.18 A "unit" for the purposes of this permit includes, but is not limited to, any landfill, surface impoundment, waste pile, land treatment unit, incinerator,

injection well, tank, container storage area, septic tank, drain field, wastewater treatment unit, elementary neutralization unit, transfer station, or recycling unit.

I.D.19 shall include, but not be limited to, best efforts to anticipate any potential force stoppages or other labor disputes. possible. any delay or prevention of performance is minimized to the greatest extent majeure event and address it before, during, and after its occurrence, such that requirement that the Permittees exercise "best efforts to fulfil such obligation: under the permit despite the Permittees best efforts to fulfill such obligation. The performed under this permit, financial inability to complete the work, work contractors, than delays or prevents the timely performance of any obligations or entity controlled by the Permittees, including but not limited to Permittees' from causes not foreseen and beyond the control of the Permittees or any person "Force majeure" for the purposes of this permit is defined as any event arising Force majeure does not include increased costs of the work to be

# I.E. DUTIES AND REQUIREMENTS

### I.E.1 Duty to Comply

and reissuance, or modification; or for denial of a Permit renewal application. [MHWMR a violation of Mississippi Solid Waste Disposal Law, Sections 17-17-1, et seq., Mississippi noncompliance, other than noncompliance authorized by an emergency Permit, constitutes the duration such noncompliance is authorized by an emergency Permit. Any Permit 270.30(a)] Code Annotated and is grounds for enforcement action; for Permit termination, revocation The Permittee shall comply with all conditions of this Permit, except to the extent and for

### I.E.2 Duty to Reapply

least 180 days prior to Permit expiration. [MHWMR 270.10(h), 270.30(b)] date of this Permit, the Permittee shall submit a complete application for a new Permit at If the Permittee wishes to continue an activity allowed by this Permit after the expiration

### I.E.3 Permit Expiration

and, through no fault of the Permittee, the Director has not issued a new Permit, as set forth submitted a timely, complete application (see MHWMR 270.10, 270.13 through 270.29) herein will remain in effect beyond the Permit's expiration date, if the Permittee has ten years. As long as MDEQ is the Permit-issuing authority, this Permit and all conditions Pursuant to MHWMR 270.50, this Permit shall be effective for a fixed term not to exceed

in MHWMR 270.51.

# I.E.4 Need to Halt or Reduce Activity Not a Defense

necessary, to halt or reduce the Permitted activity in order to maintain compliance with the It shall not be a defense for the Permittee, in an enforcement action that it would have been conditions of this Permit. [MHWMR 270.30(c)]

### I.E.5 Duty to Mitigate

reasonable, to prevent significant adverse impacts on human health or the environment. steps to minimize releases to the environment and shall carry out such measures, as are [MHWMR 270.30(d)] In the event of noncompliance with this Permit, the Permittee shall take all reasonable

# I.E.6 Proper Operation and Maintenance

conditions of this Permit. [MHWMR 270.30(e)] auxiliary facilities or similar systems only when necessary to achieve compliance with the assurance/quality control procedures. This provision requires the operation of back-up or and training, and adequate laboratory and process controls, including appropriate quality maintenance includes effective performance, adequate funding, adequate operator staffing Permittee to achieve compliance with the conditions of this Permit. Proper operation and treatment and control (and related appurtenances) which are installed or used by the The Permittee shall at all times properly operate and maintain all facilities and systems of

## I.E.7 Duty to Provide Information

with this Permit. The Permittee shall also furnish to the Director, upon request, copies of records required to be kept by this Permit. [MHWMR 264.74(a), 270.30(h)] modifying, revoking and reissuing, or terminating this Permit, or to determine compliance information which the Director may request to determine whether cause exists for The Permittee shall furnish to the Director, within a reasonable time, any relevant

### I.E.8 Inspection and Entry

required by law, to: representative, upon the presentation of credentials and other documents, as may be Pursuant to MHWMR 270.30(i), the Permittee shall allow the Director, or an authorized

Enter at reasonable times upon the Permittee's premises where a regulated

under the conditions of this Permit; facility or activity is located or conducted, or where records must be kept

- I.E.8.b under the conditions of this Permit; Have access to and copy, at reasonable times, any records that must be kept
- I.E.8.c this Permit; and and control equipment), practices, or operations regulated or required under Inspect at reasonable times any facilities, equipment (including monitoring
- I.E.8.d Sample or monitor, at reasonable times, for the purposes of assuring Permit parameters at any location. compliance or as otherwise authorized by MSWDL, any substances or

### I.E.9 Monitoring and Records

to this permit, deemed necessary to ensure implementation of new regulations or requirements, or to ensure protection of human health and the environment. The Director may require such testing by the Permittee, and may make such modifications

- Plan (See Permit Appendix E-5). [MHWMR 270.30(j)(1)] equivalent method approved by the Director. Laboratory methods must be the Groundwater Sampling and Analysis Plan (Appendix E-5) or an representative sample to be analyzed must be the appropriate method from Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity. The method used to obtain a Analysis, or an equivalent method, as specified in the Sampling and Analysis Physical/Chemical Methods SW-846, Standard Methods of Wastewater specified Ħ Test Methods for **Evaluating** Solid Waste:
- I.E.9.b applicable to open burning/open detonation units if ground-water monitoring record, certification, or application. These periods may be extended by course of any unresolved enforcement action regarding this facility. request of the Director at any time and are automatically extended during the a period of at least 3 years from the date of the sample, measurement, report, and records of all data used to complete the application for this Permit for required by this Permit, the certification required by MHWMR 264.73(b)(9), [MHWMR 264.74(b) and 270.30(j)(2)] These requirements will also be for continuous monitoring instrumentation, copies of all reports and records all calibration and maintenance records and all original strip chart recordings The Permittee shall retain records of all monitoring information, including

is required

I.E.9.c Pursuant to MHWMR 270.30(j)(3), records of monitoring information shall specify:

I.E.9.c.i The dates, exact place, and times of sampling or measurements;

I.E.9.c.ii The individuals who performed the sampling or measurements;

I.E.9.c.iii The dates analyses were performed;

I.E.9.c.iv The individuals who performed the analyses;

I.E.9.c.v The analytical techniques or methods used; and

I.E.9.c.vi The results of such analyses.

## I.E.10 Reporting Planned Changes

alterations or additions to the Permitted facility. [MHWMR 270.30(1)(1)] The Permittee shall give notice to the Director, as soon as possible, of any planned physical

# I.E.11 Reporting Anticipated Noncompliance

permitted facility or activity which may result in noncompliance with permit requirements [MHWMR 270.30(1)(2)] The Permittee shall give advance notice to the Director of any planned changes in the

### I.E.12 <u>Transfer of Permits</u>

264.12(c)] requirements of MHWMR Parts 264 and 270 and this Permit. [MHWMR 270.30(1)(3), operating life, the Permittee shall notify the new owner or operator in writing of the MHWMR 270.40. Before transferring ownership or operation of the facility during its Director may require modification or revocation and reissuance of the Permit pursuant to This Permit is not transferable to any person, except after notice to the Director.

### I.E.13 Compliance Schedules

requirements contained in any compliance schedule of this permit shall be submitted no Reports of compliance or noncompliance with, or any progress reports on, interim and final

later than 14 days following each schedule date

## I.E.14 Twenty-Four Hour Reporting

- I.E.14.a circumstances. The report shall include the following: The Permittee shall report to the Director any noncompliance which may orally within 24 hours from the time the Permittee becomes aware of the endanger health or the environment. Any such information shall be reported
- I.E.14.a.i cause an endangerment to public drinking water supplies. Information concerning release of any hazardous waste that may
- I.E.14.a.ii outside the facility. facility which could threaten the environment or human health of a fire or explosion from the hazardous waste management Any information of a release or discharge of hazardous waste, or
- I.E.14.b The description of the occurrence and its cause shall include:
- I.E.14.b.i Name, address, and telephone number of the owner or operator;
- I.E.14.b.ii Name, address, and telephone number of the facility;
- I.E.14.b.iii Date, time, and type of incident;
- I.E.14.b.iv Name and quantity of materials involved;
- I.E.14.b.v The extent of injuries, if any;
- I.E.14.b.vi and human health outside the facility, where this is applicable; An assessment of actual or potential hazards to the environment
- I.E.14.b.vii resulted from the incident. Estimated quantity and disposition of recovered material that
- I.E.14.c noncompliance has been corrected; and, if not, the anticipated time it is of noncompliance shall contain a description of the noncompliance and its cause; the period(s) A written submission shall also be provided within five days of the time the Permittee becomes aware of the circumstances. The written submission (including exact dates and times); whether the

expected to continue; and steps taken or planned to reduce, eliminate, and days. [MHWMR 270.30(1)(6)] five-day written notice requirement in favor of a written report within 15 prevent recurrence of the noncompliance. The Director may waive the

### I.E.15 Other Noncompliance

[MHWMR 270.30(1)(10)] submitted. be reported above, Permit Conditions I.E.10- I.E.15., at the time monitoring reports are The Permittee shall report all other instances of noncompliance not otherwise required to The reports shall contain the information listed in Permit Condition I.E.14

### I.E.16 Other Information

report to the Director, the Permittee shall promptly submit such facts or information. Permit application, or submitted incorrect information in a Permit application or in any [MHWMR 270.30(1)(11)] Whenever the Permittee becomes aware that it failed to submit any relevant facts in the

## I.F. SIGNATORY REQUIREMENT

270.30(k). authorized representative, shall be signed and certified in accordance with MHWMR 270.11 and All applications, reports, or information submitted to or requested by the Director, his designee, or

# I.G. REPORTS, NOTIFICATIONS, AND SUBMISSIONS TO THE DIRECTOR

to the Director should be sent by certified mail or given to: All reports, notifications, or other submissions which are required by this Permit to be sent or given

Environmental Permits Division, Chief Mississippi Office of Pollution Control P. O. Box 10385
Jackson, Mississippi 39289-0385

# I.H. CONFIDENTIAL INFORMATION

to be submitted by this Permit. In accordance with MHWMR 270.12, the Permittee may claim confidential any information required

### II. DOCUMENTS TO BE MAINTAINED AT THE FACILITY

revisions and modifications to these documents: independent, registered professional engineer, the following documents and all amendments, The Permittee shall maintain at the facility, until closure is completed and certified by an

- Waste Analysis Plan, as required by MHWMR 264.13 and this Permit.
- **I.I.2** Inspection schedules, as required by MHWMR 264.15(b)(2) and this Permit.
- I.I.3 Personnel training documents and records, as required by MHWMR 264.16(d) and this Permit.
- I.I.4 Contingency Plan, as required by MHWMR 264.53(a) and this Permit.
- **I.I.5** Operating record, as required by MHWMR 264.73 and this Permit.
- 9.I.I Closure Plan, as required by MHWMR 264.112(a) and this Permit.
- I.I.7 Post-Closure Plan, as required by MHWMR 264.118(a) and this Permit.
- **I.I.8** appropriate, as required by MHWMR 264.142(d) and 264.144(d). Annually-adjusted cost estimate for facility closure and post-closure
- I.I.9 All other documents required by Permit Condition I.E.9

# MODULE II - GENERAL FACILITY CONDITIONS

# II.A. DESIGN AND OPERATION OF FACILITY

soil, or surface water which could threaten human health or the environment, as required by explosion, or any unplanned, sudden or non-sudden release of hazardous waste constituents to air, MHWMR 264.31. The Permittee shall construct, maintain and operate the facility to minimize the possibility of a fire,

#### II.B. SECURITY

The Permittee shall comply with the security provisions of MHWMR 264.14(b)(2) and (c) and the Post-Closure Plan, Permit Attachment I-1.2f

# II.C. GENERAL INSPECTION REQUIREMENTS

264.15(d). as required by MHWMR 264.15(c). Records of inspection shall be kept, as required by MHWMR I-1.2b. The Permittee shall follow the inspection schedule set out in Post Closure Plan, Permit Attachment The Permittee shall remedy any deterioration or malfunction discovered by an inspection,

## II.D. PERSONNEL TRAINING

training documents and records, as required by MHWMR 264.16(d) and (e). program shall follow the attached outline, Permit Attachment H. The Permittee shall maintain The Permittee shall conduct personnel training, as required by MHWMR 264.16. This training

## II.E. LOCATION STANDARDS

of contaminated soil would not cause an adverse effect on human health or the environment at the demonstrated to the satisfaction of the Director that, should a washout occur, the remaining levels site or downstream. The Permittee's facility does lie in the 100 year flood plain. However, the Permittee has

Should a washout occur during the post-closure period, such a release will as required by Permit Condition. constitute a release as defined in Permit Condition I.D.13 and must be reported

# II.F. RECORD KEEPING AND REPORTING

In addition to the record keeping and reporting requirements specified elsewhere in this Permit, the Permittee shall do the following:

### II.F.1 Operating Record

MHWMR 264.73. The Permittee shall maintain a written operating record at the facility, in accordance with

### II.F.2 Annual Report

The Permittee shall comply with the biennial reporting requirements of MHWMR 264.S1.

# II.G. GENERAL POST-CLOSURE REQUIREMENTS

## II.G.1 Post-Closure Care Period

in accordance with MHWMR 264.117 and the Post-Closure Plan, Permit Attachment I. of closure of the unit and continue for 30 years after that date. Post-closure care shall be The Permittee shall begin post-closure care for the surface impoundment after completion

### II.G.2 Post-Closure Security

accordance with the Post-Closure Plan, Permit Attachment I and MHWMR 264.117(b). The Permittee shall maintain security at the facility during the post-closure care period, in

## II.G.3 Amendment to Post-Closure Plan

264.118(d), whenever necessary. The Permittee shall amend the Post-Closure Plan in accordance with MHWMR

### II.G.4 Post-Closure Notices

- II.G.4.a No later than 60 days after certification of closure of each hazardous waste accordance with MHWMR 264.119(a). quantity of hazardous waste disposed within each cell or disposal unit, in disposal unit, the Permittee shall submit records of the type, location, and
- II.G.4.b disposal unit and the last hazardous waste disposal unit, the Permittee shall Within 60 days of certification of closure of the first hazardous waste

#### do the following:

II.G.4.b.i accordance with MHWMR 264.119(b)(1). Record a notation on the deed to the facility property, in

II.G.4.b.ii MHWMR-264.119(b)(2), has been recorded. Submit a certification that a notation, in accordance with

II.G.4.c or contaminated soils, in accordance with MHWMR 264.119(c). post-closure removal of hazardous wastes, hazardous waste residues, liners, The Permittee shall request and obtain a Permit modification prior to

# II.G.5 Certification of Completion of Post-Closure Care

with the specifications in the Post-Closure Plan, as required by MHWMR 264.120. The Permittee shall certify that the post-closure care period was performed in accordance

### II.H. COST ESTIMATE FOR FACILITY POST-CLOSURE

- II.H.1 The Permittee's most recent post-closure cost estimate, prepared in accordance with MHWMR 264.144, as specified in Permit Attachment I.6, Table I-1.
- II.H.2 change in the facility's Post-Closure Plan, as required by MHWMR 264.144(c). The Permittee must revise the post-closure cost estimate whenever there is a
- II.H.3 The Permittee must keep at the facility the latest post-closure cost estimate as required by MHWMR 264.144(d).

## II.I. FINANCIAL ASSURANCE FOR FACILITY POST-CLOSURE

amount of the cost estimates required by Permit Condition II.H. Changes in financial assurance documentation of financial assurance, as required by MHWMR 264.151 or 264.149, in at least the mechanisms must be approved by the Director pursuant to 264.145 or 264.149. The Permittee shall demonstrate continuous compliance with MHWMR 264.145, by providing

### IJ. INSTITUTIONS INCAPACITY OF OWNERS OR OPERATORS, GUARANTORS, OR FINANCIAL

The Permittee shall comply with MHWMR 264.148, whenever necessary.



## III.A. MODULE HIGHLIGHTS

46.0, 31.0, 60.5, and 87.2 feet deep, respectively. The location of the wells are shown in Attachment Monitoring wells R-7, R-8, R-8B, R-9, R-9C, and R-9D are down-gradient wells and are 31.0, 31.0, the background wells. Monitoring well R-1R is 29.5 feet deep and R-10 is 27.0 feet deep. gradient or background wells and six down-gradient wells. Monitoring wells R-1R and R-10- are preserving process. The groundwater detection monitoring system consists of eight wells, two upthe closed surface storage impoundment that was used in the treatment of wastewater from the wood E, figure-E-5. The Permittee is required by this module to maintain a groundwater detection monitoring system for

Indicator parameters to be measured include pH, temperature, and conductivity.

## III.B. WELL LOCATION, INSTALLATION AND CONSTRUCTION

[MHWMR 264.97] The Permittee shall install and maintain a ground-water monitoring system as specified below:

- III.B.1 specified on the map in Permit Attachment E, figure-E-5. and in conformance The Permittee shall maintain ground-water monitoring wells at the locations with the following list:
- III.B.1.a Monitoring well R-1R and R-10 shall be maintained as a background monitoring wells
- III.B.1.b Monitoring wells R-7, R-8, R-8B, R-9, R-9C, and R-9D shall be maintained IV.B. as detection-monitoring wells for the unit identified in Permit Condition
- III.B.2 The Permittee shall maintain the monitoring wells identified in Permit Condition Permit Attachment E-5. III.B.1, in accordance with the detailed plans and specifications presented in
- III.B.3plugging and abandonment methods and certification shall be submitted to the in accordance with the Mississippi Office of Land and Water regulations. All wells deleted from the monitoring program shall be plugged and abandoned Director within seven (7) days from the date the wells are removed from the

### monitoring program.

## III.C. INDICATOR PARAMETERS AND MONITORING CONSTITUENTS

III.C.1 The Permittee shall monitor R-1R, R-10, R-7, R-8, R-8B, R-9, R-9C, and R-9D as described in Permit Condition <u>III.B</u>, for the following parameters and constituents: [MHWMR 264.98(a)]

Parameter or Constituent	Established Background Concentrations
pentachlorophenol	MDL, SW-846 Method 8270
naphthalene	MDL, SW-846 Method 8270
fluoranthene	MDL, SW-846 Method 8270
acenaphthylene	MDL, SW-846 Method 8270
2,4-dinitrophenol	MDL, SW-846 Method 8270
phenol	MDL, SW-846 Method 8270
2-chlorophenol	MDL, SW-846 Method 8270
p-chloro-m-cresol	MDL, SW-846 Method 8270
2,4-dimethylphenyl	MDL, SW-846 Method 8270
trichlorophenols	MDL, SW-846 Method 8270
tetrachlorophenols	MDL, SW-846 Method 8270
creosote	MDL, SW-846 Method 8270
chrysene	MDL, SW-846 Method 8270
benzo (b) fluoranthene	MDL, SW-846 Method 8270
benzo (a) pyrene	MDL, SW-846 Method 8270
indeno (1,2,3-cd) pyrene	MDL, SW-846 Method 8270
benz (a) anthracene	MDL, SW-846 Method 8270
dibenz (a) anthracene	MDL, SW-846 Method 8270

III.C.2 For those parameters and constituents in Permit Condition III.C.1. for which no

shall establish background values in accordance with the following procedures background values are established at the time the Permit is issued, the Permittee [MHWMR 264.97(g)(1)]

- III.C.2.a Background ground-water quality for a monitoring parameter or constituent 264.97(g)(1)] upgradient from the waste management unit for one (1) year. [MHWMR shall be based on data from quarterly sampling of the well [or wells]
- III.C.2.b The Permittee shall take a minimum of one sample from each well and a time the system is sampled. [MHWMR 264.97(g)(4)] background ground-water quality for each parameter and/or constituent each minimum of four samples from the entire system used, to determine

# III.D. SAMPLING AND ANALYSIS PROCEDURES

264.97(d) and (e)] The Permittee shall use the following techniques and procedures when obtaining and analyzing samples from the ground-water monitoring wells described in Permit Condition III.B: [MHWMR]

- III.D.1 Samples shall be collected using the techniques described in the Groundwater Sampling and Analysis Plan, Permit Appendix E-5
- III.D.2 Samples shall be preserved and shipped, in accordance with the procedures specified in the Groundwater Sampling and Analysis Plan, Permit Appendix E-5.
- III.D.3 Samples shall be analyzed in accordance with the procedures specified in the Groundwater Sampling and Analysis Plan, Permit Appendix E-5
- III.D.4 Samples shall be tracked and controlled using the chain-of-custody procedures specified in the Groundwater Sampling and Analysis Plan, Permit Appendix E-5.

### III.E. **ELEVATION OF THE GROUND-WATER SURFACE**

- III.E.1 The Permittee shall determine the elevation of the ground-water surface at each <u>III.G.2</u>. [MHWMR 264.97(f)] well each time the ground-water is sampled, in accordance with Permit Condition
- III.E.2 The Permittee shall record the surveyed elevation of the monitoring well(s) when installed (with as-built drawings).



# III.F. SIGNIFICANT EVIDENCE OF A RELEASE

monitoring results in accordance with Permit Condition III.G., the Permittee shall use the following procedures: Historical sampling results at the facility have shown the background levels for the constituents listed in Permit Condition III.C.1 to be below method detection limits. When evaluating the

- III.F.1 significant evidence of a release (subject to QA/QC checks and confirmation by detected in background samples, the following conditions will constitute For compounds that are not naturally occurring and/or those compounds not
- III.F.1.a A compound is detected above a PQL in a down-gradient well
- III.F.1.bMore than one compound is detected in a well above the MDL but below the PQL in a single sampling event.
- III.F.1.cOne compound is detected in a well above the MDL but below the PQL twice or more in a twelve-month period.
- III.F.1.d available data, including graphical and spatial analyses, must be documented or as otherwise required by permit condition, regulation or law. by the facility owner/operator either at the next scheduled monitoring event trends or indications that a release may have occurred. Such a review of PQL, either in a single well or in multiple wells, and a review of data shows A compound (or compounds) is detected above the MDL but below the
- Ш.F.2 sample. If additional or different compounds are found in a retest, further sample collected during the retest detects the compounds found in the original subsequent samples. Confirmation of a detect will occur if analysis of either to obtain an independent sample with respect to the interval of time between events (i.e., after re-purging the wells prior to sampling). It will not be necessary a release identified under Permit Condition III.F.1. The Permittee may choose to retest when there has been significant evidence of sampling will be necessary to determine if a release of the additional constituents analyzing two additional samples. Such samples must be collected in separate A retest shall consist of

### III.G. MONITORING PROGRAM AND DATA EVALUATION

The Permittee shall collect, preserve, and analyze samples pursuant to Permit

#### Condition III.D

- III.G.2 closure period (and post-closure care period for land disposal units which do not the compliance point during the active life of a regulated unit, including the The Permittee shall determine ground-water quality at each monitoring well at determination of statistically significant increases (i.e., means and variances). ground-water quality at each monitoring well in a form necessary for the clean close). [MHWMR 264.97(h)] [MHWMR 264.98(d)] The Permittee shall express the
- III.G.3 uppermost aquifer at least annually. [MHWMR 264.98(e)] The Permittee shall determine the ground-water flow rate and direction in the
- III.G.4 The Permittee shall determine whether there is significant evidence of a release Permit Condition III.F. for each parameter identified in Permit Condition III.C.1. each time ground-water quality is determined at the compliance point using the procedures specified in
- III.G.5 The Permittee shall perform the evaluations described in Permit Condition 264.98(g)(2)] III.G.4. within ninety (90) days after completion of sampling. [MHWMR

# III.H. RECORD KEEPING AND REPORTING

- IIII.H.1264.73(b)(6)] accordance with Permit Condition III.G. in the operating record. [MHWMR The Permittee shall enter all monitoring, testing, and analytical data obtained in
- III.H.2Permit Condition <u>III.G.4</u>., in accordance with the following schedule: The Permittee shall submit the analytical results required by Permit Conditions  $\underline{\mathrm{III.G.2}}$ , and  $\underline{\mathrm{III.G.3}}$ , and the results of the initial statistical analyses required by

Samples to be Collected During the Preceding Results Due to the Executive Director Months of	Results Due to the Executive Director
January - June	July 15
July - December	January 15

III.H.3 If the Permittee determines, pursuant to Permit Condition III.G., there is a statistically significant increase above the background values for the indicator

parameters specified in Permit Condition III.C.1., the Permittee shall:

- III.H.3.a Notify the Agency in writing within seven days. [MHWMR 264.98(h)(1)]
- III.H.3.b Immediately sample the ground-water in all wells and determine the concentration of all constituents identified in Appendix IX of MHWMR 261. [MHWMR 264.98(h)(2)]
- III.H.3.c the ground-water. [MHWMR 264.98(h)(3)] Establish the background values for each Appendix IX constituent found in
- III.H.3.d Within 90 days, submit to the Agency an application for a permit 264.98(h)(4)] The application must include the following information: modification to establish a compliance monitoring program. [MHWMR
- III.H.3.d.i the compliance point. [MHWMR 264.98(4)(i)] constituent found in the ground-water at each monitoring well at An identification of the concentration of each Appendix IX
- III.H.3.d.ii 264.98(h)(4)(ii)] the facility necessary to meet the requirements of compliance monitoring as described in MHWMR 264.99. Any proposed changes to the ground-water monitoring system at MHWMR
- III.H.3.d.iii monitoring as described in MHWMR 264.99. the facility necessary to meet the requirements of compliance analysis procedures, or methods or statistical procedures used at 264.98(h)(4)(iii)] Any proposed changes to the monitoring frequency, sampling and MHWMR
- III.H.3.d.iv alternate concentration limit for a hazardous constituent . For each hazardous constituent found at the compliance point, a proposed concentration limit, or a notice of intent to seek an [MHWMR 264.98(h)(4)(iv)]
- III.H.3.e Submit a corrective action feasibility plan to the Agency within 180 days. [MHWMR 264.98(h)(5)]
- III.H.4If the Permittee determines, pursuant to Permit Condition III.G, there is a specified in Permit Condition III.C.1., a demonstration may be made that a statistically significant increase above the background values for the parameters

from error in sampling, analysis, or evaluation. In such cases, the Permittee shall: source other than a regulated unit caused the increase or that the increase resulted

- III.H.4.a Notify the Director in writing within seven (7) days of the intention to make a demonstration. [MHWMR 264.98(i)(1)]
- ш.н.4.ь resulted from error in sampling, analysis, or evaluation. source other than a regulated unit caused the increase, or that the increase 264.98(i)(2)] Within 90 days, submit a report to the Director which demonstrates that a MHWMR
- III.H.4.c program at the facility. [MHWMR 264.98(i)(3)] modification to make any appropriate changes to the detection monitoring Within 90 days, submit to the Director an application for a permit
- III.H.4.d at the facility. [MHWMR 264.98(i)(4)] Continue to monitor in accordance with the detection monitoring program

# III.I. REQUEST FOR PERMIT MODIFICATION

satisfy the regulations. [MHWMR 264.98(j)] application for a permit modification to make any appropriate changes to the program which will requirements of the regulations, the Permittee must, within 90 days of the determination, submit an If the Permittee or the Director determines the detection monitoring program no longer satisfies the

## MODULE IV -POST-CLOSURE CARE

## IV.A. MODULE HIGHLIGHTS

detection monitoring that the facility is required to conduct during the post-closure care period. submitted to the MDEQ in January 1990. Module III of this permit covers the requirements for The closure construction documentation and closure certification for the surface impoundment were system. Closure activities for the surface impoundment were completed by the end of October 1989. of accumulated rainwater, placement of clean soil fill, construction of a soil-bentonite cap and cover Closure activities for the surface impoundment were initiated in July 1989 which included removal removed from the surface impoundment and shipped to a permitted off-site disposal facility. hazardous waste listing. In the summer of 1988, all sludge and visible contaminated soils were process. The sediment and sludge that accumulated in the impoundment met the K001 RCRA The closed surface impoundment was used in the treatment of wastewater from the wood preserving This module covers the post-closure care activities for the Permittee's closed surface impoundment.

## IV.B. UNIT IDENTIFICATION

subject to the terms and conditions of this permit, and as described as follows: The Permittee shall provide post-closure care for the following hazardous waste management units,

Type of Waste Unit	Description of Wastes Contained	Hazardous Waste No.
Waste Storage Impoundment	Bottom sediment sludge from the treatment of wastewater from wood preserving processes that use creosote and/or pentachlorophenol	K001

## IV.C. POST-CLOSURE PROCEDURES AND USE OF PROPERTY

IV.C.1 by MDEQ if the Director finds this is necessary to protect human health and the demonstration approved by MDEQ that the facility is secure, or may be extended that the 30-year post-closure care period may be shortened upon application and management unit listed in Permit Condition IV.B. above, to begin after The Permittee shall conduct post-closure care for each hazardous waste completion of closure of the unit and continue for 30 years after that date, except

- IV.C.2 The Permittee shall maintain and monitor the ground-water monitoring system F during the post-closure period. [MHWMR 264.117(a)(1)] and comply with all other applicable requirements of MHWMR Part 264 Subpart
- IV.C.3 follows: [MHWMR 264.228(b)(1) and (3)] The Permittee shall comply with the requirements for surface impoundments as
- IV.C.3.a Maintain the integrity and effectiveness of the final cover, including making erosion, and other events; and repairs to the cap, as necessary, to correct the effects of settling, subsidence,
- IV.C.3.b Prevent run-on and run-off from eroding or otherwise damaging the final
- IV.C.4 The Permittee shall comply with all security requirements, as specified in Permit Attachment I.2f. [MHWMR 264.117(b)]
- IV.C.5 during the post-closure care period. [MHWMR 264.117(c)] of the containment system, or the function of the facility's monitoring systems IV.B. which will disturb the integrity of the final cover, liners, any components The Permittee shall not allow any use of the units designated in Permit Condition
- IV.C.6 post-closure care activities must be conducted in accordance with the provisions The Permittee shall implement the Post-Closure Plan, Permit Attachment I.2 All of the Post-Closure Plan. [MHWMR 264.117(d) and 264.118(b)]

### IV.D. <u>INSPECTIONS</u>

the Inspection Schedule contained the Post Closure Plan, Permit Attachment I.2b. 264.117(a)(1)(ii)] The Permittee shall inspect the components, structures, and equipment at the site in accordance with [MHWMR

# IV.E. NOTICES AND CERTIFICATION

IV.E.1 or other disposal unit of the facility. For hazardous wastes disposed of before the type, location, and quantity of hazardous wastes disposed of within each cell the authority with jurisdiction over local land use, and to the Director a record of waste disposal unit, the Permittee shall submit to the local zoning authority, or No later than 60 days after certification of closure of each permitted hazardous

the hazardous wastes to the best of his knowledge and in accordance with any records he has kept. [MHWMR 264.119(a)] January 12, 1981, the Permittee shall identify the type, location, and quantity of

- IV.E.2 subsequent owner or operator of the land shall demonstrate that the removal of applicable requirements in MHWMR Parts 124 and 270. The Permittee or any request a modification to this post closure permit in accordance with the If the Permittee or any subsequent owner or operator of the land upon which the 264.119(c)] hazardous waste residues, the liner, if any; or contaminated soils, then he shall hazardous wastes will satisfy the criteria of MHWMR 264.117(c). [MHWMR hazardous waste disposal unit is located, wishes to remove hazardous wastes and
- 264.145(1). [MHWMR 264.120] financial assurance requirements for post-closure to the Director upon request until the Director releases the Permittee from the the independent, registered professional engineer's certification must be furnished and an independent, registered professional engineer. Documentation supporting approved Post-Closure Plan. The certification must be signed by the Permittee waste disposal unit was performed in accordance with the specifications in the by registered mail, a certification that the post-closure care for the hazardous for each hazardous waste disposal unit, the Permittee shall submit to the Director, No later than 60 days after completion of the established post-closure care period care under MHWMR

## IV.F. FINANCIAL ASSURANCE

- IV.F.1 The Permittee shall maintain financial assurance during the post-closure period and comply with all applicable requirements of MHWMR Part 264 Subpart H. [MHWMR 264.145]
- IV.F.2 for the Director to approve a release of funds. [MHWMR 264.145(a)(10)] assurance mechanism exceeds the remaining cost of post-closure care, in order The Permittee shall demonstrate to the Director that the value of the financial
- IV.F.3reimbursement for post-closure care. [MHWMR 264.145(a)(11)] The Permittee shall submit itemized bills to the Director when requesting

# IV.G. POST-CLOSURE PERMIT MODIFICATIONS

Plan. This request must be in accordance with applicable requirements of MHWMR Parts 124 and The Permittee must request a permit modification to authorize a change in the approved Post-Closure

60 days prior to the proposed change in facility design or operation, or no later than 60 days after Post-Closure Plan. The Permittee must submit a written request for a permit modification at least or facility design affect the approved Post-Closure Plan, there is a change in the expected year of Director. The Permittee shall request a permit modification whenever changes in operating plans an unexpected event has occurred which has affected the Post-Closure Plan. [MHWMR 264.118(d)] final closure, or other events occur during the active life of the facility that affect the approved 270, and must include a copy of the proposed amended Post-Closure Plan for approval by the

# MODULE V -CORRECTIVE ACTION

### V.A. APPLICABILITY

The Conditions of this Part apply to:

- V.A.1 identified in Attachment M-1, which require a RCRA Facility Investigation The solid waste management units (SWMUs) and areas of concern (AOCs) (RFI), some of which may or may not require Interim Measures (IM);
- **V.A.2** investigation under this permit at this time; The SWMUs and AOCs identified in AttachmentM-2, which require no further
- V.A.3 confirmatory sampling; SWMUs and AOCs identified in Attachment M-3, which require
- V.A.4 which suggests the presence of a new release of hazardous waste or hazardous release of hazardous constituents to the environment, or (3) receives information SWMU or AOC, (2) visually observes evidence of a previously unidentified to the date on which the Permittee either, (1) visually observes evidence of a new in this Part of the permit, the terms "discover", "discovery", or "discovered" refer monitoring, field investigations, environmental audits, or other means; As used Any additional SWMUs or AOCs discovered during the course of groundwater constituents to the environment;
- **V.A.5** responsibility for completion of such off-site corrective action will be required such releases will be determined on a case-by-case basis. Assurances of financiai the facility boundary where off-site access is denied. On-site measures to address not relieved of all responsibility to clean up a release that has migrated beyond to obtain the necessary permission to undertake such actions. The Permittee is Permittee's best efforts, as determined by the Director, the Permittee was unable Permittee demonstrates to the satisfaction of the Director that, despite the where necessary to protect human health and the environment, unless the Contamination which has migrated beyond the facility boundary, if applicable. The Permittee shall implement corrective actions beyond the facility boundary

# V.B. NOTIFICATION AND ASSESSMENT REQUIREMENTS FOR NEWLY IDENTIFIED SWMUs AND AOCs

- investigation of an AOC is required, the permit will be modified in accordance as to the status of the suspected AOC. If the Director determines that further affected, hazardous constituents released, magnitude of release, etc.). and all available information pertaining to the nature of the release (e.g., media days of discovery, of any suspected new AOC as discovered under Condition with MHWMR 270.41. (i.e., Confirmatory Sampling) in order to determine the status of the suspected Director may conduct, or require the Permittee to conduct, further assessment <u>V.A.4</u>. The notification shall include, at a minimum, the location of the AOC The Permittee shall notify the Director in writing, within fifteen (15) calendar AOC. The Director will notify the Permittee in writing of the final determination
- **V.B.2** days of discovery, of any additional SWMU as discovered under Condition The Permittee shall notify the Director in writing, within fifteen (15) calendar
- **V.B.3** calendar days of notification, a SWMU Assessment Report (SAR) for each The Permittee shall prepare and submit to the Director, within ninety (90) the following information: SWMU identified under Condition V.B.2. At a minimum, the SAR shall provide
- V.B.3.a required under MHWMR 270.14(b)(19). Location of unit(s) on a topographic map of appropriate scale such as
- V.B.3.b Designation of type and function of unit(s).
- V.B.3.c General dimensions, capacities and structural description of unit(s) (supply any available plans/drawings).
- V.B.3.d Dates that the unit(s) was operated
- V.B.3.e Specification of all wastes that have been managed at/in the unit(s) to the extent available. Include any available data on hazardous constituents in the
- V.B.3.f analyses, air, and/or surface water data). hazardous constituents from such unit(s) (to include groundwater data, soil All available information pertaining to any release of hazardous waste or

**V.B.4** such investigations are needed, the Permittee shall be required to prepare a plan investigations at the SWMUs covered in the SAR. If the Director determines that Based on the results of the SAR, the Director shall determine the need for further for such investigations as outlined in Condition <u>V.E.1.b</u> or <u>V.D.3</u>.

### V.C. SWMUs or AOCs NOTIFICATION REQUIREMENTS FOR NEWLY DISCOVERED RELEASES FROM

- V.C.1 under Condition V.B.4 was not required. SWMU or AOCs identified in Condition <u>V.A.4</u> for which further investigation discovered releases may be from SWMUs or AOCs identified in Condition?. or other means, within fifteen (15) calendar days of discovery. course of groundwater monitoring, field investigations, environmental audits, or release(s) of hazardous waste or hazardous constituents discovered during the The Permittee shall notify the Director in writing of any newly discovered Such newly
- V.C.2 needed, the Permittee shall be required to prepare a plan for such investigations If the Director determines that further investigation of the SWMUs or AOCs is as outlined in Condition <u>V.E.1.b.</u>

# V.D. CONFIRMATORY SAMPLING (CS)

- requirement, previously existing data may be submitted with the work plan for requirements and affected media. In order to partly or wholly satisfy the CS whether or not a release has occurred. It should also address applicable implementation and completion of specific actions necessary to determine that a CS Work Plan is required. The CS Work Plan shall include schedules of be submitted within forty-five (45) calendar days of notification by the Director Upon notification by the Director, the Permittees shall prepare and submit a V.B.1. or newly identified SWMUs per Condition V.B.4. The work plan shall Confirmatory Sampling (CS) Work Plan for suspected AOCs per Condition the Director's consideration.
- Permittees of the conditions. the revisions, or (3) conditionally approve the CS Work Plan and notify the revised CS Work Plan, (2) revise the CS Work Plan and notify the Permittees of of the CS Work Plan's deficiencies and specify a due date for submission of a the CS Work Plan, the Director shall either (1) notify the Permittees in writing schedule in the letter approving the CS Work Plan. If the Director disapproves implementation. The Director shall specify the start date of the CS Work Plan The CS Work Plan must be approved by the Director, in writing, prior to

- V.D.3 The Permittees shall implement the confirmatory sampling in accordance with the approved CS Work Plan.
- V.D.4 one submittal. of the RFI Report, then the CS Report and the RFI Report may be combined into the above determination. If submittal of the CS Report coincides with submittal data, including raw data, and a summary and analysis of the data, that supports identifying all SWMUs or AOCs that have released hazardous waste or schedule in the approved CS Work Plan, a Confirmatory Sampling (CS) Report The Permittees shall prepare and submit to the Director in accordance with the hazardous constituents into the environment. The CS Report shall include all
- V.D.5 V.E.1.b. required to prepare a plan for such investigations as outlined in Condition further investigations at the SWMUs or AOCs covered in the CS Report. If the Based on the results of the CS Report, the Director shall determine the need for Director determines that such investigations are needed, the Permittees shall be The Director will notify the Permittees of any no further action

# V.E. RCRA FACILITY INVESTIGATION (RFI)

### V.E.1 RFI Work Plan(s)

- V.E.1.a are applicable for this unit. submitted to the Director for review, then Conditions V.E.3.d and beyond RFI requirements for this unit. If the RFI Report for a unit has already been for a unit, then Condition V.E.2 and beyond govern implementation of the for this unit. If an RFI Work Plan has already been submitted and approved Requirement. If an RFI Work Plan has already been submitted, then has not been submitted for a unit, then Condition V.E.1.b initiates the RFI Because a RCRA Facility Investigation (RFI) has already been implemented Condition V.E.1.d through Condition V.E.3.d control the RFI requirements listed in Condition V.E shall be interpreted as follows: If an RFI Work Plan for many of the units identified in Condition V.A.1, the RFI requirements
- V.E.1.b of Condition V.E.1.c. V.D.5. The RFI Work Plan(s) shall be developed to meet the requirements units identified under Condition V.B.4., Condition V.C.2., or Condition calendar days of notification by the Director, an RFI Work Plan for those The Permittees shall prepare and submit to the Director, within ninety (90)

- V.E.1.c omissions or deviations are subject to the approval of the Director. In necessary to ensure compliance with MHWMR 264.101(c). addition, the scope of the RFI Work Plan(s) shall include all investigations deviations from the minimum requirements of Attachment N. Permittees shall provide sufficient written justification for any omissions or or pathway from the RFI(s) are subject to the approval of the Director. The air) is not included in the RFI Work Plan(s). Such deletions of a unit, media associated with a unit (groundwater, surface water, soil, subsurface gas, or probable or has already been characterized if a unit or a media/pathway sufficient justification and associated documentation that a release is not soil, surface water, and groundwater. contamination and the potential pathways of contaminant releases to the air, of specific actions necessary to determine the nature and extent of RFI Work Plan(s) shall include schedules of implementation and completion The RFI Work Plan(s) shall meet the requirements of Attachment N. The The Permittees must provide
- V.E.1.d the RFI Work Plan and notify the Permittees of the conditions. schedule within the approved RFI Work Plan, or (3) conditionally approve Plan and notify the Permittees of the revisions and the start date of the date for submission of a revised RFI Work Plan, (2) revise the RFI Work Permittees in writing of the RFI Work Plan's deficiencies and specify a due disapproves the RFI Work Plan(s), the Director shall either (1) notify the Plan schedule in the letter approving the RFI Work Plan(s). If the Director to implementation. The Director shall specify the start date of the RFI Work The RFI Work Plan(s) must be approved by the Director, in writing, prior

### V.E.2 RFI Implementation

activity. The Permittee shall implement the RFI(s) in accordance with the approved RFI Work Plan(s) and Attachment N. The Permittee shall notify the Director within twenty (20) days prior to any sampling

### V.E.3 RFI Reports

V.E.3.a days of receipt of the Director's final comments on the Draft RFI Report. accordance with the schedule in the approved RFI Work Plan(s). The Final RFI Report(s) shall be submitted to the Director within thirty (30) calendar Draft RFI Report(s) shall be submitted to the Director for review in pursuant to the RFI Work Plan(s) submitted under Condition V.E.1. The RCRA Facility Investigation Report(s) for the investigations conducted The Permittees shall prepare and submit to the Director Draft and Final

the environment, and to support a Corrective Measures Study, if necessary nature and extent of contamination, potential threat to human health and/or assurance procedures have been followed) and quantity to describe the ensure that the investigation data are sufficient in quality (e.g., quality in accordance with Condition V.E.1.d. The objective of this task shall be to initial findings. Approval of the final phase work plan shall be carried out a work plan for the final phase investigatory actions required based on the is a summary of the initial phase investigatory work, the report shall include relation to background levels indicative of the area. If the Draft RFI Report shall also describe the extent of contamination (qualitative/quantitative) in in all media, and describe actual or potential receptors. The RFI Report(s) sources and migration pathways, identify all hazardous constituents present describe the type and extent of contamination at the facility, including investigations of SWMUs and AOCs and their results. The summary shall The RFI Report(s) shall include an analysis and summary of all required

- V.E.3.b in Attachment Q of this permit. reported in Condition V.E.3.a. Action levels shall be calculated as specified and Final RFI Report(s), action levels for each of the hazardous constituents The Permittee shall prepare and submit to the Director, along with the Draft
- V.E.3.c required by the Director shall be prepared and submitted in accordance with Permittee of any no further action decision. Any further investigative action requirements of V.G and MHWMR 264.101. The Director will notify the notified, of the need for a Corrective Measures Study to meet the this moment of the investigation, inform the Permittee, if not already the need for further investigative action if necessary and, if appropriate at Condition V.E.1.d. described in Condition V.E.3.b. The Director shall notify the Permittee of The Director will review the RFI Report(s), including the action levels schedule specified by the Director and approved in accordance with

## V.F. INTERIM MEASURES (IM)

### V.F.1 IM Work Plan

V.F.1.a identified in Condition V.A.1. (see Attachment M-1), the IM requirements Because Interim Measures are already underway for the certain SWMUs V.F.1.c. and beyond are applicable. If IM has not been imposed for a unit, Work Plan has not been submitted for a unit, then Conditions V.F.1.b. or listed in Condition V.F. shall be interpreted as follows: If a required IM

submitted and approved for a unit, then Condition V.F.2. and beyond govern already been submitted but is unapproved, then Condition V.F.1.e. and then Condition V.F.1.d. and beyond are applicable. If an IM Work Plan has implementation of the IM requirements for this unit. beyond control the IM for this unit. If an IM Work Plan has already been

- V.F.1.bcalendar days of such notification and shall include the elements listed in prevent the further migration of contaminants thereby limiting current and investigations required under the terms of this permit. implemented. while long-term corrective action remedies are evaluated and, if necessary, future potential for human and environmental exposure to contaminants Director determines is necessary. IM are necessary in order to minimize or Interim Measures (IM) Work Plan for any SWMU or AOC which the Upon notification by the Director, the Permittee shall prepare and submit an Such interim measures may be conducted concurrently with The IM Work Plan shall be submitted within thirty (30)
- V.F.1.c and reporting in accordance with the requirements under Condition  $\overline{V.F.}$ The Permittee may initiate IM by submitting an IM Work Plan for approval
- V.F.1.d plans, or specifications), and schedules for implementation measures objectives, procedures for implementation (including any designs solution at the facility. The IM Work Plan shall include: environment and is consistent with and integrated into any long-term mitigate any current or potential threat(s) to human The IM Work Plan shall ensure that the interim measures are designed to health or the the interim
- V.F.1.e either (1) notify the Permittee in writing of the IM Work Plan's deficiencies of the schedule within the approved IM Work Plan, or (3) conditionally the IM Work Plan and notify the Permittee of the revisions and the start date and specify a due date for submission of a revised IM Work Plan, (2) revise the start date of the IM Work Plan schedule in the letter approving the IM the Director, in writing, prior to implementation. The Director shall specify The IM Work Plan imposed under Condition V.f.1.b must be approved by approve the IM Work Plan and notify the Permittee of the conditions. Work Plan. If the Director disapproves the IM Work Plan, the Director shall

### V.F.2 IM Implementation

V.F.2.a approved IM Work Plan. The Permittee shall implement the interim measures in accordance with the

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- V.F.2.b planned changes, reductions or additions to the IM Work Plan. The Permittee shall give notice to the Director as soon as possible of any
- V.F.2.c270.41 and Condition  $\underline{V.H}$  as a permit modification. Final approval of corrective action required under MHWMR 264.101 which is achieved through interim measures shall be in accordance with MHWMR

### V.F.3 IM Reports

V.F.3.a If the time required for completion of interim measures is greater than one intervals specified in the approved Work Plan. The Progress Reports shall year, the Permittee shall provide the Director with contain the following information at a minimum: progress reports at

V.F.3.a.i A description of the portion of the interim measures completed;

V.F.3.a.ii Summaries of findings;

V.F.3.a.iii reporting period; Summaries of any deviations from the IM Work Plan during the

V.F.3.a.ivSummaries of any problems or potential problems encountered during the reporting period; and

V.F.3.a.v Projected work for the next reporting period.

V.F.3.b following information at a minimum: calendar days of completion of interim measures conducted under Condition The Permittee shall prepare and submit to the Director, within ninety (90) <u>V.F.</u>, an Interim Measures (IM) Report. The IM Report shall contain the

V.F.3.b.i A description of interim measures implemented;

V.F.3.b.ii Summaries of results;

V.F.3.b.iii Summaries of all problems encountered;

V.F.3.b.iv measures; and Summaries of accomplishments and/or effectiveness of interim

V.F.3.b.v accordance with Condition I.E.9 Copies of all relevant laboratory/monitoring data, etc. 듈.

## V.G. CORRECTIVE MEASURES STUDY

## V.G.1 Corrective Measures Study (CMS) Work Plan

- V.G.1.a sufficient investigative details are available to allow concurrent action. performed concurrent with the RFI process if the Director determines that approval from the Director for concurrent RFI/CMS. The CMS may be to meet the requirements of Condition V.G.1.b The Permittee may seek Director that a CMS is required. This CMS Work Plan shall be developed requiring a CMS within ninety (90) calendar days of notification by the The Permittee shall prepare and submit a CMS Work Plan for those units
- V.G.1.b all investigations necessary to ensure compliance with 3005(c)(3), implement corrective actions beyond the facility boundary, as set forth in MHWMR 264.101, 264.552, and 270.32(b)(2). the approval of the Director. The scope of the CMS Work Plan shall include requirements of Attachment O. Such omissions or deviations are subject to written justification for any omissions or deviations from the minimum with the approved CMS Work Plan. The Permittee shall provide sufficient the approval of the Director. The CMS shall be conducted in accordance unit deleted from the CMS Work Plan. Such deletion of a unit is subject to Permittee must provide sufficient justification and/or documentation for any and completion of specific actions necessary to complete a CMS. The minimum. The CMS Work Plan shall include schedules of implementation The CMS Work Plan shall meet the requirements of Attachment O at a Condition V.A.5. The Permittee shall
- V.G.1.c approved CMS Work Plan. Permittee of the conditions. revisions, or (3) conditionally approve the CMS Work Plan and notify the Plan, (2) revise the CMS Work Plan and notify the Permittee of the deficiencies and specify a due date for submittal of a revised CMS Work either (1) notify the Permittee in writing of the CMS Work Plan's Plan. If the Director disapproves the CMS Work Plan, the Director shall The Director shall either approve or disapprove, in writing, the CMS Work This modified CMS Work Plan becomes the

## V.G.2 Corrective Measures Study Implementation

received written approval from the Director for the CMS Work Plan. Pursuant to Permit Condition specified in the CMS Work Plan, no later than fifteen (15) calendar days after the Permittee has The Permittee shall begin to implement the Corrective Measures Study according to the schedules

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# V.G.1.b. the CMS shall be conducted in accordance with the approved CMS Work Plan

### V.G.3 CMS Report

- V.G.3.a necessary to establish and implement the CAMU. The CMS Report shall requires the use of a CAMU, the CMS report shall include all information include an evaluation of each remedial alternative. If a remedial alternative summarize any bench-scale or pilot tests conducted. The CMS Report must Director's final comments on the draft CMS Report. The CMS Report shall the schedule in the approved CMS Work Plan. The final CMS Report shall The Permittee shall prepare and submit to the Director a draft and final CMS Condition V.H. CMS Final Report must contain adequate information to support the present all information gathered under the approved CMS Work Plan. The be submitted to the Director within thirty (30) days of receipt of the Report for the study conducted pursuant to the approved CMS Work Plan. Director's decision on the recommended remedy, described under Permit The draft CMS Report shall be submitted to the Director in accordance with
- V.G.3.b of a revised CMS Final Report. The Director will notify the Permittee of deficiencies in the CMS Final Report and specify a due date for submittal the CMS Final Report, the Director shall notify the Permittee in writing of Director may disapprove the CMS Final Report. If the Director disapproves the information requirements specified under Permit Condition V.G.3.a., the If the Director determines that the CMS Final Report does not fully satisfy any no further action decision.
- V.G.3.c evaluate additional remedies or particular elements of one or more proposed and the CMS Final Report, the Director may require the Permittee to As specified under Permit Condition V.G.3.b., based on preliminary results

### V.H. REMEDY APPROVAL AND PERMIT MODIFICATION

- V.H.1 A remedy shall be selected from the remedial alternatives evaluated in the CMS. environment, as per specific site conditions, existing regulations, and guidance. It will be based at a minimum on protection of human health and the The selected remedy may include any interim measures implemented to date.
- **V.H.2** Pursuant to MHWMR 270.41, a permit modification will be initiated by the Director after recommendation of a remedy under Condition V.H.1.

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necessary, into this permit. modification will serve to incorporate a final remedy, including a CAMU if

V.H.3assurance for completing the approved remedy. modified for remedy selection, the Permittee shall demonstrate financial Within one hundred and twenty (120) calendar days after this Permit has been

## ۷I. MODIFICATION OF THE CORRECTIVE ACTION SCHEDULE OF COMPLIANCE

- VI.1 the Schedule of Compliance (Attachment P). Schedule of Compliance is necessary, the Director may initiate a modification to If at any time the Director determines that modification of the Corrective Action
- V.I.2 to change the Schedule of Compliance. may also request a permit modification in accordance with MHWMR Part 270 accordance with the applicable provisions of MHWMR Part 270. The Permittee Modifications that are initiated and finalized by the Director will be in

## V.J. WORK PLAN AND REPORT REQUIREMENTS

- with the requirements of this Permit and with applicable regulations and to implementation to assure that such work plans and schedules are consistent All work plans and schedules shall be subject to approval by the Director prior schedules as written. the Director. Upon approval the Permittee shall implement all work plans and guidance. The Permittee shall revise all submittals and schedules as specified by
- **V.J.2** All work plans and reports shall be submitted in accordance with the approved the extension exists. Director based on the Permittee's demonstration that sufficient justification for Extensions of the due date for submittals may be granted by the
- required under Condition V.E. no longer satisfy the requirements of MHWMR If the Permittee at any time determines that the SAR information required under within ninety (90) calendar days of such determination. concern, the Permittee shall submit an amended Work Plan(s) to the Director hazardous constituents from solid waste management units and/or areas of 264.101 or this permit for prior or continuing releases of hazardous waste or Condition V.B., the CS Work Plan under Condition V.D., or RFI Work Plan(s)
- At least two (2) copies of all reports and work plans shall be provided by the

Permittees to the Director should be sent by certified mail or given to:

Environmental Permits Division, Chief Mississippi Office of Pollution Control P. O. Box 10385

Jackson, Mississippi 39289-0385

## V.K. <u>APPROVAL/DISAPPROVAL OF SUBMITTALS</u>

V.K.1 submittal that is disapproved, and the basis therefore. Condition V.L. shall apply conditions of this permit. The Director will notify the Permittee in writing of any Permittee, and again disapproved by the Director. have been disapproved by the Director, then revised and resubmitted by the only to submittals that have been disapproved and revised by the Director, or that ("submittals") which require the Director's approval in accordance with the The Director will review the work plans, reports, schedules, and other documents

### V.L. <u>DISPUTE RESOLUTION</u>

by the permit, the following may, at the Permittee's discretion apply: or in part, with the Director's revision of a submittal or disapproval of any revised submittal required Notwithstanding any other provision in this permit, in the event the Permittee disagrees, in whole

- necessary for the Director's determination. permit, the basis for the Permittee's position, and any matters considered Permittee asserts should be adopted as consistent with the requirements of the Such notice shall set forth the specific matters in dispute, the position the of the Director's revision of a submittal or disapproval of a revised submittal. the Permittee shall notify the Director in writing within thirty (30) days of receipt In the event that the Permittee chooses to invoke the provisions of this section,
- V.L.2 confer to resolve any disagreement. The Director and the Permittee shall have an additional thirty (30) days from EPA's receipt of the notification provided for in Condition V.L.1. to meet or
- V.L.3 specified in such agreement. submittal and implement the same in accordance with and within the time frame In the event agreement is reached, the Permittee shall submit the revised
- V.L.4 If agreement is not reached within the thirty (30) day period, the Director will

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for making this decision shall not be delegated below the Waste Management in the dispute. For the purposes of this provision in this permit, the responsibility Permittee shall comply with the terms and conditions of the Director's decision notify the Permittee in writing of his/her decision on the dispute, and the Division Director.

V.L.5 that the Director determines are not affected by the dispute. to take any action required by those portions of the submission and of the permit With the exception of those conditions under dispute, the Permittee shall proceed

## MODULE VI -WASTE MINIMIZATION

## VI.A. GENERAL RESTRICTIONS

3005(h) of RCRA (42 U.S.C. 6925(h)), and the Permittee must certify, no less often than annually, wastes were generated, then the Permittee must comply with MHWMR 264.73(b)(9), and Section In the event that the Permittee treats, stores, or disposes of hazardous wastes onsite where such

- VI.A.1 The Permittee has a program in place to reduce the volume and toxicity of economically practicable; and hazardous waste generated to the degree determined by the Permittee to be
- VI.A.2 method available to the Permittee which minimizes the present and future threat The proposed method of treatment, storage or disposal is the most practicable to human health and the environment.

## VI.B. RECORDING REQUIREMENTS

facility operating record as required by MHWMR 264.73(b)(9). If Condition VI.A. is applicable, then the Permittee shall maintain copies of this certification in the

## VI.C. WASTE MINIMIZATION OBJECTIVES

If Condition VI.A. is applicable, then the Waste Minimization program required under Condition VI.A. should address the objectives listed in Attachment Q.

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## MODULE VII -LAND DISPOSAL RESTRICTIONS

### VII.A. GENERAL RESTRICTIONS

VII.A.1 MHWMR Part 268 identifies hazardous wastes that are restricted from land or variance under MHWMR Part 268, the Permittee shall comply with all disposal unit. The Permittee shall maintain compliance with the requirements of prohibited waste may continue to be placed on or in a land treatment, storage or has been reached pending final approval of such application. restrictions on land disposal under this Part once the effective date for the waste MHWMR Part 268. Where the Permittee has applied for an extension, waiver disposal and defines those limited circumstances under which an otherwise

## VII.B. LAND DISPOSAL PROHIBITIONS AND TREATMENT STANDARDS

- VII.B.1 A restricted waste identified in MHWMR Part 268 Subpart C may not be placed MHWMR Part 268 Subparts C and/or D are met. in a land disposal unit without further treatment unless the requirements of
- VII.B.2 The storage of hazardous wastes restricted from land disposal under MHWMR are met. Part 268 is prohibited unless the requirements of MHWMR Part 268 Subpart E

VENTS

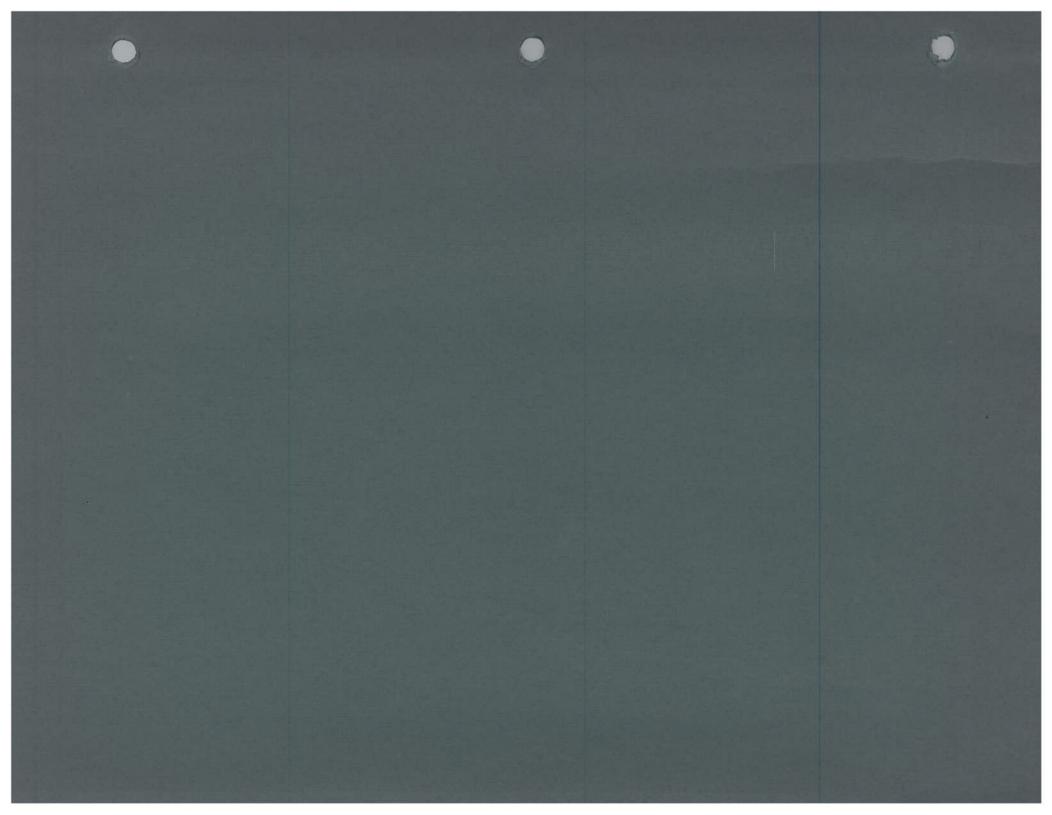


## VIII.A. GENERAL INTRODUCTION

units which contact hazardous waste containing an average organic concentration greater than 500 emissions controls must be used for tanks, surface impoundments, containers and miscellaneous On December 6, 1994, EPA published the final rule for Phase II Organic Air Emissions Standards except as specifically exempted under MHWMR 264.1080 and 264.1082 ppmw at the point of origination determined by the procedures outlined in MHWMR 264.1083(a), February 9, 1996, November 25, 1996, and December 8, 1997. In general, under these standards air permit-exempt (90-day) tanks and containers. Major clarifications to the rule were published on facilities, including certain hazardous waste generators accumulating waste on-site in RCRA (MHWMR Parts 264 and 265, Subpart CC) for hazardous waste treatment, storage, and disposal

## VIII.B. ORGANIC AIR EMISSION STANDARDS

shall apply for a permit modification under 270.42, and provide specific Part B application information required under MHWMR 270.14-17 and 270.27, as applicable, with the modification container such that the unit(s) will become subject to MHWMR Part 264 Subpart CC, the Permittees MHWMR Part 264, Subpart CC, or modifying an existing process, waste handling or tank or Prior to installing any tank, container, surface impoundment or miscellaneous unit subject to



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### XII. Process Codes and Design Capacities

- PROCESS CODE Enter the code from the list of process codes below that best describes each process to be used at the facility.
  Thirteen lines are provided for entering codes. If more lines are needed, attach a separate sheet of paper with the additional information. For "other" processes (i.e., D99, S99, T04 and X99), describe the process (including its design capacity) in the space provided in item XIII.
- 1. PROCESS DESIGN CAPACITY For each code entered in column A, enter the capacity of the process.
  1. AMOUNT Enter the amount. In a case where design capacity is not applicable (such as in a closure/post-closure or enforcement ection) enter the total amount of waste for that process.
  2. UNIT OF MEASURE For each amount entered in column B(1), enter the code from the first of unit measure codes below that describes the unit of measure used. Only the units of measure that are listed below should be used.
- PROCESS TOTAL NUMBER OF UNITS Enter the total number of units used with the corresponding process code

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Р	UNIT OF MEASURE CODE

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						0 73 2 5 5 5 1	
"Frank finite and I	Section 2	1					7
In-oth VIII-II			•			0 4	$x \mid t \mid \tau$
	Total Number Of Units	2. Unit Of N Measure (Enter code)		1. Amount (specify)	# T T T T T T T T T T T T T T T T T T T	(From list above)	
D. Description Of Process	C. Process	S	V CAPACITY	Line A. Process B. PROCESS DESIGN CAPACITY C. Process		A. Process	Line
ation in the same for sses (i.e., Dss; S99, 1	s) with the inform for "other" proc	illional sheet( at will be used	es, attach an add count any lines th	re than 13 process co. sentially, taking into ac	to list mo	E: If you need e. Number the in item XIII.	Abov X99)
		•					٠- دي
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		•					ξ
17. 7							7 0
ira i		•					9
		•		not achieved.	was		80
		closure	clean	removed; however,	rem		7
		e was	All visible waste	landfill. All vi	lan		O)
		as a	closed	Surface impoundment	** Sur		C)
		•					•
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		•					N)
	_	0.0			*	D 8 0	
0 0 1		3 7 8	5 3			S 0 2	X 1
Total Use Only Number Of Units	2. Unit Of Measure (Enter code)	234	1. Amount (Specify)	7. 4		(From list above)	, adiliber
25		СПҮ	B. PROCESS DESIGN CAPACITY	B. PROCES	24	A. Process	Line
EXAMPLE FOR COMPLETING ITEM XII (Shown in line number X-1 below): A facility has a storage tank, which can hold 533.788	ility has a storag	below): A fac	1 line number X-1	NG ITEM XII (Shown ii	COMPLET	EXAMPLE FOR gallons.	eg (3
			ed)	XII.Process Codes and Design Capabilities (Continued)	d Design (	ss Codes an	XILProce
	 			2   7   5   4   3	7 0	D 0 0	S
10 Number (Enter from page 1)	secondary ID	_	-1				-

M S D 0 0 7 0 2 7 5 4 3		XIV. Description of Hazardous Wastes
	( okad man	M S D 0 0 7 0 2 7 5 4 3
	California Carried	EPA I.D. Number (Enter from 1997)

- 7 you will handle. For hazardous wastes which are not itsed in 40 CFR, Part 261 Subpert D, enter the four-digit number(s) from 40 CFR, Part 261 Subpert C that describes the characteristics and/or the toxic contaminants of those hazardous wastes. EPAHAZARDOUS WASTE NUMBER - Enter the four-digit number from 40 CFR, Part 261 Subpart D of each listed hazardous waste
- œ of all the non-listed waste(s) that will be handled which possess that characteristic or contaminant ESTIMATED ANNUAL QUANTITY - For each listed waste entered in column A estimate the quantity of that waste that will be handled on an annual basis. For each characteristic or toxic contaminant entered in column A estimate the total annual quantity
- UNIT OF MEASURE For each quantity entered in column B enter the unit of measure code. Units of measure which must be used and the appropriate codes are:

C

POUNDS POUNDS P KILOGRAMS TONS T METRIC TONS
METRIC UNIT OF MEASURE KILOGRAMS METRIC TONS

If facility records use any other unit of measure for quantity, the units of measure must be converted into one of the required

#### Ö PROCESSES

PROCESS CODES:

PROCESS CODES:

For listed hazardous waste: For each listed hazardous waste entered in column A select the code(s) from the list of process codes contained in item XII.4. on page 3 to indicate how the waste will be stored, breated, and/or disposed of at the facility. For non-listed hazardous waste. For each characteristic or toxic contaminant entered in column A, select the code(s) from the list of process codes contained in item XII A, on page 3 to indicate all the processes that will be used to store, treat, and/or dispose of all the non-listed hazardous wastes that possess that characteristic or toxic contaminant.

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

þ

- Enter the first two as described above.

  Enter "000" in the extreme right box of fiem XIV-E, the line number and the additional code(s).

  Enter in the space provided on page 7, then XIV-E, the line number and the additional code(s).
- on the form (D.(2)). PROCESS DESCRIPTION: If a code is not listed for a process that will be used, describe the process in the space

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

- Select one of the EPA Hazardous Waste Numbers and enter it in column A. On the same line complete columns store, and/or dispose of the waste. B, C and D by estimating the total armual quantity of the wasta and describing all the processes to be used to treat,
- N In column D(2) on that line enter "Included with above" and make no other entries on that line, In column A of the next line enter the other EPA Hazardous Wasta Number that can be used to describe the waste,
- u Repeat step 2 for each EPA Hazardous Waste Number that can be used to describe the hazardous waste.

an estimated 900 pounds per year of chrome shavings from leather tanning and finishing operation. In addition, the facility will treat and dispose of three non-listed wastes. Two wastes are corrosive only and there will be an estimated 200 pounds per year of each waste. The character is corrosive and innitable and there will be an estimated 100 pounds per year of that waste. Treatment will be in an EXAMPLE FOR COMPLETING ITEM XIV (shown in line numbers X-1, X-2, X-3, and X-4 below) - A facility will beat and dispose of

			A. EPA HATARO	PA		B. ESTIMATED C. UNIT OF	C. UNIT OF	2	153				D. PROCESS	CESS
Line Number	er e	m ¥	WASTE NO. (Enter code)	CODE		QUANTITY OF WASTE	(Enter	3	PROCE	SSC	ODE	S (En	(1) PROCESS CODES (Enter code)	(2) PROCESS DESCRIPTION (If a code is not entered in D(1))
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	4	1	2							1	0	5		
-	_	0 0		2	7			100						industrial and an arrangement of the second

riease print or type with בנודב type (12 characters per inch) in the unshaded areas only

GSA NG 0249-674-07

m	A.	D 7	EPA I.D. Number (Enter	E CE	Jage !	from page 1)					Seco	ndary	Secondary ID Number (Enter from page 1)
3	S	D	0	0	7		5 4 3				$\neg$	_ ,	
×	٧.	830	ription	<u>e</u>	Hazai	XIV. Description of Hazardous Wastes (Continued)	ontinued)	4			-		-
	5	A .	HAZ A	# G	Suc	ANNUAL	C. UNIT OF	9.00			18.3	L PRC	D. PROCESSES
≥ _	Line		WASTENO. (Enter code)	8 21.	8 5	CUANTITY OF	(Enter code)	(1) PROCESS CODES (Enter code)	CESS C	a) saac	nter code	(6)	(I) PROCESS DESCRIPTION (If a code is not entered in D(1))
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T	N	-											
Τ	ω	<del> </del>				Former sur	surface im	impoundment		closed a	CO CO	land	andfill.
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### VII OPERATOR INFORMATION

### PART A APPLICATION ATTACHMENTS

#### XV MAP TOPOGRAPHIC MAP

### VII OPERATOR INFORMATION

#### **OPERATOR #1**

KOPPERS INDUSTRIES, INC. 436 Seventh Avenue Pittsburgh, PA 15219 (412) 227-2001

Status of Operator #1: P

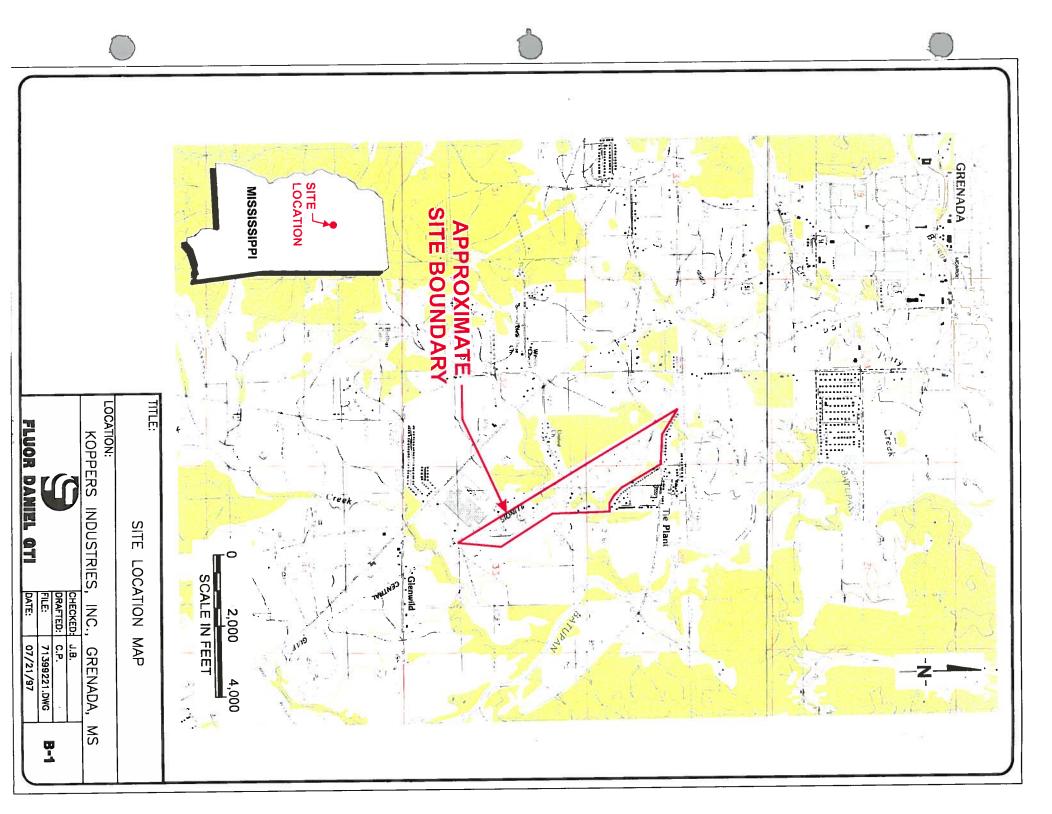
### OPERATOR #2 (\*)

BEAZER EAST, INC. One Oxford Centre, Suite 3000 Pittsburgh, PA 15219 (412) 208-8864

Status of Operator #2: P

(\*) NOTE: Operator #1 operates the wood preserving plant and generates hazardous waste which is stored for less than 90 days prior to off-site disposal.

Operator #2 is operator of the closed surface impoundment (D80).



### XVI FACILITY DRAWING SCALE DRAWING OF FACILITY

### XVII PHOTOGRAPHS GROUND LEVEL PHOTOS CLOSED SURFACE IMPOUNDMENT

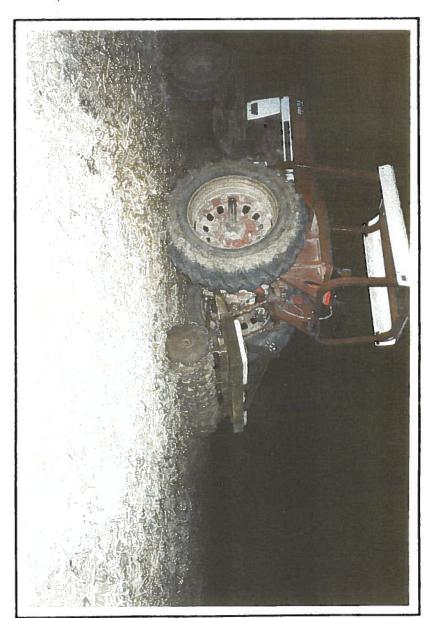


PHOTO 31: Tractor-Pulled Crimper for Seed and Mulch

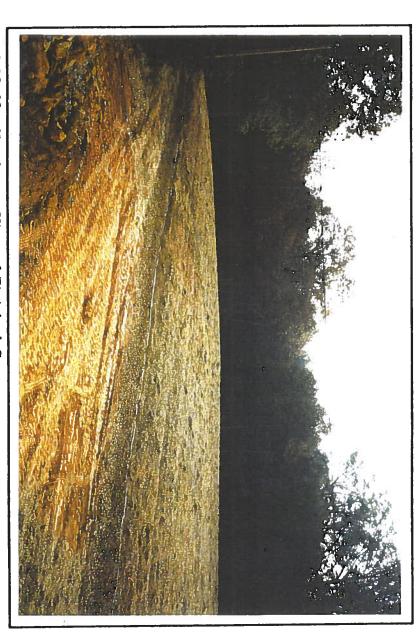
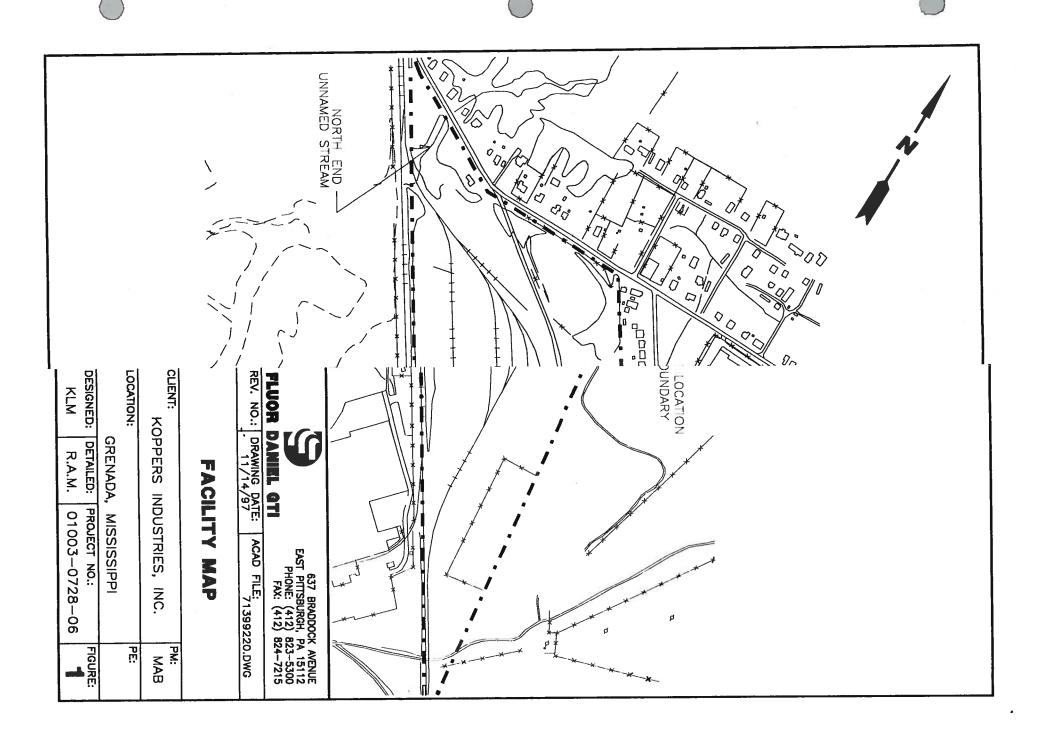
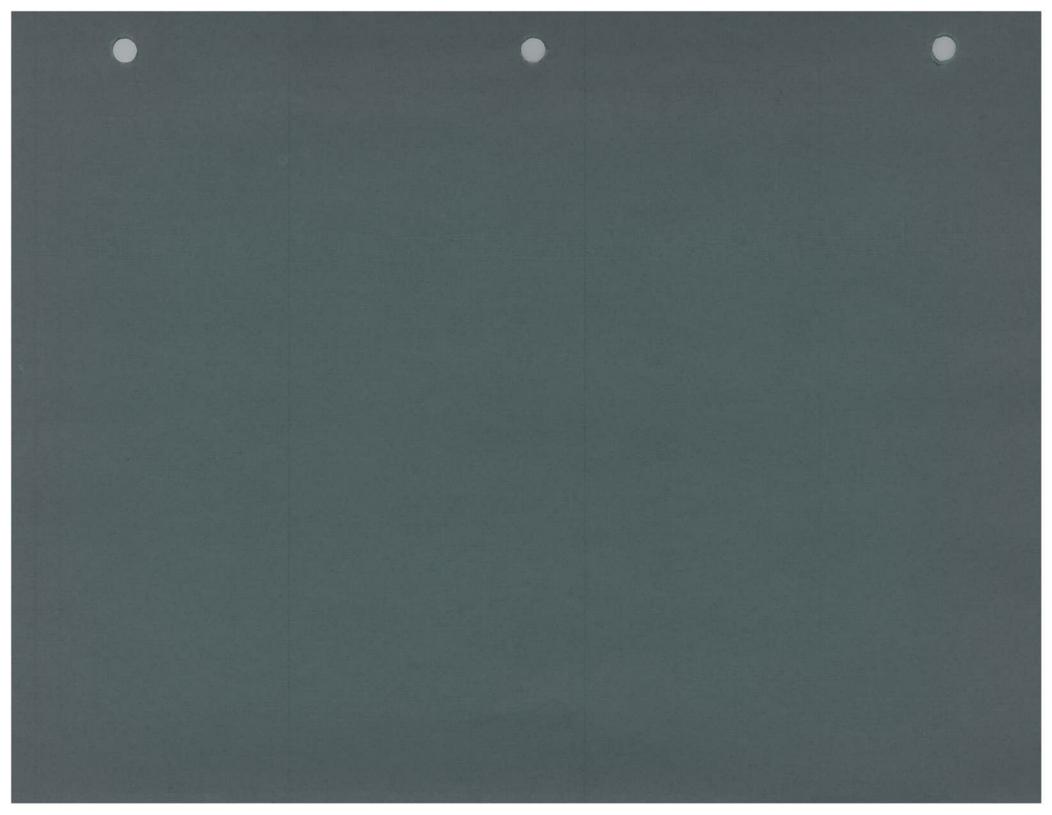


PHOTO 32: Northwest View of Finished Cap





### SECTION B. FACILITY DESCRIPTION

#### . . . **General Description**

pressure treats railroad cross ties, switch ties and poles. facility include pentachlorophenol (mixed in No. 2 diesel fuel) and creosote. The KII facility was constructed in 1904 to pressure treat railroad cross ties. Preservatives used at the The facility currently

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

The facility's street address is:

Tie Plant, Mississippi 38960 Tie Plant Road Koppers Industries, Inc.

The facility's mailing address is:

Tie Plant, Mississippi 38960 O. Box 160

The contact and party responsible for hazardous waste management at the KII facility are:

### Corporate Contact:

Pittsburgh. Pennsylvania 15219 436 Seventh Avenue Koppers Industries, Inc. Vice President Mr. Randall Collins

Local Contact:

Koppers Industries, Inc. P.O. Box 160 Mr. Tom Henderson Plant Manager Tie Plant. Mississippi 38960

Salving Standard Security Secu



Beazer East, Inc. contact and address is:

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

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

#### B.2 Topographic Map

obtained from the Federal Aviation Administration, Grenada, Mississippi AAF is included in Appendix final as-built ground surface contours of the closed SI. Meteorological and wind distribution data closure is presented as Figure B-2. The scale of this map is 1 inch = 100 feet. Figure B-3 shows the specific topographic map detailing pertinent site features and showing the topography of the SI prior to A topographic map for the KII facility and the surrounding region is included as Figure B-1. A site-

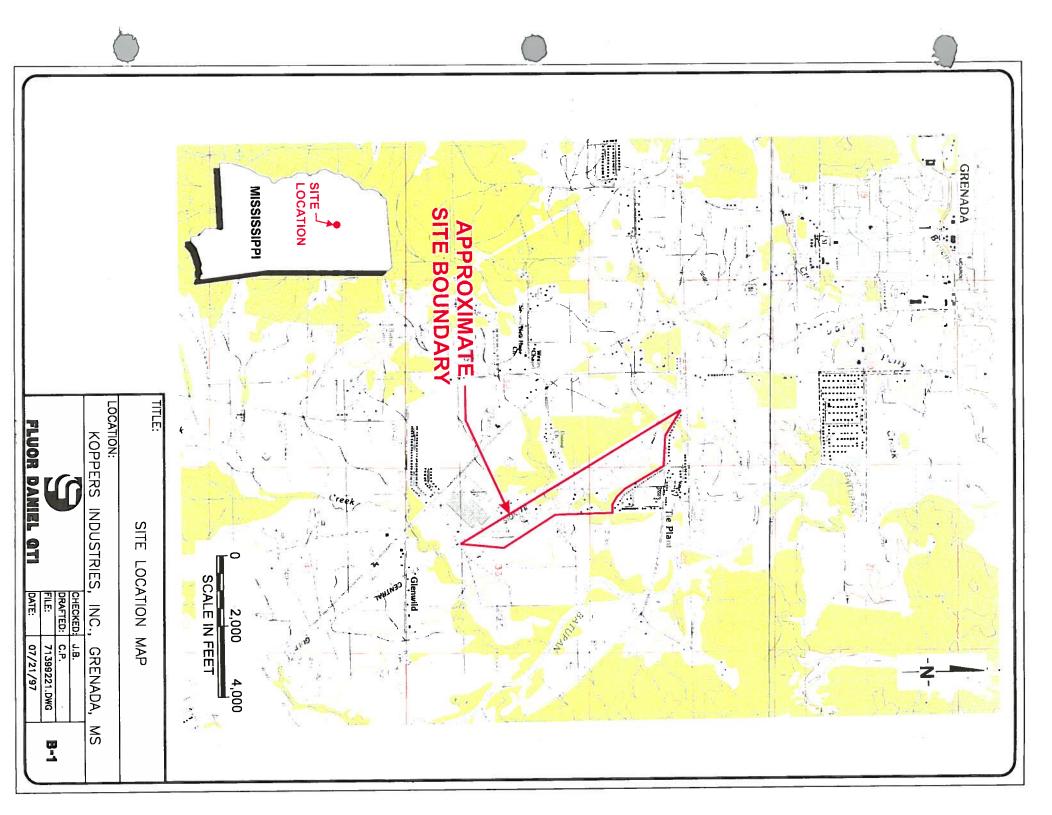
#### B.ω Location Information

### Flood Information

for Grenada County, Mississippi. A copy of the map is presented in Appendix B-2 flooding. This information was obtained from the Flood Insurance Rate Map Number 280060 0125B additional flood proofing is required to prevent potential constituent releases from the closed SI during of the facility. The closed SI is more 7 feet above this 100-year flood plain. Consequently, no The KII facility is not located within a 100-year flood plain except for a small area near the central area

#### B.4 Traffic Control

discussed in Section I.2 of this Renewal Application periodic inspections are done by foot traffic. Inspection and maintenance of the closed SI cover is use by vehicles if required to perform maintenance to the cap. Any servicing of the monitoring wells or The closed SI unit is located away from the wood treating operations. Traffic is restricted to intermittent



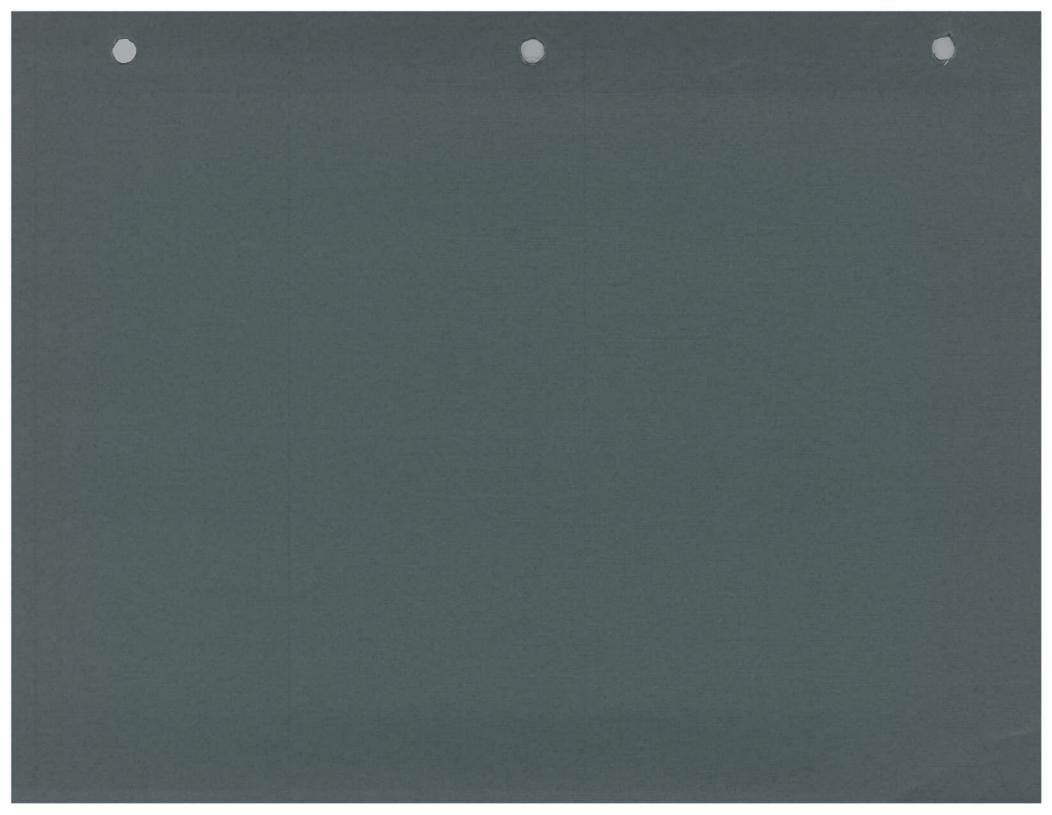
## SECTION C. WASTE CHARACTERISTICS

### $\frac{1}{2}$ **Chemical and Physical Analysis**

creosote and/or pentachlorophenol". Appencix C-1 provides a waste analysis for the K001 sludge. "bottom sediment sludge from the treatment of wastewaters from wood preserving processes that use The hazardous waste previously contained in the closed SI was K001, defined in 40 CFR 261 as

#### C.2 Waste Analysis Plan

Plan is not applicable for this Renewal Application. No wastes have been placed in the closed SI since it was closed in 1989. Therefore, a Waste Analysis





APPENDIX C-1
IMPOUNDMENT SLUDGE ANALYSIS

## LABORATORY CHRONICLE

# SAMPLE IDENTIFIER: GM 269 COMPUCHEM SAMPLE NUMBER: 31897

<pre>3. Phenols</pre>	<ol><li>Cyanide _</li></ol>	1. Metals	inorganics	5. Herbicides	4. Pesticides/PCBS	3. Base/Neutrals	2. Acid ·	<ol> <li>Volatiles</li> </ol>	Analyzed .	Extracted - Pesticides - Herbicides	Organics	Received/Refrigerated
Not Requested	Not Requested	08/14/84		08/01/84	07/27/84 - 08/01/84*	08/03/84	08/07/8¢	07/27/84		07/23/84 07/24/84 07/25/84		<u>Date</u> 07/19/84

<sup>\*</sup>Second column or absence of confirmation analysis which serves the Pesticides/PC8's. to verify the the presence

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### QUALITY ASSURANCE NOTICE

CompuChem Sample No. 31897

Although not required by the Federal Register, December 3, 1979 (modified Jules2) Volatile Method 624 procedure, the laboratory prepares VDA blanks when compositing water samples and preparing low and medium level hazardous waste VOA samples. This is to insure that the glassware used is free from contamination, and to monitor the possibility of cross-contamination from high atmosphere. levels of volatile organic compounds in some samples and the laboratory 1979 (modified July,

the The adjusted compositing compound(s) and/or flagged or method blank (# 31981 listed below. Sample da according Sample data ଟ the EPA-recommended methods. ) prepared with this sample associated with this blank contained

Methylene Chloride	Compound(s)
28	Concentration Found In Sample (ug/kg)
BON .	∴pplicable Oualifier*

reporting purposes: The following data qualifiers are กลรก 5 EPA and adopted δ CompuChem®

agg<sub>N</sub> The \*\*0 the concentration of detection limit: limit and מם priority pollutant S grea 19 than 7 in the the ne blank is greater concentration in t blank the than 1/2 sample.

adjusted sample concentration ٦. د reported

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

### בסאפסטאס בוואס בוואס

## VOLATILES ORGANICS

# SAMPLE IDENTIFIER: GK 259 COMPUCHEM SAMPLE NUMBER: 31897

28V 29V 30V 32V	214 234 264 264 274	13Y. 14V. 15V. 16V. 17V. 18V. 19V.		. 14.
VOOTE	CIS-1,3-DICHLOROPROPENE 1,1,2-TRICHLOROETHANE DIBROMOCHLOROMETHANE BROMOFORM 1,1,2,2-TETRACHLOROETHYLENE 1,1,2,2-TETRACHLOROETHANE TOLUENE	1,2-DICHLORDETHANE 1,1,1-TRICHLORDETHANE CARBON TETRACHLORIDE BROMODICHLOROMETHANE 1,2-DICHLOROPROPANE TRANS-1,3-DICHLOROPROPENE TRICHLOROETHYLENE BENZENE	O E M O I M S O	CHLOROMETHANE
				260
80L 80L 80L 80L		80 80 80 80 80 80 80 80 80 80 80 80 80 8	801 801 801 801 801 801 801	CONCENTRATION (UG/KG)
10010	50000000	56666666	100 100 100 100 100 100 100 100 100 100	DETECTION LIMIT (UG/KG)

\*See Quality Control Notice

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

COMPOUND LIST

ACID EXTRACTABLE ORGANICS

SAMPLE IDENTIFIER: COMPUCHEM SAMPLE NUMBER: GM 269 31897

11A.	, , , , ,	7 A.	თ ს ა		· ω • >•	2A.	1 <sup>8</sup> .		
PENTACHLOROPHENOL	4-NITROPHENOL A-NITROPHENOL	2,4,6-TRICHLOROPHENOL	P-CHLORO-M-CRESOL	0	2-NITROPHENOL	2-CHLOROPHENOL	PHENOL		
170000 BDL	80L 80L	8DL 8	80 F	8000	BDL	BDL	70000(1)	(UG/KG)	רסטיים אדוסטיים אדוסטיים
50000 5000	5000 5000	5000	5000 0000	5000	5000	2000	カ 0 0 1	(UG/KG)	DETECTIONS

BDL=BELOW DETECTION LIMIT

\*\*TSee Data Report Notice. Additionally,

dilution, thus the higher than normal of , sample analyzed using a detection limits. 10:1

<sup>(1)</sup>Quantitated using secondary ion

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

COMPOUND LIST

BASE-NEUTRAL EXTRACTABLE GREANICS

### SAMPLE IDENTIFIER: COMPUCHEM SAMPLE NUMBER: GM 269

2275488588888888888888888888888888888888	
N-NITROSODIMETHYLAMINE BIS (2-CHLOROSENZENE 1,3-DICHLOROSENZENE 1,2-DICHLOROSENZENE 1,2-DICHLOROSENZENE BIS (2-CHLOROISOP ROPYL) ETHER HEXACHLOROETHANE N-NITROSODI-N-PROPYLAMINE NITROSENZENE ISOPHORONE BIS(2-CHLOROETHOXY) METHANE 1,2,4-TRICHLOROBENZENE NAPHTHALENE HEXACHLOROETHOXY) METHANE 1,2,4-TRICHLOROBENZENE ACHLOROCYCLOPENTADIENE ACHLOROCYCLOPENTADIENE 2-CHLOROMAPHTHALENE 2-CHLOROMAPHTHALENE 2-CHLOROMAPHTHALENE 2,4-DINITROTOLUENE ACENAPHTHENE 2,4-DINITROTOLUENE 2,4-DINITROTOLUENE ELUORENE FLUORENE 4-CHLOROPHENYL PHENYL ETHER DIPHENYLAMINE (N-NITROSO) 1,2-DIPHENYLHYDRAZINE (AZOBENZENE) 4-BROMOPHENYL PHENYL ETHER HEXACHLOROBENZENE	
80L 80L 80L 80L 80L 80L 80L 80L	CONCENTRATION (UG/KG)
12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000	DETECTION <sup>†</sup> LIMIT (UG/KG)

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

<sup>(1)</sup>Quantitated using secondary ion

COMPOUND LIST BASE-VEUTRAL EXTRACTABLE DRIANICS

ಕಿವಿಕಿದ್ದ)

### SAMPLE IDENTIFIER: GM 269 31897

400.		448.	438.	423.	418.	408.	398.	383.	378.	368.	353.	348.	338.	326.	318.	308.	293.			
BENZO(G,H,I)PERYLENE	DIBENZO(A, H) ANTHRACENE	INDENO(1,2,3-C,D)PYRENE	BENZO (A) PYRENE	BENZO(K)FLUORANTHENE	BENZO (B) FLUO RANTHENE	DI-N-OCTYLPHTHAL ATE	BIS(2-ETHYLHEXYL)PHTHALATE	CHRYSENE	3,3'-DICHLOROBENZIDINE	BENZO(A) ANTHRACENE	BUTYLSENZYLPHTHALATE	PYRENE	BENZIDINE	FLUORANTHENE	DI-N-BUTYLPHTHALATE	ANTHRACENE	PHENANTHRENE	,		
BDL	BDL	BDL	28000	51000	75000	, BDL	BDL	65000	BDL	72000	8DL	250000	BDL	400000(1)	BDL	£3000	430000(1)	(UG/KG)	CONCENTRATION	
30000	30000	30000	12000	12000	12000	12000	12000	12000	12000	12000	12000	12000	12000	12000	12000	12000	12000	(UG/KG)	LIMIT	DETECTIONT

BDL=BELOW DETECTION LIMIT

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

<sup>(1)</sup>Quantitated using secondary ion.

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# COMPOUND LIST -- PESTICIDES/PCB'S

SAMPLE IDENTIFIER: GM 269 COMPUCHEM SAMPLE NUMBER: 31897

262.	25P.	24P.	23P.	22P.	21P.	· 20P •	19P.	18P.	17P.	16P.	15P.	14P.	13P -	12P.	11P.	10P.	9P.	8P.	7P.	бр •	2	4P.	3P .	2P.	1P.			
而THOXYCHLOR	TOX APHENE	PCB-1016	PCB-1260	PCB-1248	PCB-1232	PCB-1221	PCB-1254		HEPTACHLOR EPOXIDE	HEP TACHLUR	ENDRIN ALDEHYDE	ENDRIN	ENDOSULFAN SULFATE	_	子 六	DIELDRIN	4,4'-DDD	4,4'-DDE	_	CHLORDANE	DELTA-BHC	ار د کر	BETA-BHC	ALPHA-3HC	ALDRIN	200	í	
											*																	
801	BDL	3D-F	BDL BDL	8DL	BDL	301	8DL	BDL	BDL	80L	· BDL	80[	801	8DL	BDL	BOL	BDL	BDL .	301	BDL	- BDL	BDL	BDL	BDL	BDL		(UG/KG)	CONCENTRATION
4000	4000	4000	4000	4000	4000	4000	4000	4000	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	1007	( Un / Kn )	DETECTION

tSee Data DL=3ELOW DETECTION LIMIT See Data Report Notice. Addit dilution to properly evaluate than normal detection limits. Additionally, sample analyzed using a 200:1 uate the GC Chromatogram, thus the higher

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SECTION C

COMPOUND LIST - SDWA/RCRA HERSICIDES

SAMPLE IDENTIFIER: GM 269 COMPUCHEM SAMPLE NUMBER: 31897

CONCENTRATION DETECTION<sup>†</sup>
(MG/L)
(MG/L)

1H. 2, 4-D 2H. 2,4,5-TP (Silvex)

BDL 20.0

See Data Report Notice. Additionally, sample analyzed using dilution to properly evaluate the GC Chromatogram, thus the than normal detection limits. g a 200:1 higher

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COMPOUND LIST

INORGANICS (METALS)

•

SAMPLE IDENTIFIER: GM 269 COMPUCHEM SAMPLE NUMBER: 31897

	3	3	
1121008	765.	· ~	
. MERCURY, TOTAL . NICKEL, TOTAL . SELENIUM, TOTAL . SILVER, TOTAL . THALLIUM, TOTAL . ZINC, TOTAL	CADKIUM, TOTAL CHROMIUM, TOTAL COPPER, TOTAL LEAD, TOTAL	ANTIMONY, TOTAL ARSENIC, TOTAL	INORGANICS PRIORITY POLLUTANTS
			302
0.010 5.2 BDL BDL 73	80L 25 19	3.3 BDL	CONCENTRATION (UG/G)
			0 6 7 7
0.0020 0.10 0.50 0.50	0.10 0.10 0.50	0.50	CTION LIMITT

See Data Report Notice

### REPORT OF DATA

SAMPLE IDENTIFIER: GM 269 COMPUCHEM SAMPLE NUMBER: 31897

SUBMITTED TO:

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

DIANA A. SCAMMELL
TECHNICAL SPECIALIST, OPERATIONS

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

ROBERT E. MEIERER
DIRECTOR OF QUALITY ASSURANCE

### TABLE 1

### REVISION NO: 1

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# CHEMICAL & ALLIED PRODUCTS

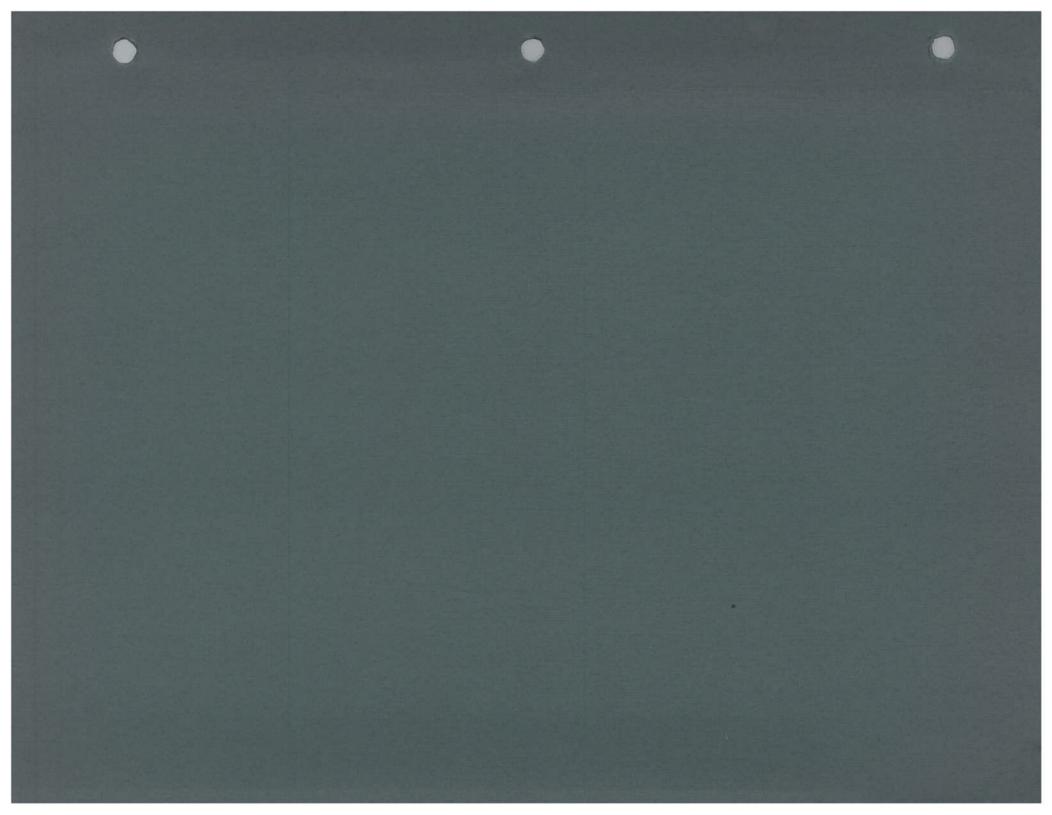
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## SAMPLE COLLECTION DATA

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7/18/84	7/17/84	LAGOON BOTTOMS	GM-269
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7/18/84	7/17/84	R-1	GM-262
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CTED BY: E. G. Huth
M. Long

ENVIRONMENTAL RESOURCES DEPARTMENT ENVIRONMENTAL ANALYSIS LABORATORY MONROEVILLE SCIENCE & TECHNOLOGY CENTER 20



## APPENDIX B-1 METEOROLOGICAL AND WIND DISTRIBUTION DATA



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

UNIFORM SUMMARY OF SURFACE WEATHER OBSERVATIONS

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

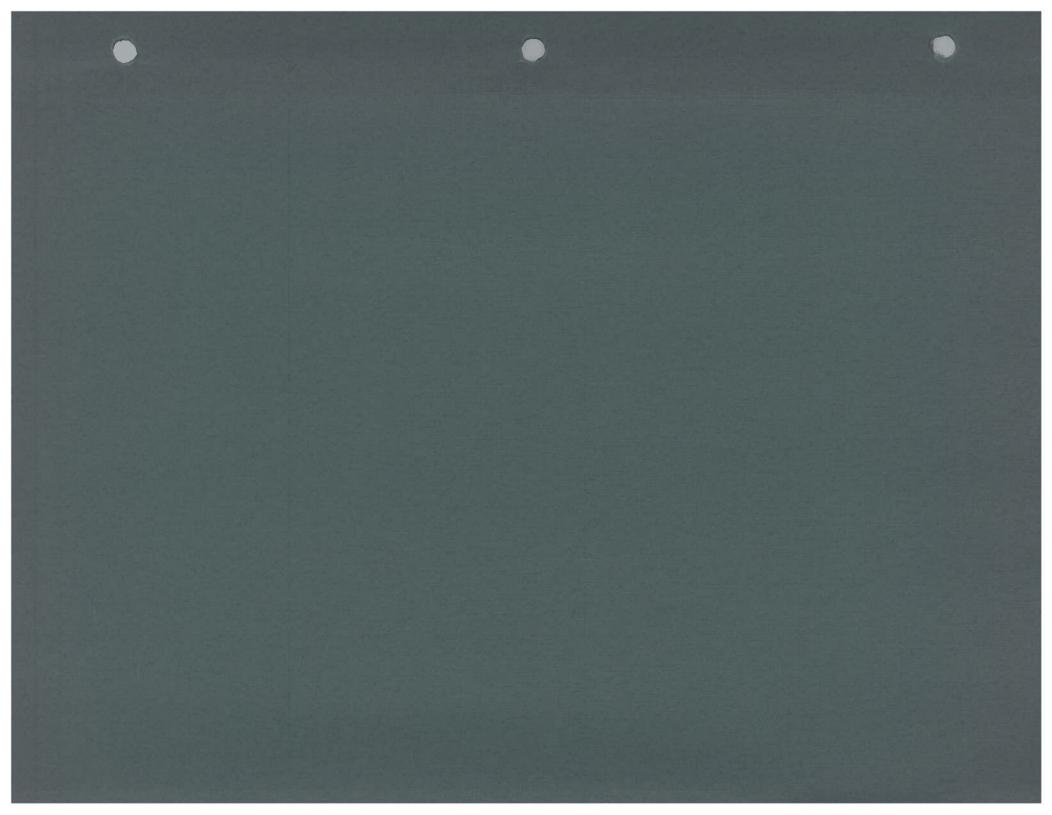
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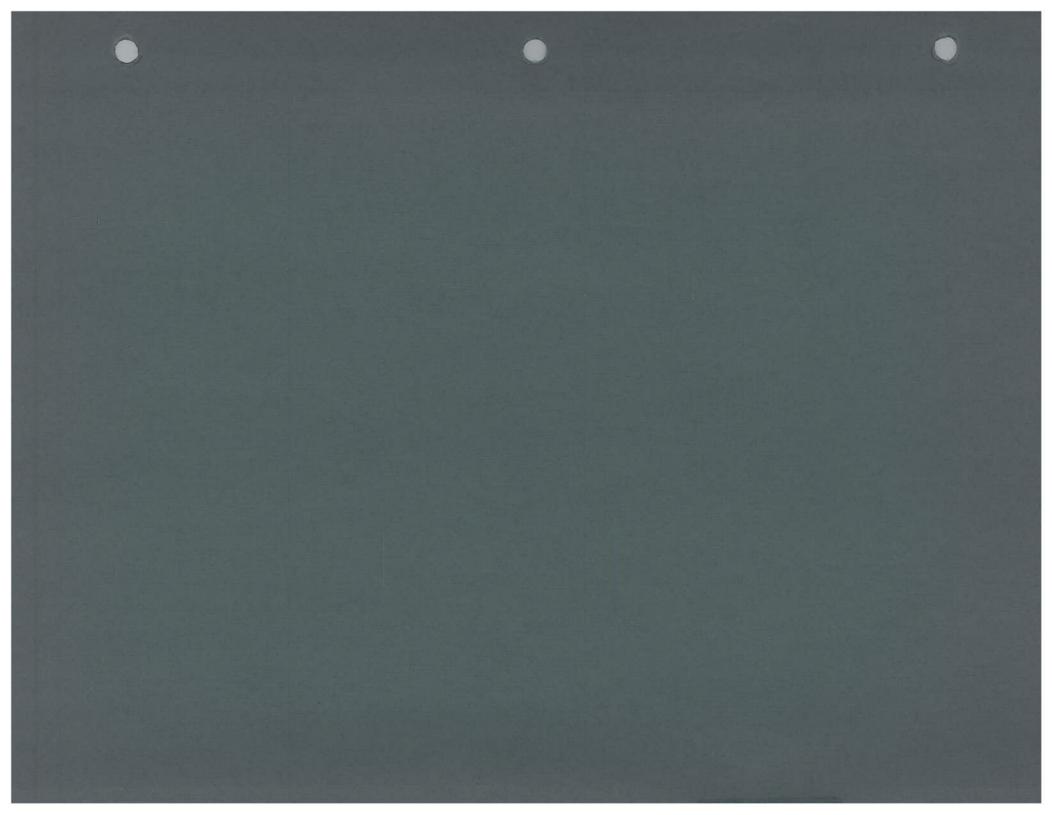
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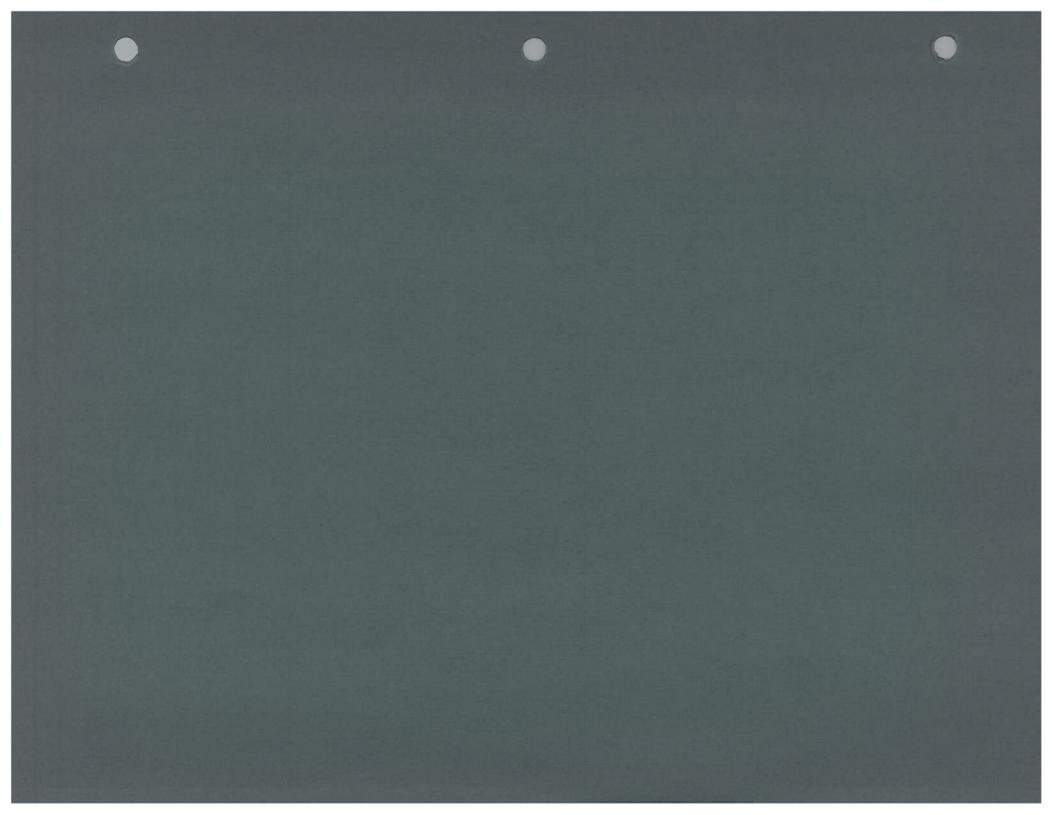
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## APPENDIX B-2 FLOOD INSURANCE RATE MAP







### SECTION D. PROCESS INFORMATION

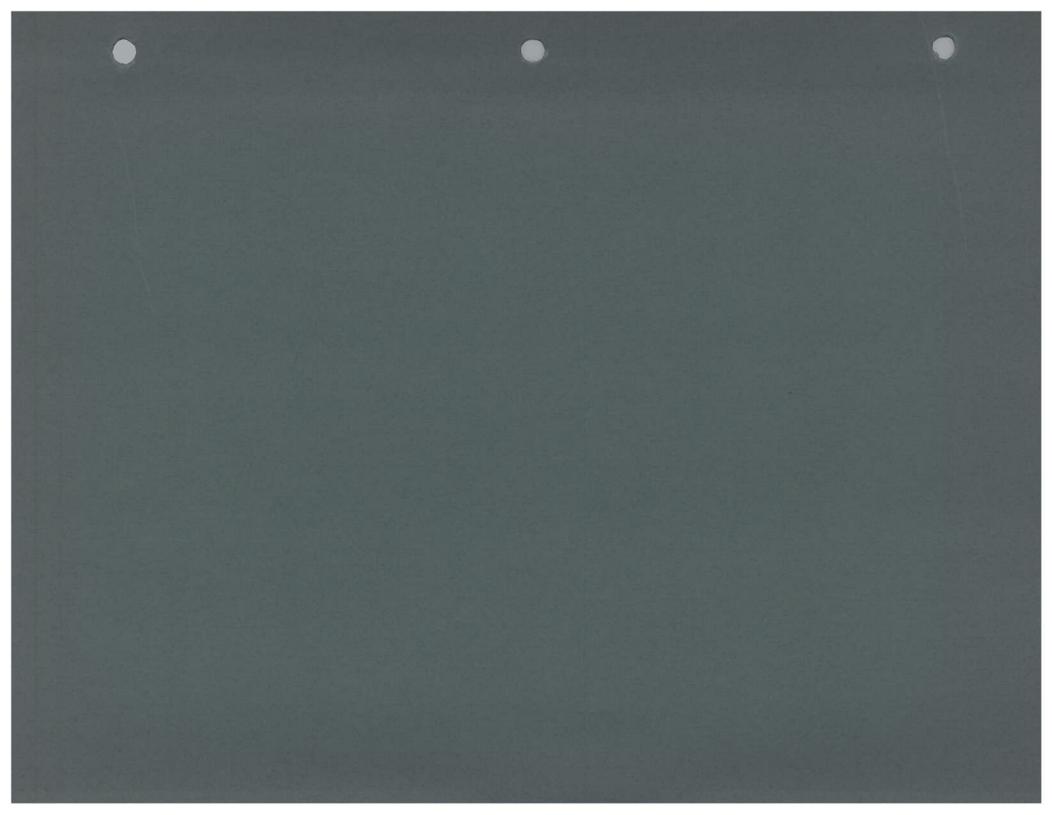
regarding containers, tanks, waste piles or land treatment facilities are not applicable. This Renewal Application is for a SI closed as a landfill. Therefore, the requirements for information

### <u>.</u> Surface Impoundment

native clayey soil. The solids from the wastewater settled out in the SI forming a sludge, which was inorganic constituents. The sludge analysis is included in Appendix C-1. sample was collected from the bottom of the SI, prior to its closure, and analyzed for organic and regulated as a K001 listed RCRA hazardous waste (40 CFR S261.32). On July 17, 1984 a sludge depth, including the side berms was approximately 7 feet. The SI was constructed from compacted pentachlorophenol. The SI was rectangular, measuring approximately 295 feet by 115 feet. Total The SI was constructed in mid-1970's to accept process wastewater containing creosote and/or

### D.2 Landfills

bentonite cap and vegetated soil cover. Details of the closure documentation are included in Section and visually contaminated soils were removed from the SI and transported off-site to a permitted landfill The SI described in Section D.1 was closed as a landfill in 1989. After the SI was dewatered, all sludge for disposal. The closure activities consisted of placing clean soil fill in the SI and constructing a soil-



# SECTION E. GROUNDWATER MONITORING

# E.1 Interim Status Groundwater Monitoring Data

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

## E.1a Description of Wells

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

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

construction, and a description of the subsurface material encountered during drilling. Additional includes depth of casing and screen, formation stabilizer and sealing material placement, date of monitoring well were presented in the 1987 Permit Application. Information provided on the logs Boring logs and well construction details showing specific design and installation of each interim status Permit Application submitted in 1987. information regarding well design, installation and location is provided in Sections E-2b and E-5b of the

# Description of Interim Status Sampling and Analysis Procedures

monitoring program were conducted in accordance with the procedures presented in Sections E-5D(1), (2) and (4) and E-9 of the Permit Application submitted in 1987. Groundwater sampling and analysis activities completed during the intenim status groundwater

## E.1c Interim Status Monitoring Data

Monitoring wells R-1, R-10, R-7, R-8 and R-9 were sampled under the interim status detection through February 1985. Quarterly sampling was also conducted at wells R-5 through R-9 during 1986 wells R-1 through R-4. Wells R-5 and R-9 were sampled following their installation in July 1984 in November 1986. The interim status detection monitoring program was initiated in January 1987. Wells R-8B, R-10, R-10B, R-11 and R-12 were sampled in a supplemental sampling round conducted from 1982 though 1987. From March 1982 though 1984, groundwater sampling was conducted at 1987 Permit Application. monitoring program. Analytical data collected during interim status are included as Appendix E-2 of the Groundwater sampling was conducted at various well locations throughout the interim status period

## E.1d Statistical Procedures

during interim status due to varying assessments of the upgradient well location. However, statistical evaluations were subsequently initiated under the detection monitoring program required by the Permit The background arithmetic mean and variance for the indicator parameters could not be determined

# E.2 General Hydrogeologic Information

## E.2a Regional and Site Geology

summarizes the most recent findings presented in the Phase II RFI Investigation Report (GeoTrans, Design (HSI, 1996); and the Final Phase II RFI Investigation Report (GeoTrans, 1997). The following Grenada, MS (AWD, 1994); the RCRA Interim Measure Predesign Investigation Report and Conceptual The regional and site hydrogeology are described in detail in the Interim Measures Work Plan, KII,

ground surface. The floodplain of the Yalobusha river and its tributaries are comprised on channel fill the latest glacial period in which glacial scour trenches were eroded to depths of 75 to 150 feet below and the Upper, Middle and Lower Wilcox Group beds. The quaternary channel fill sands are a result of Formation, which is divided into the Meridan Sand member and the overlying Basic City Shale member, facility is located in an area immediately underlain by the Quaternary channel fill sands, the Tallahatta of these deposits varies between marine and non-marine sands, clays, siltstone and gravels. The KII The KII facility is located in the North-Central Hills Physiographic Province of Mississippi. The geology

E-3 December 1997

sands deposited within the scour trenches as the glaciers retreated. The channel fill sands of the blown dust, overlie the channel fill sands. Batupan Bogue floodplain consist of discontinuous lenses of silt, fine sand, and silty clay. Loess, wind

Underlying the channel fill sands are the Basic City Shale and the Meridan Sand. The Basic City Shale Beneath the shale, is the Meridan Sand comprised of clean, fine quartz sand. consists of silt and clay, with some fine sand and ranges in thickness from approximately 30 to 150 feet

predominantly sand. The Ackerman formation consists of sand lenses, clay shale, lignite, and silt. Two Ackerman formation ranges in thickness from 245 to 360 feet. miles south of the KII facility, the Holy Springs formation averages 333 feet in thickness and the Springs formation is characterized by sands, sandy shale, and silts with a basal sand member which is The Wilcox group consists of the Holy Springs and underlying Ackerman Formations. The Holy

defined by six generalized lithologic zones, including: Field activities at the KII facility have shown that the upper lithology beneath the KII facility can be

- thicknesses that range from 0 to 10 feet. The composition of the fill material varies significantly (clay, sand, gravel, bricks, wood debris) with location throughout the KII facility. The Fill Zone occurs either as a single unit or in combination with the Upper Silt Zone, in
- N thicknesses that range from 5 to 8 feet. The unit is described from boring logs as consisting this zone. The upper silt zone is likely a loess deposit. primarily of silt with some fraction of fine sand. The local water table frequently occurs within The Upper Silt Zone is present, either as a single unit or in combination with the Fill Zone, in
- ယ grained materials composed of silty fine sands and sandy silts that collectively range from an estimated average hydraulic conductivity of 4.9 feet/day for this zone the Interim Measures Predesign Investigation (Hydro-Search, Inc., December 1996), resulted in clayey silt bed. Minor amounts of silty clays are also present in thin discontinuous beds. This of this unit is recognized by a gray-green clay bed several feet thick or bay a medium gray approximately 5 to 15 feet in thickness. This unit correlates to the channel fill sands. The base zone is partially to fully saturated throughout the KII facility. Hydraulic testing conducted during The <u>Upper Sand Zone,</u> located beneath the Fill and Upper Silt Zones, is characterized by fine-
- 4. the eastern and southern property boundaries. Where this unit is missing, the Upper and collectively range in thickness from approximately 0 to 17 feet, gradually pinching out toward Lower Sand Zones form a single unit. Where present, the Upper Low Permeability Zone as a heterogeneous unit composed of silty fine sands, sandy silts, and silty clay beds that The <u>Upper Low Permeability Zone</u> is located beneath the Upper Sand Zone and is described



**Basic City shale** behaves as a local confining unit above the Lower Sand Zone. This unit may correlate to the

- S deep soil borings, the unit has been found to range from 132 feet to 138 feet in thickness. occasional thin discontinuous sandy silt and clay beds. The upper few feet of this zone are the Upper Sand Zone, and is comprised of silty fine sands, fine-to-medium grained sands, and feet/day for this zone. This zone probably correlates to the Meridan Sand Search, Inc., December 1996), resulted in an estimated average hydraulic conductivity of 64 Hydraulic testing conducted during the Interim Measures Predesign Investigation (Hydropoorly consolidated and become more consolidated with depth. Where fully penetrated by The Lower Sand Zone is found beneath the Upper Low Permeability Zone, where present, or
- တ of fine-grained sediments comprised of siltstones, claystones, and shales, interbedded with Measures Predesign Investigation (Hydro-Search, Inc., December 1996). This zone correlates zone is known to be at least 150 feet, based on a deep soil boring completed during the Interim minor amounts of moderately well consolidated sand and sandstone. The thickness of this with the uppermost member of the Wilcox Group. The <u>Lower Confining Zone,</u> found beneath the Lower Sand Zone, is described as a sequence

approximately 10 feet below the bottom of the screen in the adjacent shallow well, within the lower wells were completed so the top of the screen for the deeper well was installed at a depth table to allow for water table fluctuations. Deep B-level monitoring wells adjacent to shallow monitoring the top of the ten-foot screen section was placed at an elevation approximately 2 feet above the water table conditions encountered at the time of drilling. The shallow A-level wells were installed such that from 20 to 34 feet bgs. The completion interval for the shallow monitoring wells is based on the water Shallow monitoring wells at the KII facility are completed within the upper sand zone, at depths varying

# E.2b Identification of Uppermost Aquifer

aquifer. The water supply wells in the Grenada area are typically screened in the Lower Wilcox Aquifer groundwater. Aquifers of the Clairborne and Wilcox Group deposits underlie the channel fill sand ground surface. Beneath the channel fill sand is a basal clay unit which inhibits vertical movement of and the floodplain of Batupan Bogue. The channel fill deposits range in depth from 20 to 35 feet below hydraulic gradient from the Wilcox aquifer to the channel fill sand aquifer. groundwater elevations than the wells screened within the channel fill sand indicating an upward localized areas. Groundwater elevation of wells screened within the Wilcox Group have higher northeastward; however, surface topography and land use affect groundwater flow directions in at depths of 450 to 600 feet below ground surface. The regional groundwater flow direction is The uppermost aquifer in the vicinity of the KII facility is the channel fill sands that underlie the KII facility

### direction in the vicinity of the closed SI. KII facility monitoring wells, potentiometric surface elevations, contour maps constructed for the last four quarters of 1997 show a more eastward groundwater flow channel fill sand is generally east northeast toward the Butapan Bogue. Detailed potentiometric potentiometric elevation contours, and groundwater flow directions within the surficial water-bearing unit Historically, groundwater elevation data consistently indicates that groundwater flow within the surficial Determination of Groundwater Flow Direction and Rate within Uppermost Aquifer

period. Velocity determinations for the detection monitoring program are calculated using the formula: from groundwater elevation data obtained during each monitoring for each semi-annual monitoring The average linear velocity of shallow groundwater flow through the uppermost aquifer is estimated the surveyed reference point elevation at each location are provided on Table E-1.

are illustrated for each of the last four quarters of 1997 are shown on Figures E-1 through E-4. Water

level measurements and groundwater elevations calculated on mean sea level (msl) datum based on

where:

n n n n hydraulic conductivity, average linear groundwater flow velocity

- 🛪 < average hydraulic gradient, and

gradients are provided in Table E-2. 0.1425 feet/day or 52 feet/year. A summary of the 1997 groundwater flow velocities and hydraulic and Cherry, 1979), the average linear groundwater flow velocity in the vicinity of the closed SI was for A-level wells - HSI GeoTrans, August 1997) and an effective porosity of 0.3 (estimated from Freeze calculated hydraulic gradients for each quarter, a hydraulic conductivity of 8.63 ft/day (slug test results the four quarters of 1997, respectively, were 0.0049, 0.0040, 0.0051 and 0.0058 feet/feet. Using the The hydraulic gradients calculated for groundwater in the area surrounding the closed SI for each of

### E, **Topographic Map Requirements**

groundwater flow direction within the surficial water-bearing unit are provided for the last four monitoring provided on separate, 1 in. = 250 ft.-scale site maps without surface topographic contours. The KII Monitoring) topographic map requirements. For clarity, the additional requirements of Part E.3 are events on Figures E-1 through E-4. Groundwater flow rates determined from these data sets are facility monitoring wells, with potentiometric surface elevations, potentiometric elevation contours, and The maps presented in Part B of this Renewal Application provide several of the Part E (Groundwater discussed in Section E.2c.

## E.4 Groundwater Quality Description

Pursuant to Parts IV.F and IV.G of the Permit, statistical evaluations of the groundwater quality data been impacted downgradient of the closed SI. The statistical evaluations are provided in Appendix E-1. completed. The statistical evaluations indicate that there is no evidence that groundwater quality has collected from wells R-1R, R-7, R-8, R-8B, R-9, R-9C, R-9D, and R-10 since 1988 have been

## E.5 Permit No. 88-543-01 Detection Monitoring Program in Accordance with the Hazardous Waste Management

inactive SI which was closed in late 1989. Beazer, as the operator, and KII, as the owner, are Waste Management Permit No. 88-543-01 (Permit) for the KII facility. The Permit was issued for the On June 28, 1988, the Mississippi Department of Environmental Quality (MDEQ) issued the Hazardous responsible for conducting the groundwater detection monitoring provisions of the Permit.

Part IV, Groundwater Protection, of the Permit was modified by the MDEQ Permit Board on February current semi-annual groundwater detection monitoring program has been in place since 1990 monitoring program and provides Post-Closure Care Requirements of the closed Sl. Therefore, the 13, 1990. The modification included the addition of 24 constituents to the post-closure detection

detection monitoring constituents are summarized in Table E-3. Method 8040); phthalates (EPA Method 8060); total and dissolved chromium (EPA Method 6010A); mercury (EPA Method 7470); and field pH, specific conductance and temperature. The suite of for polynuclear aromatic hydrocarbons (PAH) by EPA Method 8310; acid extractable phenolics (EPA Pursuant to the Permit, groundwater samples from these wells monitoring the closed SI are analyzed wells (R-7, R-8, R-8B, R-9, R-9C and R-9D). Figure E-5 presents the locations of these wells Eight wells monitor the closed SI including two upgradient wells (R-1R and R-10) and six downgradient

## E.5a Description of Wells

information are provided in Appendix E-2. Monitoring well locations are provided on Figure E-5 wells R-7, R-8, R-8B, R-9, R-9C, R-9D are the point of compliance wells. Well depth and construction 8B, R-9C, R-9D, 聚物。Wells R-1R and R-10 are located hydraulically upgradient of the closed SI and The detection monitoring well network under the Permit includes monitoring wells R-1R, R-7, R-8. R-

# E.5b Description of Sampling and Analysis Procedures

Procedures, included in the 1987 Permit Application. The semi-annual sampling events included General field measurements and sample collection were conducted in accordance with Attachment E-Groundwater Sampling and Chain-of-Custody, and Section IV.D, Sampling and Analytical



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determining field values of pH and specific conductance, purging wells, collecting samples, and recording field observations and measurements related to groundwater monitoring in a dedicated field measuring water levels, evaluating the potential presence of non-aqueous phase liquid (NAPL) layers,

elevation contour maps for the shallow A-level zone alluvium. surveyed top of casing elevations. The elevations were used to construct groundwater surface in Appendix E-3. Groundwater levels were used to determine groundwater elevations from the respective well casing. A list of the wells and the recorded groundwater levels at the wells are provided Prior to conducting any sampling activities, Beazer and KII measured water levels from the top of the

specific conductance and temperature were obtained while purging to document changes in purge submersible pump or laboratory-cleaned, dedicated, stainless-steel bailer. Field measurements of pH, The groundwater stored within the well was removed from the monitoring well using either a water had stabilized; 2) a maximum of five well volumes were removed; or 3) until the monitoring well been removed from the monitoring well and pH, specific conductance, and temperature of the purged water quality. Purging continued until 1) a minimum of three well volumes of stored groundwater had had been purged dry.

phthalates (EPA Method 8060), total and dissolved chromium (EPA Method 6010A) and mercury (EPA the following constituents: PAHs (EPA Method 8310), acid extractable phenolics (EPA Method 8040), total organic carbon, PAHs, total phenols, and pentachlorophenol. Pursuant to the Permit modification collected during the detection monitoring program required by the Permit are provided in Appendix E-4 Method 7470) and field pH, specific conductance and temperature. A summary of historical data in February 1990, groundwater samples collected from wells monitoning the closed SI are analyzed for The detection monitoring program initially included analyses for pH, conductivity, total dissolved solids,

# E.5c Procedure for Establishing Background Quality

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

## E.5d Statistical Procedures

this situation. These documents were submitted to MDEQ by Beazer on September 11, 1990, for the high number of non-detects in the groundwater monitoring data, two documents were prepared by Behrens Fisher Student's t-test or an equivalent method approved by the MDEQ. However, because of Dr. William R. Kodrich, Clarion University of Pennsylvania, detailing statistical alternatives to address In accordance with Section IV.F of the Permit. a statistical evaluation is to be completed using the



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

- Koppers Industries Inc. (KII) Grenada permit issued to KII's Grenada facility. Results of statistical analyses of data for the original five parameters specified in the
- Ņ Recommended statistical procedures for companing mean background monitoring well concentrations with mean downgradient compliance monitoring well concentrations at KII's Grenada facility.

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

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

billion) is still critical in determining whether the presence of the constituent is statistically significant sampling round, but the magnitude of the concentration (counts, or concentration units in parts per concentrations. In other words, the probability of detection may be small and constant during each detected samples with high concentrations are larger than counts for samples with smaller molecule separately but cumulatively so that the counts (i.e. concentration in parts per billion) for but stays constant from trial to trial. The Poisson model can be considered to count each constituent series of independent events over a large number of trials, where the probability of occurrence is low events" by using the Poisson Distribution (EPA 1992). The Poisson model describes the behavior of a When more than 90% of the data values are nondetect, the detected samples can be modeled as "rare

95%, will be exceeded less than 5% of the time. If this concentration value is exceeded, there is a 95% coverage with 95% confidence. This value represents a concentration value which, with a probability of Tolerance Limit is calculated. In these statistical analyses, the tolerance limit is a value defined by 95% Using the methodology and equations outlined in EPA's statistical guidance (1992), a Poisson

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probability that the downgradient concentration is significantly greater than the upgradient

group is being compared to background data. the Wilcoxon-Rank Sum Test (also known as the twoupgradient well. wells as a group contain constituent concentrations that are significantly greater than those in an using the actual constituent concentrations. Specifically, the test determines whether the downgradient sample Mann-Whitney U Test) is used (EPA 1992). This test ranks the concentration data rather than When more than 50%, but less than 90% of the data are nondetect, and a single compliance well

provide data representing background groundwater quality. wells R-1 and R-10 are located upgradient with respect to the closed SI and were determined to monitoring wells located near the compliance point (R-7, R-8, R-8B, R-9, R-9C, R-9D). Monitoring monitoring data collected from upgradient monitoring wells R-1R and R-10 to six downgradient changes in the parameters, the Poisson Tolerance Interval was used to compare groundwater upgradient to downgradient monitoring points at the closed SI. To determine statistically significant The evaluations were conducted to determine if statistically significant changes occur in comparison of Statistical evaluations of the groundwater data were conducted as part of the 1987 Permit Application.

wells to those concentrations measured in the upgradient monitoring wells. difference exists in comparing concentrations of the permit constituents in the downgradient monitoring the parameters specified in the permit. The statistical evaluations indicate that no statistically significant the background monitoring wells (R-10A and R-1R) and the six compliance monitoring wells for any of Applications of the Poisson test of proportions indicate no evidence of a significant difference between

greater than the upgradient concentrations the Wilcoxon Rank-Sum Test, downgradient concentrations were also never found to be statistically constituent detection was not regarded as significant. For those constituents statistically analyzed using since the second half of 1990. For those constituents statistically analyzed using the Poisson downgradient data were compared to a pool of upgradient data collected from wells R-1R and R-10 During past semi-annual sampling events, the detection of constituents was very infrequent. The Tolerance Limit, no downgradient concentration ever exceeded the limit. Therefore, any infrequent

# E.6 Continuation of the Detection Monitoring Program

groundwater detection monitoring program has been in place since 1990. Statistical comparisons have modified by the MDEQ Permit Board on February 23, 1990. The modification included the addition of facility. The Permit was issued for the inactive SI which was closed in late 1989. The Permit was On June 28, 1988, the MDEQ issued Hazardous Waste Management Permit No. 88-543-01 for the Kli 24 constituents to a post-closure detection menitoring program. Therefore, the current semi-annual

the point of compliance wells have not been statistically greater than upgradient well concentrations been made semi-annually from 1990 through 1997, and the concentrations of Permit constituents in

current post-closure detection monitoring program. The modifications and rationale for the closed SI meet the requirements for reducing the post-closure care period and herein has modified the stated in the Request for Modification of the Post-Closure Care Permit for Closed Surface will not adversely impact groundwater, and subsequently human health and the environment. As date indicating the absence of unit-related constituents in the groundwater, the closed SI has not, and certification of closure, the extensive analytical data base and the statistical evaluations completed to removal of waste material, capping of the unit in accordance with the closure plan, the subsequent finds that the reduced period is sufficient to protect human health and the environment. Based on the closure care period for the hazardous waste unit, if it is found that the unit is closed, and if the owner CFR Part 264. As indicated in 40 CFR Part 264.117(a)(2), the Administrator may shorten the post-The Mississippi Hazardous Waste Regulations incorporate by reference the federal regulations in 40 active life of the SI, including the closure period, and throughout the post-closure period (Part IV.G.3). <u>Impoundment</u>,≹luor Daniel GTI, Inc., February 1997), Beazer maintains that the conditions of the modifications are described in the following sections. The Permit indicates that the post-closure detection monitoring program shall continue throughout the

## Description of Wells

the lower sand at depths ranging from 41 to 87 feet bgs sand aquifer at depths ranging from 20 to 34 feet bgs. Wells R-8B, R-9C and R-9D are completed in E.1A and E.5A. The majority of the wells (R-1R, R-7, R-8, R-9, R-10) are installed within the upper downgradient point of compliance wells. Detailed descriptions of these wells are provided in section network of wells. Wells R-1R and R-10 are the upgradient wells. The remaining wells are R-7, R-8, R-8B, R-9, R-9C, R-9D and R-10). The modified detection program will include the same The current detection groundwater monitoring program for the closed SI consists of eight wells (R-1R,

## Sampling and Analysis

the upgradient monitoring wells. None of these constituents are affecting groundwater quality comparing concentrations in the downgradient monitoring wells to those concentrations measured in evaluations of the data collected over the past nine years, no statistically significant differences exist in phenol compounds. However, based on a review of the extensive analytical database and statistical Previous groundwater monitoring included semi-annual analyses for metals, PAHs, phthalates, and

suitable for detecting acid extractable phenolics (AEPs). As stipulated in "Test Methods for Evaluating Pentachlorophenol was detected during the last two monitoring events at concentrations similar to the EPA Method 8040 is a Gas Chromatography (GC) method equipped with a flame ionization detector laboratory reporting limits. Historically, pentachiorophenol was determined using EPA Method 8040.

verify that this constituent is not impacting groundwater quality downgradient of the closed SI. However, provided as Appendix E-5. detection monitoring program will be analyzed in accordance with the Sampling and Analysis Plan and/or eliminates the potential for false positive results. Groundwater samples collected during the pentachlorophenol, because it reduces the potential for misidentification of constituents and reduces Beazer proposes EPA Method 8270, a GC/Mass Spectroscopy method for analyzing to co-elution of constituents on the column. Beazer will continue to analyze for pentachlorophenol to presence of hydrocarbons commonly found in samples from waste sites. These interferences are due Solid Waste, SW-846," EPA Method 8040 is susceptible to false positives that are caused by the

current site conditions, the groundwater quality has not degraded downgradient of the closed SI. Based constituents dissolved in groundwater as it passes through a groundwater monitoring point. Under the will be completed in accordance with the sampling and analysis plan for the closed SI, included as and R-9D on an annual basis for pentachlorophenol. The post-closure detection monitoring program upgradient monitoring wells R-1R and R-10 and point of compliance wells R-7, R-8, R-8B, R-9, R-9C on this information and the extensive database, Beazer proposes to collect groundwater samples from The goal of the groundwater sampling is to define a frequency of sampling that is capable of detecting Appendix E-5. This plan details procedures for sample collection, purging, preservation and shipment, chain-of-custody, and analyses.

three consecutive years. This demonstration will be performed in accordance with the statistical groundwater quality downgradient of the closed SI has not exceeded background quality for a period of Beazer proposes that groundwater sampling be terminated following the demonstration that the evaluations presented in Section E.6d.

## Alternate Concentration Limits

standard will be required for the closed SI. However, until the post-closure period is terminated, Beazer herein reserves the right to propose alternate concentration limits for site groundwater per CFR 40 Given the lack of groundwater contamination shown to date, it is unlikely corrective action to any

## Statistical Evaluation

of the analytical data. different than the upgradient wells. These determinations will be completed annually following receipt concentration detected in samples collected from the downgradient monitoring wells is statistically appropriate method outlined i∱ Appendix E-6.∫Pentachlorophenol will be evaluated to determine if the Upon receipt of the analytical data, a statistical evaluation of the data will be completed using the

constituent list in accordance with 40 CFR 264.98 (g)(2). to repeat the sampling event and re-evaluate the groundwater quality. If the statistically significant If a statistically significant increase is determined in a downgradient monitoring well, Beazer may elect increase is confirmed, Beazer will sample the well(s) indicating a statistical increase for the Appendix IX

An annual groundwater monitoring report will be submitted to MDEQ. The annual report will include:

- Static groundwater level elevations
- -Potentiometric maps from each sampling event;
- Groundwater flow rate and direction in uppermost aquifer;
- constituent migration; and wells are adequately placed to characterize groundwater flow direction and potential Evaluation of the groundwater surface elevations to determine whether the locations of
- M-10 to the background value. Statistical comparison of groundwater analytical results of upgradient well M-1R and

# Post-Closure Groundwater Monitoring Program

program (described in Section E-6). this time pending issuance of the new Permit and approval of the proposed detection monitoring The current detection groundwater monitoring program (described in Section E.5) will be maintained at

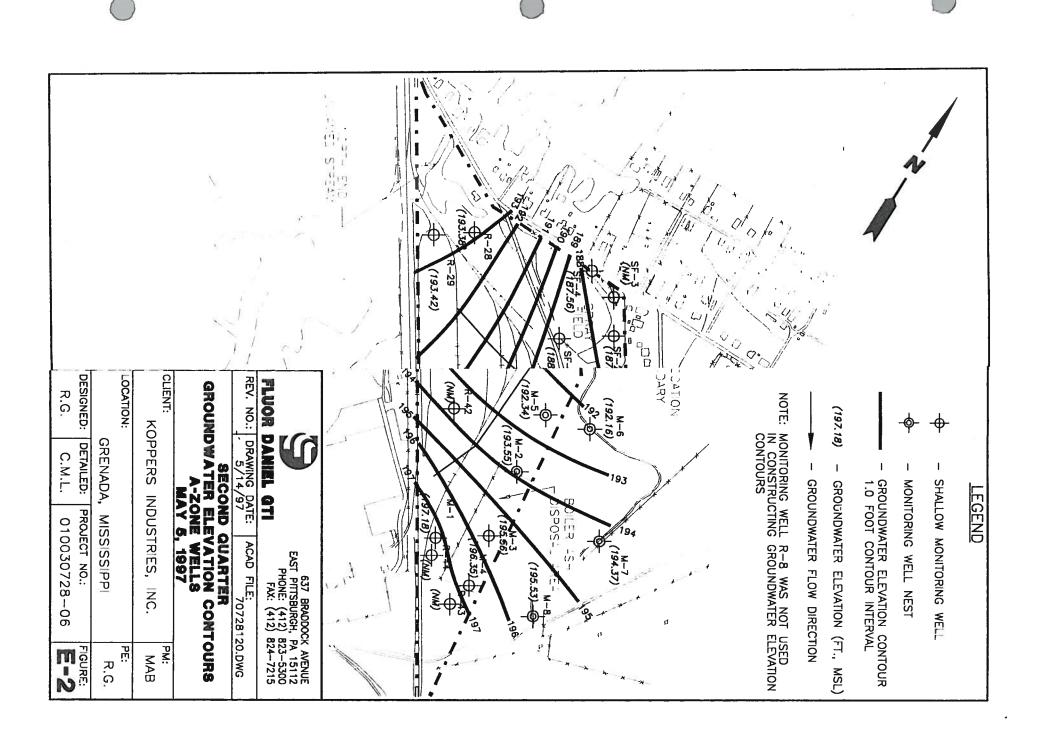
### E.7 Compliance Monitoring Program

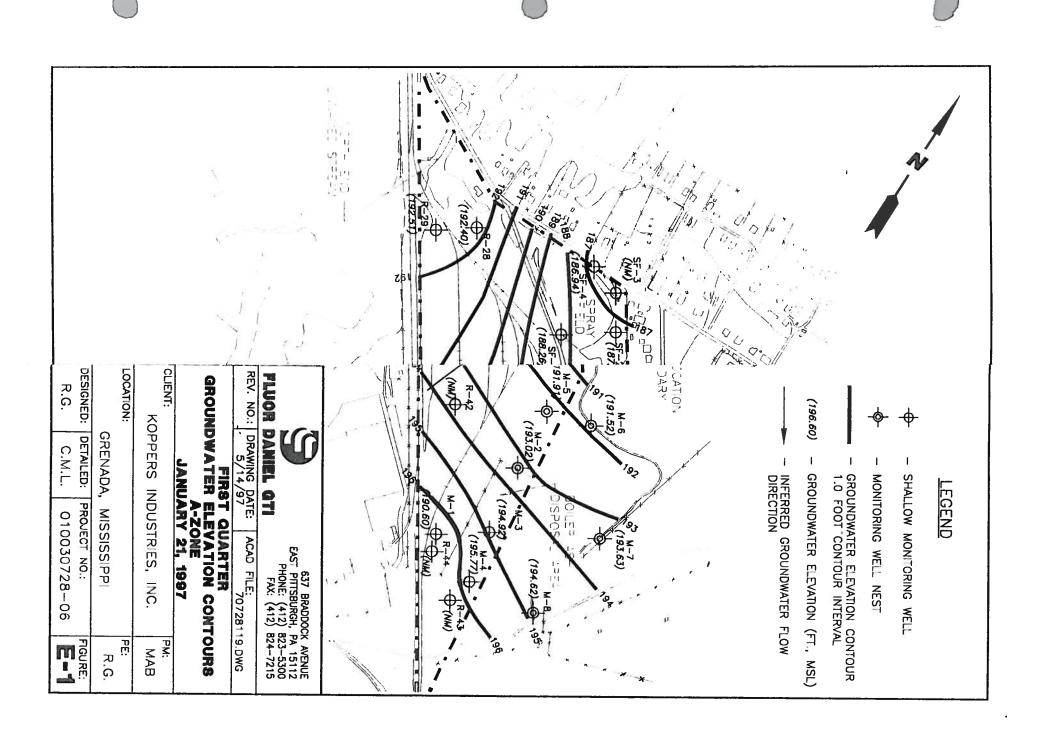
monitoring is not required closed SI has not, and is not anticipated to impact groundwater quality. As such, compliance statistically greater than that present in the upgradient wells. Consequently, the data indicate that the 1990 have indicated that no constituent in the downgradient wells has been detected at a concentration the statistical distribution of the concentrations. Overall, the results of the statistical analyses since methods were selected based on the frequency of detection of the constituents being monitored and Ground-Water Monitoring Data at RCRA Facilities, Addendum to Interim Final Guidance (1992). These Whitney U Test). These methods were selected in accordance with EPA's Statistical Analysis of evaluated semi-annually using the Poisson Tolerance Limit or the Wilcoxon Rank-Sum Test (Mann-Since 1990, groundwater analytical data from the Grenada, Mississippi facility has been statistically

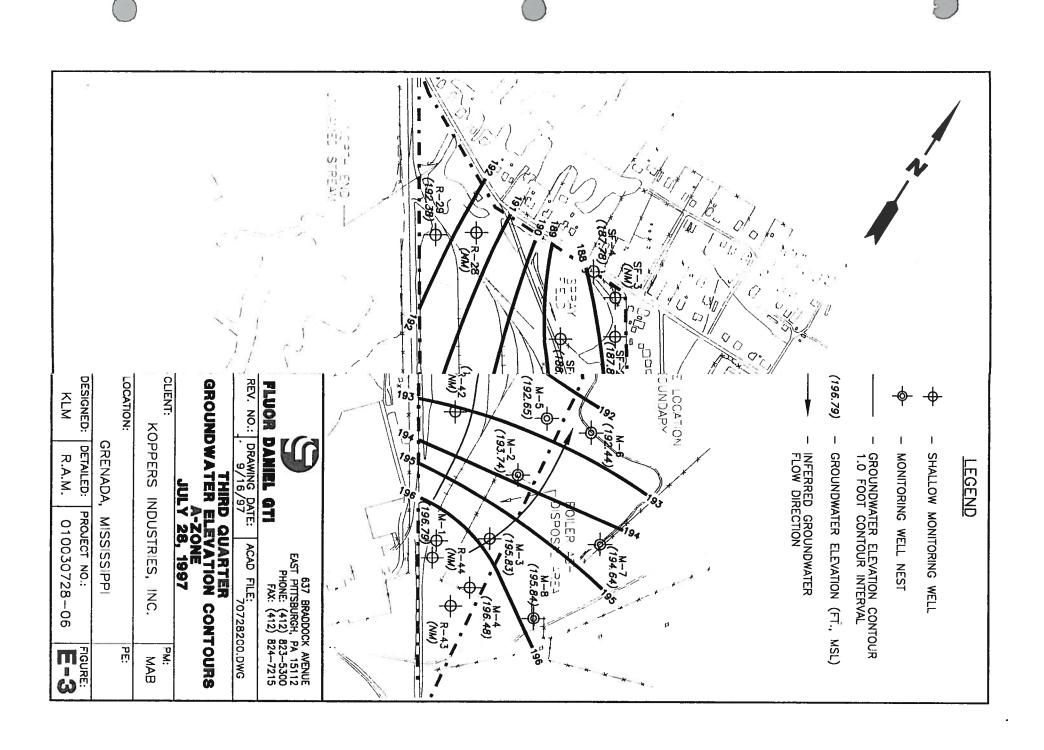


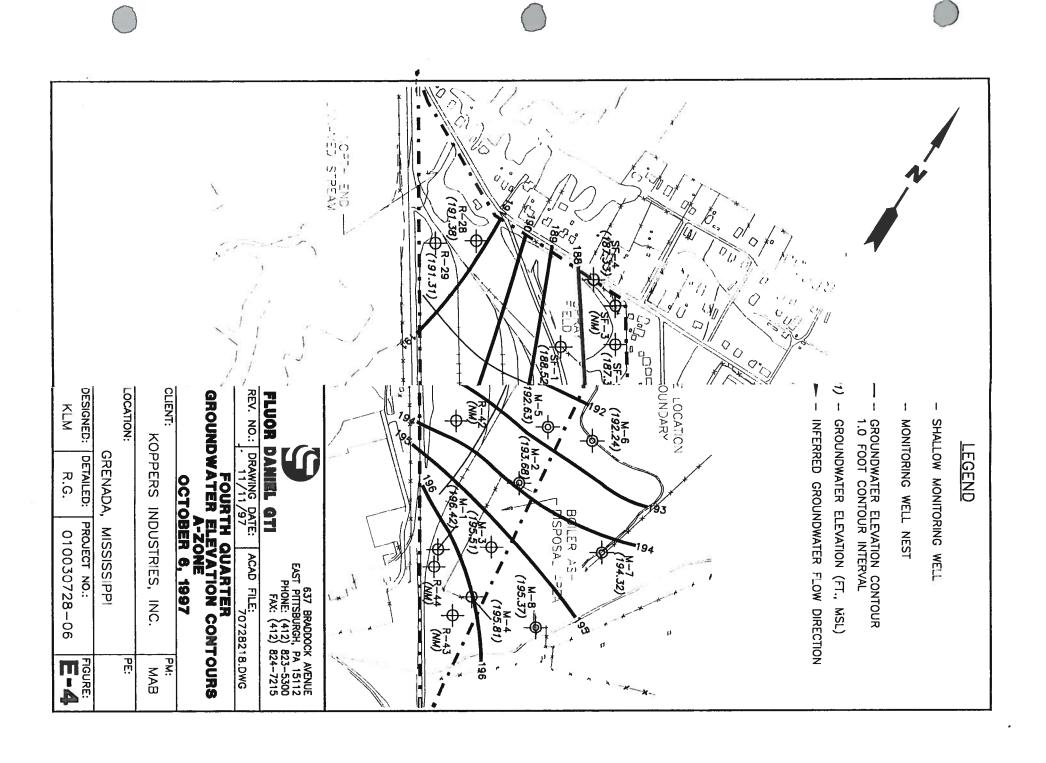
### w. M **Corrective Action Program**

groundwater corrective action for the closed SI will be necessary. Should corrective action for the be necessary through the RFI/CMS and subsequent site-wide corrective action evaluation. would be selected and implemented in conjunction with any site-wide corrective action determined to closed SI be dictated by future groundwater monitoring, as proposed herein, that corrective action Based on the first nine years of post-closure monitoring, Beazer does not anticipates that any









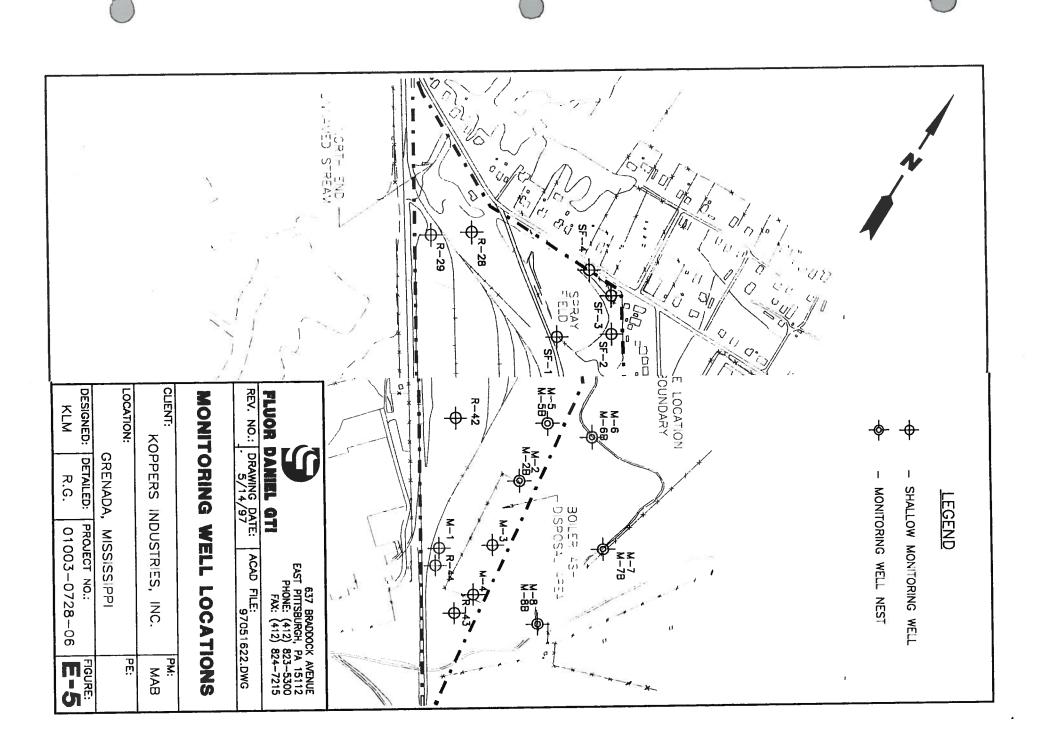


TABLE E-1
Summary of Monitoring Well Construction

### Koppers Industries, Inc Grenada Facility Tie Plant, Mississippi

Well	Top of Casing Elevation (ft msl)	Date Installed	Well Installation Depth (ft bgs)	Ground Surface Elevation (ft msl)	Well Diameter/ Type (Inches)	Screen Length / Type (feet/inches)	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	Top of Screen Elevation (ft msl)	Bottom of Screen Elevation (ft msi)	Geologic Zone Monitored
R-1R R-2 R-3 R-4 R-5 R-5B R-6 R-7 R-8 R-8B R-9C R-10 R-10 R-10 R-11 R-12 R-12 R-12B R-12D	210.87 209.26 206.96 206.06 211.84 212.18 213.04 210.98 214.53 208.98 213.66 216.00 216.07 208.78 203.74 208.94 200.71 201.28 201.74	03/28/89 03/25/82 03/26/82 03/27/82 07/17/84 08/10/88 07/17/84 07/17/84 11/13/86 07/17/84 08/26/87 08/25/87 11/03/86 11/14/86 11/12/86 11/12/86 08/15/88 05/15/91	29.5 30.5 28.0 29.0 31.0 51.0 31.0 31.0 46.0 31.0 60.5 87.2 27.0 47.0 25.0 20.0 41.0 63.0	209.60 207.28 205.20 204.50 209.60 210.10 208.60 212.40 208.00 211.70 213.10 213.87 208.00 201.80 198.77 198.74 199.26	2/PCV 2/PCV	10 / 0.010 10 / 0.010	20.0 20.0 18.0 19.0 21.0 41.0 21.0 21.0 36.0 21.0 50.5 77.2 17.0 37.0 15.0 10.0 31.0 52.5	30.0 30.0 28.0 29.0 31.0 51.0 31.0 31.0 46.0 31.0 60.5 87.2 27.0 47.0 25.0 20.0 41.0 62.5	189.6 187.3 187.2 185.5 188.6 168.6 169.1 187.6 191.4 172.0 190.7 162.6 136.7 191.0 171.0 186.8 188.8 167.7 146.8	179.6 177.3 177.2 175.5 178.6 158.6 179.1 177.6 181.4 162.0 180.7 152.6 126.7 181.0 161.0 176.8 178.8 157.7	Upper Sar Upper Sar Upper Sar Upper Sar Upper San Upper San

# TABLE E-2 Summary of 1997 Groundwater Flow Velocities and Hydraulic Gradients

### Koppers Industries, Inc. Grenada Facility Tie Plant, Mississippi

		Quarter 21, 1997	The state of the s	Quarter 5,4997	"Third Guerter Unity 22, 1997		Fourti Octob	Average		
	Gradient (unitless)	Velocity (feet/day)	Gradient (unitiess)	Velocity (feet/day)	Gradient (unitiess)	Velocity (feet/day)	Gradient (unitiess)	(feet/day)	Velocity (feet/day)	
Closed Surface Impoundment Area										
K=8.63 ft/day, n=0.3	0.006	0.174	0.004	0.109	0.005	0,133	0.005	0.152	0.142	
R-25 to R-1R = 195 feet	10813			3		1		0.100	""	
Closed Surface Impoundment Area										
K=8.63 ft/day, n=0.3	0.008	0.230	0.008	0.237	0.009	0.245	0.009	0.254	0.241	
R-9 to R-11 = 135 feet	1					3.333	0.254	0.241		
Closed Surface Impoundment Area	(9)						300000000000000000000000000000000000000			
K=8.63 ft/day, n=0.3	0.001	0.019	0.0001	0.002	0.002	0.063	0.003	0.094	0.044	
R-1R to R-7 = 138			N = 15 ==	0.002	9,003	0.003	0.004	0.044		

AVERAGES 0.0049 0.1410 0.0040 0.1159 0.0051 0.1468 0.0058 0.1684 0.1425

V = K°Vn

Where:

V = average linear groundwater flow velocity

K = hydraulic conductivity (Hydro-Search, Inc. 1996)

i = average hydraulic gradient

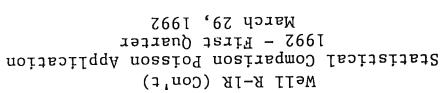
n = porosity

# TABLE E-3 Summary of Detection Monitoring Constituents Permit No. 88-543-01

Koppers Industries, Inc.
Grenada Facility
Tie Plant, Mississippi

# CONSTITUENTS

Pyrene Mercury Pentachlorophenol Dibenz(a,h)anthracene Fluoranthene Chrysene Chromium - dissolved Benzo(a)pyrene
Benzo(b)fluoranthene 2,4-Dimethylphenol 2,4-Dinitrophenol 2-Chlorophenol 2-Methyl-4,6-dinjtrophenol Naphthalene Indeno(1,2,3-c,d)pyrene Fluorene Bis(2-ethylhexyl)phthalate Benzo(k)fluoranthene Benzo(ghi)perylene Benzo(a)anthracene Acenaphthylene Acenaphthene 2,4,6-Trichlorophenol 2,4-Dichlorophenol 2,3,4,6-Tetrachlorophenol 2-Nitrophenol 4-Nitrophenol



Confidence intervals bosed on Polsson sethod:

Goldstein, Avrom. 1964, Blostatistics. The Hochillon Company. Hee York. 272 pp.

Bunyon, Michard P. 1975, Fundamentais of Statistics in the Slabasical, Hedical and Health Sciences. Durbury Press. Soston. 393 pp.

0.11 - E.O

Resnophthers = 0; Phenol = 2; 2,4-0|chlorophenol = 0; 2-46-0|nl-chophenol = 0; 2-41 trophenol = 1; 2,4,6-Thichlorophenol = 2; 2,4,6-Thichlorophenol = 2; 2,4-0|chlorophenol = 1; 2,4,6-Thichlorophenol = 2; 2,4,6-Thichlorophenol = 2; 2,4,6-Thichlorophenol = 2; 2,3,5,6-Tetrochlorophenol = 2; Benzoldph,1)Yerylene = 4; Eluoronthene = 3; Benzoldph,1)Yerylene = 4; Eluoronthene = 3; Benzoldphyene = 1; Benzoldphyene = 1; Benzoldphyene = 3; Indenot 12-dphyene = 3; Indenot 13-dphyene = 3; Inde

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	DH DH	83A	0.11 - 5.0	▶,Υ ~ EQ.Ω	ĭ	9-H	
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	OH	834	6.9 ~ 1.0 6.9 ~ 1.0	€.9 - 1.0 ▶.7 - €0.0	l 7	88-A 6-A	·
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	OH	83A	0.St - 0.0	6.9 - 1.0	3	H-9C	
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	OH DH	AE8 AE8	8.51 - 8.0 8.51 - 8.0	6.9 - 1.0	ž	9-H	
	ori Oct	834	8.51 - 8.0	E.9 - 1.D	ž	· 5-ñ	BIEBHTTHRIOU.FK A) OSLEAR
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	OH	AEB	▶.5 - €0.0	F.T - E0.0	<u> </u>	26-U	
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# Well R-IR (Con't) Statistical Comparison Poisson Application 1992 - First Quarter March 29, 1992

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Confidence intervals bosed on Polsson method:

Coldstein, flores, 1964, Blostatistics, The Hodillian Cospony, Hee York, 272 pp.

haryon, fidnerd P. 1975. Fundesentais of Statistics in the Biological, fiedical and Health Sciences. Doctury Press. Boston: 393 pp.

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Downgradient Hells

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				•		
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OH	AE3					
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OH	AE8	6.6 - 9.9	6.6 - 6.0	ň	6-4	
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				U	2-4	<b>ENTROHLON(PHENOL</b>
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04	AES	▶.5 - €0.0	5.5 - 0.0	ž	26-H	
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ŎĤ	AE8					
011		F.5 - EO.0	0.0 - 5.34	Ö	88-H	
	AE8	F.5 - CO.0	4,4 - E0.0	<u>1</u>	0-H	
0H	83A	F.5 - EO.0	E.9 - 1.0	ζ	₹-R	3月3日以北人りの17。
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Bockground Hell

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Confidence Limits for

### March 29, 1992 1992 - First Quarter Statistical Comparison Poisson Application Well R-IR (Con't)

Bockground Information: 1990–03, 03, 04 Secry June to Used: 1990–03, 03, 04 Background Hell: Right In Relation Detects in R-IR: 10-2661 '60 '70 '10-1661 10 '60 '70-0661

Confidence intervals bosed on Polsson sethod:

Surgen, Bichard P. 1975, Fundamentals of Statistics in the Biological, Hedical and Health Sciences. Dadury Press. Boston. 193 pp.

Coldstein, fluram. 1964, Blostotistics. The Hodillian Company. Hee York, 272 pp.

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Downgradient Hells

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Confidence Limits for Brokeround Hell and

Evidence of Contominotion

### Well R-10

### FOR 1992 - FIRST CHINTER Hardh 29, 1992 BTRITATION, CONPANISON POLBSON MYPLICATION

thubber of Historical Detects in R-10: Yeons, Quanter Used: 1990-02, 03, 04 1991-01, 02, 03 1902, 01 Bockground Lett: R-10 Background Information:

Confidence intervals bosed on Polsson sethod:

Coldatein, forces. 1964, Biostatistics. The Hochillon Cospany. Hew York, 272 pp.

fundon, Alchard P. 1975. Fundosentals of Statistics in the Slotogical, Hedical and Health Sciences. Dadury Fress. Boston. 393 pp.

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			<del></del>	<u></u>		<del></del>
DH	63A	i '+i - 0'i	1.7 - E0.0	i	Ş-H	PHEHOL
DH	<b>83</b> A	i 'bi - 0' i	▶.7 - €0.0	ť	6-A 86-A	
DIT	834	1.11 - 0.1	0.11 - 6.0	E	6-U	48
Dil	AEB	1.41 - 0.1	0.11 - 6.0 0.11 - 6.0	E	26-H	
OH DH	83A 83A	1.51 - 0.1	0:11 - 6:0	3	D6~U	
OH	89A	£.E - 0.0	F. T _ E0.0	ĭ	₹-A	JOHBHOOM IN-F
OH OH OH	83∧	£.E - 0.0	€.E ~ 0.0	'n	0-H 66-H	<u>.</u>
DH	AE8	€.8 - 0.0	P.T ~ ED.D E.E − 0.0	Ö	6-H	
OH	83A	€.8 - 0.0 €.8 ~ 0.0	E,B - 0.0	0	26-H	
OH OH	AE8	£.8 - 0.0	6.6- 0.0	Ō	Ø6—₩	•
	***			<del></del>	<del></del>	<del></del>
				-		2-FETHAL -4,6-DIHITTE
011	AE8	g.g - g.g	F.7 ~ €0.0	ĭ	₹- <b>U</b>	
011	AE3	£.8 - 0.0	E.E - 0.0	'n	8-A	
011	AE8	5.2 - 0.0	▶.7 - E0.0 E.E - 0.0	P	<b>6−</b> H	
Oil	83A 83A	6.8 - 0.0 6.8 - 0.0	1.7 - EO.0	į.	D6−H	
OH OH	63A	6,8 - 0.0	▶. 7 - €0.0	ı	D6-U	
	H.,			<del></del>	·	
DH1	83A	P.5 - E0.0	F.5 - €0.0	ı	5-A	2-HI MOPHENOL
OH.	B3A	F.5 - E0.0	P. T - €0.0	i	8-H	
011	834	1.5 - E0.0	▶, ₹ ~ €0.0	í	88-A	
oii	83A	≯.5 ~ £0.0	E.Q - 1.0	č	₩-6C ₩-3	
DH DH	' 83Å 83Å	P.T - E0.0 P.T - E0.0	6.9 - 1.0 6.9 - 1.0	ξ	O6-R	

Contamination

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Confidence Limits for Bookground Hell and

### E.9 - 1.0 0.11 - E.D RA. 0.11 - 6.0 C.9 - 1.0 19-9C OH B3/ 0.11 - 6.0 6-U 011 834 0.11 - E.O OH 834 0.11 - E.O P.T - ED.D DO-H OH 1.58 0.11 - 6.0 E.Q - 1.0 8-W 2,2,8,6-TETHNCHLOROPHEHOLL 0.11 - C.O 0,11 - E.O OH BBA 4.7 - E0.0 P.S - E0.0 D6-M OH P.T - ED.O 26-H OH 834 1.5 - ED.O OH 834 1.5 - EO.O E.9 - 1.0 6-H OH P.5 - CO.0 P.T - 80.0 80-U MES 011 834 P.T - E0.0 E.9 - 1.0 011 P.T - EO.O P.T - EO.O 2-(ALCOHOPHENOL P.5 - 60.0 P.7 - ED.D 011 834 55333 P.T - CO.O 6.9 - 1.0 96-M 834 P.5 - \$0.0 6.8 - 0.0 Ö 6-W AFR 1.5 - EO.0 E.9 - 1.0 88-H AF2 6.6 - 0.0 834 F.7 - E0.0 B-H 0 P.T - 00.0 2,4-01HETH/LPHEHOL 1.7 - DO.0 OH AES E.B - 0.0 P.T - £0.0 OH 834 E.B - 0.0 E.Q - 1.0 10-9C DH AE8 E.8 - 0.0 P.Y - E0.0 0-U 011 834 6.0 - 1.0 80-W 011 BBA E.C - 0.0 0.11 - 5.0 9-4 E.B - 0.0 Z-W 2,4-DICHLONOPHENOL 011 E.9 - 1.0 E'6 - 1'0 z D6-H AE8 OH H-90 H-90 H-90 E.9 - 1.0 0.6 - 12.6 OH NE8 0.11 - E.O 011 83A C.9 - 1.0 6.9 - 1.0 011 BBA E.9 - 1.0 E.Q - 1.0 E.9 - 1.0 014 834 2-4 2,4,6-Thi Cilconomienol OH RBA 6.9 - 1.0 0.11- E.D tor Unrichies (Deteots) (miseied) meldolmov not afpeled to Porometer (UG/I) In Downgradient do Luevo Downgrodient Hells CONTIDENCE LIBITE CONTIDENCE LIBITS HIStorical No Confidence Limits for Brokground Hell and Contemination Domprodient Hells To ecneblu3 I Left braue-restoned

CALORINE - 0: Hercury - 0 Action of the control of a first tropheno 1 = 0; S-He trul = 4,6-0 in tropheno 1 = 0; S-Hi tropheno 1 = 1;

2,4,6-7 in tropheno 1 = 2; 2,4-0 in tropheno 1 = 0; S-4-0 instruction 1 = 1; S-0 in condense 1 = 1;

2,3,5-7 in tropheno 1 = 3; Berzo (a Mi tropheno = 3; Berzo (a),1,1 Merylene = 3; Berzo (b) in tropheno 1 = 1; Berzo (a) Mi tropheno = 1; Berzo (a),1 Merylene = 2; Berzo (a),1 Merylene = 3; Berzo (a),1 Merylene = 1; Berzo (a),1 Merylene = 1; Berzo (a),1 Merylene = 3; Berzo (a),1 Merylene = 4; Berzo (a),

Amyon, Richard P. 1975, Fundamentais of Statistics in the Biological, Hedical and Health Sciences. Duduny Press. Soston. 303 pp.

STATISTICAL COMPANISON POTSSON APPLICATION

001ds/ein, fivrom, 1964, Blostelistics, The flocilition capany, the York, 272 pp.

Confidence intervals bosed on Polsson sethod:

thinber of Historical Detects in R-10: Veor's, Querren Used: 1900-02, 03, 04 1991-01, 02, 03 1902, 01 Brockground Hell: ft-10

Bockground Information:

Handh 29, 1992 FOR 1992 - FIRST CHANTER

Well R-10 (Con't)

### DH DH F.7 - ED.0 D6~8 834 E.9 - 1.0

Well R-10 (Con't)

Harch 29, 19:12 BTRITETL CONFINATION FULBON NEPLICATION FOR 1992 - FIRST QUANTER

fundon, fildhard ft. 1975. Fundosentals of Statistics in the Siciogical, Hedical and Health Sciences. Durbury Press. Boston. 393 pp. Coldafein, Avros. 1964. Blostotistics. The Hochillon Cospory. Hee Vork. 272 pp. Confidence intervals bosed on Polsson sethod:

for Variables (Detects)

Confidence Limits

Acenophthiene = 0; Phenol = 3; 4-Mitrophenol = 0; 3-Methyli-4,6-Ointtrophenol = 0; 3-Mitrophenol = 1; 2,5-Chiorophenol = 2; 2,4-Ointtrophenol = 1; 2,5-Chiorophenol = 0; 2,5-Chi

Downgradient Hells

of Defects

Historical No

#1 | PH

Andre growter need: 1000-03' 03' 04 1001-01' 03' 03 1003' 01

Forometer (UQ/1)

Background Hell: 8-10

Bockground Information:

thmber of Historical Detects in R-10:

	011 011	AE8 AE8 AE8	+.5 - E0.0 +.5 - E0.0 +.5 -	5.9 - 1.0 5.9 - 1.0	Š	0-4 6-4 80-4	
	011	AE8	1.5 - €0.0	p.r - €0.0 p.r - €0.0	i	1-A 8-H	BIBICO to 1 DIRECTOR A CONTRIBUTION
	DH DH	AE8 AE8	6.9 - 1.0	E.Q - 1.D	z	O6-H	
	DH	AE\$	6.1 - 9.3	1.7 - €0.0	ī	26-W	
	DH	AE8	E.P - 1.0	E.0 - 1.0	ż	6-4	
	04	AE8	E.9 - 1.0 E.9 - 1.0	0.11 - 6.0	ě	86-U	
	Ort	AE8	E.Q - 1.0	0.11 - 6.0	Ē	9-U	
				0.11 - \$.0	3	Ý-H	3FGHOUJ-1
	DH DH	AE3 AE8	8.51 - 8.0	F.T - E0.0		06-14	
	OH	∧e.d AE2	0.6 - 12.6	6.9 - 1.0	,	M−9C	
	OH	83A	0.6 - 12.6	6.9 - 1.0	ž	6-U	
	DI	AE\$	0.51 - 0.0	0.11 - 0.0	ě	80-U	
	DI1	034	0.51 - 0.0 0.51 - 0.0	E.9 - 1.0	ž		
	011	AE8		£.9 ~ 1.0	2	£-₩	39-GUA-K ©) 021-G-0
	OH	834	1 101 - D11	0.11 - 6.0	•	O6~W	
	DH	AE&	1.151 - 0.11	0.11 - 11.0	Ē	26-U	
			1 'PL - 0'1	0.11 - 6.0	Ĕ	6-U	69
		THEFT WELL M-10. SEE TABLE 3 FOR MESULTS.	UO.40 U.I.In 1771 II.Inno. no		ř.	88-U	
	011	824	1,11 ~ 0,1	DONHOWDIENT HELLS A-6 MID A	<b>*</b>	9-W	
				0.11 - 6.0	t	₹ <b>-</b> 4	BHSHTTHINIOUSH d'SOSSIBIL
	ON ON	AE8	6.0 - 1.0	£.E - 0.D		<del></del>	
	DII	AE8	E.9 - 1.0	A.T - EO.O	Ď.	D6-U	
	DH	AE8 AE8	6.4 - 1.0	P.T - EO.D	•	<b>26~U</b>	
	DH	AE8	C16 - i10	E.Q - 1.D	, ,	0-U ₩-0	
	DH	AE&	0:1 - 8:3	6.0 - 1.0	ž	9-U	
<del></del>			E.9 - 1.0	6.9 - 1.0	ž	5-4	DEJCO(0'11') NEW/ENE
	OH	AE8	1.41 - 0.1	0.11 - E.D			
			· -	<b>.</b> 0	Ę	06-W	
					5	¥-6C ₩-8	
		OF HIS AND THE OPENING THE BOOK	T 338 (MUOIN) SOUNIN	U TO SIEVUMENT WITH SHO DITIES	Į.	69-U	
		CONFINED HITH UPDIVIOUSHT MELL N-10	) 70-8 GEN 10-8 188-5 ,	DOMINATION HELLS N-7, N-8	į.	9-V	
	I i Det	يستسفوه استهماه والموالة والسراف المستواط والمستوال ووالم والأ			•	ž-ū	BELICO (@ NAKLIHAVCE) IE
	1 1 1077	#					

for Uorlobies (Detects)

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Confidence Limits for Background Hell and Background Hell and

	OH OH	M Tente 3. VES VES VES VES VES	031 <del>111110</del> 13.6 13.6 13.6 13.6	9 27 3 10 3A	86-81,8-84 SH-81,8-84 SH-81,8-84 SHE 118-3 - 11 O	C .	₩-30 ₩-30 ₩-3	
	ОН	834		- 8.0	▶.7 - E0.0	t ,	5-R 8-R	TAJNHTH'K JYXZILIVHT3-S •218
	OH OH OH OH	53A 83A 83A 83A 83A 83A	p.5 -	- 50.0 - 50.0 - 50.0 - 50.0 - 50.0	6.9 - 1.0 6.9 - 1.0 6.7 - 60.0 6.7 - 60.0 6.8 - 0.0 6.8 - 0.0	0 i i z	100-14 20-14 10-04 10-08 10-08 10-04	зюмнимоку
	04 04 01 01 04 01	93A 83A 83A 83A 83A	0.11	- 6.0 - 6.0 - 6.0 - 6.0 - 6.0	E.E - 0.0 E.B - 0.0 E.E - 0.0 E.E - 0.0 E.E - 0.0	0 0 0 0 0 0	7-7 6-8 6-8 7-90 7-90 7-90	31-301-04 )6-15-16-16-16-16-16-16-16-16-16-16-16-16-16-
	OH OH OH OH	93A AE8 AE8 AE8 AE8 AE8	6.9 6.9 6.9	- 1.0 - 1.0 - 1.0 - 1.0	0.11 - 6.0 0.11 - 6.0 6.9 - 1.0 6.7 - 60.0 6.7 - 60.0	: : : :	R-90 R-90 R-90 R-90 R-90 R-90	PATENE
-	OH OH OH OH	83A 83A 83A 83A 848 848	5.51 12.6 12.6 0.51	- 8.0 - 8.0 - 8.0 - 8.0 - 8.0	E.Q - 1.0 E.Q - 1.0 E.Q - 1.0 E.Q - 1.0 E.Q - 1.0	2222	H-90 H-90 H-9 H-9 H-9	BIERUWANOM'UK YI) OZIERG
	0H 0H 0H 0H	83A 83A 83A 83A 83A	p.5 - p.5 - p.5 -	- £0.0 - £0.0 - £0.0 - £0.0 - £0.0	F, T - E0.0 F, T - E0.0 F, T - E0.0 F, T - E0.0 F, T - E0.0	\$ \$ \$ \$ \$	H-90 H-90 H-98 H-98 H-9	BI CHRAIAHO
uoş	tonies Contaelnat Contaelnat III Domognad	Confidence Li Bockground He Downgrodien? Overlo	ES INIT S	bonechinos eanebilnos ealdainou	Confidence Limits	mod H lepinotalH Educated to	#11मत	CI\pu) nel secinol

CALGOLIUS - 0; Hercury - 0 

fungen, filchard F. 1975, Fundamenteis of Statistics in the Siciogical, Hedical and Health Sciences. Dudony Fress. Baston. 903 pp.

Coldstein, flurom. 1964. Blostotistics. The Hodfillon Company. Hee York. 272 pp.

Confidence intervals bosed on Polsson sethod:

Bockground Information:

Bockground Hell: R-I0

Bockground Hell: R-I0

Functoround Hell: R-I0

Functoround Hell: R-I0

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Well R-10 (Can't)

# Well R-10: (Con't) striction commission potason medication for the properties of the potason for the potason f

Bockground Information:

Bockground Information:

Bockground Hell: R-10

Confidence intervals based on Polsson method:

Ooldstein, flores, 1964, Blostatissias, The Hodiliton Cospony, Hee York, 272 pp.

Munyon, filchard P. 1975, Fundamentais of Statistics in the Siciogical, Medical and Health Sciences. Durbury Press. Boston. 393 pp.

Downgrodient Hells

	06-U	0	5 5 - 0,0	6.6 - 6.9	NE3	Diff
	H-9C	Ö	6.8 - 0.0	£.8 ~ 0,0	834	Oil
	86~A 6~A	0	0.0 - 5.3 0.0 - 5.3	0.0 - 5.3	894	OΗ
	0-H	ŏ	€ 8 - 0.0 € M - 0.0	6.8 - 0.0 6.6 - 0.0	<b>4€3</b> <b>4€8</b>	OH OH
MCDARHTHAREDIE	₹~A	ŏ	E.B 0.0	£.ē - 0.0	834	011
			<del></del>			
	00-H	<u>o</u>	E E - 0.0	6.8 - 0.c	/E8	OH
	₩-9C ₩-8	i .	0.11 - 8.0 4.5 - 60.0	0.0 - 6.3	AE8	011
	89-W	t	0.6 - 12.6	6.8 ~ 0.0 6.8 - 0.0	AE8 AE8	OH OH
	8-W	Ŏ	E.E - 0.0	£.E - 0.0	834	DH OH
HANDMENE	7-A	E	0.11 - 8.0	£.8 - 0.0	834	Dis
	06-W		6.E - 0.D	£.8 - 0,0	834	011
	H-9C	ō	Ç.E - 0.0	6.6 - 6.0	83A	011
	6-A	O.	6.8 - 0.0	£.8 ~ 0.0	AE3	OH
	99-U	!	F.T → E0.0	6.6 - 6.9	AE8	OH
TOTAL TRIONITION	5-M 8-M	ż	\$.9 - 1.D \$.5 - \$0.0	6.8 - 0.0 6.5 - 0.0	AE8 AE8	OH OH
		<del></del>			0.311	
	06-H	2	E.9 - 1.0	6.5 ~ 0.0	RBA AE8	OH
	D6-H	3	6.9 - 1.D	€;B - 0;0	AE8	OH
	6~-U	D	F.7 - EO.D F.8 - O.O	5.5 - 0.0 6.5 - 0.0	AEB AEB	DH DH
	5-A	ò	E.B - 0.0	6.8 - 0.0	834	Oi)
PERITRICHLOROPHENOL	2-M	0	£.8 - 0.0	E.E - 0.0	8.3.\	OH
	06-U	0	E.B - 0.D	P.5 - E0.0	834	OH
	26-H	õ	6.5 - 0.0	₱.5 - E0.0	83A	011
	6-H	i.	.T - EO.O	P.S - EO.O	AE8	OH
	6-F1	Ō	0.0 - 5.34	▶.5 - <b>c</b> 0.0	∧E3	OH
PLUOPYITHEIR	5-R	ż	E.Q - 1.0	>. 7 ~ E0.0 >. 7 ~ E0.0	BBA BBA	0H 0H
Poroseter (ug/1)	#     PH	of lool-ofeld slooted to	Confidence Limits for Variables (Detects)	Contidence Lisits (or Unionides (Defects)	alial freiborgmod colnevo	Jrielbongrwod ni 11eH

TIM brownphone

Background Hell and

Confidence Limits for

Contestination

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### Hanch 29, 1992 FOR 1992 - FIRST QUANTER STATISTICAL COMPRESON POLBSON APPLICATION Well R-10 (Con't)

thuber of Historical Detects in R-10: Yeors, Quarter Ushd: 1990-02, 03, 04 1991-01, 02, 03 1992, 01 British Parkground Hell: R-10 Bockground Information:

0

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Confidence intervals based on Polsson method:

doldstain, fivram, 1964, Blostatistics, The hachilian Cospony, Hee York, 272 pp.

H-9C

D6-8

6-V

8-U

80-U

HEUCHUA

CHUOHITAN

Forester (Ug/1)

Chrosins - 0; Heround - 0

Auryon, filchord P. 1975. Fundomentals of Statistics in the Biological, Hedical and Health Sciences. Duchury Fress. Boston. 1903 pp.

E.E - 0.0

E.E - 0.0

E.E - 0.0

E.E - 0.0

C.B - 0.0

E.E - 0.0

6.6 - 5.9

E.E - 0.0

£.E - 0.0

C:E - 0.0

for Vorichias (Detects)

Confidence Limits

1,7 - EO.O

Renaphthens = 0; Fhenol = 5; 4-dithophenol = 0; 2-Hethyli-4,6-Dinitrophenol = 0; 2-Hitrophenol = 1; 2-chiorophenol = 1; 2,4-dichorophenol = 0; 2,4,6-Trichiorophenol = 3; 2,4-dichorophenol = 1; 2-chiorophenol = 1; 2-chiorophenol = 3; 2,4-dichorophenol = 1; 2,4-dichorophenol = 3; 2,4-dichorophenol = 1; 2-chiorophenol = 3; 2,4-dichorophenol = 3; 2,4-dichorophenol = 3; 2,4-dichorophenol = 1; 2,4-dichorophenol = 3; 2,4-dichoro

Downgrodlent Hells

E.B - 0.0

E.E - 0.0

E.E - 0.0

E.B - 0.0

E.B - 0.0

6.8 - 0.0

5.8 - 0.0 5.8 - 0.0

E.E - 0.0

€.8 ~ <u>0.0</u>

C.C - D.D

Confidence Limits for Variables (Detects)

Bockground Hell

DH DH

DH

DH

011

OH

OH

011

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Tre Dominación ni

Contamination

10 somblug

AE8

834

834

BBA

AEB

B3A

834

83A

BEA

qo I nevo

Confidence Limits for Bockground Hell and

Brind Josepherson

### March 29, 1992 Results of Statistical Analyses for Selected Parameters

Nonparametric methods were used where there were fewer than 50% nondetects but more than 15% nondetects where sample observations were not normally distributed. Parametric methods were used where sample observations were normally distributed.

Parameters analyzed by these methods were:

Benzo(a)anthracene Benzo(b)fluoranthene Bis(2-ethylhexyl)phthalat

Comparison with Up-gradient well R-10:

St i uzaR	Test Applied	zlisk	rajampan9
No evidence of con-	One-way analysis of variance.	7-8	Benzo(a)anthracene
ramination in down		8-A	
duadlent wells at		88-8	W
50. < q		6-8	
		В−9С	
and you again the			Benzo(b)[luoranthene
-No evidence of con- tamination in down	One-way analysis of variance.	88-8	202000000000000000000000000000000000000
gradient wells at			
<b>č</b> 0. ∢ q			
		<del></del>	·
No evidence of con-	Kruskal-Wallis Test for	8-A	Bis(2-ethylhexyl)phthalat
famination in down-	AUONA pirisetric	88-A	
gradien fraibang 50. < q		6-8	

### March 29, 1992 Results of Statistical Analyses for Selected Parameters

Nonparametric methods were used where there were fewer than 50% nondetects but more than 15% nondetects where sample observations were not normally distributed. Parametric methods were used where sample observations were normally distributed.

Parameters analyzed by these methods were:

Benzo(a)anthracene Benzo(b)1luoranthene Bis(2-ethylhexyl)phthalat

Comparison with Up-gradient well R-18:

Test Applied	zliaW	Parameter
One-way analysis of variance.	<b>∠-</b> 8	Benzo(a)anthracene
	8-A	
	88-A	
	6H	
	B-9C	•
		3
	o-a	
uneway analysis of variance.		Benzo(b)[luoranthene
	go u	
Watekal-Hallic Toct for	8-8	tolodidac luvadiudia-C)>is
		sis(2-ethylhexyl)phthalat
มดดนน - วาเมา สพามากสมดน		
	e u	
	Sc	R-7 One-way analysis of variance. R-8 Gne-way analysis of variance. R-9 Gne-way analysis of variance. R-88 H-9C H-9C H-9C H-9C H-9C H-9C H-9C H-9C

# Results of Statistical Analyses Granada, MS Plant October 30, 1992

- Data for thirty (30) parameters were analyzed according to the methods outlined in "Statistical Analysis of Ground-Water Monitoring Data at RCRA (Resource and Recovery Act) Facilities, Final Guidance."

categories: Data for all wells (upgradient and downgradient) fell into two analysis

- 1) More than 50% nondetects which required a Poisson test of proportions, and
- 2) Nonparametric ANOVA (Kruskal-Wallis test).

Of the thirty parameters, only three employed the nonparametric ANOVA. Three parameters, were benzo(b)fluoranthene, bis(2-ethylhexyl)phthalate, and benzo(a)anthracene required a nonparametric ANOVA to compare some downgradient wells with some upgradient wells. The nonparametric ANOVA was required because well data were not normally distributed.

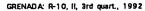
Table 1 summarizes analyses for upgradient well R-10. analyses for upgradient well R-1R. Table 2 summarizes

all previous sample p benzo(b)fluoranthene). for previous sample dates. On one case only, a new detect concentration was compared with the well mean periods. The additional detect value did not differ from the mean of periods. (Upgradient well R-10, parameter

required for any parameter. In all cases, there was no statistical evidence that correctional measures are

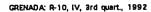
### Well R-10

			. 465 - 51 -				
	······································	STATIST	ICAL ANALYSES FOR WELL PAR				
		FOR 1992, T	PREPARED OC	TOBER 80, 1992			
			1				
						0000	100000
nd Information:		arasa					
		1 - 01, 02, 03, 04; ; 1992 - 01, 0	3	75 06301			
nd Well: R-10							
f Hernday Dat	tects in R-10:						
Acenso	hthene - O' Phenol - 1	: 4 -Nitrophenol - ( 2-Methyl-4,6-	Dinitrophenol - O; 2-Nitrophenol -	1; 2,4,6-Trichio raphenol - 2; 2 4-Dicio	rophenol - 1; 2,4-Dimet hylphenol -	1; i - Chlorophenol - 1;	
2356	8-Tetrachiorophenol - 2	: Benzo (a) anthrace: ne - 5: Benzo	(g.h.l)Perviene - 2: Benzo (b) fluoran	thene - 7: Benzo(a)pyene - 4; Fluorene -	2; Dibenzo(a,h)Anthracer e - 1; Chry	sene - 1;	
Benzo (	k)fluorenthene - 2: Pvr	rene - 2: Indeno(123-cd)Pyrene - 3:	Phenenthrene - 1; Bis(2-Ethylhei	kyl)Phtalat - 4; Pentachloropheno - 1; Flu	oranthene - 1; 2,4-Dinkrophenol - 0; I	Naphthalene - O;	
Acenac	ohthalene - O: Chromiu	m - 0; Mercury - 0; 2,3,4,6-Tetrac	hiorophenol - 0				
					99		500 HADGBARD \$00850
·							
e Intervals base	ed on Polsson method						
		tatistics. The MacMillan Company.	New York 272 pp.				
			cal, Medical and Health Sciences.	Duxbury Press, Boston, 393 pp.			
	1			I source on the second			
					Confidence Limits for		4
		Downgradien	R Wells	Background Well	Background Well and		
		Historical Number	Confidence Limits	Confidence Limits	Downgradient Wells	Evidence of Contaminatio	R
	W clt	of Detects	for Variables (Detects)	for Variables (Detects)	Overlap	in Downpractent Wells	
rter (un/1) PHTHENE	R-7	0	0.0 - 5.3	0.0 - 5.8	YES	INO	
THE PARTY OF THE P	R-8	o o	0.0 - 5.8	0.0 - 5.3	YES	NO	
	R-8B	O	0.0 - 5.3	0.0 - 5.3	YES	NO	
	R-9	0	0.0 - 5.3	0.0 - 5.3	YES	No	
	R-9C	0	0.0 - 5.3	0.0 - 5.3	YES	NO	rimetra (mes e masse e masse e m
	R-9D	<u>`</u>	0.0 - 5.3	0.0 - 5.3	YES	NO	t more construction of the
	N. 90		-  <u>-</u>		1 5.5	······································	
	R-7	1	0.03 - 7.4	1,0 - 14,1	YES	NO	
	R-8		0.03 - 7.4	1.0 - 14.1	YES	NO	
	R-8B		0.1 - 9.3	1.0 - 14.1	YES	NO	
	R-9	3	0,3 - 11,0	1.0 - 14.1	YES	NO	· ····································
	R-9C	- 2	0.3 - 11.0	1.0 - 14.1	YES	NO	
	R-9D	<u>_</u>	0.3 - 11.0	1.0 - 14.1	YES	NO	
				1.7 - 1.7.	1 5 5		The second second second second
PHENOL	R-7	1	0.03 - 7.4	0,0 - 5.3	YES	NO	
T FEROL	R-8		0.0 - 5.3	0.0 - 5,3	YES	NO	
	R-8B		0.01 - 7.4	0.0 - 5.8	YES	NO	
	R-9	1	0.0 - 5.8	0.0 - 5.3	YES	NO	(III
	R-9C		0.0 - 5.3	0.0 - 3.3	YES	NO	
	R-9D		0.0 - 5.3	0.0 - 5.8	YES	NO NO	
	N-70					The state of the s	mark same as an a
IYL-4, 6-DINITR	OPLENOL B-7		0.03 - 7.4	0.0 - 5.3	YES	NO	
1 7.0 511110	R-8	- i	0.0 - 5.8	0.0 - 5.3	YES	NO	
	R-88		0.03 - 7.4	0.0 - 5.3	YES	NO	
	R-9		0.0 - 5.3	0.0 - 5.3	YES	NO	
	R-9C		0.03 - 7.4	0.0 - 5.3	YES	NO	COLUMN TO THE PARTY OF THE PART
	R-9D		0.03 - 7.4	0.0 - 5.3	YES	NO	man de la companya del companya de la companya del companya de la
			0.03 - 7.7	7.9 - 7.9			
			003-74	003-74	VEC	NO	
ATENOL							
				. <u> </u>			
				. 4		The same of the sa	
		2					
	R-9D	2	0.1 - 9.3	0.03 - 7.4	YES	INO.	
PHENOL	R-7 R-8 R-8B R-9 R-9C R-9D		1 1 1 2 2 2 2	1 0.03 - 7.4 1 0.03 - 7.4 1 0.03 - 7.4 2 0.1 - 9.3 2 0.1 - 9.3 2 0.1 - 9.3	1 0.03 - 7.4 0.03 - 7.4 1 1 0.03 - 7.4 2 0.03 - 7.4 2 0.1 - 9.3 0.03 - 7.4 2 0.1 - 9.3 0.03 - 7.4 2 0.1 - 9.3 0.03 - 7.4 2 0.1 - 9.3 0.03 - 7.4	1     0.03 - 7.4     0.03 - 7.4     YES       1     0.03 - 7.4     0.03 - 7.4     YES       2     0.1 - 9.3     0.03 - 7.4     YES       2     0.1 - 9.3     0.03 - 7.4     YES	1     0.03 - 7.4     0.03 - 7.4     YES     NO       1     0.03 - 7.4     0.03 - 7.4     YES     NO       2     0.1 - 9.3     0.03 - 7.4     YES     NO       2     0.1 - 9.3     0.03 - 7.4     YES     NO       2     0.1 - 9.3     0.03 - 7.4     YES     NO



			Commence of the second				MCCALLED MANAGEMENT						
				STATISTIC	AL ANALYSES	FOR WELL PAR	AMETERS						
	·			FOR 1992, -		PREPARED OCT	OBER 20, 199	2					I
					T	<del></del>	,				Assessment .		
						············		·				·	1
					ļ	ļ				*			1
ckground info					L								•
		2, 03, 04; 1991 -	01, 02, 03, 04;	; 1992 - 01, 03	·····	ļ							<b> </b>
ickground Wel						<u></u>						······································	
mber of Histo	orical Detects in	R-10;											
	Acenaphthene	- 0; Phenol - 5; 4	-Nitrophenol - C	2-Methyl-4,6-Di	initrophenol - 0;	2-Nitrophenol -	1; 2,4,6-Trichic	rophenol - 2; 2 4-Dick	prophenol - 1; 2,4-Dime	hylphenol -	1; i - Chlorophenol	<u> 1;                                    </u>	L
	2.3.5.6-Tetrac	hiorophenol - 3: B	enzo(a)anthrace:	ne - 5: Benzo(g	.h.l)Perylene - 2:	Benzo (b) fluoran	thene - 7: Benz	o(a)pyene - 4; Fluorene -	2; Dibenzo(a,h)Anthrace	e - 1; Chrys	ene - 1;		Hamana -
	Renzo (k) fluora	nthene - 2: Pyrene	- 2: Indeno(123	-cd)Pyrene - 3:	Phenanthrene -	1: Bis(2-Ethylhex	vi)Phtalat - 4: I	entachloropheno - 1: Fl	uoranthene - 1; 2,4-Dinitro	phenol - 0; N	aphthalene - O;		1
		e - O; Chromium -					C	T		· i · · · · · · · · · · · · · · · · · ·			Name and Address of the
	Acertopitalen	6 - 0, CIROIIAMII -	O, Mercuy - O,	2,0,7,0 100001	T T								44-44
		_{				ļ							
							······································						
nfidence inte	rvals based on P	a to a construction of the last construction o											
	Goldstein, Avr	om. 1964. Blostati	stics. The MacM	lian Company.	New York, 272	pp.	91	300 M		<u> </u>			
	Runyon, Richar	d P. 1975, Fundai	mentals of Statis	tics in the Biolog	cal, Medical and	Health Sciences. I	Duxbury Press, 1	Boston, 393 pp.		5501 0000			
	-			***************************************		I		1				1	
······					***************************************				Confidence Lir	nits for		de la companya della companya della companya de la companya della	
······································				Downgradient	Wells		Deal-	ound Well	Background W				1
			Hetorical		Confidence L		Confidenc		Downgradient		Evidence of	Cost minutes	
									······	<del></del>			
Parameter ()		N cele	of Dete	CT3	for Variables			obles (Detects)	<u>Ov</u>		In Downwader		
2,4,6-TRICHL	OROPHENOL	R-7	3		0.3 - 1		0.1 - 9		YES			NO	
		R-8	2		0.1 - 9.		0.1 - 9		YES			NO	
50 N	0 6500 300000	R-88	2	r - 0000495050	0.1 - 9.	3	0.1 - 9	.8	YES			NO	L
39		R-9	3		0.3 - 1	1.0	0.1 - 9	.3	YES		J. D.	NO	
		R-9C	4		0,6 - 1	2.6	0.1 - 9	.3	YES		-11	NO	1
		R-9D	2		0.1 - 9.	2	0.1 - 9	3	YES			NO	
	······································			······································			,	T				Andrew Jalent Today Co. N	
2,4-DICHLORO	DOLENO	R-7	1	***************************************	0.3 - 1	10	0.03	7.4	YES			NO	
1, T-DICI CONC	T TENOL	R-8	2		0.3 - 1		0.03		YES			NO	
<u> </u>		R-88			0.1 - 9.2		0.03		YES			A CONTRACTOR OF THE PARTY OF TH	
			Z									Ю	
		R-9	1		0.03 - 7		0.03		YES			Ю	
		R-9C	2		0,1 - 9.7		0.03		YES			NO	
		R-9D	1		0.03 - 7	.4	0.03	7.4	YES			NO	
		(178)					(2000)000)199	_0.000010-0	77-41 321-41-				
4-DIMETHYL	PHENOL	R-7			0.03 - 7	3250 (000)03 A	0.03	7.4	YES			NO	
	1	R-8	Ö		0.0 - 5.	3	0.03	7.4	YES			NO	1
		R-88	2		0.1 - 9.3		0,03		YES			NO	1
		R-9	ō		0.0 - 5.		0.03		YES			NO	1
	-	R-9C			0.1 - 9.		0.03		YES			NO	-
		R-9D			0.03 - 7		80.0		YES		··· ··· · · · · · · · · · · · · · · ·	NO	
				**************************************	0,03 - /		0,08			***************************************		0.0000000000000000000000000000000000000	
				u.1 <del></del>		L		1.				1	
-CHL OROPHE	NOL	R-7			0.03 - 7		0.08		YES			NO	
		R-8	2		0,1 - 9.		0.02		YES			NO	
PERSONAL DESCRIPTION		R-88	1		0.03 - 7		0.09		YES			NO	
		R-9	1	2	0.03 -	7.4	0.03		YES			NO	a description and a
	10000	R-9C	1		0.03 - 7	.4	0.03	· 7.4	YES	10000 100000 100000 100000 100000 100000 100000 100000		NO	
.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		R-9D	1		0.03 - 7	.4.	0.03	7,4	YES			NO	1
			·		l	T		I		1		Description Course	
2 5 6 TDC	LOROPHENOL	R-7	3	,2,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	0.3 - 11		0.3 - 1	0	YES			NO	
., 3, 5, 0- 1 MCH	LUNUTHENUL				····				YES			NO	
		R-8	3		0.3 - 11		0.3 - 11					A STATE OF THE PARTY OF THE PAR	
		R-8B	1		0.03 - 7		0.3 - 11		YES	4		МО	
	70020000000	R-9	9		0.3 - 11	.0	0.3 - 1	.0	YES			NO	1
4		R-9C	2		0.1 - 9.3		0.3 - 11	.0	YES	to garana		NO	in annual
		R-9D	2		0,1 - 9,3		0.3 - 11	^	YES	1		NO	
		IR-VD					0.3 - 1						

					ANALYSIS	FOR WELL BAD	AVETERS			1	-			
				FOR 1992,	AL ANALYSES		TOBER 30, 199		-	r	-		·	
				FOR 1992,		PREPARED OC	1000 30, 188	<u> </u>						
									-		-		·	
			ļ								-		·	
ackground Informa		L	1		L		ļ							
ears, Quarter Used		03, 04; 1991	01, 02, 03, 04,	; 1992-01, 03	r		ļ	······································			-			
ackground Well: R-									-		- <del> </del>			
lumber of Historica	Detects in R	10;	Nihamahanat d	0.11-1-1-1-4-5-01	directions of the	2 Merophonol -	1: 2 4 8-Triobio	rophenol - 2: 2	4-Dictorophenol	- 1: 2 4-Dime	t Intohenol - 1:	- Chlorophenol	- 1:	
	cenapritnene -	U, Phenoi - 3; 4	-Mitrophenoi - C	Z-MethyF-1,0-Di	thtrophenor - O,	Beere (h) Sucres	thene . 7: Benz	/almiene - 4: E	luorene - 2; Diben	no/a h) Anthrace	c a 1 Choveans	- 1.		
2,	8,5,6-1 etrach	iorophenoi - a; t	senzo(a)ammrader	ne - 5; Benzo(g	Bhannathrana	1. Die/2-Ethelber	tileire - 7, Deilzi	ant achier och and	- 1; Fluoranthene	a 1: 2 4-Dintr	onhand - C' Nanh	thelene - O		
ne l	inzo (K) Tiuoniin	nene - z; ryreni	- Z; Indeno(128	2,3,4,6-Tetrachi	Preparts ore -	1. Bists.Erithille	i	entacino opitoro	1, Floor Midrell		Option of the pri	T		
	oenapmnalene	- U, Chromaum -	t o, mercury - o,	2,3,4,0-16118619	orophenor - O		<del> </del>		•					
			ļ								- <del></del>			
		L												<b></b>
confidence intervals			L								<del></del>			
			stics. The MacM		New York 272		<u></u>							
Ru	myon, Richard	P. 1975. Funda	mentals of Statis	tics in the Biolog	cal, Medical and	lealth Sciences.	Duxbury Press. B	oston, 393 pp.			-			
							ļ				<u> </u>	<b>.</b>		
							<u> </u>			Confidence Lie	·····	<b>ļ</b>		
				Downgradient				und Well		Background W				L.
			i flatorical	A	Confidence Li		Confidence	**************		Downgradient	Wels	Evidence of		
Parameter (wp/1)		Yes	of Deta	cte	for Variables			bles (Detects)		<u>0</u> y		in Downstader		
BENZO (p,h,l)PERYI	LENE	R-7	2	-E	0.1 - 9.		0.1 - 9.			YE			NO	
		R-8	2		0.1 - 9.		0.1 - 9.			YES			NO	
	.,	R-80	2		0.1 - 9.		0,1 - 9.			YES			МО	
		R-9	1		0.03 - 7		0.1 - 9.			YES			NO	
		R-9C	1		0.03 - 7		0.1 - 9.			YE!			МО	
		R-9D	0		0.0 - 5.	3	0.1 - 9.	3	3	YE	5		МО	
	***************************************													
BENZO(b)FLUORA	NTHENE	R-7	3		0.3 - 11		2.0 -			YE!			NO	
NAME OF THE OWNER OWNER OF THE OWNER	Q	R-8	4				th Kruskal-Walls r				tion does not diffe			
		R-8B					th Kruskal-Walls r	*****	st.		tion does not diffe	er from that of u		
		R-9	3		0.3 - 11		2.0 -		-	YE		<b></b>	NO	
		R-9C	ļ		0.1 - 9.1		2.0 -			YE			NO	
13		R-9D	3		0.3 - 11	O.	2.0 -	7.1	_	YES	5		NO	
									-				ļ. <u>.                                   </u>	
BENZO(a)PYRENE	<del></del>	R-7	2		0.1 - 9.3		0.6 -			YE			NO	<b></b>
<u> </u>		R-8	<u> 2</u>	<u> </u>	0.1 - 9.2		0.6 -			YE			МО	
		R-8B	3	<u> </u>	0.3 - 11		0.6 -	······		YE			NO	-
		R-9	2		0.1 - 9.3		0.6 -			YE			NO	
		R-9C	2		0.1 - 9.3		0.6 -			YE			NO	
		R-9D			0.03 - 7	.4	0.6 -	2,6		YE	5		NO	
	in													
FLUORENE		R-7			0.3 - 11		0.1 -			YE			NO	
		R-8	3		0.3 - 11		0.1 -	d-1000 1 0000 0000 0000 000 000 000 000 0		YE			NO	
		R-88	3		0.3 - 11		0.1 -			YE			NO	
		R-9			0.03 - 7		0.1 -			YE			NO	<b></b>
		R-9C	1		0.03 - 7		0.1 - 1			YE			NO	or more remains
		R-9D	<u> </u>		0.1 - 9.3	l	0.1 -	7.3		YE	S		NO	
	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,										<u> </u>		1	
DIBENZO(a,h)ANTI	HRACENE	R-7	1		0.03 - 7		0.03 - 7			YE		<u> </u>	NO	<b></b>
		R-8	<u> </u>		0.03 - 7		0.03 - 7			YE			NO	
		R-8B			0.03 - 7	.4	0.03 - 7		Acceptable with the second	YE		Over the second	NO	10(10)16(10)16(10)
ware.	2720	R-9	2		0,1 - 9,3		0.03 - 7	.4		YE			NO	
	PART	R-9C	2		0.1 - 9.3	}	0.03 - 7	.4	- American and a service of the	YE	S	Leanning and the second	NO	
,		R-9D	1	1	0.03 - 7		0.03 - 7	************************		YES			NO	I
		L:		<b>1</b>			·	·						•



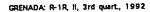
	1	T						
		·	STAT	TISTICAL ANALYSES FOR WELL, P.	ARAMETERS			
		-	FOR 1992	ې PREPARED (	OCTOBER 80, 1992			Total Committee
				,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,				
			1		us usuosos a			
Background Infor	rmation:							
		2. 09. 04: 1991 -	- 01, 02, 03, 04; ; 1992 - 01	1, 03				
ackground Well			1					
	vical Detects in	B-10						
TOTIOE OF THE	Anenerhthene	- C Phenol - 5: 4	4 -Ntrophenol - ( 2-Methyl-4	4.6-Dintrophenol - 0: 2-Nitrophenol	- 1; 2,4,6-Trichio rophenol - 2; 2 4-Dicion	rophenol - 1; 2,4-Dimet hylphenol -	1; ; - Chlorophenol - 1;	
	2 9 S A. Tetras	blocophenol - 8: 5	Benzo/a) mythracei be - 5: Rer	nzn(n hi)Perviene - 2: Benzo(b) fluor	an thene - 7: Benzo(s)pyene - 4; Fluorene -	2: Dibenzo(a.h)Anthracer e - 1; Chry	sene - 1:	Annay 1 44 Jun 17 4 41 14 14
	Benzo Withorn	mhana - 2. Duran	a - 2' Indeno(128-od)Pyrene	- 2: Phenanthrene - 1: Bis(2-Ethyl	hexyl)Phtalat - 4; Pentachloropheno - 1; Flu	oranthene - 1: 2.4-Dinitrophenol - 0:	Naphthelene - 0;	CLICITION CONTRACTOR
	Accompany	a . O Chromim	- 0; Mercury - 0; 2,3,4,6-Tet	trachlorophenol - 0				
	Adenaphthalen	4 - O, CIROTINATI	- 0, Marcay - 0, 2,3,4,0-161	Tracino opieno - o				
	ļ							
	1							
Connuence Inter	vels based on Po							
	Goldstein, Avn	m. 1964. Blostat	tistics. The MacMillan Compan	ny. New York 272 pp.				<b></b>
	Runyon, Richar	g P. 1975, Funda	memals of Statistics in the B	Biolog cal, Medical and Health Science	s. Duxbury Press. Boston. 393 pp.			
	-sc #81255035933	12 100 100 45 25 2 45 1 1 0 2 7 7 2 5						
						Confidence Limits for		.
			Downgrad		Background Wol	Background Well and		
universitati er	1		Historical Hamber	Confidence Limits	Confidence Limits	Downgradient Wets	Evidence of Contamination	
Parameter (a	P()	Y/ site	of Detects	for Variation (Ontesta)	for Variables (Ortocts)	O-other	In Domestadent West	
CHRYSENE		R-7	3	0.03 - 7.4	0.03 - 7.4	YES	NO	
		R-6	1 1	0.03 - 7.4	0.03 - 7.4	YES	NO	
		R-80		0.03 - 7.4	0.03 - 7.4	YES	NO	A STATE OF THE STA
		R-9	1	0.03 - 7.4	0.03 - 7.4	YES	NO	
		R-9C	1	0.03 - 7.4	0.03 - 7.4	YES	NO NO	
		R-9D	1	0.03 - 7.4	0.03 - 7.4	YES	NO	
BENZO(k)FLUO	RANTHENE	R-7	1	0.03 - 7.4	0.1 - 9.3	YES	NO	1
	T	R-8	1	0.03 - 7.4	0.1 - 9.3	YES	i NO	1
	1	R-88	1	0.03 - 7.4	0.1 - 9.3	YES	NO	T
	<b>1</b>	R-9	1	0.03 - 7.4	0.1 - 9.3	YES	NO	
68		R-9C	1	0.03 - 7.4	0,1 - 9,3	YES	NO NO	
******		R-9D	1	0.03 - 7.4	0.1 - 9.3	YES	NO	
···· · · · · · · · · · · · · · · · · ·	<del> </del>		·					·
PYRENE		R-7	3	0.3 - 11.0	0.1 - 9.3	YES	NO	<del></del>
I I VEING		R-B	3	0.3 - 11.0	0.1 - 9.3	YES	- l No	
	·	R-8B	3	0.3 - 11.0	0.1 - 9.3	YES		
				0.1 - 9.3	0.1 - 9.3	YES	NO NO	
	<u> </u>	R-9 R-9C		*** **** ****   **   *** *** *** *** **		YES	INO NO	
			<del></del>	0.03 - 7.4	0.1 - 9.3	YES	missioners between the constitution of the con	
		R-9D	1	0.03 - 7.4	0.1 - 9.3	YES		
							NO	
INDENO(123-c	DALAKE	R-7	<u> </u>	0.0 - 5.3	0.2 - 11.0	YES		
		R-8	1	0.03 - 7.4	0.3 - 11.0	YES	NO	<b></b>
		R-8B	<u> </u>	0.0 - 5.3	0.3 - 11.0	YES	100	
	ļ	R-9	<u> </u>	0.0 - 5.3	0.3 - 11.0	YES	NO	
	<u> </u>	R-9C	0	0,0 - 5.3	0.3 - 1 1.0	YES	NO	- J
		R-9D	0	0.0 - 5.3	0.3 - 11.0	YES	NO	
		Street.					2000	
PHENANTHREN	E	R-7	1	0.03 - 7.4	0.03 - 7.4	YES	NO	A CL CONTRACTOR CONTRACTOR
	T	R-8	2	0.1 - 9.3	0.03 - 7.4	YES	NO	
	1	R-8B	1	0.03 - 7.4	0.03 - 7.4	YES	, NO	1
	·	R-9	·	0,03 - 7,4	0.03 - 7.4	YES	NO	1
				0,00 - 7,-7	1 0.00 - 1.11	1 1001	1110	
				00-83	002.74	VEC	NO NO	CE CONT.
		R-9C R-9D	0	0.0 - 5.3 0.0 - 5.3	0.03 - 7.4 0.03 - 7.4	YES YES	NO NO	

						: 1				L				
				STATISTIC	AL ANALYSES I	OR WELL PAR	AMETERS		.		<u> </u>			······································
1			F	OR 1992,	S 1994	PREPARED OCT	TOBER 30, 199	2						
											ļ <u></u>			
kground Infon	mathor													
Cuertes III	1000 - 02	03 04: 1001 -	01, 02, 03, 04;	1992 - 01, 03										
		03, 03, 1001				(	***************************************		400		57,00			
kground Well:								A THE RESIDENCE OF THE PERSONS	· ·	i		1245500000000000000000000000000000000000		
nber of Histor	rical Detects in R-	10:	-Nitrophenol - ( 2			2 Altrophenol -	1: 2 4 & Trichio	ronhanol - 2: 2	4-Dictorophenol	- 1: 2.4-Dimet	hylphenol - 1; 2	- Chlorophenol	-1;	5 H092H3938775
	Acenaphthene -	0; Phenol - 5; 4	-Nitropnenoi - t	Z-Metry-4,0-U	ntrophenor - o,	E-latiobileioi -	1, 2,7,0   Rent	/a\auana - 4: E	horens - 2: Dihen	zo(a h)Anthracer	a - 1: Chrysene	- 1:	· · · · · · · · · · · · · · · · · · ·	1
	2,3,5,6-Tetrachi	orophenol - 8; B	enzo(a)anthracei n	e - 5; Benzo(g	niperylene - 2;	Heuso (D) Imoran	thene . 7. Benzi	J(a)pyene, r	1. Elverenthen	- 1: 2 4-Dinter	obenol - O Nanh	thelene • O	personal contract contract	
	Benzo (k) fluorent	hene - 2; Pyrene	- 2; Indeno(128-o	nd)Pyrene - 2;	Phononthrone -	i; Bis(2-Ethylnex	yijemmat - 4; P	ent actior opners	- 1, Floorermen	- 1, 2,04300	J. 110 - 0, 110 pm	1		
	Acenephthelene	- C; Chromium -	0; Mercury - 0; 2	, 3, 4, 6-Tetrach	orophenoi - O						,			
		***************************************		=			·							
	1		/		1989-05	57-20					00.024			and the same of the same of
fidence interv	vals based on Pols	son method:				\$1000000000 100	7				5750			- Company of the Company
1			etics. The MacMills	en Company.	New York, 272	D.	······································						50000000000	
	Dunion Dishard	D 1075 Eurodes	mentals of Statistic	e in the Riploc	cal Medical and I	leath Sciences.	Duxbury Press. B	oston, 393 pp.		<u> </u>		2000		120000000000000000000000000000000000000
	Runyor, rochero	r. 1973. Fulloui	1	ar in allo biolog				The state of the s	T	***************************************				
									·	Confidence Lin	tts for		1	· men ill rechable ill and a
									·	Background We	<del></del>			and the second of the con-
	<u> </u>			Downgradient				ound Well	<u> </u>		<del>,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,</del>	Evidence -	Contamination	
	0.00		Hetorical I	***************************************	Confidence Li		Confidence			Downgradient 1	******			
erprotor (pr	P/D	Wells	of Dytec	bi .	for Variables			bles (Detects)	***************************************	Oye		in Downgrade		
CENAPHITHYL		R-7	1		0.03 - 7	.4	0.0 - 5.			YES			NO	
	T	R-8	0	2200 990	0.0 - 5.	3	0.0 - 5.	3		YES			NO	
		R-88	ol		0.0 - 5.	3	0.0 - 5.	3		YES			NO	in Tarabashi Carabashi da
		R-9	0		0.0 - 5.	3	0.0 - 5.	3		YES			NO	
		R-9C	i		0.0 - 5.		0.0 - 5.		· 1	YES			NO	2.5200.000.000
		R-9D	ļ		0,0 - 5.		0,0 - 5		·	YES			NO	
		K-80			0.0 - 3.	······································		ř			·			
					ļ. <u></u>					YES			NO	· <del> </del>
HROMIUM		R-7	0		0.0 - 5.		0.0 - 5					·	NO	
		R-8	0		0.0 - 5.	3	0.0 - 5		_}	YES				
		R-9B	O		0.0 - 5.	3	0.0 - 5			YES		_}	NO	
		R-9	0		0.0 - 5.	3	0.0 - 5	.3		YES	S	1	NO	
	·	R-9C	0	***************************************	0.0 - 5.	3	0.0 - 5	.3		YES		5299	NO	
		R-9D	1 0		0.0 - 5.		0.0 - 5	.3		YES			NO	
			<u>-</u>				1 <u>-</u>	I					A STATE OF THE STA	
					0.0 - 5.	<del></del>	0.0 - 5	9		YES		-	NO	-
ERCURY		R-7	<u> </u>							YES			NO	
		R-8	<u>                                     </u>		0.03 - 7		0.0 - 5			YES			NO	
1007646		R-88	<u>  0 </u>		0.0 - 5.		0.0 - 5							
	44 34000 HBS	R-9	0		0.0 - 5.	3	0.0 - 5			YES			NO	-
	pace	R-9C	0		0.0 - 5.		0.0 - 5			YES			NO	
WORKS WORK AND		R-9D	o		0.0 - 5.	3	0.0 - 5	.8		YE!		a contraction of the	NO	
												MARKET HE THE TOTAL AND THE	Approximate and the second	
S 4 6-TETRA	ACHLOROPHENOL	R-7	o		0.0 - 5.	3	0.0 -	5,8		YE		and a second and the	NO	
	1	R-8	0		0.0 - 5	.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	0.0 -	5.9		YES	<b>i</b>	1860000	NO	ESCHOOL STORY
	- <del> </del>	R-8B			0.0 - 5		0.0 -			YES	\$		NO	7.500
		· · · · · · · · · · · · · · · · · · ·	- <del> </del>		0.0 - 5		0.0 -		1	YE		457-57-1	NO	T
		R-9	-  <u>-</u>		0.0 - 5		0.0 -			YE		1	NO	1
		R-9C	<u>                                     </u>				0.0-		-[	YE			NO	
27 272	1	R-9D	0		0.0 - 5	J *	1.0-	3.8 T		15	<u></u>			
300 50000			[		l		<u> </u>	J	.	ļ <del> </del>	.1	l		-
NZO(a)ANTI	HRACENE	R-7	4		Compared to up	gradient wells wit	th Kruskal-Walls 1	est.				er from that of t		
	1	R-8	4			gradient wells wit						er from that of t		
		R-8B				gradient wells wit			-1	Well concentrat	ion does not diff	er from that of I	apgradient wells.	120
		å	]			gradient wells wit			-1	Well concentrate	ion does not diff	er from that of i	poradient wells.	-
		R-9										er from that of		
	<u> </u>	R-9C	4			gradient wells wit			_		···	1 170111 11101 01 1		
	I	R-9D	3		0.3 - 11	.0	1.0 -	14.1	*)	YE:	<u> </u>		NO	
	1													

				er aren	CAL ANALYSES	EOD WELL BAD	ANGUEDE			<u> </u>				
					CAL ANALISES		TOBER 30, 199		<u> </u>	T				
			<b></b>	FOR 1992,	·r	MENAED OC	IOSER SIL ISS							
				ļ						ļ	ļ		· · · · · · · · · · · · · · · · · · ·	
kground inform					L						<del></del>			
		03, 04; 1991 -	01, 02, 03, 04;	; 1992 - 01, 03	! 			пиничен в политични				•		den en e
ckground Well: F		ļ						Internation I pro-			<b></b>			-
mber of Historic	cal Detects in R-	10:			1	1			4 Clateranhand	11 2 4 Dimes	balabanal - 1	. Chlorophenol	1.	
	Acenaphthene -	0; Phenol - 5; 4	-Nitrophenol - C	2-Methyl-4,6-D	Initrophenol - 0;	Z-Nitrophenoi -	1; 2,4,6-1 ncmc	ropnenoi - 2; 2	4-Dictorophenor	- 1; 2,4-Dillet	hyphenor 1,	a - Gradiophienor	7	• (4 (4) (7) (4) (4
	2,3,5,6-Tetrach	orophenol - 3; Bo	enzo (a) anthrace	ne - 5; Benzo(	g.h.i)Perylene - 2;	Benzo(b) nuoran	thene - 7: Benz	o(a)pyene - 4; F	luorene - 2; Diber	IZO(B,A)ARRIFBCET	e - I, Liwysene	I- 1:		
					Phonanthrene -	1; Bis(2-Ethylne:	xyl)Phtalat - 4; P	етаспюгорпало	- I; Fluorantnen	e - 1; 2,4-Dinitro	pnenoi - U; Napri	ithalene - O,		
	Acenephthalene	- O; Chromium -	O; Mercury - O;	2,8,4,6-Tetraci	Norophenol - 0							ļ		
												<u> </u>		-
fidence interve	als based on Poi	son method:												
		n. 1964. Biostatis			New York 272									
F	Runyon, Richard	P. 1975, Fundan	nentals of Statis	tics in the Biolo	cal, Medical and	Health Sciences.	Duxbury Press. E	oston 393 pp.						
			iliana i					or the same of the						1
		ž ,	(	<u> </u>						Confidence Lin				THE ROLL
			di Vi	Downgradient	Wells	]	Backgr	and Well		Background We			L	1
			Historical	Number	Confidence L	lynks	Confidenc	e Limits		Downgradient \	Mells	Evidence of	Contamination	CHIALT IN
Parameter (up)	70	Y/ SRE	of Data	ST.	for Variables	(Detects)	for Vari	bles (Detects)		0//9		la Downstader	R Wells	
	XYL)PHTHALAT		2		0,1 - 9.		0.6 - 1			YES			NO	
		R-8	4		Compared to up	gradient wells wit	th Kruskal-Walls n	onparametric tes	t.	Well concentrat	on does not diffe	er from that of u	pgradient wells.	
	***************************************	R-88	4				th Kruskal-Walls n			Well concentrati	on does not diffe	er from that of u	pgrødlent wells.	T-1
	***************************************	R-9	4		Compared to up	gradient wells wit	th Kruskal-Walls n	onparametric tes	1.	Well concentrati	on does not diff	er from that of u	pgradlent wells.	
		R-9C	3		0.8 - 1		0.6 - 1		Torreson in the second	YES	**************	1	NO	The transmitter
······································		R-9D	2		0.1 - 9.		0.6 - 1			YES		T	NO	
						<del> </del>	<u></u> -	· · · · · · · · · · · · · · · · · · ·	1	†	<b> </b>	1		
FLUORANTHENE		R-7	1		0.03 -	7.4	0.03	7.4		YES			NO	<del></del>
LOOPONTINENE		R-8			0.3 - 1		0.03		-	YES		<del> </del>	NO	·
		R-8B	3		0.0 - 5		0.03		-	YES		-	NO	n necessary and a se
	·			,	0.03 -		0.03		l	YES		·}	NO	
		R-9 R-9C	1		0.03 -		0.03		ļ	YES	Commence of the contract of th		NO	
	<del></del>									A THE REAL PROPERTY AND ADDRESS OF THE PARTY AND		<b></b>	The second secon	
		R-9 D	0		0.0 - 5	.3	0.03	7.4		YES			МО	
						J						ļ. <del></del>		
ENTACHLOROPI	HENOL	R-7	0		0.0 - 5.		0.03			YES		<del> </del>	NO	(10)
		R-8	C		0.0 - 5.		0.03		-	YES		<b>-</b>	NO	
		R-88	1		0.03 - 7		0.03		ļ	YES	Construction of the last of th	-	NO	
		R-9	C	<u> </u>	0.0 - 5.		0.03		ļ	YES			NO	ļ
		R-9C	2		0.1 - 9		0.03			YES			NO	
		R-9D	2	THE TRANSPORT OF THE PARTY OF T	0.1 - 9	.3	0.03	7.4		YES			NO	1
			,										NO	
4-DINITROPHE	NOL	R-7	2		0.1 - 9.		0.0 -			YES				
20.00	52,40000	R-8	1	<u> </u>	0.03 -		0.0 -			YES			NO	
Was embled		R-88	2		0,1 - 9,		0.0 -			YES			NO	
		R-9	O		0,0 - 5,	3	0.0 -	5.3		YES		1	NO	
		R-9C	0		0.0 - 5.	3	0.0 -	5.3	1	YES		1	NO	1.
		R-9D	C		0.0 - 5.	3	0.0 -	5.3		YES	6000000000000	AS AS	NO	
				1						1	<u> </u>		1	
ACHTHALENE		R-7	2	i i	0.1 - 9.	3	0.0 -	5.3	Control of the Contro	YES	Karana and a same and	1	NO	1
IIIII-LEING		R-8	-		0.0 - 5.		0.0 -			YES			NO	1
		R-88		-	1.0 - 14		0.0 -			YES	**************************************		NO	1
			3		0.9 - 11	_ ····	0.0 -		-	YES			NO	-
		R-9	3							YES			NO	-
		R-9C R-9D	1		0.03 - 7		0.0 -			YES			NO	

### Well R-1R 1992 - Third Quarter

					0.5 0.0	VA.							
		.,		STATISTIC	AL ANALYSES	FOR WELL PAR	AMETERS	20070					
				FOR 1992,		PREPARED OCT	TOBER 30, 1992	2		1			
	.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		· · · · · · · · · · · · · · · · · · ·		I		1	74.74					m =2200 =2
							A						
						······································		Annual Control of the					
lackground Infor		03 04: 1001	01 03 03 04:	. 1002 - 01 02	I						the state of the s		1
	sed: 1990 - 02	03, 04; 1991 -	01, 02, 03, 04,	1992-01,03	T							manual reconstitut in english	
Background Well:					[							TO THE RESERVE OF THE PARTY OF	Marie Carlo Car
Number of Histor	rical Detects in R	1R									. 1: 1 - Chlorophesol		
	Acenaphthene -	0; Phenol - 5; 4	-Nitrophenol - C	2-Methyl-4,6-D	nitrophenol - 0;	2-Nitrophenoi -	1; 2,4,6-1 nemo	rophenol - 2; 2 4-Dic	:iorophenoi - 1; 2,4-1	met nyiphenoi	- 1, 1 - Chorophenor	the second community of	
3440	2,3,5,6-Tetrach	lorophenol - 1; B	enzo (a)anthracei	ne - 5; Benzo(g	j.h.i)Perylana - 4;	Benzo (b) nuoran	thene - 4; Benze	o(a)pyrene - 4; Fluoren	e - 2; Dipenzo(a,n)Antr	racele - 1; Cnry	/sene - 1;		
	Benzo (k) fluoram	thene - 2; Pyrene	- 3; Indeno(123	-cd)Pyrene - 1;	Phenanthrene -	3; Bis(2-Ethylhex	cyl)Phtalet - 4; P	entachloropheno - 4; F	luoranthene - 6; 2,4-Di	ntrophenol - 5;	Naprithalene - b;		
	Acenaphthalene	- 4; Chromium -	0; Mercury - 0;	2,3,4,6-Tetrach	lorophenol - 0								
			2,000,000,000		(ASS)	2502		V. 200					
	,	w.				101000000000000000000000000000000000000	1000	200 Sec. 10 Page 10 Pa					
Confidence Interv	vals based on Pol	son method:										200000000000000000000000000000000000000	
	Goldstein Avron	1964. Blostati	stics. The MacM	llan Company.	New York, 272	DØ.			A-144014-1-1401-1-151-14401-1-1401-1-1401-1-1401-1-1401-1-1401-1-1401-1-1401-1-1401-1-1401-1-1401-1-1401-1-140				
					cal. Medical and I	Health Sciences.	Duxbury Press. B	ioston, 393 pp.	CONTRACTOR OF THE PROPERTY OF		neo Ama		2010-110-110-110-1
												25- 20-04-20-04-	1
						***************************************			Confidence	Limits for		1	100000
***************************************				Downgradient	Wells		Bucker	ound Well	Background				1
			Historical		Confidence Li		Confidence		Downgradie		Evidence of (	Contemination	
		MA			for Variables			obles (Detects)		Overlup	in Downgrades		
Parameter (ve		Wells	of Dete		0.0 - 5.		0.0 -			YES	marine Allert Co.	NO.	<b>(4)</b>
ACENAPHTHEN	e	R-7			0.0 - 5.		0.0-			YES		NO NO	0.4411111111111111111111111111111111111
		R-0			0.0 - 5.		0.0 -			YES		NO	
		R-8B					0.0-			YES		NO	
		R-9			0.0 - 5.								<b></b>
		R-9C	0		0.0 - 5.		0.0 -	·   Darron   Constitution		YES		МО	
		R-9D	0		0.0 - 5.	3	0.0 -	5.3		YES		МО	Spine in the state of
PHENOL		R-7	1		0.03 - 7		1.0 - 1			YES		NO	Contract Contract
		R-8	1		0.03 - 7		1.0 - 1			YES		NO	
		R-88	2	Massachines Commission	0.1 - 9.1		1.0 - 1			YES		NO	
300501 U		R-9	3		0.3 - 11		1.0 - 1	14.1		YES		NO	
		R-9C	3		0.3 - 11		1.0 - 1	14.1		YES	St. 100	NO	
		R-9D	3		0.3 - 11	.0	1.0 - 1	14.1		YES		NO	Contract Con
4-NITROPHENOL		R-7	1		0.03 - 7	.4	0.0 -	5.3	New Colors Colors (	YES		NO	T
	[	R-8	0		0.0 - 5.	3	0.0 -	5.3		YES	CO COLORAGO	NO	and the second state of
		R-8B	1		0.03 - 7	.4	0.0 -	5.3		YES		NO	
***************************************		R-9	0		0.0 - 5.		0.0 -	5.9	CASC OR CONTROL OF	YES		NO	1
		R-9C	0		0.0 - 5.	***************************************	0.0 -			YES		NO	
		R-9D			0.0 - 5.		0.0 -			YES		NO	
	·					Ī	·						110 1000
2-MC131VI -4 4	-DINITROPHENOL	R-7	1		0.08 - 7	4	0.0 -	5.3		YES	40-180-1904 A. J. C. B.	NO	1
4-ME 11111-4,0	I	R-8			0.0 - 5.	CONTRACTOR OF THE PARTY AND ADDRESS OF THE PARTY.	0.0 -			YES		NO	1
		R-88		ł	0.03 - 7	~~~~~	0.0 -			YES		NO	
		By the property of management of references to the second		***************************************			0.0 -			YES		NO	
		R-9	·		0.0 - 5.		0.0 -			YES		NO	
		R-9C			0.03 - 7			.,		YES		NO.	
		R-9D	1		0.03 - 7	4	0.0 -	5.3		AF2	·	NO .	** ** ** ** ** ** ** ** ** ** ** ** **
						l	ļ <del></del>						and the feet that a con-
2-NITROPHENOL	L	R-7	1	<u> </u>	0.03 - 7		0.03 - 7			YES		NO	
		R-8	1		0.03 - 7	.4	0.03 - 7	.4		YES		NO	
	I	R-88	1	L	0.03 - 7	.4	0.03 - 7	.4	ALSO OMOTEUROS MALONACIONAS	YES	man alem negati	NO	
		R-9	2	1	0.1 - 9.3	3	0.03 - 7	.4	of the control of the second s	YES	THE COURSE STORY DESCRIPTION	NO	
	·	R-9C	2		0.1 - 9.3		0.03 - 7	7.4		YES		NO	1
					0.1 - 9.3		0.03 - 7			YES		NO	
	-0.00	R-90											



	<u> </u>						54 (0.000)
		STAT	ISTICAL ANALYSES FOR WELL PA	RAVETERS			
		FOR 1992	PREPARED 0	CTOBER 30, 1992			
				20000 0000 0000 000 000			
kground information:							
rs, Quarter Used: 1990 - (	02, 03, 04; 1991 -	01, 02, 03, 04; 1992 - 01	1, 03			Visit Control Report Control Control	
kground Welt: R-1R		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,					
nher of Historical Detects in	R-1R			a salata	- 1: 2 4-Dimet Indohend	- 1: : - Chlorophenot - 1:	
		-Nitrophenol - ( 2-Methyl-4	i,6-Dinitrophenoi - 0; 2-Nitrophenoi	- 1; 2,4,6-Trichio rophenol - 2; 2 4-Dictor	opnenoi - 1, 2,4-ballet hyphenoi		
2,3,5,0 1eu	embana a 2º Purene	- 2: Indeno(123-cd)Pyrene	- 1: Phenanthrene - 3; Bis(2-Ethyl)	nexyi)Phtalat - 4; Pentachloropheno - 4; Flu	oranthene - 6; 2,4-Dinitrophenol - 5;	Naphthalene - 6;	
Bauso(K)rioor	antirere - z, ryiere	O; Mercury - O; 2,3,4,6-Te	trachlorophenol - O				
Acenaphthale	ne - 4; Chromium -	U, Mercury - U, 2,8,4,0-16	(racinorophenor- o			Windowski,	
fidence intervals based on I	Poisson method:						Charles Charles
Caldetala Au	rom 1984 Blostati	stics. The MacMillan Compar	ny. New York, 272 pp.				4
Purvon Piche	ed P 1975 Funda	mentals of Statistics in the I	Biolog cal, Medical and Health Sciences	i, Duxbury Press, Boston, 393 pp.			
Runyor, roan	101. 1010.1010		·············				and the second s
					Confidence Limits for	#22 #10000000000000000000000000000000000	2000 1000 2000 2000 2000
				Background Well	Background Well and	Allers Transport Programs Transp	
		Downgra			Downgradient Wells	Evidence of Contamination	ar manual laborativa
	00 50	Historical Number	Confidence Limits	Confidence Limits			
erameter (ws/I)	Wols	of Detects	for Variables (Detects)	for Variables (Detects)	Overlag	in Downsradient Wells	
4,6-TRICHLOROPHENOL	R-7	31	0.3 - 11.0	0.1 - 9.3	YES	NO	
, a, a rechtonomenot	R-8	2	0.1 - 9.3	0.1 - 9.3	YES	NO	A Company
			0,1 - 9,3	0.1 - 9.8	YES	NO	
restance of the second	R-OB		0.3 - 11.0	0,1 - 9.3	YES	NO NO	
	R-9	3			YES	NO	
endrolesconoscoción acros con la	R-9C	4	0.6 - 12.6	0.1 - 9.3	YES	NO	The state of the s
	R-9D	2	0.1 - 9.3	0.1 - 9.3	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		
							erabi e e e e e e e e e e e e e e e e e e e
4-DICHLOROPHENOL	R-7	3	0.8 - 11.0	0.1 - 9.3	YES	NO	
	R-8	3	0.3 - 11.0	0.1 - 9.3	YES	NO	
			0.1 - 9.3	0.1 - 9.3	V YES	NO	1000
	R-8B		0.03 - 7.4	0,1 - 9.3	YES	NO	
	R-9	<u>                                     </u>			YES	NO	
	R-9C	2	0.1 - 9.3	0.1 - 9.3			
	R-9D	1	0.03 - 7.4	0.1 - 9.3	YES	NO	+
,4-DIMETHYLPHENOL	R-7	11	0.03 - 7.4	0.03 - 7.4	YES	NO	
4-DIMETHTCPHENOL			0.0 - 5.3	0.03 - 7.4	YES	NO	25440 D500 pt 34
	R-8	. <u> </u>		0.03 - 7.4	YES	NO	
	R-8B	2	0.1 - 9.3		YES	NO	
	R-9	0	0.0 - 5.3	0.03 - 7.4		NO	
	R-9C	2	0.1 - 9.3	0.03 - 7.4	YES		·····
	R-9D	1 1	0.03 - 7.4	0.03 - 7.4	YES	NO	
		<del></del>			70	SWEET MANUEL STOCKHOOLS	
			0,03 - 7.4	0.03 - 7.4	YES	NO	
-CHLOROPHENOL	R-7		0.1 - 9.8	0.03 - 7.4	YES	NO	500 5000 5000 500
	R-8	.		AND THE PERSON NAMED IN COLUMN TWO IS NOT THE PERSON OF TH	YES	NO	100000
Winds 15	R-80	. 1	0.03 - 7.4	0.03 - 7.4	YES	NO	rich and drawn
and the same	R-9	11	0.03 - 7.4	0.03 - 7.4		NO	
	R-9C	1	0.03 - 7.4	0.03 - 7.4	YES		
	R-9D	1	0.03 - 7.4	0.03 - 7.4	YES	NO	
					THE CO. STREET, CO. LANSING.		
- uu				0.03 - 7.4	YES	NO	A
1,3,5,6-TRICHLOROPHENOL	R-7	3	0.3 - 11.0		YES	NO	
10.00	R-8	3	0.3 - 11.0	0.03 - 7.4	· YES	NO	
	R-89	1	0.03 - 7.4	0.03 - 7.4		The second secon	
	R-9	3	0.3 - 11.0	0,03 - 7.4	YES	NO	
	R-9C	-	0.1 - 9.3	0.03 - 7.4	YES	NO NO	
							1
	R-9D		0.1 - 9.3	0.03 - 7.4	YES	NO	20,000,000,000



### Well R-1R (Con't) 1992 - Third Quarter

т		1		<del></del>	SF 10.00		T					
	·			STATISTIC	AL ANALYSES	GR YELL PAR	AMETERS				88 F9FE 184	
		·		FOR 1992,		MEPARED OC	TOBER 30, 199	2				
			}		Care The Intelligent		T	T				
						<del></del>	1					
Background infor	l			·			ļ	1				
Background inton	medun	2, 03, 04; 1991 -	01 02 03 04	· 1992 - 01. 03								Assessment and the second
Years, Quarter U		c, U3, U4, 1891 -	01, 02, 03, 04,	1				<u> </u>	1	0.10		
7	1 - 1 B - 4 4 - L - 6		····	} <del>-</del>				·				
Number of Histor	nest Detects in F	CIRC	- Alternation	2-Methyld 8-DL	nitrophenol - 0	2-Nitrophenol -	1: 2.4 6-Trichi	rophenol - 2: 2 4-Dick	prophenol - 1; 2,4-Dimet hyl	phenol - 1; ; - Chlo	rophenol - 1;	
	Acenaphthene	- U, PREMOI - 5; 4		E-MELHYP7,0-UI	hilbanian - 4	Benzo Mignor	there - 4. Ren	o(a)nyrene - 4: Fhiorene	- 2; Dibenzo(a,h)Anthrace e -	1: Chrysene - 1:		Total Control of the
	2,3,5,6-Tetrac	niorophenol - 1; B	enzo(a)ammracei	ne - 2; senzo(0,	Channeltane 4;	3. Dis/3 Comit-	vul\Dhtalet - A.	Pentachioropheno - 4. Fi	uoranthene - 6; 2,4-Dinitropher	nol - 5: Naphthalene	• 6;	and an analysis of the second
	Benzo (k) fluorar	thene - 2; Pyrene	- 3; Indeno(123	-ca)Pyrene - 1;	rnenanthrene -	a; bis(z-Etnyine	xyi)riitalat - 4;	remediatoricio 1º 4, Fit	ZOLUTINITE - O. E. TOWNS OFFICE			THE RESERVE OF THE PARTY OF THE
	Acenaphthalen	- 4; Chromium -	0; Mercury - 0;	Z,3,4,5-Tetrachi	orophenoi - O							
		<u></u>	ļ			,						
Confidence Interv			ļ									
	Goldstein, Avro	m. 1964. Blostati	stics. The MacM	illan Company.	New York 272	op.						
	Runyon, Richard	1 P. 1975, Funda	mentals of Statis	tics in the Biolog	cal, Medical and I	Health Sciences.	Duxbury Press.	Boston 393 pp.				
											The state of the s	
		1000							Confidence Limits			4 (104 ) (4 (4 (4 (4 (4 (4 (4 (4 (4 (4 (4 (4 (4
				Downgradient				ound Well	Background Well as			
		2000 7000 1000	Historical	Number	Confidence L		Confidenc		Downgradient Well:		nce of Contamination	
_Permister_(w	P/D	Welts	of Date	cts	for Variables	(Detects)	Letradesbetesperterapers	inbles (Detects)	Overtee	In Do	empredent Webs	
BENZO (g,h,I)PE	RYLENE	R-7	2		0.1 - 9.		0.6 - 1		YES	94,889	NO	
		R-8	200000000000000000000000000000000000000	4770 orun - 291	0.1 - 9.	3	0.6 - 1		YES		NO	1 =
	***	R-00	2	2020	0.1 - 9,		0.6 - 1		YES	- MONOR 10 - M MI M M M / M	NO	
······································		R-0	1	100000	0.03 - 7		0.6 - 1		YES		NO	
		R-9C	1	2555	0.03 - 7	7.4	0.6 - 1		YES		NO	
		R-9D	0	1-2	0.0 - 5.	3	0.6 - 1	2.6	YES		NO	
	···	1 0.1	1			/A						
BENZO(b)FLUO	RANTHENE	R-7	3		0.3 - 1	1.0	0.6 - 1	2.6	YES		NO	L
	T	R-8	4		Compaired to up	gradient wells w	th Kruskal-Walls	nonparametric test.			that of upgradient wells.	Thronous see Eu
	}	R-8B	4					nonparametric test.	Well concentration of	does not differ from	that of upgradient wells,	
	1	R-9	3		0.3 - 11		0.6-		YES		NO	
	1	R-9C	2		0.1 - 9.3		0.6-		YES		NO	
	<u> </u>	R-9D	а		0.9 - 11	.0	0.6 -	2.6	YES		NO	
			1			l						
BENZO(a)PYREM	NE.	R-7	2		0.1 - 9.3	3	0.6 -	12.6	YES		NO	3100-400000
	r <del>z</del>	R-8	2		0,1 - 9,			12.6	YES	1020000	NO	
·		R-88	3		0.3 - 11			12.6	YES		NO	100000000
ļ	<u> </u>	R-9	1		0.1 - 9.			12.6	YES		NO	
<b></b>	<del> </del>	R-9C	·		0.1 - 9.			12,6	YES		NO	
	<del> </del>	R-9D		<del> </del>	0.03 - 7			12.6	YES		NO	
	·	1230	·		0.00-7	i ······						
FLUORENE		R-7			0.8 - 11	.0	0.1 -	9.3	YES		NO	4 * 1000* 20 10 2 40 0
PLUCKENE		R-8	.		0.3 - 11		0.1 -		YES		NO	
		R-89			0.3 - 11		0.1	\$1.000 to   \$1.000	YES		NO	30 30 30 30 30 30 30 30 30 30 30 30 30 3
	.		.	·	0.03 -		0.1		YES		NO	
		R-9		<u> </u>	0.03 - 7		0.1		YES		NO	
		R-9C		J	0.03 - 7		0.1		YES		NO	
		R-9D	ļ		U.1-9.	1	U.1.	7.0			the second second second second	
						1		7.4	YES		NO	
DIBENZO(a,h)A	NTHRACENE	R-7		<u> </u>	0.03 - 7		0.03 -		YES		NO	
		R-8	1	!	0.03 - 7		0.03 -				NO	
ACT 1445		R-88			0.03 - 7		0.03 -		YES		NO	
		R-9	2	?	0.1 - 9.		0.03 -	·····	YES			
	22 20 20 20 20 20 20 20 20 20 20 20 20 2	R-9C	1900	2 50	0.1 - 9.		0.03 -		YES		NO	
		R-9D	1	1	0.03 - 7	'.4	0.03 -	7.4	YES		NO	
	-			· · · · · · · · · · · · · · · · · · ·		T		2000,000,000		1280,738	I - <del></del>	- 1

### Well R-IR (Con't) 1992 - Third Quarter

					<u> </u>		É.						
				STATISTIC	CAL ANALYSES	FOR WELL PAR	METERS						
	2000 00 H000 2000	100 1000	32	FOR 1992, '			TOBER 30, 199	2	Vinging.			1	
	***************************************	600			Tay 164	144	2000-9-2002						
***************************************		***************************************	*0 0	101 32:50100			1962 197	The second second second		vi sve semele			
Background Infor	mation;				1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1				500	V25050 (255 = 2,7500)			
Years, Quarter U	sed: 1990 - 02	03, 04; 1991 -	- 01, 02, 03, 04;	: 1992 - 01, 03	in the state of th	Car (Caramette 1439)	2427410000000000000000000000000000000000						
Background Welt			· · · · · · · · · · · · · · · · · · ·		T			Commence of the Commence of th	6. 190	100000000000000000000000000000000000000			
	rical Detects in R-	1R:	· · · · · · · · · · · · · · · · · · ·										
··········	Acenaphthene -	O; Phenol - 5; 4	-Nitrophenol - C	2-Methyl-4,6-D	initrophenoi - 0;	2-Nitrophenol -	1; 2,4,6-Trichic	rophenol - 2; 2 4-Dick	orophenol - 1; 2,4-Dime	t hylphenol - 1	; : - Chlorophenol	-1;	
	2,3,5,6-Tetrach	orophenol - 1; E	Benzo (a) amthrac ei	ne - 5; Benzo(g	j,h,i)Perylene - 4;	Benzo(b) fluoran	thene - 4: Benz	o(a)pyrene - 4; Fluorene	- 2; Dibenzo(a,h)Anthrac	e e - 1; Chryse	ne - 1:		I
	Benzo(k)fluoram	hene - 2; Pyrene	e - 8; Indeno(123	-cd)Pyrene - 1;	Phenanthrene -	3; Bis(2-Ethylhe)	xyl)Phtalat - 4; P	entachioropheno - 4; Fi	uoranthene - 6; 2,4-Dintr	ophenol - 5; Na	phthalene - 6;		
			- O; Mercury - O;				1		4000 ACC (CV ACC ACC ACC ACC ACC ACC ACC ACC ACC A				
			7				1					<del> </del>	
Confidence Interv	vals based on Pol	son method	1				<u> </u>					***************************************	
			Istics. The MacMi	lan Company.	New York 272	ID.						***************************************	
			mentals of Statist				Duxbury Press. I	Roston, 393 pp.					
	7		1							-		<del> </del>	1
			1						Confidence Li	nite for		† <del></del>	
			<del> </del>	Downgradient	Wells		D-st-	ound Well	Background W				
			Historical		Confidence Li		Confidenc		Downgradient		Evidence of		
Parameter (ur	-70	Wels	of Dete		for Variables			bles (Detects)		erise	in Downwader		
CHRYSENE	4 mars	R-7	11		0.03 - 7	***************************************	0,03 -		YE		T NAMES OF	NO	***************************************
CIRTISENC		R-8			0.03 - 7		0.03 -		YE			NO	
		R-09			0.03 - 7		0.03		YE			140	
		R-9		***************************************	0.03 - 7		0.03		YE			NO	000.00
***************************************		R-9C	ļi		0.03 - 7		0.03 -		YE			NO	Charles I roger carrie
	***************************************	R-9D	·		0.03 - 7		0.03		YE			NO	
			<del> </del>		0.03		0.03		15			<u> </u>	**************************************
BENZO(k)FLUO	RANTHENE	R-7			0.03 - 7		0.1 -	0.3	YE			NO	
32,122(1), 200		R-8	i		0.03 - 7		0.1 -		YE			NO	<b></b>
		R-88	<del> </del>		0.03 - 7		0.1 -		YE				
	······································	R-9	·		0.03 - 7	**************************	0,1 -		YE			NO NO	
		R-9C	<u> </u>		0.03 - 7		0,1 -	Q*************************************	YE			NO	<del> </del>
		R-9D	·		0.03 - 7		0.1 -	Printer Printer and Planter of Street, and Perinter of Street, and Article Street, and	YE				
		K-90	<del> </del>		0.03 - 7	.7	0.1.	3.3	TE:			NO	
PYRENE		R-7			0.3 - 11.		0.3 -		YE			NO	
r ireite		R-8	3		0.3 - 11.		0.3 -		YE				
		R-8B			0.1 - 9.3		0.3 -		TE YE			NO NO	<b></b>
		R-9	<del> </del>		0.03 - 7		0.3 -	**************************************	YE YE			NO	
		R-9C	<del> </del>		0.03 - 7		0.3 -		YE				
		R-90	<b> </b>		0.03 - 7	*************************	0.3 -		YE			NO	
		K-9U	<b></b>	***************************************	0.03 - /		0.3 -	11.0	YE			NO	
INDFNO(123-cd	1\DYDENE	R-7			0.0 - 5.2		0.03 -	1	YE			NO	
11-11-00	J/F I PAETAE	R-8			0.03 - 7		0.03 -		YE			NO	
	***************************************	R-8B		(	0.0 - 5.3		0.03 -		YE			NO .	
		K-88										NO	
		R-9C			0.0 - 5.3		0.03 -		YE				ļ
									YE			NO	4
		R-9D			0.0 - 5.3		0.03 -					NO	
						l. <del></del>							
PHENANTHRENE		R-7			0.03 - 7		0.3 -		YE			МО	
		R-8	2		0.1 - 9.3		0.3 -		YE			NO	1
	10000000000	R-88	1		0.03 - 7.		0.3 -		YE			NO	
	resident and the property of the same for the state of the same of	R-9	1		0.03 - 7.		0.3 -		YE			NO	
020200	10000 100000000 0000	R-9C	0		0.0 - 5.3	Marie Romanie	0.3 -	11.0	YE			NO	
202000000 2000	0.000.000.000.000.000	R-9D	0	9 00 00	0.0 - 5.3		0.3 -	11.0	YE			NO	
	***************************************	***************************************			1					1		1	T



Well R-IR (Con't) 1992 - Third Quarter

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				STATISTIC	AL ANALYSES	FOR WELL PAR	AMETERS		20 17 1020004				
					······································		TOBER 30, 199	2					
				FOR 1992, 1		PREPARED UC	10004 30, 193	T			******		III PIRROTTO CONTRACTOR
				<b> </b>					·		1	a manufactura (m. 1911)	Extension of the second
			53 1050000 100000 10							(a.e.) = nee () ()		100	1221 W Factor
ackground Infon	metlon		80 120 VENEZA 62 02 00 650 FC					Comment of the Commen				HIND TO D	
ears. Quarter U	sed 1990 - 02	03, 04; 1991 -	01, 02, 03, 04;	; 1992 - 01, 03								and the second second	
ackground Welt.			T					5000					
	*****	1 D		}			8160849	12000					4 - 0 (4) (4) (4) (4) (4) (4)
······		C. D 5. 4	-Nitrophenol - (	2-Methyl-4.6-Dr	nitrophenol - 0:	2-Nitropheno! -	1; 2,4,6-Trichic	rophenol - 2; 2 4-Diclo	rophenol - 1; 2,4-Dimet	hylphanol - 1;	- Chlorophenol	1	The contract
				- 6: Danza/a	h l\Dandana 4.	Benzoth Museum	i thene - 4: Reni	n(a)nvrene - 4: Fluorene	- Z: Dipenzo(II, II)Antimaci	CA - I' CHANAGH			
	2,3,5,6-1 etrach	orophenol - 1, b	enzotajantnace	ad\Dwans - 1:	Dhenanthrene -	9. Big/2-Ft bylba	xvi)Phtelat - 4:	entachioropheno - 4: Flu	oranthena - 6; 2,4-Dinkro	phenol - 5; Naph	nthalene - 6;	15.72	
	Benzo(k) Nuoram	nane - 2; Pyrene	- a; indeno(123	I coryrene - 1, 1	riteliantizera -	1	1		·	. i		TANADAN EMA	
	Acenaphthalene	- 4; Chromkum -	O; Mercury - O;	2,3,4,6-Tetrachk	orophenoi - U				······································			w commence of the contract	
	71											e in the second of the second	
onfidence interv	vals based on Pol	sson method:		<u> </u>								in the second second	
	Goldstein Avron	n. 1964. Blostati	stics. The MacM	ilian Company.	New York, 272		<u> </u>						
	Runyon, Richard	P. 1975, Funda	mentals of Statis	tics in the Biolog	cal, Medical and	Health Sciences.	Duxbury Press.	Boston, 393 pp.					
		1	l	T		T	53333333333						The state of the s
						1		1	Confidence Lin	nits for			- Secret Citizens relate to a
				Downgradient	Wells	<b></b>	Ractive	ound Well	Background W	el and	Designation and the second		
		ļ	1.00	4.,	Confidence L		Confidenc		Downgradient '		Evidence of	Contamination	
l	L		Historical	J						190	In Downgrade		
Personeter (ur		Wols	of Dete	CTS	for Variables	A		lables (Detects)	YES			NO	motern to accommen
BIS(2-ETHYLH	EXYL)PHTHALAT	R-7	2	N. SENSARRINA	0.1 - 9.		0.6 - 1					and the second s	
1-700-000	A11 107 A2	R-8	4		Compared to up	gradient wells wit	th Kruskal-Walle	nonparametric test.	Well concernran	ion does not diff	er from that of t	ppracient wells.	
		R-88	4		Compared to up	gradient wells wh	th Kruskal-Walls	nonparametric test.		ion does not diff			100 - 100
****		R-9	4		Compared to up	gradient wells wit	th Kruskal-Walls	nonparametric test.		ion does not diff	er from that of i		and the
		R-9C	3		0.3 - 1	1.0	0.6 - 1	2.6	YES			NO	
····· · · · · · · · · · · · · · · ·		R-9D	2		0.1 - 9.	.3	0.6 - 1	2.6	YES	-0.000000000000000000000000000000000000	11. 01. CHIMINOUS C	NO	
	ļ		<del> </del>			T		1				110000012-3500	
	<u> </u>				0,03 -	7.4	1.5 -	15.6	YES			NO	14 - (1) - (1) - (1) - (1)
FLUORANTHEN	<b>₹</b>	R-7	ļ <u>l</u>		0.3 - 1		1.5 -		YES	. <del> </del>		NO	
		R-8			· · · · · · · · · · · · · · · · · · ·				YE			NO	H-107 - +
		R-8B	C		0.0 - 5			15.6				NO	Martin San Aleccinic
		R-9	1	,	0,03 -			15.6	YE			NO	
		R-9C		)	0.0 - 5		1.5 -		YE:			ter a reservation of the property of the contract of the contr	
		R-9D	C	05 5000	0.0 - 5	.3	1.5 -	15.6	YE	<u> </u>		NO	
PENTACHLORO	PHENOL.	R-7	C		0.0 - 5.	3	0.6 -	2.6	YE			NO	
	1	R-8		il	0.0 - 5.	3	0,6-	12.6	YE	5		NO	
······································		R-88	1	·	0.03 - 7		0.6 -	12.6	YE	\$		NO	
	·	R-9		<u></u>	0.0 - 5.		0.6 -		YE	5	1	НО	
		R-9C		<u> </u>	0.1 - 9	************************	0.6-		YE		No ca	NO	
		R-9D			0.1 - 9		0.6-		YE			NO	
		וא-אן			0,1-9				<del></del>				
Maria de la companiona de		R-7			0.1 - 9.			14.1	YE	S		NO	
2,4-DINTROPH	ENOL.	and the street of the party party bears the party and the state of the			Martinaria Inches			14.1	YE			NO	
	# 100 mm	R-8			0.03 -				YE	*** **********************		NO	A 100 A 100 A
	0. 0.000 (0.000	R-8B	100000000000000000000000000000000000000	2	0.1 - 9.		1.0					NO	
		R-9		0	0.0 - 5.		the state of the s	14.1	YE			NO	
		R-9C		)	0.0 - 5.			14.1	YE			mark manager surrent and a second second	
		R-9D	(	0	0.0 - 5.	3	1.0	14.1	YE	5		МО	C 4 C 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1
			-					1070000		1			
Comments the more re-					0.1 - 9.	3	1.5	15.6	YE	S	S. Marinoliko	NO	
NAPHTHALENE		R-7			0.0 - 5			15.6	YE		1	NO	
		R-8		0					YE			NO	
		R-8B		5	1.0 - 1			15.6	YE			NO	***************************************
44	T	R-9		3	0.3 - 1	1.0		- 15.6				NO	
	49005-000 9388												100000000000000000000000000000000000000
				1 2000	0.03 -	7.4	1.5	15.6	YE				
		R-9C		1	0.03 - 0.0 - 5			· 15.6	YE			NO NO	

## Well R-IR (Con't) 1992 - Third Quarter

				STATISTIC	AL ANALYSES	FOR WELL PAS	AMETERS	<b> </b>	ļ		- 12 E	<u> </u>		
				FOR 1992, '_			TOBER 30, 199	. <u> </u>	<b></b>			· · · · · · · · · · · · · · · · · · ·	Constitution on the	
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	,3,5,6-Tetrachi	orophenol - 1; 8	enzo(a)ammrace	lue - 2; Benzo(	Phenanthrene -	3: Dis/2-Ethylhe	Literio - T. Dolla	Pertachloropheno	4. Fluoranthen	- 6: 2 4-Dinkre	ophenol - 5: Napt	thalene - 6:		
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		R-8	0		0.0 - 5.		0.6 - 1			YES			МО	
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		R-9			0.0 - 5.		0.6 - 1		ļ	YES	• 4		NO	
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CHROMIUM		R-7			0.0 - 5.		0.0 - 5			YES			NO	
00 THE RESERVE		R-8			0.0 - 5.		0.0 - 5			YE!			NO	
		R-88	C		0.0 - 5.		0.0 - 5			YE!			NO	
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MERCURY		R-7		 	0.0 - 5.3		0.0 - 5			YES			МО	
		R-8			0.03 - 7	· · · · · · · · · · · · · · · · · · ·	0.0 - 5			YES		<b></b>	NO	
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Commence of the commence of th		R-9C			0.0 - 5.		0.0 - 5		ļ	YES			NO	4
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		R-9C			0.0 - 5.		0.0 -			YES			NO	
		R-9D	<u> </u>		0.0 - 5.	3	0.0 -	3.4	·	YES			120	
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ENZO(a)ANTHE	ACENE	R-7					h Kruskal-Wallis	······································	ļ			er from that of u		
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SMARS COMMITTEE TO	100000000000000000000000000000000000000	R-8B			. <b>.</b>	~,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	h Kruskal-Walls	******************		THE RESERVE OF THE PARTY OF THE		er from that of u	}Tiqqqq-q	· · · · · · · · · · · · · · · · · · ·
		R-9					h Kruskal-Wallis	**************************************		····		er from that of u		
		R-9C			Compared to up	gradient wells wi	th Kruskal-Wallis	est.				er from that of u	of president sections and desired the section of th	4
		R-9D			0.3 - 11	.0	1.0 -	14.1	l	YES			МО	1
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# APPENDIX E-2 WELL CONSTRUCTION INFORMATION



<del></del>	30 +	25 + +   + + + + + + + + + + + + + + + + +	20 +	15 + + +		<del>     </del>	5	+++	DEPTH DEPTH	_	GROUND ELEVATION TOP OF WELL 210 DEPTH OF WELL (f	112	DRILLING MET	PROJECT
	Lt red/tan F-SAND,	Lt tan F-M SAND,			Tan F -SAND	SAND,	Brown CLAY &	Brown FILL and		IAL 2" PVC	210.81 L (ft) 32.77	DISC (Developers Inter	I.S.A	Grenada, MS (RCRA)
	ND, tr silt	VD, tr c sand				r brown cla	SILT, it f sand	CLAY & SILT, it broken rock	DESCRIPTION	SCREEN 10 ft of 0.010" screen	GROUND WATER DEPTH (ft):  AT COMPLETION 22.8  AFTER 12 HOURS 22.6		GEOLOGIST	RA)
<del></del>								fragments _ III III	CONSTRUCTION	SCREEN	GRAVEL PACK FACE BENTONITE BACK FILL CONCRETE	~	J. B. Gillespie	5

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# WELL LOG: R-1R

40 35	30	25 20	- <del> </del>	б	Depth	Ground Elevation: Top of Well Elev.: Depth of Well: 29. Ground Water Dep At Completion:	Drilling M Driller: P	PROJECT:
	S 8,8,1 <u>D</u>	S S 6,6,8	S 12,20,20	S 7,8,12	Sample Counts	Ground Elevation: Top of Well Elev.: Depth of Well: 29.5 FEET Ground Water Depth: At Completion:	ethod: HOLLO ROFESSIONA	
m	Buff/gray trace-	Light buf	Light gra quart	Coarse GR Orange-t patche light gr	ē	Casing Screen:	UGER E INDUSTR	Grenada Wood I
Bottom of Boring at 30.5 f	Buff/gray fine to medium clean SAND, trace rust bands, trace clay	Light buff fine to medium clean SAND, coarsens gradually with depth	Light gray/ buff fine clean SAND, well-sorted quartz, trace mafic grains	Coarse GRAVEL (FILL)  Orange-brown SILT AND CLAY, trace bropatches (decomposed organics), trace light gray silt and clay (mottles/veins)	Description	Sample Collection G-grab T-shelby tube S-splitspoon C-rock core Casing Material: 2 * PVC Screen: 2 * PVC (0.01 * SLOT)		Plant LOCATION:
feet	ND.	, Š	well-sorted	CLAY, trace brown ——organics), trace ——mottles/veins)		GRAVEL PACK BENTONITE GROUT SCREEN	ИПН 28, 1989	N: Grenada, MS
	<u> </u>		\$5555555555555555555555555555555555555		Construction	***************************************	п	

Sheet 1 of 1

<del>                                     </del>	25 	<del></del>	<del>                                      </del>	 	5 . <del></del>	<del></del>	<del></del>	DEPTH DEPTH	-	GROUND ELEVATION TOP OF WELL DEPTH OF WELL (f	DRILLER Develo	: [
	Gray F SAND, tr silt	Lt tan/brown F	Lt gray/tan F t	Lt tan/gray CL	Tan/gray CLAYEY SILT,	Tan CLAYEY	Gray CLAY &		AL 2" PVC	709.26 (ft) 30.54	METHOD H.S.A.  Developers International	ida, MA (RC
	tr silt	Lt tan/brown FMC SAND, tr silt	to V-F SAND, tr silt	LAYEY SILT and F-SAND	YEY SILT, some f sand	SILT, tr f sand	SILT, tr brown/black organic particles	DESCRIPTION	SCREEN 10 ft of 0.010" screen	GROUND WATER DEPTH (ft): AT COMPLETION 21.54  AFTER 12 HOURS 21.5	Service Corp. DATE ' 3,	MONITORING WELL LOG
<del></del>		+ + + + + + + + + + + + + + + + + + +					Se - Se	CONSTRUCTION	SCREEN	GRAVEL PACK E BENTONITE BACK FILL S CONCRETE	J. B. Gillespie /25/82	WELL NO. R-
<u></u>	111			1		3/28/ce	8	NOIT		See See		2

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	25	70	15 Lt tan M-F SAND, tr silt	5 - Brown/gray CLAYEY SILT, It f sand	- Brown/gray SILTY CLAY, tr f sand	DEPTH DEPTH DESCRIPTION	4 ->	GROUND ELEVATION GROUND WATER DEPTH (ft):  TOP OF WELL 206.96 AT COMPLETION 21.8  DEPTH OF WELL (ft) 29.8 AFTER 12 HOURS 22.0	ational Service Corp. DATE 3	DRILLING METHOD H.S.A. GEOLOGIST	<b>K</b> 0
<del></del>				 		CONSTRUCTION		GRAVEL PACK (元元公) BENTONITE BACK FILL (公元公) CONCRETE		J. B. Gillespie	•

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<del></del>	25 + + + + + + + + + + + + + + + + + + +	15	10 .	5 <del>- - - -</del>  -	DEPTH DEPTH		GROUND ELEVAT TOP OF WELL DEPTH OF WELL	DRILLER I	
		Lt tan/lt gray M-F	Lt gray/tan F SAN	Brown CLAY & SI  Lt tan CLAYEY S		RIAL 2" PVC	10N 206.06 (ft) 30.55	Developers International	nada, MS (RC
		SAND, tr silt	SAND, tr silt	SILT, tr f sand SILT, and F SAND	DESCRIPTION	SCREEN 10 ft of 0.010" sc	GROUND WATER DEPTH (ft AT COMPLETION 21 AFTER 12 HOURS 2	Service Corp.	TORING WELL LOG
-1	<del>-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1</del>					screenSC	.55 .55	DATE 3/27/82	
					CONSTRUCTION	िक	GRAVEL PACK RATEONITE BENTONITE BACK FILL CONCRETE	. Gillespie	È

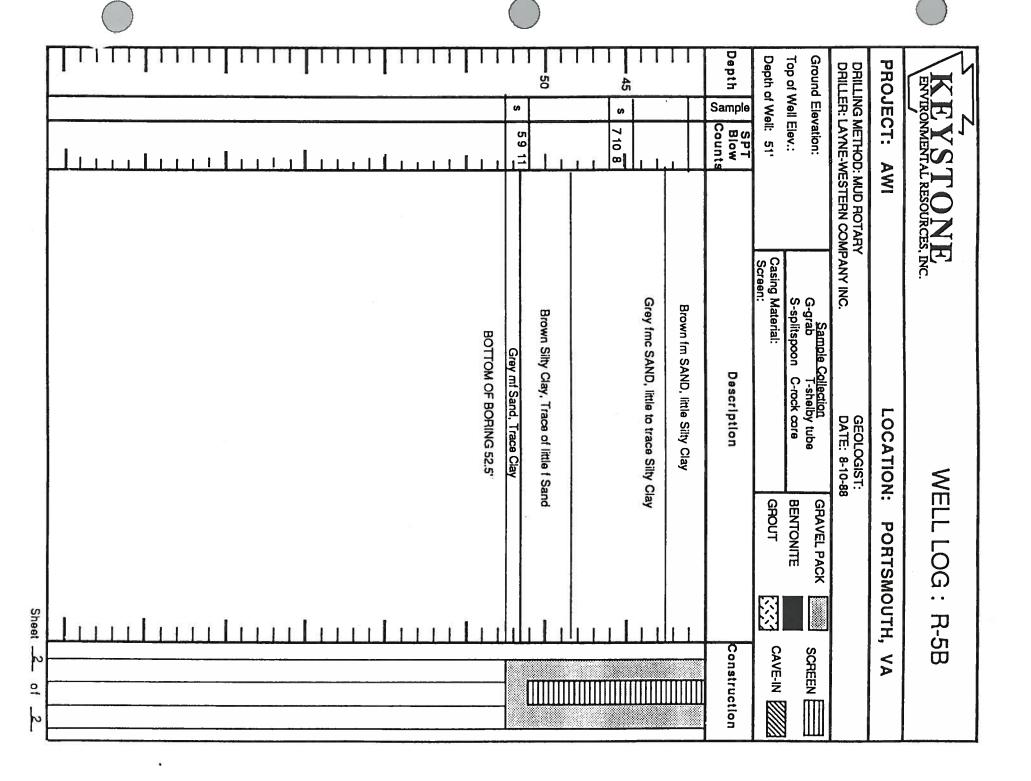
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DEPTH 25 30. 20.0 TRATA 15 10. GROUND TOP OF CASING MATERIAL 2" DEPTH OF WELL DRILLER DRILLING PROJECT S . Q 0 SAMPLE DEPTH MELL ELEVATION METHOD\_ Grenada, Gray Tan Brown Tan Brown/gray (ft Brown/tan Tan/brown/gray Inc m S PVD 胃 Ħ ILI SAND, S S SH SAND, III À 0 Engineering R TOPSOIL, S CLAY S and ILT, דד III s MONITORING silt SILT, S SCREEN and β'n III Some anaerobic GROUND WATER CLAY AFTER. DESCRIPTION AT COMPLETION 12] ß n organic H SAND CLAY lay 10' and organics WELL odor 0 m 010 SAND DEPTH (roots) F 06 H HOURS Slot (roots (ft): DATE GEOLOGIST S tone ragments /17/84 ŗ. 8 GRAVEL PAC BENTONITE BACK FILL CONCRETE SCREEN Gillespie **WELL** CONSTRUCTION NO. PACK **R-5** . .



# WELL LOG: R-5B

	40	ω	30 25	20 5 5 6	ω	Sample	Ground Elevation: Top of Well Elev.: Depth of Well: 51'	DRILLING N	PROJECT:
	1 2 12	14 19 12			<u> </u>	SPT Blow Counts	ation: Elev.: II: 51'	DRILLING METHOD: MUD ROTARY DRILLER: LAYNE-WESTERN COMPANY,INC.	COLLIER
	Dark Brown CLAY &	Brown Grey mf SA		DESCRIPTION	SEE R-5 BORIN	D	Sample Collection G-grab T-shelby tube S-splitspoon C-rock core Casing Material: Screen:	Y (PANY,INC	LANDFILL
	s SILT, trace to little fm Sand	Brown Grey mf SAND, trace to little Silty Clay	è	DESCRIPTIONS FROM 0 TO 30 FEET	SEE R-5 BORING LOG FOR GEOLOGIC	Description		GEOLOGIST: DATE: 8-10-88	LOCATION:
(0	Sand	ау					GRAVEL PACK BENTONITE GROUT		GRENADA,
Sheet 1 of 2						Construction	SCREEN CAVE-IN		SM



Gray fmc SAND, tr silt	Gray CLAY & SILT, tr f SAND	Rust/gray fm SAND and CLAY & SILT	10.0 Tan/white f SAND, tr silt	Gray/brown SILT & CLAY	Tan/gray SILT  Tan/gray SILT	DESI	CASI	TOP OF WELL 213.004 AT COMPLETION DEPTH OF WELL (ft)31.0 AFTER HOURS	P.S.I. IncEngineering DATE 7	METHOD H.S.A	PROJECT Grenada MS
	0.					CONSTRUCTION	SCREEN	GRAVEL PACK SENTONITE BENTONITE BACK FILL CONCRETE	/17/84	B. Gillespie	

DEPTH 30. 25. 20. 10. 15 CASING MATERIAL TOP OF GROUND DEPTH OF WELL DRILLER DRILLING PROJECT Q SAMPLE EPTH H MELL ELEVATION WETHOD. P.S.I. Grenada, Tan Brown Gray/tan White Tan White (ft Tan/brown/gray 1098 /brown H Inc. SAND, ഗ S SK 3 ILI 'n 出 -Engineering SAND, S PVC 0 AND S ያን ILI SAND, H CLAY MONITORING Some and SILT, H SCREEN GROUND WATER H and prown S AFTER. DESCRIPTION AT COMPLETION σ, III n UMO1 H lay m SAND, የጉ roots WELL. 10' Ŗ٠ S CLAY П silt ያጉ 0.010 DEPTH SILT F06 HOURS lay, 1 Slo (ft): У DATE GEOLOGIS H S н 116 Ø /17/84 4 þ GRAVEL PAC BENTONITE BACK FILL CONCRETE SCREEN Gillespie MELL CONSTRUCTION NO. PACK 77 7

							108.0				
Gray/tan fmc SAND, TR SILT	25.0	White/tan vf SAND, tr silt	Gray CLAY & SILT, tr vf sand	5.0 Brown SILT & CLAY	Brown SILT and SILT & CLAY	DEPTH DEPTH DESCRIPTION		GROUND ELEVATION  TOP OF WELL 214.53  DEPTH OF WELL (ft) 31.0  GROUND WATER DEPTH (ft):  AT COMPLETION  AFTER HOURS	Engineering	DRILLING METHOD H.S.A. GFOI OGIST	
 IIIIIIII						CONSTRUCTION	SCREEN		12	MELL WELL	

	Grey/green CLAY and SILT, tr f sand	Brown fm SAND, tr to little pockets o	25 Grey CLAY and SILT, tr f sand	20	10 1111	· · · · · · · · · · · · · · · · · · ·	- No samples taken from 0-26.5 feet - See R-8 Monitoring Well Log for soil - description	DEPTH DEPTH DESCRIPTION		TOP OF WELL 208.98'  DEPTH OF WELL (ft) 46  AFTER HOURS	For Inc.	ud Rotary GEOLOGIST	PROJECT Koppers Co. Inc., Grenada, Mississippi
SHELL STATES OF THE STATES OF								CONSTRU	SCREEN	GRAVEL PACK BENTONITE BACK FILL CONCRETE		Coltor	WELL NO.R-

LASHS

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Brown fm Bottom of	- Brown fm SILT Grey cla	DEPTH DEPTH	CASING MATERIAL	GROUND ELEVATION  TOP OF WELL 208-98'  DEPTH OF WELL (ft) 46	PROJECT Koppers Co. Inc., Gre DRILLING METHOD Mud Rotary DRILLER PSI Inc.
SAND, tr silt f boring @ 45.5'	fm SAND, tr pockets of CLAY and layey SILT, tr to little f sand	DESCRIPTION ,	SCREEN	GROUND WATER DEPTH (ft):  AT COMPLETION  AFTER HOURS	NITORING WELL LOG  nada, Mississippi  GEOLOGIST S  DATE 11/1
		CONSTRUCTION	SCREEN	GRAVEL PACK RESERVED BENTONITE BACK FILL RESERVED BACK FILL	WELL NO. R-8B . A. Colton

<del></del>		\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\					STRATA SAMPLE DEPTH DEPTH	CASING MATERIAL	GROUND ELEVAT TOP OF WELL DEPTH OF WELL	DRILLER	က	PROJECT
	Tan fmc SAND,	Tan f SAND, t	Brown SILT &	y tube	Gray SILT, li			RIAL 2" PVC	ELEVATION WELL 213.66 DF WELL (ft) 31.0	P.S.I. IncEngine	METHOD H.S.A.	
	tr silt	tr silt	CLAY, tr roots CLAY, tr f sand		little silt & clay	roots	DESCRIPTION	SCREEN 10' 0.010	GROUND WATER DEPTH AT COMPLETION AFTER HOURS	neering		MONITORING WELL LOG
								Slot	(ft):	7/17/84	GEOLOGIST J. B. G	
							CONSTRUCTION	REEN	GRAVEL PACK ::・:・:・: BENTONITE BACK FILL (公司)		WELL NO. R-9	5



# WELL LOG (R-9C)

	40 35 30 25 20 15 10 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Depth SPT Sample Sounts	Ground Elevation: 213.10 feet Top of Well Elev.: 215.99 feet Depth of Well: 63.4 feet Ground Water Depth: At Completion:	Drilling Method: Wash Rotary Driller: P. S. I. IncEngineering	PROJECT: Grenada R
	Refer to well log R-9D for descriptions	Description	Sample Collection G-grab T-shelby tube S-splitspoon C-rock core Casing Material: 2" I.D. PVC Screen: 10' of 0.010 " Slotted	S:	RCRA LOCATION:
Sheet _1 of2_		Construction	GRAVEL PACK BENTONITE GROUT SCREEN		l: Grenada, Mississippi



## WELL LOG (R-9C)

8 7 8 8 8 5 6 %	Depth	Ground At Com	Ground Top of V	Drilling I Driller:	PRO	EN
	Sample		조호	P. S	Œ	
	SPT Blow Counts	Ground Water Depth: At Completion:	Ground Elevation: 213.10 feet Top of Well Elev.:215.99 feet Depth of Well: 63.4 feet	Drilling Method: Wash Rotary Driller: P. S. I. IncEngineering	PROJECT: Grenada	ENVIRONMENTAL RESOURCES, INC.
Refer to well log R	٥	Casing Material: 2" I.D. PVC Screen: 10" of 0.010 " Slotted		าน	RCRA	JRCES, INC.
Refer to well log R-9D for descriptions	Description	l; 2" I.D. PVC 0.010 " Slotted	Sample Collection G-grab T-shelby tube S-splitspoon C-rock core	Geologist: Date:	LOCATION:	
		SCREEN	GRAVEL PACK BENTONITE	t: C.Cramer August 26, 1987	Grenada,	MELL LOG (
	Construction				Mississippi	ָר־פט)

Sheet \_2\_\_ of \_\_2\_



# WELL LOG (R-9D)

	40 S 15,18,21		35 S 7,14,18		က တ မ			25 S			20 S		15 S	S	10 (S)	-	<u></u> -	S	S	S	Depth spT sounts	Ground Water Depth: At Completion:	Ground Elevation: 213.87 feet Top of Well Elev.:216.67 feet Depth of Well: 90 feet	Drilling Method: Wash Rotary Driller: P. S. I. IncEngineering	PROJECT: R-9C a
	40-40.5' Rust mi SAND, tr. silt	Gray CLAYEY SILT, tr. f. sand	35-35.2' Rust mf SAND, little silt				Gray mf SAND, little silt, tr. clay,some wood fragments				Tan f SAND, tr. silt			Brown SILT & CLAY, tr. f sand, tr. roots		g.		Gray SILT, little clay		Tan brown SILT, tr. roots	Description	Casing Material: 2" I.D. PVC Screen: 10" of 0.010" slotted SCREEN	et <u>Sample Collection</u> GRAVEL PACK  t G-grab T-shelby tube BENTONITE  S-splitspoon C-rock core GROUT	y Geologist: C. Cramer ing Date: August 25, 1987	and R-9D Well Nest LOCATION: Grenada, Missis
Sheet _1 of _3_						- <del>-</del>	<del></del>	•	<u> </u>	~~		-11		<u> </u>							Construction				ississippi



# WELL LOG (R-9D)

	1	Gray f SAND, some sit, micaceous	37,50/5	S	80
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			1_1_		83
	L				75
	1_1	Gray f SAND & SILT,micaceous			1 1
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			27,50/5	တ	'   70
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				1	'   {
<u> </u>	silty clay pockets	Brown mf SAND & SILT, micaceous, some small silty clay pockets	16,23,31	S	֓֞֞֜֝֝֝֞֜֝֝֟֝֝֝֝֟ ภ
	LL				' '
<u> </u>					•
	Li		18,24,34	S	60 60
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	Li	9-1	15,18,15	တ	55
<u> </u>		Rust mt SAND, tr grav sit			ı
XX XX			1 1		1 1
			15,16,17	S	50
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	minae	Rust mf SAND, tr. sit, tr. gray sity clay laminae	15,20,28	S	1 45
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	<u>                                     </u>				1 1
Construction		Description	Counts	Samp	Depth
	SCREEN	Screen: 10' of 0.010" siotted	H≝		≥ C
	GROUT	S-splitspoon C-rock core	Storing Water Death:	≦  <u>5</u>	
	GRAVEL PACK BENTONITE	Sample Collection G-grab T-shelby tube	Ground Elevation: 213.87 feet Top of Well Elev.:216.67 feet	A E	Top
	C. Cramer August 25, 1987	Geologist: C. ( Date: Au	Drilling Method: Wash Rotary Driller: P. S. I. IncEngineering	g Me	Drillin Drille
sippi	Grenada,Missis	R-9D Well Nest LOCATION:	PROJECT: R-9C and	5	PR

Sheet 2 of 3



# WELL LOG (R-9D)

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Construction		Description	Mora	Depth	6
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		Screen: 10 of 0.010 slotted	At Completion:	At Comp	-
	COBEEN	Casing Material: 2" I.D. PVC	Water Depth:	Ground \	
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	BENICNIE	-	114/all: 00 fact	7 - 2 - 2	_
Company of the Company		G-Grah T-shelby tube	Top of Wall Flav : 216 67 feat		_
	GRAVEL PACK		Floration: 213 87 feet	2010	7
	August 25, 1987	Date:	Driller: P. S. I. IncEngineering	Driller: P	_
	C. Cramer	gist: (	Drilling Method: Wash Rotary	Drilling M	_
osippi	Gi ellada, Missi	d u-an Mell Mest Focklion.	ביים ביים מות	77.00	_
		Don Wall Mark			
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_	•	RCES, INC.	ENVIRONMENTAL RESOURCES, INC.	ENV	_
		N.E. VVI	L L U L C		

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					B-1	sampl	PVC	78'		Hollow	Co. Inc.,	<b>E</b>
					Boring Log for soil description	DESCRIPTION	SCREEN 10' of 0.010" slots	COMPLETIONHOURS		Stem Auger GEOLOGIST :	., Grenada, Mississippi	MONITORING WELL LOG
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SCREEN Colton MELL CONSTRUCTION ĕ. R-10B 

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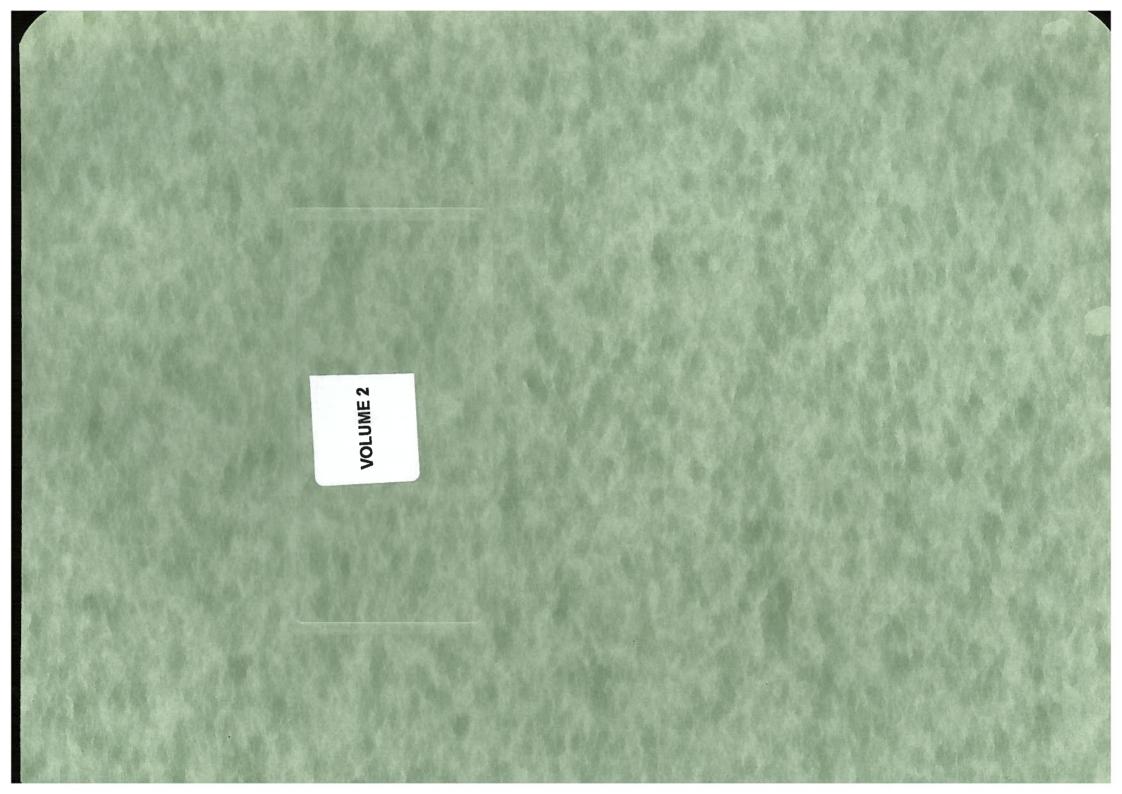
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40 ω 5 30 25 20 DEPTH STRATA 15 10 CASING MATERIAL ഗ DEPTH OF WELL GROUND ELEVATION PROJECT\_ TOP OF WELL DRILLER DRILLING SAMPLE HL430 METHOD\_ Koppers (ft 203 12 No See Mud PSI Co. PVC samples taken B-4 Boring Log 25 Rotary Inc Inc., MONITORING WELL LOG SCREEN Grenada, GROUND WATER DEPTH (ft): DESCRIPTION AFTER AT COMPLETION 6 Mississippi for 유 HOURS SOL 9 010"  $\vdash$ DATE GEOLOGIST description lot 12/86 တ GRAVEL PAC BENTONITE BACK FILL CONCRETE SCREEN Colton MELL CONSTRUCTION PACK NO. R-11

25 20 15 10 CASING MATERIAL GROUND DRILLER DEPTH OF WELL TOP OF WELL-DRILLING ഗ PROJECT SAMPLE ELEVATION METHOD Koppers (ft) 200 Bottom Grey Grey/green N Grey Brown Mud PSI PVC င္ပ 20 fmc Rotary to Inc 0f Inc., clayey SAND brown boring fmc MONITORING WELL LOG SCREEN\_ Grenada, GROUND WATER SILT, and fmc SAND DESCRIPTION AFTER AT COMPLETION ര 10 S SAND, 21 Mississippi μ. .1ty tr tr ഗ S E H HLd30 feet silt CLAY HOURS rt 0 sand, H 010" silt (£) DATE GEOL OGIST tr lv Lots roots S 16/86 > GRAVEL PAR BENTONITE BACK FILL CONCRETE SCREEN Colton MELL CONSTRUCTION PACK ₹ 0. Ø ì 12

KHYSTONE ENVIRONMENTAL RESOURCES, INC.

# WELL LOG R-12B

DRILLIANO METHOD: MUD ROTARY CORUM ELWATOR: CORRECADOR CORR	LING METHOD. MUDIPOTARY LEP: LAYNE WESTERN COMPANY, INC. LEP: LAYN						
DUTIONS  SEER-12 BORING LOG FOR GEOLOGIC DESCRIPTIONS  FROM 0 TO 24.5 FEET  Grey mic SAND, trace to little Clayey Sit  Gas 38  Grey mic SAND, trace to little Clayey Sit	SEE R-12 BORING LOG FOR GEOLOGIC DESCRIPTIONS  SEE R-12 BORING LOG FOR G			0	D 19 E		Τ
CO: MUD ROTARY WESTERN COMPANY, INC.  Sample Collection Graing Material:  Description  SEE R-12 BORING LOG FOR GEOLOGIC DESCRIPTIONS FROM o TO 24.5 FEET  Grey mic SAND, trace to little Clayey Sit  Grey mic SAND, trace to little Clayey Sit  GO: MUD ROTARY GEOLOGIST: S. COLTON GEOLOG	GRENADA WOOD PLANT LOCATION: GRENADA, MS  OC: MUD ROTARY WESTERN COMPANY, INC.  Gasing blastics  Casing Maerial:  Description  Description  SEE R-12 BORING LOG FOR GEOLOGIC DESCRIPTIONS  FROM o TO 245 FEET  Grey mic SAND, trace to little Clayey Sitt	0 5	Ω	Ë	p of pth c		
CO: MUD ROTARY WESTERN COMPANY, INC.  Sample Collection Graing Material:  Description  SEE R-12 BORING LOG FOR GEOLOGIC DESCRIPTIONS FROM o TO 24.5 FEET  Grey mic SAND, trace to little Clayey Sit  Grey mic SAND, trace to little Clayey Sit  GO: MUD ROTARY GEOLOGIST: S. COLTON GEOLOG	GRENADA WOOD PLANT LOCATION: GRENADA, MS  OC: MUD ROTARY WESTERN COMPANY, INC.  Gasing blastics  Casing Maerial:  Description  Description  SEE R-12 BORING LOG FOR GEOLOGIC DESCRIPTIONS  FROM o TO 245 FEET  Grey mic SAND, trace to little Clayey Sitt			Sample	Well Well	38 5	
GEOLOGIST: S. COLTON DATE: AUGUST 15, 1998  Sample Collection T-shelby tube sterial:  Description  Description  GRAVEL PACK BENTONITE GROUT  SSS  GROUT  SSS  HOUT  HOUS FROM 0 TO 24.5 FEET  Py mic SAND, trace to little Clayey Sit  This by mic SAND, trace to little Clayey Sit  HOUS  GROUT  SSS  GROUT  SSS  GROUT  HOUS  HO	PLANT LOCATION: GRENADA, MS  GEOLOGIST: S. COLTON DATE: AUGUST 15, 1988  SCREEN  SCREEN  Fabrilly tube splitspoon C-rock corne sterial:  Description  Description  Construction  Construction  FROM 0 TO 24.5 FEET  Prince SAND, trace to little Clayey Siit  Prince SAND, trace to little Clayey Siit  Prince SAND, trace to little Clayey Siit  Construction		1	Blow	Elev.: ell: 41'	METHOLAYNE	- 1
				Description	Sample Collection G-grab T-shelby tube S-splitspoon C-rock core Casing Material: GRAVEL PACK SHOWN GRAVEL PACK GROUT GROUT	PLANT LOCATION: GRENADA,  GEOLOGIST: S. COLTON DATE: AUGUST 15, 1988	

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Depth Depth of Well: 41' Top of Well Elev.: Ground Elevation: DRILLING METHOD: MUD ROTARY DRILLER: LAYNE WESTERN COMPANY, INC. PROJECT: GRENADA WOOD ક KEYSTONE ENVIRONMENTAL RESOURCES, INC. Sample Counts 8 14 15 SPT Casing Material: Screen: Sample Collection G-grab T-shelby tube S-splitspoon C-rock core BOTTOM OF BORING 43.5 PLANT Description LOCATION: GEOLOGIST: S. COLTON DATE: AUGUST 15, 1988 WELL LOG GROUT BENTONITE GRAVEL PACK GRENADA, Sheet 2 SW R-12B 0 Construction CAVE-IN SCREEN b



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	7 16	8911	6 10 14	8 11 13	8 12 13	4 7 12	4 5	12	3 6 6	Blow	Top of Well Elev.: Depth of Well: 31'	DRILLING METH DRILLER: LAYNE	PROJECT:	MAN.
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BOTTOM OF BORING 31.5	nd f			à	Sit	Brown Silty CLAY, some fine Sand	Sit an	Ce + 5	ace f	Description	G-grab T-shelby tube S-splitspoon C-rock core Material:		_	
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31.5 <sup>1</sup>	) lay p					and			, trac		"	GEOLOGIST: DATE: 8-3-88	A	
	Grey fmc SAND and f Sifty Clay pockets								CLAY, trace f Sand, trace fm Gravel				LOCATION:	WELL LOG:
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			BOTTOM OF BORING 21.5'	Grey fm SAND, little to some Silty Clay products	Grey Clayey SILT, some f Sand	Grey mc SAND, little Clay pockets, trace wood fragments	Brown Grey 1mc SAND	Brown f SAND, trace to little Silt	Brown Clayey SILT, trace f Sand	Description	Screen: GROUT (CAVE-IN ) CAVE-IN (CAVE-IN ) CAVE-I		DRILLER: LAYNE-WESTERN COMPANY, INC.  GEOLOGIST: S. COLTON DATE: 8-18-88	GRENADA WOOD PLANT LOCATION: GRENADA, MS	ENVIRONMENTAL RESOURCES, INC.  WELL LOG: R-16

Sheet 1

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Depth 30 35 Depth of Well: 29.5 Top of Well Elev.: Ground Elevation: 8 20 DRILLING METHOD: MUD ROTARY
DRILLER: LAYNE WESTERN COMPANY, INC. PROJECT: 5 ō Œ KEYSTONE, ENVIRONMENTAL RESOURCES, INC. Ø G G G G G s s **G** ດ Sample 4 7 13 7 14 19 9 18 22 612 11 6 14 9 6 10 9 SPT Blow Counts O 12.9 9 11 GRENADA Casing Material: Screen: WOOD Sample Collection G-grab T-shelby tube S-splitspoon C-rock core COLLAPSE TO 29.5 BOTTOM OF BORING 32.5 @ 25' - 32.5 Sand is fmc and contains Clay pockets Grey White f SAND, trace Sit Brown Clayey SILT, trace f Sand PLANT @ 19.7' - 20' Clay pocket @ 19.5' - 21' Sand is fm Description LOCATION: GEOLOGIST: S. COLTON DATE: 8-11-88 WELL LOG: R-17 BENTONITE GROUT GRAVEL PACK GRENADA, SW Construction CAVE-IN SCREEN

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													Brown Grey fm SAND, trace to little Sit		trace fine Sand		Brown Clayey SILT, trace f Sand, trace fine Gravel						GEOLOGIST: S. COLTON	LOCATION:	<	
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KEYSTONE ENVIRONMENTAL RESOURCES, INC.

## WELL LOG: R-19

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В	ନ୍ତ			Brown SILT & CLAY,trace to little f Sand Brown mottled Clayey SILT, trace f Sand	25	Brown Black Clayey SILT, little fm Sand		nteria .	Sample Collection - G-grab T-shelby tube S-splitspoon C-rock core	·	_	
BOTTOM OF BORING	Grey m SAND, trace Sit	Brown fine SAND, trace Sit	Grey	SILT	2.5 - 6.5 ∞ntains up to 50% fmc Gravel	Blac					PLANT	
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KEYSTONE ENVIRONMENTAL RESOURCES, INC.

WELL LOG: R-20

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ŀ	4	+	10 14 1 <u>3</u> 	9 12 18	4 1221			Counts	Depth of Well: 32	Ground Elevation: Top of Well Elev.:	A LIN	31	NAME
	BOTTOM OF BORING 38"		Grey White fm SAND, trace to little Silt  @ 15' - 16.5' Sand is Brown Black		@ 7.5' - 10' trace f Sand @ 10' - 11.25' little to some f Sand Grey Brown f SAND, some silt trace Clay	Brown CLAY, trace Sitt  Dark Grey to Grey Brown Situ CLAY	Brown Silty CLAY, trace Silt	Description  FILL (asphalt, gravel)	Casing Material: Screen:	Sample Collection  Jrab  J-shelby tube  plitspoon C-rock core	M AUGER		ENVIRONMENTAL RESOURCES, INC. VYELL LOG: H-20
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Sheet 1 of 1

Depth မွ Depth of Well: 28' Ground Elevation: Top of Well Elev.: 23 8 DRILLING METHOD: HOLLOW STEM AUGER DRILLER: LAYNE WESTERN COMPANY, INC. 5 PROJECT: ಠ S KEYSTONE, ENVIRONMENTAL RESOURCES, INC. s G Ø S ດ Q Sample ດ Q ω ທ 6 10 16 4 Counts 9 10 41 SPT GRENADA WOOD Casing Material: Screen: FILL (black gravel, asphalt, cinders, fmc sand) Sample Collection G-grab I-shelby tube S-splitspoon C-rock core Dark Grey Black Sity CLAY, trace fm Sand White Grey fmc SAND, trace to little Silt Grey Clayey SILT, trace to little f Sand Brown Grey f SAND & SILT, trace Clay Grey Brown Silty CLAY, little f Sand BOTTOM OF BORING 30' PLANT Description LOCATION: GEOLOGIST: J. DINUNZIO DATE: 8-15-88 WELL LOG: R-21 GROUT BENTONITE **GRAVEL PACK** GRENADA, SM Construction CAVE-IN SCREEN

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	BOTTOM OF BOBING 21 F	31.5' some silt, trace wood fibers	26.5' trace to little silt, trace wood fibers	Grey Brown Green mc SAND	Grey Green Clayey SILT	Dark Grey - Grey SILT & CLAY	Black Brown Grey Silty CLAY, trace f Sand	FILL (Black Brown m Gravel and Sand, little Silt, trace brick fragments)	Description	C-rock core	Sample Collection G-grab T-shelby tube	2 R	5	
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PROJECT:  DRILLING METH DRILLER: LAYNI Ground Elevation Top of Well Elev.:  Depth le Biox S S 1 3 4 7 3 5 8 7 8 7 8 7 8 7 8 7 8 7 8 7 8 7 8 7 8	
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PROJECT:  DRILLING METHOD DRILLER: LAYNE V Ground Elevation: Top of Well Elev.:  Depth of Well: 22'  Depth of Well: 3'  S 1 3 4  S 7 8 7  S 8 7 8  S 7 8 7  S 7 8 7  S 8 7 8  S 7 8 7  S 7 8 7  S 8 7 8  S 7 8 7  S 8 7 8	177
PROJECT: GRENADA WOOD PLANT LOCATION: GRENADA, MS DBILLING METHOD: MUD ROTARY SPOND Well Elev: Spond Elevation: Spond Well: 22' Spond Claim Marker Country Spond Claim Marker Country Spond Claim Marker	
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## WELL LOG: R-24

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		G		\sigma	•	ا س		\ \sigma	G	\ \ \ \ \ \ \	7	,	<u>ω</u>	w		-		ŗ oʻ ¥	und I	IĒĒ	Įõ	
	sample	491	1.1.	768		687		9 13 14	12 19 18	6	3 1		257	2 2 5	s 18 21 10	Samp Counts	<b>⊸</b> 9	Top of Well Elev.:	Ground Elevation:	NG METHOI	PROJECT:	
BOTTOM OF BORING 37	Grey Brown Sithy CLAY	Grey Brown mc SAND, trace Silt		@ 25' - 26.5 trace silty clay, trace root fragments						<u> </u>		<u> </u>			FILL (asphalt,gravel, Black Brown Silty Clay, f Sand)	Description	Screen: GROUT CAVE-IN	oon C-rock core BENTONITE	CK SCORERY	DRILLING METHOD: HOLLOW STEM AUGER DRILLER: LAYNE WESTERN COMPANY, INC. DATE: 8-11-88	GRENADA WOOD PLANT LOCATION: GRENADA, MS	AT ALBOOKCES, INC.

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#### WELL LOG: R-25

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3 25	20 0	<del>,</del> 5	υ ·	Depth	Ground Elevation: Top of Well Elev.: Depth of Well: 31	PROJECT: DRILLING METION DRILLING METION
	ν ν 7	ω ω ω	w w	• Sample	Well Well	
no sampie	10	5 7 9 T 9 15 16 7 11 15	3 2 1	SPT Blow Counts	Vatio Elev.	
		7 9 15 16		SPT Blow ounts	- : n	
Red Brown fmc SAND, trace to little Brown Grey Sity Clay	White to white Brown fm SAND, trace to little Silt	Tan fine SAND & SILT  Brown Silty CLAY, trace f Sand, trace Gravel  Green Grey to Brown to Grey fm SAND  @ 10' - 10.3' contains 50 % Clayey Silt  @ 10.3' - 12.5' trace to little Silt	FILL (asphalt, Gravel, Brown Clayey Silt, trace fine Sand)  Black Green CLAY, trace Silt, trace roots, trace f Sand  Grey Brown Silty CLAY	Screen:  Description	Sample Collection grab T-shelby tube splitspoon C-rock core terial:  DATE: 8-12-88 GRAVEL PACK BENTONITE	PROJECT: GRENADA WOOD PLANT LOCATION: GRENADA,  DRILLING METHOD: HOLLOW STEM AUGER  GEOLOGIST: J. DINUNZIO
						R-25
######################################			5555555	Construction	SCREEN	25
<u> </u>				truc	Z H	
				tion		
				AX	22 11111	

Sheet 1 of 1

Depth Depth of Well: 33' Top of Well Elev .: Ground Elevation: ဌဌ မ 25 DRILLING METHOD: MUD ROTARY
DRILLER: LAYNE WESTERN COMPANY, INC. PROJECT: 80 5 Ġ 5 KEYSTONE, INC. ທ G w ຜ G w Ø G Sample G 4 N 6 O ហ 3 4 5 SPT Blow Counts N 7 မ \_\_ 5 드 11 12 10 9 17 18 ယ ယ 97 ρο CŢ GRENADA WOOD Casing Material: Screen: Brown Clayey SILT to SILT & CLAY, trace fm sand Brown Green Silty CLAY, trace f Sand Sample Collection G-grab I-shelby tube S-splitspoon C-rock care Brown CLAY & SILT, trace fm Sand Brown SILT & CLAY, Grey mf SAND, trace Sit @ 10.75' Grey White ! SAND PLANT FILL (cinders, Clay, red mc Sand) BOTTOM OF BORING 33 Description LOCATION: GEOLOGIST: S. COLTON DATE: 8-12-88 WELL LOG: R-26 GROUT BENTONITE GRAVEL PACK GRENADA, NS Construction CAVE-IN SCREEN

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## WELL LOG: R-27

35 36 25	, , , , <b>,</b> , ,	2 2	2	Depth	Grou Top :	99 7
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1,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	467	2 2 2 3 1 1 2 3 4 5 5 6 5 7 N	1 4 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6		Ground Elevation: Top of Well Elev.: Depth of Well: 23'	PROJECT: GRENADA WOOD  DRILLING METHOD: MUD ROTARY  DRILLER: LAYNE WESTERN COMPANY, INC.
			Br		wΩ	GRENADA V  GRENADA V  D: MUD ROTARY  WESTERN COMPA
-	Brown	Brown Silty CLAY,trace fm Sand, trace f Gravel	Brown Clayey SILT, trace fm Sand, trace to little f gravel Brown CLAY & SILT, trace fm Sand, trace f gravel		Sample G-grab S-splitspoor Casing Material: Screen:	WOOD PLANT
	Brown fm SAND, trace Clay  BOTTOM OF BORING 23	VY,trace fm Sa	; trace fm Sand	Description	Sample Collection G-grab T-shelby tube S-splitspoon C-rock core Material:	
	e Clay	nd, trace f Gra	d, trace to little Sand, trace f g	ă		LOCATION: GEOLOGIST: S. ( DATE: 8-12-88
		<u>6</u>	f gravel		GRAVEL PACK BENTONITE GROUT	GRENADA,
				^A	333	DA, MS
				Construction	SCREEN E	
		****************** <b>*</b>		Ö		

Sheet 1 of 1

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<u> </u>	8	T ë	- T	G		Depth	Ground Eleval Top of Well Ek Depth of Well:	DA DA	PR	J. J
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	4 5 6	6 9 11	6 11 13	3 5 7	677_	Blow	Ground Elevation: Top of Well Elev.: Depth of Well: 27	G METHOD: R: LAYNE WE	PROJECT: G	SAS.
Grey to G	Red Brown Si	Стеу Вгоч	Grey White, Red	Brown Gr	Red Brown to B		Samp G-grab S-splitspo Casing Material: Screen:	DRILLING METHOD: HOLLOW STEM AUGER DRILLER: LAYNE WESTERN COMPANY, INC.	GRENADA WOOD PLANT	KEYSTONE ENVIRONMENTAL RESOURCES, INC.
Grey to Grey White fm SAND  BOTTOM OF BORING 29'	Red Brown Sity CLAY, some fm Sand,	Grey Brown m SAND, trace Sitt	Grey White, Red Brown fm SAND, trace to some Silt	Brown Green CLAY, trace Silt, trace to little f Sand	Red Brown to Brown Silty CLAY, trace to little f Sand	Description	Sample Collection G-grab T-shelby tube S-splitspoon C-rock core BENTONITE Material: GROUT	GEOLOGIST: J. DINUNZIO DATE: 8-10-88	NT LOCATION: GRENADA,	WELL LOG
		<b>公</b> <b>公</b>				Construction	SCREEN CAVE-IN	- 1	DA, MS	3 : R-28

Sheet 1 of 1



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	sample	no sampte	224	6 5 2	238	3 4 4	4 5 6	688	4 5 9	Blow	/ell: 28'	Ground Elevation: Top of Well Elev.:	METHOL LAYNE V	PROJECT:	ONMENT.
BOLLOW OF BORING 31.5		Brown to Grey fm SAND, little to some Silt, trace to little Clay			Red Brown CLAY, some White Grey fm Sand, trace Silt		Brown CLAY to Sitty Clay, trace Sitt to little f Sand		Dark Brown Sity CLAY, trace f Sand	Description	Casing Material: Screen:	Sample Collection GRAVEL PACK S-splitspoon C-rock core Sention S-splitspoon C-rock core	DRILLING METHOD: HOLLOW STEM AUGER DRILLER: LAYNE WESTERN COMPANY, INC. DATE: 8-10-88	GRENADA WOOD PLANT LOCATION: GRENADA, MS	ENVIRONMENTAL RESOURCES, INC.  WELL LOG: R-29
				<b>1</b>					33	Construction	CAVE-IN Z	SCREEN E			Ö
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35	<b> </b>	8 8		<del>й</del>	5 5	5	Depth	Ground Elevat Top of Well Ele Depth of Well:	무유	PR /
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1,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	1 w 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	101112	1-1-1	4 8 11	6 10 10	7 10 9	- X	Ground Elevation: Top of Well Elev.: Depth of Well: 29	DRILLING METHOD: MUD ROTARY DRILLER: LAYNE WESTERN COMPANY, INC.	PROJECT: GRENADA WO
								φΩ.	JD ROTARY TERN COMPA	TONE AL RESOURCES, IN GRENADA V
						Br		San G-grab S-splitsp Casing Material: Screen:	'	8
юттом оғ в	@ 31.5' is Clay		@ 125'- @ 15'-1	White f SAND,trace Silt	es.	own Clayey SI	Description	Sample Collection G-grab T-shelby tube S-splitspoon C-rock core Material:		PLANT
BOTTOM OF BORING 31.5	Clay		@ 12.5' - 14' Sand is fm @ 15' - 16.5 Sand is m	),trace Silt	į	Brown Clayey SILT, trace f Sand	ption	Ω , by tube	GEOLOGIST: S. COLTON DATE: 8-17-88	WE
						a.		GRAVEL PACK BENTONITE GROUT	Ω	WELL LOG:
				111				SSSS		3: R-30
							Construction	SCREEN CAVE-IN		
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### WELL LOG: R-31

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	759	10 10 5	477	787	4 5 15	3 4 7		SPT Blow Counts	/ell: 34'	Ground Elevation: Top of Well Elev.:	METHOUS LAYNE V	PROJECT:	ONMENT
BOTTOM OF BORING 35"	Grey Brown fmc SAND, trace to little Brown Green Silty Clay	Red Brown fm SAND, trace Silt, trace black organic streaks	Grey Brown to Brown White fm SAND, trace to little Silt		Grey Green I SAND & SILT	@ 3' - 5' some wood fragments @ 7.5' - 9' trace to little wood fragments @ 7.5' - 11' little to some f sand	FILL (Black m Gravel, some fmc Sand, little asphalt, little Black Brown Silty Clay)		Casing Material: Screen:	Sample Collection G-grab T-shelby tube S-splitspoon C-rock core  Second Sention GRAVEL PACK Second Sention SCREEN	DRILLING METHOD: HOLLOW STEM AUGER DRILLER: LAYNE WESTERN COMPANY, INC. DATE: 8-17-88	GRENADA WOOD PLANT LOCATION: GRENADA, MS	ENVIRONMENTAL RESOURCES, INC.

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46 % %	25 26 15	5 ° 5	Top of Depth	PROPRIL
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	8,10,9 6,7,5 5,8,6 7,8,11 7,8,11 9,9,10	5,5,5 5,5,5 4,4,5	Top of Well Elev.: 215.00 feet  Depth of Well: 26 feet  SPT Blow Counts	ENVIRONMENTAL RESOURCES  PROJECT: Groundwat  DRILLING METHOD: MUD ROTARY  DRILLER: PSI, INC.
Bottom of Boring 26.5'	Brown silty CLAY, tr to little fm	wn clayey SILT, tr f wn SILT and CLAY to tr fm sand	Sample Collection G-grab T-shelby tube S-splitspoon G-rock core Casing Material: 2" I.D. PVC Screen: 10" of 0.010" slotted  Description	er Monitoring LOCAT
1 1 1	Sand	tr fm gravel	SAND PACK BENTONITE GROUT SCREEN	GRENADA, A. COLTON 19, 1997
			Construction	MISSISSIPPI



### WELL LOG (M-2)

8 % %	20 S 9,10,16 S 14,16,14 S 8,8,8	S 4,6,7 S 5,4,5 10 S 4,5,9 15 S 5,7,9 15 S 13,16,24	S Sample Counts	┥┋┈	PROJECT: Groundwate DRILLING METHOD: MUD ROTARY DRILLER: PSI, INC.
Bottom of Boring 29'	some silty clay (18 to 18.5 f	Brown SILT and CLAY, little fn Brown SILT and CLAY, some fi	Brown/black mf SAND, little silt an Brown clayey SILT to SILT and CLAY, tr fm sand	Sample Collection G-grab T-shelby tube S-splitspoon C-rock core  Casing Material: 2" I.D. PVC Screen: 10" of 0.010" slotted	Groundwater Monitoring LOCATION: GRENJ D: MUD ROTARY DATE: October 19, 1987 DATE: October 19, 1987
1	sand		d cinders	SAND PACK BENTONITE GROUT SCREEN	: GRENADA, N.S. A. COLTON
		2222222222222 222222222222222	Zuo C	********	MISSISSIPPI



### **BORING LOG** BM-2B

PROJECT: GWQA - ASH PILE LOCATION: GRENADA,

DRILLING METHOD: MUD ROTARY

DRILLER: LAW ENGINEERING, INC.

GEOLOGIST: D. SMITH

DATE: OCTOBER 22, 1989

SAMPLE COLLECTION

SW

G - grab

T - shelby tube

S - splitspoon C - rock core

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			SEE BORING LOGS FOR WELL M-28 FOR O' TO SE F															Description	

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# BORING LOG BM-2B

Medium Grey fm SAND, trace Clay and Sit	16 33 36	w	80
			11
Medium Grey fmc SAND, trace Clay and Silt, trace Black Sand seams	11 34 32	w	75
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	14 31 33	۵	<u> </u>
	1_1		1 I 
	11 21 31	s	]   S
			1 1 1
@ 59' - 64.5' trace muscovite flakes @ 59' - 60.5' trace black Sand seams	4 12 17	G	8
Medium Grey fm SAND, trace Clay and Silt			1 1 1
	11 23 25	w	55
	1		1 1 1
			و
	122	ω	5
			11
SEE BORING LOGS FOR WELL M-2B FOR 0' TO 55.5'	3 4 4	s	<del> </del>   <del> </del> <del> </del> <del> </del> <del> </del> <del> </del> <del> </del> <del> </del> <del> </del> <del> </del>
	<u>l F</u>		1 1
	1		1
Description	SPT Blow Counts	Sample	Depth
S - splitspoon C - rock core	GEOLOGIST: D. SMITH DATE: OCTOBER 22, 1989	ü, Х	GEOL(
EERING, INC. G - grab T - shelby tube	DRILLER: LAW ENGINEERING, INC.	E	DRII
MUD ROTARY SAMPLE COLLECTION	DRILLING METHOD:		DRII
ASH PILE LOCATION: GRENADA, MS	GWQA -	JE(	PROJECT:
S, INC.	ENVIRONMENTAL RESOURCES, INC.	닝	ENV



# BORING LOG BM-2B

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1111			10 95	8	### ### ### ### ### ### ### ### ### ##	Depth	DRILLE GEOLG DATE:	PRC	9
			w w	w	l so	Sample	温心性	<u> </u>	
	1,,,,		30 50/6	26 38 50 /6	18 30 44	SPT Blow Counts	ER: LA	PROJECT: GWQA -	ONMENTA
		BOTTOM OF BORING 100.5'		Medium Grey fm SAND, trace Clay and Silt  @ 84' - 85.5' trace Black organics (bone coal) in thin (< 1/4 " thick) seams  @ 89' - 89.5' trace brown organics (patches of peat)  @ 90' Tan f Sand, little Clay and Silt, trace Muscovite flakes (4" thick seam)  @ 99' - 100.5' trace dark brown organics (3/8" thick peat seam)		Description	DRILLER: LAW ENGINEERING, INC.  G- grab  T- shelby tube  S- splitspoon  C- rock core  DATE: OCTOBER 22, 1989	ASH PILE LOCATION: GRENADA, N	ENVIRONMENTAL RESOURCES, INC.

Sheet 3 of 3



## WELL LOG M-2B

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woh/6-	11	1 2 2			_	2 2 3		3 4 5	7 : 7	•	1 1 3		846	١	2 2 4	212	١.	30n/ 4°		123		334	- [ -	101	- C	Counts	Bio.	Depth of Well: 47.5	Elev.:	Ground Elevation:	METHOL LAW EN	PROJECT: G
	Medium Grey Sil grading into med			@ 30.5' - 3	@ 29.5' - 3	@ 25' - 25. @ 27 5' - 2			Light Grey / Orange E			<b>@</b> 20'	fm Sa	Gradir					<b>@</b>	@ 2.5'	trace to in	Light Gre						Casin Scree			DRILLING METHOD: MUD ROTARY DRILLER: LAW ENGINEERING, INC.	GWQA - ASH PI
	Medium Grey Silty CLAY, trace Black organics (decomposed plant matter) grading into medium gray CLAY & SILT			30.5' - 31' thin (< 1/16") layers of medium Grey Clay and	1' little vf to f Sand	@ 25' - 25.5' trace dark Brown organics (decomposed plant matter)	Hard Orange Brown CLAY & SILT		Light Grey / Orange Brown / Red Orange Silty Clay trace	Light Grey mc Sand		@ 20' - 21.5' little to some clay	fm Sand, trace Orange Brown / rust streaks	Grading from Light Grey fm SAND, some clay to light Grey		Light Grey / Rust Silty CLAY			11.5 trace to intie vi to it	2.5' - 4' trace mc gravel (Black - weathering to rust colored sit)	trace to little Orange Brown patches / mottles	Light Grey CLAY & SILT, Silt and Clay to Clay and Silt			Black FILL( Sand and Clay, trace Sand and Gravel)	pasci priori	Panadia	െ<	G-grab T-shelby tube S-splitspoon C-rock core	Sample Collection		PILE L
	Janics (decomposed			medium Grey Clay		nics (decomposed p	LAY & SILT	6" pvc ca	Clay trace Dark Bro	mc Sand			/ rust streaks	AND, some clay to li		st Silty CLAY			Sand, trace Hust Sir	- weathering to rust	es / mottles	Clay to Clay and Silt			trace Sand and Gr			GROUT			GEOLOGIST: D. SMITH DATE: OCTOBER 21, 1989	LOCATION: G
	plant matter)			and Silt		plant matter)		pvc casing set at 25'	Dark Brown organics(plant).					ght Grey					t patches	t colored sitt)					avel)			S S	BENTONITE	GRAVEL PACK	(ITH 21, 1989	GRENADA,
	111		Ш		1	Ш		Ц	Щ					Ш		Ш			Ш		Ш	Ц	丄	L			$\downarrow$	[公] -				SW
[[]]				\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	<u>~</u>	<u> </u>				\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\				\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\			<u>公</u> 公							<u>六</u> 公		Constructio		CAVE-IN	SCREEN			
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Sheet



## WELL LOG M-2B

PROJECT: GWCA - ASH PILE LOCATION: GRENADA, MS  PRILLER: LAW ENGINEERING, INC.  DRILLING METHOD: MD ROTIATY  Corund Elevation:  Top of Well: 475*  Depth in Septiment of the Sep
DECT: GWGA - ASH PILE LOCATION: GRENADA, MS  LIGA MERLOC: MUD ROTARY  Well Elevation:  G-gab Fight  Gounts  Searing Mentals; 27-W  Searin
MACA - ASH PILE LOCATION: GRENADA, MS  D: MUD ROTARY GEOLOGIST: D. SMITH GANEERING, INC.  Sample Cellection G-grab T-shelby tube Sample Cellection G-grab T-shelby tube Gasing Material: 2 AVC Screen: 2 PVC (0.010 slots)  Description  SAME AS ABOVE  Medium Grey fine SAND, trace Sity Clay (patch) Drange Brown fine SAND, trace Sity Clay (patch)  Orange Brown fine SAND BOTTOM OF BORING 55.5' - 100.5'  SEE BORING LOG FOR BORING BM-2B FOR 55.5' - 100.5'
A PILE LOCATION: GRENADA, MS  GEOLOGIST: D. SMITH DATE: OCTOBER 21, 1999  Gashiftspoon C-rick core S-splitspoon C-rick core S-splitspoon C-rick core S-splitspoon C-rick core Grave Description  Description  SAME AS ABOVE  Medium Grey fm SAND @ 44' - 45.5' some Clay @ 49' - 50.5' little Clay @ 49' - 50.5' little Clay BOTTOM OF BORING 58.5'  Medium Grey foor SAND, trace Silty Clay (patch)  Dorange Brown fmc SAND BOTTOM OF BORING 58.5'  BORING LOG FOR BORING BM-2B FOR 55.5' - 100.5'
MELL LOG IVI  GEOLOGIST: D. SMITH DATE: OCTOBER 21, 1989 S-splitspoon C-rock core S-splitspoon C-rock core Bentronite Irishelby tube S-splitspoon C-rock core S-splitspoon C-rock core Gry Martinite C-rock core Bentronite Bentronite GROUT  SAME AS ABOVE  Medium Grey fm SAND  @ 44' - 45.5' some Clay @ 49' - 50.5' little Clay @ 49' - 50.5' little Clay BOTIOM OF BORING 55.5' - 100.5'  BOTIOM OF BORING 55.5' - 100.5'  BORING LOG FOR BORING BM-2B FOR 55.5' - 100.5'
S DA, MS Z
SR DA, MS S
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Sheet 2 of 2



### WELL LOG (M-3)

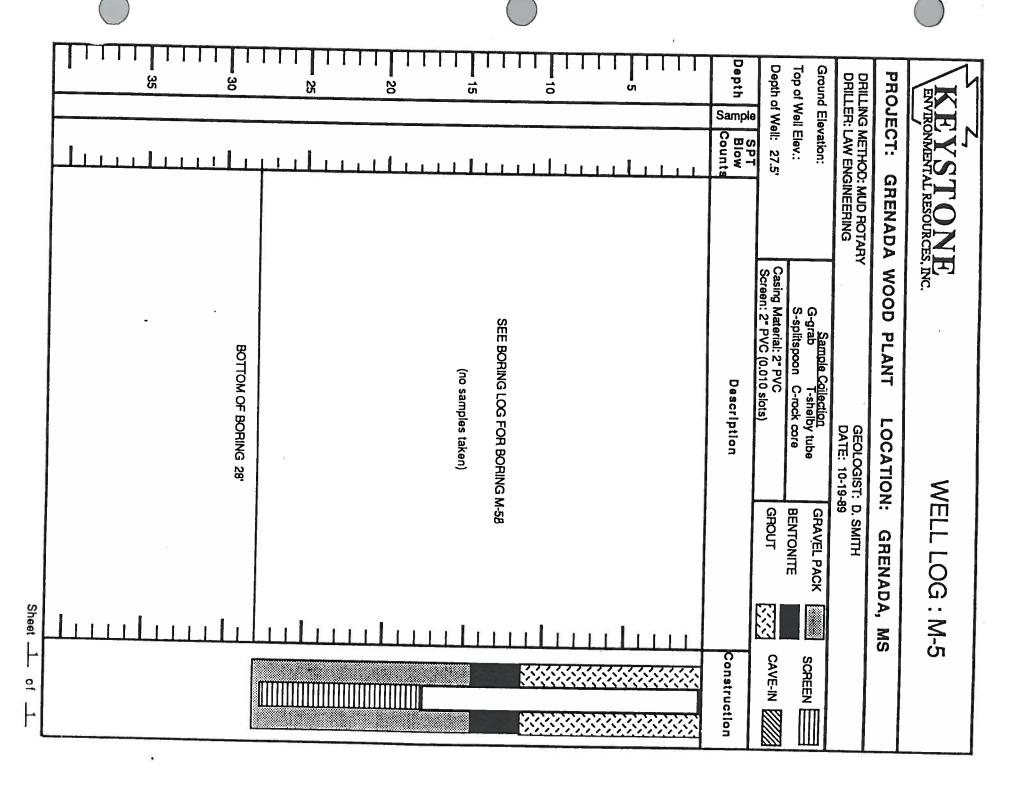
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L		L	3,2,1 _	7.7.7		6,6,6		8,8,11	8,7,10		7,13,14		6,9,15		7,11,13	9,13,15		6,8,11	a,,		5,7,9		3,3,4	SPT Blow Counts	Depth of Well: 30 feet	Top of Well Elev.: 216.83 feet	DRILLING METHOD: MUD ROTARY DRILLER: PSI, INC.	PROJECT: Gro	
		Bottom of Boring at 31.5				to Sill and CLAY, tr f sand											(Sand and clay pocket 22.5 to	ter silt at 7.7 feet			•	Brown silty CLAY to clausu SiLT.	Brown clayey SILT, tr f sand	Description	Casing Material 2" I.D. PVC Screen: 10" of 0.010" slotted			Groundwater Monitoring LOCATION:	
		feet				ayey sili											22.9 feet)	grad	.		•	7			SCREEN	BENTONITE GROUT	19, 1987		1
Ш	ш	Ш	<u>L</u>											~					, , , , , , , , , , , , , , , , , , ,		~~	口 <u>交</u>	•	Construction		2222222		MISSISSIPPI	



### WELL LOG (M-4)

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<u>                                     </u>		Bottom of Boring 29'			30	
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	_1		8,10,12	U		
	<u>.</u> [	clay 5.				1
	  []	Brown tan ( CAND tr silt	14,13,11	ဟ	•	
					55	1
		Brown clayey SILI, it to and I sand	13,15,18	S	. 1	
						L
		Brown clayey SILT to silty CLAY, tr f sand	1,3,4	S		
Construction		Description	SPT Blow Counts	Sample	Depth	Ď I
		Casing Material:2" I.D.PVC Screen: 10' of 0.010" slotted SCREEN	Depth of Well: 27.5 feet	of ₹	Depth o	_
	ŀ	Sample Collection G-grab T-shelby tube B S-splitspoon C-rock core	Top of Well Elev.: 215.86 feet	We!!	Top of	1
		GEOLOGIST: S. A. DATE: October 19,	DRILLING METHOD:MUD ROTARY DRILLER:PSI, INC.	Be	DAILE	1
ISSISSIPPI	Z Z	Groundwater Monitoring LOCATION: GRENADA,		M	PROJECT:	
				I		1

Sheet 1 of 1





## WELL LOG M-5B

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 8	1 I	35	1		8	H	25			3		15 15	ור		; ;	П	T 5	T	П	Π	Depth	Depth	Groun Top of	DRIE DRIE	PRC	9
		w		U	•		w		ď		1	n		σ			w			S	Sample	₹ 8	Well Well	ES	1 5	
woh/18-	1.	₩0 <u>1/6</u> 2		2 2 2	<b>,</b>		8 11 12	1	5 14 14			3	لب	123			233_			5 14 12	SPT Blow Counts	Depth of Well: 50'	Ground Elevation: Top of Well Elev.:	LAW ENC	PROJECT: G	ONMENTA
			ange Brown mottles		\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	<u> </u>		/\/\	Light Grey Tan mc SAND, trace f Sand and Silt	<u> </u>	@ 15' - 15.8' trace Orange Brown Clay and Silt @ 15.8' - 16.5' trace vf Sand	rey CLAY & SILT , trace Silty Clay (lense)	<u> </u>	<del>\\\\</del>		<del>)</del>	<u> </u>	<u>\\\</u>		FILL( Brown orange Sand and Gravel, trace siag)	Description	Casing Screen:	Sample Collection G-grab T-shelby tube S-splitspoon C-rock core  GRAVEL PACK SCREEN SCREEN	DRILLING METHOD: MUD ROTARY DRILLER: LAW ENGINEERING, INC. DATE: OCTOBER 23, 1989	GWQA - ASH PILE LOCATION: GRENADA, MS	ENVIRONMENTAL RESOURCES, INC.

Sheet 1

of 2



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	RONMEN	OURCES, INC	000
PRO	PROJECT: (	GWQA - ASH PILE LOCATION: GRENADA, MS	0
DRILL.	ING METHO	DRILLING METHOD: MUD ROTARY DRILLER: LAW ENGINEERING, INC. DATE: OCTOBER 23, 1989	
Ground	Ground Elevation:	Sample Collection G-grab T-shelby tube GRAVEL PACK	SCREEN
lop or v	lop of Well Elev.:	<b>6</b> 100	
Depth o	Depth of Well: 50'	Casing Material: 2" PVC Screen: 2" PVC (0.010 slots)	CAVE-IN
Depth	Sample SPT Counts		Construction
		SAME AS ABOVE	
45	s woh/6"	Medium Grey Orange Brown mottled vf SAND, some Clay	
55	2 2 2 4	Medium grey mc SAND, trace medium gray silty Clay (patches)	
		BOTTOM OF BORING 50.5'	
55	. 1 .		<u> </u>
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Sheet 2 of 2

DEP TH ΩŞ 30 25 20 15 10 GROUND CASING MATERIAL DEPTH OF WELL TOP OF WELL DRILLER DRILLING PROJECT S SAMPLE HL430 ELEVATION WETHOD Grenada, PSI Gray Gray moist Gray Gray (ft) Rust 212 some Light Brown pockets, 2 Rust Miss SILT silty organic C m ç ASH PVC gray **S11** SAND Rust orange, ť and H ġ Sprayfield CLAY, and brown mottled Q, and organics, CLAY lack stains, m MONITORING WELL LOG SAND, SCREEN\_ SAND, SILT, and GROUND H F AFTER DESCRIPTION SAND, sand, **A** light little בד Wet gravel, H COMPLETION moist 10' WATER concretions clay, wet gray 0.010 Sį. ílt, silty DEPTH tr 1 HOURS moist mottled slotted roots п wet (ft): ч CLAY, DATE e GEOLOGIST 6 lay, gravel), silty Wet mois PVC П Wet н 8/21/85 silt CLAY, C.A. GRAVEL PACK
BENTONITE
BACK FILL
CONCRETE
SCREEN Cramer MELL CONSTRUCTION ₹ 0. SF-

211774

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<del>                                     </del>	30 +	25 Blue	Tan m	20	15	White	10 Light	. Tan c	5 Brown	Light	Light	STRATA SAMPLE DEPTH DEPTH		DEPTH OF WELL (ft)	TOP OF WELL 211.04	DRILLER PSI	DRILLING METHOD HSA	PROJECT Grenada, 1
	to gray mf SAND, little silt, wet	gray silty CLAY,wet	mf SAND, little silt, wet			, tan, and rust f SAND, tr to some silt,	gray and rust CLAY and SILT, moist	layey SILT, tr white silt pockets, mois	and white silty CLAY, fractured, dry	brown and gray mottled clayey SILT, tr	brown silty CLAY, some roots, moist	DESCRIPTION	PVC SCREEN 10' 0.010 slotted PVC		AT COMPLETION	DATE 8	A GEOLOGIST	Miss. Sprayfield
<del>                                      </del>						+ + + ·					X    X   +    X      X	CONSTRUCTION	0.05	BACK FILL 以表表的	GRAVEL PACK	/22/85	ner	WELL NO SF-2

SHEET

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DEPTH ယ S 30 25 20 5 0 GROUND CASING MATERIAL DEPTH OF WELL PROJECT TOP OF WELL DRILLER DRILLING S SAMPLE HL430 ELEVATION METHODHSA Grenada, (ft) Tan Rust, 面OLSE gray silty ran and Rust White moist Brown an PSI 2 9 臣 ç PVC Miss and tan SAND, gray G SAND gray gray and gray clay lens, Sprayfield m דד and SILT, white SAND, mottled MONITORING WELL mottled SCREEN clayey silt, GROUND AFTER DESCRIPTION laminated ms, 15-15.5, AT COMPLETION little silty Wet SILT, CLAY moist WATER DEPTH (ft): 10' ç CLAY, and 0.010" Some 、無f 19. S Some HOURS SILT, SAND, 1 9.5-20, roots, ד slotted silt DATE GEOLOGIST organic п tr moist Wet m silt sand PVC sand stains, C.A. 8/22/85 GRAVEL PAC BENTONITE BACK FILL CONCRETE SCREEN Cramer MELL CONSTRUCTION 11/1/ PACK 8 S 5F-3 22

STRATA 35 30 25 20. 15 CASING MATERIAL 0 DEPTH OF DRILLER\_ TOP OF WELL GROUND S DRILLING PROJECT SAMPLE H1430 ELEVATION MELL WETHOD Kust and can Grenada, PSI Gray (ft) Tan White, 4 Light Brown and tr organic соще Brown silt, organic 0 19 ი Miss. SAND gray gray **HSA** tan, silty sand moist tan SAMU, and stains, moist and silty Sprayfield and Size CLAY, some organics, MONITORING mottled clayey SCREEN orange mottled, SILT, GROUND rust CLAY, ТІССТЕ black DESCRIPTION AFTER\_ AT COMPLETION Wet laminated f WATER moist concretions, WELL S SILT, DEPTH (ft): HOURS 6 SILT SAND wet H DATE H GEOLOGIST 面oist sand, and to roots Wet Ħf CLAY, moist SAND,  $\infty$ 1/23/85 c. GRAVEL PAC BENTONITE BACK FILL CONCRETE SCREEN × Cramer WELL NO. CONSTRUCTION PACK SF-4 

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Strata Depth 20 ייווותן אפthod: HOLLOW STEM AUGER Driller: LAYNE-WESTERN COMPANY, INC. Geologist: חבלים אינון 15 10 Project: CI KEYSTONE ENVJRONMENTAL RESOURCES, INC Sample Q5 3 C  $\zeta$ S S Grenada المرسا 7 w' 52 Blow 100 TN W 5 Š 0 5 0 S7:43 Drange-hours/rust FILL (cranje-brown Wood Plant SILT AND orange-brown frust Bottom pinasso 40 mottled CLAY, trace organics (decomposed) (decomposed) SILT, Bority Description CLAY AND **Boring Log:** Location: Grenada, Some B matted G-grab S-splitspoon 10.5 feet Sample collection SILT, Trave pris CLAY and gravel) AND C-rock core T-shelby tube SIL7 NS 7

Depth Drilling Method: HOLLOW STEM AUGER Driller: LAYNE-WESTERN COMPANY, INC. Geologist: D. SMITH 20 Geologist: D. SnI Date: "NUGUST, 1988 10 Project: S KEYSTONE ENVIRONMENTAL RESOURCES, INC. Sample Depth S S  $C_{\lambda}$ 5 S S S Grenada Wood Plant 2/2 المرات 13/2 Count 4 W N W نې 62 Y ، نم 00 0 STIFF Light gray Trust orange-brown Light Lact unerg-shows 13 4.5-6 feet trace decomposed organics 07300 CLAY Bottom of ANO Description **Boring Log:** Location: Grenada, mottled SIL1 Boring at mottled CLAY AND SILT G-grab S-splitspoon Sample collection SIZTY OFF rustSray 10.5 B-3 to C-rock core T-shelby tube mottle SM

APPENDIX E-3
HISTORICAL GROUNDWATER ELEVATIONS



SUMMARY OF 1988 GROUNDWATER ELEVATIONS (1) (2) TABLE 1

## KOPPERS INDUSTRIES, INC. GRENADA, MISSISSIPPI

### NOTES:

- (1) All elevations are in feet above mean sea level and referenced to USGS datum.
  (2) Wells R-5B, R-12B and R-13 through R-31 were installed in August, 1988.
  (3) NM indicates water level not measured.

TABLE 1

### SUMMARY OF 1989 GROUNDWATER ELEVATIONS (1) BEAZER MATERIALS AND SERVICES, INC. GRENADA, MISSISSIPPI

						_									R-29				R-25	R-24	R-23	R-22	R-21	R-20	R-19	7-100 7-100	P-17	R-15	3 :- K	R-12	- T	R-10B	R-10	R-9D	₽-9C	R-4	R-88	77	R-7	70 ;	R-SB	N 7	2 2	7 × 0	* <del>*</del>	; <del>;</del>	d -		1	₩cII	
	214.50	4.37		214 84		215.25	15.28	15.88	212.19	11.09	211.04	212.74	214.09	210.55	206.78	207 20	210.05	211.85	211.54	211.76	205.50	213.19	211.80	214.10	212 72	213.03	199.44	216.69	201.23	200.71	203.74	208.94	204,78	216.07	216.00	213.66	204.94	214.53		212.18	211.24	206.06	206.96	209.26	210.87	210.81			Liovation(1)		19.2
	3	3	Ü	-		•						7 i	i	1	2.5	2.5	3 5	; ; ;	2 E	3 8	¥ £ £	: £	2 S		26.90	27.03	21.88	31.62	15.01	14.78	18.20	2.45	19.42	¥ !	2	22.52	1 12 1 2	25.41	27.42	26.11	25.92	21.59	21.40	23.52	NK(2)	25.02		2-12-99	Ques	Comment	Dept. to
-				194.51 2		191.33			_				187.29	197.24	192.19	189.74	18.65	186.51	18.57	189.45	191.98	187.49	187.41	188,93	185.92	185.98	1.1	185.07	186.27	185.93	7 22		189.97	190.63	182.52	185.86	185.49	185.57	185.62	136,07	183.90	184.47	2 28	185.74	1	£.23		2-12-89	3	F Elevation(1)	Comments
Ŕ	2			_			17.60						ממ									23.56	K R	20.00	2.22	23.98	P (	2 2 2	2 2 2	: : :	21.37	ž	25.06	24.43	24,98	22	77.49	2.2	27	24.98	2	10.63	8 8 8 1	2 ; 2 ;	2	Ę				Grand	
·	1	15.000						186.53									187.29	187.51	197.44	28.6	192.67	1		8	17.6	180.60	187.21	17.2	177.39	186,74	187.57	189.92	191.01	191.57	Z .	18.73	187.04	R S	3 : X i	3 3	Ř Š	186.97	186,90	186.76	1		1				
ž	2	19.50	•	į	<b>*</b>	21.01	277	25.30	H	24.42	25.17	77	2 2	14.65	3 2 2		į	<b>3</b>	2 6		1 : 1 :	1 1 2	2 2 2	3 6		12.90	29.40	14.47	13.81	17.33	¥	<b>7.8</b>	25.50	24.75	7 2	ş ş		28.50	5	25.02	19.67	20.56	259	24.11	ž		7178	3	Commission	Depart	ı
1	1	18.36	195.57	1	193.37			R	R	<b>1 1 1 1 1 1 1 1 1 1</b>		187.60	192.13	16221	05.081	1	1	187.72	190.07	190.E3	194.78	121.59	190.44	187.37	186,97	186,54	187.29	186.81	8.8		1	3	3 5 E	186.4G	1	186,39	186.45	15.361	186.92	186.80	186.39	1 <b>86.4</b> 0	186.67	186.76	1		* IT 8	9	Elevation(1)	Oromadarator	
3 2	•		21.56	26,92	22.07	18.39	24.61	25.67	24.81	2.63	X	23.36	14.61	15.65	25.25	24.69	24.17	24.51	15.69	21.92	23.57	10.82	27	<b>4.</b> %	26.53	13.06	29.97	R I	14.7	¥ 5	7 7 7	5 13	25.16	24.60	23.59	27.54	24.98	1.1	<b>3</b> .5	25.50	20.14	21.03	r E	ز ا	Ş						
190.47	138.04	R	195.27	181.33	193.21	196.61	185.58	185.42	186.23	187.31	187.85	187.19	192.17	192.34	199.80	187.16	187.37	187.25	199.81	191.27	184.32	12,09	290.04	186.36	5		Ř j	186.27	35.93	186.21	188.91	190.28	190.84	187.06	183.39	28.95	2		R de	R 2.22	3 2		25.23	,		12-12-89	į				

### NOTES:

All elevations are in feet above mean sea level.
 NM indicates water level not measured.
 Well R-1 was replaced with well R-1R in March 1989.
 Wells M-2B, M-5 and M-5B were installed in October 1989.
 Wells R-6, R-8, R-8B, R-9, R-25 and R-26 were repaired in October 1989.



### TABLE I

### SUMMARY OF 1990 GROUNDWATER ELEVATIONS

### KOPPERS INDUSTRIES, INC. GRENADA, MISSISSIPPI

MI31.	(feet)	GROUNDWATER (foot)	GROUNDWATER ELEVATION (foot)	DEPTH TO GROUNDWATER (feet)	GROUNDWATER ELEVATION (feet)	DEPITI TO GROUNDWATER (foot)	GROUNDWATER ELEVATION (feet)	DEPTH TO GROUNDWATER (feet)	GROUNDWATER ELEVATION (feet)
		JAN. 7	, 1 <del>99</del> 0	JUNE	26, 1990	SEPT.	7, 1990	DEC. 1	0, 1990
R-1R R-2	210.87	24.62	186.25	23.40	187,47	23.73			
R-3	209.26	22.96	186.30	21.76	187.50	23.02	187.14	25.02	185.85
R-4	206.96	20.85	186.11	18.75	188.21	21.00	186.24	23.58	185.68
R-5	206.06 211.84	20.09	185.97	18.88	187.18	20.09	185.96 185.97	21.54	185.42
R-5B	212.18	25.51	186.33	24.29	187.55	25.36		20.63	185.43
R-6	212.16	25.69	186.49	24.50	187.68	25.75	186.48	25.94	185.90
R-7	97	26.45	186.59	25.43	187.61	NM	186.43	26.05	186.13
R-8	210.98	24.94	186.04	24.73	186.25	24.97	NM	NM	NM
R-8B	214.53	27.52	187.01	26.30	188.23	27.58	186.01	25.46	185.52
R-9	208.98	23.64	185.34	22,35	186.63		186.95	28.06	186.47
	213.66	26.63	187.03	25,31	188.35	23.59	185.39	24.09	184.89
R-9C	216.00	25.12	190.88	23.92	192.08	26.94	186.72	27.07	186,59
R-9D	216.07	25.75	190.32	24.52		25.18	190.82	25.64	190.36
R-10	208.78	19.49	189.29	18.08	191.55	25.83	190.24	26,29	189.78
R-10B	208.94	22.25	186.69	21.20	190.70	19.04	189.74	19.64	189.14
R-11	203.74	17.73	186.01	16.52	187.74	22.59	186.35	22.63	186.31
R-12	200.71	14.41	186.30	13.06	187.22	17.83	185.91	18.33	183.41
R-12B	201.28	14.75	186,53	13.76	187.65	14.30	186.41	14.95	185.76
R-13	216.69	30.03	186.66	28.80	187.52	14.81	186.47	15.35	185.93
R-16	199.44	11.53	187.91	11.63	187.89	29,94	186.75	30.48	186.21
R-17	213.03	26.50	186.53	25.30	187.81	12.81	186.63	13.68	185.76
R-18	212.82	26.34	186.48	25.18	187.73	26.45	186.58	27.00	186.03
R-19	212.77	22.83	189.94	21.79	187.64	26.42	186.40	26,99	185.83
R-20	214.10	26,09	188.01	25.32	190.98	22.35	190.42	22.97	189.80
R-21	211.89	23.65	188.24	22.65	188.78	25.55	188.55	26.28	187.82
t-22	213.19	21.36	191.83	21.34	189.24	22.29	189.60	24,02	187.87
t-23	205.50	15.56	189.94	14.67	191.85	22.23	190.96	22,00	191.19
l-24	211.76	24.55	187.21	23.37	190.83	15.53	189.97	15.52	189.98
l-25	211.54	24.25	187.29	23.05	188.39	24.20	187.56	24.90	
1-26	211.85	24,70	187.15		188.49	23.85	187.69	24.56	186.86
-27	210.05	20.07	189.98	23,48	188.37	24,49	187.36	23.96	186.98
-28	207.89	15.07	192.82	19.36	190.69	20.33	189.72	20.62	187.89
-29	206.78	13.94	192.84	14.52	193.37	16.47	191.42	16.43	189.43
-30	210.55	23.17	187.38	13.58	193.20	15.49	191.29	15.48	191.46
-31	214.09	26.03	188.06	22.10	188.45	23.53	187.02		191.30
F-1	212.74	25.50	187.24	24.51	189.58	26.58	187.51	23.76	186.79
F-2	211.04	24.83		24.56	188.18	25.02	187.72	26.76	187.33
F-3	211.09	24.73	186.21	24.58	186.46	24.55	186.49	25.47	187.27
F-4	212.19	25.76	186.36	23.40	187.69	24.28	186.81	25.03	186.01
t-1	215.00	18.33	186.43	24.46	187.73	NM	NM	24.88	186.21
1-2	215.28	22,07	196.67	17.62	197.38	18,35	196.65	NM	NM
1-2B	215.25	26.74	193.21	21.50	193.78	21.42	190.03	18.55	196.45
1-3	216.83		188.51	25.80	189.45	27.25		21.89	193.39
l- <b>4</b>	215.86	21.53	195.30	20.45	196.38	20.99	188.00	27.23	188.02
1-5	214,37	19,76	196.10	18.64	197.22	19.36	195.84	21.46	195.37
I-5B	214.50	22.47	191.90	21.78	192.59	19.36 NM	196.50	19.82	196.04
	417.30	26.74	187.76	25.69	188.81	NM NM	NM	22.17	192.20
OTES:					110000	*****	NM	27.41	187.09



<sup>1)</sup> NM - indicates water levels not measured.

<sup>2)</sup> All clevations are in fact above mean sea level.



KOPPERS INDUSTRIES, INC. GRENADA, MISSISSIPPI

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NOTES:		M-SB	X-5	Y	X-3	M-2B	M-2	X-1	SF-4	SF-3	SF-2	SF-I	R-31	R-30	R-29	R-28	R-27	R-26	R-25	R-24	R-23	R-22	R-21	R-20	R-19	R-18	R-17	R-16	R-13	R-12B	R-12	<b>7</b> -11	00	֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓	ביי אליי מיי	֓֞֞֝֞֝֟֝֓֓֓֟֝֓֓֓֓֓֓֓֓֟֟ ֓֓֞֓֓֞֓֞֓֓֞֞֓֓֞֓֞֓֓֓֞֞֓֓֓֡֓֓֡֓֡֓֡	֓֞֞֝֟֓֓֓֟֟֓֓֓֟֟֓֓֓֟֟ ֓֓֓֓֓֓֓֓֞֓֓֞֓֓֞֓֓֞֞֓֓֞֞	R-8B	X-8	R-7	<b>8-6</b>	R-SB	R-5	7	7-3	R-2	R-IR			WELL
		214 50	214 37	215 86	216.83	215.25	215.28	215.00	212.19	211.09	211.04	212.74	214.09	210.55	206.78	207.89	210.05	211.85	211.54	211.76	205.50	213.19	211.89	214.10	212.77	212.82	213.03	199.44	216.69	201.28	200.71	203.74	208.94	208.78	216.07	216.00	213.66	208.98	214.53	210.98	213.04	212.18	211.84	206.06	206.96	209.26	210.87		(man const)	CASING ELEVATION
	VC.02	36.60	22.00	10.66	21.77	22.20	21 20	17.8	36.80	24.75	24.76	25.45	3 2 2	23.03	14.13	15.53	20.33	24.78	24.39	X	14.95	20.73	23.80	26.22	XX	26.38	26.63	11.89	30.13	14.75	14.55	17.77	21.82	19.39	25.64	25.01	26.47	23.44	27.49	24.86	26.68	25.56	25.55	20.18	21.00	23.08	24.66	JANUAR	(Iox)	DEPTH TO GROUNDWATER
	188.00	192.16	196.20	195.39	188.72	193.38	197.01	186.39	180.54	186.28	187.28	197.30	19 88	187 63	193.65	107.72	180 77	187.07	187 15	;	190 55	103 46	188 00	187 89	1.00	186.46	186 40	187 55	186.55	186.53	185 15	185.97	187.12	189.39	190.43	190.99	187.19	185.54	187.04	186.17	75.55	186.63	186.20	185.88	185.96	186 18	186.21	JANUARY 14, 1991	(foot/mal)	GROUNDWATER ELEVATION
	25.67	22.12	19.44	21.24	25.60	21.74	18.22	25.24	24.19	24.21	25.26	24.89	22.23	3 13.00	13.74	17.02	10.93	23.06	3 3	14.01	20.73	25.54	3 2 2	36.36	3 6	3 C	2	9:14	20.32	13.05	12.00	16.86	20 17	18 80	24.88	24.26	25.66	20.70 72.67	36.50	2.0	·	24.01	27.61	10.77	36.5	3 !	22 PK	APRIL	(feet)	DEPTH TO GROUNDWATER
	188.83	192.25	196.42	195.59	189.65	193.54	196.78	186.95	186.90	186.83	187.48	189.20	188.32	193.18	193.15	190.23	187.90	187.77		190.89	192.44	188.55	100.30	190.27	187.22	187.26	189.72	187.45	187.33	187.40	100.00	100.//	189.89	190 90	191.74	191.74	187 07	10/.03	180.89	187.21	18/.44	187.03	100./9	78.061	18/.0/	180.91		APRIL 8, 1991	(feet/mal)	GROUNDWATER ELEVATION

All elevations are in feet above mean sea level, and referenced to USGS datum.
 NM - indicates water level not measured.





# SUMMARY OF 1991 GROUNDWATER ELEVATIONS KOPPERS INDUSTRIES, INC.

### KOPPERS INDUSTRIES, INC. GRENADA, MISSISSIPPI

NOTES:	M-5B	X-5	Y	M-3	M-2B	M-2	X -	ST-4	27-3	SE 2	2 1 1	25	ל ב ב	D-20	00°-	2 / Z	7-K	2 7	7-24 3-24	2 7	P-23	N-21	2 6	7 T	7-10	R-17	K-16	7-13 13	R-12B	<b>R</b> -12	R-11	R-10B	R-10	<b>R-9D</b>	ا ا	ב ק	X-83	7 ×	ל ל ל	מי א	7-10	, <u>†</u>	7-0	3 K	R-IR			WELL	
	214.50	214.37	215.86	216.83	215.25	215.28	215.00	212.19	211.09	211.04	212.74	212.74	214.00	200.76	207.89	21.00	215.85	311.04	211.70	202.50	306.63	217.09	214.10	212.//	212.82	213.03	199.44	216.69	201.28	200.71	203.74	208.94	208.78	216.07	216.00	213.66	20% 0%	210.50	210.04	212.18	21.04	206.06	200.96	204.26	210.87		•	CASING ELEVATION (foot/mail)	30 aQL
į	25.56	21.48	18.61	20.28	25.74	21.09	17.62	24.75	23.79	23.98	24.06	25.26	22.63	14.09	15.03	19.77	23.43	22.88	2 2	19.32	19.70	5.34	24.67	21.50	24.98	25.08	9.02	28.55	13.55	12.84	16.37	21.07	18.10	24.40	23.75	3 !	20.15	26.53	3.21	24.20	24.30	18.72	19.74	21.72	23.16	JULY 15, 1991	6	DEPTH TO GROUNDWATER (feet)	
190.74	188-04	192.89	197.25	196.55	189.51	194.19	197.38	187.44	187.30	187.06	188.08	000	187.92	192.69	192.86	190.28	188.42	188.66	1	186.18	193.43	189.55	189.43	191.27	187.84	187.95	190.42	188.14	187.73	187.87	187.37	187.87	190.68	191.67	100.50	100.00	186.40	187.43	187.83	187.98	187.54	187.34	187.22	187.54	187.71	5, 1991	(1000)	GROUNDWATER ELEVATION (foet/mal)	
10.77	26.00	21.81	19.48	21.08	27.10	21.53	18.25	25.37	24.38	24.47	24.61	26.44	23.37	15.21	16.19	20.43	24.28	23.76	24.11	15.14	22.57	23.08	25.54	22.39	26.25	26.34	13.33	29.80	14.68	14.36	17.65	22.20	19.24	25.63	20.30	36.36 66.53	27.41	24.79	26.04	25.42	25.22	19.94	20.86	22.88	24.33	NOVEMBI		DEPTH TO GROUNDWATER	
187.31	197 61	192.56	196.38	195.75	188.15	193.75	196.75	186.82	186.71	186.57	188.13	187.65	187.18	191.57	191.70	189.62	187.57	187.78	187.65	190.36	190.62	188.81	188.56	190.38	186.57	186.69	186.11	186.89	186.60	186.35	186.09	186.74	200	190.44	101.30	1 20.54	187.12	186.19	187.00	186.76	186.62	186.12	186.10	186.38	186.54	NOVEMBER 21, 1991	(metr /root)	GROUNDWATER ELEVATION	

All elevations are in feet above mean sea level, and referenced to USGS datum.
 NM - indicates water level not measured.



## SUMMARY OF 1992 GROUNDWATER ELEVATIONS KOPPERS INDUSTRIES, INC. GRENADA, MISSISSIPFI

TEW	TOP OF CASING ELEVATION (feet)	DEFIH TO GROUNDWATER (feet)	GROUNDWATER ELEVATION (foct/mail)	DEPTH TO GROUNDWATER (feet)	GROUNDWATER ELEVATION (feet/mal)
59		FEBRUARY 3, 1992 (1st Qu)	1992 (1st Qu)	MAY 4, 1992 (Zzd Qtr)	92 (2ml Qtr)
R-IR	210.87	24.14	186.73	24.00	186.87
R-2	209.26	22.60	186.66	72.47	186.79
R-3	206.96	20.55	186.41	5 5 6 6	18.36 26.36
7	206.06	19.63	18.43	19.52	186.93
R-5	211.84	25.07	18.7	25.02	187.16
R-SB	212.18	25.13	186.00	25.6 <b>6</b>	187.36
7 7	213.0 <b>4</b>	24.49	186.49	24.39	186.59
7 T	214.53	27.10	187.43	26.97	187.56
χ-8B	208.98	23.08	185.90	22.98	186.00
₽-9	213.66	26.05	187.61	25.92	187.72
₽-9C	216.00	24.67	191.33	24.57	191.45
R-9D	216.07	25.31	190.76	25.21	190.08
R-10	208.78	19.31	157.4	21.75	187.19
8 7 100	2017.74	17.33	186.41	17.22	186.52
₽-12	200.71	14.05	186.66	13.78	186.93
R-12B	201.28	14.44	186.84	14.41	186.87
R-13	216.69	29.66	187.09	11.47	187.97
7-16	199.4	26.11	186.92	26.00	187.03
7 × 1	212.82	25.95	186.87	25.80	187.02
R-19	212.77	<b>12.54</b>	190.23	22.45	190.32
R-20	214.10	25.70	188.40	25.27	189.33
R-21	211.89	3 23.25	191.07	22.10	191.09
7-7-7-7-7-7-7-7-7-7-7-7-7-7-7-7-7-7-7-	505.20	14.85	190.65	14.78	190.72
7 7 2 1	211.76	24.17	187.59	24.82	186.94
R-25	211.54	23.81	187.73	24.51	187.03
R-26	211.85	24.07	187.78	20.74	190.01
R-27	210.05	23.04	193.41	15.24	192.65
0.70 0.72	206.78	14.38	192.45	13.94	192.84
7 7 8 1	210.55	22.99	187.56	22.92	187.63
R-31	214.09	25.91	188.18	25.80	188.29
SP-1	212.74	24.67	188.07	24.58	186.95
SF-2	211.04	24.29	1	24.16	186.93
SF-3	211.09	25.39	186.80	25.21	186.98
		ì		11 66	196.43
. <u>.</u>	215.02	21 63	193.67	21.76	193.54
K-78	215.30	26.46	188.86	26.63	188.69
X-1	216.54	21.30	195.54	21.41	195.43
K :	215.79	19.64	196.15	19.70	196.09
X-2	214.45	21.92	192.53	22.07	180 881
M-SB	214.58	26.46	188.12	1 8	-
; š	i			1	
M-98	1 1	1	1		1
M-78	1	1	1	1	-
X-8		ŀ	1	1	
M-8B	i	1	i	-	}

NOTES:
(1) All elevations are in feet above mean sea level, and referenced to USOS datum.
(2) NM - indicates water level not measured.
(3) Wella M-6, M-6B, M-7, M-7B, M-8 and M-8B were installed in August 1992 and were not sampled until third quarter 1992.



## SUMMARY OF 1992 GROUNDWATER ELEVATIONS KOPPERS INDUSTRIES, INC. GRENADA, MISSISSIPPI

		9	GRENADA, MISSISSIPPI		
WELL	CASING ELEVATION (feet)	DEPTH TO GROUNDWATER (fact)	GROUNDWATER ELEVATION (foct/mat)	DEPTH TO GROUNDWATER	GROUNDWATER ELEVATION
		CBER 14.	1992 (3rd Qtr)	OCTOBER 14-15, 1992 (4th Qu)	, 1992 (4th Qu)
R-IR	210.87	24.91	185.96	24.86	186.01
B R-2	209.26	X	1	WN	1
Z J	206.96 206.06	¥ ¥	1 1	21.31	185.65
R-5	211.84	XX X	1 1	25.78	F 55.
R-SB	212.18	M	ł	25.85	186.33
2 A	213.04	X	1	MX	1
77 7- <b>30</b> /	210.98 214_53	7 K	185.64	25.31	185.67
R-8B	208.98	23.91	185.07	27.90 23.80	186.63
R-9	213.66	26.89	186.77	26.91	186.75
7 % 6	216.00	25.53	190.47	25.48	190.52
R-10	204.78	19.60	189.90	26.13	189.94
R-10B	208.94	X		X 5	4.68
R-11	203.74	×	ł	18.09	185.65
R-12B	200.71	ž ž	i	14.78	185.93
R-13	216.69	X	1 1	36.13	186.13
N-16	199.44	X	l	MN	i
N-18	212.82	ZZ	1 1	26. <b>E</b>	186.19
R-19	212.77	XX	i	23.00	189.77
R-20	214.10	MM	1	26.21	187.89
R-22	213.19	Z 3		23.76	188.13
R-23	205.50	Z.	1	15.29	190.21
R-24	211.76	¥	ł	XX	1
R-26	211.54	Z Z	i	X	I
R-27		X 3	1	Z X	1
R-28	207.89	ž	i	16.55	191.34
5 70 5 29	206.78	ž	ł	15.64	191.14
R-31	214.09	Z Z	1	M	1
SF-1	212.74	Z :	1 1	25.01 25.11	187.48
SF-2	211.04	XX	I	24.96	186.08
SPL 3	211.09	¥	I	24.94	186.15
9	212.19	Z	1	25.99	186.20
K 3 -	215.02	19.01	10.961	18.96	196.06
M-28	215.30	72.19	193.11	22.12	193.18
M-3	216.84	21.89	2	21.5	187.86
X	215.79	20.21	195.58	20.17	195.62
K-S	214.45	72.49	191.96	22.53	191.92
X 3	214.58	27.44	187.14	27.38	187.20
M-68	212.83	2 £ 2 £	191 8	21.14	191.53
M-7	213.39	19.71	193.68	. 19. ti	193.74
K-73	213.26	24.65	184.61	24.54	188.72
X-88	213.88	19.ZS	2 2	19.29	12.53
		ţ	186.43	24.86	189.02
NOTES					

All elevations are in foet above mean sea level, and referenced to USGS datum.
 MM indicates not measured.
 Wella M-6, M-6B, M-7, M-7B, M-8 and M-8B were installed in August 1992 and were not sampled until third qui



TABLE 1

# SUMMARY OF 1993 GROUNDWATER ELEVATIONS KOPPERS INDUSTRIES, INC. GRENADA, MISSISSIPPI

MARCH 2, 1993 (1st QTR)

JUNE 1, 1993 (2nd QTR)

<u>z</u>	,	<u>ا</u>	W/R	R	X	X	×	N N	N.		1	¥	N. C.	X	Z	N. C.	Z	N. N.		S	S	S	S	7 P	P. P.											4	4	I Lann					1				1	1			温い		1			e e	7	(+) = +	
NOTE:	1	R-44	R-43	R-42	M-8B	X-8	M-7B	X-7	X - 6 E	3	X ;	M-SB	X-2	M-4	<b>X</b> −3	M-2B	M-2	M-1	•	SF-4	SF-3	SF-2	SF-1	R-31	R-30	R-29	R-28	R - 27	R - 26	R-25	N 1 2 2	R-22	R-21	R-20	R-19	R-18	R-17	R-16	R-13	R-12B	R-12	R-11	K-10	R-9D	R-9C	R-9	R-8B	R-8	R-7	8 1 5 b	R-5	R-4	R-3	R-2	R-1R	W ELL	WEI I		
a	00.017	214 <8	216.13	214.89	213.88	214.11	213.26	213.39	212.83	212.07	212.67	214 58	214.45	215.79	216.84	215.32	215.30	215.02		212.19	211.09	211.04	212.74	214.09	210.55	206.78	207.89	210.05	211.54	211.76	203.50	213.19	211.89	214.10	212.77	212.82	213.03	199.44	216.69	201.28	200.71	208.54	208.78	216.07	216.00	213.66	208.98	214.53	210.98	213.04	211.84	206.06	206.96	209.26	210.87	(TCW SABOR 1991)	ELEVATION	TOP OF	1
	ZM	NA NA	Z :	Z	23.68	19.30	23.86	19.05	24.96	20.99	1000	26.18	77 48	20.12	21.99	26.15	22.22	18.78		NK :	NA 25:52	74.85		75 17	Z	13.08	15 18	ZZZ	23	ZZ	14.53	21.40	23.47	25.85	22.84	25.88	26.05	11.79	29.59	14.74	13 02	21.42	19.16	25.18	24.54	25.98	22.96	27.02	24.39	ZZ	XX	MN	XX	XX	24.18	(leel)	GROUNDWATER	מיי שישטיי	MARCH 2, 1993 (1st QTR)
	1 1	1		1 1	190.20	194.81	189.40	194.34	187.87	191.68	100.40	198.40	101 87	195.67	104.85	189.17	193.08	196.24		!   ! : !	130:19	186.10	187.71	188 07	1110	103 80	107 71	1 1	1 1	!!!	190.97	191.79	188.42	188.25	189.93	186.94	186.98	187.65	187.10	187.04	18677	187.52	189.62	190.89	191.46	187.68	186.02	187.51	186.50	!!!	1	1 1 1	!!!!	1 1 1	186.69	(lect above MSL)	ELEVATION		93 (1st QTR)
	XX	; X	21.21	71 71	Z	Z	ZX	XX	ZX	ZX	3	VY.	77 34	19.79	21 88	ZX	21.93	18.47	14172	Z 3	23	74.04 24.04	24.64	24.80	NN 10:11	14 02	7 7 7 7	ZZ	Z	Z	14.31	21.24	23.21	25.63	22.20	25.25	25.52	8.71	28.98	N.K.	1 2 3	. Z	18.89	24.96	24.36	25.63	22.74	26.88	24.08	Z	24.51	M	XX	XX	23.98	(leet)	GROUND WATER		JUNE 1, 1993
		1 1	175.00	103.68	1	) 	1 1 1	1 1 1	! !	1 1	 	11.741	102 11	196.00	195 19	1	193.37	19655	1		       	188.10	188 10	188 70	172.70	192.65	3   1	!!!!	!!!	1 1	191.19	191.95	188.68	188.47	190.57	187.57	187.51	190.73	187.71	107.42		!	189.89	191.11	191.64	188.03	186.24	187.65	186.90		187.33		-	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	186.89	(Icel above MSL)	ELEVATION		1, 1993 (2nd QTR)

All elevations are in feet above mean sea level, and referenced to USGS datum.
 NM indicates not measured.

TABLE 1

# SUMMARY OF 1993 GROUNDWATER ELEVATIONS KOPPERS INDUSTRIES, INC. GRENADA, MISSISSIPPI

AUGUST 16, 1993 (3rd QTR)

R-1R WELL TOP OF
CASING
ELEVATION
(feet above MSL) DEPTH TO GROUNDWATER (feet) GROUNDWATER
ELEVATION
(Icet above MSL) DEPTH TO GROUNDWATER NOVEMBER 21, 1993 (4th QTR) (feet) GROUND WATER
ELEVATION
(feet above MSL)

11				-		1			÷1			十二				1	2		No.			40			A. Car					e and										Ę		11									
NOTES:		7-44	2 1 2	K-42	M-8B	X-8	M-7B	M-7	M-6B	M-6	M-SB	X-5	X ;	X-3	M-2	M-1		\$P-1	SF-3	SF-2	SF-1	אל אל הואל הואל הואל הואל הואל הואל הואל הו	R 5	R 120	D 126	R-26	R-25	R-24	R-23	R-22	R-21	R-20	R 1 10	R-17	R-16*	R-13	R-12B	K-11	R-10B	R-10	R-9D	R-90	K-8B	7 - X-	R-7	R-6	R-SB	R-5	7 7 7 1 V	R-2	R-1R
		214.58	216.13	214.89	213.88	214.11	213.26	217 70	212 87	217.67	214.45	215.79	216.84	215.32	215.30	215.02	412.19	313 10	211.04	212.74	214.09	210.55	206.78	207.89	210.05	211.85	211.54	211.76	205.50	213.10	214.10	212.77	212.82	213.03	199.44	216.60	200.71	203.74	208.94	208.78	216.00	213.66	208.98	214.53	210.98	213.04	212.18	211 84	206.96	209.26	210.87
	į	ZZZ	Z X	2 2 3	7 3		Z	M	XX	26.77	22.42	20.21	21.93	26.86	18.96 22.12		25.57	MN	24.85	15.31	25.90	MX	15.31	16.26	20.34	NN 40.94	24.65	14.65	22.95	23.07	25.49	22.28	26.02	26.15	29.78	14.61	WN	17.45	21.07	25.43	24.79	26.14	23.18	27 71	23.86	25.22	NN	19.70	20.65	24.13 22.68	
	1 1			1 ! !	!!!	:	# I I	1 1 1	1 1 1	187.81	107.03	105 58	104.00	193.18	196.06		186.62	1 1 1	186.19	107.17		191.47	191.63	189.71		186.85	1	190.85	190.24	188.82	188.61	190.60	100.00	186.14	186.91	186.67	10.29	187.00	189.61	190.64	191.21	187 57	187.32	186.38	187.18	186.96	111	186.36	186.31	186.72	
	XX	Z	Z	Z :	ZX	24.78	20.08	25.43	27.18	22.66	20.74	22.45	27.18	22.60	19.13	21.02	25.03	24.97	25.28	26.51	23.62	15.68	16.72	20.84	MN	24.70	XX	14.89	23.62 72 <b>5</b> 7	73.67	22.76 26.63	26.54	26.64	13.57	10.72	14.60	17.87	22.11	19.69	25.23	26.64	23.64	27.68	25.07	26.33	25.65	25 57	21.10 20.17	23.15	24.68	(1061)
	! ; ! !	1   !	! ! ! !	1 1	188.48	193.31	187.01	191.22	187.40	191.79	195.05	194.39	188.14	192.70	105 80	186.07	186.06	186.07	187.46	187.58	186.93	191.10	191.17	189.21	1 1 1 1	186.84	19.001	190.62	188.27	188.03	190.01	186.28	186.39	185.35	186.33	186.11	185.87	186.83	180.00	190.77	187.02	185.34	186.85	185 01	186.71	186.27	185.89	185.86	186.11	186.19	(lect above M:

All elevations are in feet above mean sea level, and referenced to USGS datum.
 Well R-30 and SF-3 could not be located due to overgrown weeds/shrubs.
 During the third quarter sampling event, Well R-16A contained light and dense phase non-aqueous liquids, but not of measurable thickness.



### TABLE 1 (Cont.)

### SUMMARY OF 1994 GROUNDWATER ELEVATIONS KOPPERS INDUSTRIES, INC. GRENADA, MISSISSIPPI

	r		H 21,1994		7,1994		JST 30, 1984		EMBER 15, 1994
	TOP OF CASING	DEPTH TO	GROUNDWATER	DEPTH TO	GROUNDWATER	DEPTH TO	GROUNDWATER	DEPTH TO	GROUNDWATER
WELL	ELEVATION	GROUNDWATER	ELEVATION	GROUNDWATER	ELEVATION	GROUNDWATER	ELEVATION	GROUNDWATER	ELEVATION
	(feet mpl)	(feet)	(feet msi)	(feet)	(feet msi)	(feet)	(feet mei)	(feet)	(feet mel)
-1	215.02	19,06	195.96	19.27	195.75	18.56	198,16	18,45	198.57
-2	215.30	22.58	192.72	22.43	192.67	22,33	192.97	22.34	192.96
-28	215.32	26.27	189,05	26.01	189.31	26.61	188,71	25.96	189.34
-3	216.84	22.31	194.53	22.25	194.59	22.10	194.74	22.10	194.74
4	215.79	20.52	195 <i>.</i> 27	20.50	195,29	20.29	195.50	20.23	195.58
5	214.45	22,80	191.65	22.55	191.90	22.53	191.92	22.56	• 191.89
-5B	214.58	26.27	188,31	25.85	188.73	26.55	166,03	26.00	188.58
-6	212.67	21,48	191.19	21,23	191.44	21,30	191.37	21.35	191.32
6B	212.83	24.81	188.02	24,58	188.25	25,06	187.77	24.52	188.31
7	213.39	20.03	193.36	19.89	193.50	20.02	193.37	19.97	193.42
78	213.26	23.62	189.64	23,39	189.87	24,06	189,20	23.41	189.85
-8	214,11	19,78	194,33	19.42	194,69	19.70	194,41	19.68	194.43
8B	213.88	23.88	190.00	23.59	190.29	24,28	189.60	23.59	190,29
-05	213.00	25.00	150.55	22.00					
-1R	210.87	24.17	186.70	24,26	186.59	23.98	186.89	23.81	187.06
-1K -2	210.67	22.96	186.30	22.71	186,55	22.48	186.76	22.23	187.03
2 3	208.26	20.99	185.97	20.74	186.22	20.44	186.52	20.16	186.80
		20.99	185.99	19.95	186.11	19.49	186.57	19.21	186.85
•	206.06		186,83	24.90	186,94	24.90	186.94	24.71	167.13
5	211.84	25.01	186.96	24.89	187.29	25.04	187.14	24.72	187.46
5B	212.18	25.22			187.56	25.68	187,38	25.40	187.64
6	213.04	25.70	187.34	25.48 24.15	186.83	24,38	186.60	24.09	186.89
7	210.98	24.40	186.58		187.73	27.00	187,53	26.71	167.62
В	214.53	27.00	187,53	26.80		27.00 22.97	186.01	22.67	156.31
8B	208.98	22.98	188.00	22.63	186.35	25.93	187,73	25.65	188.01
9	213.66	25.98	187.68	25.70	187.96	24.55	191.45	24.24	191.76
9C	216.00	24.58	191.42	24.32	191.66		190,88	24.88	191,19
9D	218.07	25.20	190.87	24.90	191.17	25.19 18.75	190,00	18.69	190.09
10	208.78	19.15	189.63	18,99	189.79			21.09	187.85
10B	208.94	21,48	187.46	21.11	167.63	21.57	187.37 186,50	16.92	186,62
11	203.74	17.56	186.18	17.22	186,52	17.24		14.89	186.02
12	200,71	14.56	186.15	14.16	186.55	13.92	106,79	10.59	190.69
128	201.28	14.80	186.48	14.65	186.63	14.43	186.85	29.37	187,32
13	216.69	29.69	187.00	29.43	187.28	29.64	187.05		176.60
16	199.44	13.48	185.96	13.19	188.25	12.74	186.70	22.84	167.24
17	213.03	26.00	187,03	25.84	187.19	25.98	187.05	25.79	
-18	212.62	25.79	187.03	25.83	187.19	25.84	186.98	25.60	167.22
-19	212.77	22.51	190.26	22.34	190.43	22.06	190.71	21.95	190.82
-20	214.10	25.29	188.81	24.98	189.12	25.22	188.88	25.25	188.85
-21	211.89	NM	_	NM	211.89	22.85	189.04	22.84	189.05
-22	213.19	21.72	191,47	21.49	191.70	22.61	190.58	22.73	190.48
23	205.50	14.76	190.74	14.48	191.02	14.53	190,97	14.07	191.43
24	211.76	NM	_	NM	211.76	NM	_	NM	
25	211.54	NM	_	NM	211.54	23.58	187.96	23,48	188.06
26	211.85	NM	_	NM	211.85	NM	-	NM	_
27	210.05	20.45	189.60	20.08	189.97	20.13	189.92	19.95	190.10
28	207.89	15.84	192.05	15.61	192.28	15.92	191.97	15.27	192.62
	208.78	14.72	192.06	14.54	192,24	14.86	191.92	14.16	192.62
-29 -30	206.76 210.55	22.83	187.72	22.54	188.01	23.07	187.48	13.74	196,81
	210.55	22.03 25.54	188.55	25.21	188.88	25.67	186,42	13.91	200.18
·31 ·398	214.09	23.34 NM	100.33	11,78		NM	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	NM	_
	200.07	NM NM	_	11.12	_	NM	_	NM	_
-39C	044.00	• • • • • • • • • • • • • • • • • • • •		NM		NM	_	NM	_
-42	214.89	NM	_		_	NM	_	NM	_
-43	216.13	NM	-	NM	-	NM NM	<u>-</u>	NM	_
-44	214.58	NM	_	NM	-	NM	_		
F-1	212.74	25.13	187.61	24.96	187.78	24.77	187,97	24.71 24.20	188.03 186.84
F-2	211.04	NM	_	NM	_	24.30	186,74		100.04
F-3	211.09	NM	_	NM		NM.	_	NM	-
F-4	212.19	NM	_	NM.	_	25.45	186,74	25,38	166.81

All elevations are reported in fast above mann sea level and referenced to a USGS datum.
 Nid — Not Messawd.

NOTES:



### Summary of Groundwater Elevations for 1995 Koppers Industries, Inc. Grenada Facility Tie Plant, Mississippi

	T ( O	January	24, 1995	May 1	0, 1995	August 1	4. 1995 T	Novemb	er 6, 1995
Vell	Top of Casing Elevation (feet msl)	Groundwater (feet TOC)	Groundwater Elevation (feet msl)	Depth to Groundwater (feet TOC)	Groundwater Elevation (feet msl)	Depth to Groundwater (feet TOC)	Groundwater Elevation (feet msi)	Depth to Groundwater (feet TOC)	Groundwater Elevation
M 4	045.00					(,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	(ICCLINS)	(leet IOC)	(feet msi)
M-1 M-2	215.02	18.31	196.71	18.38	196.64	18.29	196.73	18.84	106 10
	215.30	22.16	193.14	21.90	193.40	22.05	193.25	22.05	196.18
M-2B	215.32	25.48	189.84	25.16	190.16	24.99	190.33	26.98	193.2
M-3	216.84	21.93	194.91	21.46	195.38	21.37	195.47	21.91	188.3
M-4	215.79	20.02	195.77	19.63	196.16	19.59	196.20		194.9
M-5	214.45	22.38	192.07	22.16	192.29	22.26	192.19	20.26	195.53
И-5B	214.58	25.45	189.13	25.09	189.49	25.29	189.29	23.34	191.1
M-6	212.67	21.04	191.63	20.64	192.03	20.90		25.87	188.7
И-6B	212.83	23.95	188.88	23.52	189.31	23.76	191.77	21.22	191.4
<b>1-7</b>	213.39	19.71	193.68	19.27	194.12	19.62	189.07	23.98	188.85
<b>/</b> 1-7B	213.26	22.80	190.46	22.46	190.80	22.64	193.77	20.03	193.36
<b>8-N</b>	214.11	19.22	194.89	18.50	195.61	19.08	190.62	23.08	190.18
<b>/I-8</b> B	213.88	23.04	190.84	22.60	191.28		195.03	19.32	194.79
	1			22.00	191.20	22.93	190.95	23.16	190.72
?-1R	210.87	23.40	187.47	22.84	188.03	23.20	407.07		
≀-2	209.26	21.75	187.51	NM (4)		23.20 21.70	187.67	23.47	187.40
?-3	206.96	19.68	187.28	19.00	187.96		187.56	22.33	186.93
?-4	206.06	18.75	187.31	18.05	188.01	19.43	187.53	19.71	187.25
₹-5	211.84	24.03	187.81	23.71	188.13	18.69	187.37	18.99	187.07
R-5B	212.18	24.29	187.89	23.73		23.90	187.94	24.21	187.63
?-6	213.04	24.95	188.09	23.73 24.36	188.45	24.18	188.00	24.52	187.66
2-7	210.98	23.63	187.35		188.68	24.95	188.09	25.18	187.86
2-8	214.53	26.25	188.28	23.04	187.94	23.70	187.28	23.99	186.99
-8B	208.98	22.21	186.77	25.61	188.92	26.28	188.25	26.42	188.11
-9	213.66	25.21		21.61	187.37	22.29	186.69	22.38	186.60
-9C	216.00	23.79	188.45	24.56	189.10	25.22	188.44	25.36	188.30
-9D	216.07	24.43	192.21	23.21	192.79	23.89	192.11	24.06	191.94
-10	208.78		191.64	23.87	192.20	24.53	191.54	24.72	191.35
-10B	I I	18.47	190.31	17.97	190.81	18.23	190.55	18.46	190.32
-106 -11	208.94	20.68	188.26	20.32	188.62	21.13	187.81	21.53	187.41
	203.74	16.44	187.30	NM		16.13	187.61	16.52	187.22
-12 -12B	200.71	13.13	187.58	12.42	188.29	13.02	187.69	13.36	187.22
-12B	201.28	13.63	187.65	12.99	188.29	13.39	187.89	13.59	187.69



### TABLE 1

### Summary of Groundwater Elevations for 1995 Koppers Industries, Inc. **Grenada Facility** Tie Plant, Mississippi

		January 2	24, 1995	May 10	0, 1995	August 1	4 1995	November 6, 1995						
	Top of Casing	Depth to	Groundwater	Depth to	Groundwater	Depth to	Groundwater	Depth to						
Well	Elevation	Groundwater	Elevation	Groundwater	Elevation	Groundwater	Elevation	•	Groundwater					
	(feet msl)	(feet TOC)	(feet msl)	(feet TOC)	(feet msl)	(feet TOC)		Groundwater	Elevation					
				1.55	(100t mon)	(Teel TOO)	(feet msl)	(feet TOC)	(feet msi)					
R-13	216.69	28.92	187.77	28.28	188.41	28.86	187.83	00.70						
R-16	199.44	8.90	190.54	9.77	189.67	8.69 (5)	107.03	29.72	186.97					
R-17	213.03	25.29	187.74	24.70	188.33	25.18		9.03 (5)	190.41					
R-18	212.82	25.09	187.73	24.45	188.37		187.85	25.42	187.61					
R-19	212.77	21.83	190.94	21.47	191.30	24.95	187.87	25.13	187.69					
R-20	214.10	25.07 (1)	189.03	24.45 (1)		21.77	191.00	22.13	190.64					
R-21	211.89	22.70	189.19	22.18	189.65	24.91 (1)	189.19	25.23 (1)	188.87					
R-22	213.19	20.36	192.83	21.32	189.71	22.56	189.33	22.97	188.92					
R-23	205.50	25.42	180.08		191.87	20.16	193.03	20.65	192.54					
R-24	211.76	NM (2)	160.06	13.69	191.81	25.36	180.14	25.74	179.76					
R-25	211.54	22.93 (3)	188.61	NM (2)	_	NM(2)		NM(2)						
R-26	211.85	NM (2)	100.01	23.16	188.38	22.63 (3)	188.91	23.13 (3)	188.41					
R-27	210.05	19.88	190.17	NM (2)		NM(2)		NM(2)						
R-28	207.89	14.63	193.26	19.50	190.55	19.71	190.34	20.09	189.96					
R-29	206.78	13.44		14.51	193.38	14.59	193.30	14.89	193.00					
R-30	210.55	22.28	193.34	13.43	193.35	13.37	193.41	13.69	193.09					
R-31	214.09	22.26 24.63	188.27	21.88	188.67	22.19	188.36	22.48	188.07					
R-39B	214.03		189.46	24.22	189.87	24.58	189.51	24.99	189.10					
R-39C		NM		NM		NM		NM						
R-42	244.90	NM		NM		NM		NM						
	214.89	NM		NM		NM		NM	_					
R-43	216.13	NM		NM		NM	_	NM	_					
R-44	214.58	NM	-	NM		NM		NM						
SF-1	212.74	24.56	188.18	24.23	100 54	04.40		_						
SF-2	211.04	23.88	187.16	24.23 NM	188.51	24.42	188.32	24.73	188.01					
SF-3	211.09	NM	107.10		_	23.67	187.37	24.06	186.98					
SF-4	212.19	25,13	187.06	NM		NM(4)		NM(4)						
NOTE:		20, 13		NM		24.98	187.21	25,13	187.06					

(1) NAPL was measured at well R-20: 1.72' DNAPL (first quarter); 0.01' LNAPL (second quarter); 1.99' DNAPL (third quarter); and 1.90' DNAPL (fourth quarter). NOTE:

- (2) Well is buried.
- (3) Bentonite observed in well.
- (4) Well could not be located.
- (5) Sheen detected on probe in well R-16A.
- (6) NM = Not measured.

TABLE 1
Summary of 1986 Groundwater Elevations
Koppers Industries, Inc.
Grenada Facility
Tie Plant, Mississippi

2	SF.3	SE !	SF-1		R-44	R 43	R-42	R-39C	R-39B	R-31	R-30	R-28	R-28	7.5	2 2	5	2 2	3 2	7 2	7 R	R.20	R-198	R-19	R-18	R-17	R-18	R-13	R-120	R-12B	3 -	R-108	R-10	R-90	<sub>स्</sub> र ह	B 7	30	R-7	₽	R-58	5 Z	R S	R-2	R-18	¥-88	¥.	M-78	¥.7	¥ ₹	¥-58	¥5	Ĭ	¥ ₹	¥ ×	¥		¥e <u>l</u>		•	$\neg$
212 10	211.00	211.04	21274		214.58	216.13	214.89	!	!	214.09	210.55	206.78	207.89	210.05	211.85	271.54	211./6	205.50	213,19	211.80	214.10	-	21277	212.82	213.03	4.08	216.69	203.102	200.71	203.74	208.94	208.78	216.07	216,00	208.98	214.53	210.98	213.04	212.18	208.08	206.96	209.28	210.87	213.88	214.11	213.28	213.39	21207	214.58	214.45	215.79	215.32	215.30	215.02	(least treat	Elevation	Casing	T00 Qf	
) 9	2 5	24.02	24.60		Z	Z	Z	Z	X	25.28	22.89	14.66	15.84	20.38	Z	23.56	Z	14.58	21.65	23.16	25.57	Z	24	25. <b>88</b>	25.83	10.80	29.46	Z .	13.77	N	21.42	19.31	25.05	24.38	X 22 23 25 25	26.86	24.25	25.54	24.87	19.36	20.26	22.33	23,98	23.76	19.30	23.52	19.63	21.16	26.26	22.58	20.15	2 26	22.36	18.82	(leet)	Groundwater	Depth to	Buldari	FIRE
18 A		18701	186 13	_	Z	Z K	Z X	Z	Z	188.81	187.66	192.12	192.05	189.67	Z	187.98	Z	180.92	191.54	188.73	186.53	Z X	190.33	187.16	187.20	188.64 04	187 23	NE 1	187.00	N	187.52	189.47	191.02	19 10 10 10 10 10 10 10 10 10 10 10 10 10	186.17	187.67	186.73	187.50	187.02	186.70	186.70	186.83	186.89	180.12	194.61	189.74	183.76	191.51	188.32	191.87	185.04	2 89.06 83.06	182.94	196.20	(leet msl)			rescuary 19, 1996	First Quarter
3 3	23.04	23.47	3	į	Z	Z	Z	Z T	Z	25.45	22,82	14.78	15.81	20.30	X	23.44	23.66	14.51	22.56	22.80	25.18	Z	<b>22.08</b>	25.43	25 61	1232	8 2	14.08	13.37	Z	21.35	18.84	24.84	25.56	22.59	26.60	24.02	25.30	24.5/	19,10	20.22	22.07	23.88	23.75	18.89	23.53	24.08	20.86	22.20	22.25	20 25.74	28.28	22.08	18.72	(Toda)	Groundwater	Depth to	Jun	Seco
A NA	187.20	189.33	<u>.</u>	7	2 3	2	Z :	Z	Z	188 PA	187.73	192.02	192.08	189.75	Z	188.10	188.10	190.99	190.63	189.09	188,92	Z	190.71	187.39	187 43	187 13	AN NA	187.20	187.34	Z	187.50	189.94	191.02	1 68.10 153	186.39	187.93	186.96	187.74	187.27	188.96	186.74	187.19	187 19	190.13	<b>18</b> .23	180.53	188.15	191.81	192.38	182.20	195.70	189.06	183.24	196.30	(feet msl)		Groundwater	June 5, 1986	Second Quarter
Z	24.15	23.82	}	2	2 3		2	Z :	NIM.	3 !	23.15	14.91	Z	20.62	Z	23.68	Z	18.22	22.87	23.15	25.33	Z	N. I	26.24	3 Z	29.7	Z	14.35	13.63	Z	22.12	19.28	24.04	26.19	23.23	27.23	24.19	3 5.51 3 5.51	25.15	19.51	22.25	228	2	24.33	19.27	23.10	3 25	21.35	27.01	2241	200	27.10	22.24	19.12	(feet)	Groundwater	Depth st	Augus	Third
Z	188.89	188.92		3	Z Z	3			, G	187 88	187 40	191.87	ž	189.43	Z	187.86	Z K	189.28	180.32	186.74	186.77	Z	2 2	188.58	188.80	186.98	Z	186.93	187.08	Z	186.82	180.56	191.16	187.47	185.75	187.30	186.79	186.87	186.69	186.55	184.71	100.00		189.55	194.54	183.24	187.74	191.32	187.57		194.88 St. 88	188.22	183.06	195.98 195.98	(feet msl)		Groundwater	August 26, 1996	Third Quarter
Z	24.21	24.85		Z	Z	3	2 3	3	25.10	3 3	3 8	13.86	14.95	20.16	Z	23.25	Z	25.86	20.81	23.04	25.34	2 2	3 5	4 5 5 6	Z	29.90	13.80	13.66	13.48	16.62	2 5	24.91	24.21	. 25.47	22.53	28.51	24.06	24.61	24.30	19.13	19.80	3 12	3	23.21	19 37	20.24	24.12	21.34	28.	2 5	2218	27.10	2234		(feet)	Groundwater		Novem	Foun
Z	186.83	187.89		Z	Z	×	3	3	188.93	78.701	187 85	9 9	5 5	189.89	Z	188 29	Z	179.64	18238	188.85	188.78	108.33	107.59	187.57	Z	186.79	-13.96	187.62	187.23	187.12	187.25	191.16 33.26	191.79	188.19	188.45	188.02	1869	187.57	187.54	186.93	187.16	187.29		190.67	190.07	183.15	188.71	191.33	1 6	\$ 55 3 55	194.08	188.22	182.98	198 18			Groundwater	November 19, 1996	Fourth Quarter

NOTES:

(1) All elevations are in feet referred to mean sea level (mst).

(2) NM = not measured.

(3) NAPL was detected in well R-20: Approximately 1.78 feet of DNAPL in first quarter:

TABLE 1
Summary of 1997 Groundwater Elevations
Koppers Industries, Inc.
Grenada Facility
The Plant, Mississippl

Case			Janu-	First Quarter	9	Second Quarter		Third Quarter		
Part   Charles		Top of		1 at, 1987		W 6, 1997	-	luly 28, 1997	Octo	ber 6. 1997
Part	Well	Casing	o depth to		Depth t					
		(feet mai)	To es		Groundwa					
1.   1.   1.   1.   1.   1.   1.   1.	<b>F</b>	3				19831	(Jeel)		(feet)	1
Hard   2125   2226   1020	¥2	215.30	7 is 20	196.60	17.84	197.18	18.23			
	¥-28	215.32	3 2	183.02	21.75	193.55	21.56		10.00	196
1	£	218.84	3 2	189.48	24.83	190.49	25.57		21.62	<b>193</b>
March   12446   2254   16717   1226   16235   1631   1644   1645   164	Ī	215.79	28.12	2 1 1 1 2	21.28	195.56	21.01		21.33	193.
	£	214.45	3 14	180.77	19.44	196,35	19.31		DR.91	196.
Heat   1225   11.00   10.00   20.00   10.00	¥-68	214.58	¥ ¥	191.91	22.08	192,39	21.80	<b>3</b> 3	19.58	195.2
March   1972   2020   2020   1982   2020	¥ 60	212.62	2 0	188.70	24.84	189.74	25.42	190.00	21.82	192.6
Wilson   1972   1973   1974   1984   1974   1984   1974   1984   1974   1984   1974   1984   1974   1984   1974   1984   1984   1974   1974   1984	F :	70717	21.15	191.52	20.51	192 is	3 2	189.16	26.20	188.3
1.   1.   1.   1.   1.   1.   1.   1.	F 7 6	212.83	24.41	188.42	23 25	189.51	20.63	192.44	20.43	192,2
	7	213.39	19.76	193.63	19.83	10.5	23.81	189.02	24.66	<b>8</b>
The color   The	à	213.26	23.08	190, 18	271	9 9	18.75	194.64	19.07	94.3
Part   20100   2222   190.09   2229   190.09   2229   190.09   2239   190.09   190.09   2239	Ī	214.11	19.49	194.63 63		191.12	22.86	190,40	23.88	1000
Ref.   2007   2200   18637   2200   18637   2200   18637   2200   18637   2200   18637   2200   18637   2200   18637   2200   18630   2210	#-88	213.88	23.32	190.56	7 ē	195.53	18.27	195.84	18.74	195.0
100   100	ò				-	191.09	23.18	190.72	23.94	189.94
No.   200.000   22.01   100.000   23.31   107.000   22.00   100.000   23.30   100.	7 7	210.87	23.90	186.97	33					
	7 ×	209.26	22.01	187.25	21.31	107.78	22,24	188.03	23.36	187.5
Red		206.96	20.11	186.85	19 2	107.80	21.30	187.96	21.99	187.27
Red   221,00		206.06	19.20	186.86	1831	107.74	19.22	187.74	19.93	187.03
Californ		211.84	24.77	187.07	23.88	187 98	18.28	187.78	19.25	186.81
Red   210.00   25.40   107.61   24.55   108.00   24.15   108.00   24.15   108.00   24.15   108.00   24.15   108.00   24.15   108.00   24.25   108.00   24.25   108.00   24.25   108.00   28.50   108.00   28.50   108.00   28.50   108.00   28.50   108.00   28.50   108.00   28.50   108.00   28.50   108.00   28.50   108.00   28.50   108.00   28.50   108.00   28.50   108.00   28.50   108.00   28.50   108.00   28.50   108.00   28.50   108.00   28.50   108.00   28.50   28.50   108.00   28.50   108.00   28.50   108.00   28.50   108.00   28.50   108.00   28.50   108.00   28.50   108.00   28.50   108.00   28.50   108.00   28.50   108.00   28.50   108.00   28.50   108.00   28.50   108.00   28.50   108.00   28.50   108.00   108.00   28.50   108.00   108.00   108.00   28.50   108.00   108		212.18	24.73	187.45	23.82		23.74	188.10	24.31	187.53
Red 21436 2266 1974 186.52 266 1974 22.21 186.52 26.22 187.72 22.22 188.54 20.29 216.00 24.22 191.69 24.73 186.52 24.78 187.79 22.22 21.60 24.22 191.69 24.73 186.52 24.78 187.79 22.22 21.60 24.22 191.69 24.73 186.50 24.79 186.50 24.22 191.69 24.73 186.50 24.79 186.		213.04	25.43	187.61	24.55	188.40	23.91	188.27	24.56	187.62
Read 200.00 2.00.00 187.04 28.51 186.02 20.00 187.74 22.52 186.77 20.00 187.84 21.00 187.84 22.52 186.77 20.00 187.84 22.52 186.00 20.00.78 19.07 189.71 20.00 189.14 19.07 189.71 18.60 20.00.78 19.07 189.71 18.60 20.00.78 19.07 189.71 18.60 20.00.78 19.07 189.71 18.60 20.00.78 19.07 189.71 18.60 20.00.78 19.07 189.71 18.60 20.00.78 19.07 189.71 18.60 20.00 18.60 20.00 19.00 1		210.98	24.10	186.88	23.21	187.77	3 2	188.51	25.32	187.72
Red		20.50	3 2	187.84	28.51	186.02	3 5	187.73	23,92	187.06
Rado 21600 23.2 191.50 24.71 198.60 24.72 198.60 24.74 198.60 21607 24.94 191.32 24.52 192.52 24.74 198.67 191.37 192.52 24.74 198.67 191.37 192.52 24.75 198.77 192.52 24.75 198.77 192.52 24.75 198.77 198.		243.56	22.86	186.12	21.76	187.22	2 10	188.71	26.51	188,02
## 24.22		213.08	25.70	187.96	24.78		2 2	187.14	22.52	186.46
4-100         24,94         191;13         24,02         192,03         24,02         192,03         24,03         192,03         24,03         192,03         24,03         192,03         24,03         192,03         24,03         192,03         24,03         192,03         192,03         24,03         192,03		216.00	24.32	191.68	23.37	3	24./0	188.88	25.47	
18.07   18.0		210.07	24.94	191.13	24.02		3	192.58	24.09	188.19
100   100		208.78	19.07	189.71	18.53	13 E	23.42			186.19
16.86   18.86   18.87   18.7		200.54	21.20	187.74		197.08 197.08	23.42 24.08	191.99	24.74	188.19 191.91 191.33
13.74   186.97   12.57   186.14   12.65   180.05   187.73   167.73   167.74   186.97   12.57   186.14   12.65   180.05   130.41   14.75   187.75   188.75   187.75		74	16.86		20.30	192.05 190.25	23.42 24.08 18.21	191.99 190.57	24.74 18.75	186.19 191.91 191.33 190.03
14.02   14.02   187.26   13.11   168.17   13.37   17.06   182.06   13.41		3 2	13.74	186.88	20.30 15.97	192.06 190.26	23.42 24.08 18.21 20.75	191.99 190.57 188.19	24.74 18.75 21.38	188.19 191.91 191.33 190.03
NM N		201.28	14.02	186.88	20.30 15.97 12.67	192.05 190.25 188.64 187.77	23.42 24.08 18.21 20.75 16.01	191.99 190.57 188.19 187.73	24.74 18.75 21.38 16.74	188.19 191.91 191.33 190.03 187.56
18			Z	186.88 186.97 187.26	20.30 15.97 12.67	192.05 190.25 188.64 187.77	23.42 24.08 18.21 20.75 16.01	191,99 190.57 186.19 187.73 188.06	24.74 18.75 21.36 16.74 13.41	188.19 191.91 191.33 190.03 187.56 187.30
198.44		216.69	29.40	186.88 186.97 187.26	20.30 15.97 12.67 13.11	192.05 190.25 190.25 188.64 187.77 186.14	23.42 24.08 18.21 20.75 16.01 12.66 13.37	191.99 190.57 188.19 187.73 188.06 187.81	24.74 18.75 21.38 16.74 13.41	188.19 191.91 191.33 190.03 187.56 187.50 187.50
1-1		14.68	11.12	186.88 186.97 187.26 NM 187.29	20.30 15.87 12.67 13.11 NM	192.05 190.25 188.64 187.77 188.14 188.17	23.42 24.08 18.21 20.75 18.01 12.86 13.37	191.99 190.57 186.19 187.73 186.06 187.91	24.74 18.75 21.38 16.74 13.41 14.02	188.19 191.91 191.33 190.03 187.56 187.00 187.20
18		13.03	25.75	186.86 186.97 187.26 NM 187.29	20.30 15.87 12.67 13.11 NM 28.46	192.05 190.26 186.64 187.77 186.14 186.17 NM 186.23	23.42 24.08 18.21 20.75 18.01 12.66 13.37 NM 28.38	191.99 190.57 186.19 187.73 186.06 187.81 NM 188.31	24.74 18.75 21.38 16.74 13.41 14.02 NM	188.19 191.91 191.33 190.03 187.56 187.00 187.20 187.20
198 21277 22.46 190.31 21.88 190.89 21.82 191.84 24.69 197.87 25.33 198.80 22.46 188.50 23.45 184.82 24.65 189.85 22.45 189.85 23.21 188.50 23.21 188.50 24.82 189.22 211.89 23.21 188.60 22.47 189.42 22.11 189.65 24.80 22.21 189.28 20.50 14.10 191.40 13.59 191.22 22.11 189.78 22.45 23.20 20.50 14.10 191.40 13.59 191.22 22.11 189.78 22.45 23.25 20.50 14.10 191.40 13.59 191.22 22.11 189.78 22.45 23.25 189.28 20.27 189.22 22.11 189.78 22.45 23.20 20.21 189.84 19.22 22.11 189.23 23.00 17.21 20.05 20.21 189.84 19.22 190.13 19.22 190.13 19.22 190.13 20.31 19.22 190.13 19.22 190.13 19.22 190.13 19.22 190.13 19.22 190.13 19.22 190.13 19.22 190.13 19.22 190.13 19.22 190.13 19.22 190.13 19.22 190.13 19.22 190.13 19.22 190.13	:	12.56	Z	186.88 186.97 187.26 NM 187.29 188.32	20.30 15.87 12.67 13.11 NM 28.46 7.67	192.05 190.25 188.64 187.77 188.14 188.17 NM 188.23 191.77	23.42 24.08 18.21 20.75 18.01 12.66 13.37 NM 28.38	191.99 190.57 188.19 187.73 188.06 187.91 NM 188.31 187.25	24,74 18,75 21,38 16,74 13,41 14,02 NM 29,03	188.19 191.91 191.33 190.03 187.56 187.00 187.20 187.20 187.26
198		12.77	22.46	186.88 186.97 187.26 NM 187.29 188.32 188.32	20.30 15.87 12.67 13.11 NM 28.46 7.67 24.82	192.06 190.26 188.64 187.77 188.14 188.17 NM 188.23 191.77	23.42 24.08 18.21 20.75 18.01 12.65 13.37 NM 28.38 12.19	191.99 190.57 188.19 187.73 188.06 187.91 188.31 188.31 187.25	24,74 18,75 21,38 16,74 13,41 14,02 NM 29,03 13,44	184.19 191.91 191.33 190.03 187.56 187.00 187.28 NM 187.66 NM
200 214,10 25,80 188,50 24,51 NA 25,08 NA 25,79 21 211,89 23,21 188,68 22,47 189,42 24,45 189,65 24,80 21 213,19 20,90 192,29 20,97 192,22 27,11 189,78 22,45 22 213,19 20,90 192,29 20,97 192,22 27,11 189,78 22,45 23 205,50 14,10 191,40 13,59 191,91 14,15 191,08 27,75 24 211,76 NM			} i	186,86 186,97 187,26 187,26 NM 187,29 188,32 187,28 NM	20.30 15.87 12.67 13.11 NM 28.48 7.67 24.82	192.06 190.26 180.26 180.64 187.77 186.14 186.17 NM 188.23 191.77 188.21	23.42 24.08 18.21 20.75 18.01 12.86 13.37 NM 28.38 12.19 24.81	191.99 190.57 188.19 187.73 188.06 187.81 NM 188.31 187.25 188.22	24,74 18,75 21,38 16,74 13,41 14,02 NM 28,03 13,44 28,03	188.19 191.91 191.33 190.03 187.56 187.00 187.28 NM 187.66
21 211.89 23.21 188.68 22.47 189.28 24.45 189.68 22.75 213.19 20.90 192.29 20.97 192.22 22.11 189.78 22.45 23.20 20.50 14.10 191.40 13.59 191.91 14.15 191.08 22.75 211.54 23.39 188.15 23.02 188.52 22.51 189.78 22.45 211.85 NM		_	2	186,88 186,87 187,26 NM 187,29 188,32 187,28 187,28 NM 180,31	20.30 15.87 12.67 13.11 NM 28.46 7.67 24.82 24.72	192.05 190.25 190.25 188.64 187.77 188.14 188.17 NM 188.23 191.77 188.21 190.29	23.42 24.08 18.21 20.75 16.01 12.86 13.37 NM 28.38 12.19 24.89	191.99 190.57 188.19 187.73 188.06 187.81 NM 188.31 187.25 188.32 188.22 187.87	24.74 18.75 21.38 16.74 13.41 14.02 NM 28.03 13.44 25.43 25.43	188.19 191.91 191.33 190.03 187.56 187.00 187.20 187.26 NM 187.66 NM
22         213.19         20.80         192.29         22.47         189.42         22.11         189.78         22.45           23         205.50         14.10         191.40         13.59         192.22         22.11         189.78         22.45           23         205.50         14.10         191.40         13.59         191.91         14.15         191.08         22.45           24         207.55         14.10         191.40         13.59         191.91         14.15         191.35         14.47           24         211.54         23.39         188.15         23.02         188.52         22.51         188.93         23.00           77         210.05         20.21         188.84         19.92         190.13         19.92         190.13         23.00           9         205.78         14.27         192.51         13.36         193.42         14.40         192.38         15.41         NM         NM           210.55         22.60         187.96         21.78         183.72         190.12         22.05         188.50         22.82           21.489         NM         NM         NM         NM         NM         NM         NM			23 .54 28 .54	186,86 186,97 187,26 NM 187,29 188,32 187,29 188,32 187,28 NM 190,31	20,30 15.87 12.67 13.11 NM 28.46 7.67 24.82 24.72 24.72 24.72 24.72	192.05 190.25 188.64 187.77 188.14 188.17 NM 188.23 191.77 188.21 187.84 190.89	23.42 24.08 18.21 20.75 16.01 12.86 13.37 NM 28.38 12.19 24.88 24.88 24.88	191.99 190.57 188.19 187.73 188.06 187.81 NM 188.31 187.25 188.22 187.87	24.74 18.75 21.38 16.74 13.41 14.02 NM 28.03 13.44 25.43 25.43 25.33	184.19 191.91 191.33 190.03 187.56 187.00 187.20 187.26 NM 187.60 187.50 187.50
205.50 20		14.10	25.60 25.60	186,88 186,87 187,26 NM 187,29 188,32 187,29 188,32 189,31 NM 180,31	20,30 15.87 12.67 13.11 NM 28.46 7.67 24.82 24.72 21.88 24.51	192.05 190.26 188.64 187.77 188.14 188.17 NM 188.23 191.77 188.21 190.89 NA	23.42 24.08 18.21 20.75 18.01 12.86 13.37 NM 28.38 12.19 24.81 24.81 24.86 24.45	191.99 190.57 188.19 187.73 188.06 187.81 NM 188.31 187.25 188.22 187.27 181.15	24,74 18,75 21,38 16,74 13,41 14,02 NM 29,03 13,44 25,43 25,43 25,33 21,90 26,78	188, 19 191,91 191,33 190,03 187,56 187,20 187,20 187,60 187,60 187,60 187,60 187,63
211.76 NM		14.10	25.60 23.21	186,88 186,87 187,26 NM 187,25 188,32 187,28 NM 190,31 NA 188,50 188,50	20,30 15.87 12.67 13.11 NM 28.46 7.67 24.82 24.72 21.88 24.51 24.82	192.06 190.26 190.26 188.64 187.77 188.14 188.17 NM 188.23 191.77 188.21 187.84 190.89 NA	23.42 24.08 18.21 20.75 16.01 12.66 13.37 NM 28.38 12.19 24.81 24.89 24.80 25.06 24.60 24.60 24.60 24.60	191.99 190.57 188.19 187.73 188.06 187.81 NM 188.31 187.25 188.22 187.25 181.15 NA	24,74 18,75 21,38 16,74 13,41 14,02 NM 29,03 13,44 25,43 25,43 25,43 25,43 25,43 25,23 21,90 26,79	188, 19 191, 91 191, 33 190, 03 187, 26 187, 20 187, 20 187, 20 187, 26 NM 187, 86
56         211.54         23.39         188.15         23.02         188.52         22.51         188.93         23.00           86         211.85         NM		85.50 	25.46 25.60 23.21 20.90	186,88 186,87 187,26 NM 187,25 188,32 187,28 NM 190,31 NA 188,50 188,68 192,29	20.30 15.97 12.67 13.11 NM 28.49 7.67 24.82 24.82 24.82 24.82 24.82 24.82 24.82 24.82	192.06 190.26 188.64 187.77 186.14 186.17 NM 186.23 191.77 168.21 167.84 190.89 NA 189.28	23.42 24.08 18.21 20.75 16.01 12.66 13.37 NM 28.38 12.19 24.81 24.81 24.80 24.81 24.80 24.81 24.80 24.81 24.80 24.81 24.80 24.81 25.06	191.99 190.57 188.19 187.73 188.06 187.81 NM 188.31 187.25 188.22 187.25 181.15 NA	24,74 18,75 21,38 16,74 13,41 14,02 NM 28,03 13,44 28,03 13,44 25,43 25,43 25,43 25,23 25,23 21,80 24,80 24,80	188, 19 191, 91 191, 33 190, 03 187, 36 187, 30 187, 26 187, 20 187, 28 NM 187, 26 NM 188, 30
211.05		14.10 11.89 13.19 85.50	25.46 25.60 23.21 20.90 14.10	186,86 186,97 187,26 NM 187,29 188,32 187,28 NM 180,31 NM 180,31 NA 180,31 NA 180,31 NA 180,31 NA 180,31 NA 180,31 NA 180,32	20.30 15.87 12.67 13.11 NM 28.46 7.67 24.82 24.72 21.88 24.72 21.88 24.72 21.88 24.72 21.88 24.72 21.88 24.72 21.88 24.61 24.61 24.62 24.63 25.63 26.6	192.06 190.26 190.26 188.64 187.77 188.14 188.23 191.77 188.21 188.21 189.26 189.28 189.28	23.42 24.08 18.21 20.75 18.01 12.86 13.37 NM 28.38 12.19 24.81 24.89 21.62 24.89 21.62 24.65 24.45 24.45 24.45	191.99 190.57 188.19 187.73 188.06 187.91 NM 188.31 187.25 188.22 188.22 187.87 191.15 NA	24,74 18,75 21,36 16,74 13,41 14,02 NM 29,03 13,44 25,43 25,43 25,43 25,23 21,90 25,79 24,80 22,45	184.19 191.91 191.93 190.03 187.56 187.06 187.66 NM 187.66 NM 187.60 187.78 189.44
NM		14.10 11.89 13.19 1.76	25.60 25.80 23.21 20.90 14.10	186,86 186,97 187,26 NM 187,29 188,32 187,28 187,28 187,28 187,28 187,28 187,28 188,32 188,31 NA 188,50 188,50 188,50 188,50 188,50	20,30 15.87 12.67 13.11 NM 28.48 7.67 24.82 24.72 21.88 24.72 21.88 24.72 21.88 24.51 24.51 24.51 24.51 24.51	192.05 190.25 190.25 188.64 187.77 188.17 188.17 NM 188.23 191.77 188.21 189.21 189.28 NA 189.28	23.42 24.08 18.21 20.75 16.01 12.86 13.37 NM 28.38 12.19 24.89 24.89 24.89 24.89 24.89 24.89 24.89 24.89 24.89 24.89 24.89 24.98	191.99 190.57 188.19 187.73 188.06 187.81 NM 188.31 187.25 188.22 187.27 181.15 NA 183.65 189.78	24,74 18,75 21,38 16,74 13,41 14,02 NM 28,03 13,44 25,43 25,43 25,33 21,80 25,79 24,80 24,80 24,80 27,45	186.19 191.91 191.33 190.03 187.56 187.30 187.26 187.26 NM 187.56 NM 187.60 187.23 190.87 NA 189.30
210.05 20.21 188.84 19.92 190.13 19.92 190.13 20.31 18.85 207.89 15.49 192.40 14.51 183.38 15.41 NM 16.51 183.38 19.92 190.13 20.31 19.95 21.78 183.38 15.41 NM 16.51 190.13 20.31 19.95 21.78 188.77 22.05 188.80 15.47 192.38 15.47 192.38 15.47 192.38 15.47 192.38 15.47 192.38 15.47 192.38 15.47 192.38 15.47 192.38 19.92 190.12 24.35 188.50 22.82 19.85 1		14,10 11,89 13,19 15,50 1,76	25.46 25.50 23.21 20.90 14.10 NM	186,86 186,97 187,26 NM 187,29 188,32 187,29 188,32 187,28 NM 180,31 NA 180,31 NA 180,31 NA 180,31 NA	20,30 15.87 12.67 13.11 NM 28.46 7.67 24.82 24.72 24.72 24.72 24.72 24.72 24.72 24.72 24.72 24.72 24.72 24.72 24.72 24.72 24.72 25.46 26.51 26.5	192.06 190.26 188.64 187.77 188.14 188.17 188.23 191.77 188.21 188.21 187.84 190.89 NA 189.28 189.42 191.27	23.42 24.08 18.21 20.75 18.01 12.86 13.37 NM 28.38 12.19 24.81 24.81 24.81 24.83 24.85 24.85 24.85 24.85 24.85 24.85 24.85 24.45	191.99 190.57 188.19 187.73 188.06 187.81 NM 188.31 187.25 188.22 187.27 181.15 NA 189.65 189.78 181.08	24,74 18,75 21,38 16,74 13,41 14,02 NM 29,03 13,44 25,43 25,43 25,43 25,78 24,80 24,	186.19 191.91 191.33 190.03 187.56 187.20 187.28 NM 187.66 NM 187.66 NM 187.66 NM 187.66 NM 187.66
8     207.89     15.49     192.40     14.51     19.013     19.82     19.013     20.31       9     206.78     14.27     192.51     13.36     193.42     14.40     192.38     15.41     NM     16.51       0     210.55     22.60     187.96     21.78     188.77     22.05     188.50     22.82       98     —     NM     <		14,10 11,89 13,19 15,50 11,76	25.46 25.60 23.21 20.90 14.10 NM 23.39	196,86 196,97 187,28 NM 187,29 188,32 187,28 NM 190,31 NA 188,50 188,60 188,60 188,60 192,29 191,40 NM	20.30 15.87 12.67 13.11 NM 28.48 7.67 24.82 24.72 24.82 24.72 24.82 24.72 24.82 24.72 24.82 24.73 24.73 24.83 13.69 NM	192.06 190.26 188.64 187.77 186.14 188.17 NM 188.23 191.77 168.21 169.86 NA 189.28 189.42 192.22 191.91 NM	23.42 24.08 18.21 20.75 16.01 12.66 13.37 NM 26.38 12.19 24.81 24.88 21.62 25.06 24.63 21.62 25.06 24.71 27.11	191.99 190.57 188.19 187.73 188.06 187.81 NM 188.31 187.25 188.22 187.87 181.15 NA 189.55 189.78 181.08	24,74 18,75 21,38 16,74 13,41 14,02 NM 29,03 13,44 25,43 25,43 25,43 25,43 25,43 25,43 25,43 25,43 25,43 25,43 25,43 25,43 25,43 25,43 26,43 27,44 28,03 21,90 22,90 24,90 24,90 24,90 24,90 25,76 26,76 27,	186.19 191.91 191.33 190.03 187.56 187.00 187.28 NM 187.66 NM 187.67 NM 187.69 187.69 NM 187.60 187.23
9 206.78 14.27 192.51 13.36 193.36 15.41 NM 16.51 12.05 22.60 187.95 21.78 188.77 22.06 192.38 15.47 14.40 192.38 15.47 12.409 24.25 188.84 23.97 190.12 24.35 188.50 22.82 14.40 192.38 15.47 192.38 15.47 192.38 19.74 22.62 14.40 192.38 19.74 22.82 14.40 192.38 188.50 192.38 19.74 22.82 14.40 192.38 188.50 192.38 18.74 22.82 14.40 192.38 188.50 192.38 18.74 22.82 14.40 192.38 188.50 192.38 188.50 192.38 188.50 192.38 19		14,10 11,89 13,19 15,50 1,76 1,186	25.46 25.60 23.21 20.90 14.10 NM 23.39 NM 20.21	186,86 186,97 187,28 NM 187,29 188,32 187,28 NM 180,31 NA 180,31 NA 180,31 NA 180,31 NM 180,31 NM 180,31 NM 180,15 NM	20.30 15.87 12.67 13.11 NM 28.46 7.67 24.82 24.72 24.72 24.72 24.72 24.72 24.72 24.72 24.72 24.72 24.72 24.72 24.73 24.73 24.51 24.5	192.06 190.26 190.26 188.64 187.77 188.14 188.23 191.77 188.21 189.28 190.89 NA 189.28 189.28 189.28 189.28 189.28 189.28	23.42 24.08 18.21 20.75 18.01 12.86 13.37 NM 28.38 12.19 24.81 24.89 21.62 25.08 24.65 24.46 24.46 24.	191.99 190.57 188.19 187.73 188.06 187.91 NM 188.31 187.25 188.22 187.25 188.22 187.87 181.15 NA 189.65 189.78 191.08 191.08 191.35 NM	24,74 18,75 21,36 16,74 13,41 14,02 NM 29,03 13,44 25,43 25,43 25,33 21,90 25,79 24,80 25,79 24,80 27,	186.19 191.91 191.33 190.03 187.56 187.00 187.28 NM 187.66 NM 187.60 187.60 187.00 187.00 NM 187.60 NM 187.60 NM 187.60
0     210.55     22.60     187.86     183.42     14.40     192.38     15.47       1     214.09     24.25     188.84     23.97     190.12     24.35     188.50     22.82       98     —     NM     <		14,10 11.89 13.19 13.19 1.76 1.76 1.78	25.46 25.60 23.21 20.90 14.10 NM 23.39 NM 23.39 NM 23.39	186,86 186,97 187,26 NM 187,29 188,32 187,29 188,32 187,28 187,29 188,31 NM 180,31 NA 188,50 191,40 NM 188,15	20.30 15.87 12.67 13.11 NM 28.48 7.67 24.82 24.72 21.88 24.72 21.88 24.72 21.88 24.72 21.88 24.51 24.82 24.82 24.82 13.59 NM	192.05 190.25 190.25 190.25 188.64 187.77 188.14 188.23 191.77 188.21 187.84 180.89 NA 189.28 189.28 189.28 189.28 189.28 189.28 189.28 189.28	23.42 24.08 18.21 20.75 16.01 12.86 13.37 NM 28.38 12.19 24.88 24.88 24.88 24.88 24.86 24.15 24.15 24.15 24.15 24.15 24.15 24.15 24.15 24.15 24.15 24.15	191.99 190.57 188.19 187.73 188.06 187.81 NM 188.31 187.25 188.22 187.27 181.15 NA 189.78 189.78 189.78	24,74 18,75 21,38 16,74 13,41 14,02 NM 28,03 13,44 25,43 25,43 25,33 21,80 25,79 24,80 25,79 24,80 25,79 24,80 25,79 24,80 25,79 24,80 25,79 24,80 25,79 26,79 27,76 28,79 28,	186.19 191.91 191.33 190.03 187.56 187.30 187.26 NM 187.66 NM 187.60 187.23 190.87 NA 189.30 189.30
1 214.09 24.25 188.84 23.97 190.12 24.35 188.50 22.82 28.9    88		14.10 11.89 13.19 1.76 1.76 1.76 1.78	25.46 25.60 23.21 20.90 14.10 NM 23.39 23.39 NM 23.39 16.21	186,88 186,97 187,26 NW 187,29 188,32 187,29 187,28 NW 180,31 NA 180,50 188,50 188,50 188,50 188,68 192,29 191,40 NM	20.30 15.87 12.67 13.11 NM 28.46 7.67 24.82 24.72 24.72 24.72 24.72 24.72 24.82 24.82 24.82 24.82 24.82 24.83 14.83 82 83 84 84 85 86 87 87 87 87 87 87 87 87 87 87 87 87 87	192.06 190.26 190.26 188.64 187.77 188.14 188.23 191.77 188.23 191.77 188.21 187.84 190.89 NA 189.28 189.42 192.22 191.27 191.91 NM	23.42 24.08 18.21 20.75 16.01 12.86 13.37 NM 28.38 12.19 24.81 24.81 24.81 24.83 24.63 26.63 26.	191.99 190.57 188.19 187.73 188.06 187.81 NM 188.31 187.25 188.22 187.87 191.15 NA 189.65 189.78 191.08	24,74 18,75 21,38 16,74 13,41 14,02 NM 28,03 13,44 25,43 25,43 25,43 27,59 24,80 26,79 24,80 27,75 27,75 27,75 27,75 NM 28,00 NM 28,00	186.19 191.91 191.33 190.03 187.26 187.20 187.28 NM 187.66 NM 187.66 NM 187.63 NM 187.63 NM 187.63 NM 187.63 NM 188.64 NM 189.30 189.44 191.03 NM 188.54 NM 188.54 NM
98 - NM		14.10 11.89 13.19 13.19 5.50 1.76 1.76 1.154 1.185 1.158 1.158	25.46 25.50 23.21 20.90 14.10 14.10 NM 23.39 NM 20.21 115.49	186,88 186,97 187,28 NM 187,28 188,32 187,28 187,28 NM 190,31 NA 188,50 188,50 188,50 188,68 192,29 191,40 NM 188,68 192,29 NM	20.30 15.97 12.67 13.11 NM 28.49 7.67 24.82 24.82 24.72 21.88 24.72 21.88 24.72 21.88 24.72 21.88 24.72 21.88 24.72 21.88 24.51 13.69 NM 23.02 NM 23.02 NM 23.02 NM	192.06 190.26 190.26 188.64 187.77 186.14 186.23 191.77 186.21 187.84 190.89 NA 189.28 189.42 192.22 191.91 NM 188.22 NM	23.42 24.08 18.21 20.75 18.01 12.86 13.37 NM 28.38 12.19 24.81 24.81 24.82 25.06 24.45 27.11 24.83 21.62 25.06 24.45 27.11 27.	191.99 190.57 188.19 187.73 188.06 187.81 NM 188.31 187.25 188.22 188.22 187.87 181.15 NA 189.78 181.08 181.08 181.08		188, 19 191, 91 191, 33 190, 03 187, 26 187, 20 187, 26 187, 26 187, 26 187, 26 187, 26 187, 27 187, 28 187, 28 187, 28 187, 28 187, 28 188, 28 189, 24 190, 24
214.89 NM			25.46 25.50 23.21 20.90 14.10 14.10 NM 23.39 NM 23.39 15.49 15.49 24.26	186,86 186,97 187,28 NW 187,29 188,32 187,28 187,28 187,28 180,31 NA 180,31 NA 180,50 184,68 192,29 191,40 NM 184,68 192,29 191,40 NM	20.30 15.97 12.67 13.11 NM 28.46 7.67 24.82 24.72 24.72 24.82 24.72 24.82 24.72 24.83 13.69 NM 23.02 NM 23.02 NM	192.06 190.26 190.26 188.64 187.77 186.14 186.23 191.77 188.21 188.21 187.84 190.89 NA 189.28 189.42 192.22 191.91 NM 189.33 191.31 NM	23.42 24.08 18.21 20.75 18.01 12.86 13.37 13.37 12.88 12.19 24.81 24.88 21.62 24.86 24.65 24.45	191.99 190.57 188.19 187.73 188.06 187.81 NM 188.31 187.25 188.22 188.27 187.87 181.16 182.78 181.08 181.08 181.35 NM	77 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	186, 19 191, 91 191, 33 190, 03 187, 26 187, 20 187, 26 187, 20 187, 26 187, 26 187, 26 187, 26 187, 26 187, 27 187, 28 188, 30 189, 30 189, 34 191, 03 188, 54 191, 03 188, 54 191, 03 188, 54 191, 03 188, 54 191, 03 188, 54 191, 03 188, 54 191, 03 188, 54
214.88 NM			25.46 25.60 23.21 20.90 14.10 14.10 NM 23.39 NM 20.21 15.49 16.49 14.27 22.60	186,88 186,97 187,28 NM 187,29 188,32 187,28 187,28 180,31 NM 180,31 NA 180,50 184,68 192,29 191,40 NM 188,68 192,29 191,40 NM	20.30 15.87 12.67 13.11 NM 28.46 7.67 24.82 24.72 21.88 24.72 21.88 24.61 24.82 24.81 24.82 24.81 24.82 24.81 24.82 24.81 24.82 24.81 24.82 24.81 24.82 24.81 13.59 NM NM NM NM NM NM NM NM NM NM NM NM NM	192.05 190.25 190.25 190.25 190.25 190.17 188.14 188.23 191.77 188.21 189.28 189.28 189.42 190.89 NM 189.28 189.42 190.22 191.91 NM 189.32 191.91 NM	23.42 24.08 18.21 20.75 16.01 12.86 13.37 13.37 12.88 12.19 24.88 24.88 24.88 24.88 24.11 22.11	191.99 190.57 188.19 187.73 188.06 187.81 NM 188.31 187.25 188.22 187.87 191.15 NA 189.78 191.08 191.35 NM 188.55 NM	1.74 1.75 1.75 1.77 1.77 1.77 1.77 1.77 1.77	186,19 191,91 191,33 190,03 187,56 187,06 187,06 187,66 NM 187,66 NM 187,60 187,60 187,80 188,54 NM
214.58 NM			25.46 25.60 23.21 20.90 14.10 NM 20.39 20.39 20.21 15.49 14.27 22.80 24.26	186,88 186,97 187,28 NM 187,29 188,32 187,28 187,28 187,28 187,28 180,31 NA 180,31 NA 180,50 180,68 192,29 191,40 NM 180,15 NM 180,15 NM	20.30 15.87 12.67 13.11 NM 28.48 7.67 24.82 24.72 21.88 24.61 24.82 21.88 24.51 24.82 21.89 24.61 24.81 24.82 13.59 NM 19.62 14.51 13.36 21.78	192.05 190.25 190.25 190.25 188.64 187.77 188.14 188.23 191.77 188.21 189.28 189.42 180.28 189.42 190.28 189.42 190.28 189.42 190.28	23.42 24.08 18.21 20.75 16.01 12.86 13.37 NM 28.38 12.18 24.88 24.88 24.88 24.86 24.45 22.11 14.15 NM 19.92 15.41	191.99 190.57 188.19 187.73 188.06 187.81 NM 188.31 187.25 188.22 187.27 181.15 NA 183.65 189.78 181.06 191.35 NM 188.63 NM	1.74 1.75 1.75 1.75 1.75 1.75 1.75 1.75 1.75	186.19 191.91 191.93 190.03 187.56 187.00 187.20 187.56 NM 187.60 187.60 187.60 187.60 187.60 NA 189.60 187.60 187.60
214.58 NM	•		25.46 22.56 23.21 20.90 14.10 14.10 14.10 23.39 14.21 22.22 24.25 14.27 24.25	186,86 186,97 187,26 NM 187,29 188,32 187,29 187,29 187,29 180,31 NA 188,50 188,50 188,68 192,29 191,40 NM 188,15 NM 188,15 NM	20.30 15.97 12.57 13.11 NM 28.46 7.57 24.82 24.72 24.82 24.51 24.82 22.47 20.97 13.59 NM 23.02 NM 23.02 NM 23.02 NM 23.02 NM	192.05 190.25 190.25 188.64 187.77 188.14 188.23 191.77 188.21 189.21 189.28 189.42 192.22 191.22 191.22 191.22 192.22 191.22 193.42 190.13	23.42 24.08 18.21 20.75 16.01 12.86 13.37 NM 28.38 24.81 24.88 24.68 24.45 22.11 22.11 24.83 24.45 24.	191.99 190.57 188.19 187.73 188.06 187.81 NM 188.33 187.25 188.22 187.27 191.15 NA 189.65 189.78 191.08 191.35 NM 188.53 NM	174 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	186.19 191.91 191.33 190.03 187.26 187.20 187.20 187.26 187.20 187.23 180.87 189.30 189.44 190.44 190.44 191.03 NM 189.30 189.30 189.44 191.03 NM 189.30 189.30 189.44 191.03 NM
212.74 24.48 188.26 24.16 188.58 23.88 186.86 24.22 211.04 23.80 187.24 23.35 187.69 23.15 187.89 23.86 24.22 212.19 25.25 186.94 24.63 187.65 NM	0.9 - 0.9 - 0.9 - 2.5		25.46 25.50 23.21 20.90 14.10 14.10 14.10 23.39 15.21 20.21 15.49 115.49 14.27 14.27 14.27 14.27 14.27 14.28 14.28	186,88 186,97 187,28 NM 187,22 188,32 187,28 NM 190,31 NA 188,50 188,50 188,68 192,29 191,40 NM 188,68 192,29 191,40 NM 188,68 192,29 191,40 NM	20.30 15.97 12.67 13.11 NM 28.49 7.67 24.82 24.72 24.82 24.72 24.82 24.81 13.69 13.59 NM 23.02 NM 23.02 NM 19.02 14.51 13.36 13.36 NM 23.02 NM 23.02 NM 24.02 NM 25.02 NM 26 NM 26.02 NM 26.02 NM 26.02 NM 26.02 NM 26.02 NM 26.02 NM 26.02 N	192.05 190.25 190.25 188.64 187.77 188.14 188.23 191.77 188.21 189.28 189.28 189.42 192.22 191.91 NM 189.28 189.42 192.22 191.91 NM 189.28 189.42 192.22 191.91 NM 189.28	23.42 24.08 18.21 20.75 18.01 12.86 13.37 13.37 12.48 24.88 24.88 24.45	191.99 190.57 188.19 187.73 188.06 187.81 NM 188.31 187.25 188.22 187.87 181.15 NA 189.78 181.06 189.78 181.06 189.78	174 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	186.19 191.33 190.03 187.26 187.30 187.28 NM 187.86 NM 187.87 NA 189.30 189.44 190.44 191.03 180.87 NM 189.30 189.44 191.03 NM 189.30 189.34 191.03 NM 189.34 191.03 NM 189.34 NM
212.74 24.48 188.26 24.18 188.58 23.88 188.86 24.22 2110.09 25.25 186.94 24.63 187.65 24.76 NM	V # - 2 m 4 m 4 m		25.46 25.50 23.21 20.90 14.10 14.10 NW 23.39 NW 20.21 15.49 115.49 115.49 14.27 12.280 24.25	186,86 186,97 187,26 NM 187,29 188,32 187,28 187,28 187,28 187,28 187,28 187,28 187,28 187,28 187,28 187,28 188,50 188,68 192,29 191,40 NM 188,15	20.30 15.87 12.67 13.11 NM 28.46 7.67 24.82 24.72 24.82 24.72 24.82 24.81 24.82 24.81 24.82 24.81 24.82 24.81 24.82 24.81 13.59 NM NM NM NM NM NM NM NM NM NM NM NM NM	192.05 190.25 190.25 190.25 188.64 187.77 188.14 188.23 191.77 188.21 189.28 189.42 190.89 NM 189.42 192.22 192.22 191.91 NM 189.42 192.22 192.22 193.23 183.42 184.57 184.57	23.42 24.08 18.21 20.75 16.01 12.86 13.37 13.37 12.88 12.19 24.88 24.88 24.88 24.88 24.11 22.11 23.11 24.11	191.99 190.57 188.19 187.73 188.06 187.81 NM 188.31 187.25 188.22 187.87 191.15 NA 189.78 191.35 NM 189.78 191.35 NM 189.78 191.35 NM	1.136 8.76 8.77 8.100 8.100 1.44 1.43 1.43 1.44 1.43 1.43 1.44 1.43 1.43	186.19 191.91 191.33 190.03 187.26 187.20 187.28 NM 187.66 NM 187.60 187.00 187.23 190.87 NA 189.30 189.44 191.03 NM 188.54 NM 188.54 NM 188.54 NM 188.54 NM
212.74 24.48 188.26 24.18 188.58 23.88 188.86 24.22 2110.0 23.80 187.24 23.35 187.69 23.15 187.89 23.66 24.22 2112.19 25.25 186.94 24.63 187.65 NM NM NM NM NM NM NM NM NM	0.00.00.00.00.00.00.00.00.00.00.00.00.0		25.46 25.60 23.21 20.90 14.10 NM 23.39 24.20 25.21 26.21 27.39 27.39 28.39 29.	186,86 186,97 187,26 NM 187,29 188,32 187,28 187,28 188,32 187,28 188,50 188,68 190,31 NA 188,50 188,68 192,29 191,40 NM 188,84 192,40 188,15 NM 188,84 189,24 NM 188,84 NM NM NM NM NM	20.30 15.87 12.67 13.11 NM 28.48 7.67 24.82 24.72 21.88 24.72 21.88 24.61 24.61 24.61 24.61 24.61 24.61 24.61 24.61 24.61 14.61 13.59 NM 18.62 NM 18.62 NM NM NM NM NM NM NM NM NM NM NM NM NM	192.05 190.25 190.25 190.25 188.64 187.77 188.14 188.23 191.77 188.21 189.28 189.28 189.42 190.89 NM 189.22 191.91 NM 189.33 191.91 NM 189.34 190.13 193.36 193.36 193.36 193.42 193.36 193.42	23.42 24.08 18.21 20.75 16.01 12.86 13.37 14.18 24.88 24.88 24.88 24.88 24.45 22.11 14.15 14.15 14.16	191.99 190.57 188.19 187.73 188.06 187.81 NM 188.31 187.25 188.22 187.27 181.15 NA 183.65 189.78 181.08 191.35 NM 188.93 NM 188.93 NM 188.93 NM 188.93 NM 189.13 NM	1.136 8.76 8.77 8.8.74 1.002 1.003 1	186, 19 191, 91 191, 91 191, 33 190, 03 187, 56 187, 56 187, 56 187, 66 187, 66 187, 67 187, 68 187, 69 187, 6
211.04 23.80 187.24 23.35 188.58 23.88 186.86 24.22 211.09 NM	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2		25.46 25.50 25.21 20.90 14.10 NM 23.39 24.25 115.49 14.27 22.60 24.25 NM NM NM NM NM	186,86 186,97 187,26 NM 187,29 188,32 187,29 187,29 187,29 187,29 180,31 NA 188,50 188,68 192,29 191,40 NM 188,15 NM 188,15 NM 188,15 NM 188,15 NM 188,15 NM 189,24 NM 189,24 NM 189,24 NM 189,24 NM 189,26 NM 189,26 NM 189,26 NM NM NM NM NM NM NM NM NM NM NM NM NM	20.30 15.87 12.67 13.11 NM 28.48 7.67 24.82 24.72 21.88 24.51 24.82 21.88 24.51 24.82 22.47 20.87 13.59 NM 23.02 NM 23.02 NM 19.92 14.51 13.36 21.78 23.97 NM	192.05 190.25 190.25 188.64 187.77 188.14 188.23 191.77 188.21 187.84 190.89 NA 189.28 189.42 190.28 189.42 191.27 191.91 NM 188.52 189.42 191.27 191.91 NM 188.52 NM 189.28 189.42 191.27 191.91 NM 188.52 NM 189.28	23.42 24.08 18.21 20.75 16.01 12.86 13.37 NM 28.38 12.19 24.81 24.81 24.88 21.62 25.08 24.45 27.11 14.15 NM 18.92 15.41 14.40 22.35 NM	191.99 190.57 188.19 187.73 188.06 187.81 NM 188.22 187.25 188.22 187.25 189.22 187.25 189.25 189.15 NM 189.16 189.78 189.78 189.78 NM 189.13 NM 189.13 NM	8.76 8.76 8.77 8.77 8.00 8.00 8.00 8.00 8.00 8.00	188, 19 191, 91 191, 91 191, 33 190, 03 187, 26 187, 20 187, 20 187, 28 187, 26 187, 20 187, 26 187, 20 187, 26 187, 20 187, 26 187, 23 180, 87 180, 8
211.09 NM	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2			186,86 186,97 187,28 NM 187,28 188,32 187,28 187,28 187,28 187,28 187,28 187,28 187,28 188,60	5.587 5.587 5.57 5.57 5.57 5.51 5.51 5.51 5.51 5.5	192.05 190.25 190.25 188.64 187.77 188.14 188.23 191.77 188.21 187.84 190.89 NA 189.28 189.42 192.22 191.91 NM 188.52 NM 189.42 192.22 191.91 NM 188.52 NM 189.42 192.27 193.36 189.47 190.13 183.48 183.42 NM 188.52 NM	23.42 24.08 18.21 20.75 18.01 12.86 13.37 12.88 12.19 24.88 24.88 24.45	191.99 190.57 188.19 187.73 188.06 187.81 NM 188.31 187.25 188.22 187.87 191.15 NA 189.78 181.08 181.08 181.08 181.08 181.08 181.08 181.08 181.08 181.08 181.08	1.1.38 8.76 8.74 1.1.38 8.0.03 1.1.44 1.1.43 1.1.43 1.1.43 1.1.43 1.1.43 1.1.43 1.1.43 1.1.43 1.1.43 1.1.43 1.1.43 1.1.43 1.1.44 1.1.43 1.43	188,19 191,91 191,33 190,03 187,26 187,00 187,26 187,06 187,23 190,17 NM 187,66 187,23 190,17 NA 189,30 189,14 191,03 NM 189,14 NM 189,14 NM 189,14 NM 189,14 NM 189,14 NM 189,14 NM
212.19 25.25 186.94 24.63 187.65 NM NM NM NM	22 22 22 22 22 22 22 22 22 22 22 22 22		- 5 0 7 6 1 1 2 5 6 8 8	28 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	0.30 0.587 2.267 2.11 2.11 2.11 2.11 2.11 2.11 2.11 2.1	192.05 190.25 190.25 188.64 187.77 188.14 188.23 191.77 188.21 187.84 190.89 NA 189.28 189.42 192.22 191.91 NM 189.42 192.22 191.91 NM 189.42 192.22 191.91 NM 189.42 193.42 193.42 193.42 193.42 193.42 193.42 193.42 193.42	23.42 24.08 18.21 20.75 18.01 12.86 13.37 13.37 14.88 24.88 24.88 24.88 24.45	191.99 190.57 188.19 187.73 188.06 187.81 NM 188.31 187.25 188.22 188.27 187.87 191.15 NA 189.65 189.78 191.08 191.35 NM 188.65 NM 188.78 NM 188.93 NM NM NM NM NM NM NM NM NM NM NM NM NM	1.36 8.76 8.76 8.674 8.602 8.602 8.602 8.602 8.602 8.602 8.602 8.602 8.602 8.602 8.602 8.602 8.602 8.602 8.602 8.602 8.603 8.003 8.003 8.003 8.003 8.003 8.003 8.003 8.003 8.003 8.003 8.0	186.19 191.91 191.93 190.03 187.26 187.20 187.28 187.26 187.20 187.23 190.87 NM 187.86 187.00 187.23 190.87 NA 188.30 189.30 189.31 180.87 NM 188.52 NM 188.52 NM
24.63 187.55 NM		888888888888888888888888888888888888888	- 5 6 7 7 6 11 1 2 12 12 13 15 16 16 16 16 16 16 16 16 16 16 16 16 16	2 6 3 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	0.30 0.587 2.67 2.67 2.67 2.68 2.68 2.68 2.69 2.72 2.72 2.72 2.72 2.72 2.72 2.72 2.7	192.05 190.25 190.25 190.25 188.64 187.77 188.14 188.23 191.77 188.21 189.28 189.28 189.42 190.22 191.91 NM 188.52 191.91 NM 189.42 191.91 NM 189.42 192.22 191.91 NM 189.42 190.13 180.13	23.42 24.08 18.21 20.75 16.01 12.86 13.37 NM 28.38 24.89 24.89 24.89 24.89 24.45 22.11 22.11 14.16 NM 19.92 15.41 NM 19.92 15.41 NM 19.92 NM NM NM NM NM NM NM NM NM NM NM NM NM	191.99 190.57 188.19 187.73 188.06 187.81 NM 188.31 187.25 188.22 187.27 181.15 NA 183.65 189.78 181.08 191.35 NM 188.93 NM 18	1.38 8.76 8.74 1.38 8.674 1.43 1.43 1.43 1.44 1.43 1.43 1.44 1.43 1.44 1.43 1.44 1.43 1.44 1.44	186.19 191.91 191.33 190.03 187.26 187.20 187.20 187.23 180.87 NA 189.44 190.47 189.47 190.47 NM 189.47 191.03 NM 189.47 191.03 NM 189.48 191.03 NM 189.52 NM 189.52 NM 189.36 N
		688888888888888888888888888888888888888	- 5 0 7 6 H × 8 C 10 8 8	2 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	0.36 5.597 5.597 5.597 5.597 5.598 5.599 5	192.05 190.25 190.25 188.64 187.77 188.14 188.23 191.77 188.21 189.21 189.28 189.42 192.22 191.22 191.21 NM 180.13 183.36 183.42 183.42 183.42 183.42 184.77 186.77 186.77 186.77 186.77 186.77	23.42 24.08 18.21 20.75 16.01 12.86 13.37 NM 28.38 24.48 24.48 24.48 24.48 24.45 27.11 14.15 22.11 14.15 22.45 24.88 24.45 24.	191.99 190.57 188.19 187.73 188.06 187.81 NM 188.22 187.25 188.22 187.25 189.22 187.25 189.22 187.25 189.23 NM 189.65 189.78 189.13 NM 1	8.76 8.76 8.77 8.77 8.00 8.00 8.00 8.00 8.00 8.00	186.19 191.91 191.33 190.03 187.26 187.30 187.26 187.27 187.28 188.52 188.52 188.52

All elevations are in feet referred to mean sea level (msl).
 NM = not measured.
 NAPL was detected in well R-20: Approximately 1.72 feet of DNAPL in first quarter, approximately 1.80 feet of DNAPL in the second quarter, approximately 0.7 feet of DNAPL in the second quarter, and approximately 0.00 feet of DNAPL in the fourth quarter.
 "- Top of casing elevation was recalculated during the second quarter, after being damaged during demolition of an adjacent building.

APPENDIX E-4
A SUMMARY OF HISTORICAL ANALYTICAL RESULTS



#### GRENADA, MS PLANT QUARTERLY MONITORING FOR RCRA SURFACE IMPOUNDMENT PARAMETER: 2,3,4,6-TETRACHLOROPHENOL (ug/L)

Veli#	3rd Qtr.	4th Qtr.	1 st Qtr.	1992	3rd Qtr.	1st Q(r.	993
	(7/17)	(11/21)	(2/5)	2nd Qtr.	(9/15)	(3/2)	3rd Qtr.
1R <1.0 7 <	, <1.0, <1.0 , <1.0, <1.0 1.0, <1.0 1.0, <1.0 1.0, <1.0 1.0, <1.0 1.0, <1.0 0.0, <1.0	<1.0, <1.0, <1.0 <1.0, <1.0, <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0	<1.0, <1.0, <1.0 <1.0, <1.0, <1.0 <1.0, <1.0 <1.0, <1.0 <1.0, <1.0 <1.0, <1.0 <1.0, <1.0 <1.0, <1.0	<1.0, <1.0, <1.0 <1.0, <1.0, <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0	<1.0, <1.0, <1.0 <1.0, <1.0, <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0	<1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0	(B/17) <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0

Well#	1st Qtr. (3/22, 3/23)	3rd Qtr. (8/30, 8/31)	19: 1st Qtr, (1/25, 1/26)	3rd Qtr. (8/15, 8/16)
R-10 R-1R R-7 R-8 R-8B R-9 R-9C R-9D	<1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0	<1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0	<2.5 <2.5 <2.5 <2.5 <2.5 <2.5 <2.5 <2.5	<2.5 <2.5 <2.5 <2.5 <2.5 <2.5 <2.5 <2.5

	#8000000000000000000000000000000000000	44		<2.5
Weil #	1st Qtr. (2/20,2/21)	96 3rd Qtr. (8/27,8/28)	1st Qtr. (1/21, 1/22)	97 3rd Qtr. (7/29, 7/30)
R-10 R-1R R-7 R-8 R-8B R-9 R-9C	<2.5 <2.5 <2.5 <2.5 <2.5 <2.5 <2.5 <2.5	<2.5 <2.5 <2.5 <2.5 <2.5 <2.5 <2.5 <2.5	<2.0 <2.0 <2.0 <2.0 <2.0 <2.0 <2.0 <2.0	<2.5 <2.5 <2.5 <2.5 <2.5 <2.5 <2.5 <2.5

## TABLE 2-1

Summary of Groundwater Monitoring Wells Koppers Industries, Inc. Grenada Facility Grenada, Mississippi

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## Point of Compliance Wells

R-8 R-88 R-9 R-9C R-9D

P-12

#### PARAMETER: 2,4,6-TRICHLOROPHENOL (ug/L)

Well#	2nd Qtr. (6/26)	1990 3rd Qtr, (9/18)	4th Qtr. (12/11)	1st Qtr. (1/16)	1991 2nd Qir. (4/9)	3rd Qtr.
R-10 R-1R R-7 R-8 R-8B R-9 R-9C	<1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0	1.1, 24.4, 9.33 <1.0,<1.0,<1.0 <1.0, <1.0 <1.0, <1.0 <1.0, <1.0 <1.0, <1.0 44.3, <1.0 <1.0, 21 12.3, <1.0	1.95, 1.62, 1.70 1.10, 1.51, 1.17 1.51, 4.80 4.10, 2.09 2.78, 1.43 2.06, 2.48 5.82 2.53, 2.23	<1.0, <1.0, <1.0 <1.0, <1.0, <1.0 1.07, <1.0 <1.0, <1.0 <1.0, <1.0 <1.0, <1.0 <1.0, <1.0 1.07, <1.0	<1.0, <1.0, <1.0 2.41, 2.21, 3.43 1.41, 2.03 6.12, 4.38 1.08, <1.0 2.27, 2.25 2.22, 1.55 <1.0, <1.0	<pre>&lt;1.0,&lt;1.0,&lt;1.0</pre> <1.0,<1.0,<1.0 <1.0,<1.0,<1.0 <1.0,<1.0 <1.0,<1.0 <1.0,<1.0 <1.0,<1.0 <1.0,<1.0 <1.0,<1.0 <1.0,<1.0 <1.0,<1.0 <1.0,<1.0 <1.0,<1.0

Well#	1st Qtr; (2/5)	3rd Qtr. (9/15)	1st Qtr, (3/2)	1993 3rd Qtr, (8/17)	1st Qtr. (3/22, 3/23)	994 3rd Citr. (8/30, 8/31)	196 1st Qtr. (1/25, 1/26)	5 3rd Qtr. [8/15; 8/16]
R-10 R-1R R-7 R-8 R-8B R-9 R-9C R-9D	<1.0, <1.0, <1.0 <1.0, <1.0, <1.0 <1.0, <1.0 <1.0, <1.0 <1.0, <1.0 <1.0, <1.0 <1.0, <1.0 <1.0, <1.0 <1.0, <1.0	<1.0, <1.0, <1.0 <1.0, <1.0, <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0	<1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0	<1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0	<1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0	<1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0	<2.5	2.5 2.5 2.5 2.5 2.5 2.5 2.5 2.5 2.5 2.5

1st Qtr. Well # (2/20,2/21)	1996 3rd Qtr. (8/27,8/28)	1st Qtr. (1/21, 1/22)	97 3rd Qtr. (7/29, 7/30)
R-10	<2.5 <2.5 <2.5 <2.5 <2.5 <2.5 <2.5	<2.0 <2.0 <2.0 <2.0 <2.0 <2.0 <2.0	<2.0 <2.0 <2.0 <2.0 <2.0 <2.0 <2.0 <2.0

Well#	2nd Qtr.	1990 3rd Otr.	PARA	METER: 2,4-DICHLORO	PHENOL (ug/L)	
R-10 R-1R R-7	( <b>6/26</b> ) <0.50 <0.50	(9/18) <0.50, <0.50, co.50	4th Qtr. (12/11)	1st Qt. (1/15)	1991 2nd Otr.	•••
R-8 R-8B R-9 R-9C R-9D	0.581 1.06 0.668 <0.50 0.571 0.632	<0.50, <0.50, <0.50 <0.50, <0.50 <0.50, <0.50 <0.50, <0.50 <0.50, <0.50 <0.50, <0.50 <0.50, <0.50 <0.50, <0.50 <0.50, <0.50	<0.50, <0.50, <0.50 <0.50, <0.50, <0.50 <0.50, <0.50 <0.50, <0.50 <0.50, <0.50 <0.50, <0.50 <0.50, <0.50 5.46 <0.50, <0.50	<0.50, <0.50, <0.50 <0.50, 1.80, 1.13 <0.50, 0.776 <0.50, 0.681 1.20, 1.65 <0.50, <0.50 <0.50, <0.50 <0.50, <0.50	<	**Rd Qtr.** (7715)  <0.50, <0.50, <0.50 <0.50, <0.50, <0.50 <0.50, <0.50 <0.50, <0.50 <0.50, <0.50 <0.50, <0.50 <0.50, <0.50 <0.50, <0.50 <0.50, <0.50 <0.50, <0.50 <0.50, <0.50

Well#	1st Qtr. (2/5)	1992 3rd Qtr.		10.50, <0.50	<0.50, <0.50	<0.50, <0.50 <0.50, <0.50 <0.50, <0.50	
R-10 R-1R R-7 R-8 R-8B R-9 R-9C R-9D	<1.0, <1.0, <1.0 <1.0, <1.0, <1.0 <1.0, <1.0 <1.0, <1.0 <1.0, <1.0 <1.0, <1.0 <1.0, <1.0 <1.0, <1.0 <1.0, <1.0	(9/16)  <0.5, <0.5, <0.5 <0.5, <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5	1st Qtr. (3/2) <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50	\$93 3rd Qtr. (8/17) <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50	1st Qtr. (3/22, 3/23) <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50	4nd Otr. (8/30, 8/31) <0.5 <0.5 <1.0 <0.5 <0.5 <0.5 <0.5	1806 181 Cat., (1/28) 3rd Cat., (1/28), 1/28) 1.0 (1.0 (1.0 (1.0 (1.0 (1.0 (1.0 (1.0 (
10	1st Qtr. (2/20-21/96)	3rd Qtr. (8/27, 8/28)	1st Qtr. 1997	•	<0.50	<0.5 <0.5	<1.0 <1.0 <1.0 <1.0 <1.0 <1.0

			<0.50	<0.50 <0.50
Well#	1st Otr. (2/20-21/96)	3rd Qtr.	191	)7
R-10 R-1R	<1.0 <1.0	(8/27, 8/28) <1.0	1st Qtr. (1/21, 1/22)	3rd Qtr. (7/29, 7/30)
R-7 R-8	<1.0	<1.0 <1.0	<1.0 <1.0	<1.0
R-8B R-9	<1.0 <1.0	<1.0 <1.0	<1.0 <1.0	<1.0 <1.0
R-9C	<1.0 <1.0	<1.0	<1.0 <1.0	<1.0 <1.0
	<1.0	<1.0 <1.0	<1.0	<1.0
			<1.0	<1.0 <1.0

#### PARAMETER: 2,4-DIMETHYLPHENOL (ug/L)

Well#	2nd Qtr. (6/26)	1990 3rd Qtr, (9/18)	4th Qtr. (12/11)	1st Qtr. (1/15)	1991 2nd Qtr. (4/9)	3rd Qtr. (7/16)
R-10 R-1R R-7 R-8 R-8B R-9 R-9C R-9D	<0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50	<0.50, 2.26, <0.50 <0.50, <0.50, <0.50 <0.50, <0.50 <0.50, <0.50 0.636, <0.50 <0.50, <0.50 5.94, <0.50 <0.50, 1.41	<0.50, <0.50, <0.50 <0.50, <0.50, <0.50 <0.50, 0.787 <0.50, <0.50 0.738, <0.50 <0.50, <0.50 <0.50 <0.50 <0.50	<0.50, <0.50, <0.50 <0.50, 0.503, <0.50 <0.50, <0.50 <0.50, <0.50 <0.50, <0.50 <0.50, <0.50 <0.50, <0.50 2.25, 0.952 <0.50, <0.50	<0.50, <0.50, <0.50 <0.50, <0.50, <0.50 <0.50, <0.50 <0.50, <0.50 <0.50, <0.50 <0.50, <0.50 <0.50, <0.50 <0.50, <0.50	<0.50,<0.50,<0.50 <0.50,<0.50,<0.50 <0.50,<0.50 <0.50,<0.50 <0.50,<0.50 <0.50,<0.50 <0.50,<0.50 <0.50,<0.50

Well#	1 st Qtr. (2/5)	92 3rd Qtr. (9/15)	1st Qtr. (3/2)	993 3rd Qtr. (8/17)	199 1st Qtr. (3/22, 3/23)	3rd Qtr. (8/30, 8/31)	1st Qtr. (1/25, 1/26)	3rd Qtr. (8/15, 8/16)
R-10 R-1R R-7 R-8 R-8B R-9 R-9C R-9D	<1.0, <1.0, <1.0 <1.0, <1.0, <1.0 <1.0, <1.0 <1.0, <1.0 <1.0, <1.0 <1.0, <1.0 <1.0, <1.0 <1.0, <1.0	<0.5, <0.5, <0.5 <0.5, <0.5, <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5	<0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5	<0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5	<0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5	<0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5	<1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0	<1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0

	19		1997				
Well#	1 st Qtr. (2/20, 2/21)	3rd Qtr. (8/27,8/28)	1st Qtr. (1/21, 1/22)	3rd Qtr. (7/29, 7/30)			
R-10	<1.0	<1.0	<1.0	<1.0			
R-1R	<1.0	<1.0	<1.0	<1.0			
R-7	<1.0	<1.0	<1.0	<1.0			
R-8	<1.0	<1.0	<1.0	<1.0			
R-8B	<1.0	<1.0	<1.0	<1.0			
R-9	<1.0	<1.0	<1.0	<1.0			
R-9C	<1.0	<1.0	<1.0	<1.0			
R-9D	<1.0	<1.0	<1.0	<1.0			

PARAMETER: 2,4-DINITROPHENOL (ug/l)

Well #	1988 3rd Qtr. (7/26)	4th Qtr. (9/27)	1st Qtr. (2/13)	1989 2nd Qtr. (6/22)	3rd Qtr. (9/20)	4th Qtr. (12/14)	1st Qtr. (1/19)	2nd Otr, (6/27)	1990 3rd Qtr. (9/18, 9/19)	4th Qtr. (12/11)	1st Oir, (1/15, 1/16)	1991 2nd Qtr. (4/9, 4/10)	3rd Qtr. (7/16, 7/17)
R-10 R-1R R-7 R-8 R-8B R-9 R-9C R-9D	<1.00 NI 1.32 <1.00 <1.00 <1.00 <1.00 <1.00	<1.00 NI <1.00 <1.00 <1.00 <1.00 <1.00	<1.00 NI <1.00 <1.00 <1.00 <1.00 <1.00 <1.00	<1.00  <1.00 <1.00 <1.00 <1.00 <1.00 <1.00	<1.00 <1.00 <1.00 <1.00 <1.00 <1.00 <1.00	<1.00 <1.00 <1.00 <1.00 <1.00 <1.00 <1.00 <1.00	<1.00 <1.00 <1.00 <1.00 <1.00 <1.00 <1.00 <1.00	<1.00 <1.00 <1.00 <1.00 <1.00 <1.00 <1.00 <1.00	<1.00, <1.00, <1.00 <1.00, <1.00, <1.00 <1.00, <1.00 <1.00, <1.00 <1.00, <1.00 <1.00, <1.00 <1.00, <1.00 <1.00, <1.00 <1.00, <1.00	<1.00, <1.00, <1.00 1.32, <1.00, 1.13 1.26, 1.60 2.61, <1.00 <1.00, 1.97 <1.00, <1.00 <1.00 <1.00 <1.00	<1.00, <1.00, <1.00 <1.00, <1.00, <1.00 <1.00, <1.00 <1.00, <1.00 <1.00, <1.00 <1.00, <1.00 <1.00, <1.00 <1.00, <1.00 <1.00, <1.00	<1.00, <1.00, <1.00 <1.00, <1.00, <1.00 <1.00, <1.00 <1.00, <1.00 <1.00, <1.00 <1.00, <1.00 <1.00, <1.00 <1.00, <1.00	<1.00, <1.00, <1.00 <1.00, <1.00, <1.00 <1.00, <1.00 <1.00, <1.00 <1.00, <1.00 <1.00, <1.00 <1.00, <1.00 <1.00, <1.00

Well#	1st Qtr. (2/5)	1992 3rd Qtr. (9/15)	1993 1st Otr. (3/2)	3rd Qtr. (8/17)	199 1st Qtr. (3/22, 3/23)	3rd Qtr. (8/30, 8/31)	1st Ofr. (1/25, 1/26)	1995 3rd Ctr. (8/15; 8/16)
R-10 R-1R R-7 R-8 R-8B R-9 R-9C R-9D	<1.0, <1.0, <1.0 <1.0, <1.0, <1.0 <1.0, <1.0 <1.0, <1.0 <1.0, <1.0 <1.0, <1.0 <1.0, <1.0 <1.0, <1.0	<1.0, <1.0, <1.0 <1.0, <1.0, <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0	<1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0	<1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0	<1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0	<1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0	<2.5 <2.5 <2.5 <2.5 <2.5 <2.5 <2.5 <2.5 <2.5	Q.5 Q.5 Q.5 Q.5 Q.5 Q.5 Q.5 Q.5

Well#	1 1st Qtr.	996 3rd Qtr.	191 1st Qtr.	1997 3rd Qtr.	
	(2/20, 2/21)	(8/27,8/28)	(1/21, 1/22)	(7/29, 7/30)	
R-10	<2.5	<30	<2.0	<2.0	
R-1R	<2.5	<30	<2.0	<2.0	
R-7	<2.5	<30	<2.0	<2.0	
R-8	<2.5	<30	<2.0	<2.0	
R-8B	<2.5	<30	<2.0	<2.0	
R-9	<2.5	<30	<2.0	<2.0	
R-9C	<2.5	<30	<2.0	<2.0	
R-9D	<1.0	<30	<2.0	<2.0	

NI - Not Installed untile March 1989.

#### PARAMETER: 2-CHLOROPHENOL (ug/L)

Well#	2nd Qtr. (6/26)	1990 3rd Qtr. (9/18)	4th Qtr. (12/11)	1st Qtr. (1/15)	1991 2nd Citr. (4/9)	3rd Qfr. (7/16)
R-10 R-1R R-7 R-8 R-8B R-9 R-9C R-9D	<0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50	0.834, 7.02, 4.30 0.556, <0.50, <0.50 <0.50, <0.50 0.613, <0.50 <0.50, <0.50 <0.50, <772 36.8, 3.31 1.72, 2.18	<0.50, <0.50, <0.50 <0.50, <0.50, <0.50 <0.50, 1.63 1.04, <0.50 <0.50, 96.7 <0.50, <0.50 <0.50 <0.50	<0.50, <0.50, <0.50 <0.50, <0.50, <0.50 <0.50, <0.50 <0.50, <0.50 <0.50, <0.50 <0.50, <0.50 <0.50, <0.50 <0.50, <0.50 <0.50, <0.50 <0.50, <0.50	<0.50, <0.50, <0.50 <0.50, <0.50, <0.50 <0.50, <0.50 <0.50, <0.50 <0.50, <0.50 <0.50, <0.50 <0.50, <0.50 <0.50, <0.50 <0.50, <0.50 <0.50, <0.50 <0.50, <0.50	<0.50,<0.50,<0.50,<0.50

Well#	1st Qtr. (2/5)	992 3rd Qtr. (9/15)	19/ 1st Qtr. (\$/2)	3rd Qtr. (8/17)	1st Citr. (3/22, 3/23)	\$4 \$rd Citr. (8/30, 8/31)	196 195 Ott. (1/25, 1/26)	6 3rd Citr. (8/16, 8/18)
R-10 R-1R R-7 R-8 R-8B R-9 R-9C R-9D	<1.0, <1.0, <1.0 <1.0, <1.0, <1.0 <1.0, <1.0 <1.0, <1.0 <1.0, <1.0 <1.0, <1.0 <1.0, <1.0 <1.0, <1.0	<0.5, <0.5, <0.5 <0.5, <0.5, <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5	<0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5	<b>Q</b> 0.5	<0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5	<0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5	<1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0	<1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0

	1st Qtr.	96 3rd Qtr. (8/27,8/28)	1st Qtr. (1/21, 1/22)	3rd Qtr. (7/29, 7/30)
Well#	(2/20, 2/21)	(8/27,8/26)	(112.), 1122/	
R-10	<1.0	<1.0	<1.0	<1.0
R-1R	<1.0	<1.0	<1.0	<1.0
	<1.0	<1.0	<1.0	<1.0
R-7 R-8	<1.0	<1.0	<1.0	<1.0
R-8B	<1.0	<1.0	<1.0	<1.0
R-9	<1.0	<1.0	<1.0	<1.0
	<1.0	<1.0	<1.0	<1.0
R-9C R-9D	<1.0	<1.0	<1.0	<1.0

#### PARAMETER: 2-METHYL-4,6-DINITROPHENOL (ug/L)

Veil#	2nd Qtr. (6/26)	1990 3rd Qtr. (9/18)	4th Qtr. (12/11)	1st Otr. (1/15)	1981 2nd Ofr. (4/9)	3rd Qtr. (7/16)
R-10 R-1R R-7 R-8 R-8B R-9 R-9C R-9D	<1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0	<1.0, <1.0, <1.0 <1.0, <1.0, <1.0 2.51, 3.52 <1.0, <1.0 1.33, <1.0 <1.0, <1.0 <1.0, 1.17	<1.0, <1.0, <1.0 <1.0, <1.0, <1.0 <1.0, <1.0 <1.0, <1.0 <1.0, <1.0 <1.0, <1.0 <1.0, <1.0 <1.0, <1.0	<1.0, <1.0, <1.0 <1.0, <1.0, <1.0 <1.0, <1.0 <1.0, <1.0 <1.0, <1.0 <1.0, <1.0 <1.0, <1.0 <1.0, <1.0	<1.0, <1.0, <1.0 <1.0, <1.0, <1.0 <1.0, <1.0 <1.0, <1.0 <1.0, <1.0 <1.0, <1.0 <1.0, <1.0 <1.0, <1.0	<1.0,<1.0,<1.0 <1.0,<1.0,<1.0 <1.0,<1.0 <1.0,<1.0 <1.0,<1.0 <1.0,<1.0 <1.0,<1.0 <1.0,<1.0

Well#	1992 1 st Qtr. (2/6)	3rd Qtr. (9/15)	195 1st. Qtr. (3/2)	3 ard Qtr. (8/17)	19/ 1st. Qtr. (3/22, 3/23)	94 3rd Citr. (8/30, 8/31)	199 fat, Otr. (1/25, 1/26)	ard Qtr. (8/16, 8/16)
2-10 2-1R 2-7 2-8 2-8 2-8 2-9 2-9 2-9C 2-9D	<1.0, <1.0, <1.0 <1.0, <1.0, <1.0 <1.0, <1.0 <1.0, <1.0 <1.0, <1.0 <1.0, <1.0 <1.0, <1.0 <1.0, <1.0	<1.0, <1.0, <1.0 <1.0, <1.0, <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0	<1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0	<1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0	<1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0	<1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0	Q.5 Q.5 Q.5 Q.5 Q.5 Q.5 Q.5 Q.5	<2.5 <2.5 <2.5 <2.5 <2.5 <2.5 <2.5 <2.5 <2.5

	1st Qtr.	96 3rd Qtr.	1st Qtr.	3rd Qtr.
Well#	(2/20, 2/21)	(8/27, 8/28)	(1/21, 1/22)	<u>(7/29, 7/30)</u>
R-10	<2.5	<2.5	<2.0	<2.0
R-1R	<2.5	<2.5	<2.0	<2.0
R-7	<2.5	<2.5	<2.0	<2.0
R-8	<2.5	<2.5	<2.0	<2.0
R-8B	<2.5 <2.5	<2.5	<2.0	<2.0
	<2.5 <2.5	<2.5	<2.0	<2.0
R-9	<2.5 <2.5	<2.5	<2.0	<2.0
R-9C R-9D	<2.5 <2.5	<2.5	<2.0	<2.0

#### PARAMETER: 2-NITROPHENOL (ug/L)

Weli#	2nd Qtr. (6/26)	1990 3rd Qtr, (9/18)	4th Qtr. (12/11)	1st Otr. (1/15)	1991 2nd Otr. (4/9)	\$rd Ctr. (7/16)
R-10 R-1R R-7 R-8 R-8B R-9 R-9C R-9D	<0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50	0.514, 1.40, 1.19 <0.50, <0.50, 0.712 <0.50, <0.50 1.40, 0.878. <0.50, 0.849 1.08, 0.823 10.7, <0.50 0.504, 0.687	<0.50, <0.50, <0.50 <0.50, <0.50, <0.50 <0.50, 0.514 <0.50, <0.50 <0.50, <0.50 <0.50, <0.50 1.40, 1.21 1.46 1.10, <0.50	<0.50, <0.50, <0.50 <0.50, <0.50, <0.50 <0.50, <0.50 <0.50, <0.50 <0.50, <0.50 <0.50, <0.50 <0.50, <0.50 <0.50, <0.50 <0.50, <0.50	<0.50, <0.50, <0.50 <0.50, <0.50, <0.50 <0.50, <0.50 <0.50, <0.50 <0.50, <0.50 <0.50, <0.50 <0.50, <0.50 <0.50, <0.50 <0.50, <0.50	<0.50, <0.50, <0.50 <0.50, <0.50 <0.50, <0.50 <0.50, <0.50 <0.50, <0.50 <0.50, <0.50 <0.50, <0.50 <0.50, <0.50 <0.50, <0.50

Well#	1 1st Qtr. (2/5)	992 3rd Qtr. (9/15)	1963 1 st Citr. (3/2)	3rd Qtr. (8/17)	194 1st Otr, (3/22; 3/23)	94 3rd Ofr. (8/30, 8/31)	196 1st Citr. (1/26, 1/26)	3rd Cit; (8/15, 8/15)
R-10 R-1R R-7 R-8 R-8B R-9 R-9C R-9D	<1.0, <1.0, <1.0 <1.0, <1.0, <1.0 <1.0, <1.0 <1.0, <1.0 <1.0, <1.0 <1.0, <1.0 <1.0, <1.0	<0.5, <0.5, <0.5 <0.5, <0.5, <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5	<0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5	<0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5	40.5 40.5 40.5 40.5 40.5 40.5 40.5 40.5	<0.5 <0.5 <0.5 <0.5 <0.5 <0.6 <0.5 <0.5	<1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0	<1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0

	1st Qtr,	1996 3rd Qtr,	191 1st Otr. (1/21, 1/22)	3rd Qtr. (7/29, 7/30)
Well#	(2/20, 2/21)	(8/27, 8/28)	1021,1122	
R-10	<1.0	<1.0	<1.0	<1.0
R-1R	<1.0	<1.0	<1.0	<1.0
R-7	<1.0	<1.0	<1.0	<1.0
R-8	<1.0	<1.0	<1.0	<1.0
R-8B	<1.0	<1.0	<1.0	<1.0
R-9	<1.0	<1.0	<1.0	<1.0
R-9C	<1.0	<1.0	<1.0	<1.0
R-9D	<1.0	<1.0	<1.0	<1,0

#### PARAMETER: 4-NITROPHENOL (ug/L)

Weil#	2nd Qtr. (6/26)	1990 3rd Qtr. (9/18)	4th Qtr. (12/11)	1st Qtr. (1/15)	1991 2nd Qtr. (4/9)	3rd Qtr. (7/16)
R-10 R-1R R-7 R-8 R-8B R-9 R-9C R-9D	<1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0	<1.0, <1.0, <1.0 <1.0, <1.0, <1.0 <1.0, <1.0 <1.0, <1.0 <1.0, <1.0 <1.0, <1.0 <1.0, <1.0 <1.0, <1.0	<1.0, <1.0, <1.0 <1.0, <1.0, <1.0 <1.0, 5.23 <1.0, <1.0 <1.0, <1.0 <1.0, 1.97 <1.0, <1.0 <1.0, <1.0	<1.0, <1.0, <1.0 <1.0, <1.0, <1.0 <1.0, <1.0 <1.0, <1.0 <1.0, <1.0 <1.0, <1.0 <1.0, <1.0 <1.0, <1.0	<1.0, <1.0, <1.0 <1.0, <1.0, <1.0 <1.0, <1.0 <1.0, <1.0 <1.0, <1.0 <1.0, <1.0 <1.0, <1.0 <1.0, <1.0	<1.0,<1.0,<1.0 <1.0,<1.0,<1.0 <1.0,<1.0 <1.0,<1.0 <1.0,<1.0 <1.0,<1.0 <1.0,<1.0 <1.0,<1.0 <1.0,<1.0

1997 1 st Qtr. (2/5)	2 3rd Qtr. (9/15)	199 1st. Citr. (3/2)	3 3rd Qtr. (8/17)	1st, Citr. (3/22, 3/23)	ard Qtr. (8/30, 8/31)	1st, Qtr. (1/26, 1/26)	96 3rd Citr. (8/15,8/16)
-10	<1.0, <1.0, <1.0 <1.0, <1.0, <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0	<1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0	<1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0	<1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0	<1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0	Q.5 Q.5 Q.5 Q.5 Q.5 Q.5 Q.5 Q.5 Q.5	<2.5 <2.5 <2.5 <2.5 <2.5 <2.5 <2.5 <2.5

	1st Qtr.	96 3rd Qtr.	1st Qtr.	3rd Qtr.
Well#	(2/20, 2/21)	(8/27, 8/28)	(1/21, 1/22)	(7/29, 7/30)
R-10	<2.5	<2.5	<2.0	<2.0
R-1R	<2.5	<2.5	<2.0	<2.0
R-7	<2.5 <2.5	<2.5	<2.0	<2.0
R-8	<2.5	<2.5	<2.0	<2.0
R-8B	<2.5	<2.5	<2.0	<2.0
	<2.5	<2.5	<2.0	<2.0
R-9	<2.5 <2.5	<2.5	<2.0	<2.0
R-9C R-9D	<2.5 <2.5	<2.5	<2.0	<2.0

PARAMETER: ACENAPHTHENE (ug/l)

Well #	194 3rd Otr; (7/26)	18 4th Qtr; (9/27)	1et Qtr. (2/15)	2nd Citr. (6/22)	1989 3rd Ctr. (9/20)	4th Off: (12/14)	1et Qtr. (1/0)	2nd Citr. (6/27)	1990 3rd Gtr, (8/18, 9/19)	4th Off. (12/11)	1st Otr, [1/16, 1/16]	1991 2nd Cir; (A/G, A/10)	3rd Citr. (7/16, 7/17)
R-10 R-1R R-7 R-8 R-8B R-9 R-9C R-9D	<2.00 NI <2.00 <2.00 <2.00 <2.00 <2.00 <2.00	<2.00 NI <2.00 <2.00 <2.00 <2.00 <2.00 <2.00 <2.00	<2.00 NI <2.00 <2.00 <2.00 <2.00 <2.00 <2.00	<2.00  <2.00 <2.00 <2.00 <2.00 <2.00 <2.00	<2.00 <2.00 <2.00 <2.00  <2.00 <2.00 <2.00	<2.00 <2.00 24.8 <2.00 <2.00 <2.00 <2.00 <2.00	<2.00 <2.00 <2.00 <2.00 <2.00 <2.00 <2.00 <2.00	<2.00 <2.00 <2.00 <2.00 <2.00 <2.00 <2.00 <2.00	<2.00, <2.00, <2.00 <2.00, <2.00, <2.00 <2.00, <2.00 <2.00, <2.00 <2.00, <2.00 <2.00, <2.00 <2.00, <2.00 <2.00, <2.00	<.00, <2.00, <2.00 <2.00, <2.00, <2.00 <2.00, <2.00 <2.00, <2.00 <2.00, <2.00 <2.00, <2.00 <2.00, <2.00 <2.00, <2.00	<2.00, <2.00, <2.00 <2.00, <2.00 <2.00, <2.00 <2.00, <2.00 <2.00, <2.00 <2.00, <2.00 <2.00, <2.00 <2.00, <2.00 <2.00, <2.00 <2.00, <2.00 <2.00, <2.00	<200, <2.00, <2.00 <2.00, <2.00 <2.00, <2.00 <2.00, <2.00 <2.00, <2.00 <2.00, <2.00 <2.00, <2.00 <2.00, <2.00 <2.00, <2.00	2.00, 2.00, 2.00 2.00, 2.00 2.00, 2.00 2.00, 2.00 2.00, 2.00 2.00, 2.00 2.00, 2.00 2.00, 2.00

Well#	1902 1 of Citr. (2/6)	3rd Qtr. (W15)	1st Otr. (3/2)	93 3rd Qtr. (0/17)	1st Qtr. (3/22, 3/23)	964 3rd Gtr. (8/17)	(at Otr. (1/25, 1/26)	1866 Sed Car: (8/16, 9/18)	1ut Qtr, (2/26, 2/21)	344 Ctr. (8/27, 8/20)
R-10	<2.00, <2.00, <2.00	<2.00	<2.00	<2.00	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
R-1R	<2.00, <2.00, <2.00	<2.00	<2.00	<2.00	<2.0	<2.0	<2.0	<2.0	₹2.0	<2.0 <2.0
l-7	<2.00, <2.00	<2,00	<2.00	<2.00	<2.0	<2.0	<2.0	<2.0	₹2.0	<2.0 <2.0
-8	<2.00, <2.00	<2.00	<2.00	<2.00	<2.0	<2.0	<2.0	<2.0	₹2.0	₹2.0 ₹2.0
-6B	<2.00, <2.00	<2.00	<2.00	<2.00	<2.0	<2.0	<2.0	<2.0	₹2.0	<2.0 <2.0
1-9	<2.00, <2.00	<2.00	<2.00	<2.00	<2.0	<2.0	<2.0	<2.0	₹2.0	<2.0
-9C	<2.00, <2.00	<2.00	<2.00	<2.00	<2.0	<2.0	<2.0	<2.0	₹2.0	<2.0 <2.0
l-9D	<2.00, <2.00	<2.00	<2.00	<2.00	<2.0	<2.0	<2.0	<2.0	₹2.0	<2.0 <2.0

Well #	fet Otr.	3rd Otr.
	(1/21, 1/22)	(7/28, 7/30)
R-10	<2.0	<2.0
R-1R	<2.0	<2.0
R-7	<2.0	<2.0
R-8	<2.0	<2.0
R-8B	<2.0	<2.0
R-9	<2.0	<2.0
R-9C	<2.0	<2.0
R-9D	<2.0	<2.0

NI Not installed until March 1989.

#### PARAMETER: ACENAPHTHYLENE (ug/l)

Well.#	2nd Oir, (8/27)	1990 3rd Qtr: (9/18, 9/19)	4th Qtr. (12/11)	1st Qtr. (1/15, 1/15)	1991 2nd Otr. (4/8, 4/10)	3rd Qtr. (7/16, 7/17)	1et Qtr, (2/6)	Sird-Ott. (0/18)	1963 1et Gir. (972)	31d Cit. (8/17)
R-10	<2.00	<2.00, <2.00, <2.00	<2.00, <2.00, <2.00	<2.00, <2.00, <2.00	<2.00, <2.00, <2.00	<2.00, <2.00, <2.00	<2.00, <2.00, <2.00	<2.00	<2.00	<2.00
R-1R	<2.00	<2.00, <2.00, <2.00	<2.00, <2.00, <2.00	<2.00, <2.00, <2.00	<2.00, <2.00, <2.00	<2.00, <2.00, <2.00	<2.00, <2.00, <2.00	<2.00	<2.00	<2.00
R-7	<2.00	<2.00, <2.00	<2.00, <2.00	<2.00, <2.00	<2.00, <2.00	<2.00, <2.00	<2.00, <2.00	<2.00	<2.00	<2.00
R-8	<2.00	<2.00, <2.00	<2.00, <2.00	<2.00, <2.00	<2.00, <2.00	<2.00, <2.00	<2.00, <2.00	<2.00	<2.00	<2.00
R-8B	<2.00	<2.00, <2.00	<2.00, <2.00	<2.00, <2.00	<2.00, <2.00	<2.00, <2.00	<2.00, <2.00	<2.00	<2.00	<2.00
R-9	<2.00	<2.00, <2.00	<2.00, <2.00	<2.00, <2.00	<2.00, <2.00	<2.00, <2.00	<2.00, <2.00	<2.00	<2.00	<2.00
R-9C	<2,00	<2.00, <2.00	<2.00	<2.00, <2.00	<2.00, <2.00	<2.00, <2.00	<2.00, <2.00	<2.00	<2.00	<2.00
R-9D	<2.00	<2.00, <2.00	<2.00, <2.00	<2.00, <2.00	<2.00, <2.00	<2.00, <2.00	<2.00, <2.00	<2.00	<2.00	<2.00

Well #	1 et Citr. (3/22, 3/23)	54 3rd Qtr. (8/17)	1995 1st Qtr. (1/25, 1/26)	3rd Qtr. (8/15, 8/16)	1666 1et Citr. (2/20, 2/21)	3rd Ctr. (8/27, 8/28)	196 1 of Qtr. (1/21, 1/22)	3rd Gir. [7729, 7730]
R-10	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
R-1R	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
R-7	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	2.6
R-8	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
R-8B	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
R-9	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
R-9C	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
R-9D	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0

Well i	
R-10	1
R-1R	- 1
R-7	
R-8	
R-8B	
R-9	
R-9C	
R-9D	
-	

Ni - Not installed until March 1989.

#### PARAMETER: BENZO(a)PYRENE(ug/L)

Well#	2nd Qtr. (6/26)	1890 3rd Qtr. (9/18)	4th Qtr. (12/11)	1st Otr. (1/15)	1991 2nd Qtr. (4/9)	8rd Off. (7/16)
R-10 R-1R R-7 R-8 R-8B R-9 R-9C R-9D	0.021 <0.02 <0.02 <0.02 <0.02 0.021 <0.02 <0.02 <0.02	<0.02, <0.02, <0.02 <0.02, <0.02, 0.052 <0.02, <0.02 <0.02, <0.02 <0.02, <0.02 <0.02, <0.02 <0.02, <0.02 <0.02, <0.02 <0.02, <0.02	<0.02, <0.02, 0.038 0.032, <0.02, <0.02 <0.02, <0.02 <0.02, <0.02 <0.02, <0.02 <0.02, <0.02 <0.02, <0.02 <0.02, <0.02	0.260, 0.257, 0.255 0.257, 0.261, 0.255 0.256, 0.260 0.259, 0.255 0.259, 0.257 0.256, 0.263 0.253, 0.257 0.256, 0.253	0.02, 0.023, 0.027 0.021, 0.02, 0.032 0.029, 0.034 0.0261, <0.02 0.023, 0.025 <0.02, 0.021 0.033, 0.022 <0.02, <0.02	<.0.02, <0.02, <0.02 <0.02, <0.02, <0.02 <0.02, <0.02 <0.02, <0.02 <0.02, <0.02 <0.02, <0.02 <0.02, <0.02 <0.02, <0.02 <0.02, <0.02 <0.02, <0.02

	1992 1st Qtr.	3rd Qtr. (9/15)	199 154 Qtr. (3/2)	3rd Qtr, (8/17)	1st Qtr, (3/22, 3/23)	94 Srd Citr. (8/30, 8/31)	196 Otr. (1/26, 1/26)	3rd Qtr. (8/16, 8/16)
R-10 R-1R R-7 R-8 R-8B R-9 R-9C R-9D	<pre>&lt;0.02, &lt;0.02, &lt;0.02 &lt;0.02, &lt;0.02, &lt;0.02 &lt;0.02, &lt;0.02</pre>	<0.02 <0.02 <0.02 <0.02 <0.02 <0.02 <0.02 <0.02 <0.02	<0.02 <0.02 <0.02 <0.02 <0.02 <0.02 <0.02 <0.02	<0.02 <0.02 <0.02 <0.02 <0.02 <0.02 <0.02 <0.02	<0.02 <0.02 <0.02 <0.02 <0.02 <0.02 <0.02 0.03	40.02 40.02 40.02 40.02 40.02 40.02 40.02 40.02	<0.02 <0.02 <0.02 <0.02 <0.02 <0.02 <0.02 <0.02	<0.02 <0.02 <0.02 <0.02 <0.02 <0.02 <0.02 <0.02

	1st Qtr.	96 3rd Qtr. (8/27, 8/28)	195 1st Qtr. (1/21, 1/22)	Srd Qtr. (7/29, 7/30)
Well#	(2/20, 2/21)	<0.02	<0.02	<0.02
R-10	<0.02 <0.02	<0.02	<0.02	<0.02
R-1R	<0.02	<0.02	<0.02	<0.02
R-7	<0.02 <0.02	<0.02	<0.02	<0.02
R-8		<0.02	<0.02	<0.02
R-8B	<0.02	<0.02	<0.02	<0.02
R-9	<0.02	<0.02	<0.02	<0.02
R-9C R-9D	<0.02 <0.02	<0.02	0.025	<0.02

#### PARAMETER: BENZO(b)FLUORANTHENE (ug/L)

Vell#	2nd Qtr. (6/26)	1990 3rd Qtr. (9/18)	4th Ott. (12/11)	1st Qtr. (1/15)	1991 2nd Citr. (4/8)	3rd Qtr. (7/16)
R-10 R-1R R-7 R-8 R-8B R-9 R-9C R-9D	0.049 0.025 <0.02 <0.02 <0.052 <0.02 <0.02	0.034, 0.039, 0.075 <0.02, 0.035, 0.09 0.057, 0.054 0.035, <0.02 <0.02, <0.02 <0.02, <0.02 <0.02, <0.02 <0.02, <0.02	0.07, 0.059, 0.057 0.082, <0.02, <0.02 <0.02, <0.02 <0.02, 0.05 0.059, 0.04 <0.02, <0.02 <0.02 0.023, 0.037	0.242, 0.229, 0.228 0.223, 0.242, 0.226 0.227, 0.236 0.235, 0.228 0.233, 0.232 0.228, 0.252 0.220, 0.221 0.219, 0.221	0.032, 0.043, 0.059 0.056, 0.043, 0.061 0.067, 0.071 0.059, 0.04 0.074, 0.072 0.029, 0.037 0.057, 0.047 0.028, 0.046	<0.020, <0.020, <0.020 <0.020, <0.020, <0.020 <0.020, <0.020 <0.020, <0.020 <0.020, <0.020 <0.020, <0.020 <0.020, <0.020 <0.020, <0.020

Well #	1992 1st Qtr. (2/5)	3rd Qtr. (9/15)	1st Qtr. (3/2)	993 3rd Qtr. (8/17)	1st Ott. (3/22, 3/23)	94 3rd Qtr. (8/17)	1st Citr. (1/26, 1/26)	3rd Otr. (8/15, 8/15)
R-10 R-1R R-7 R-8 R-8B R-9 R-9C R-9D	0.03, 0.03, 0.02 <0.02, <0.02, <0.02 <0.02, 0.02 <0.02, <0.02 <0.02, <0.02 0.02, 0.04 <0.02, <0.02 <0.02, <0.02	0.04 <0.02 <0.02 <0.02 <0.02 <0.02 <0.02 <0.02	<0.02 <0.02 <0.02 <0.02 <0.02 <0.02 <0.02 <0.02	<0.02 <0.02 <0.02 <0.02 <0.02 <0.02 <0.02 <0.02	<0.02 <0.02 <0.02 <0.02 <0.02 <0.02 <0.02 0.02	<0.02 <0.02 <0.02 <0.02 <0.02 0.02 <0.02 <0.02	<0.02 <0.02 <0.02 <0.02 <0.02 <0.02 <0.02	<ul> <li>40.02</li> <li>40.02</li> <li>40.02</li> <li>40.02</li> <li>40.02</li> <li>40.02</li> <li>40.02</li> <li>40.02</li> <li>40.02</li> </ul>

	1996 1st Qtr.	3rd Qtr.	1997 1st Qtr. 3rd Qtr.		
Well#	(2/20, 2/21)	(8/27, 8/28)	(2/20, 2/21)	(7/29, 7/30)	
R-10	<0.02	<0.02	<0.02	<0.02	
R-1R	<0.02	<0.02	<0.02	<0.02	
R-7	<0.02	<0.02	<0.02	<0.02	
R-8	<0.02	<0.02	<0.02	<0.02	
R-8B	<0.02	<0.02	<0.02	<0.02	
R-9	<0.02	<0.02	<0.02	<0.02	
R-9C	<0.02	<0.02	<0.02	<0.02	
R-9D	<0.02	<0.02	<0.02	<0.02	

#### PARAMETER: BENZO(k)FLUORANTHENE(ug/L)

	2nd Qtr. (6/26)	1990 3rd Qtr. (9/18)	4th Qtr. (12/11)	1st Qtr. (1/15)	1991 2nd Qtr. (4/9)	3rd Ofr. (7/16)
Vell # R-10 R-1R R-7 R-8 R-8B R-9 R-9C R-9D	1.16 <0.02 <0.02 <0.02 <0.02 <0.02 <0.02 <0.02	<0.02, <0.02, 0.021 <0.02, <0.02, 0.091 <0.02, <0.02 <0.02, <0.02 <0.02, <0.02 <0.02, <0.02 <0.02, <0.02 <0.02, <0.02	<0.02, <0.02, <0.02 <0.02, <0.02, <0.02 <0.02, <0.02 <0.02, <0.02 <0.02, <0.02 <0.02, <0.02 <0.02, <0.02 <0.02	0.245, 0.241 0.242 0.240, 0.246, 0.241 0.241, 0.244 0.243, 0.241 0.241, 0.242 0.241, 0.250 0.239, 0.239 0.239, 0.239	<0.02, <0.02, <0.020 <0.02, <0.02, <0.020 <0.02, <0.02 <0.02, <0.02 <0.02, <0.02 <0.02, <0.02 <0.02, <0.02 <0.02, <0.02 <0.02, <0.02	<0.02, <0.02, <0.02 <0.02, <0.02, <0.02 <0.02, <0.02 <0.02, <0.02 <0.02, <0.02 <0.02, <0.02 <0.02, <0.02 <0.02, <0.02 <0.02, <0.02

	1997 1st Qtr.	3rd Qtr. (9/15)	1st Qtr. (9/2)	33 3rd Qtr. (8/17)	18 1st Qtr. (3/22, 3/23)	94 3rd Off. (8/30, 8/31)	191 1st Otr. (1/25, 1/28)	8rd Off. (8/15, 8/16)
R-10 R-1R R-7 R-8 R-8B R-9 R-9C R-9D	<pre>&lt;0.02 &lt;0.02, &lt;0.02 &lt;0.02 &lt;0.02, &lt;0.02 &lt;0.02, &lt;0.02 &lt;0.02, &lt;0.02 &lt;0.02, &lt;0.02 &lt;0.02, &lt;0.02 &lt;0.02, &lt;0.00 &lt;0.02, &lt;0.00 &lt;0.02, &lt;0.00 &lt;0.002, &lt;0.002 &lt;0.002, &lt;0.002 &lt;0.002, &lt;0.002</pre>	0.02 <0.02 <0.02 <0.02 <0.02 <0.02 <0.02 <0.02	<0.02 <0.02 <0.02 <0.02 <0.02 <0.02 <0.02 <0.02	<0.02 <0.02 <0.02 <0.02 <0.02 0.02 <0.02 <0.02	<0.02 <0.02 <0.02 <0.02 <0.02 <0.02 <0.02 0.02	<0.02 <0.02 <0.02 <0.02 <0.02 <0.02 <0.02	<0.02 <0.02 <0.02 <0.02 <0.02 <0.02 <0.02 <0.02	0.0.25 <0.02 <0.02 <0.02 <0.02 <0.02 <0.02 <0.02

Well#	1st Qtr. (2/20-2/21)	96 3rd Qtr, (8/27, 8/28)	1997 1st Qtr. (1/21, 1/22)	3rd Qtr. (7/29, 7/30)
R-10 R-1R R-7 R-8 R-8B R-9 R-9C R-9D	<0.02 <0.02 <0.02 0.034 <0.02 <0.02 <0.02	<0.02 <0.02 <0.02 <0.02 <0.02 <0.02 <0.02 <0.02	<0.02 <0.02 <0.02 <0.02 <0.02 <0.02 <0.02	<0.02 <0.02 <0.02 <0.02 <0.02 <0.02 <0.02 <0.02

#### PARAMETER: BENZO(a)ANTHRACENE (ug/L)

Well #	2nd Qtr. (6/26)	1990 3rd Qtr. (9/18)	4th Ctr. (12/11)	1 st Off; (1/15)	1991 2nd Otr, (4/9)	ard Qtr. (7/15)
R-10	<0.02	<0.02, 0.08, <0.02	0.07, 0.059, 0.057	0.210, 0.207, 0.208	<0.02, <0.02, 0.021	0.052, 0.052, 0.057
R-1R	<0.02	<0.02, 0.077, 0.135	0.08, <0.02, <0.02	<0.02, 0.207, 0.220	0.035, <0.02, 0.026	0.048, 0.047, 0.057
R-7	<0.02	0.075, 0.088	0.032, 0.04	0.204, 0.215	<0.02, <0.02	0.049, 0.051
R-8	<0.02	0.087, <0.02	0.027, 0.055	0.218, 0.287	<0.02, <0.02	0.050, 0.046
R-8B	<0.02	<0.02, <0.02	0.048, 0.033	0.307, 0.210	0.023, 0.021	<0.020, 0.047
R-9	<0.02	0.074, 0.075	0.024, 0.032	0.271, 0.217	<0.02, 0.032	0.051, 0.084
R-9C	<0.02	<0.02, <0.02	0.038	0.211, 0.208	0.043, 0.023	<0.020, 0.045
R-9D	<0.02	<0.02, <0.02	0.023, 0.037	0.219, 0.201	0.026, <0.02	<0.02, <0.02

Well #	1st Ctr. (2/5)	1992 3rd Ott. (9/15)	1 st Citr. (3/2)	993 3rd Ctr. (8/17)	1st Citr. (3/22, 3/23)	44 - 3rd Citr. (8/30, 8/31)	1 st Citr. (1/26, 1/26)	886 8rd Ott; (8/15, 5/16)
R-10 R-1R R-7 R-8 R-8B R-9 R-9C R-9D	<0.02, <0.02, <0.02 <0.02, <0.02, <0.02 <0.02, <0.02 <0.02, <0.02 <0.02, <0.02 <0.02, <0.02 <0.02, <0.04 <0.02, <0.02 <0.02, <0.02	<0.02 <0.02 <0.02 <0.02 <0.02 <0.02 <0.02 <0.02 <0.02	<0.02 <0.02 <0.02 <0.02 <0.02 <0.02 <0.02 <0.02	0.02 -0.03 -0.03 -0.03 -0.03 -0.03	<0.02 0.03 <0.02 <0.02 <0.02 <0.02 <0.02 0.02	◆0.02 ◆0.02 ◆0.02 ◆0.02 ◆0.02	40.02 40.02 40.02 40.02 40.02 40.02 40.02	<0.02 <0.02 <0.02 <0.02 <0.02 <0.02

	1st Qtr.	996 3rd Qtr.	1997 1st.Qtr.	3rd Otr.
Well#	(2/20, 2/21)	(8/27, 8/28)	(1/21, 1/22)	(7/29, 7/30)
R-10	<0.02	<0.02	<0.02	<0.02
R-1R	<0.02	<0.02	<0.02	<0.02
R-7	<0.02	<0.02	<0.02	<0.02
R-8	<0.02	<0.02	<0.02	<0.02
R-8B	<0.02	<0.02	<0.02	<0.02
R-9	<0.02	<0.02	<0.02	<0.02
R-9C	<0.02	<0.02	<0.02	<0.02
R-9D	<0.02	<0.02	<0.02	<0.02

#### PARAMETER: BENZO(g,h,l)PERYLENE (ug/L)

Well#	2nd Qtr. (6/26)	1990 3rd Qtr. (9/18)	4th Qtr. (12/11)	fat Qtr. (1/15)	1991. 2nd Citr. (4/9)	3rti Qtr. (7/16)
R-10	<0.05	<0.05, <0.05, <0.05	0.071, <0.05, 0.077	<0.05, <0.05, <0.05	<0.05, <0.05, <0.05	0.122, 0.109, 0.125
R-1R	<0.05	<0.05, <0.05, <0.05	<0.05, 0.1, 0.052	<0.05, 0.215, <0.05	<0.05, <0.05, 0.068	0.103, 0.100, 0.106
₹-7	<0.05	<0.05, <0.05	<0.05, 0.057	<0.05, <0.05	<0.05, <0.05	0.103, 0.104
₹-8	<0.05	<0.05, <0.05	<0.05, 0.07	<0.05, <0.05	<0.05, <0.05	0.100, 0.102
R-8B	<0.05	<0.05, <0.05	0.056, <0.05	<0.05, <0.05	<0.05, <0.05	0.101, 0.100
R-9	<0.05	<0.05, <0.05	<0.05, <0.05	<0.05, <0.05	<0.05, <0.05	0.099, 0.104
R-9C	<0.05	<0.05, <0.05	<0.05	<0.05, <0.05	<0.05, <0.05	0.099, 0.100
R-9D	<0.05	<0.05, <0.05	<0.05, <0.05	<0.03, <0.05	<0.05, <0.05	<0.05, <0.05

Well #	1992 1 st Qtr. (2/5)	3rd Qtr. (9/15)	1st Qtr, (\$/2)	93 3rd Otr. (8/27, 8/28)	1st Off; (3/22, 3/28)	and Qtr. (8/30, 8/31)	1st Qtr. (1/26, 1/26)	and Qtr. (8/15, 8/16)
R-10	<0.05, <0.05, <0.05	<0.05	<0.05	<0.03	<0.05	<0.05	<0.05	0.056
R-1R	<0.05, <0.05, <0.05	<0.05	<0.05	<0.03	<0.05	<0.05	<0.05	<0.05
R-7	<0.05, <0.05	<0.05	<0.05	<0.03	<0.05	<0.05	<0.05	<0.05
R-8	<0.05, <0.05	<0.05	<0.05	<0.03	<0.05	<0.05	<0.05	<0.05
R-8B	<0.05, <0.05	<0.05	<0.05	<0.03	<0.05	<0.05	<0.05	<0.05
R-9	<0.05, <0.05	<0.05	<0.05	<0.03	<0.05	<0.05	<0.05	<0.05
R-9C	<0.05, <0.05	<0.05	<0.05	<0.03	<0.05	<0.05	<0.05	<0.05
R-9D	<0.05, <0.05	<0.05	<0.05	<0.03	<0.05	<0.05	<0.05	<0.05

	199 151 Qtr.	3rd Qtr.	199 1st Qtr.	3rd Qtr.
Well#	(2/20, 2/21)	(8/27, 8/28)	(1/21, 1/22)	(7/29, 7/30)
R-10	<0.05	<0.05	<0.05	<0.05
R-1R	0.25	<0.05	<0.05	< 0.05
R-7	<0.05	<0.05	<0.05	<0.05
R-8	<0.05	<0.05	<0.05	<0.05
R-8B	<0.05	<0.05	<0.05	<0.05
R-9	<0.05	<0.05	<0.05	<0.05
R-9C	<0.05	<0.05	<0.05	<0.05
R-9D	<0.05	<0.05	<0.05	<0.05

#### GRENADA, MS PLANT QUARTERLY MONITORING FOR RCRA SURFACE IMPOUNDMENT

#### PARAMETER: BIS(2-ETHYLHEXYL)PHTHALATE (ug/L)

Well#	2nd Qtr. (6/26)	1990 3rd Qtr. (9/18)	4th Qtr. (12/11)	1st Qtr. (1/15)	1991 2nd Qtr. (4/8)	3rd Qtr. (7/16)
R-10 R-1R R-7 R-8 R-8B R-9 R-9C	<10 <10 <40 <2.0 <40 <2.0 <10 <10	2.0, 2.42, 4.91 6.69, <2.0, <2.0 <2.0, <2.0 6.59, 5.41 4.66, 7.4 3.6, 16.2 <2.0, <2.0 <2.0, <2.0	<7.5, <7.5, <7.5 <7.5, <7.5, <7.5 <7.5, <7.5 <7.5, <7.5 <7.5, <7.5 <7.5, <7.5 <7.5, <7.5 <7.5, <7.5	<2.0, 3.79, 8.10 2.77, 2.69, <2.0 <2.0, <2.0 5.98, <2.0 2.71, <2.0 17.1, <2.0 2.51, <2.0 <2.0, 2.0	47.1, 3.86, 4.93 2.77, 2.86, 2.62 <2.0, 7.33 7.71, 3.2 2.62, 3.49 <2.0, 2.89 16.1, 44.4 7.68, 5.98	2.18, 2.35, 4.21 2.46, 10.2, 3.00 <2.0, 2.11 3.75, 3.11 9.42, 15.2 7.99, 4.79 6.05, 5.46 9.83, 9.07

Well#	199 1st Qtr. (2/5)	32 3rd Qtr. (9/15)	1st Qtr. (3/2)	993 3rd Qtr. (9/17)	1st Qtr. (3/22, 3/23)	4 3rd Qtr, (8/30, 8/31)	19 1st Ob; (1/26, 1/26)	3rd Qtr. (8/16, 8/16)
R-10 R-1R R-7 R-8 R-8B R-9 R-9C R-9D	<10, <10, <10 <10, <10, <10 <10, <10 <10, <10 <10, <10 <10, <10 <10, <10 <10, <10 <10, <10 <10, <10 <10, <10	<10 <10 <10 <10 <10 <10 <10 <10 <10	<10 <10 <10 <10 <10 <10 <10	<94.5 <94.5 <94.5 <94.5 <94.5 <94.5 <94.5	<1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0	5.2 5.6 3.5 2.9 3.6 2.6 6.0	<5.0 8.0 45.0 45.0 20 45.0 45.0 25	<5.0 <5.0 <5.0 <5.0 7.3 <5.0 <5.0

	1st Qtr. (2/20, 2/21)	1996 3rd Qtr. (8/27,8/28)	1st Otr (1/21, 1/22)	3rd Qtr. (7/29, 7/30)
Well#	(424, 441)	(OA) (OA)		
R-10	<1.0	<2.5	<0.10	<0.10
R-1R	<1.0	<2.5	<0.10	<0.10
R-7	<1.0	<2.5	<0.10	<0.10
	<1.0	<2.5	<0.10	<0.10
R-8		<2.5	<0.10	<0.10
R-8B	<1.0	<2.5	<0.10	<0.10
R-9	<1.0		<0.10	<0.10
R-9C	<1.0	<2.5	1	<0.10
R-9D	<1.0	<2.5	<0.10	20,10

#### PARAMETER: CHRYSENE(ug/L)

Well#	2nd Qtr. (6/26)	1990 3rd Ctr. (9/18)	4th Qtr. (12/11)	1st Qtr. (1/15)	1981 2nd Qtr. (4/9)	3rd Qtr. (7/15)
R-10 R-1R R-7 R-8 R-8B R-9 R-9C R-9D	<0.15 <0.15 <0.15 <0.15 <0.15 <0.15 <0.15 <0.15	<0.15, <0.15, <0.15 <0.15, <0.15, <0.15 <0.15, <0.15 <0.15, <0.15 <0.15, <0.15 <0.15, <0.15 <0.15, <0.15 <0.15, <0.15 <0.15, <0.15	<0.15, <0.15, <0.15 <0.15, <0.15, <0.15 <0.15, <0.15 <0.15, <0.15 <0.15, <0.15 <0.15, <0.15 <0.15, <0.15 <0.15, <0.15 <0.15	0.225, 0.252 0.257 <0.15, 0.214, 0.235 0.274, 0.251 0.263, 0.131 <0.15, 0.214 0.182, 0.307 0.277, 0.242 0.271, 0.276	<0.15, <0.15, <0.15 <0.15, <0.15, <0.15 <0.15, <0.15 <0.15, <0.15 <0.15, <0.15 <0.15, <0.15 <0.15, <0.15 <0.15, <0.15 <0.15, <0.15 <0.15, <0.15 <0.15, <0.15	<ul> <li>&lt;0.15, &lt;0.15, &lt;0.15</li> <li>&lt;0.15, &lt;0.15, &lt;0.15</li> <li>&lt;0.15, &lt;0.15</li> </ul>

Well#	1982 1st Qtr. (2/5)	3rd Ctr. (9/15)	1993 1st Otr. (3/2)	3rd Qtr. (8/17)	1004 1st Qtr. (3/22, 3/23)	3rd Qtr. (8/80, 8/31)	1906 1st Off: (1/25, 1/26)	3rd Otr. (8/16, 8/16)
R-10 R-1R R-7 R-8 R-8B R-9 R-9C	<pre>&lt;0.15 &lt;0.15, &lt;0.15 &lt;0.15 &lt;0.15, &lt;0.15</pre>	<0.15 <0.15 <0.15 <0.15 <0.15 <0.15 <0.15	<0.15 <0.15 <0.15 <0.15 <0.15 <0.15 <0.15 <0.15	<0.15 <0.15 <0.15 <0.15 <0.15 <0.15 <0.15 <0.15	<0.15 <0.15 <0.15 <0.15 <0.15 <0.15 <0.15 <0.15	<0.15 <0.15 <0.15 <0.15 <0.15 <0.15 <0.15 <0.15 <0.15 <0.15	<0.15 <0.15 <0.15 <0.15 <0.15 <0.15 <0.15 <0.15 <0.15	<0.15 <0.15 <0.15 <0.15 <0.15 <0.15 <0.15 <0.15

Well#	199 1st Qtr. (2/20, 2/21)	8 3rd Qtr. (8/27, 8/28)	1997 1st Qtr. (1/21, 1/22)	3rd Qtr. (7/29, 7/30)
		<0.15	<0.15	<0.15
R-10	<0.15	<0.15	<0.15	<0.15
R-1R	<0.15	<0.15	<0.15	<0.15
₹-7	<0.15	<0.15	<0.15	<0.15
₹-8	<0.15	<0.15	<0.15	<0.15
R-8B	<0.15	<0.15	<0.15	<0.15
₹-9	<0.15	<0.15	<0.15	<0.15
R-9C R-9D	<0.15 <0.15	<0.15	<0.15	<0.15

#### PARAMETER: DISSOLVED CHROMIUM (ug/L)

Well #	199 3rd Qtr. (9/18)	4th Qtr. (12/11)	1st Qtr. (1/15)	2nd Qtr. (4/9):	3rd Qtr. (7/16)
R-10 R-1R R-7 R-8 R-8B R-9 R-9C R-9D	<10, <10, <10 <10, <10, <12.5 <10, <10 <10, <10 <10, <10 <10, <10 <10, <10 <10, <10 <10, <10	<10, <10, <10 <10, <10, <10 <10, <10 <10, <10 <10, <10 <10, <10 <10, <10	<10, <10, <10 <10, <10, <10 <10, <10 <10, <10 <10, <10 <10, <10 <10, <10 <10, <10 <10, <10 <10, <10 <10, <10	<10, <10, <10 <10, <10, <10 <10, <10 <10, <10 <10, <10 <10, <10 <10, <10	<10, <10, <10 10, <10, <10 <10, <10 <10, <10 <10, <10 <10, <10 <10, <10 <10, <10

Well#	1st Qtr. (2/5)	1992 3rd Qtr, (9/15)	1 1st Otr, (3/2)	993 3rd Citr. (8/17)	199- 1 st Otr, (3/22, 3/23)	and Citr. (8/30, 8/31)	1at Qtr. (1/25, 1/28)	95 3rd Ott. (8/15, 8/16)
R-10 R-1R R-7 R-8 R-8B R-9 R-9C R-9D	<10, <10, <10 <10, <10, <10 <10, <10 <10, <10 <10, <10 <10, <10 <10, <10 <10, <10	<10 <10 <10 <10 <10 <10 <10	<10 <10 <10 <10 <10 <10 <10	<10 <10 <10 <10 <10 <10 <10 <10	<10 <10 <10 <10 <10 <10 <10	<10 <10 <10 <10 <10 <10 <10	<10 <10 <10 <10 <10 <10 <10	<10 <10 <10 <10 <10 <10 <10

		96 3rd Qtr.	1997 1st Qtr. 3rd Qtr.		
Well #	1st Qtr. (2/20,2/21)	(8/27,8/28)	(1/21, 1/22)	(7/29, 7/30)	
R-10	<10	<10	<10	<10	
R-1R	<10	<10	<10	<10	
R-7	<10	<10	<10	<10	
R-8	<10	<10	<10	<10	
R-8B	<10	<10	<10	<10	
R-9	<10	<10	<10	<10	
R-9C	<10	<10	<10	<10	
R-9D	<10	<10	<10	<10	

#### PARAMETER: DIBENZO(a,h)ANTHRACENE (ug/L)

Well #	2nd Qtr. (8/26)	1990 3rd Qtr. (9/18)	4th Qtr. (12/11)	1st Qtr. (1/15)	1991 2nd Ofr. (4/8)	3rd Off. (7/16)
R-10 R-1R R-7 R-8 R-8B R-9 R-9C	<0.03 <0.03 <0.03 <0.03 <0.03 <0.03 <0.03 <0.03 <0.03	<0.03, <0.03, <0.03 <0.03, <0.03, <0.03 <0.03, <0.03 <0.03, <0.03 <0.03, <0.03 <0.03, <0.03 <0.03, <0.03 <0.03, <0.03	0.07, <0.03, 0.273 0.277, 0.038, 0.058 0.053, 0.067 0.077, 0.19 0.124, 0.066 0.074, 0.06 0.056 0.049, 0.103	<0.03, <0.03, <0.03 <0.03, <0.03, <0.03 <0.03, <0.03 <0.03, <0.03 <0.03, <0.03 <0.03, <0.03 <0.03, <0.03 <0.03, <0.03	<0.03, <0.03, <0.03 0.046, <0.03, <0.03 <0.03, <0.03 <0.03, <0.03 <0.03, <0.03 <0.03, <0.03 <0.03, <0.03 <0.03, <0.03	<0.03, <0.03, <0.03 <0.03, <0.03, <0.03 <0.03, <0.03 <0.03, <0.03 <0.03, <0.03 <0.050, 0.058 <0.03, <0.03 <0.03, <0.03

	199 1st Qtr.	2 3rd Otr, (9/15)	1 1st Qtr. (3/2)	993 3rd Qtr. (8/17)	1st Otr. [3/22, 3/23]	4 3rd Qtr. (8/30; 8/31)	1st Car. (1/25, 1/25)	96 Srd Qtr. (8/15, 8/16)
R-10 R-1R R-7 R-8 R-8B R-9 R-9C R-9D	(2/5) <0.03 <0.03, <0.03 <0.03 <0.03, <0.03 <0.03, <0.03 <0.03, <0.03 <0.03, <0.03 <0.03, <0.03 <0.03, <0.03 <0.03, <0.03 <0.03, <0.03 <0.03, <0.03 <0.03, <0.03 <0.03, <0.03 <0.03, <0.03 <0.03, <0.03	<0.03 <0.03 <0.03 <0.03 <0.03 <0.03 <0.03 <0.03 <0.03	<0.03 <0.03 <0.03 <0.03 <0.03 <0.03 <0.03 <0.03	<0.03 <0.03 <0.03 <0.03 <0.03 <0.03 <0.03	<0.03 <0.03 <0.03 <0.03 <0.03 <0.03 <0.03	<ul><li>40.03</li><li>40.03</li><li>40.03</li><li>40.03</li><li>40.03</li><li>40.03</li><li>40.03</li><li>40.03</li><li>40.03</li></ul>	40.03 40.03 40.03 40.03 40.03 40.03 40.03	40.03 40.03 40.03 40.03 40.03 40.03 40.03

Veil #	1st Qtr. (2/20, 2/21)	3rd Qtr. (8/27, 8/28)	1 st Otr. (1/21, 1/22)	3rd Qtr. (7/29, 7/30)
	······································	<0.03	<0.03	<0.03
₹-10	<0.03 <0.03	<0.03	<0.03	<0.03
R-1R		<0.03	<0.03	<0.03
₹-7	<0.03	<0.03	<0.03	<0.03
₹-8	<0.03	<0.03	<0.03	<0.03
R-8B	<0.03	<0.03	<0.03	< 0.03
₹-9	<0.03		<0.03	< 0.03
R-9C	<0.03 <0.03	<0.03 <0.03	<0.03	<0.03

#### PARAMETER: FLUORENE (ug/L)

Well #	2nd Ctr. (6/26)	1990 3rd Citr. (9/16)	4th Otr. (12/11)	1st Qfr. (1/15)	1991 2nd Ctr. (4/9)	3rd Otr. (7/16)
R-10 R-1R R-7 R-8 R-8B R-9 R-9C R-9D	<0.2 <0.2 0.21 <0.2 0.262 <0.2 <0.2 <0.2 0.233	<0.2, <0.2, <0.2 0.304, <0.2, 0.237 0.728, 0.332 0.32, <0.2 <0.2, <0.2 0.703, 0.344 <0.2, <0.2 <0.2, <0.2	0.404, 0.22, <0.2 <0.2, <0.2, <0.2 <0.2, <0.2 <0.2, 0.283 0.351, 0.25 <0.2, <0.2 <0.2 <0.2	0.281, 0.267, 0.293 0.275, 0.231, 0.279 0.217, 0.228 0.245, 0.23 0.23, 0.22 0.239, 0.220 0.233, 0.223 0.24, 0.23	<ul> <li>&lt;0.2, &lt;0.2, &lt;0.2</li> <li>&lt;0.2, &lt;0.2</li> </ul>	<0.2, <0.2, <0.2 <0.2, <0.2, <0.2 <0.2, <0.2 <0.2, <0.2 <0.2, <0.2 <0.2, <0.2 <0.2, <0.2 <0.2, <0.2 <0.2, <0.2

Well #	1992 1 st Qtr. (2/5)	3rd Qtr. (9/15)	195 1st Off; (3/2)	3rd Ott. (8/17)	fet Citr. (372, 3723)	994 3rd Car. (8/90, 8/31)	199 191 Off. (1/25, 1/28)	[84.8" 84.9] 244.035
R-10 R-1R R-7 R-8 R-8B R-9 R-9C R-9D	<0.2, <0.2, <0.2 <0.2, <0.2, <0.2 <0.2, <0.2 <0.2, <0.2 <0.2, <0.2 <0.2, <0.2 <0.2, <0.2 <0.2, <0.2 <0.2, <0.2	<0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2	<0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2	<0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2	<0.20 0.50 <0.20 <0.20 0.27 <0.20 <0.20	<0.2 <0.2 <0.2 <0.20 <0.2 <0.20 <0.20 <0.20	40.2 40.2 40.2 40.2 40.2 40.2 40.2 40.2	40.2 40.2 40.2 40.2 40.2 40.2 40.2 40.2

Well#	1996 1st Otr. (2/5)	3rd Qtr; (8/27, 8/28)	1997 1st Qtr. (1/21, 1/22)	3rd Otr. (7/29, 7/30)
R-10 R-1R R-7 R-8	<0.2 <0.2 <0.2 <0.2 <0.2	<0.2 <0.2 <0.2 <0.2	<0.2 <0.2 <0.2 <0.2	<0.2 <0.2 <0.2 <0.2
R-8B R-9 R-9C R-9D	<0.2 <0.2 <0.2 <0.2	<0.2 <0.2 <0.2 <0.2	<0.2 <0.2 <0.2 <0.2	<0.2 <0.2 <0.2 <0.2

PARAMETER: FLUORANTHENE (ug/l)

Well #	1986 3rd Citr. (7/26)	4th Off. (9/27)	1st Qtr. (2/13)	1986 2nd Otr. (8/22)	3rd Citr. (9/20)	4th Qtr. (12/14)	1st Qtr. (1/19)	2nd Qtr. (6/27)	1860 Srd Cit; (8/18, 8/16)	4th Otr. (12/11)	1st Cir. (1716, 1718)	1991 2nd Otr. (4rs, 4r10)	2rd City (7/10, 7/57)
R-10 R-1R R-7 R-8 R-8B R-9 R-9C R-9D	<0.200 NI <0.200 <0.200 <0.200 <0.200 <0.200 <0.200	<0.200 NI <0.200 <0.200 <0.200 <0.200 <0.200 <0.200	<0.200 NI <0.200 <0.200 <0.200 <0.200 <0.200 <0.200	<0.200 — <0.200 <0.200 <0.200 <0.200 <0.200 <0.200	<0.200 <0.200 <0.200 <0.200 <0.200 <0.200 <0.200 <0.200	0.207 <0.200 <0.200 0.214 <0.200 <0.200 <0.200 <0.200	<0.200 <0.200 <0.200 <0.200 <0.200 <0.200 <0.200 <0.200	<0.200 0.215 <0.200 <0.200 <0.200 <0.200 <0.200 <0.200 <0.200	<0.200, <0.200, <0.200 0.468, 0.493, 0.410 0.557, 0.313 0.470, <0.200 <0.200, <0.200 0.579, 0.270 <0.200, <0.200 <0.200, <0.200	<0.200, <0.200, <0.200 <0.200, <0.200, <0.200 <0.200, <0.200 <0.200, <0.200 <0.200, <0.200 <0.200, <0.200 <0.200, <0.200 <0.200, <0.200 <0.200, <0.200	<0.200, <0.200, <0.200 <0.200, <0.200, <0.200 <0.200, <0.200 <0.200, <0.200 <0.200, <0.200 <0.200, <0.200 <0.200, <0.200 <0.200, <0.200 <0.200, <0.200	<0.200, <0.200, <0.200 <0.200, <0.200, <0.200 <0.200, 0.200 <0.200, <0.200 <0.200, <0.200 <0.200, <0.200 <0.200, <0.200 <0.200, <0.200 <0.200, <0.200	<0.200, <0.200, <0.200 <0.200, <0.200, <0.200 <0.200, <0.200 <0.200, <0.200 <0.200, <0.200 <0.200, <0.200 <0.200, <0.200 <0.200, <0.200 <0.200, <0.200

Well #	1982 1st Otr. (2/6)	3rd Qfr. (9/15)	1=t City, (3/2)	1983 3rd Ctr. (8/17)	1et Ott.	994 3rd Qti: (8/30, 8/31)	fet Ofr.	96 3rd Ott. (8/15, 8/16)	196 1st Qtr. (2/20-2/21)	3rd Qtr; (8/27; 8/28)	160 1et Cit; (1721, 1722)	3rd Cfr. (7/26, 7/50)
	<0.200, <0.200, <0.20 <0.200, <0.200, <0.20 <0.200, <0.200 <0.200, <0.200 <0.200, <0.200 <0.200, <0.200 <0.200, <0.200 <0.200, <0.200 <0.200, <0.200	<0,200 <0,200 <0,200 <0,200 <0,200 <0,200 <0,200 <0,200	<0.200 <0.200 <0.200 <0.200 <0.200 <0.200 <0.200 <0.200	<0.200 <0.200 <0.200 <0.200 <0.200 <0.200 <0.200	<0.20 0.25 <0.20 <0.20 <0.20 <0.20 <0.20 <0.20	<0.2 <0.2 <0.2 <0.2 <0.2 <0.2 0.24 <0.2 <0.2	<0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2	<0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2	<0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2	<0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2	<0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2	40.2 40.2 40.2 40.2 40.2 40.2 40.2 40.2 40.2

NOTE: The concentration of fluoranthene in these wells in the first quarter of 1991 was <0.200 ug/l only after the concentrations detected in associated trip and field blanks was subtracted from the actual detected concentrations.

Ni - Not installed until March 1989.

#### PARAMETER: INDENO(123-cd)PYRENE(ug/L)

Neil 🗭 ,	2nd Qtr; (8/26)	1990 3rd Qtr, (9/18)	4th Qtr. (12/11)	1et Qtr; (1/15)	1901 2nd Qtr, (4/9)	3rd Citr. (7/18)
₹-10	<0.05	<0.05. <0.05. <0.05	0.053, <0.05, 0.08	<0.05, 0.212, <0.05	<0.05, <0.05, <0.05	<0.05, <0.05, 0.053
R-1R	<0.05	<0.05, <0.05, <0.05	0.088, <0.05, <0.05	<0.05, <0.05, <0.05	<0.05, <0.05, <0.05	<0.05, <0.05, <0.05
₹-7	<0.05	<0.05, <0.05	<0.05, <0.05	<0.05, <0.05	<0.05, <0.05	<0.05 <0.05
8	<0.05	<0.05, <0.05	<0.05, 0.063	<0.05, <0.05	<0.05, <0.05	<0.05 <0.05
-88	<0.05	<0.05, <0.05	<0.05, <0.05	<0.05, <0.05	<0.05, <0.05	<0.05 <0.05
-9	<0.05	<0.05, <0.05	<0.05, <0.05	<0.05, <0.05	<0.05. <0.05	<0.05 <0.05
-9C	<0.05	<0.05, <0.05	<0.05	<0.05, <0.05	<0.05, <0.05	<0.05 <0.05
-9D	<0.05	<0.05, <0.05	<0.05, <0.05	<0.05, <0.05	<0.05, <0.05	<0.05 <0.05

Well #	1902 1et Ctr. (2/5)	3rd Qtr, (9/15)	101 Citr. (3/2)	85 3rd Ott; (8/17)	161 Otr. (3/22, 3,23)	4 Srd Citr. (6/30, 8/91)	16 Cate; (1/25, 1/28)	Sed City (Wis, Sed)
R-10 R-1R R-7 R-8 R-8B R-9	<0.05, <0.05, <0.05 <0.05, <0.05, <0.05 <0.05, <0.05 <0.05, <0.05 <0.05, <0.05 <0.05, <0.05 <0.05, <0.05	<0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05	<0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05	<0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05	<0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05	<0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05	<0.05 <0.05 <0.05 <0.05 <0.05 <0.05	<0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05

	196 1et Cir.	3rd Qtr.	1st Qtr.	Srd Otr,
Well#	(2/6)	(8/27, 8/28)	[1/21, 1/22]	(7/29, 7/80)
R-10	<0.05	<0.05	<0.05	<0.05
R-1R	<0.05	<0.05	<0.05	<0.05
R-7	<0.05	<0.05	<0.05	<0.05
R-8	<0.05	<0.05	<0.05	<0.05
R-8B	<0.05	<0.05	<0.05	<0.05
R-9	<0.05	<0.05	<0.05	<0.05
R-9C	<0.05	<0.05	<0.05	<0.05
R-9D	<0.05	<0.05	<0.05	<0.05

#### PARAMETER: DISSOLVED MERCURY (ug/L)

Well#	2nd Qtr. (6/26)	1990 3rd Qtr. (9/18)	4th Qtr. (12/11)	1st Qtr. (1/15)	1991 2nd Qtr. (4/9)	3rd Qtr. (7/16)
R-10	<0.2, <0.2, <0.2	<0.2, <0.2, <0.2	<0.2. <0.2. <0.2	<0.2, <0.2, <0.2	<0.2, <0.2, <0.2	<0.2,<0.2,<0.2
R-1R	<0.2, <0.2, <0.2	<0.2, <0.2, <0.2	<0.2, <0.2, <0.2	<0.2, <0.2, <0.2	<0.2, <0.2, <0.2	<0.2,<0.2,<0.2
₹-7	<0.2, <0.2	<0.2, <0.2	<0.2, <0.2	<0.2. <0.2	<0.2. <0.2	<0.2, <0.2
₹-8	0.216, <0.2	<0.2, <0.2	<0.2, <0.2	<0.2, <0.2	<0.2, <0.2	<0.2, <0.2
R-8B	<0.2, <0.2	<0.2, <0.2	<0.2, <0.2	<0.2, <0.2	<0.2, <0.2	<0.2, <0.2
₹-9	<0.2, <0.2	<0.2, <0.2	<0.2. <0.2	<0.2, <0.2	<0.2, <0.2	<0.2, <0.2
R-9C	<0.2, <0.2	<0.2	<0.2, <0.2	<0.2, <0.2	<0.2, <0.2	<0.2, <0.2
R-9D	<0.2, <0.2	<0.2, <0.2	<0.2, <0.2	<0.2, <0.2	<0.2, <0.2	<0.2, <0.2

Vell#	1992 1st Qtr. (2/5)	1st Qtr. (9/15)	1st Otr. (3/2)	93 3rd Qtr, (8/17)	191 1st Qtr. (3/22, 3/23)	3rd Qtr. (8/30, 8/31)	1st Gtr. (1/25, 1/26)	3rd Qtr. (8/16, 8/16)
₹-10	<0.2, <0.2, <0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
R-1R	<0.2, <0.2, <0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
₹-7	<0.2, <0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
8-8	<0.2, <0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
R-8B	<0.2, <0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
2-9	<0.2, <0.2	<0.2	<0.2	່ <0.2	<0.2	<0.2	<0.2	<0.2
-9C	<0.2, <0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
-9D	<0.2, <0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2

		96	4:	997
Well#	1st Qtr. (2/20,2/21)	3rd Qtr. (8/27,8/28)	1st Otr. (1/21, 1/22)	3rd Qtr. (7/29, 7/30)
R-10	<0.2	<0.2	<0.2	<0.2
R-1R	<0.2	<0.2	<0.2	<0.2
R-7	<0.2	<0.2	<0.2	<0.2
R-8	<0.2	<0.2	<0.2	<0.2
R-8B	<0.2	<0.2	<0.2	<0.2
R-9	<0.2	<0.2	<0.2	<0.2
R-9C	<0.2	<0.2	<0.2	<0.2
R-9D	<0.2	<0.2	<0.2	<0.2

PARAMETER: NAPHTHALENE (ug/l)

Well #	1968 3rd Ctr. (7/26)	4th Citr. (9/27)	1st Ofr. (2/13)	2nd Otr, (6/22)	1999 3rd Ofr. (9/20)	4th Qtr. (12/14)	1et Otr. (1/19)	2nd Citr, (6/27)	1990 Sed Ote. (9/18, 9/19)	4th Qtr, (12/11)	1et Ofr. (1/18, 1/16)	1981 2H4 Ott- (4/8, 4/10)	- 3rd Citr. (7/14)
R-10 R-1R R-7 R-8 R-8B R-9 R-9C R-9D	<2.00 NI <2.00 <2.00 <2.00 <2.00 <2.00 <2.00	<2.00 NI <2.00 <2.00 <2.00 <2.00 <2.00 <2.00	<.00 NI <.00 <.00 <.00 <.00 <.00 <.00	<2.00 NI <2.00 <2.00 <2.00 <2.00 <2.00 <2.00	<2.00 <2.00 <2.00 <2.00 - 2.41 <2.00 <2.00	<2.00 <2.00 <2.00 <2.00 <2.00 <2.00 <2.00	<2.00 <2.00 <2.00 <2.00 <2.00 <2.00 <2.00	<2.00 4.56 3.05 <2.00 7.76 1.77 <2.00 <2.00	<2.00, <2.00, <2.00 2.94, <2.00, 3.63 <2.00, 2.79 <2.00, <2.00 2.90, 2.84 2.28, <2.00 <2.00, <2.00 <2.00, <2.00	<200, <200, <200 <200, <200, <200 <200, <200 <200, <200 3.27, <200 <2.00, <2.00 4.99 <2.00, <2.00	<2.00, <2.00, <2.00 <2.00, <2.00, <2.00 <2.00, <2.00 <2.00, <2.00 <2.00, <2.00 <2.00, <2.00 <2.00, <2.00 <2.00, <2.00 <2.00, <2.00	<.00, <2.00, <2.00 <2.00, <2.00, <2.00 <2.00, <2.00 <2.00, <2.00 <2.00, <2.00 <2.00, <2.00 <2.00, <2.00 <2.00, <2.00 <2.00, <2.00	<.00, <.00, <.00 <.00, <.00, <.00 <.00, <.00 <.00, <.00 <.00, <.00 <.00, <.00 <.00, <.00 <.00, <.00 <.00, <.00

Well #	1992; 1 et Ctr, (2/13)	3rd Qtr. (9/15)	199 1st Otr, (3/2)	3rd Qtr. (8/17)	1et Qtr. (3/22, 3/23)	984 3rd Citr; (8/30, 8/31)	1st Qtr. (1/26, 1/26)	1986 3rd Qtr: (9/18; 9/16)	196 1et Ott. (2/20-2/21)	9rd Citr. (9/27, 9/28)	100 Chr (1/21) 1/22)	97 Sec. (784, 784)
R-10	<2.00, <2.00, <2.00	<2.00	<2.00	<2.00	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<0.20	<0.20
R-1R	<2.00, <2.00, <2.00	<2.00	<2.00	<2.00	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<0.20	<0.20
R-7	<2.00, <2.00	<2.00	<2.00	<2.00	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<0.20	<0.20
R-8	<2.00, <2.00	<2.00	<2.00	<2.00	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<0.20	<0.20
R-8B	3.3, 3.1	<2.00	<2.00	<2.00	<2.0	<2.0	<2.0	<2.0	2.3	<2.0	<0.20	<0.20
R-9	<2.00, <2.00	<2.00	<2.00	<2.00	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<0.20	<0.20
R-9C	<2.00, <2.00	<2.00	<2.00	<2.00	<2.0	<2.0	<2.0	<2.0	<20	<2.0	<0.20	3
R-9D	<2.00, <2.00	<2.00	<2.00	<2.00	<2.0	<2.0	<2.0	<2.0	<20	<2.0	<0.20	2.1

NI - Not installed until March 1989.

#### PARAMETER: PENTACHLOROPHENOL (ug/l)

Well #	19 3rd Qtr, (7/26)	88 4th Otr. (9/27)	1st Qtr. (2/13)	1989 2nd Otr, (6/22)	3rd Qtr. (9/20)	4th Qtr. (12/14)	1st Qtr. (1/19)	2nd Qtr. (6/27)	1990 3rd Qtr, (9/18, 9/19)	4th Qtr. (12/11)	1st Qtr. (1/16, 1/16)	1991 2nd Qtr. (4/9, 4/10)	3rd Citr. (7/16,7/17)
R-10	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	1.04, 1.88, 1.34	<1.00, <1.00, <1.00	<1.00, <1.00, <1.00	<1.00, <1.00, <1.00	<1.00, <1.00, <1.00
R-1R	NI	NI	NI		<1.00	<1.00	<1.00	<1.00	<1.00, <1.00, <1.00	<1.00, <1.00, <1.00	<1.00, <1.00, <1.00	<1.00, <1.00, <1.00	<1.00, <1.00, <1.00
R-7	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00, <1.00	<1.00, <1.00	<1.00, <1.00	<1.00, <1.00	<1.00, <1.00
R-8	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00, <1.00	<1.00, <1.00	<1.00, <1.00	<1.00, <1.00	<1.00, <1.00
R-8B	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00, <1.00	<1.00, <1.00	<1.00, <1.00	1.09,1.32	<1.00, <1.00
R-9	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00, <1.00	<1.00, <1.00	<1.00, <1.00	<1.00, <1.00	<1.00, <1.00
R-9C	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	13.5, 1.46	<1.00	<1.00, <1.00	3.21,3.38	<1.00, <1.00
R-9D	<1.00	<1.00	<1.00	<1.00	<1.00	1.38	<1.00	<1.00	4.43, 3.31	<1.00, <1.00	<1.00, <1.00	<1.00, <1.00	<1.00, <1.00

	1992		199	B	199	Y	1	996
Well #	<u>                                     </u>	3rd Qtr. (9/15)	1st Qtr. (3/2)	3rd Qtr. (8/17)	1st Qtr. (3/22, 3/23)	3rd Qtr. (8/30, 8/31)	1st Qtr. (1/25, 1/26)	3rd Ott. (8/16, 8/16)
R-10	<1.00, <1.00, <1.00	<1.00, <1.00, <1.00	<1.00	<1.00	<1.0	<1.0	<2.5	<2.5
R-1R	<1.00, <1.00, <1.00	<1.00, <1.00, <1.00	<1.00	<1.00	<1.0	<1.0	<2.5	<b>  &lt;2.5</b>
R-7	<1.00, <1.00	<1.00	<1.00	<1.00	<1.0	<1.0	<2.5	<2.5
R-8	<1.00, <1.00	<1.00	<1.00	<1.00	<1.0	<1.0	<2.5	<2.5
R-8B	<1.00, <1.00	<1.00	<1.00	<1.00	<1.0	<1.0	<2.5	<2.5
R-9	<1.00, <1.00	<1.00	<1.00	<1.00	<1.0	<1.0	<2.5	<2.5
R-9C	<1.00, <1.00	<1.00	<1.00	<1.00	<1.0	<1.0	<2.5	<2.5
R-9D	<1.00, <1.00	<1.00	<1.00	<1.00	<1.0	<1.0	<2.5	<2.5

Well#	1st Qtr. (2/20, 2/21)	1996 3rd Qtr. (8/27, 8/28)	1 1ST Qtr. (1/21, 122/)	997 3rd Qtr. (7/29, 7/30)
R-10	<2.5	<2.5	<2.0	<2.0
R-1R	<2.5	<2.5	<2.0	<2.0
R-7	<1.0	<2.5	<2.0	4
R-8	<2.5	<2.5	<2.0	<2.0
R-8B	<2.5	<2.5	<2.0	<2.0
R-9	<2.5	<2.5	<2.0	<2.0
R-9C	<2.5	<2.5	<2.0	<2.0
R-9D	<2.5	<2.5	3.0	3

#### PARAMETER: PHENANTHRENE (ug/L)

	2nd Qtr. (6/26)	1990 3rd Otr, (9/18)	4th Otr. (12/11)	1st Qtr. (1/15)	1991 2nd Otr. (4/9)	3rd Qtr. (7/19)
Vell# k-10 k-1R k-7 k-8 k-8 k-8B k-9 k-9C k-9C k-9D	<0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5	<0.5, <0.5, <0.5 1.44, 1.75, 1.44 2.84, 1.24 1.12, <0.5 <0.5, <0.5 1.67, 0.743 <0.5, <0.5 <0.5, <0.5	0.749, 0.579, <0.5 0.752, 0.813, 1.07 <0.5, <0.5 0.524, 0.799 0.525, <0.5 <0.5, <0.5 <0.5 <0.5	<0.5, <0.5, <0.5 <0.5, <0.5, <0.5 <0.5, <0.5 <0.5, <0.5 <0.5, <0.5 <0.5, <0.5 <0.5, <0.5 <0.5, <0.5 <0.5, <0.5	<0.5, <0.5, <0.5 0.625, 0.656, 0.564 <0.5, <0.5 <0.5, <0.5 <0.5, <0.5 <0.5, <0.5 <0.5, <0.5 <0.5, <0.5 <0.5, <0.5 <0.5, <0.5	40.5, 40.5, 40.5 40.5, 40.5, 40.5 40.5, 40.5 40.5, 40.5 40.5, 40.5 40.5, 40.5 40.5, 40.5 40.5, 40.5

	199 1st Qtr.	1st Qtr.	1993 1st Qtr. (3/2)	3 3rd Qtr. (8/17)	1st Qtr. (2/22, 3/23)	94 3rd Qtr. (8/30, 8/31)	199 1st Cit. (1/26, 1/26)	Srd Car. (846, 846)
Well # R-10 R-1R R-7 R-8 R-8B R-9 R-9C R-9D	<pre>&lt;0.5, &lt;0.5, &lt;0.5 &lt;0.5, &lt;0.5, &lt;0.5 &lt;0.5 &lt;0.5, &lt;0.5 &lt;0.5 &lt;0.5 &lt;0.5 &lt;0.5 &lt;0.5 &lt;0.5 &lt;0.5</pre>	<0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5	<0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5	<0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5	<0.50 0.61 <0.50 <0.50 <0.50 <0.50 <0.50	<0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50	<0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1	<0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5

Well #	1st Qtr.	3rd Qtr.	1st Qtr.	3rd Qtr.
	(2/20-2/21)	(8/27, 8/28)	(1/21, 1/22)	(7/29, 7/30)
R-10 R-1R R-7 R-8 R-8B R-9 R-9C R-9D	<0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5	<0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1	<0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5	<0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5

#### GRENADA, MS PLANT QUARTERLY MONITORING FOR RCRA SURFACE IMPOUNDMENT

#### PARAMETER: PHENOL (ug/L)

Vell#	2nd Qtr. (6/26)	1990 3rd Qtr, (9/18)	4th Otr. (12/11)	1st Qtr. (1/15)	2nd Qtr. (4/9)	3rd Citr. (7/16)
R-10 R-1R R-7 R-8 R-8B R-9B R-9C	0.721 1.06 <0.50 <0.50 <0.50 1.44 <0.50	0.528, 0.865, 0.50 0.897,<0.50,<0.50 <0.50,<0.50 <0.50,<0.50 <0.50,<0.50 <0.50,<0.50 <0.50,<0.50 <0.50,<0.50	1.16, 0.738, 1.01 1.87, 3.45, 2.93 2.89, 0.544 2.33, 1.64 1.97, 2.13 1.60, 3.79 3.51 5.14, 4.81	<0.50,<0.05,<0.05 <0.50,<0.05,<0.05 <0.50,<0.50 <0.50,<0.50 <0.50,<0.50 <0.50,<0.50 <0.50,<0.50 <0.50,<0.50 <0.50,<0.50	1.96, 0.74, <0.50 <0.50, 1.34, 3.43 <0.50, <0.50 <0.50, <0.50 <0.50, <0.50 <0.50, 2.04 3.50, 3.41 3.52, 5.18 5.38, 4.31	<0.50, 0.847, 0.624 0.678, <0.500, 1.08 <0.50, <0.50 <0.50, <0.50 <0.50, <0.50 <0.50, <0.50 0.562, <0.50 1.07, 0.858

1st Qtr.	992 3rd Qtr.	1st Qtr.	93 3rd Qtr. (8/17)	1st Otr. (3/22, 3/23)	3rd Qtr. (8/30, 8/31)	1st Ofr. (1/25, 1/25)	3rd Qtr. (8/15, 8/16
(2/5)   (2/5	(9/15) <0.50, <0.50, <0.50 <0.50, <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50	<0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50	<0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50	<0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50	Q.5	<1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0	<1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0

	1st Qtr.	3rd Qtr.	1st Qtr.	3rd Qtr. (7/29, 7/30)
Nell#	(2/20, 2/21)	(8/27,8/28)	(1/21.1/22)	(1125,1190)
D 40	<1.0	<1.0	<1.0	<1.0
R-10	<1.0	<1.0	<1.0	<1.0
R-1R	<1.0	<1.0	<1.0	<1.0
R-7	<1.0	<1.0	<1.0	<1.0
R-8	I I	<1.0	<1.0	<1.0
R-8B	<1.0	<1.0	<1.0	<1.0
R-9	<1.0	<1.0	<1.0	<1.0
R-9C	<1.0		<1.0	<1.0
R-9D	<1.0	<1.0	1.0	•5

#### PARAMETER: PYRENE (ug/L)

Well#	2nd Qtr. (6/26)	1990 3rd Qtr. (9/18)	4th Qtr. (12/11)	1st Qtr. (1/15)	1991 2nd Otr. (4/8)	Sed Ofr. (7/18)
R-10	<0.2	<0.2. <0.2. <0.2	0.244, 0.229, 0.216	0.593, 0.522, 0.562	<0.2, <0.2, <0.2	<0.2, <0.2, <0.2
R-1R	<0.2	0.628, 0.282, 0.308	0.343, <0.2, <0.2	<0.2, 0.547, <0.2	<0.2, <0.2, <0.2	<0.2, <0.2, <0.2
₹-7	<0.2	0.870, 0.366	0.227, 0.218	0.674, 0.689	<0.2, <0.2	<0.2, <0.2
₹-8	<0.2	0.424, <0.2	0.247, 0.351	0,636, 0,661	<0.2, <0.2	<0.2, <0.2
R-8B	<0.2	<0.2, <0.2	0,250, 0.242	0.664, 0.491	<0.2, <0.2	<0.2, <0.2
R-9	<0.2	<0.2. <0.2	<0.2, <0.2	0.659, 0.532	<0.2, <0.2	<0.2, <0.2
R-9C	<0.2	<0.2. <0.2	<0.2	0.522, 0.577	<0.2, <0.2	<0.2, <0.2
R-9D	<0.2	<0.2, <0.2	<0.2, <0.2	0.575, 0.570	<0.2, <0.2	<0.2, <0.2

Well#	1992 1st Qtr. (2/5)	3rd Qtr. (9/15)	1 1st Qtr. (3/2)	993 3rd Qtr. (8/17)	1st Qtr. (3/22, 3/23)	94 3rd Qtr; (8/30, 8/31)	1st Otr. (1/25, 1/26)	996 3rd Otr. (8/15, 8/16)
R-10	<0.2, <0.2, <0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
R-1R	<0.2, <0.2, <0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
R-7	<0.2, <0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
R-8	<0.2, <0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
R-8B	<0.2, <0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
R-9	<0.2, <0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
R-9C	<0.2, <0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
R-9D	<0.2, <0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2

	19 1st Qtr.	96 3rd Otr.	1997 1st Qtr. 3rd Qtr.					
Well#	(2/20-2/21)	(8/27, 8/29))	(1/21, 1/22)	(7/29, 7/30)				
R-10	<0.2	<0.2	<0.2	<0.2				
R-1R	<0.2	<0.2	<0.2	<0.2				
R-7	<0.2	<0.2	<0.2	<0.2				
R-8	<0.2	<0.2	<0.2	<0.2				
R-8B	<0.2	<0.2	<0.2	<0.2				
R-9	<0.2	<0.2	<0.2	<0.2				
R-9C	<0.2	<0.2	<0.2	<0.2				
R-9D	<0.2	<0.2	<0.2	<0.2				

## APPENDIX E-5 SAMPLING AND ANALYSIS PLAN

# SAMPLING AND ANALYSIS PLAN POST-CLOSURE CARE KOPPERS INDUSTRIES, INC. GRENADA FACILITY GRENADA, MISSISSIPPI

## Prepared for

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## Prepared by:

November 1997

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Revised March 1999

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Concord, MA 01742

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TABLES
2-1 Summary of Groundwater Monitoring Wells

## **FIGURES**

2-1 Well Location Map 6-1 Chain-of-Custody

### 1.0 INTRODUCTION

Ground Water Monitoring Technical Enforcement Guidance Document, September 1986, SW-846 Test Methods for Evaluating Solid Wastes, and Standard Methods for the Examination of specifications and methods to be employed, and to ensure the highest possible degree of technical accuracy and precision, statistical validity, and documentary compliance of data generated in the course of conducting RCRA Post-Closure activities for the Koppers Industries, Inc. (KII) Grenada Facility located in Grenada, Mississippi. The format of this document is in accordance with the EPA Technical Guidelines for Quality Assurance Project Plans (July 1988). Additional sources of information used in preparing the SAP originated from the U.S. EPA RCRA Water and Wastewater. The purpose of the Sampling and Analyses Plan (SAP) is to define and document the

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## 2.0 PROJECT DESCRIPTION

#### 2.1 Introduction

monitor groundwater quality. A summary of sampling locations and project schedules are provided in the Post-Closure Care Permit Reapplication, along with the rationale for location and parameter selection. Environmental Quality (MDEQ) requirements to monitor groundwater quality groundwater quality in the alluvium underlying the Koppers Industries, Inc. Grenada facility (facility) during post-The Post-Closure Care Program will be implemented to comply with Mississippi Department of Groundwater samples will be collected from select monitoring wells in the alluvium to

### 2.2 Site Description

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

#### 2.3 Site History

currently pressure treats railroad cross ties, switch ties and poles. the facility include pentachlorophenol (mixed in No. 2 diesel fuel) and The facility was constructed in 1904 to pressure treat railroad cross ties. creosote. Preservatives used at The facility

Waste Management, Inc., located in Emelle, Alabama for disposal. Prior to closure of the SI a RCRA permit application was submitted to the MDEQ and a Hazardous Waste Management Permit No. 88-543-01 became effective on June 28, 1988 for the operation and post-closure care of the closed SI. The SI was closed in 1989 and certification of closure for the Si was included in the Closure Closure (Keystone, 1988) contaminated soils were removed from the impoundment and shipped off-site to Chemical sediment sludge (K001) was generated. In the summer of 19988, all K001 sludge and visually appears that the SI was constructed by excavating into the natural clay soil and using the excavated material to construct the dike around the SI. During the operation of the SI, bottom wastewater treatment system and was used until 1988 to treat wastewater resulting from the wood preserving operations. No records exist concerning the construction of the SI, but it The surface impoundment (SI) was constructed in the mid 1970's as part of the plant's Construction Documentation Report for the Surface Impoundment

### 2.4 Target Compounds

creosote as follows: K001 in 40CFR 261 Appendix VII and other semivolatile organic compounds associated with Groundwater samples will be analyzed using U.S. EPA Method 8270C for constituents listed for

#### Table 2-1

pentachlorophenol	chrysene
phenol	naphthalene
2-chlorophenol	fluoranthene
p-chloro-m-cresol	benzo(b)fluoroanthene
2,4-dimethylphenyl	benzo(a)pyrene
2,4-dinitrophenol	indeno(1,2,3-cd)pyrene
trichlorophenols	benzo(a)anthracene
tetrachiorophenois	dibenzo(a,h)anthracene
acenaphthene	acenaphthalene
fluorene	anthracene
phenanthrene	pyrene

#### 2.5 Data Use

objectives of RCRA. During the remaining portion of the 30-year Post-Closure Care Program which began in June 1990, groundwater data will be collected to establish a database to statistically assess the groundwater quality. The monitoring program has been developed to determine to be protective of human health and the environment. Monitoring under the Detection Monitoring Program is designed to be consistent with the

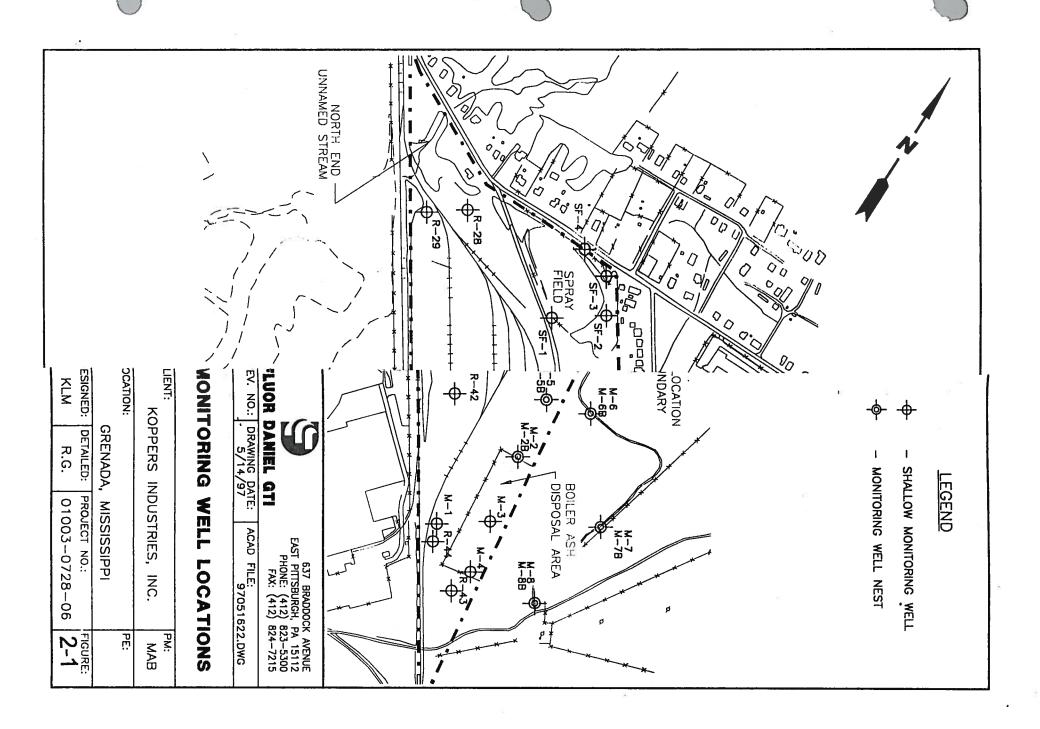
## 2.6 Sampling Locations

previous monitoring events. determined by historical groundwater quality data and groundwater flow directions obtained from The locations of the monitoring wells from which the groundwater samples will be collected were

Groundwater samples will be collected from two upgradient monitoring wells, R-1 R and R-1 0 and six point of compliance monitoring wells, R-7, R-8, R-8B, R-9, R-9C and R-9D. Figure 2-1 presents the well locations.

#### 2.7 Schedule

data. The detection monitoring program continue throughout the post-closure period or until the will be completed within approximately five (5) weeks of receipt of the final sample. Analytical results will be made available to the MDEQ approximately 30 days after receipt of the analytical under the current detection monitoring program required by the 1988 Permit. Sample analyses permit is modified Permit. Until such time, the groundwater beneath the facility will be monitored semi-annually The detection groundwater monitoring program will be implemented after the issuance of the



## 3.0 PROJECT ORGANIZATION AND RESPONSIBILITY

#### 3.1 Project Team

Manager and principle investigators Project responsibilities within the primary contractor will proceed from the Program Manager to the Project

### 3.1.1 Program Manager

of hazardous waste and environmental engineering activities. who has over ten years of experience in management of environmental work sites, including management Overall legal responsibility for the project resides with the Beazer Program Manager, Mr. Robert Markwell

### 3.1.2 Project Manager

and preparation of required reports, and assignment of technical responsibilities to appropriate Principle project schedule and budget. Other responsibilities include coordination with subcontractors, coordination Investigators. Administrative support activities are under the Project Manager's supervision. project team activities. The Project Manager also is responsible for the management and tracking of the The Project Manager will coordinate and manage the day-to-day technical aspects of the project and

## 3.1.3 Site Hydrogeologist/Field Team Leader

are related to the project. completed. The Site Hydrogeologist/Field Team Leader reports to the Project Manager on all issues that Team Leader supervises the sampling operations and ensures that the Project requirements are The Hydrogeologist/Field Team Leader is responsible for field activities. The Site Hydrogeologist/Field

### 3.2 Subcontractors

of the program The laboratory's Project Manager will report to Project Manager assigned to oversee the analytical aspects

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## 4.0 QUALITY ASSURANCE OBJECTIVES FOR MEASUREMENT DATA

measurement data are provided below. The Quality Assurance (QA) objectives for the project are listed below. The QA objectives for

#### 4.1 Precision

Precision is the degree of reproducibility of a measured quantity. Precision will be evaluated in field at the point of measurement. Laboratory precision will be verified by the laboratory.

## 4.1.1 Temperature and pH

used to determine stability of groundwater for sampling. agree to within plus or minus the sensitivity of the instrument. These measurements will also be location. The second measurement will be considered a duplicate measurement and must Two measurements of temperature and pH will be made before and after sampling at each well

## 4.1.2 Specific Conductivity

used to determine stability for groundwater sampling. agree to within plus or minus the sensitivity of the instrument. These measurements will also be location. The second measurement will be considered a duplicate measurement and must Two measurements of specific conductivity will be made before and after sampling at each well

## 4.1.3 Laboratory Analytical Measurements

specific Quality Assurance Manual (QAM). Precision objectives for all laboratory analytical measurements are defined in the laboratory-

#### 4.2 Accuracy

Accuracy is the degree of conformity of a generated value to the true value. The accuracy of field measurements is generally limited to the sensitivity of the instruments used. The accuracy of laboratory measurements will be evaluated through the data validation process (see Section

## 4.2.1 Groundwater Level

Groundwater levels will be measured to the nearest 0.01 of a foot

## 4.2.2 Temperature and pH

device as follows: temperature to +/- 1.0°C and pH to +/- 1.0 standard unit. The accuracy of these indicator measurements will be limited to the sensitivity of the measuring

### 4.2.3 Conductivity

The accuracy of this indicator measurement will be limited to the sensitivity of the measuring device and no less than +/- 10.0 umhos.

## 4.2.4 Laboratory Analytical Measurements

Accuracy objectives for all laboratory analytical measurements are defined in Section 4.0 of the laboratory specific QAM. The laboratory will meet the Estimated Quantitation Limits (EQLs) for the constituents listed in Table 4-1 using U.S. EPA Method 8270C.

Table 4-1 Estimated Quantitation Limits (EQLs) for Semivolatile Organics

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

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## 5.0 SAMPLING PROCEDURES

### 5.1 Sampling Program

over a 22-year period to assess groundwater quality changes with time. All sampling locations were selected to monitor groundwater quality in the alluvium underlying the facility. The purpose of the monitoring is to provide a database to track groundwater quality

### 5.2 Sample Locations

### 5.2.1 Groundwater

property. Monitoring wells R-1 R and R-1 0 are located hydraulically upgradient of the closed SI and monitoring wells R-7, R-8, R-8B, R-9, R-9C and R-9D are located hydraulically downgradient of the closed SI. A total of 8 monitoring wells will be sampled semi-annually. All wells are located on KII's

## 5.3 Equipment Blank Collection

### 5.3.1 Equipment Blank

the procedures described in Standard Operating Procedures provided as Attachment A of this container for analysis. The equipment should have been decontaminated prior to sampling using SAP. The transfer should occur in the field location with the highest potential for contamination. through or over clean sample equipment, and then placing the water in an empty sample equipment blank is collected by passing laboratory-demonstrated analyte-free water

The following procedures will be followed for equipment blanks:

- be analyzed for the same parameters as the environmental samples At least one equipment blank will be collected during the sampling event and will
- The equipment blank will be cooled with ice to 4 C +/- 2 C to preserve the blank.

## 5.4 Laboratory Replicate Samples

QAM. The collection of additional sample volume may not be necessary. Laboratory replicates will be performed by the laboratory consistent with the laboratory-specific

## 5.5 Containers, Preservation and Holding Times

days of extraction. will be 1 -liter amber glass bottles. Samples and sample extracts must be kept cooled at 40 +/-2°C. Samples must be extracted within seven days of sample collection and analyzed within 40 All samples will be collected in laboratory provided, clean containers. SVOC sample containers

## 5.6 Chain-of-Custody Procedures

Chain-of-custody procedures are presented in Section 6.0, Sample Custody.

## 5.7 Sample Transportation and Storage

containers and prior to sample shipment, the containers will be packed in ice and shipped via The sample containers will be shipped from the laboratory to the field. After filling the sample

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of samples during weekends. temperature noted on the chain of custody. The laboratory will be prepared to receive shipments laboratory, the temperature of the water inside the shipping containers will be checked and the transported to minimize the possibility of breakage. Upon the arrival of the field samples at the overnight courier to the off-site laboratory. Precautions will be taken whenever glassware is

## 5.8 Prevention of Cross-Contamination

sampling point. more than once for purging or sampling. Materials, such as nylon rope, will be dedicated to each transported to the site. Field decontamination of pumps will be required when a pump is used equipment and dedicated materials. Bailers will be decontaminated in the laboratory and Cross-contamination of field samples will be prevented through the use of decontaminated

## 5.9 Documentation of Sampling Activities

unique sample labels, weather conditions and any other observations deemed pertinent. factors that may affect the quality of the data collected, sample identification numbers using of visit, location of sampling points, field instrument calibration information, number of samples arrival and departure, name of person keeping the log, names of all on-site personnel, purpose field log books will be maintained to record pertinent information at each sample location. Information recorded in the field logs will include name and location of site, date and time of collected, matrix of sample and volume of samples taken, method of sample collection and any Proper documentation of all activities at the KII facility will be made by field staff. Water-resistant

## 6.0 SAMPLE CUSTODY

### 6.1 Field Custody

Chain-of-Custody Form and the receiver will accept custody for all or part of the shipment by an exchange of signatures with the delivening agent. the Project Manager. Any deviations from the original shipment documents will be noted on the seals are intact. Any shipping containers that show evidence of tampering will be addressed with become part of the Chain-of-Custody record. The receiver will verify that all chain-of-custody of-Custody Form is provided in Figure 6-1. When overnight couriers are utilized, the airbill will the site. For all sampling, appropriately prepared containers and blank water will be shipped in custody-sealed containers with a Chain-of-Custody Form. An example of an acceptable Chain-The Chain-of-Custody will begin with the shipment of sample containers from the laboratory to

authorized personnel or until custody is transferred by an exchange of signatures to another Custody Form. The sample will be secured in a shipping container by the sampler and must remain in his or her possession until it is secured in an approved location accessible only to When a sample has been taken in the field, the sampling technician will complete the Chain-of-

bottles that usually constitute a single sample. identification number. Labels with the same identification number will be used on the various respect. The label is printed in waterproof, self-adhesive stock. All labels in a set have the same that information on the Chain-of-Custody Form and the container label matches in every Each sample container will be clearly identified using standard container labels. It is imperative

Following are definitions for some of the terms on the labels:

Identification No.

notebooks. The purpose of the identification number is to provide a single, unique applied to each bottle within one sample and to the corresponding forms or management. identifier to All labels in a set have the same identification number. The label set will be This field consists of a four to seven character alphanumeric code and the date. distinguish the sample from all others and ಠ simplify

Site

the largest area of concern in a project (i.e., it is the name used for the area of the entire project). A single name or abbreviation will be used by samplers. The site is the name of the overall area from which the sample was taken. It is

## 6.2 Laboratory Custody

remaining samples will be released for proper disposal maintained at the laboratory under chain-of-custody for a period of six months. addressed in the Transfer of custody to the analytical laboratory, and sample custody within the laboratory, are laboratory-specific QAM. Upon completion of analysis, samples will be Thereafter, all

#### **Chain** Custody Record MA 000171



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Project Name: Project Number: Send Report To: Sampler (Print Name): Page \_\_\_\_\_ of \_\_\_\_ Address: Sampler (Print Name): Shipment Method: Airbill Number: Phone: Purchase Laboratory Receiving: Order #: Fax: Sample Field Sample ID Sample Sample Number of Comments, Special Date Lab Sample ID Time Matrix Containers Instructions, etc. (to be completed by lab) Relinquished by: (Signature) Received by: (Signature) Date: Time: Sample Custodian Remarks (Completed By Laboratory): QA/QC Level Turnaround Sample Receipt Relinquished by: (Signature) Received by: (Signature) Date: Time: Total # Containers Received? Level I - 11 Routine 11 COC Seals Present? II () Level 24 Hour [.] Relinquished by: (Signature) COC Seals Intact? Received by: (Signature) Date: Time: Level III 1 Week **Received Containers Intact?** Other Other \_\_\_\_ Temperature?

White: Lab Copy

Yellow: PM Copy

Pink: Field Copy

Gold: PM/QA/QC Copy

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## 7.0 **CALIBRATION PROCEDURES AND FREQUENCY**

#### 7.1 Field Instruments

the manufactures' instructions accompanying the respective instruments. Calibration records for each field instrument used on the project will be maintained in the field. equipment will maintain proficiency and perform the prescribed calibration procedures outlined in field instruments. Field team members familiar with the field calibration and operations of the A calibration program will be implemented to ensure that routine calibration is performed on all

in accordance with the manufacturer's specifications. Three field instruments will be used during sampling that will require calibration and include specific conductivity meter, pH meter, and a thermometer. All field instruments will be calibrated

#### 7.2 Laboratory Instruments

calibration procedures will be consistent with the method used for analysis. Laboratory calibration procedures are addressed in detail in the laboratory-specific QAM. All

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## 8.0 ANALYTICAL PROCEDURES

#### 8.1 Laboratory

Laboratory analytical procedures will be in accordance with the SW-846, Test Methods for Evaluating Solid Waste, 40 CFR pt. 136, November 1986 and all subsequent promulgated updates. SVOCs listed in Table 4-1 will be analyzed by EPA Method 8270C. The laboratory will maintain, and have available for the appropriate operators, SOPs relating to sample preparation and analysis according to the methods stipulated in the tables referenced above.

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## 9.0 INTERNAL QUALITY CONTROL (QC) CHECKS

### 9.1 Field QC Checks

#### 9.1.1 Calibration

discussed in Section 7.0 of this SAP. groundwater samples. Field measurements of temperature, pH, and specific conductance will be obtained for Calibration of the instruments used to obtain these measurements is

notebook. Calibration records for each field instrument used on this project will be maintained in the field

### 9.1.2 Equipment Blanks

from improperly cleaned sampling equipment to sample contamination. Equipment blanks should be handled, transported, and analyzed in the same manner as the samples with which they are associated. area is to attempt to simulate a worst-case scenano regarding contributions from ambient air or air and sampling instruments. The reason for performing equipment blanks in the most impacted The equipment blank provides a check on possible sources of contamination such as ambient

Issues affecting the use and integrity of equipment blanks include the following:

- during shipment. Handling - The temperature of the blank water must be maintained at 4° +/- 20°C
- of sample collection of the equipment blank. specific analytical method being used. The holding-time clock begins at the time Holding Time - Holding times for individual parameters are dictated by the

## 9.1.3 Laboratory Replicate Samples

they require additional sample volume sample volume in the field. The contracted laboratory will include additional sample containers if QAM. Laboratory replicate samples may Laboratory replicates will be performed by the laboratory consistent with the laboratory-specific or may not necessitate the collection of additional

## 9.2 Laboratory QC Checks

Internal QC checks are documented in the laboratory-specific QAM. All laboratory internal QC Section 8.0 of this SAP will conform to those required by the methodologies noted in the tables provided in

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#### 10.0 DATA REPORTING

#### 10.1 **Data Reduction**

#### 10.1.1 Field

as well as on any forms required for the project. sampling, the data, as measured by the field instrument, will be reported in the field notebooks Data reduction will occur for the field measurements at the point of sampling. At the point of

#### 10.1.2 Office

following information: will be further reduced to data tables, graphs and images. The data tables will contain the Upon the return of the analytical results from the laboratory, and after data validation, the data

- The date and number of the most current revision;
- sample location, matrix, depth, etc.); Information identifying exactly the samples represented on the tables (e.g.
- The compounds for which the samples were tested;
- The results for each compound; and
- The data flags as applied by the laboratory and the data validators

#### 10.1.3 Laboratory

Data reduction in the laboratory is covered in detail in the laboratory-specific QAM

## **Identifying Outliers**

#### 10.2.1 Field

Investigator responsible for field activities will conduct the comparison and order any suspicious Outliers are isolated, anomalous analytical results. Outliers in the field measurements will be determined through comparison of historical data to current measurements. The Principle measurement data re-measured

#### 10.2.2 Laboratory

QAM. The laboratory's results, including their identification of outliers, will be verified through the data validation process. Detailed procedures for the laboratory identifying outliers are found in the laboratory-specific

### **Data Reporting**

in advance by Beazer East, Inc. or its designated representative. Any proposed equivalent forms required below must be justified by the laboratory and approved

### APPENDIX E-6 STATISTICAL METHODS

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## STATISTICAL EVALUATION PROCEDURES

## I. TREATMENT OF NON-DETECTS

- Ē the following characteristics for each constituent and analytical method: The treatment of low and zero data values shall be based upon information concerning
- Method of Detection Limit (MDL; as published in SW-846);
- Ы Practical Quantification Limit (PQL; as published in SW-846);
- ယ Limit-of-Detection (LOD; as determined within the laboratory); and
- Limit-of-Quantitation (LOQ; as determined within the laboratory).
- <u>.</u>B such that the following treatments are warranted: In general, the laboratory Limit of Detection and Limit of Quantitation should be known,
- In those cases where the laboratory LOD is known, verified and approved by the state, then any data less than the LOD shall be treated as one-half of the LOD.
- 'n In those cases where the laboratory LOQ is known, verified and approved by the state, then any data greater than the laboratory LOD, but less than the laboratory LOQ, shall be treated as one-half of the laboratory LOQ.
- ယ "not detected" shall be treated as one-half of the published SW-846 MDL. In those cases where the laboratory LOD is not known, then any data reported as
- 4 as greater than MDL, but "less than PQL" shall be treated as one-half of the In those cases where the laboratory LOQ is not known, then any data reported published SW-846 PQL.

#### II. OUTLIERS

page 8-11. Analysis of Groundwater Monitoring Data at RCRA Facilities, Interim Final Guidance, April, 1989 The presence of outliers shall be tested in accordance with EPA guidance presented in Statistical

#### III. NORMALITY

following are used for decisions: size up to 50 and the Shapiro-Francia Test of Normality for sample size more than 50. The The original data must be treated for normality using the Shapiro-Wilk Test of Normality for sample

If the original data show that the data are not normally distributed, then the data must be log-transformed and tested for normality using the above methods.

- Ы distributed, then a normal distribution test must be applied If the original or the log-transformed data confirm that the data are normally
- ယ distributed, then a distribution free test must be applied. If the original or the log-transformed data confirm that the data are not normally

## IV. SELECTION OF STATISTICAL METHOD

- ₹ . values shall be compared to the parametric tolerance interval/prediction interval in for a given constituent and the data follow a normal distribution, then the downgradient than or equal to 15% of the background data values are less than the MDL and/or PQL Monitoring Data at RCRA Facilities, Addendum to Interim Final Guidance (April, 1992). <u>guidance documents, Statistical Analysis of Groundwater Monitoring Data at RCRA</u> accordance with the procedure described by Gibbons (1991) and summarized in the EPA data values obtained duning four sampling events for the upgradient wells and when less In those cases where the background data consist of a minimum of eight (8) independent <u> Facilities, Interim Final Guidance (April, 1989) and Statistical Analysis of Groundwater</u>
- **₹** Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Interim Final described by Gibbons (1991) and summarized in the EPA guidance documents summarized in the EPA guidance document, Statistical Analysis of Groundwater adjusted in accordance with the procedure described by Altchison (1955) and MDL and/or PQL for a given constituent, then the mean and standard deviation shall be than 15%; but less than or equal to 50%, of the background data values are less than the In those cases where the background data consist of a minimum of eight (8) independent parametric tolerance interval/prediction interval in accordance with the procedure After the adjustments are made, the downgradient values shall be compared to the Monitoring Data at RCRA Facilities, Addendum to Interim Final Guidance (April, 1992). data values obtained during four sampling events for upgradient wells and when more Facilities, Addendum to Interim Final Guidance (April, 1992). Guidance (April, 1989) and Statistical Analysis of Groundwater Monitoring Data at RCRA
- ₹.c. summarized in the EPA guidance documents, Statistical Analysis of Groundwater prediction interval in accordance with the procedures described by Gibbons (1991) and values shall be compared to the non-parametric tolerance interval or non-parametric are less than the MDL and/or PQL for a given constituent, then the downgradient data and when more than 50%, but less than or equal to 90%, of the background data values independent data values obtained during four sampling events for the upgradient wells, In those cases where the background data consist of a minimum of nineteen (19) Guidance (April 1992) <u>Analysis of Groundwater Monitoring Data at RCRA Facilities. Addendum to Interim Fina</u> Monitoring Data at RCRA Facilities, Interim Final Guidance (April, 1989) and Statistica
- **₹** In those cases where the background data consist of a minimum of eight (8) independent data values obtained during four sampling events for downgradient wells and when more

described by Gibbons (1987) and Cox and Hinkley (1974). Tolerance Limit or the Poisson Prediction Limit in accordance with the procedure constituent, then the downgradient data values shall be compared to the Poisson than 90% of the background data values are less than the MDL and/or PQL for a given

- Z E In those cases where 100% of the background data are "non-detects," then the downgradient data values shall be compared to Practical Quantitation Limit (PQL).
- **₹** evaluations will be performed in accordance with the EPA guidance documents, Statistical or other statistical approaches as applicable will be incorporated. In those cases where the above statistical methods are not applicable, the Students t-test Addendum to Interim Final Guidance (April, 1992) 1989) and Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Analysis of Groundwater Monitoring Data at RCRA Facilities, Interim Final Guidance (April,

#### V. FREQUENCY

the monitoring system to determine statistically significant increases over background. are described above. The statistical comparisons shall consider individually, each of the wells in constituents summarized in the permit, as appropriate. The procedures for statistical comparison Once background is established, statistical companisons will be made for each sampling event for

## SECTION F. PROCEDURES TO PREVENT HAZARDS

unit is discussed in Section I.2f. The SI is a nonactive facility and was closed as a landfill in 1989. Post-closure security for the closed

## SECTION G. CONTINGENCY PLAN

The SI is a nonactive facility and was closed as a landfill in 1989. Therefore, a Contingency Plan is not applicable for the closed SI.

#### SECTION H. PROGRAM TRAINING

will be inspected and properly sampled. No specialized training beyond that required for maintenance activities. The use of well samplers trained in proper RCRA procedures will insure that the well network and the associated groundwater monitoring network have been appropriately trained to conduct these Beazer will insure that those individuals responsible for the inspection and maintenance of the closed SI of a household lawn is required for routine maintenance of the cover system. Any significant The qualifications and training records of those individuals will be supplied upon request. maintenance activities concerning these systems will be conducted by qualified personnel.

#### REQUIREMENTS SECTION CLOSURE PLANS, POST-CLOSURE PLANS, AND FINANCIAL

#### I.1 Closure Plan

certification document is included in Appendix I-1. was closed in accordance with the specifications of the facility's closure plan. A copy of the closure for Surface Impoundment Closure (Keystone, 1989) was submitted to the MDEQ certifying that the SI Closure activities for the SI were completed on October 1989. The Construction Documentation Report

## I.1a Closure Performance Standard

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

## I.1b Partial Closure and Final Closure Activities

The SI was not partially closed, therefore partial closure requirements are not applicable.

## l.1c Maximum Waste Inventory

stored in the SI During the active life of the SI, a maximum of approximately 1050 cubic yards of K001 sludge was

### I.1d Schedule for Closure

The SI was closed in 1989.

### I.1e Closure Procedures

the following sections Documentation of closure activities and the final design of the closed SI as a landfill can be found in Appendix I-1. A description of how the SI was closed and the design of the final landfill is provided in

# I.1e(1) Inventory Removal, Disposal, or Decontamination of Equipment

October 1989. For a description of the landfill design see Section I.1e(2). covered with a low-permeability soil-bentonite cap. Closure activities were completed by the end of Dewatering activities were completed by July 18, 1989. The SI was filled with clean material and was pumped from the impoundment to the Grenada POTW in accordance with a letter, dated May 2, to Chemical Waste Management, Inc. located in Emelle, Alabama for disposal. Accumulated rainwater 1989, from the State of Mississippi, Bureau of Pollution Control, Industrial Pretreatment Division. In 1988, all K001 sludge and visually contaminated soils were removed from the SI and shipped off-site

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

## I.1e(2) Closure of Disposal Unit

A description of how the SI was closed as a landfill is provided in the following sections

sludges were removed from the SI prior to construction of the cap and cover. I.1e(2)(a) Elimination of Liquids/Waste Stabilization. As described in Section I.1e(1), all liquid and

continued until the grades required for the soil-bentonite subbase were achieved site borrow source was placed in the SI. The fill material was placed in approximately 8-inch lifts and compacted to at least 90 percent of the maximum dry density. Placement and compaction of the soil fill trench was excavated with a dozer around the perimeter of the SI. Clean soil fill material from an offthe subgrade was prepared, and the SI dikes were excavated and placed in the SI as fill material. A key I.1e(2)(b) Cover Design. After the sludge and visually contaminated soil were removed from the SI,

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

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

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

slope of approximately 4 percent. Also, infiltration beyond the vegetated cover is minimized because of the underlying drainage layer and compacted soil-bentonite which allow infiltration to flow to the I.1e(2)(c) Minimization of Liquid Migration. To minimize infiltration, the cover will drain by a final perimeter channels.

closed landfill. It is intended to minimize any threats to human health and the environment because any or waste products or constituents to groundwater or surface water or the atmosphere are controlled. post-closure escape of hazardous waste, hazardous waste constituents, leachate, contaminated runoff, 1.1e(2)(d) Maintenance Needs. The closure design minimizes the required future maintenance of the

from the local groundwater system. positive drainage. These measures minimize the infiltration into the disposal area, and isolate the landfill of the cover. The design of the soil-bentonite cap, drainage layer, and vegetated soil layer promote The liquid portion of the sludge and contaminated soils were removed from the SI prior to construction

identified in the Section I.2d, Maintenance Plan. Minimum maintenance will be performed to keep the cover functional. Specific maintenance needs are

the use of a geotextile fabric atop the sand zone. permits drainage to the collection channels. The potential for the drainage layer clogging is reduced by soil-bentonite cap is provided by the drainage layer. The drainage layer is constructed of sand which slope of the soil cover and topsoil layers. The drainage of infiltration by the conducting zone above the I.1e(2)(e) Drainage and Erosion. Free drainage of precipitation off the cover will be provided by the

outlet it to existing drainage courses Drainage is controlled by using off-site diversion ditches, on-site collection channels, surface grading The on-site collection channels are designed to control the on-site surface water and

design was selected to minimize erosion. The cover erosion potential was calculated using the Universal Soil Loss Equation. The final cover

Settlement, Subsidence and Displacement. the approved Closure Plan. under the applied cover overburden loading. Calculations estimating cap settlement were presented in fill material, excluding the drainage layer. These materials are not expected to significantly consolidate The soils that comprise the cover are compacted, cohesive

is not expected to, cause significant consolidation of the compacted cohesive backfill. the compaction criteria for placement and overburden loading. The overburden load has not to date, and replaced by compacted cohesive backfill. The potential for consolidation of the backfill is governed by The potential for waste consolidation is precluded because the waste sludges have been removed and

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

### I.2 Post-Closure Plan

continue to be performed in accordance with the above-cited regulations. There are approximately 22 activities that have been performed for the last nine years under the current permit. These activities will requirements for post-closure care. These include inspection, maintenance, and groundwater monitoring. trend of groundwater quality data collected from the wells monitoring the closed SI post-closure care period can be shortened substantially (see Section E.6b), based on the last nine-year years remaining in the original 30-year post-closure period. However, Beazer anticipates that the This Post-Closure Care Plan for the closed SI includes inspection, monitoring, and maintenance CFR 264 and as adopted by the Mississippi Hazardous Waste Management Regulations, include The regulations governing closure of waste disposal sites, as contained with Federal Regulations in 40

### I.2a Post-Closure Contact

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

On-Site Contact:
Mr. Tom Henderson
Plant Manager
Koppers Industries, Inc.
P. O. Box 160
Tie Plant, Mississippi 38960
(601) 226-4584

change on the Beazer facility is rainfall runoff. are likely to cause relatively slow rates of change. For instance, the most likely natural force to affect would still allow the contact person sufficient time to take appropriate action. rainstorms were to cause accelerated erosion, the monthly (and after major rainfall) inspection schedule The monthly inspection frequency is justified because the forces of nature acting on the Beazer facility However, even if several large, closely-spaced

## Groundwater Monitoring System Inspection

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

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

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

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

The inspection log will also provide for reporting any variances noted and remedial action taken. The result of the inspections will be placed on an inspection log which is included in Appendix I-2.

### Monitoring Plan

monitoring program for the post-closure period is proposed in Section E.6. groundwater monitoring program over the last 10 years of the permit, a revised groundwater Management Permit for the closed SI is discussed in Section E.5. Based on data collected from this The current post-closure groundwater monitoring program covered under the existing Hazardous Waste

### Maintenance Plan

cost estimate. Maintenance activities at the closed SI will be triggered by problems/deficiencies which equipment operators may be needed occasionally and their cost have been included in the post-closure The contact person will be responsible for maintenance activities at the closed SI. Additional labor and

Off-site Contact:

Mr. Robert Markwell

Environmental Program Manager Beazer East, Inc.

One Oxford Centre

Suite 3000 Pittsburgh, Pennsylvania 15219 (412) 208-8812

### 1.2b Inspection Plan

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

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

operation, the KII plant manager will function as the contact person. Tom Henderson, can be contacted at (601) 226-4584 be conducted by a post-closure contact person designated by Beazer. period. Upon any permanent shut-down of the KII facility, the post-closure care for the closed SI will The post-closure care of the closed SI system will be conducted by Beazer during the post-closure care The current plant manager, Mr. During continued plant

post-closure period. Section I.6 are based on the assumption that some outside assistance will be necessary through the major maintenance activities become necessary. The post-closure cost estimates that are included in Although additional assistance is not expected, outside assistance may be required if, for some reason, equipment will be used by the on-site contact person to perform the inspection and maintenance tasks. The on-site contact person will be provided with necessary inspection equipment by Beazer.

#### Cover Inspection

log sheet which is presented in Appendix I-2. integrity. The results of the inspections and any corrective action taken will be placed on an inspection cover condition, potential erosion damage and cover subsidence and run-on and run-off control system (i.e., fences and gates), Beazer will also examine the cover integrity monthly, including vegetative Beazer will conduct monthly (and after major rainfall) inspections of site access and security systems

will be noted in the monthly inspections for the cover or during the groundwater monitoring inspections. maintenance activities (as appropriate): Observations of the problem/deficiencies could result in initiation of one or more of the following

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

## I.2e Post-Closure Care for Miscellaneous Units

Miscellaneous units do not apply to this facility.

## I.2f Post-Closure Security

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

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

in turn contact the police. All visitors are instructed to report to the plant office personnel are instructed to report any unusual activities or security incidents to a supervisor who may In addition, the KII facility operates continuously 24 hours a day, 5 days per week. All KII facility

## I.3 Notices Required for Disposal Facilities

## 1.3a Certification of Closure

contains documentation of closure construction to verify that the SI was closed in accordance with the Documentation Report for the Surface Impoundment Closure is included in Appendix I-1. This report Closure of the SI as a landfill was completed in 1989. The report titled, Closure Construction

and B of this report. approved closure plan. The operator and engineer certification of closure is included in Attachments A

#### *I.3b* Survey Plat

Management Unit. The use of the described area is restricted and any future uses must not disturb the surveyor and contains a note, which states the area described hereon previously contained a Waste Resources. integrity of the final cover without prior approval of the State of Mississippi, Department of Natural the location and dimensions of the closed SI. The plat was prepared and certified by a professional land Appendix I-3 contains a copy of a survey plat submitted to the local zoning authority which indicates

#### **I.4** Closure Cost Estimate

The SI was closed in 1989, therefore a closure cost estimate is not applicable.

### 1.5 Financial Assurance Mechanism for Closure

1989. Financial assurance mechanism for closure is not applicable for this facility since the SI was closed in

#### **1.6 Post-Closure Cost Estimate**

post-closure will be updated annually. Table I-1 summarizes the Post-Closure Cost Estimate in current dollars. The cost estimate for

### 1.7 Financial Assurance Mechanism for Post-Closure

264.145 is presented in Appendix I-4. The current established financial assurance mechanism for post-closure care as required by 40 CFR

## SECTION J. OTHER FEDERAL LAWS

to the post-closure care activities detailed herein. Other than the regulations stated in this permit reapplication, no known other federal laws are applicable

## SECTION K. CERTIFICATION

significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violation." knowledge and belief, true, accurate and complete. I am aware that there are my inquiry of the person or persons who manage the system, or those persons directly qualified personnel properly gather and evaluate the information submitted. Based on responsible for gathering information, the information submitted is, to be the best of my under my direction or supervision in accordance with a system designed to assure that "I certify under penalty of law that this document and all attachments were prepared

James P. Brennan
(Name)
Come () Brandar (Signature)
Vice President and General Manager (Title)
Beazer East, Inc. (Company Name)
March 22, 1999

# SECTION L. INFORMATION REQUIREMENTS FOR SOLID WASTE MANAGEMENT UNITS

## **Description of Solid Waste Management Units**

documented in a report entitled RCRA Facility Assessment of the Koppers Industries, Inc., Grenada, Mississippi (EPA, 1987). The RFA identified the following 13 potential solid waste management units A RCRA Facility Assessment (RFA) of the KII Grenada Site was conducted in July 1987 and

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

SWMU, types of wastes handled, period of operation and status are summarized in Table L-1. The locations of the SWMUs identified in the RFA are shown on Figure L-1. A brief description of each

storage shed. The location of the storage shed is shown on Figure L-1 of the Application. 1988 through May 1989 soils were excavated within the tank process area and placed inside an existing KII upgraded the tank process area by installing a concrete surface around the tanks. From October

system were installed in the Drip Track Area (SWMU 8). Prior to the installation of the concrete pad, Additionally, in accordance with 40 CFR Subpart W - Drip Pads, a concrete drip pad and collection yards of soil. These structures were located to the south of the Storage Shed Structure as shown on February 1991, and placed in two (2) soil containment structures totaling approximately 3,200 cubic visually impacted soils around and under the drip pad were excavated from December 1990 through a polyethylene liner to overlay the existing site soils. After placement of the drip track soils, Figure L-1. The original construction of both soil containment structures consisted of the placement of constructed around the perimeter of the soil containment structures. polyethylene sheeting was used to cover the soil piles. The cover was secured and a fence was

were identified by the MDEQ as SWMUs in the fall of 1993. The location of these SWMUs are shown on Figure L-1. In addition to the SWMUs identified in the RFA, the soil containment structures and the storage sheds





### <u>|</u>2 Summary of RCRA Facility Investigations (RFI)

releases of hazardous constituents, and implementing the appropriate corrective action for any such the MDEQ on June 28, 1988. A requirement of these permits was to evaluate the SWMU's for potential issued by EPA Region IV and under Hazardous Waste Management Permit No. 88-543-01 issued by The facility began operating under RCRA Part B Post-Closure Care Permit No. MDS 007 027 543

In accordance with these permits, Koppers Company, Inc. performed a Phase I RFI of each SWMU in of Solid Waste Management Units, Koppers Industries, Inc. Plant, Grenada, Mississippi (Keystone, The findings of this investigation was presented in the report Soil and Groundwater Investigation

implemented during the additional investigations of the SWMUs. Responses to comments received Beazer submitted the Phase II RFI Work Plan, RCRA Facility Investigation (RFI), Koppers Industries, In December 1989, the MDEQ concurred that additional investigations were warranted. Subsequently Phase II RFI field activities began in May 1991. Mississippi (Keystone, 1991). In January 1991, the MDEQ and the EPA approved this Work Plan and Supplemental Work Plan, RCRA Facility Investigation (RFI), Koppers Industries, Inc., Grenada, from the EPA and MDEQ regarding the Phase II RFI Work Plan were incorporated as revisions titled *Inc., Grenada, Mississippi* (Keystone, 1990), to outline the scope of work and the procedures to be

regarding the revised Draft Phase II Report were received by Beazer on June 12, 1996. Beazer completed in 1992 and revised in 1994 based on EPA comments. A second set of EPA comments A draft Phase II RCRA Facility Investigation Report, Koppers Industries, Inc., Grenada, Mississippi was during May and June 1997. prepared in accordance with that response, and the supplemental field investigations were conducted Plan Addendum, Koppers Industries, Inc., Grenada Facility, Grenada, Mississippi (HSI, 1997) was submitted a response to EPA's comments on August 30, 1996. The RCRA Facility Investigation, Work

exposure routes, and associated potential risks for current and future human populations and the potential migration in soil, groundwater, surface water and sediment, and evaluated the constituents, the KII facility. This report also presented an updated Conceptual Site Model of constituents and their 1997 supplemental investigation to define and present the nature and extent of constituent impact at Grenada, Mississippi (HSI, 1997) incorporated data from the Phase I RFI, the Phase II RFI and the The Final Phase II RCRA Facility Investigation (RFI) Report, Koppers Industries, Inc., Grenada Facility, environment. Beazer submitted the final report to the EPA and MDEQ for review and approval in January 1998.

## Information Pertaining to Releases

facility were included in the Final Phase II RCRA Facility Investigation (RFI) Report, Koppers pertaining to potential releases of hazardous wastes or hazardous constituents from SWMUs at the Industries, Inc., Grenada Facility, Grenada, Mississippi (HSI, 1997). The 13 SWMUs were investigated in detail during the Phase I and Phase II RFI studies. Information

# Sampling and Analysis Description of Solid Waste Management Units

SWMUs at the facility can be found in the Final Phase II RCRA Facility Investigation (RFI) Report, Results of sampling and analysis of groundwater, soils, surface water, and sediments related to Koppers Industries, Inc., Grenada Facility, Grenada, Mississippi (HSI, 1997).

#### <u>|</u>5 **Corrective Action**

following describes corrective action activities completed and proposed interim measure activities. permit period will continue beyond the expiration date of the existing permit (i.e., June 1998). The releases from the SWMUs. All corrective action activities implemented or proposed during the existing Process changes and upgrades at the KII facility have minimized or eliminated the potential for further

were removed prior to 1989. accordance with a closure plan approved by EPA in January 1991. The South Waste Piles (SWMU 13) Piles. The Spray Irrigation Field (SWMU 3) was taken out of service in mid-1988 and closed in 1991 in have recently been addressed through a direct removal action, with the exception of the North Waste SWMUs in the northern and southern areas of the facility have either already undergone closure or

system and was used until 1988 to treat wastewater resulting from the wood preserving operations. In the summer of 1988, all K001 sludge and visually contaminated soils were removed from the operation and post-closure care of the closed SI. The SI was closed in 1989 and certification of closure Hazardous Waste Management Permit No. 88-543-01 became effective on June 28, 1988 for the for disposal. Prior to closure of the SI, a RCRA permit application was submitted to the MDEQ and impoundment and shipped off-site to Chemical Waste Management, Inc., located in Emelle, Alabama The closed SI (SWMU 2) was constructed in the mid-1970's as part of the plant's wastewater treatment Management Permit No. 88-543-01 on June 28, 1988, as amended in February 1990, for post-closure for the SI was included in the Closure Construction Documentation Report for the Surface care of the closed SI. Impoundment Closure (Keystone, 1989). The State of Mississippi issued Hazardous Waste

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documentation report and closure certification were submitted to the MDEQ in June 1990. The Boiler Ash Landfill was closed in 1990 by constructing a RCRA cap over the area. The construction groundwater monitoring has been performed for the closed boiler ash landfill since 1988. The Boiler beginning in approximately December 1982 and continuing through 1987. RCRA interim-status treating facility, and is classified as a RCRA unit because boiler ash was placed at this location The closed Boiler Ash Landfill (SWMU 5) is located in the southern portion of the Kll Grenada wood Ash Landfill was closed pursuant to a negotiated Order with MDEQ and documented in the reports Assessment (Dames & Moore, February 1994). 1993) and Supplemental Investigation Addendum to Boiler Ash Landfill Groundwater Quality Final Report, Groundwater Quality Assessment, Boiler Ash Disposal Area (Chester Environmental,

upgradient, off-site source. these volatiles are not present in detectable concentrations in the vadose zone in the closed boiler ash collected from the test bonings and monitoring wells installed for the closed boiler ash landfill prove that Groundwater Quality Assessment are not the result of activities conducted on the KII facility. The data 1,2-dichloroethene) detected during the RCRA interim status groundwater monitoring program and the (Dames & Moore, February 1994) confirmed that the volatile organics (tetrachloroethylene (TCE) and The Supplemental Investigation Addendum to Boiler Ash Landfill Groundwater Quality Assessment landfill, and that their presence in site groundwater is the result of groundwater transport from an

constituents in groundwater. The November 1995 report entitled, An Interim Engineering Report performed an investigation to determine the rate of movement and extent of volatile organic During the fourth quarter of 1994, Heatcraft, the adjacent upgradient property owner to the KII facility, Grenada facility. the following properties have been influenced by the TCE contamination plume..," including the Kli adjacent properties in the upper three (3) stratigraphic layers. Based on groundwater analytical results the Heatcraft, Inc. South Plant site has migrated toward the north, northwest and northeast to the adjacent to the KII property. The report states that "...The TCE contamination plume that originated at plume originating from the Heatcraft property located west of the closed boiler ash landfill on property prepared by Hazclean Environmental Consultants, details field activities related to delineating a TCE (Phase I) for a Comprehensive Groundwater Investigation Program at Heatcraft, Inc. (South Plant),

property are the primary impact on groundwater quality at the facility, and that the closed boiler ash ash landfill at the KII Grenada wood treating facility on the basis that constituents from the adjacent Beazer petitioned to terminate the groundwater monitoning program associated with the closed boiler MDEQ on the discontinuation of the closed boiler ash landfill monitoring program. Monitoring Program (Fluor Daniel GTI, February 1991). Beazer has received verbal concurrence from groundwater monitoring program was provided in the Request for Discontinuation of the Boiler Ash landfill has had minimal, if any, impact on groundwater. Information supporting the elimination of the

storage shed is shown on Figure L-1 of the Application. stored inside an existing storage shed from May 1989 through October 1996. The location of the installing a concrete surface around the tanks. Soils excavated within the tank process area were Kil upgraded the tank process area from October 1988 through May 1989 by excavating soils and

of the soil containment structures. with polyethylene sheeting. The cover was secured and a fence was constructed around the perimeter liner to overlay the existing site soils, followed by placement of the drip track soils and finally by covering yards of soil. These structures were located south of the storage shed structure, as shown on Figure L-February 1991, and placed in two (2) soil containment structures totaling approximately 3,200 cubic visually impacted soils around and under the drip tracks were excavated from December 1990 through system were installed in the Drip Track Area (SWMU 8). Prior to the installation of the concrete pad, Additionally, in accordance with 40 CFR Subpart W - Drip Pads, a concrete drip pad and collection The construction of the soil containment structures consisted of the placement of a polyethylene

initiated the soil removal form these SWMUs/soil containment structures on October 23, 1996. Soil off site to Laidlaw's USPCI Lone Mountain, Subtitle "C" landfill facility located in Waynoka, Oklahoma accordance with the Soil Pile Removal Procedures (Fluor Daniel GTI, Inc., 1996). The soils were taken removal and completion of site restoration activities was completed on November 15, 1996, in 1993. Subsequently, Beazer provided notification to the U.S. EPA, Region IV of these SWMUs and The storage shed and soil containment structures were identified by the MDEQ as SWMUs in the fall of (Fluor Daniel GTI, Inc., 1997). removal activities were documented to the EPA and MDEQ in the Removal Documentation Report (EPA ID No. OKD065438376), and post-removal samples were collected. The removal and post-

### Proposed Interim Measures

Predesign Investigation Report and Conceptual Design (HSI, 1996). measures investigation conducted in 1996 and documented in the report RCRA Interim Measures impacted underlying soils. The Former Wastewater Treatment System was the focus of an interim (SWMU 8), and the Former Wastewater Treatment System (SWMU 11) were determined to have Releases from SWMUs in the Central Process Area (i.e., SWMUs 1, 4, 9 and 10), the Drip Track Area

Investigation Report (HSI, 1997), includes: Investigation Report and Conceptual Design (HSI, 1996) and the Final Phase II RCRA Facility The proposed interim measure, presented to EPA and MDEQ in the RCRA Interim Measure Predesign

Installation of a subsurface vertical containment barrier along the north bank of the Central Ditch to contain DNAPL and prevent continuing seeps into the Central Ditch;



Installation of a low-permeability soil cover to reduce precipitation infiltration to the saturated zone and thereby reduce the groundwater hydraulic gradient toward the Central Ditch.

This interim measures is scheduled to be conducted in 1998.

### Potential Natural Attenuation

natural attenuation occurring at the KII facility based on the following observations: As stated in the Final Phase II RCRA Facility Investigation Report (HSI, 1997) there are indications of

- The characteristics of the constituents of concern indicate that biological degradation is
- source areas indicates that natural processes are limiting constituent transport; and Substantial decrease in concentrations of site-related constituents over distance from
- The relatively small areal extent of the groundwater impacts, given more than 90 years of site operation and an average flow velocity of 0.11 ft/day for the Upper Sand Zone further indicates naturally limited constituent migration.

groundwater. Conceptual Design (HSI, 1996) indicated the potential for a high degree of biological activity in the Sampling performed and reported in the RCRA Interim Measures Predesign Investigation Report and

Table I-1 Post-Closure Care Estimate
Koppers Industries, Inc.
Grenada, Mississippi Facility
Tie Plant, Mississippi

\$210,485	TOTAL POST-CLOSURE ESTIMATE
\$191,350 \$19,135	Subtotal Contingency
\$4,800	P.E. Certification of Post-Closure (60 hr x \$80/hr)
\$8,800	Monitoring Well Part Replacement (\$50/well x 8 wells x 1 time/yr x 22 yrs)
\$10,600	Monitoring Well Maintenance & Repair (2 hr/well x \$30/hr x 8 wells x 1 time/yr x 22 yrs)
\$2,500	Monitoring Well Inspection (¼-hr/well x \$50/hr x 9 wells x 1 time/yr x 22 yrs)
\$90,750	Analytical Cost (Annually) (\$4,125/yr x 22 yrs)
\$39,600	Sampling Cost [(2 hr/well x \$50/hr x 8 wells) + \$1,000 equipment & expenses] x 22 yrs
	Post-Closure Monitoring
\$4,600	(1 acre x 1 visit/yr x \$210/acre x 22 yrs)
	Fertilization of Cap
\$3,300	(5 visits/yr x 1 acre/visit x \$30/acre x 22 yrs)
	Lawn Care of Cap
\$26,400	(2 hr/mo x \$50 x 12 mo/yr x 22)
	Inspection of Closed Surface Impoundment
Estimated Cost Over a 22-Year Period In Current Dollars	Activity

# APPENDIX I-1 CLOSURE CONSTRUCTION DOCUMENTATION REPORT FROM SURFACE IMPOUNDMENT CLOSURE



CLOSURE CONSTRUCTION
DOCUMENTATION REPORT
FOR
SURFACE IMPOUNDMENT CLOSURE
KOPPERS INDUSTRIES, INC.
GRENADA, MS

Prepared for:

BEAZER MATERIALS AND SERVICES, INC.
PITTSBURGH, PENNSYLVANIA

Prepared by:

KEYSTONE ENVIRONMENTAL RESOURCES, INC. 3000 TECH CENTER DRIVE MONROEVILLE, PA 15146

**PROJECT NO. 176975** 

DECEMBER 1989

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		2.3.1 C 2.3.2 I 2.3.3 S	Clearing
	2.5	Excaval Clay Ke	on of Cut and Fill Material, Trench Excavation
	2.5 2.8 2.8 2.8	Soil Fill. Equipm Soil - Be	Soil Fill  Equipment Decontamination  2-3  Soil - Bentonite Layer  Cheotextiles and Drainage Layer  2-5
	2.10 2.11 2.11	Cover Soil Stone Prot Top Soil	
	2.13	Drainage St Vegetation	Drainage Structures
3.0	CON	CONSTRUCT ASSURANCE	ION DOCUMENTATION AND QUALITY
	3.1	Consti Soil T	Soil Testing3-1
		3.2.1	Borrow Source Approval Testing
			3.2.2.1 Soil Fill 3-2 3.2.2.2 Soil-Bentonite Layer 3-2 3.2.2.3 Drainage Layer 3-3 3.2.2.4 Cover Soil 3-3
4.0		DRAWINGS	Z-1-8
5.0		SCHEDULE	
6.0		PHOTOGRAPHS	
A A I	Appendix A Appendix B Appendix C	<b>∀</b> g∪	Daily Construction Inspection Reports Soil Testing Data and Results Waste Manifests for Sludge Removal
<b>44</b>	Attachment A Attachment B	nt A nt B	Operator Certification of Closure Professional Engineer Certification of Closure

DCC #R-415

manifests. The "Operator Certification of Closure" is contained in Attachment A and "Professional Engineer Certification of Closure" is contained in Attachment B.

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## 2.0 CLOSURE ACTIVITIES

photographs are referenced in the descriptions of closure activities. record illustrating the construction activities is also included in Section 6.0, and these in Appendix A in the form of construction inspection daily reports. approved plan. Additional information on closure construction activities is included performed to complete closure of the surface impoundment in accordance with the following sections briefly describe the construction activities which were A photographic

## 2.1 Health and Safety Training

1910.120. The training was conducted during the week of June 25, 1989. Emergency Response Training in accordance with the requirements of 29 Construction personnel received 40 hours of Hazardous Waste Operations and

personnel protective equipment was used throughout the construction activities. Since all K001 sludges had previously been removed from the work area, Level D

## 2.2 Construction Start-up Meeting

were discussed and resolved. responsibilities were discussed; and, questions concerning the execution of closure and schedule were reviewed; construction quality assurance testing, inspections and from Keystone Environmental Resources, Inc. The construction activities, sequence and Green Construction Company and the resident inspector and project manager meeting was attended by both the construction engineer and foreman from Green An informal, on-site construction start-up meeting was held on July 19, 1989. The

### 2.3 Site Preparation

rolling of the subgrade. These activities are discussed in the following sections. brush and fence removal, removal of rainwater from the impoundment, and proofwas required to accomplish the construction. and a dozer. Additional pieces of equipment were mobilized throughout the job as preparation work began on July 12. Initially, the equipment consisted of a track hoe Equipment was mobilized to the site during the week of July 9, 1989 and site Site preparation work consisted of

#### 2.3.1 Clearing

around the a ten foot wide area impoundment were removed prior to the completion of dewatering. The fence and all trees and brush within

## 23.2 Impoundment Dewatering

rainwater was pumped from the impoundment to the Grenada POTW. Dewatering activities were initiated by Koppers Industries, Inc. personnel on June 19, 1989 and accumulated In accordance with the letter, dated May 2, 1989, from the State of Mississippi, Control, Industrial Pretreatment Division, were completed by the contractor on July 18, 1989. Pollution

After dewatering was completed, the pump and intake and discharge hoses were taken to the plant's equipment wash down area and were decontaminated by steam cleaning. Both internal and external surfaces were decontaminated.

## 2.3.3 Subgrade Preparation

accumulated rainwater was removed from the impoundments, the Wet subgrade soils were conditioned by spreading them in order to expedite their drying (see Photo 2). subgrade was prepared by tracking with the dozer. After the

# 2.4 Excavation of Impoundment Dikes

placed into the surface impoundment as fill material (see Photos 3 and 4). Photo 5 When the subgrade was prepared, the impoundment dikes were excavated and shows the impoundment after placing and compacting the dike soils.

# 2.5 Soil-Bentonite Key Trench Excavation

excavated into the existing side slopes of the impoundments to a depth determined After the impoundment dikes were excavated and placed in the impoundment, a key The trench was trench was excavated with the dozer around the perimeter.

into the impoundments as fill. from the slopes and elevations of the final contours. The excavated soil was placed

#### 2.6 Soil Fil

the grades required for the soil-bentonite subbase were achieved. discussed in Section 3.2. Placement and compaction of the soil fill continued until standard was met. The soil testing, conducted to approve the borrow source prior to construction and as quality assurance documentation during construction, were checked periodically throughout fill placement to verify that this minimum Standard Proctor Test Method for compaction (ASTM D-698). In-place densities compacted to at least 90 percent of the maximum dry density obtained from the fill was spread into lifts of approximately eight (8) inches, loose thickness and from an off-site borrow source was placed in the impoundments (See Photo 6). The After completion of the cut and fill of the dikes and key trench material, clean soil fill

## 2.7 Equipment Decontamination

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

### 2.8 Soil-Bentonite Layer

the clay soil could be placed and compacted to achieve an in-place coefficient of soil-bentonite mixture was remolded and tested in the laboratory to demonstrate that sampled. Soil from the borrow source was mixed with bentonite and the resultant construct the clay barrier soil layer. Soil from a pre-approved off-site borrow source and bentonite were used to Prior to construction, the borrow source was

permeability less than 1 x 10<sup>-7</sup> cm/sec. The soil testing program and construction quality assurance program are discussed in Section 3.2.

applied to the soil at a rate of between 2.2 and 3.0 lbs/ft<sup>3</sup>. The bentonite was mixed into the soil by tilling and/or disking until the bentonite was uniformly distributed eight (8) inch (loose thickness) lift over the entire impoundment. Bentonite was then The soil-bentonite layer was constructed by placing and spreading the soil into an throughout the soil lift (See Photos 7 through 13).

The moisture content was adjusted, as required, to assure that the placement soil of the maximum dry density The soil-bentonite layer was then compacted with the rubber-tired roller. The soilobtained from the Standard Proctor Test Method for Compaction (ASTM D-698). moisture content exceeded the optimum moisture content for the soil. bentonite layer was compacted to at least 95 percent

(2) feet in thickness (compacted) were then placed using increasing amounts of bentonite. Following completion of placement of the last lift of the soil-bentonite layer, the final surface was shaped and graded to conform to the intent of the design drawings. The surface of the soil-bentonite layer was rolled smooth with a steel drum components were adjusted accordingly. Four more soil-bentonite lifts totaling two subsequently added to the soil fill zone and the elevations of the remaining cap layer had a coefficient of permeability greater than  $1 \times 10^{-7}$  cm/sec and, therefore, The results of the laboratory permeability tests indicated that the original first lift of the soil-bentonite permeability less than 1 x  $10^{-7}$  cm/sec, two "undisturbed" samples were obtained roller in preparation for the installation of the filter fabric and the drainage layer. To document that the constructed soil-bentonite layer had a coefficient not meet the requirements of the approved closure plan. from each lift and tested in the laboratory (See Photo 14).

# 2.9 Geotextiles and Drainage Layer

A non-woven geotextile was placed around the edge of the material was placed in a single, 12-inch thick lift and was compacted to at least 75%coefficient of permeability was greater than  $1 \times 10^{-2}$  cm/sec. The drainage layer Prior to construction, the drainage layer material was tested to verify that its A one-foot layer of drainage material was then placed over the soil-bentonite layer. relative density.

the 18" overlap on the edges was stapled. slope and covering the layer with geotextile (See Photos 21-23). Photo 24 shows how the outer edges to a 4 horizontal to 1 vertical slope, lapping the geotextile over the programs are discussed in Section 3.2. The drainage layer was completed by shaping drainage layer material (See Photos 17 and 18). Soil testing and quality control impoundment cap area and extended approximately two (2) feet beneath the

#### 2.10 Cover Soil

dry density obtained from the Standard Proctor Test method for Compaction compacted to a dry unit weight corresponding to at least 90 percent of the maximum (ASTM D-698). loose thickness and compacted with a rubber-tired roller. The cover soil was Photos 20 and 25). The soil was placed in lifts of approximately eight (8) inches, end loaders so that the equipment did not track directly on the geotextile (See layer. The first lift was placed by progressively placing and spreading the soil with Eighteen inches of cover soil was placed over the geotextile overlying the drainage

### 2.11 Stone Protection

Stone protection was placed along the side slopes of the drainage layer against the four (4) horizontal to one (1) vertical. filter fabric (See Photo 19). The two feet of coarse stone was placed to a slope of

#### 2.12 <u>Top Soil</u>

prepared for seeding. for the cap construction. inches of topsoil was placed and spread to establish the finished elevations and slopes Top soil was placed over the coversoil layer (See Photo 26). A minimum of six (6) The topsoil was placed and lightly compacted and then

### 2.13 Drainage Structure

middle of the western side of the cap and extends past the southern end of the cap impoundment to convey run-off away from the west area. The channel begins at the A drainage channel was constructed along the western side of the capped surface

west to east (See Photo 33). Surface grading was used around the remaining portions until it connects perpendicularly with an existing drainage channel that runs from of the capped area to direct run-off away from the closed surface impoundment.

#### 2.14 Vegetation

To complete the closure construction, the capped area was seeded and mulched to establish vegetal cover. The topsoil was prepared for seeding by applying fertilizer and tilling to incorporate the fertilize throughout the topsoil layer (See Photos 27-29). A seed mixture, consisting of the following:

Rate (Ibs/acre)	20	35	112	ì
Common Name	Tommon) hulled	Bermuda Orass (Comment)	Fescue	Rye

culti-packer which crimped the mulch into the seed bed (See Photo 31). Photo 32 following the application of the mulch, it was lightly compacted with a tractor-pulled was then mulched with straw at the rate of 4,000 pounds per acre. Immediately was applied to the capped area by a hand seeder (See Photo 30). The seeded area shows an overview of the seeded cap.

\* 25

# CONSTRUCTION DOCUMENTATION AND QUALITY ASSURANCE 3.0

These activities are summarized in the following was used to provide soil testing services during the borrow source approval phase Soil permeability testing was provided by Springer period. Additionally, a local soil testing consultant (Mid-South Testing Company) Keystone provided a full-time resident inspector throughout most of the construction In order to insure that the construction was performed in accordance with the intent of the approved closure plan and the design drawings and construction specifications, Engineering in Starkville, MS. and throughout construction. sections.

# 3.1 Construction Inspection and Daily Reports

and a summary of the daily activities. Copies of these reports are included as daily reports. The construction inspection reports included information about the weather, contractor personnel, equipment employed, inspectors and visitors on-site, of the design drawings and specifications, and preparation of construction inspection testing conducted by the soils consultant, assisting the contractor with interpretation responsible for visual inspection of the closure construction, coordination of the The resident inspector was Keystone's resident inspectors were on-site during all construction activities except for dewatering, brush clearing and fence removal. Appendix A.

#### 3.2 Soil Testing

testing and laboratory testing of samples from the construction. The various testing is described in the following sections and the test data and results are included as The testing performed during construction included both field Soil testing was performed prior to construction to approve the contractor's quality construction as during and borrow sources Appendix B. proposed

# 3.2.1 Borrow Source Approval Testing

The contractor's proposed borrow source, for each of the soil layers required for the cap construction, was tested to verify compliance with the respective project material

protection material was tested to determine grain size distribution. natural moisture content, grain size distribution and Atterberg Limits. minimum and maximum densities. was tested to determine grain size distribution, coefficient of permeability and and tested to determine the coefficient of permeability. The drainage layer material percent of the maximum dry unit weight obtained from the Standard Proctor Test remolded, at the optimum moisture content, to a dry unit weight corresponding to 95 soil were each tested to determine natural moisture content, grain size distribution, specifications. The unclassified soil fill, soil for the soil-bentonite layer and the cover Atterberg Limits and moisture density relationship (Standard Proctor Test Method Compaction ASTM D698). Samples of the soil-bentonite soil were also The topsoil material was tested to determine The stone

# 3.2.2 Construction Quality Assurance Testing

construction specifications and to verify that the construction satisfied the intent of verify that the fill materials were Field testing of the various soil layers was conducted throughout the construction to placed and compacted as required by the

#### 3.2.2.1 Soil Fill

percent of the optimum moisture content. corresponding moisture contents from these tests ranged from -0.9 percent to +1.9 maximum dry density obtained from the Standard Proctor Test. place density equalled or exceeded the dry density corresponding to 90 percent of the In-place density tests were performed on the soil fill. The tests indicated that the in-Additionally, the

## 3.2.2.2 Soil-Bentonite Layer

three tests and they were within 1% of the optimum. corresponding moisture contents exceeded the optimum moisture content except for the maximum dry density obtained from that the in-place dry density exceeded the dry density corresponding to 95 percent of performed. All final density tests performed on the soil-bentonite layer indicated bentonite soil layer. In-place density tests and laboratory permeability tests were performed on the soil-Sixty-three density tests and ten permeability tests were the Standard Proctor Test. Several of the moisture

incorporated into the soil fill zone, but that the next four lifts (2 feet total) did meet determine the coefficient of permeability of the soil-bentonite soil layer. The test results indicated that the first soil-bentonite lift did not meet the permeability This lift was left in place and diameter shelby tube samplers. Each sample was tested in the laboratory to the in-place soil-bentonite layer were obtained on each soil-bentonite lift with 3-inch layer did not exhibit any deflection under heavy equipment travel. Two samples of specified in the construction specifications; but, for these ten tests, the soil-bentonite contents exceeded the limit of 3 percent above the optimum moisture content requirements of the approved closure plan. the required minimum permeability criteria.

### 3.2.2.3 Drainage Laver

tests were performed. All final density tests performed on the drainage layer In-place density tests were performed on the drainage layer. A total of eight density indicated that the in-place dry density exceeded 75 per cent relative density.

#### 3.2.2.4 Cover Soil

Proctor Test. The corresponding moisture contents averaged 4.3 percent below the density exceeded 90 percent of the maximum dry density obtained from the Standard density tests were performed. All final density tests indicated that the in-place dry A total of sixteen In-place density tests were performed on the cover soil layer. optimum moisture content.

6 (A.)

#### 4.0 DRAWINGS

The following drawings show the plan view and the cross-sections of the cap and surface impoundment and the survey plat with deed restriction notification.

NOTE:
THE AREA DESCRIBED HEREON PREVIOUSLY CONTAINED A WASTE MANAGEMENT UNIT DESIGNATED U.S.EPA IDENTIFICATION NUMBER AND ONTO A WASTE AND ANY FUTURE USES MUST NOT DISTURB THE INTEGRITY OF SYSTEM WITHOUT THE PRIOR APPROVAL OF THE STATE OF MISSISSIPPI DEPARTMENT OF NATURAL RESOURCES, MONITORING ARE TO BE PERFORMED IN ACCORDANCE WITH THE APPROVAL OF THE MONITORING ARE TO BE PERFORMED IN ACCORDANCE WITH THE APPROVED CLOSURE/POST-CLOSURE PLAN. MONUMENT NO.1 1,177,713.863 - 888,929.384 N - 209.777 HUB - SET NORTH - 1. EAST ----1 21 46 E  $^{B\Gamma D_G}\cdot$ HUB -EAST -9.0B 35 SOUTH AST . I BY OTHERS 1, 177, 640, 195-- 667, 033, 748 HUB - SET NORTH - 1. EAST -----P.O.B NO3 27'42"E 135.38 N81 53 24 E . 88 BY OTHERS 177, 671.073 666, 949.674 98N EDGE 8 23'57"W 27.68 81.95 21.09 W 묶 EDGE 0 CONCRETE NORTH - 1.
EAST ---ELEVATION 묶 101.75 S02 07'49"W GRAVEL -S70°29'20"W CONCRETE MONUMENT NO.2 NORTH - 1,178,094,923 EAST --- 667,133,509 ELEVATION - 204.19 1, 177, 696.352 -- 667, 220.530 DN - 207.15 EAST --S20°54°28\*W BY OTHERS , 178, 022.274 667, 147.805 .S22<sup>\*</sup>35′18"E

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REGISTERED PROFESSIONAL ENGINÉER NO. REGISTERED LAND SURVEYOR NO. 2344

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#### 5.0 SCHEDULE

during the closure. The following schedule identifies the start and completion dates of each activity

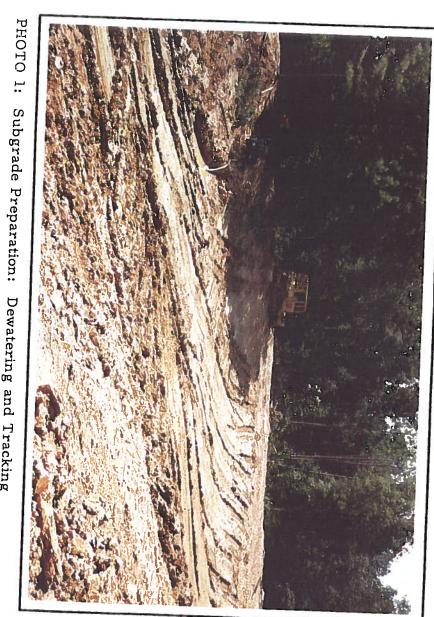
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### 6.0 PHOTOGRAPHS

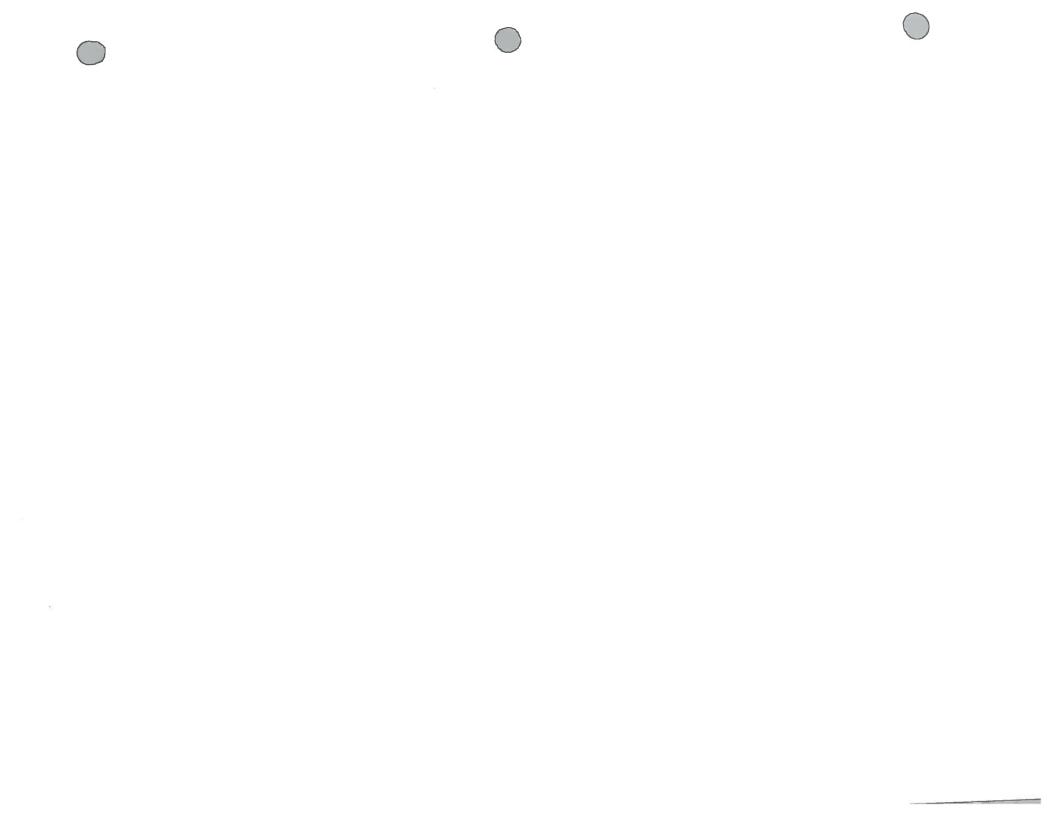
The following photographs represent a brief pictorial account of the closure and are referenced in Section 2.0.



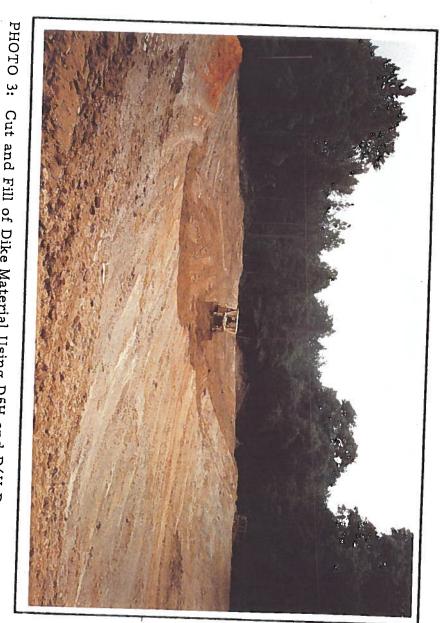
Dewatering and Tracking



PHOTO 2: Subgrade Preparation: Spreading Soil to Dry



## KOPPERS INDUSTRIES, INC. GRENADA, MS PLANT



Cut and Fill of Dike Material Using D5H and D6H Dozers



PHOTO 4: Checking Grade Elevation During Cut and Fill



PHOTO 5: Rolled Surface During Cut and Fill

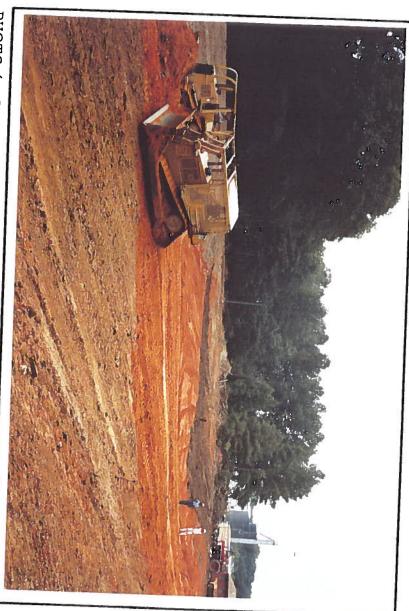
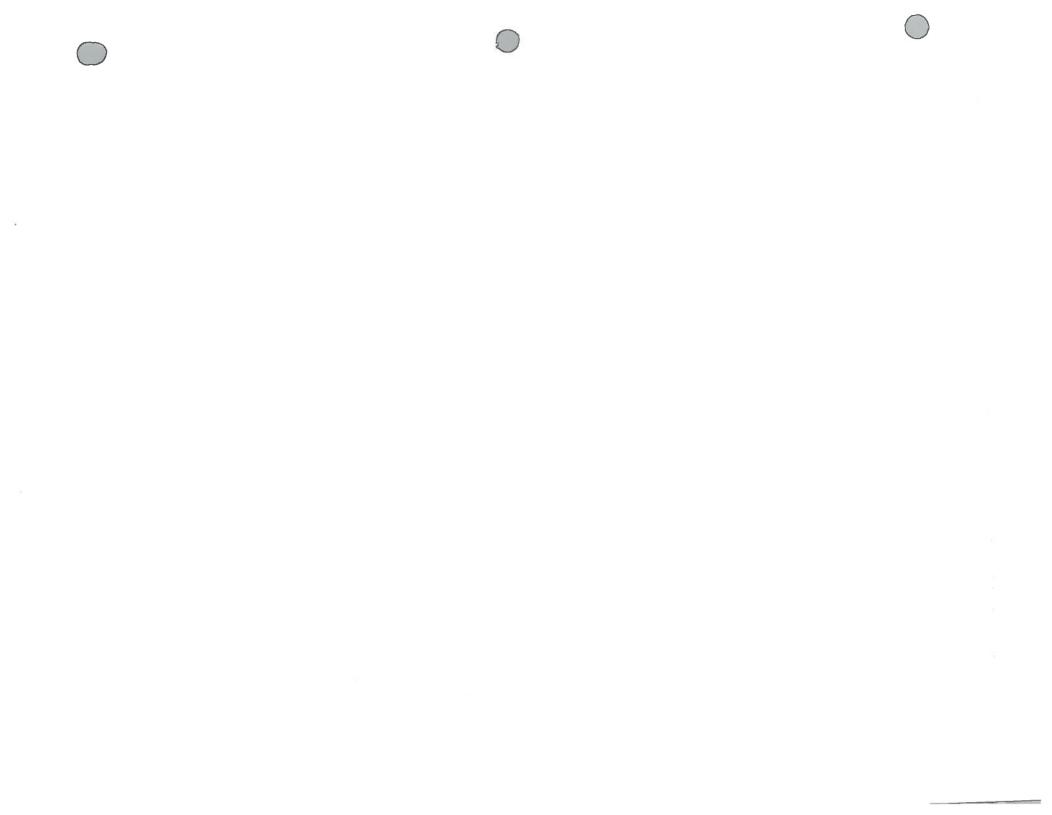


PHOTO 6: Beginning of Unclassified Fill



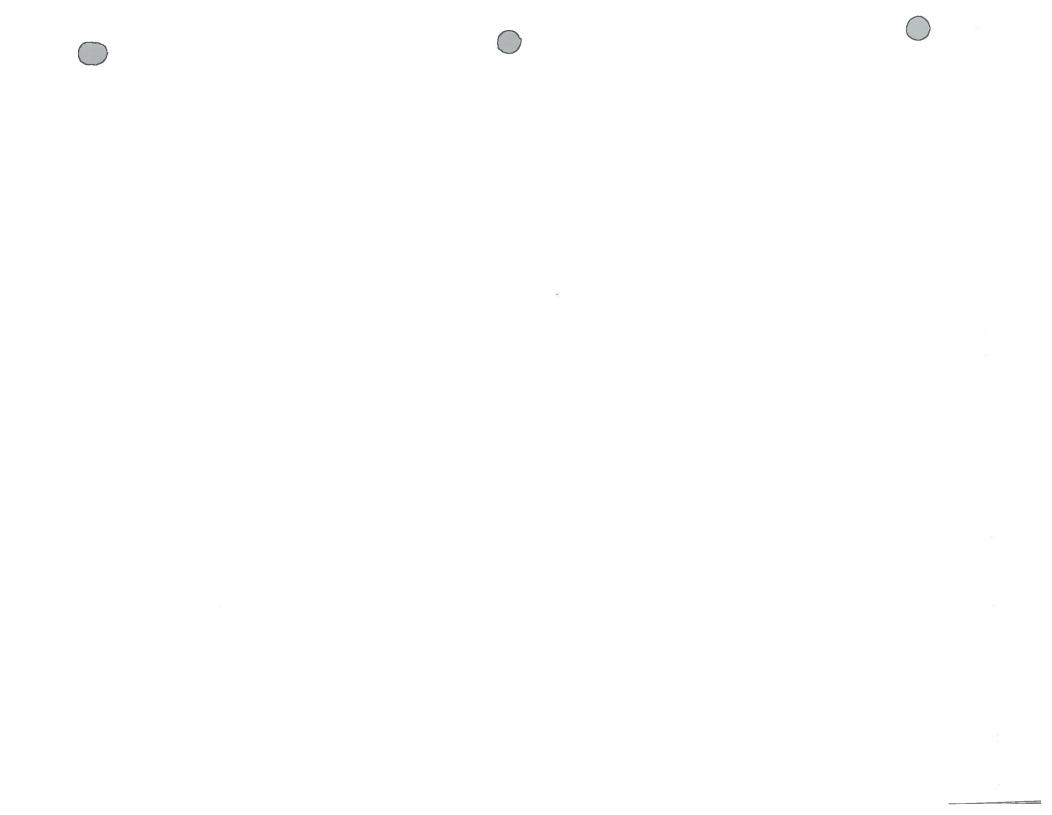
## KOPPERS INDUSTRIES, INC. GRENADA, MS PLANT



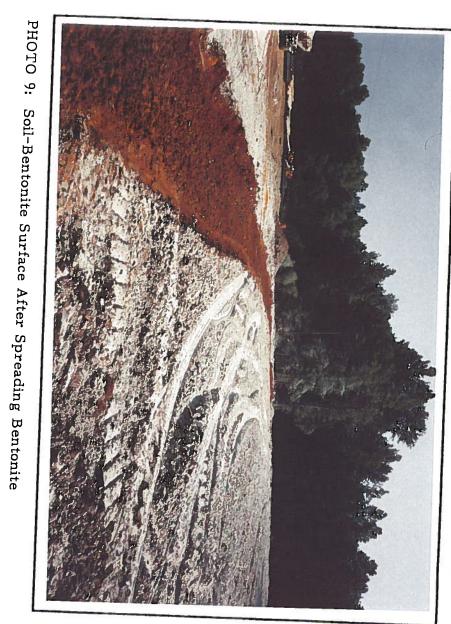
Loading Bentonite into the Spreader with the Backhoe



PHOTO 8: Spreading Bentonite



## KOPPERS INDUSTRIES, INC. GRENADA, MS PLANT



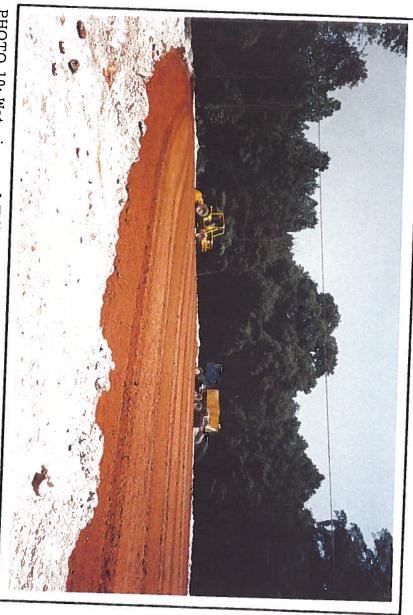
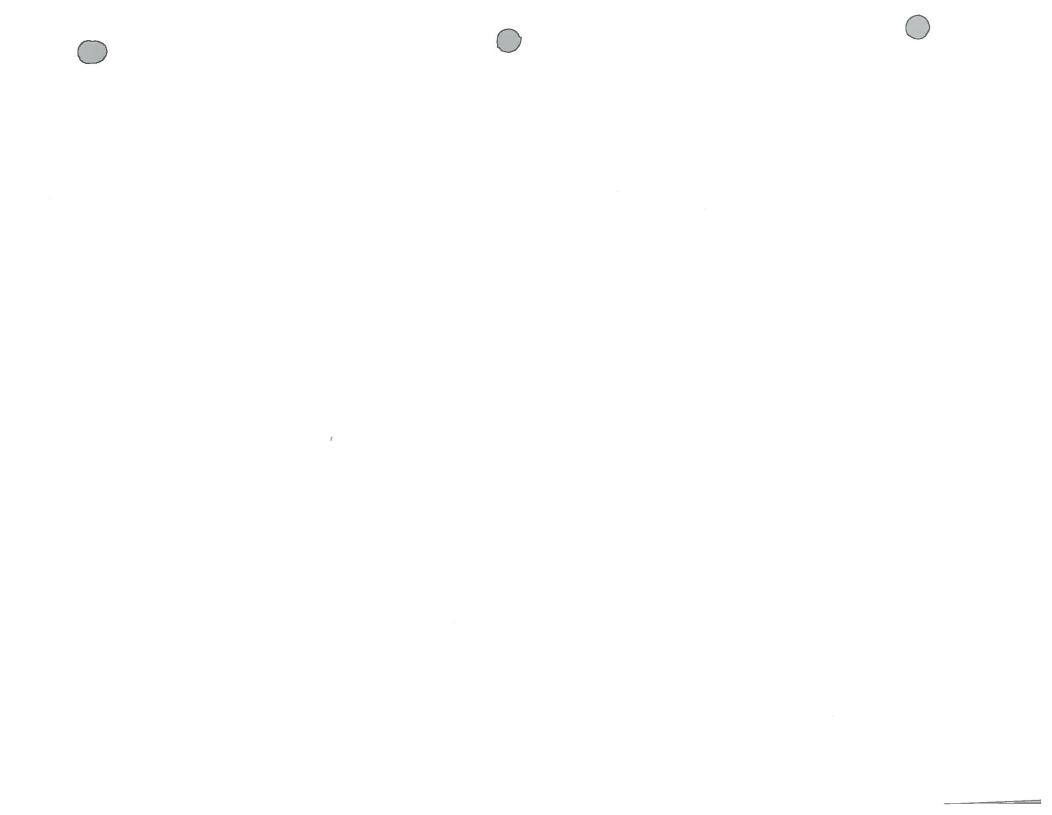


PHOTO 10: Watering and Tilling Soil-Bentonite



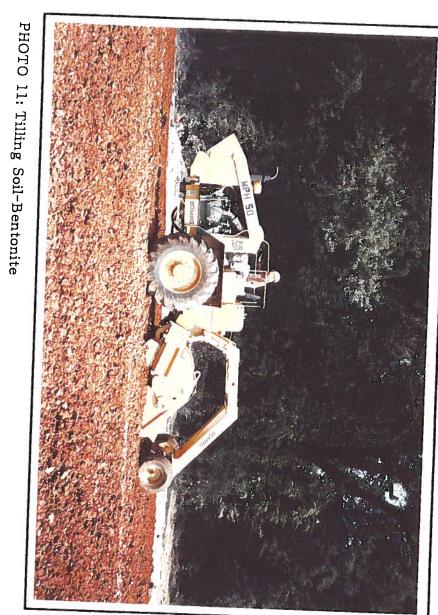
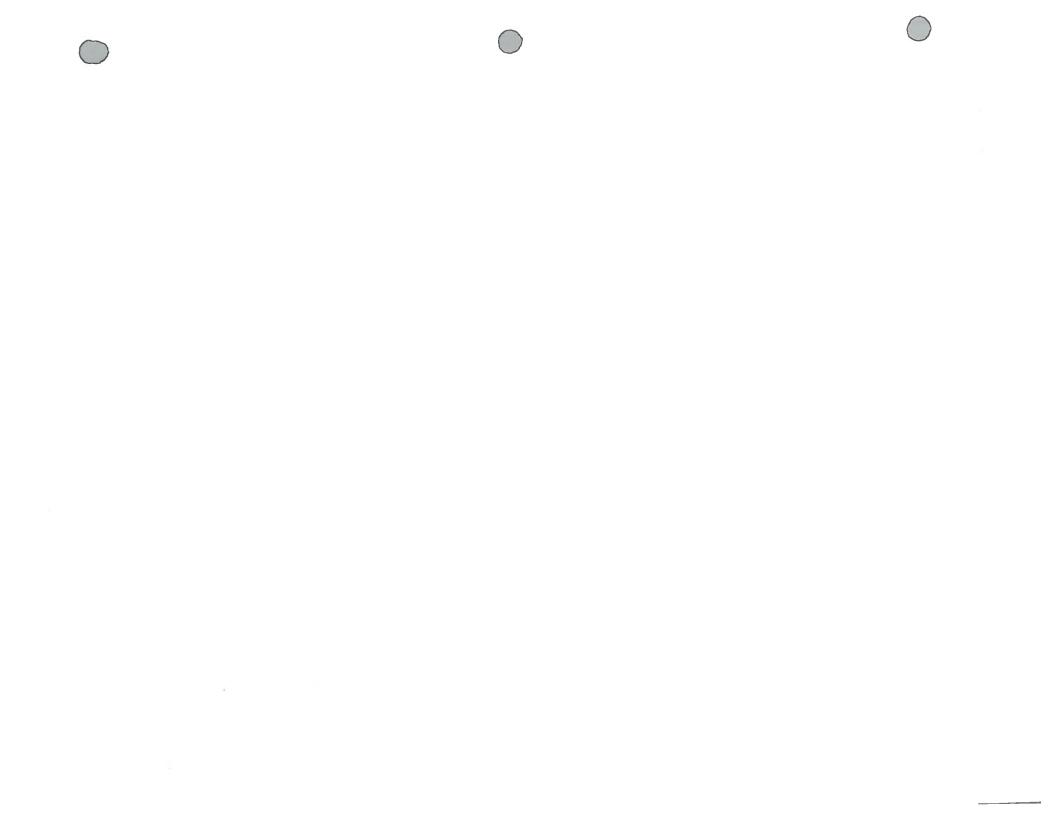




PHOTO 12: Disking and Tilling Soil-Bentonite





Checking Moisture Content with Humboldt Nuclear Tester

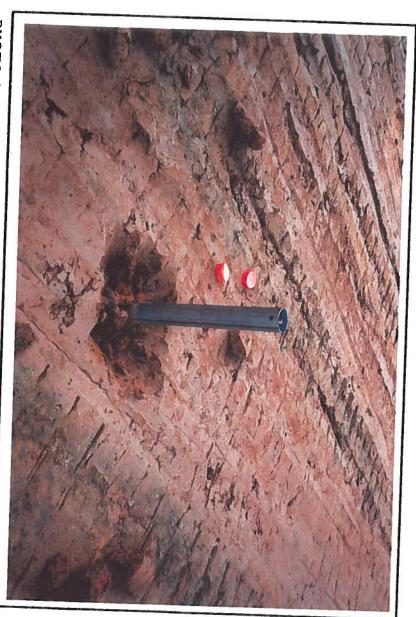
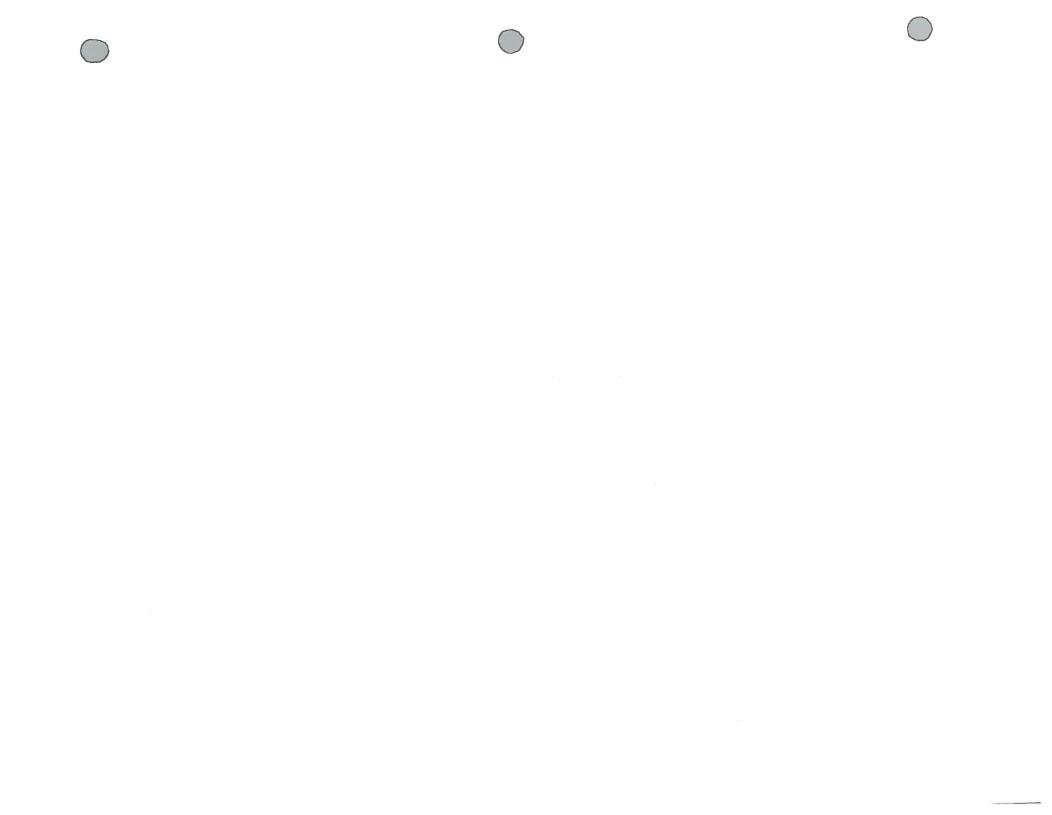
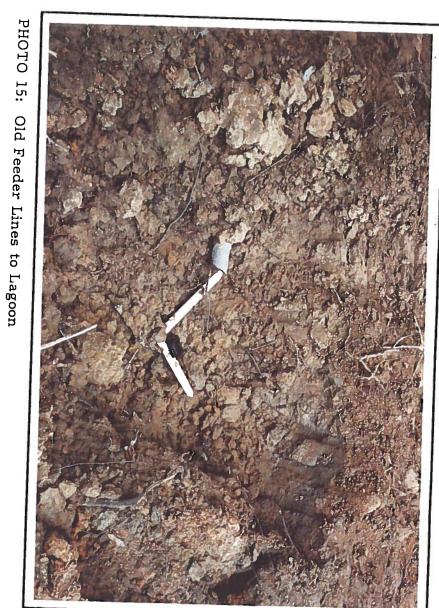


PHOTO 14: Digging Out Shelby Tube





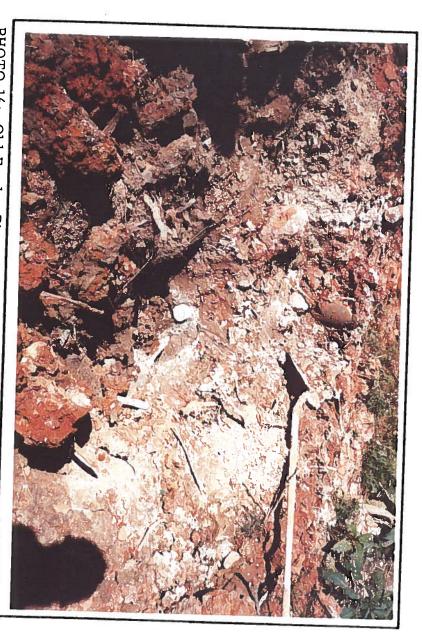
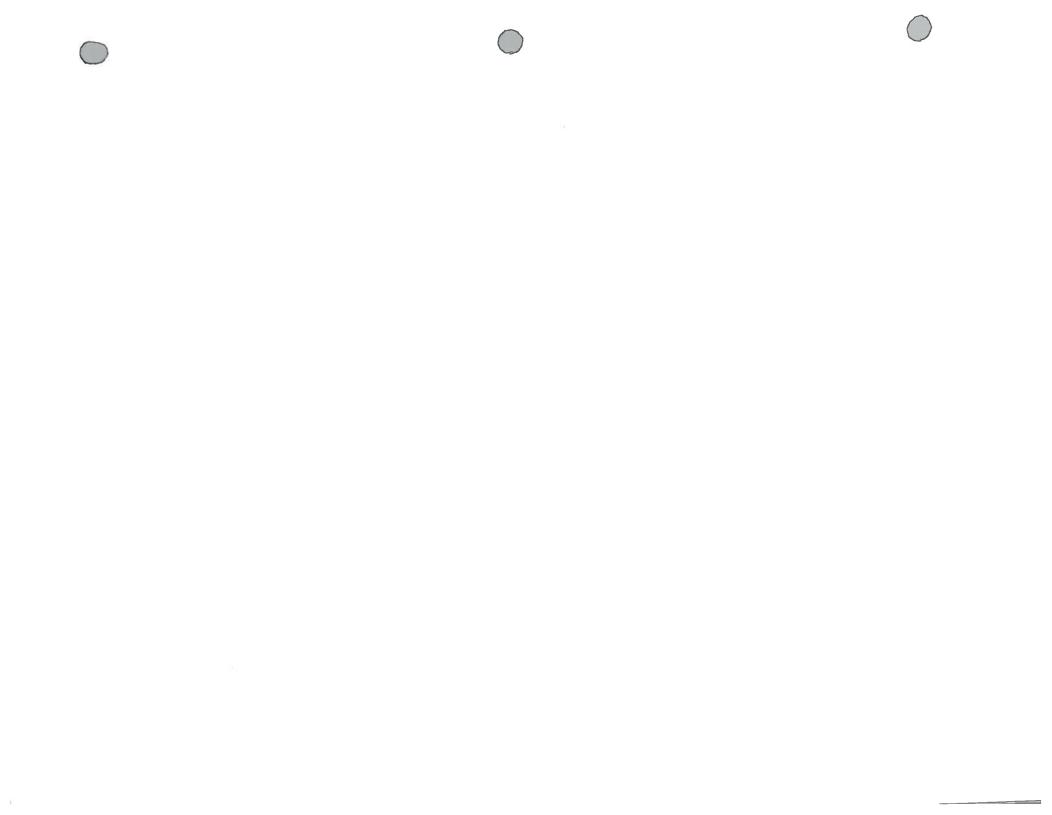


PHOTO 16: Old Feeder Pipes to Lagoon - Cut and Backfilled 10' with Cement



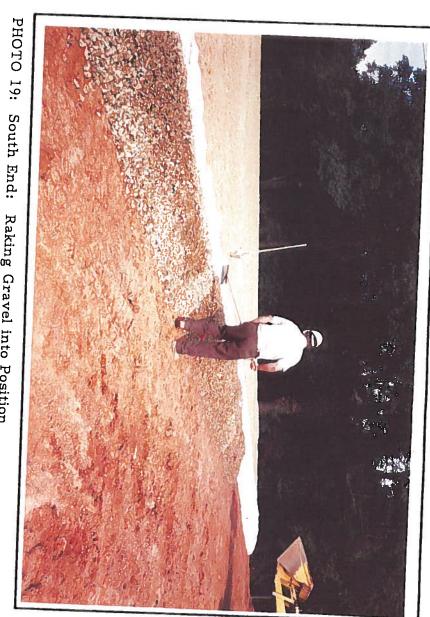


Pushing Sand (Drainage Layer) into Position with 850D Dozer

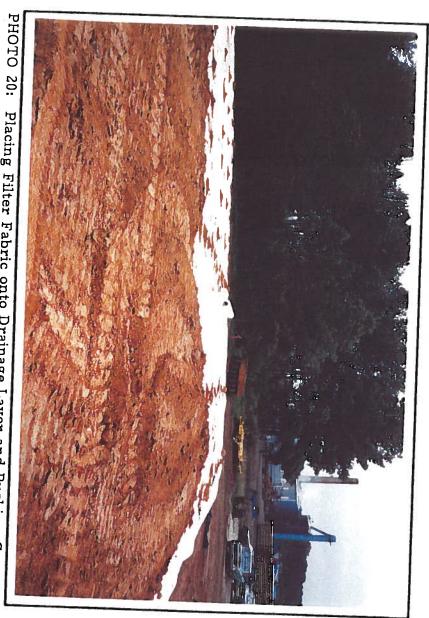


PHOTO 18: 850D Dozer Grading Drainage Layer

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Raking Gravel into Position



Placing Filter Fabric onto Drainage Layer and Pushing Cover Soil onto the Fabric



PHOTO 21: Folding Filter Fabric back over the Ten-Foot Extension

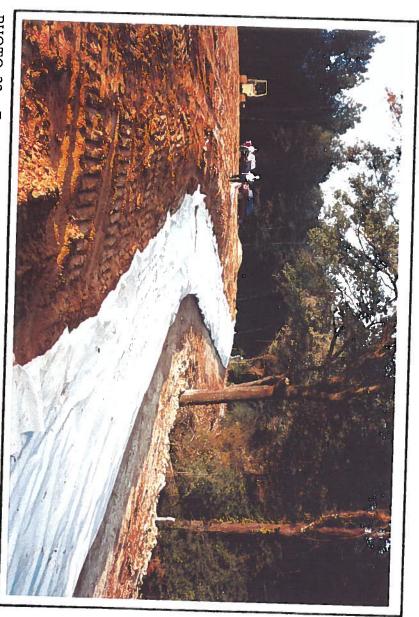
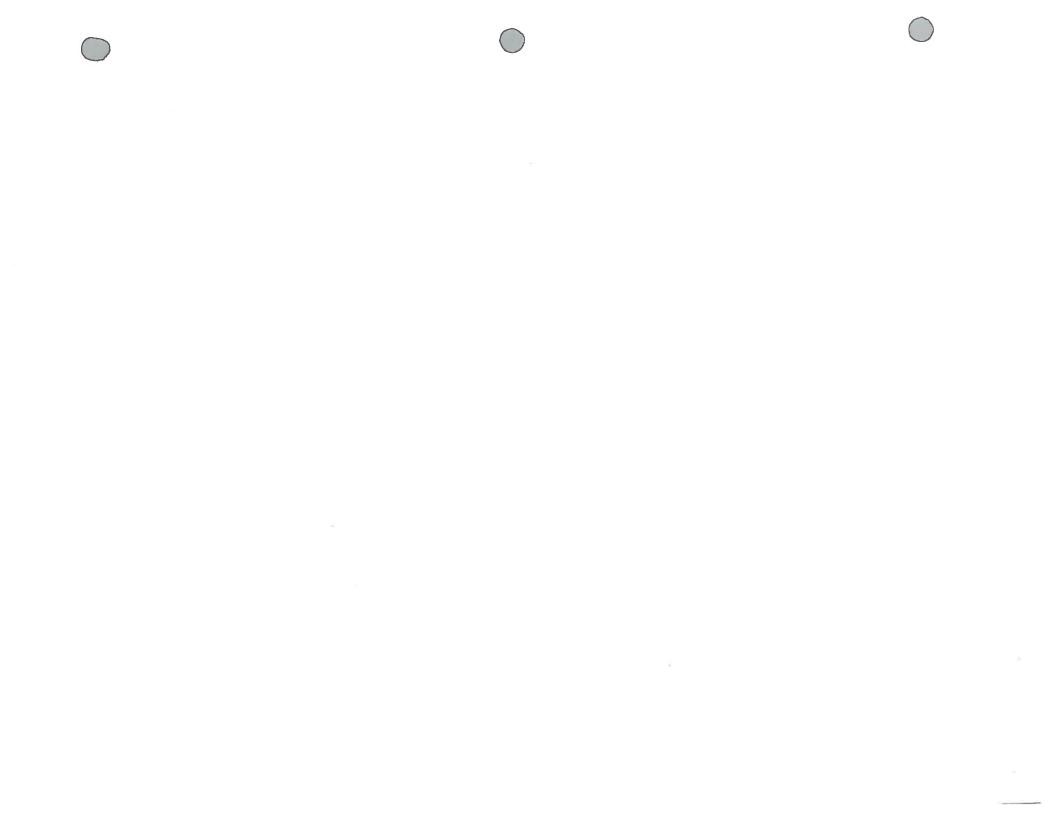


PHOTO 22: East Side Extension: Ready for Cover Soil





Folding Back Filter Fabric on West Side

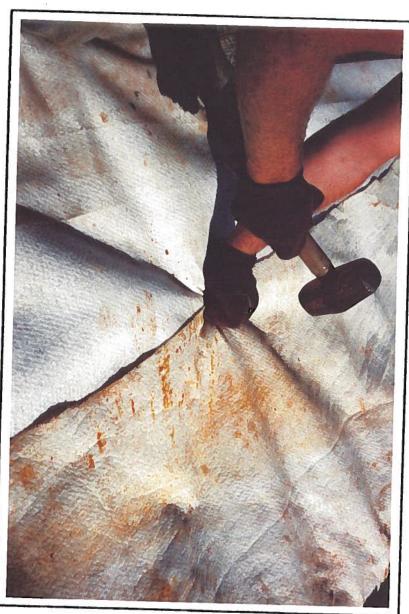


PHOTO 24: Stapling Overlaps

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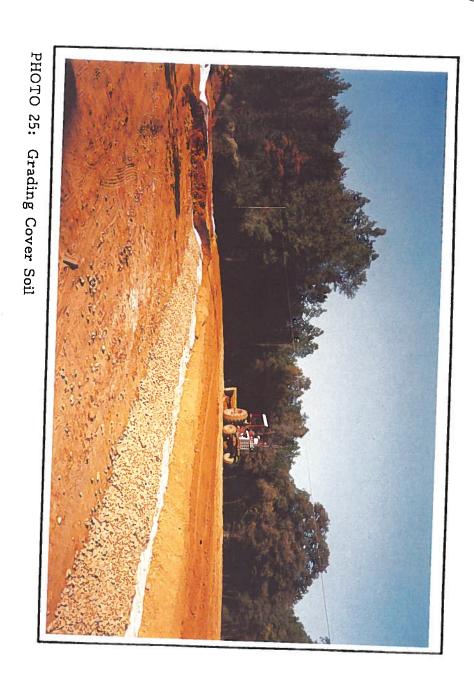




PHOTO 26: Grading Top Soil Along West Side

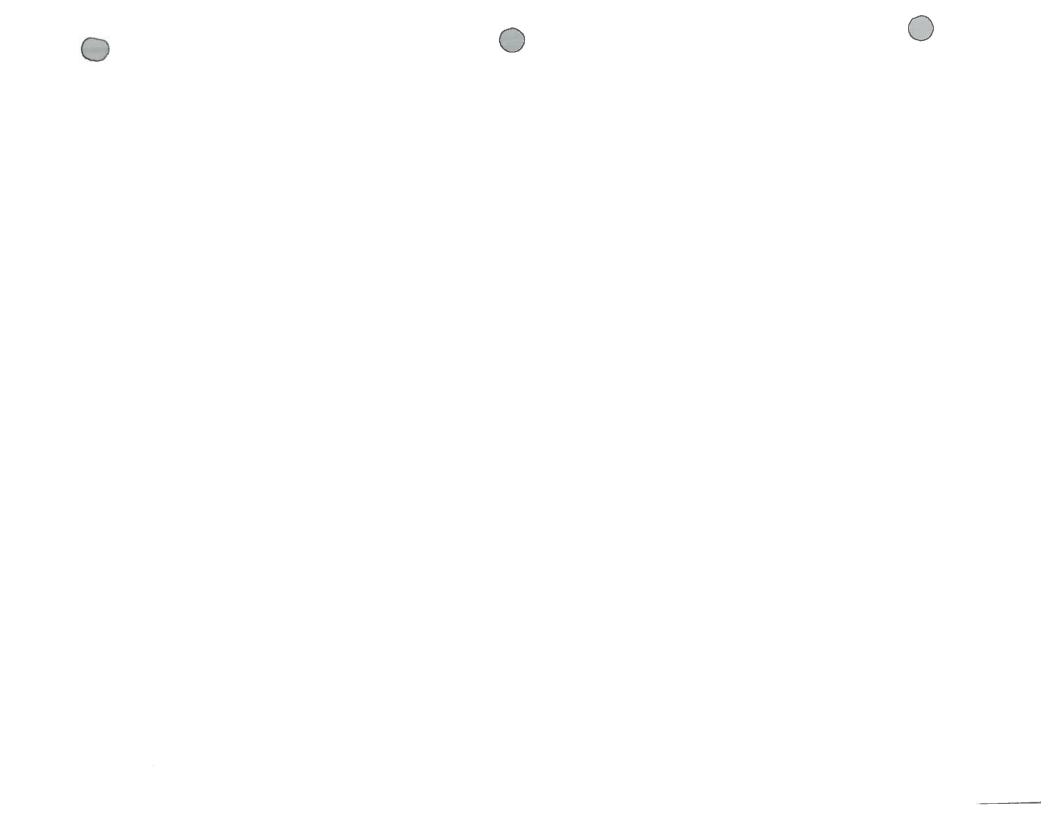
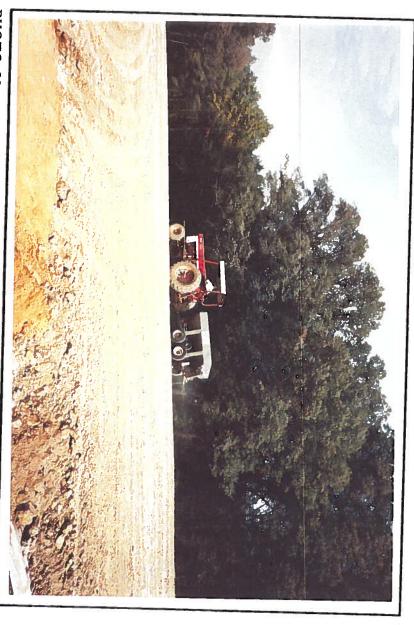
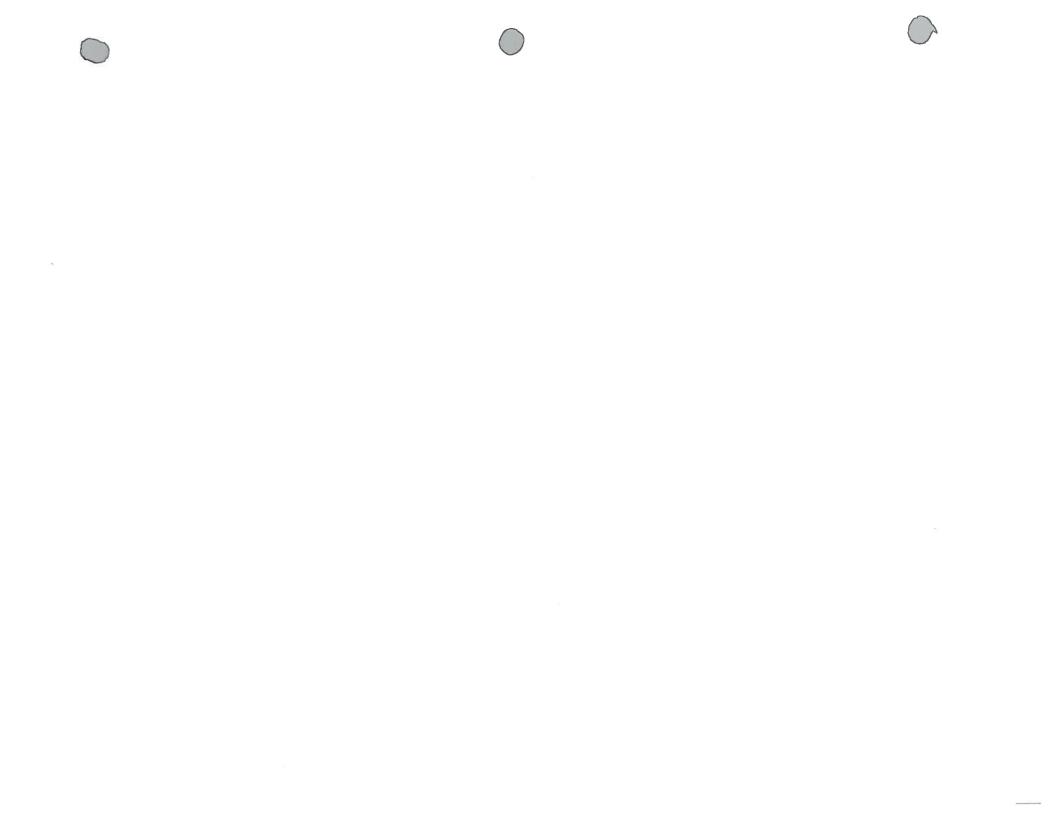


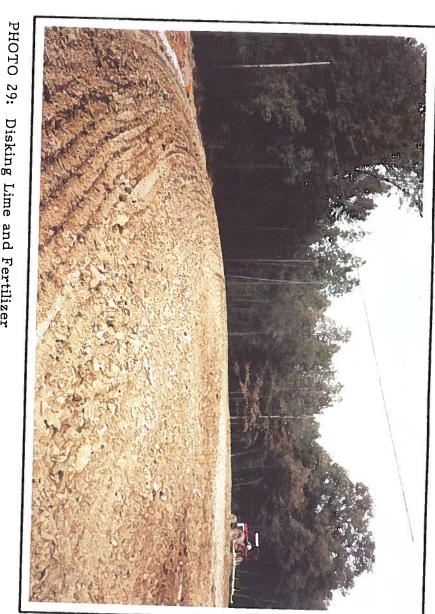


PHOTO 27: Applying Limestone with Truck-Mounted Agricultural Spreader



**PHOTO 28:** Applying Fertilizer with Tractor-Pulled Agricultural Spreader





Disking Lime and Fertilizer



PHOTO 30: Grass Seeding with Hand Spreader



PHOTO 31: Tractor-Pulled Crimper for Seed and Mulch

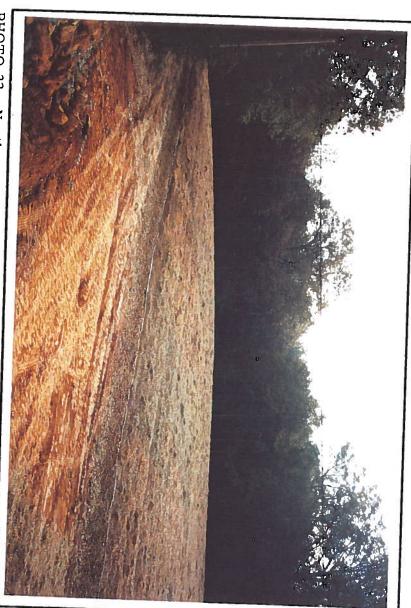
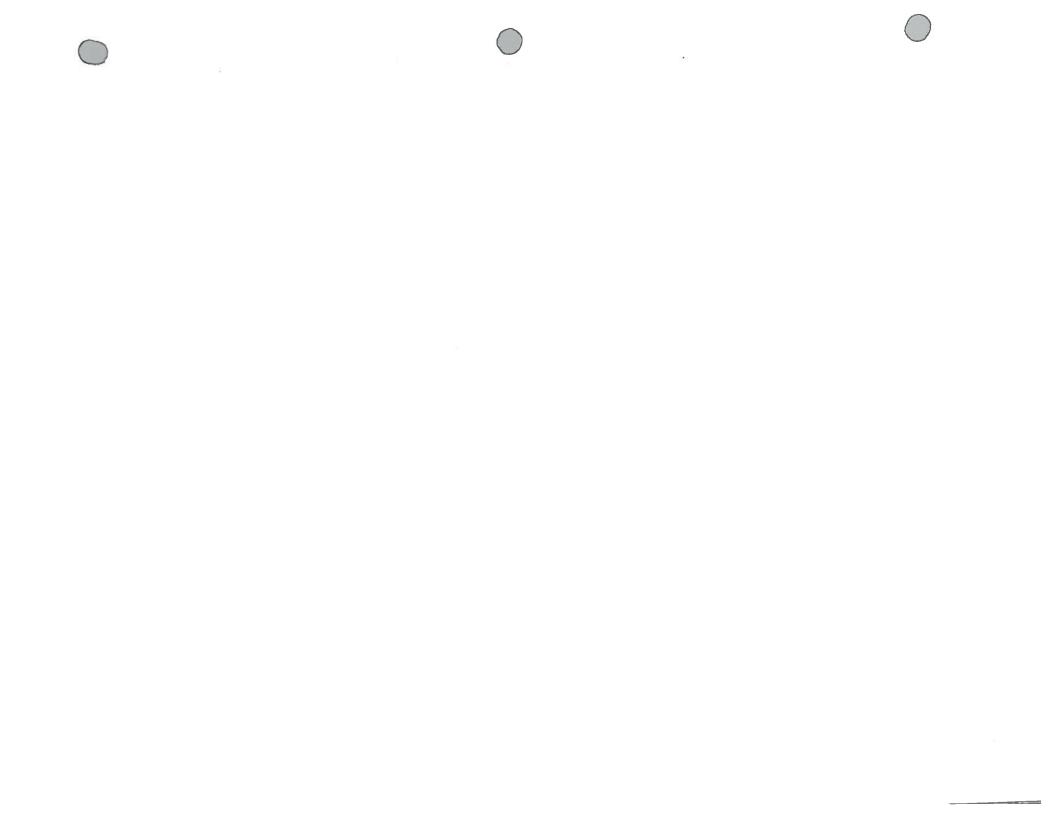
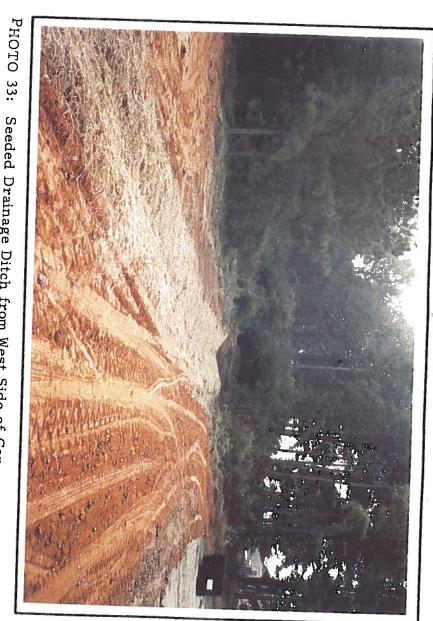
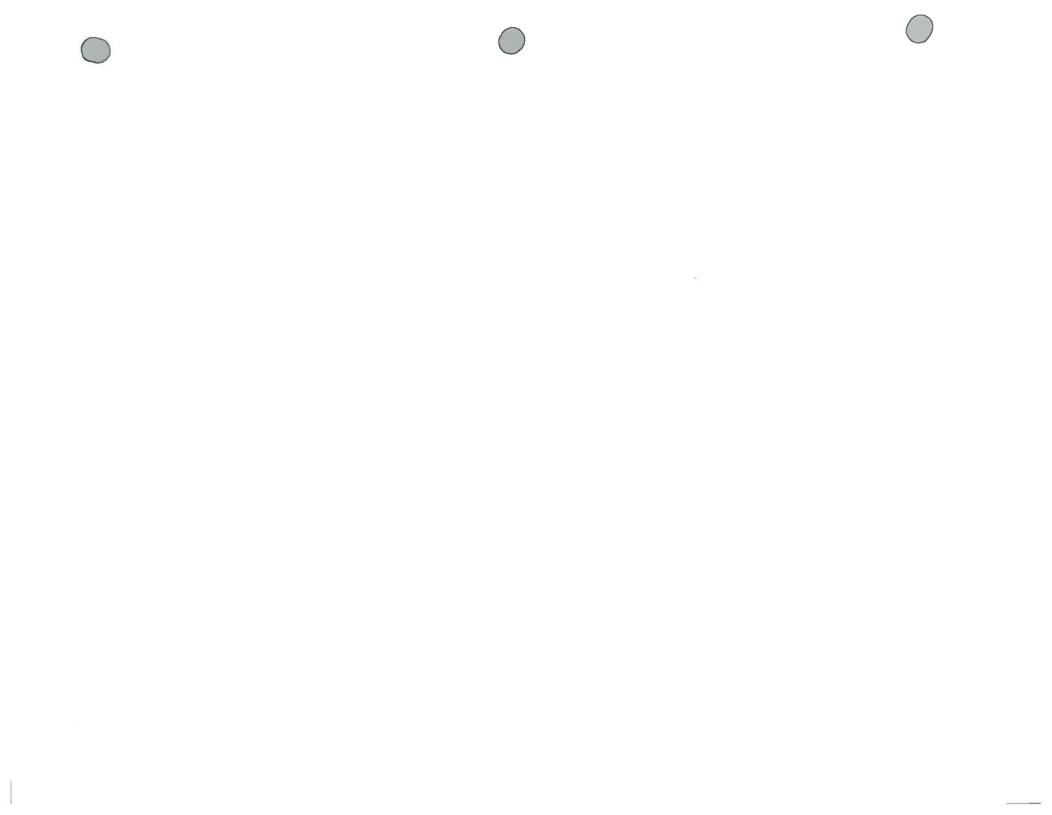


PHOTO 32: Northwest View of Finished Cap





Seeded Drainage Ditch from West Side of Cap



#### APPENDIX A

Daily Construction Inspection Reports

BEAZER MATERIALS & SERVICES, INC. SURFACE IMPOUNDMENT CLOSURE KOPPERS INDUSTRIES, INC. GRENADA, MISSISSIPPI PLANT	REPORT NO.: SHEET 1 OF BY:
WEATHER: MOSTLY SUNNY, HOT PRECIPITATION: O (inches) TEMPERATURE: CONTRACTOR PERSONNEL ON SITE: GREEN & CALCARY DE ALEY	E: LOW 71 HIGH 87 GREEN: TEM BOURIENA
IPMENT EMPLOYED: TEACK HGE DS	H BOZER
INSPECTORS ON SITE: TERRY KIRCHMER : K	KEY STONE
QUALITY CONTROL TESTS AND SAMPLES: NONE	
VISITORS ON SITE: 446: NEW TURNAGE ) KEYSTONE : (NIKE BOLLINGER	JOHN SIRBEN
SUMMARY OF ACTIVITIES: MIKE AND I	ARRIVED ABOU
VT OF TR	AROUND THE SES FENCING
AND WHAT REMAINED OF THE STORY OF THE STORY	
SIGNATURE:	France D. Kul

ATTACHMENTS:\_

ATTACHMENTS: BEAZER MATERIALS OF SURFACE IMPOUNDMENT KOPPERS INDUSTRIES GRENADA, MISSISSINGER SUMMARY 0 TODAY MPOU. VORBUT PUN PERS としくませく BE 01 EX PED ITE MATERIALS & SERVICES, IMPOUNDMENT CLOSURE INDUSTRIES, INC. CA USE OF. IHE での大く A150 PA/Z ACTIVITIES DRY ったつの U U CEFT Wester Con S. MUDDY 北 THE とこによ 3 (cont. 洲 DEY126 EXCESS IN POUNDONEY SACEADING 0.7.50 7 INC. SIGNATURE: BOTTOM 0 RENTHAL 計 がえ CONTICA CTORS 0 PUMP OVER T THU 344 当年 DATE: BY: SHEET REPORT エボ 0 DISCHARSING 100 F 7/19/89 NO.: 75, PAST 8

らると 82 00 REPORT NO.: of STO JE LOW (4) HIGH CLOUDY 5 Н KEYSTONE PICKEY. 200 SHEET DATE: BY:\_ アノ 0 GREEN 4 AFTERNOON McCLESKEY TEMPERATURE: " 326 # 10 J. A. A 2 Boill GER 2 CAFFER まし SAMPLES: CATERPILLAS • 1 INC. 12 といろいく MAVE MATERIALS & SERVICES, I IMPOUNDMENT CLOSURE; INDUSTRIES, INC. SITE: TERRY (inches) AND SOF BIRE WEATHER: MOLDING: MOSTLY CONTRACTOR PERSONNEL ON ACTIVITIES: TESTS SF SITE: EQUIPMENT EMPLOYED: アンチ SITE: とっているの MATERIALS CONTROL PRECIPITATION:\_ NO O NO OF INSPECTORS VISITORS SUMMARY GRENADA, QUALITY SURFACE KOPPERS JOE 乙元

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ATTACHMENTS: SUMMARY BEAZER MATERIALS & SERVICES, SURFACE IMPOUNDMENT CLOSURE KOPPERS INDUSTRIES, INC. GRENADA, MISSISSIPPI PLANT 10:30 (5850 NO Tigo 一年 ्राभाराक) OF ACTIVITIES To K N' TERSECTION **₩**3 5 CHO CENTERUNE PNCLASSIFIED TINISHED (cont.): 200 SIGNATURE: INC. GRADE ō SUBGRAVE 45 ) junës व् EXISTING DATE:
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INDUSTRIES, INC.
MISSISSIPPI PLANT BEAZER MATERIALS SURFACE I KOPPERS I GRENADA,

DATE: 124 & SPEET SOF SPEET SOF

SUMMARY OF ACTIVITIES (cont.):  STARTED 320 LIFT OF UNCLASSIFIED  MATERIAL. THIS SOIL CHME FROM  GREAN & GIREN'S BORROW PIT AT THEIR  GARAGE LOCATION.	FINISHED AT 6:30 DM			SIGNETURE: The P. Kinding
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ATTACHMENTS: 7-1,7-2 SIGNAMIDE: TOLVAC > A.S.	SUMMARY OF ACTIVITIES: 7:00 +M.  FINISHED PLACING 360 LIFT. IT WAS  ESCLED AND TESTED, THE 4 TH LIFT  WITS ALSO PLACED FORCED FORCED AND TESTED.  SEE ATTACH MENTS FOR RESULTS.	VISITORS ON SITE: JOHN GREEN (676) FOR HUDSON (CAT)	INSPECTORS ON SITE: 15024 KIRCHNER! KEYSTONE  VETT VANCE : MID-SOUTH TESTING  QUALITY CONTROL TESTS AND SAMPLES: DOUSLTY & MGISTURE	EQUIPMENT EMPLOYED: DSH DSZER, 1064 TEPACTOR	WEATHER: AM: OVERLAST PAY PAPETLY SUNCY PRECIPITATION: O (Inches) TEMPERATURE: LOW & HIGH & 3 CONTRACTOR PERSONNEL ON SITE: GREEN & GREEN CONST.  JOE WILLING PICKEY DENCEY JOE DAVE MCLESKI	SURFACE IMPOUNDMENT CLOSURE KOPPERS INDUSTRIES, INC. GRENADA, MISSISSIPPI PLANT  BEAZER MATERIALS & SERVICES, INC.  REPORT NO:: 7  SHEET 1 of 1  BY: 7726
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DATE 7/35/89	3to UN CLASSIFIED		$\mathcal{E}$		(a) S					
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INC.	
BEAZER MATERIALS & SERVICES, INC. SURFACE IMPOUNDMENT CLOSURE KOPPERS INDUSTRIES, INC. GRENADA, MISSISSIPPI PLANT	•

DATE: 724 31
REPORT NO.: 3
SHEET 1 of A

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BEAZER MATERIALS & SERVICES, INC. SURFACE IMPOUNDMENT CLOSURE KOPPERS INDUSTRIES, INC. GRENADA, MISSISSIPPI PLANT

DATE:  $7 \Rightarrow 8/8/9$ REPORT NO.: 10
SHEET 1 of 1
BY:  $7P\mu$ 

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WEATHER: API SUNNY MILD OF WERCAST (DRIENE) THEN CI	PRECIPITATION: TEMPE (inches) TEMPERATURE: LOW & SHIGH & SALERY AS ALERY AS	TOE WILLING , RICKEY DENVEY JUE MAVE A'CLESKEY)	JOHN SUGGS, NGIL TURNAGE	EQUIPMENT EMPLOYED: DSH DOZER 1066 TRACTOR,	INSPECTORS ON SITE: TERM KIELITHEL : KEYSTSWE  SEFF VANCE : MIN -SOUTH TESTING  SUMMARY OF ACTIVITIES: APP: 7'OOH  ROLLED AND TESTED 10TH - SOUTH  ROLLED AND TESTED 10TH - SOUTH  ROLLED AND TESTED 10TH - SOUTH	43153
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BEAZER MATERIALS & SERVICES, INC.  SURFACE IMPOUNDMENT CLOSURE  KOPPERS INDUSTRIES, INC.  GRENADA, MISSISSIPPI PLANT  And Date of Andrew Control of Andrew C	REPORT NO.: 11 SHEET 1 Of 1 BY:
WEATHER: THE CONTRACTOR PERSONNEL ON SITE: SIEN & CAREEN !	TEMPERATURE: LOW LES HIGH &S  S REEN & CAREEN !
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MASTURE KEYSTONE 4 CONTROL TESTS AND SAMPLES: DENSITY 143-12 KIRCHAR 17.10-52TH Trepsy ATTACA MODE SITE: ۲, VHNCE NO O INSPECTORS か所 SEFF QUALITY

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STONE SERK 公 かららてい ·· KIRCHNEL SAMPLES:\_ SOUTH TEN27 AND ŧ 110 CONTROL TESTS SITE: 35 Ö Y V INSPECTORS QUALITY SEFF

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INDUSTRIES, INC.  SHEET 1  MISSISSIPPI PLANT  BY: T
OVERCH ST MIL
O (inches) TEMPERATURE: LOW 62 HIGH
PERSONNEL ON SITE: SPERN & GILDEN
WILLING , JOHN SUGG
EMPLOYED: DSH DUZER (TO PUSH START
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ON SITE: TELLY KIRCHNER : KEY
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CONTROL TESTS AND SAMPLES: SAMPLES TAKEN FROM
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ON SITE: ハランE
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INC.			
BEAZER MATERIALS & SERVICES,	SURFACE IMPOUNDMENT CLOSURE	KOPPERS INDUSTRIES, INC.	A, MISSISSIPPI PLANT
BEAZER	SURFACE	KOPPERS	GRENADA,

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WEATHER: SUARY, MILLS
PRECIPITATION: (inches) TEMPERATURE: LOW HIGH
CONTRACTOR PERSONNEL ON SITE: GREEN & GREEN ',
JOE WILLIMG, SOHN SUGGS (BOTH 7-5:30)
RICKEN DONLEY JOVE DAVE MICLIESEN (ROTH 1-5:30)
EQUIPMENT EMPLOYED: JOLU TEHCTOR DISK WIPLEMENT
SCRAPER D
INSPECTORS ON SITE: TERRY KIRCHNER : KEYSTENE
JEFF VANCE: MID-SOUTH TESTING
QUALITY CONTROL TESTS AND SAMPLES: AEVSITY & MOISTURE
JOB PTTY & MENSI
VISITORS ON SITE: NONE
SUMMARY OF ACTIVITIES: ARR. 7 AM 1-11-14-145 5:30
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ATTRACTOR LIMITS TESTS FOR THE THERE SAMPLES

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ATTACHMENTS:\_

SURFACE IMPOUNDMENT CLOSURE KOPPERS INDUSTRIES, INC. GRENADA, MISSISSIPPI PLANT	SHEET Of Of BY:
SUMMARY OF ACTIVITIES (cont.):	
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AND WERLES UNTOL	
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DENSITY AND MOISTURE TESTS	WAR THEN.
ATTACHMENTS: SIGNATURE:	Tasana P. Kuhnan

ATTACHMENTS: SIGNATURE: Tryons D Kinh	<u>8</u> 1
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MIDISSITH TEXTING TOOK SAMPLES FOR	<u>ل</u> ـــ,
USING SOIL WITH MORE CLAY NOW HOT.	1
STARTED NEXT LIFT NOW IST LIFT OF SOIL BONT	1
SUMMARY OF ACTIVITIES: 7:55 AM 1 FJD, 7:35 DM	SI
	1
VISITORS ON SITE: NONE	V
GRAIN SIZE DIST., PROCTOR, AND OFT. MOIST. ANALYSIS	1
QUALITY CONTROL TESTS AND SAMPLES: SHINDLES THEN FOR	Ø
MIKE BULLINGER . KEYSTONE , SEFF VANCE , MIO SOUTH FRING	·
INSPECTORS ON SITE: TORY KIRCHIVER: KEYSTONE	H
	ı
1912 1	ı
EQUIPMENT EMPLOYED: 55H DOZER, JOHN TEACTOR	Ħ
	1
JOHN SUGGS	
JOE WILLING, RICKEY DENCEY JOE DAVE MCCLESKEY,	1,
CONTRACTOR PERSONNEL ON SITE: SILPEN & SKEEN CONST:	0
PRECIPITATION: (inches) TEMPERATURE: LOW 67 HIGH	hd
WEATHER: SUNNY MILD	<b>5</b> !
SORFACE IMPOUNDMENT CLOSURE  KOPPERS INDUSTRIES, INC.  SHEET 1 of	
MATERIALS & SERVICES, INC.	

:

INC. BEAZER MATERIALS & SERVICES, SURFACE IMPOUNDMENT CLOSURE KOPPERS INDUSTRIES, INC. GRENADA, MISSISSIPPI PLANT

EATHER: SULLY MILD
RECIPITATION: O (inches) TEMPERATURE: LOW 64 HIGH &S CONTRACTOR PERSONNEL ON SITE: 64 GEN 4 62 EEN 1.  SOC WILLING, RICKEY NEWLY SOE DAVE (MICHERE)
JOHN 5 5 665.
SQUIPMENT EMPLOYED: 154 DOZER
INSPECTORS ON SITE: TERMY KIRCHMER, MIKE BALIMER? KEYSTENE JEFF VANCE MITE SATH TESTING (1/2 DAY)
ES:
VISITORS ON SITE: Mande
SUMMARY OF ACTIVITIES: ( 3 4 7 ) FIM. 16 3 12 12
SCRAPES CLAY LAYER SECTION OFF NE
CORNING AND REMOVED CXCESS SANDY LAYER
RELOW IT, RE-SET GRADE STAKES, AFIRA
PEPCACING THE CLAY LAYBR.
ATTACHMENTS: SIGNETURE: 16 WYCE & KINKING

BEAZER MATERIALS & SERVICES, INC.  SURFACE IMPOUNDMENT CLOSURE  KOPPERS INDUSTRIES, INC.  GRENADA, MISSISSIPPI PLANT  BY: TOKEN  BY:
WEATHER: HOT, SUMMY HAZY
NEL ON SITE: Color of Alem Const.
JOE WILLING PICKEY DAVIEY, JOE DAVE MOCKEY
504~ 50665.
EQUIPMENT EMPLOYED: DSH DOZER, ASC. SPRENDER,
8
RS ON SITE: TERRY KIRCHIOR
מעג מהמשי
CONTACO ABOA CAME CAME ABO
VISITORS ON SITE: NONE
SUMMARY OF ACTIVITIES: TO AM FIN. 6 PM
APPLIED BONTONITE FROM TRACTOR- PULLED
SPREADER IN THREE DOSES TOTALING 45,080 BS;
TILLING AFTER EACH APPLICATION.
THEN PUT FIVE TRUCK LONGS OF WATER ONTO
MIXTURE AND DISKED THEM TOXETHER. MAISTURE
CHECK IN DICATED SUIGHTLY HIGH! THERER WILL DISK IN AM.
ATTACHMENTS: SIGNATURE: Towned P. Human

INC. SERVICES, r CLOSURE PLANT INDUSTRIES, INC MISSISSIPPI IMPOUNDMENT W MATERIALS GRENADA, SURFACE BEAZER

DATE: \$\left\| \left\| \left\| \left\| \left\| \left\| \text{REPORT NO.: \left\| \left\| \left\| \text{SHEET 1 of \left\| \left\| \left\| \text{EDM: \left\| \left\| \text{AM: \left\| \left\| \reft\| \text{AM: \left\| \left\| \reft\| \text{AM: \left\| \reft\| \reft\| \text{AM: \left\| \reft\| \reft\| \text{AM: \left\| \reft\| \reft\| \reft\| \text{AM: \left\| \reft\| \reft\| \reft\| \reft\| \reft\| \text{AM: \left\| \reft\| \re

5 HIGH B 50 LOW 6,722m TEMPERATURE: DENLEY 4 HUMID GREEN RICKEY SITE: ナグ (inches) Ö とうろうく CONTRACTOR PERSONNEL 5223 0 PRECIPITATION: WEATHER: 700 11353 不完成 gerray PUSH MALEMENT P TEREST ひって 450 EMPLOYED: CTSP TRA **EQUIPMENT** 270

SIONE S STURE 不成 ٤ 4 BOLUNGEL DENS: TY 200  $\mathcal{Z}$ SAMPLES: とうしてれ SITE: T. KIRCHNER 3-5 AND TESTS # 6 IANCE CONTROL NO INSPECTORS Ĺ QUALITY SIEF

VISITORS ON SITE: ASSIVE

A P PPPPA 221 YESTERDAY'S ナ 186 2000 SHER & SMPACTION ととのか 591 SIGNETURE: LEANER Fileson DRIVE 2 是户 工 515 JAKEN! Sorte 424x STT3 子がみしり たがろ J in EALE forest 8 T 2 Sept 1-02 0 半 0 40 ACTIVITIES: 4 EN612 THEN PIEN K, SOME オージ SPRINGER افي ATTACHMENTS: STURE WATER, N HAVE QF. 1735 DISTED SUMMARY 5 10

			(5) =								63					
15	14	13	<u>D</u>	11	70	_0	A	7	6	い	<u>_</u>	W	L	-	TEST NO.	
					29.0	<b>シ</b> を.0	1,4	Dr. 7	Q F . ]	Dy. 5	ا، يال	24.3	ار ال	といり	Po MoiSTURE	ATTACHMENT 19-1
					95,0	18.5	98.5	8.23	95, V)	100.	102.2	102,5	102.7	99.5	90 TO #4 MOD	19-1
							e U		_£:		7	6 U	^1	ドアナ	1 ST SOIL - BENTON TE	DATE 8/12/89

DATE: 8/16 REPORT NO: 30 SHEET 1 of L BY: C ni R	WEATHER: Sunny, Humid > rained approximately linch and line precipitation: C (inches) Temperature: LOW ZO HIGH 92.  CONTRACTOR PERSONNEL ON SITE: Joe (willing, Ricky Deuny)  (also 3 fruck drivers for Green & Gwen havled in clay)  Equipment employed: Caterpillar D5H, International tacks  w/ disk attachment	
INC.	TEME TEME (Sree	Sex her
BEAZER MATERIALS & SERVICES, SURFACE IMPOUNDMENT CLOSURE KOPPERS INDUSTRIES, INC. GRENADA, MISSISSIPPI PLANT	WEATHER: SONDY, Homid  PRECIPITATION: Calinches)  CONTRACTOR PERSONNEL ON SITE:  (also 3 fruck drivers for also 3 fruck drivers for EQUIPMENT EMPLOYED: Calectin	INSPECTORS ON SITE: Chais Rescher
BEAZER MATI SURFACE IMI KOPPERS INI GRENADA, M	WEATHER: SPRECIPITAT CONTRACTOR (also EQUIPMENT	INSPECTORS

hauled atternoon muddy amas in perimeter of cab 50, alt trucks to 5:30 ock oled M 2.00 andish 1 atec Z Z 4 from help Standing atknoon som pad aut in the marning 9 Worked dick SUMMARY OF ACTIVITIES:\_ and श्रीप प्रवस COD LANGE One 24 70 7012 Was

aller buy limits

SIEUX analysis and

300-bomod

12XCE

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QUALITY

MONE

VISITORS ON SITE:

Sampled

CONTROL TESTS AND SAMPLES: Jeff Vence

Christan! M. SIGNITURE: ATTACHMENTS:

ATTACHMENTS: SIGNITURE:	SUMMARY OF ACTIVITIES: Wet areas (award painter)  1 water the probled and then recompared. J  4 ocalians wy Humbolt. The results w  4 19.7% moisher 104.5% density #2 24%  #3 23.4% moisher 104.5% rel density #4 27.4%  #5 23.4% moisher 102% rel density #4 27.4%  T said this was ok and he didn't have to reue	QUALITY CONTROL TESTS AND SAMPLES: 2 54 mbles for the possing security 2 14 PI , 85% passing siche (1820) VISITORS ON SITE:	EQUIPMENT EMPLOYED: International Face  D514, International by rubber to the vobiller  INSPECTORS ON SITE: Chris Rescher	WEATHER: Hot Hozy parth suning PRECIPITATION: O (inches) TEMP CONTRACTOR PERSONNEL ON SITE: Ja- Tom Doubleday (left at 10:00 Am) Hows worked 7:00 to 5:30	BEAZER MATERIALS & SERVICES, INC. SURFACE IMPOUNDMENT CLOSURE KOPPERS INDUSTRIES, INC. GRENADA, MISSISSIPPI PLANT
TURE: Chuita M. Rusch	packed. Jeff Vlance ksky rcs. whs were: #2 24% master 97.1% relations to revort it.	samples from skrkpile #1 PI=12	Farmall w/ disk, Catespiller i hred compacter, Romas	TEMPERATURE: LOW 70 HIGH 93	DATE: 6/19/69 REPORT NO.:31 SHEET 1 of 1 BY: CMR

INC. MATERIALS & SERVICES, IMPOUNDMENT CLOSURE INDUSTRIES, INC. MATERIALS GRENADA, SURFACE KOPPERS

S|2069 cm R . 0 2 REPORT SHEET DATE: BY:\_\_

40 HIGH 2:0 in atknoon at LOW 72 16+4 TEMPERATURE: SUNDY Dashleden Hazy in morning Tom بعتممنك CONTRACTOR PERSONNEL ON SITE: (inches) thring रहकेट्ट PRECIPITATION: 卫 WEATHER: ONN

Gaterpiller DSH disk farmell International 3.30 9 7.00 EMPLOYED: EQUI PMENT Worked

Raschor Chris SITE: ö INSPECTORS

SAMPLES: CONTROL TESTS AND QUALITY

MON SITE: NO NO VISITORS

last iled. Ton COVES 20 म् इस्रा र कार्वक 20 P SIGNITURE: 30, 4 spacins 4 s to keds Rowsh ムメる 7 +20 from Not sored end 3 ked 3:30. north ACTIVITIES: 201 d 3 00002 7 यभ्। mouse **C.2C.**1 af 1:30 ,9× 00000 عرب OF \$ \$ x50 といい SUMMARY 4407 ~50 ٢ 0 305

ATTACHMENTS:

٠,

ATTACHMENTS:	13, 450, lbs (18, 450 gross), - he	von politique son	filled after each load	dist and 3/2 loads of	removed level stakes is rocks	SUMMARY OF ACTIVITIES: John	ire: John	QUALITY CONTROL TESTS AND SAMPI	 INSPECTORS ON SITE: Chris Ras	DSH dozer, John Deere frontend loader backfor,	7:00 to 7:30	Joe Willing Tom Dosblarla	CONTRACTOR PERSONNEL ON SITE:	ATION: O (inch	WEATHER: Hot Homid Somne	BEAZER MATERIALS & SERVICES, SURFACE IMPOUNDMENT CLOSURE KOPPERS INDUSTRIES, INC. GRENADA, MISSISSIPPI PLANT
SIGNI	e second			a (Joe Willing benbnik	s (2-3 hours	ა <i>ი</i> ვე ა	ſ	LES:	<b>^</b> I	le dimp h		1	E: John	- 1	2	, INC.
SIGNITURE:	weighed	The 1	was	) La	ms). Truck	Iom Darbleda		s: Tel-lbace	Farmall us disk, compactor sline spreader	backhoe,		(2:00 to 8:00)	ردووںک	TEMPERATURE: 1		
	14,170 lbs	2		lyas th	7	lay Roky	Green & Green	12:30 %	empactor il	Rex rot			Picky	10м 74 нісн 96		DATE: 8/REPORT NO SHEET 1 C
	bs	العملوا عمد	The	cap was	a more		3	7. <b>3</b> 0	me spreader.	clay)			Denny	96 HB		8/21/69 No.: 33 L of Z

BEAZER MATERIALS & SERVICES, INC. SURFACE IMPOUNDMENT CLOSURE KOPPERS INDUSTRIES, INC. GRENADA, MISSISSIPPI PLANT

DATE: 6 21/89
REPORT NO.:33
SHEET 2 of 2
BY: CMR

weighted 20,000 lbs. Rob billing was done to adopther of 6". The fivit has filling was done to adopther of 6". The fivit has filling was done to approximately 15 min. The clay looked complets, mined and no unmixed bentonite was observed.  After roba tilling Jeff Vonce town congreted clay town and no unmixed bentonite was observed.  After roba tilling Jeff Vonce town congreted clay the results were: 17%, 20%, 19:4% and 23%.  For truck loads of water was etten applied (by 100) the results were: 17%, 20%, 19:4% and 23%.  The results were: 29%, 19%, 19%, 19%, 19%, 10%, 10%, 10%, 10%, 10%, 10%, 10%, 10
--

SIGNITURE: Chustain

ATTACHMENTS:

encompasing the whole site borcent moustore and relative density or torned.	tst w/ Hom bust were ser-tomed.
45	
16 whole	Porcent
	11 locations
Γ	A Maria I.N. Ramon to
) ratio hild obvious wet spots	Dex for chas Jac D
and Risi	compator. Tom D. and Rais
Succes compacted for 2 hrs. w/	
	ATRITOWN ON OTTH
Il locations, Took	Something of the state of the s
MPLES: Tof Vance took Zmastre	CITAL THE COMPONE TESTS AND SAMPLES:
Rasker	INSPECTORS ON SITE: Chris Russley
+	min) ) D5H dozer ) wxx kr
ial Farmall w/ disk & compache	
· ·	
	The Same Pick Donny
Toe Winning Tom Doubleder	SOMET ON STEEL
TEMPERATURE: LOW 74 HIGH 99	(inches)
hmid	WEATHER: New Hot Sunny Hamid
BY: CMC	
INC. DATE: 8/22/89	BEAZER MATERIALS & SERVICES, INC. SURFACE IMPOUNDMENT CLOSURE

:

BEAZER MATERIALS & SERVICES, INC. SURFACE IMPOUNDMENT CLOSURE KOPPERS INDUSTRIES, INC. GRENADA, MISSISSIPPI PLANT

DATE: 8 22 89

REPORT NO.: 34

SHEET 2 of 3

BY: CMR

SIGNITURE:

ATTACHMENTS:



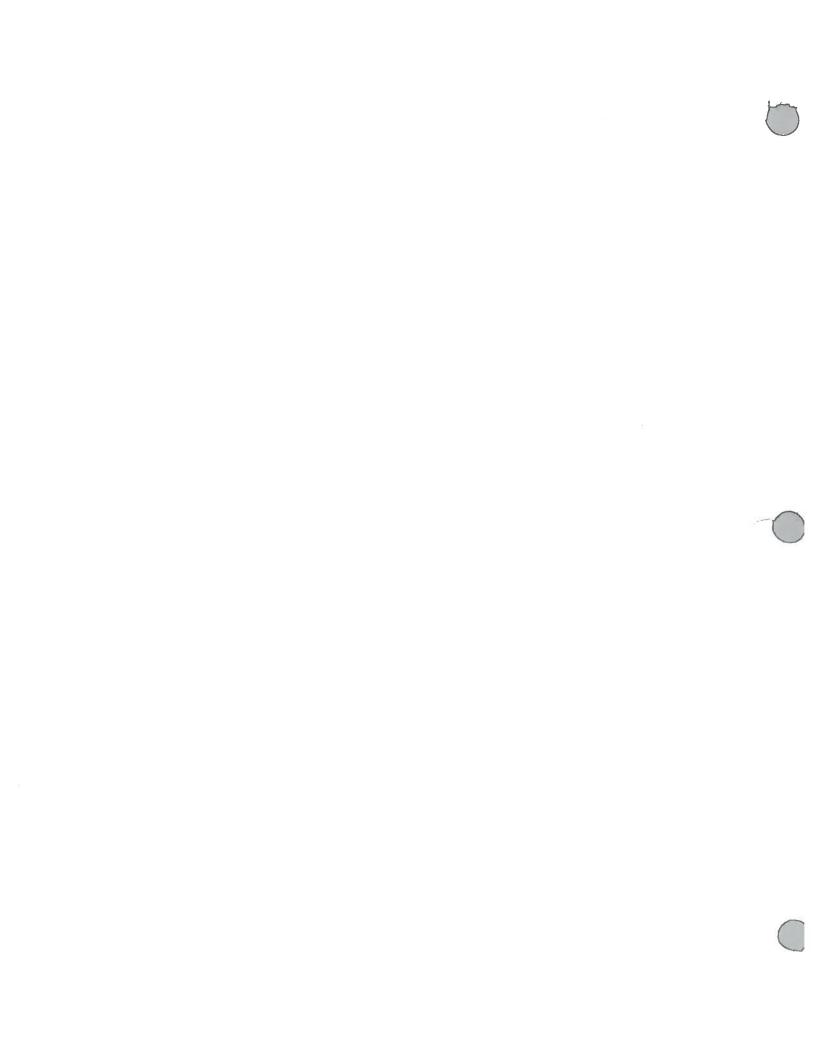
#### POST-CLOSURE PERMIT RENEWAL APPLICATION KOPPERS INDUSTRIES, INC. GRENADA, MISSISSIPPI FACILITY

Fluor Daniel GTI Project 101399

December 1997

Prepared for:
Beazer East, Inc.
One Oxford Centre, Suite 3000
Pittsburgh. Pennsylvania 15219

Prepared by:
Fluor Daniel GTI
637 Braddock Avenue
E. Pittsburgh, PA 15112



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	1,6	Post-Closure Cost Estimate
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TARIF	S	

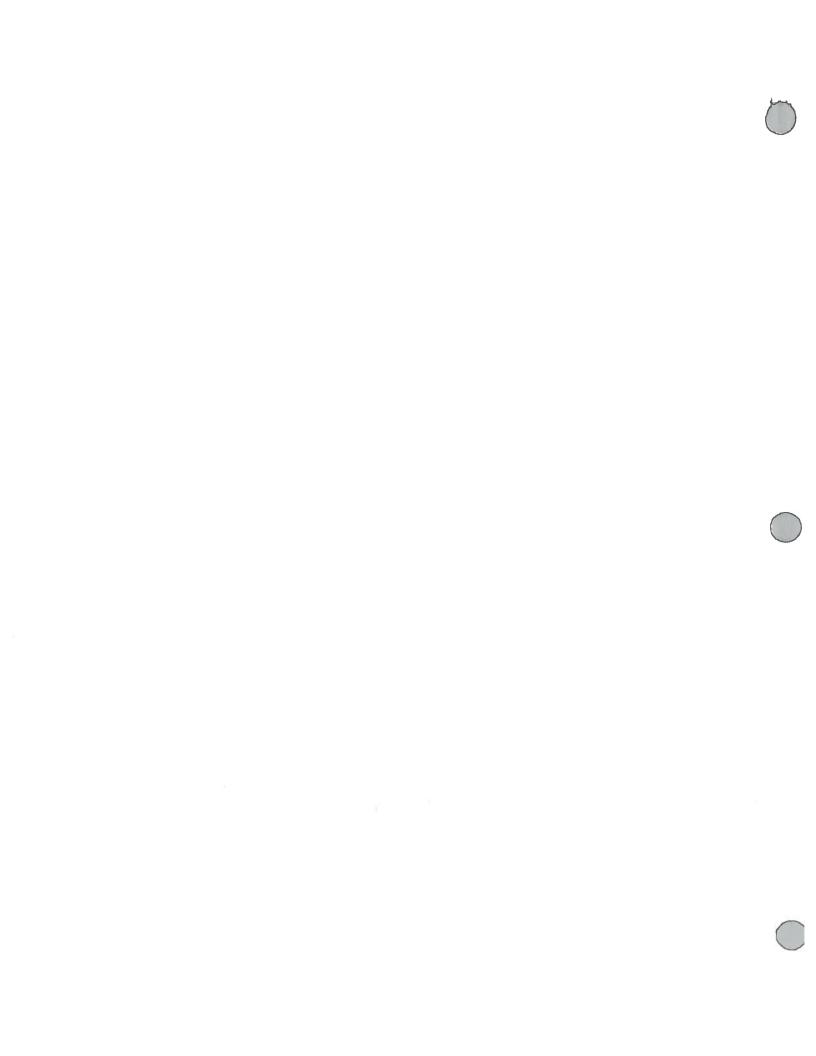
#### IABLES

E-1	Summary of Monitoring Well Construction
E-2	Summary of 1997 Groundwater Flow Velocities and Hydraulic Gradients

E-3 Summary of Detection Monitoring Constituents

Post-Closure Cost Estimate 1-1

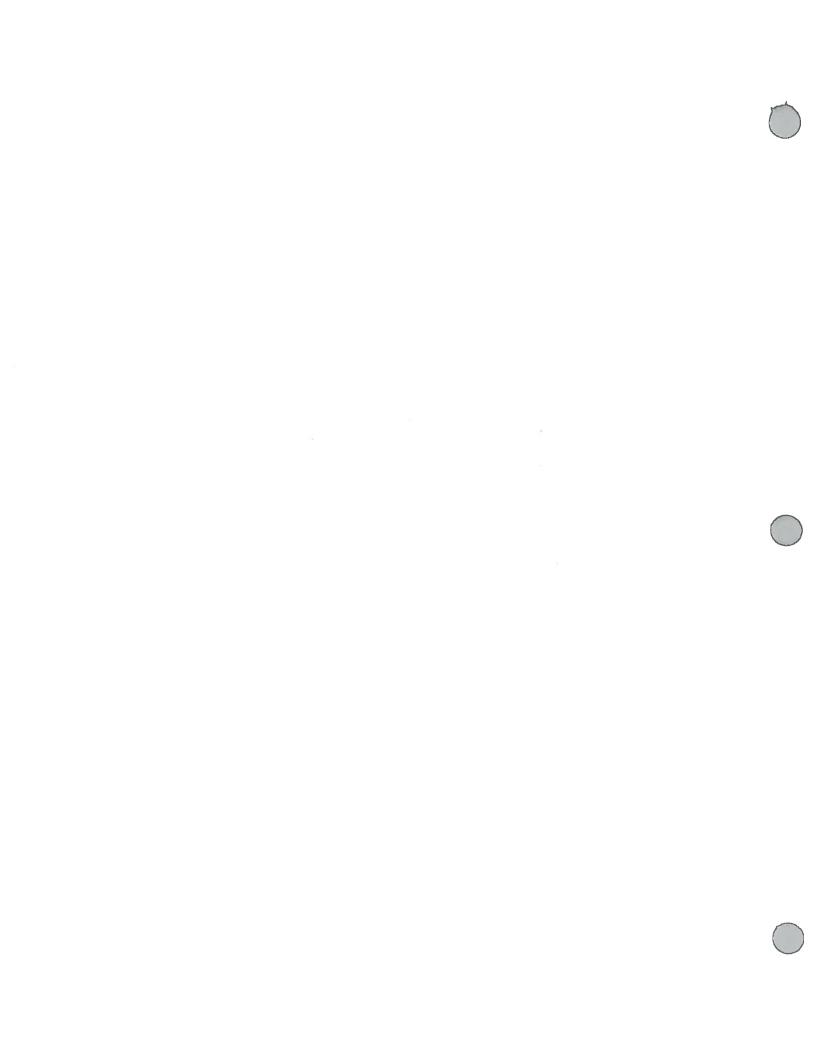
PIPPOSE INTERESTANDAPORE COLLARD



#### **APPENDICES**

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B-1	Meteorological and Wind Distribution Data
B-2	Flood Insurance Rate Map
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#### INTRODUCTION

PROJECTS BEAZER GRENADA PORE LESS NOS

In accordance with Federal Regulations in 40 CFR Parts 264 and 270 and the Mississippi Hazardous Waste Management Regulations (MHWMR) 264 and 270, this Resource Conversation and Recovery Act (RCRA) Post-Closure Care Permit Renewal Application (Renewal Application) is being submitted for the closed surface impoundment (SI) at the Koppers Industries, Inc. (KII) facility located in Tie Plant, Mississippi, Grenada County (KII facility).

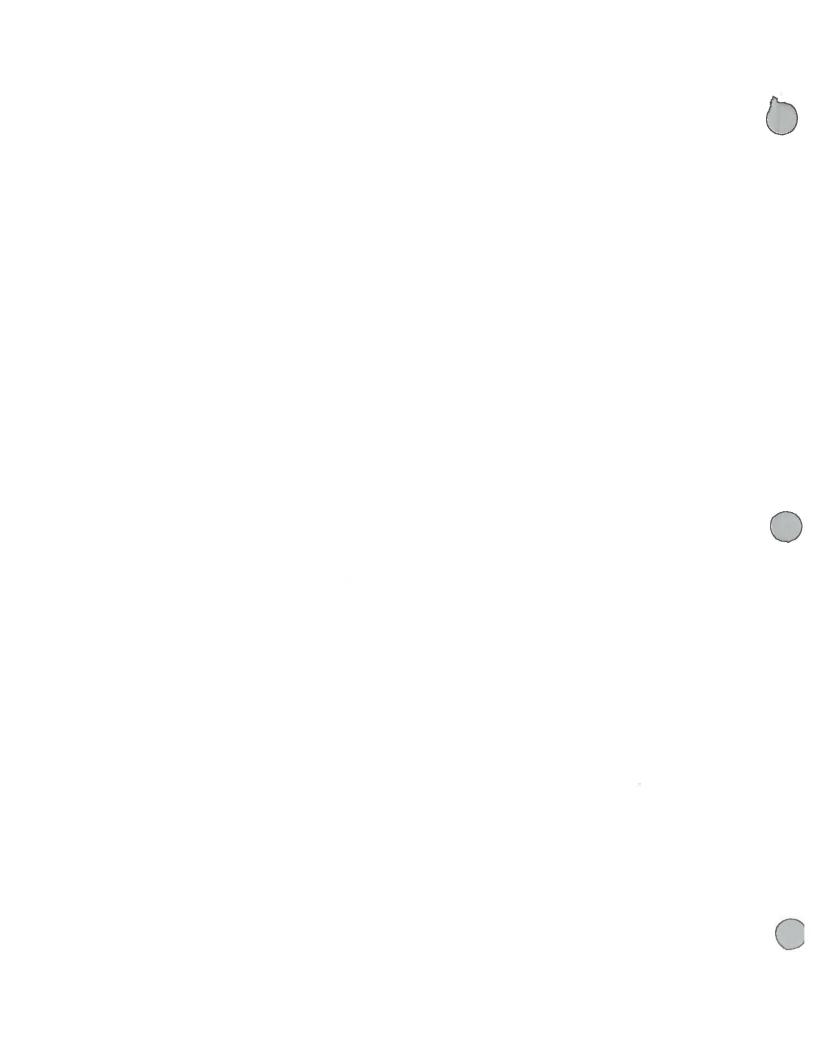
The original RCRA Operating Permit Application for the SI was submitted to the Mississippi Department of Natural Resources currently known as the Mississippi Department of Environmental Quality (MDEQ) in 1987 by Keystone Environmental Resources. The effective date of the Hazardous Waste Management Permit No. 88-543-01 (Permit) for the SI was June 28, 1988. The MDEQ Permit Board modified the Permit on February 23, 1990. The Permit was modified to reflect Beazer as operator, KII as owner, include additional detection monitoring constituents in Part IV - Groundwater Protection, and to provide Post-Closure Care requirements of the closed SI. The duration of the Permit was 10 years and is set to expire on June 28, 1998. In accordance with Section I.D.2 of the Permit, the Permittee shall submit a complete application for a new permit at least 180 days before this permit expires.

The 1984 Hazardous and Solid Waste Amendments (HSWA) Permit is set to expire on June 14, 1998. As stated in the EPA letter to Beazer dated July 17, 1997 and pursuant to HSWA Permit Condition I.D.2 (40 CFR 270.10(h)), and Part I Section I.D.2 of the Post-Closure Permit, the Permittee shall submit a complete application for a new permit at least 180 days before the permit expires. Because the HSWA Permit and the Post-Closure Permit together constitute the full RCRA Permit for the facility, this Renewal Application has been prepared to meet both regulatory requirements.

The KII facility was built in 1904 by Koppers Company, Inc. On November 14, 1988, BNS, Inc., an indirect wholly-owned subsidiary of Beazer PLC, completed its acquisition of all the common stock of Koppers Company, Inc. On January 26, 1989, the name of Koppers Company, Inc. was changed to Beazer Materials and Services, Inc. (BM&S). On December 28, 1988, the wood treating facilities, including the KII facility, were purchased by KII. No changes in operation have resulted from this sale. On April 16, 1990, the name of Beazer Materials and Services, Inc. was changed to Beazer East, Inc. Under the terms of the purchase agreement. Beazer has agreed to remain the "operator" of the RCRA SI. Beazer has also agreed to retain responsibility for financial assurance required in connection with the closure of the RCRA SI and has provided appropriate financial assurance documentation (refer to Section I.7).

Prior to closure, the SI stored hazardous waste material, K001 (bottom sediment sludge from the treatment of wastewaters from wood preserving processes that use creosote and/or pentachlorophenol). In the summer of 1988, all K001 sludge and visually contaminated soils were removed from the SI and shipped to a permitted off-site disposal facility. Closure activities for the SI were initiated in July 1989 which included removal of accumulated rainwater, placement of clean soil



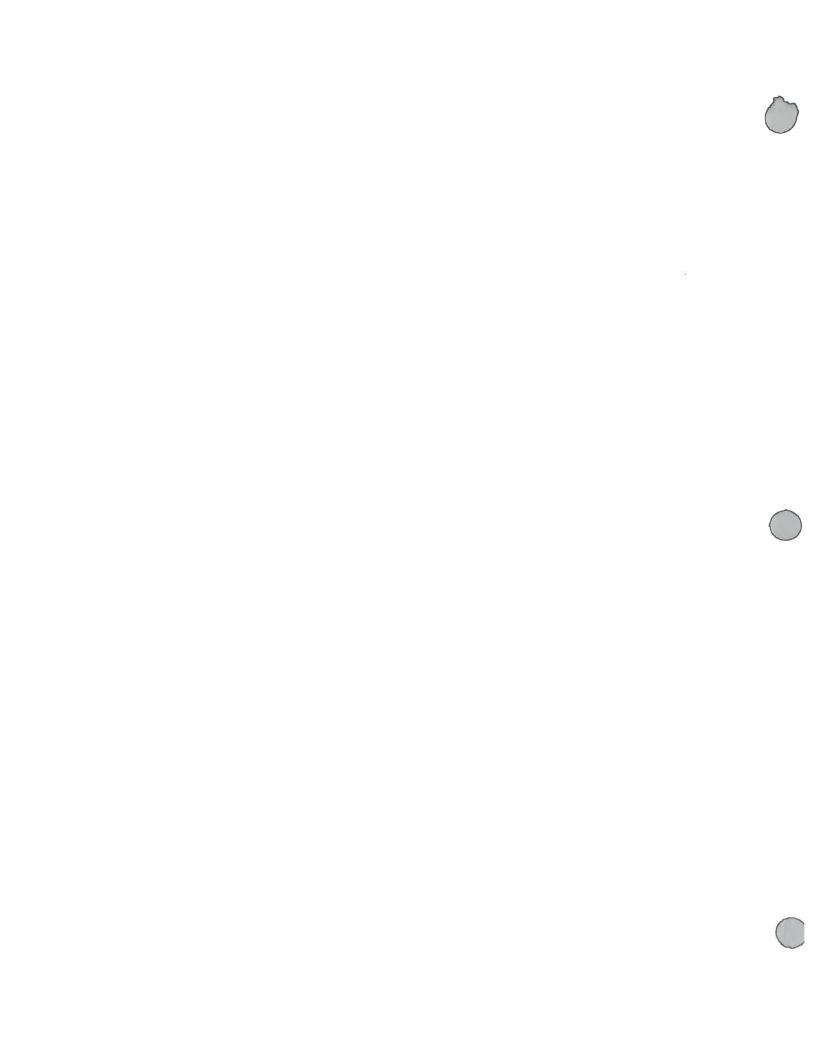


fill, construction of a soil-bentonite cap and cover system. Closure activities for the SI were completed by the end of October 1989. The closure construction documentation and closure certification for the SI were submitted to the MDEQ in January 1990.

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

•	Section A	Part A Application
•	Section B	Facility Description
•	Section C	Waste Characteristics
•	Section D	Process Information
•	Section E	Groundwater Monitoring
•	Section F	Procedures to Prevent Hazards
•	Section G	Contingency Plan
•	Section H	Training Program
•	Section I	Closure Plans, Post-Closure Plans and Financial Requirements
•	Section J	Other Federal Laws
•	Section K	Certification
•	Section L	Information Requirements For Solid Waste Management Units





30f3 CMR

tosts taken on 8/22/89



ST#1, ST#2 - shelby tube samples

	1st Sampling						
	% moisture %	relidensily		2nd Sampling		3rd	
1	<b>23.5</b> (25.8, 25.2)	95.2 (94.8, 55.8) (m/ss	ted in possed	Zampine	5	sam	pins
2	25.0	95,5	<b>Dossed</b>				
3	230	101,7	ad not pass	fail		26.7	26.6
4	26,2	97.6	pess	•		•	96.6 pes
5	24.8	95.0	pass				
<b>6</b>	24.9	9 <b>9.</b> 5	pes 3				
7	25,3	97.3	pass				
8	24.2 (26.3)	95,3 (945) (relst)	pass				
9	27,5	95,1	pess				
10	24.7	93.7	P433				
11	23,1	100.3	didnot pass	242%	97.8	passed	

BEAZER MATERIALS & SERVICES, INC. SURFACE IMPOUNDMENT CLOSURE KOPPERS INDUSTRIES, INC. GRENADA, MISSISSIPPI PLANT	DATE: 82989 REPORT NO.: 25 SHEET 1 of 3 BY: TPK
WEATHER: SUNNY HOT, HUMID . MORNING .  PRECIPITATION: TRACE (inches) TEMPERATURE: L	OW 73 HIGH 95
CONTRACTOR PERSONNEL ON SITE:	
GRAN & BROW : JUE WILLING , RICKEY DI	DUEY JOHN SUGGS
EQUIPMENT EMPLOYED: CATERPILLAR D5H D03	el )
INTERNATIONAL FARMALL TRACTOR, BACK HOE,	TWO TRAILER TRUCKS
RUBBER-TIRED ROLLER	
INSPECTORS ON SITE: TERRY KIRCHNER: Key	STONE
QUALITY CONTROL TESTS AND SAMPLES: NONE	
VISITORS ON SITE: SEFF VANCE : MID-S	SOUTH TESTING
SUMMARY OF ACTIVITIES: STAKES AT 7:00	Am .
STOPPED AT MID-SOUTH TESTING TO	O GET RESULTS
DE GRAIN SIZE AND ATTERBARG LIM	175 TESTS:
- GRAIN SIZE (PRESING * 200 SIEVE):	18%, 83%
- PLASTICITY INDEX : 15	
ARRIVED AT SITE AT 7:45 AM. 3 ATTACHMENTS: SIGNATURE: 12	OE AND RICKEY

BEAZER MATERIALS & SERVICES, INC.  SURFACE IMPOUNDMENT CLOSURE  KOPPERS INDUSTRIES, INC.  GRENADA, MISSISSIPPI PLANT  DATE: 8 9 8 9  REPORT NO.: 25  SHEET 2 of 3  BY: TPK	
SUMMARY OF ACTIVITIES (cont.):	
WANT TO GET AN ALTERNATE TILLER AS BOTH OF	
THE TWO PREVIOUSLY USED ONES ARE DOWN FOR REPAIRS	٠.
RICKEY WAS BACK AT 8:45 WITH THE BACK HOE.	
TWO TRAILBRS USED TO BRING IN SOIL FROM	
THE BORROW.	
JOE WILLING ISN'T SURE IF THE BORROW HAS	
ENOUGH CLAYER SOIL FOR THE NEXT LIFT.	
MAY HAVE TO FIND A NEW PIT (ISE W.)	
AT 7:00 AM, JOHN, RICKEY AND JOE ARE TAKING	
GRADE CHECKS AS THEY PLACE THE STAKES.	
APPROXIMATELY 50 % OF THE SOIL FOR THIS	
LIFT IS IN PLACE.	
AFTER LUNCH, THE CREW CONTINUED TO PICK UP	
POCKS AND JOE W. OPERATED THE DOZER IN	
OFFICE TO SPREAD THE ARRIVING BORROW MATERIAL.	
ONLY ONE TRICK IS DELIVERING MATERIAL NOW.	
TTACHMENTS: SIGNATURE: / Kusham	

BEAZER MATERIALS & SERVICES, INC. SURFACE IMPOUNDMENT CLOSURE KOPPERS INDUSTRIES,INC. GRENADA, MISSISSIPPI PLANT	DATE: 82989 REPORT NO.:35 SHEET 3 of 3 BY: TPK
SUMMARY OF ACTIVITIES (cont.):  AT 4:30 PM, A BRIEF SHOWER  NOTHING SIGNIFICANT FELL.	
THE LAST TRUCK LOAD WAS DELY AT 5:45, THE MORTH HALF IN THE SO BEING "CLEANED IS THE SO BEING "CLEANED-UP" ACCORDING BUEPRINT CHECK WILL BE DONE	SF THE IMPOUNDMENT CTH HALF WAS TO GRADE STAKES
FINISHED AT K:10 PM	
ATTACHMENTS:SIGNITURE	: Time P. Kirdne

BEAZER MATERIALS & SERVICES, INC.  SURFACE IMPOUNDMENT CLOSURE  KOPPERS INDUSTRIES, INC.  GRENADA, MISSISSIPPI PLANT  DATE: \$\frac{30.89}{REPORT NO.:24}  SHEET 1 of 2  BY: \frac{10.89}{10.89}
WEATHER: HUMID, OVERCAST A.M.; SUNNY BY 9:00
PRECIPITATION: 0.58 (inches) TEMPERATURE: LOW 73 HIGH 93
CONTRACTOR PERSONNEL ON SITE:
GROON & GREEN: JOE WILLING, RICKEY DENLEY, JOHN SUGGS,
LEDNARD LANIER, CLYDE MEYERS
EQUIPMENT EMPLOYED: FARM TRACTOR - IH 1066, DISK
IMPLEMENT, BACK HOE, SMALL GARDEN TILLER MASCHIO TYPE
FORD TRACTOR
INSPECTORS ON SITE: TORRY KIRCHNIOR - KEYSTONE
QUALITY CONTROL TESTS AND SAMPLES: NOVE
VISITORS ON SITE: TESTING
SUMMARY OF ACTIVITIES: ARRIVED AT 7:00 AM.
THE TOP INCH OR TWO WAS NET FROM AN
BARLY MORNING, SHOWER. JOE W. DECIDED TO
LET IT AIR DRY A LITTLE BEFORE DISKING.
AT 10:45, THE TOP 3 OR 4 INCHES WORE
DISKED TO SPEED UP THE DRYING.
AT 11:00, THE SMALL GARDON TILLER WAS PROUGHT
ATTACHMENTS:SIGNATURE: Leave & Kinha

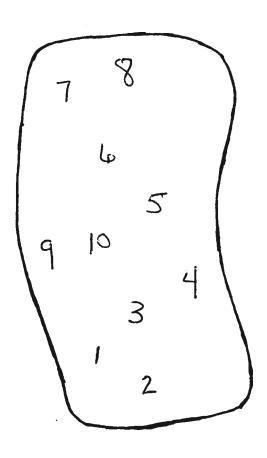
BEAZER MATERIALS & SERVICES, INC. SURFACE IMPOUNDMENT CLOSURE KOPPERS INDUSTRIES,INC. GRENADA, MISSISSIPPI PLANT	DATE: \$\\\ 30\\8\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\
SUMMARY OF ACTIVITIES (cont.):	
AT 11:30, THE FRONT LEFT TIP WATER TRUCK WAS CHANGED (DUE	E ON THE
AFTER LUNCH, THE CREW RESUMED OVERSIZED ROCKS IN THE LIFT. WHIS	OF PICKING UP
LEDNARD & CLYDE LET AT 4:00 1	>m ,
TESTED THE NEW TILLER - MIXED  4:00 PM - LOPADED BENTONITE: 15,	050 165 (NET)
4:30 PM - BEGAN SPRAYING BENTS 5:00 PM - BEGAN DISKING SOIL/B 5:25 PM - STARTED TILLING ; 6 10:10 PM - STARTED ROLLING; 6	FAGGTS SESTEN
- POLICIS BERAVSE OF 50 90 HAS	
ATTACHMENTS:SIGNITURE:	in P. Kuhmen

BEAZER MATERIALS & SERVICES, INC.  SURFACE IMPOUNDMENT CLOSURE  KOPPERS INDUSTRIES, INC.  GRENADA, MISSISSIPPI PLANT  DATE: 8/3/89  REPORT NO.:27  SHEET 1 of 2  BY: THE
WEATHER: FOGGY, PARTLY SUNNY A.M.; SUNNY, HOT P.M.
PRECIPITATION: (inches) TEMPERATURE: LOW 74 HIGH 95
CONTRACTOR PERSONNEL ON SITE:
GREEN & GREEN: JOE WILLING, RICKEY DENLEY,
JOHN SUGGS, JOE DAVE MCCLOSKEY
EQUIPMENT EMPLOYED: IH IDGE TRACTOR, SPREADER,
DSH CAT. DOZER, DISK IMPLEMENT, MASCHIO TILLER
INSPECTORS ON SITE: TERRY KIRCHNER: KEYSTONE  JEFF VANCE: MID-SOUTH TESTING
QUALITY CONTROL TESTS AND SAMPLES: MOISTURE AND DENSITY  (SEE ATTACHMENT)
VISITORS ON SITE: Nowe
SUMMARY OF ACTIVITIES: ARRIVED 7:00 AM
THE SPREADER WAS LOADED WITH THE SROND
APPLICATION OF BENTONITE: WEIGHT = 15,450 lbs (NAT
STARTED SPREADING AT 8:10; FINISHED AT 8:25.
DISKED THIS APPLICATION, BUT WILL ROTOTILL
THE THIRD APPLICATION OF RENTONITE
ATTACHMENTS: 27-1 SIGNATURE: Terror & Kinking

BEAZER MATERIALS & SERVICES, INC.  SURFACE IMPOUNDMENT CLOSURE  KOPPERS INDUSTRIES, INC.  GRENADA, MISSISSIPPI PLANT  DATE: 8 31 89  REPORT NO.: 37  SHEET 2 of 2  BY: 18
SUMMARY OF ACTIVITIES (cont.):
THE THIRD LOAD OF BENTONITE WAGHED
15,380 lbs (Net)
CALLED MIKE BOLLINGER (KEYSTONE) AROUT
ADDING EXTRA BENTONITE, HE SAID TO ADD
ABOUT 5000 EXTRA POINDS SINCE THE RESULTS
DF THE LAST LIETS PERMETABILITY TESTS
WARE SO CLOSE TO THE DESIGN SPERS.
THE FOURTH LOAD OF BENTONITE WEIGHED
5,940 165 (NET).
FINISHED SPREADING BENTONITE AT 11:30 AM.
DISKED SOIL / BENTONITE FROM 11:30 - 12:00.
TILLED FROM 12:45 - 1:45.
WATER WAS THEN APPLIED TO BRING UP THE
MOISTURE CONTENT. AFTER WATERING,
THE SOIL WAS ROTOTILLED AGRIN AND
THEN ROLLEN WITH THE RUBRER-TIREN ROLLER.
JEFF VANCE OF MID-SOUTH TESTING TOOK
MOISTURE AND DENSITY TESTS (SEE ATTACHMENT
FOR RESULTS ). SOME OF THE TESTS SHOWED EXCESS
MOISTURE AND LOW COMPACTION. MURE WILL BE TAKEN TOMORROW.
ATTACHMENTS: SIGNATURE: Tunner & Kinhon (

ATTACHMENT 27-1 BATE 8/31/89

TEST NO.	90 MOISTURE	ONTO AAMOS
1	27.0	96.6
ಎ	29.0	92.8
3	26.0	98.8
4	31.8	39.8
5	31.6	87.8
6	24.4	98.2
7	25.5	98.3
8	27.0	95.6
9	26.5	94.5
10	٥. يا چ	96.3
11		
12		
13		
14		
15		



BEAZER MATERIALS & SERVICES, INC.  SURFACE IMPOUNDMENT CLOSURE  KOPPERS INDUSTRIES, INC.  GRENADA, MISSISSIPPI PLANT  DATE: 9 (8)  REPORT NO.:28  SHEET 1 of 2  BY: TPK
WEATHER: SUNNY, HOT, HUMIN  PRECIPITATION: O (inches) TEMPERATURE: LOW 71 HIGH 94  CONTRACTOR PERSONNEL ON SITE:  SREEN 9 GREEN: JOE WILLING, RICKEY DENCEY,
JOHN SUGGS, JOE DAVE MCCLOSKEY
EQUIPMENT EMPLOYED: IH I DLIG TRACTOR, CAT. BSH BORD,  DISK IMPLEMENT
INSPECTORS ON SITE: TERRY KIRCHNER: KEYSTONE
QUALITY CONTROL TESTS AND SAMPLES: MOISTURE AND DONSITY
VISITORS ON SITE: NONÉ
SUMMARY OF ACTIVITIES: ARRIVED AT 7:00 A.M.  SEVERAL AREAS APPEARED TOO WET; THEREFORE;  THESE AREAS WERE DISKEN IN ORDER TO EXPEDITE  THESE DRYING. AFTER DRYING, THESE AREAS  WERE THEN ROLLED AND MOISTURE AND  DENSITY TESTS INFRE TAKEN (SEE ATTACHMENT).
ATTACHMENTS: 28-1 SIGNATURE: June & Kindne

SURFACE IMPOUNDMENT CLOSURE KOPPERS INDUSTRIES, INC.	DATE: 9/189 REPORT NO.:25 SHEET 2 of 2 BY: TPK
SUMMARY OF ACTIVITIES (cont.):	
SHELBY TUBES WERE THEN PUSHE	A INTO
THE SOIL FOR PERMEABILITY SAMA	PLES
AT 10:00 AM. , SAMPLES WERE TAKEN	i To
SPRINGER ENGINEERING IN STARKI	TICE MS.
FOR TESTING.	
RETURNED TO PLANT BY 3:00 P	M. To
STORE EQUIPMENT THEN WENT TO	HIRPORT
FOR FLIGHT BACK TO DITTS RUZGH	
	<del></del>
<del></del>	
ATTACHMENTS: 38-1 SIGNATURE: 12mm	~ P. Kinkin

# ATTACHMENT 28-1 BATE 9/1/89

	TEST NO.	MOISTURE	Po NOITS AGMOS			
-	ł	25.5	99.0	٥,٢٠		active.
	ર	27.0	97.8	o.K,		
	3	29.8/31.4	94.3/92.4	λίζ	4,6	)
	4	31.7/28.7	91.0/94.8	NE	,	
	<b>x</b> 5	25.5	99.7	ok		, (
	<b>b</b> 6	24.8	99.8	OK		. (
	7				3,5	
	8					P
	9				2	
	10					
	11					
i i	12		1		5 AND G WE COXIMATELY THE	
	13		Loc	ATION	us AS NOS.	3 AND 4,
•	14		120	E TA	TREN HOWEVER	S LATER.
	15					

BEAZER MATERIALS & SE SURFACE IMPOUNDMENT O KOPPERS INDUSTRIES, IN GRENADA, MISSISSIPPI	CLOSURE NC.	RE SH	TE: 9 9 89 PORT NO.: 39 EET 1 of 3	
WEATHER: MILD & CLOC	207 IN MORNING	j SUNNY,	tor Honio in	A FTERNO
PRECIPITATION: 5 (i	nches) TEMPER	RATURE: LOW_	<u> 13 нісн 95</u>	
CONTRACTOR PERSONNEL	ON SITE:			
SREEN & GREEN :	RICKEY NEWLEY	, JOHN ;	50665	
EQUIPMENT EMPLOYED:	INTERNATIONAL I	FARMALL W	TH DISK	
CASE 850 BOZER (US	WAL CHISEL PLOU	w) INT. 1	FARMALL WITH	
BENTONITE SPREAMER.	BOMAG ROTOTI	LUER WATE	R TRUCK , CASI	: BACK ItoE
INSPECTORS ON SITE:		•		
QUALITY CONTROL TESTS	AND SAMPLES:^	DNE		ÿ
VISITORS ON SITE:	SNE			
SUMMARY OF ACTIVITIES	: ARRIVED AT	7:00 AM.		
JOHN SUGGS MAS	USING THE	DISK TO 1	SLEAK-UP	
SOIL FURTHER AFT	of Rickey iden	OLEY MADE	A PASS	
WITH THE 850 DO	HER USING T	HE CHISEL	PLOW TO	
LOOSEN SOIL. AF	TIOR THIS, THE	Y BOTH	NPRE	
PICKING UP ANY	ROCKS GREAT	PR THAN S	SIX INCHES	
IN DIAMETER. F	URTHER DISKI	ING WAS	THOU DONE	
ATTACHMENTS:			•	w~

DATE: 9989 URFACE IMPOUNDMENT CLOSURE COPPERS INDUSTRIES, INC. RENADA, MISSISSIPPI PLANT  DATE: 9989 REPORT NO.: 23 SHEET 2 of 3 BY: 1PK	
UMMARY OF ACTIVITIES (cont.):	
TO UNGVER ANY REMHING ROCKS.	
AT 11:15, THE SPREADER WAS LOADED WITH THE	
FIRST BATCH OF BENTONITE TO RE SPREAD.	
AT 11:45 THE BENTONITE WAS SARAHD.	
FIRST APPLICATION: 15, 410 165 (NFT)	
AT 1-00 PM, THE SOIL AND BENTONITE WAS	
MIXED USING THE DISK.	
AT 1:10 , THE BODAG ROTOTILLER WAS USED TO	
PROVIDE BETTER MIXING AND TO INSURE THAT	
IT WAS MIXED TO A DADTH OF SIX INCHES.	
FINISHEN TILLING AT 3:00 PM.	
MORE LOOSE ROCKS LARGER THAN SIX INCHES	
IN DIAMETER WERE REMOVED.	
AT 3:15 THE SECOND APPLICATION WAS	
LOADED INTO THE SPREADER; WEIGHT : 15,110 165 (NET)	)
3:50 STARTED TILLING SOIL BENTONITE USING	
BOMAG TILLER AND SMALL (MASCHIO) TILLER.	
THIRD LOAD OF BENTONITE WEIGHED 14,560 155 WE	7
THEO COATS OF ISCNIS NITE COLORS	•)
ATTACHMENTS: SIGNATURE: Teine P. Kinh	_

BEAZER MATERIALS & SERVICES, INC. SURFACE IMPOUNDMENT CLOSURE KOPPERS INDUSTRIES, INC. GRENADA, MISSISSIPPI PLANT	DATE: 9989 REPORT NO. 39 SHEET 3 of 3 BY: TPK
SUMMARY OF ACTIVITIES (cont.):	
CALLED MIKE BOLLINGER (KEYSTONE)	
ADDING EXTRA BENTONITE AGAIN	<del></del>
LIFT AS WAS DONE ON THE LAS	T LIFT.
HE SAID TO GO AHAYD AND AND	EXTRA.
FOURTH LOAD WEIGHED 7, 160 165	(NET)
THEREFORE, TOTAL RENTOUTE ADDED	WAS:
15,610 lbs	
200 15,110	
3°0 14,560	
47 7,160	
TOTAL 52,440 165	
AT 4:30 THE THIRD AND FOURT	H L022
OF BONTON: TE WERE TILLED INTO	
USING BOTH TILLES AGAIN.	
FINISHED TILLING AT 8:30 AM	
ATTACHMENTS:SIGNATURE:	m P. Kuhn

BEAZER MATERIALS & SERVICES, INC.  SURFACE IMPOUNDMENT CLOSURE  KOPPERS INDUSTRIES, INC.  GRENADA, MISSISSIPPI PLANT  DATE: 910 89  REPORT NO.: 30  SHEET 1 of 2  BY: TPK
WEATHER: SVERCHST, DRIZZLING (RAINED LAST NIGHT)
PRECIPITATION: (inches) TEMPERATURE: LOW_7  HIGH_85
CONTRACTOR PERSONNEL ON SITE:
GROON & GROON : JOE WILLING (2 HRS)
EQUIPMENT EMPLOYED: NONE
INSPECTORS ON SITE: TERRY KIRCHNER
QUALITY CONTROL TESTS AND SAMPLES: NONE
VISITORS ON SITE: NoN€
SUMMARY OF ACTIVITIES: ARRIVED AT 7:00 A.M.
APPLOXIMATERY ONE INCH OF RAIN FELL THROUGH
THE NIGHT. SINCE THE RAIN WAS NOT EXPECTED,
THE LIFT WAS NOT ROLLED LAST NIGHT.
THIS LEFT THE RAIN SATURATE THE TOP TWO
OR THREE IN CHES TO THE EXTENT THAT IT
WAS TOO WET TO DISK DRY
ATTACHMENTS:SIGNATURE:

BEAZER MATERIALS & SERVICES, SURFACE IMPOUNDMENT CLOSURE KOPPERS INDUSTRIES, INC. GRENADA, MISSISSIPPI PLANT	INC.	DATE: 9/0/89 REPORT NO.: 33 SHEET 2 of 2 BY: TPK
SUMMARY OF ACTIVITIES (cont.)		
I RETURNED TOJICE		
AFTERNOON TO CHECK		
SINCE THE SUN WAS		1 CLOVDS
ALL DAY, THE SOIL N	WAR DRIED.	
		s
<u> </u>		
ATTACHMENTS:	SIGNATURE:	na P. Kinhre

BEAZER MATERIALS & SERVICES, INC.  SURFACE IMPOUNDMENT CLOSURE  KOPPERS INDUSTRIES, INC.  GRENADA, MISSISSIPPI PLANT  DATE: 9/11/89  REPORT NO.:31  SHEET 1 of 3'  BY: 7PK	
WEATHER: AM: HAZY, ALTOCUMULUS CLOUDS; PM: PARTLY SUNNY, SOME	DRIZZLE
PRECIPITATION: TRACE (inches) TEMPERATURE: LOW 73 HIGH 89	
CONTRACTOR PERSONNEL ON SITE: GREEN & GREEN CONST:	
JOE WILLING RICKEY DENCEY, JOHN SUGGS,	
JOE NAVE M'CLESKEY	
EQUIPMENT EMPLOYED: I HIOGIC TRACTOR, DISK IMPLEMENT,	
85 AD DOZER, FORD TRACTOR, MASCHIO TILLER,	
RUBBER-TIFED ROLLER	
INSPECTORS ON SITE: TERRY KIRCHNIAL - KEYSTONE	
JEFF VANCE - MID-SOUTH TESTING	
QUALITY CONTROL TESTS AND SAMPLES: NOISTURE & DENSITY	
WITH HUMBOLDT SAMPLER.	
VISITORS ON SITE: NONE	
SUMMARY OF ACTIVITIES: ARRIVED AT 7:05 A.M.	
RICKEY WAS DISKING THE SOIL TO HELP IT BRY	
MORE QUICKY.	
IN ORDER TO GET AN INPA OF THE MOISTURE	
CONTENT THE SURFACE WAS ROLLED (TWO	
DASSES ONLY AND THE RESULTS OF TWO	
TESTS (30% and 28% o MOISTURE) SHULUED	
ATTACHMENTS:SIGNATURE:	

BEAZER MATERIALS & SERVICES, INC.  SURFACE IMPOUNDMENT CLOSURE  KOPPERS INDUSTRIES, INC.  GRENADA, MISSISSIPPI PLANT  DATE: 91/89  REPORT NO.:31  SHEET 2 of 3  BY: TPK
SUMMARY OF ACTIVITIES (cont.):
THAT WATER CONTENT WAS IN EXCES OF THE
ACCEPTABLE MOISTURE LIMIT OF OPTIMUM (24.2%)
PLUS 3 70 ABOVE OFTIMUM (27.2%)
AFTER LUNCH, STORM CLOUDS BEGAN TO MOVE
IN SO THE 850 D TRACTOR TRACKEN OVER
THE SURFACE TO PARTIALLY ROLL THE TOP IN
CASE IT RAINEY.
JEFF VANCE OF MID-SOUTH TESTING TOOK
MORE SAMPLES AND BUTH WARE LOW
(20 % AND 21.8%) INDICATING THAT MUCH
MOTSTURE HAD EVAPORATED IN SOME SECTIONS
WHILE OTHERS STILL APPRACED WET.
SINCE THE RAIN FROM SUNDAY MURRING ONLY
WET THE TOP 2" OR 3", MIXING OF THE
WHOLE LE" MIGHT CREATE THE PERFECT MOISTURE.
THEREFORE, THE FORD TRACTOR W/ MASCHIO THUR
MADE TWO PHSSES, BUT ONLY TILLED TOP
4"; 50 THE DISK WAS BROUGHT OUT IN STEER
TO MIX THE FULL 6" DOPTH.
BY THIS TIME, THE MOISTURE APPEARED
ATTACHMENTS:SIGNATURE:

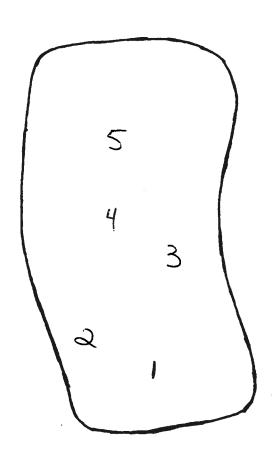
BEAZER MATERIALS & SERVICES, IN SURFACE IMPOUNDMENT CLOSURE KOPPERS INDUSTRIES, INC. GRENADA, MISSISSIPPI PLANT	c.	DATE: 9/1/89 REPORT NO.: 31 SHEET 3 of 3 BY: TRY
SUMMARY OF ACTIVITIES (cont.):		n, 807
IT WAS TOO LATE TO	BEGIN F	HIDING
WATER, TILLING AN	10 ROLLING	•
THEREFORE, THE TOP	WAS Rocce	a) in case
FINISHED AT L:00		
PINISHEIS HI U.SO		
-		
ATTACHMENTS:	_signature: 1	ma P. Kinhore

BEAZER MATERIALS & SERVICES, INC. SURFACE IMPOUNDMENT CLOSURE KOPPERS INDUSTRIES, INC. GRENADA, MISSISSIPPI PLANT	DATE: $9/2/89$ REPORT NO.: 32 SHEET 1 of 2 BY: TPK
WEATHER: AM: OVERCAST, MILB, 9:00 AM: PARTLY S  PRECIPITATION: (Inches) TEMPERATURE: I  CONTRACTOR PERSONNEL ON SITE: 6250 4 6 RE	OW_71_HIGH_94
RICKEY DENCEY, CLYDE MEYERS.	2.7 65.05
EQUIPMENT EMPLOYED: IH 1044 TRACTOR, DIS	SK IMPLEMENT
INSPECTORS ON SITE: TERLY KIRCHNER & KE  JEFE VANCE: MID-SOUTH  QUALITY CONTROL TESTS AND SAMPLES: MOISTURE	H TESTING
DENSITY TESTS.  VISITORS ON SITE: JOHN GREEN (PRES. OF	siléen + 6 leen )
SUMMARY OF ACTIVITIES: AFRIVED AT 7:00  JEFF VANCE TOOK SEVERAL MOISTURE A  TESTS. THE RESULTS WERE BELOW  FOR BOTH MOISTURE AND COMPACTIO  THEREFORE, THE SOIL WAS DISKED  PREPARATION OF ANDING WATER. B  FESULTS OF THIS MORNINGS TESTS,	ND COMPACTION SPECIFICATIONS N. D IN ASPD ON
ATTACHMENTS: 32-1, 32-2 SIGNATURE: Tem	<del>-</del>

BEAZER MATERIALS & SERVICES, INC. SURFACE IMPOUNDMENT CLOSURE KOPPERS INDUSTRIES, INC. GRENADA, MISSISSIPPI PLANT	DATE: 9/13/89 REPORT NO.:33 SHEET 2 of 3 BY: TPK
SUMMARY OF ACTIVITIES (cont.):	
TRUCKLOAD OF WATER WAS ADD	ed ,
THE SOIL WAS THEN DISKED !	ASAIN AND
THEN POLLED WITH THE IH 104	4 TRACTOR AND
FUBBAR-TIRED ROLLER (SIX PAS	
SIX MOISTURE AND COMPACTION	
TAKEN AND ALL BUT ONE TE	
EITHER MOISTURE OR COMPACTION	
AFTER LUNCH, THE SOIL WAS	
AND THIS TIME, TWO MORE TRU	CKLSADS (4000 GAL)
WARE ADDED, THEN DISKED AND	· ROLLED (SIX ASSES).
ELEVEN AREAS WARD THEN TESTED	FOR MOISTURE
AND COMPACTION (SEE ATTACHME	TUT ).
RESULTS WERE ACCEPTABLE. T	
SHELBY TURE SAMPLES WERE	
THEN SEALED WITH WAX. SING	
TOO LATE TO TAKE THAM TO TH	
TAKE THEM TOMOPROW MORNING	
BUGINEBUNG FOR ANALYSIS O	
FINISHAD AT 6:00 DM.	
ATTACHMENTS: 33-1,33-2 SIGNATURE	Tenne A. Kinhwin

# ATTACHMENT 32-1 BATE 9/12/89

	TEST NO.	MOISTURE	of WOITS A4MOS
	ì	21.4	104.3
3	ಎ	29.2/24.3	91.3/93.6
	3	20.9	107.6
	4 .	22.8	103.3
	5	24.2	98.5
	6	·	11
	7		
	8		
	9		
	10		
	11		
	12		
	13		
	14		
	15		



# ATTACHMENT 32-2 BATE 9/12/89

TE	5T 0,	90 MOISTURE	oF 40172A4M02	-	
	1	24.9	100.2	O.K.	
¢	ಎ	24.7	97.8	OK.	11 10
	3	25.2	101-1	OK.	1
	4	24.2	103.9	ゔド	3
	5	26.9	99.3	ψK	7 9
	6	26.9	94.4	эĸ	\
	7	25.9	103.1	3K	6 5 4
	8	24.0	104.0	or	2 3
	9	25.8	96.4	ماد	
	10	24.3	102.1	£	
	11	27.2	94.7	ગર	
÷	12				
" (	13				
<b>20</b>	14				
,	15				

BEAZER MATERIALS & SERVICES, INC. SURFACE IMPOUNDMENT CLOSURE KOPPERS INDUSTRIES, INC. GRENADA, MISSISSIPPI PLANT	DATE: 9/3/89 REPORT NO.:33 SHEET 1 of 1 BY: TPK
WEATHER: NOT APPLICABLE	·
PRECIPITATION: $\nu/A$ (inches) TEMPERATURE:	LOW <u>NA</u> HIGH NA
CONTRACTOR PERSONNEL ON SITE: PONE	
EQUIPMENT EMPLOYED: NONE	
INSPECTORS ON SITE: NONE	
QUALITY CONTROL TESTS AND SAMPLES: FONE	
VISITORS ON SITE: None	
SUMMARY OF ACTIVITIES:	
STOPPED BY MIN-SOUTH TESTING T	6 PICK UP
SAND SAMPLE TO THRE TO SPRINGER	ENGINEALING
FOR FALLING HEAD PERMEABILITY TE	T AND
RELATIVE DENSITY TEST ALONG WIT	H THE TWO
SHABY TUBES POR ANALYSIS OF A	ERMEA BILITY.
THEY SHOULD BE READY BY 9/18 OF	9/19/89.
ATTACHMENTS: None Signature: 124	me P. Kinhain

BEAZER MATERIALS & SERVICES, INC. SURFACE IMPOUNDMENT CLOSURE KOPPERS INDUSTRIES, INC. GRENADA, MISSISSIPPI PLANT	DATE: $92289$ REPORT NO.: 34 SHEET 1 of 1 BY: TPK
WEATHER: POURING RAIN REMNANTS OF PRECIPITATION: ? (inches) TEMPERATURE: CONTRACTOR PERSONNEL ON SITE: NONE	
EQUIPMENT EMPLOYED: NONE	
INSPECTORS ON SITE: TEARY KIRCHNER: KE	PYSTONE
VISITORS ON SITE: NONE	
SUMMARY OF ACTIVITIES: UNARLE TO  AS FAIN INTENSITY INCREASING HURRICANE HUBO	
AUTHACHMENTS SIGNETURE:	T. D. Kirkner

BEAZER MATERIALS & SERVICES, INC.  SURFACE IMPOUNDMENT CLOSURE  KOPPERS INDUSTRIES, INC.  GRENADA, MISSISSIPPI PLANT  DATE: 10 9 89  REPORT NO.: 35  SHEET 1 of 5  BY:
WEATHER: SUNNY, MILD
PRECIPITATION: 6 (inches) TEMPERATURE: LOW 45 HIGH 80
CONTRACTOR PERSONNEL ON SITE: GREEN & GREEN CONST.:
RICKEY NEWLEY, JOE DAVE MCCLESKEY
EQUIPMENT EMPLOYED: IH 1066 TRACTOR, FORD 3000 TRACTOR,
BOX SCRAPER, DRUM ROLLER
INSPECTORS ON SITE: TELRY KIRCHNER : KEYSTONE
QUALITY CONTROL TESTS AND SAMPLES: NONE
VISITORS ON SITE: JOE WILLING : GREEN - GREEN
SUMMARY OF ACTIVITIES: 6+6 USED THE BOX
SCRAPER TO GET A UNIFORM GRADE ON
THE BENTONITE SURFACE AND THOU PULLED
THE DRUM FOLLER TO ACHIEVE A SMOOTH
SURFACE.
I APRIVAD AT 12:30 AM FROM PITTSBURGH
AND TWO GOG MAN WARE DIGGING
ATTACHMENTS:SIGNATURE: Trunci ) Kunha-

BEAZER MATERIALS & SERVICES, INC. SURFACE IMPOUNDMENT CLOSURE KOPPERS INDUSTRIES, INC. GRENADA, MISSISSIPPI PLANT	DATE: 10/9/39 REPORT NO.: 35 SHEET 2 of 2 BY: TPK
SUMMARY OF ACTIVITIES (cont.):	THE TWO
PIPES WHICH ORIGINALLY FED	
THE MUD INSIDE THERE PIPE	
CAMBUT MIXTURE IN SELDAL TO SEAL THE PIPES. EMOUGH CE	
MIXED TO BACKFILL THE PIPE	FS TON FORT.
THIS TOU FET BEGAN APPLOXI FEST FROM THE TOP OF THE K	
FIRISHED AT 3 PM.	
ATTACHMENTS · SIGNATURE:	T.D. Kinkner

SURFACE IMPOUNDMENT CLOSURE REPORT	0 10 89 NO.: 34 of 3
WEATHER: CLEAR, MILD	
PRECIPITATION: O (inches) TEMPERATURE: LOW 55 HI	GH_79
CONTRACTOR PERSONNEL ON SITE: SAEPO & GILBAN COM	57
JOE WILLING, RICKEY DOULEY, JOE DAVE ME	<u>CLEZKEY</u>
EQUIPMENT EMPLOYED: It 1066 TRACTOR, FORD 3000	TUICTOR,
BOX SCRAPER, DEVEN LOUBE, CASE 8500 BO	735
INSPECTORS ON SITE: TERRY KIRCHNER: KEYSTONE	
QUALITY CONTROL TESTS AND SAMPLES: NONE	
VISITORS ON SITE: NONE	
SUMMARY OF ACTIVITIES: ARRIVAD AT 7:00 AM	
CUT ONE 15' ROLL OF FILTER FARRIC IN	
AND LAID IT AROUND SOUTH END, EAST S	IDE
AND NORTH END, ONTO THIS FABRIC, SI	
WAS PLACED, COVERING 3 FREE (2 FAST B	anof
THE SO' DISTANCE & FROM CENTER LINE	)
THE SAND TRUCKS BACKED ONTO THE CL	<u> </u>
ATTACHMENTS:SIGNATURE: Tenner P. A	Linkver

SURFACE IMPOUNDMENT CLOSURE KOPPERS INDUSTRIES, INC.	DATE: 10 10 189 REPORT NO.: 34 SHEET 2 of 2 BY: TPK
SUMMARY OF ACTIVITIES (cont.):	
LAYER IN ORDER TO SPOT-PLACE TO	HE SAND
APD ELIMINATE EXCESS PUSHING	OF THE SAM
INTO POSITION. ANY GROOVES MI	DE BY
THE TRUCKS WARE EITHER RECLED IN	UITH THE
DRUM ROLLER OR BACK-DRAGGED	WITH
THE RLADE OF THE 850 D MSZER	RETOLE
ANY SAND WAS LAIN.	
ABOUT HALF OF THE SAND REQUI	(B) WAS
NELIVERED TODAY.	
FINISHED 5:30 Am.	
•	
ATTACHMENTS:SIGNEQURE:	a D. Kulm

BEAZER MATERIALS & SERVICES, INC.  SURFACE IMPOUNDMENT CLOSURE  KOPPERS INDUSTRIES, INC.  GRENADA, MISSISSIPPI PLANT  DATE: 10 11 89  REPORT NO.:37  SHEET 1 of SERVICES  BY: 174
WEATHER: CLEAR, COOL
PRECIPITATION: O (inches) TEMPERATURE: LOW 48 HIGH 84
CONTRACTOR PERSONNEL ON SITE: 4 CEN & GREEN:
JOE WILLING, RICKEY DENLEY, JOE DAVE MCCLESKEY
EQUIPMENT EMPLOYED: 850 b DOZER, TRAILER TRUCKS
INSPECTORS ON SITE: TERRY KIRCHNER: KEYSTONE
QUALITY CONTROL TESTS AND SAMPLES: NONE
VISITORS ON SITE: NONE
SUMMARY OF ACTIVITIES: APRIVED 7:00 AM.
TRUCKS STARTED AROUND 7:30 AM DELIVERING
SAND.
LAID OUT THE REMAINDER OF THE FILTER
FABRIC AROUND THE SOUTHWEST CORNER,
LEAVING ABOUT 25 FEBT OPEN FOR
TRUCK TRAFFIC.
ATTACHMENTS: SIGNATURE: Time & Kinhne

BEAZER MATERIALS & SERVICE SURFACE IMPOUNDMENT CLOSUR KOPPERS INDUSTRIES, INC. GRENADA, MISSISSIPPI PLANT	E		DATE: 10 11 REPORT NO.: SHEET 2 of BY: TPK	37
SUMMARY OF ACTIVITIES (con-	t.):			
WHEN THE SAND	LIFT	rooken	FULL,	
THE TRUCKS WER	e stop	AED AN	D THEY	
CHECKED GRADE.	IT L	00KS L	IKE ABOU	<u> </u>
A DOZÁN LOADS V	UILL S	STILL E	gedesin se	<u>,                                     </u>
			·	
<del></del>				
		·	- manimum nin aa	
<del></del>				
			4.00	
			147	
ATTACHMENTS:	SIGN	NTURE: Tivin	ne P. Kink	mer

BEAZER MATERIALS & SERVICES, INC.  SURFACE IMPOUNDMENT CLOSURE  KOPPERS INDUSTRIES, INC.  GRENADA, MISSISSIPPI PLANT  DATE: 10 12 5 10 12 5 10 12 10 1
WEATHER: SUNNY, MILD W/ MORNING FOG
PRECIPITATION: O (inches) TEMPERATURE: LOW 54 HIGH 85
CONTRACTOR PERSONNEL ON SITE: GREEN & GREEN !
JOE WILLING, RICKEY DENCEY, JOE DAVE M'CLERKEY
EQUIPMENT EMPLOYED: 853 D D57-PR
INSPECTORS ON SITE: TERRY KIRCHNER: KEYSTONE
QUALITY CONTROL TESTS AND SAMPLES: NONE
VISITORS ON SITE: TEXT VANCE: PID-SOUTH TESTING
SUMMARY OF ACTIVITIES:
13 TRUCKLOADS OF SHAD WERE DELIVERED,
BRINGING THE SURFACE VARY CLOSE TO
GRADE SPECS.
THE GRAVE EDGES WERE PAKED TO BRING
THEM AS CLOSE AS PUSSIBLE TO A
4:1 SLOPE (H:V)
ATTACHMENTS:SIGNATURE: Teremi P. Kendanic

BEAZER MATERIALS & SERVICES, INC.  SURFACE IMPOUNDMENT CLOSURE  KOPPERS INDUSTRIES, INC.  GRENADA, MISSISSIPPI PLANT  DATE: 10/12/3° REPORT NO.: 3% SHEET 2 of 2 BY: TPK
SUMMARY OF ACTIVITIES (cont.):
IT LOOKS LIKE ONE MORE LOAD OF
SAND WILL BE NEEDED TO CLOSE GAP
WHERE TRUCKS BACKED UP ONTO SAND.
TEEF VANCE STOPPED BY AND I ASKED
HIM TO COME TOMORROW FOR DRY DENSIT!
TESTS AND TO GET A SAMPLE OF THE
BORROW AIT'S SOIL TODAY TO RUN A
NOW PROCTOR TEST ON IT. HE'LL GET
SAMPLE FOMORROW.
JIMPLE TOSHORKOW.
FINISHM 5:30 AM.
ATTACHMENTS:SIGNATURE:

BEAZER MATERIALS & SERVICES, INC. SURFACE IMPOUNDMENT CLOSURE KOPPERS INDUSTRIES, INC. GRENADA, MISSISSIPPI PLANT	DATE: 10 13 89 REPORT NO.: 39 SHEET 1 of 3 BY: TEX
WEATHER: SURNY, MILD W AM.  PRECIPITATION: (inches) TEMPH	·
CONTRACTOR PERSONNEL ON SITE: GREE	n a Green:
JOE WILLING, RICKEY DENLEY	
EQUIPMENT EMPLOYED: 850 D DOZE	F P
INSPECTORS ON SITE: TERRY KIRCHA  TEFF VANCE: MID-SOL  QUALITY CONTROL TESTS AND SAMPLES:	TH TESTING
VISITORS ON SITE:	
SUMMARY OF ACTIVITIES:	4ND TURNIED FILTER
FABRIC UP AND OVER TO	
SAND SO THAT THE GIRA	
DLACED AGAINST THE BU	
THE CONDUCTING ZONE.	
ATTACHMENTS:SIGN	TURE: Teina P. Kuchner

BEAZER MATERIALS & SERVICES, INC.  SURFACE IMPOUNDMENT CLOSURE  KOPPERS INDUSTRIES, INC.  GRENADA, MISSISSIPPI PLANT  DATE: 10/13/89  REPORT NO.: 37  SHEET 2 of 3  BY: TPK
SUMMARY OF ACTIVITIES (cont.):
JEFF VANCE OF MID-SOUTH PERFORMED
DRY DENSITY TESTS W/ HUMBOLDT
NUCLEAR MACHINE. TARGET DENSITY WAS
CALCULATED ACCORDING TO THE FOLLOWING
EQUATION:
MIN. BRY DENSITY X MAX BRY DONSITY
DRY DENSITY = MAX DRY DEN - 0.75 (MAX. D.D MIN. D.D.
(RE)'DEN)
DLY DENSITY = 90.4 × 106.3 = 101.8
106.375 (106.3-90.4)
TEST DRY WANSITY TO MOISTURE
1 108.9 o.x 5.7
2 107.1 ox 5.7
3 107.8 sk 5.9
4 10 k. k ox 5.1 2 1 3
6 108.8 or 4.6
7 106.9 ox 6.2
8 106.1 ox 4.9
ATTACHMENTS: SIGNATURE: Terma D. Kinhon

BEAZER MATERIALS & SERVICES, INC. SURFACE IMPOUNDMENT CLOSURE KOPPERS INDUSTRIES, INC. GRENADA, MISSISSIPPI PLANT	DATE: 16 13 89 REPORT NO.: 39 SHEET 3 of 3 BY: 1PK
SUMMARY OF ACTIVITIES (cont.):  JEFF VANCE AND I U BORROW PIT TO GET A S  COVER SOIL LAYER SO THE PROCTOR TEST / ANALYSIS	SAMPLE OF THE AT A STANDARD
FINISHED AT 5:30 AM.	CD ISC EVALUATED,
ATTACHMENTS:SIGNAT	TURE: Thires P. Kinhin

BEAZER MATERIALS & SERVICES, INC.  SURFACE IMPOUNDMENT CLOSURE  KOPPERS INDUSTRIES, INC.  GRENADA, MISSISSIPPI PLANT  DATE: 10   14   8    REPORT NO.: 40  SHEET 1 of 1  BY: 1   1   1   1    BY: 1   1   1    BY: 1
WEATHER: FOGGY, COOL
PRECIPITATION: O (inches) TEMPERATURE: LOW 55 HIGH 83
CONTRACTOR PERSONNEL ON SITE: GREN + GREEN:
JOE WILLING, RICKEY DENLEY, JOE DAVE MCCLESKEY
EQUIPMENT EMPLOYED: BACK HOE
INSPECTORS ON SITE: TERRY KIRCHNER: KEYSTONE
QUALITY CONTROL TESTS AND SAMPLES: NONF
VISITORS ON SITE: パロンド
SUMMARY OF ACTIVITIES: FINISHED PLACING AGAREGITE
WITH THE BACK HOTE BY 9:00 AM. THEN STAPED
TO RAKE IT INTO PLACE AND 4:1 SLOPE,
TOLD JUE W. THAT HE NEEDED TO DO A
QUANTITY IN-PLACE SURVEY. HE'LL GET WITH
NOTE TO SEE THAT IT IS DONE, FINISHED
R4 12 HOON.
ATTACHMENTS: SIGNETURE: Tenera P. Kinhva

BEAZER MATERIALS & SERVICES, INC. SURFACE IMPOUNDMENT CLOSURE KOPPERS INDUSTRIES, INC. GRENADA, MISSISSIPPI PLANT	DATE: 10 15 8 REPORT NO.: 41 SHEET 1 of BY: 10k
WEATHER: CLOUDY, COOL , FOGGY	
PRECIPITATION: O (inches) TEMPERATURE: L	ow <u>Sl</u> high
CONTRACTOR PERSONNEL ON SITE: GREEN & GRE	en const:
MEIL TURNAGE, JOE WILLING,	ared Dued
	<u> </u>
EQUIPMENT EMPLOYED: TRANST, Ron	
INSPECTORS ON SITE: TERRY KIRCHNER: K	EYSTONE
QUALITY CONTROL TESTS AND SAMPLES:	
VISITORS ON SITE: None	
SUMMARY OF ACTIVITIES: AFR. 7:00 Am	
NEIL JOF AND NOUS DID QUANTI	th survey
FOR SAND AND ALGREGATE LAYER	,
FINISHED AT 9:00 AM. LEFT F	ASSUBETTIA SO
AS 646 SAID ALL OF THEIR TR	icks Are
DOWN AND WEN'T HAVE AND UNT	
ATTACHMENTS: SIGNATURE: Tem	ma ). Kinhne.

BEAZER MATERIALS & SERVICES, INC. SURFACE IMPOUNDMENT CLOSURE KOPPERS INDUSTRIES, INC. GRENADA, MISSISSIPPI PLANT	REPORT NO.: 43 SHEET 1 of 2 BY: TPK
WEATHER: COLD , OVERSAST , 1	MIEBUILLENT YSISSIL
PRECIPITATION: The (inches) TE	
CONTRACTOR PERSONNEL ON SITE: G	con a Green coust:
JOE WILLING (SDAY), J.	SHALL GUA MEERY ONLY
FROM CONCRETE PLANT	· ·
EQUIPMENT EMPLOYED: ₩2	ES
INSPECTORS ON SITE: TERRY KI	
VISITORS ON SITE: NOWE	
SUMMARY OF ACTIVITIES: ARTIVED	
SPREADING OUT FILTER	
COVER SOIL WAS BUILT	
SO THAT THE TRICKS C	
THE AND DUMP THEIR	
3/4 OF SURFACE WAS	S COVERED WITH FARRIC
ATTACUMENTS · S.	IGNATURE: Tome P. Kinhim

BEAZER MATERIALS & SERVICES, INC. SURFACE IMPOUNDMENT CLOSURE KOPPERS INDUSTRIES, INC. GRENADA, MISSISSIPPI PLANT	DATE: 10/8/8/ REPORT NO.: 48 SHEET 2 of 3 BY: 19-
SUMMARY OF ACTIVITIES (cont.):	
THE TRUCKS STOPPED ABOUT	1:30 M) WHEN
THE RAIN CAME FORCING THE	
NOWN AS THE TRICKS WULD	
IT IN AND OUT OF THE E	BORROW AREH,
FINISHED AT 1:30 . WE	ONT TO SEE
D. SMITH WY DRILLERS AT	
OF PLANT TO CHECK OUT P	
	1
ATTACHMENTS:SIGNATURE:_	Terena P. Kirkun

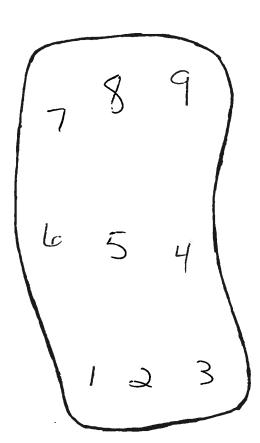
BEAZER MATERIALS & SERVICES, INC. SURFACE IMPOUNDMENT CLOSURE KOPPERS INDUSTRIES, INC. GRENADA, MISSISSIPPI PLANT	DATE: 10 19 89 REPORT NO.: 43 SHEET 1 of 1 BY: TPK
WEATHER: OVERCAST, COLD, SLIGHT DEL	2215
PRECIPITATION: 0.1 (inches) TEMPERATURE:	
CONTRACTOR PERSONNEL ON SITE: GREEN + G	
JOE WILLING, NETL TURNAGE, DO	ud Boyd
EQUIPMENT EMPLOYED: NONE	
INSPECTORS ON SITE: TERRY KIRCHNER	KEYSTONE
QUALITY CONTROL TESTS AND SAMPLES: None	
VISITORS ON SITE: NONE	
SUMMARY OF ACTIVITIES: INTERMITTANT	
AT PLANT SITE WITH RAIN A-	
GREAN + GREAN DECIDED TO SHU	T DOWN AS
TRUCKS CAN'T PULL THE HILL FR	lor the
BORROW PIT. FINISHED AT P	
WARKED ON REPORTS.	
ATTACHMENTS: POE SIGNATURE:	T.P. Kinh -

BEAZER MATERIALS & SERVICES, INC.  SURFACE IMPOUNDMENT CLOSURE  KOPPERS INDUSTRIES, INC.  GRENADA, MISSISSIPPI PLANT  DATE: 10   30   59   REPORT NO.: 44   SHEET 1 of 3
WEATHER: SUNNY, COLD
PRECIPITATION: O (inches) TEMPERATURE: LOW 33 HIGH 55
CONTRACTOR PERSONNEL ON SITE: GREW + GREW !
DOUG BOYD, BENJY HOWARD
EQUIPMENT EMPLOYED: 130 LGP DOZER, IH TRHETOR
W/ BOX SCRAPER, RUBBER-TIRD POLLER
INSPECTORS ON SITE: TELRY KIRCHNER = KEYSTONE
JEFF VANCE: MID-SOUTH TESTING
QUALITY CONTROL TESTS AND SAMPLES: COMPACTION AND
MOISTURE TESTS W/ HEMBOLDT TESTER (NUCLEAR)
VISITORS ON SITE: JOHN GREEN, NAL TURNAGE:
GREEN + GREEN
summary of activities: Ark. 7:00 Am
6+6 FINISHED LAYING OUT THE FILTER FABRIC
AND THE SPREAD OUT THE FIRST LIFT OF
THE COVER SOIL. FINISHED ROLLING THE
FIRST LIFT BY 1:30 PM. JEFF VANCE OF
MID-3 OUTH TESTING TOOK COMPACTION AND
MSISTURE TESTS W/ HUMBOLDT TESTER.
ATTACHMENTS: 44-1 SIGNITURE: Town P. Kinshow

BEAZER MATERIALS & SERVICES, INC. SURFACE IMPOUNDMENT CLOSURE KOPPERS INDUSTRIES, INC. GRENADA, MISSISSIPPI PLANT	PATE: 10 20 87 REPORT NO.: 44 SHEET 2 of 2 BY: TPK
SUMMARY OF ACTIVITIES (cont.):	A., ====================================
PASSED HAVING 29590 Comp.	
+ 5 % OF OPTIMUM MOISTURE.	
DIANE SMITH OF KEYSTONIE BEDI	
DRILLERS DOWN TO WORK ON THE S WELLS: STABILIZING MOST WIT	
CONCRETE BASE AND REPAIRING	f
WELL KNOCKED DOWN BACK IN J	
TRUCKS STARTED AROUT 3 PM	
NEIL T. OF G+G SURVEYED F	
WILL NEED A FEW MORE LOADS	
FINISHED LE PM.	
ATTACHMENTS:SIGNATURE:	P. Kinh

# ATTACHMENT 44-1 BATE 10/20/89

TEST NO.	90 MOISTURE	0P 40172A4m02
1	15.1	95.1
ಎ	14.6	132.5
3	16.4	99.4
4	الورله	104.1
5	14.5	106.1
6	15.0	99 1
7	15.5	1.00.1
8	14.le	95.4
9	14.3	i05,3
10		
11		
12		
13		
14		
15		



BEAZER MATERIALS & SERVICES, INC.  SURFACE IMPOUNDMENT CLOSURE  KOPPERS INDUSTRIES, INC.  GRENADA, MISSISSIPPI PLANT  DATE: 10   89   89   89   89   89   89   89   8	11-
WEATHER: CLEAR, COLD	_
PRECIPITATION: O (inches) TEMPERATURE: LOW 32 HIGH 53	_
contractor personnel on site: Shew & GREEN	
BENJY HOWARD, DOUG BOYD, NOTE TORNAGE	_
	-
EQUIPMENT EMPLOYED: IH 1066 TRACTOR , BOX SCRAPER,	-
BBOLGP DOZER, BACK HOE	<b>-</b>
INSPECTORS ON SITE: TEXZZY KIRCHNOL: KEYSTONE	<b>-</b>
QUALITY CONTROL TESTS AND SAMPLES: None	-
visitors on site: John Gleen: Green + Green	_
SUMMARY OF ACTIVITIES: TWO TRUCKS DUMPED	-
THIS MORNING TO FILL IN LOW SPOT.	_
MEIL, BONSY AND DOUG TOOK GRADE	
SURVEY. BENJY THEN RAN THE DUZER	
TO EVEN OUT THE SURFACE AND FIND OUT	
IF MORE SOIL IS NEWDED. AT 2:40 PM,	
MORE TRUCKS CAME TO FILL IN GAPS AND	
ATTACHMENTS: SIGNATURE: Towner P. Kindy	

BEAZER MATERIALS & SERVICES, INC SURFACE IMPOUNDMENT CLOSURE KOPPERS INDUSTRIES, INC. GRENADA, MISSISSIPPI PLANT	DATE: 10 2186 REPORT NO.: 45 SHEET 2 of 2 BY: TPK
SUMMARY OF ACTIVITIES (cont.):	
BACKHOE TO PLACE:	SOIL APOUND FDGES
TRYING TO GET CLOSE	TO 4:1 SLOPE.
CHECKED TOMORROW OF	
FINISHED AT 6	PM
	=
·	
ATTACHMENTS: SIG	ENATURE: T. P. Kichian

BEAZER MATERIALS & SERVICES, INC. SURFACE IMPOUNDMENT CLOSURE KOPPERS INDUSTRIES, INC. GRENADA, MISSISSIPPI PLANT	DATE: 10 22 89 REPORT NO.: 46 SHEET 1 of 1 BY: TPK
WEATHER: CLEAR, COLD	
PRECIPITATION: O (inches) TEMPERATURE:	LOW 32 HIGH 22
CONTRACTOR PERSONNEL ON SITE:	
	,
EQUIPMENT EMPLOYED:	
INSPECTORS ON SITE:	
QUALITY CONTROL TESTS AND SAMPLES:	
VISITORS ON SITE:	
SUMMARY OF ACTIVITIES: ARRIVED 7:00	AM.
WAITED TWO HOURS - NO ONE	From 646 CAME
ATTACHMENTS:SIGNATURE:	T.P. Kinh

BEAZER MATERIALS & SERVICES, INC. SURFACE IMPOUNDMENT CLOSURE KOPPERS INDUSTRIES, INC. GRENADA, MISSISSIPPI PLANT	REPORT NO.: 41 SHEET 1 of 2 BY: TPK
WEATHER: CLOUDY, MILD	·
PRECIPITATION:(inches) TEMPERATURE:	LOW 45 HIGH 60
CONTRACTOR PERSONNEL ON SITE: Giller +	silean :
BENJY HOWARD, DOUGBOYD, NE	7L TURNAGE
	*
EQUIPMENT EMPLOYED: 530 LGP SOZER, I  Box Scraper	H 1066 TRACIOZ,
INSPECTORS ON SITE: TERRY KIRCHNER:  JEFF VANCE: MID-SOUTH TESTI	
QUALITY CONTROL TESTS AND SAMPLES: COMPA	
VISITORS ON SITE: JOHN GREEN : GREEN +	- akeens
SUMMARY OF ACTIVITIES: APR. 7 Am.	
PUSHED COVER SOIL TO MAKE GR	ADE, REPAIRED
MINOR RIPS IN FILTER FABRIC	
ENGES AROUND S.I. ABOVE GRAV	a
JEFIE VANCE TOOK COMPACTION I	AND MOISTURE
TESTS; COMPARTION WAS GOOD,	BUT MOISTUR
WAS MORE THAN 5 % LOWAR -	
ATTACHMENTS: 47-1 SIGNATURE: 1	m. D. Kilm

SUMMARY OF ACTIVITIES (cont.):  JOHN GREEN INSISTED THAT SOIL WAS NOT  DRY. I CALLED MIKE BOLLINGER OF  KEYSTONE AND HE SAID TO GET ANOTHER  PROCTOR OR TWO AND THAT THESE WILL  BE COMPARED TO TODAY'S TEST RESULTS.
(ORIGINAL PRECTOR MAY NOT BE RAYESBUTATIVE.) CLEANED UP SURFACE WITH TRACTOR AND BOX SCRAPER
FINISHED 7 PM
ATTACHMENTS: SIGNATURE: T.P. Kuhm

# ATTACHMENT 47-1 BATE 10/23/89

	TEST NO.	MOISTURE	0P WOIT2 A4M02	•
	1	13.4	111-4	
	2	13.9	96.5	
	3	13.5	87.5	
	4	11-6	104.4	15
	5	10.1	100,9	
	6	9.4	102.6	\ \ \
	7	13.0	102.0	
	8			\
	9		ч	
	10			
	11			
÷	12			
	13			
	14			
	15			

BEAZER MATERIALS & SI SURFACE IMPOUNDMENT ( KOPPERS INDUSTRIES, IN GRENADA, MISSISSIPPI	CLOSURE	•	REPORT	ola4 89 No.:48 of a
WEATHER: SUNNY	MILD			
PRECIPITATION: O (	inches) T	EMPERATURE:	10W <u>50</u> HI	GH 77
CONTRACTOR PERSONNEL	ON SITE:	alten + 6	PERN !	
BENJY HOWAR	Doue	BoyD ,	NOL TUR	NAGE
EQUIPMENT EMPLOYED:	D3016121	05742		
INSPECTORS ON SITE:	TEERY KI	RCHNEVL:	KEY STO	NE
QUALITY CONTROL TESTS	S AND SAMPLE	s: Nane		
VISITORS ON SITE:	Joie			
		5		
SUMMARY OF ACTIVITIES	s: AR2	7 Am.		
DIS COVEREDS TH	AT EXTER	USION DI	MENISIO	NOF
IMPOUNDMENT				
SHORT ALL AR				
LAYING OUT	FILTER C	LOTH ARO	UND EN	SE
AND PUTTING				
BOTH MIKE B.	AND JOHN	i G. KN	ABOV	TH15.
ATTACHMENTS:	ç	SIGNATURE: T	P. Km	hun

BEAZER MATERIALS & SERVICES, INC. SURFACE IMPOUNDMENT CLOSURE KOPPERS INDUSTRIES, INC. GRENADA, MISSISSIPPI PLANT	DATE: \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \
SUMMARY OF ACTIVITIES (cont.):	
G+ G ORDERED This Make Rocks	OF FILTER
FABRIC WHICH ARE NEEDED TO FI	INISH
EXTENSION. SPECS WERE RELAY	ED TO
MIKE B. AND HE OK'S THOM.	
FINISHED BAST SIDE AND HALF	OF WEST SIDE
REMOVED WEST SIDE RAMP SO	THAT
FABRIC AND SAND CAN BE AL	ACED THERE
Tomorrow.	7
FINISHED 7 AM	
ATTACHMENTS: SIGNATURE: T. P.	tush-

BEAZER MATERIALS & SERVICES, INC.  SURFACE IMPOUNDMENT CLOSURE  KOPPERS INDUSTRIES, INC.  GRENADA, MISSISSIPPI PLANT  DATE: 105 89  REPORT NO.: 49  SHEET 1 of 2  BY: 1PK					
WEATHER: CUEAR, COOL, PATCHY FOR  PRECIPITATION: O (inches) TEMPERATURE: LOW 48 HIGH 81					
PRECIPITATION: (Inches) TEMPERATURE: LOW (6 HIGH 0)					
CONTRACTOR PERSONNEL ON SITE: GREEN & GREEN					
CONTRACTOR PERSONNEL ON SITE: GREAT & GREAT :  BOUG BOYD, BENJY HOWARD, NEIL T. (SDAY)					
EQUIPMENT EMPLOYED: BACK HOE					
The Market of the State of the					
INSPECTORS ON SITE: TELLY KIRCHNEZ: KEYSTONE					
QUALITY CONTROL TESTS AND SAMPLES: None					
VISITORS ON SITE: JEFF VANCE: MID-SOUTH TESTING					
SUMMARY OF ACTIVITIES: 122. 7 AM.					
REMOVER FORD TRACTOR FROM SITE.					
LAID OUT FILTER FABRIC ALONG REMAINSOR					
OF WEST SIDE AND DOWN TOWARD SOUTH BUD.					
GOT THREE LOADS OF GRAVEL AND					
STARTED SPOTTING IT AROUND SAND					
BACK HOE.					
ATTACHMENTS: SIGNATURE: T.P. Kurdung					

BEAZER MATERIALS & SERVICES, INC. SURFACE IMPOUNDMENT CLOSURE KOPPERS INDUSTRIES, INC. GRENADA, MISSISSIPPI PLANT	DATE: 10 25 87 REPORT NO.: 49 SHEET 2 of 2 BY: +PK
SUMMARY OF ACTIVITIES (cont.):	
JEFF VANCE OF MID-SOUTH	TEST IN G
STOPPED BY TO RELAY RES	Tá Tá
NEW PROCTOR TESTS ON T	
OPTIMUM MOISTURE PARCENTS A	
SANDY SECTION - 14 90	
CLAYEY SECTION - 17 70	
THEREFORE, RESULTS FROM	10/33 ARE OK.
FINISHED Le: 30 AM	
ATTACHMENTS:SIGNATURE:	T. A. Kirkum

BEAZER MATERIALS & SERVICES, I SURFACE IMPOUNDMENT CLOSURE KOPPERS INDUSTRIES,INC. GRENADA, MISSISSIPPI PLANT	REPORT NO.: 50 SHEET 1 of 2 BY: TPK
CONTRACTOR PERSONNEL ON SITE:	TEMPERATURE: LOW 40 HIGH 80
EQUIPMENT EMPLOYED: 530 LGP Box SCRAPER, IH 106	
INSPECTORS ON SITE: TERRY	KIRCHNER: KEYSTONE
QUALITY CONTROL TESTS AND SAM	PLES: Nave
visitors on site: Name	
+ IMMENIATORY THEREAF	WITH SAND AND GRAVER
ATTACHMENTS:	_signequre: T.P. Kinhon

BEAZER MATERIALS & SERVICES, INC. SURFACE IMPOUNDMENT CLOSURE KOPPERS INDUSTRIES, INC. GRENADA, MISSISSIPPI PLANT	DATE: 10/36/89 REPORT NO.: 50 SHEET 2 of 2 BY: TPK
SUMMARY OF ACTIVITIES (cont.):	
THE DOZER PUSHED ABOUT 12	LOADS OF
COVER SOIL ONTO THE TEN FOS	T EXTENSION
MORE GRAVER WAS ADDED TO THE	SIDES AFTER
FABRIC WAS PULLED UP AT THE	GORNERS.
Box scraper was then i'sen	TO SHAPE
UP THE SURFACE. LET ABO	
ON THE SIDES FOR SPILLOFF	
TOP SOIL TO BE ADDAD.	
CALLED MIKE B. TO CHECK ON	THE
POSSIBLE CHANGE IN GRASS SEED	
PROBABLY WON'T START HERE THIS	
6+6 RECOMMENDS RYE AN ANN	•
FESCUE AND SOME BERMUDA FOR	
ALSO, MIKE WILL CHERK ON	<del></del>
ASPHALT TACK COAT TO CRIMP M	
MULCH HE SHOULD KNOW BY TOX	
	,0,1
FINISHED AT LE: 30 PM	
ATTACHMENTS:SIGNATURE: /	D Kushrer

BEAZER MATERIALS & SERVICE SURFACE IMPOUNDMENT CLOSUF KOPPERS INDUSTRIES, INC. GRENADA, MISSISSIPPI PLANT	RE		DATE: 10 2787 REPORT NO.: 51 SHEET 1 of 2 BY: TPK
WEATHER: SUNNY, MIL	LD		
PRECIPITATION: O (inches		ERATURE: LO	ow_41_HIGH_81
CONTRACTOR PERSONNEL ON SI			
DOUG BOYD, RAN	ity Howa	iri) , Nerc	TURNAGE (3)
EQUIPMENT EMPLOYED: 53010	sp dstel	- ) Til (del	· TRACTOR,
Box Scraper			
INSPECTORS ON SITE: Tail	LY KIRG	いまとめたいス	LYSTONE
QUALITY CONTROL TESTS AND	SAMPLES:	~ 3w€	
VISITORS ON SITE: _ ~>~E			
SUMMARY OF ACTIVITIES:	422 7 +	7m.	
FINISHED SLADING CO	NEX SOIL	L NEIL-	T. TOSK
QUANTITY SURVEY	WITH T	52 AND TO	E OF THE
coval SOIL.			
STARTED TOP SOIL	- ABOUT	9:30	Pm
STOPPED WHILE SI	RVEYIN	< - RE	SUMED AROUND
10:30 AM, AGAIN	WITH	TWO TR	rcks.
ATTACHMENTS:	SIGN	MURE: T.	2. Kishma

BEAZER MATERIALS & SERVICES, INC. SURFACE IMPOUNDMENT CLOSURE KOPPERS INDUSTRIES, INC. GRENADA, MISSISSIPPI PLANT	DATE: 10 27 89 REPORT NO.: 51 SHEET 2 of 2 BY: 1PF
SUMMARY OF ACTIVITIES (cont.):	
MORE GRADING WAS DONE AR	SUND THE
GRAVEL FDGE, SPOTTING LOADS	S TO EVEN
OUT THE EDGE,	
PLACED FILTER FABRIC OVER	NE SIDE OF
GRAVEL FOR FINAL PUSH OF	TOP SOIL
ABOUT 5 PM, EXTRA TRUC	KS BROUGHT
TOP SOIL UNTIL 6:30.	
FINISHED 6:30 AM.	
	) I
·	
ATTACHMENTS:SIGNATURE:	T. P. Kinh

BEAZER MATERIALS & SERVICES, INC.  SURFACE IMPOUNDMENT CLOSURE  KOPPERS INDUSTRIES, INC.  GRENADA, MISSISSIPPI PLANT  DATE: 10889  REPORT NO.:50  SHEET 1 of 1  BY: 1PK
WEATHER: SUNNY COOL  PRECIPITATION: O (inches) TEMPERATURE: LOW 40 HIGH 78  CONTRACTOR PERSONNEL ON SITE: GRENT SLEEN:
Ben JY Haward , Doug Boyd
INSPECTORS ON SITE: TERRY KIRCHNEL! KEYSTONE
QUALITY CONTROL TESTS AND SAMPLES: No Section 2015
visitors on site: Nove
SUMMARY OF ACTIVITIES: APR 7:50 AM  PAKED OUT SIDES OF GRAVER EDGE, NO
ALMOST ENSUGH TOP SOIL BELIVERED
WILL GRADE ON MONDAY.  FINISHED 7:50 DM
ATTACHMENTS: SIGNATURE: T.P. Kirkhan

BEAZER MATERIALS & SERVICE SURFACE IMPOUNDMENT CLOSU KOPPERS INDUSTRIES, INC. GRENADA, MISSISSIPPI PLAN	JRE	REPORT NO.: 53 SHEET 1 of J BY: TPK
WEATHER:		·
PRECIPITATION:(inche CONTRACTOR PERSONNEL ON S	es) TEMPERATURE:	
EQUIPMENT EMPLOYED:		
INSPECTORS ON SITE:		
QUALITY CONTROL TESTS AND	SAMPLES:	
VISITORS ON SITE:		
SUMMARY OF ACTIVITIES:	OFF TODAY	
ATTACHMENTS:	signiture: 1.	- P Kinhner

BEAZER MATERIALS & SERVICES, INC. SURFACE IMPOUNDMENT CLOSURE KOPPERS INDUSTRIES, INC. GRENADA, MISSISSIPPI PLANT	DATE: 10/36/89 REPORT NO.:54 SHEET 1 of 2 BY: TPK
WEATHER: PARTLY CLOUDY, MILD	
PRECIPITATION: O (inches) TEMPERATURE:	
CONTRACTOR PERSONNEL ON SITE: 6 REDV + 61	
Benty HowARD, DOUG BOXD, NOL	TURNAGE,
CHAZLES	
EQUIPMENT EMPLOYED: D3CL6P D5ZEP	
INSPECTORS ON SITE: TERRY KIRCHWOL!	<ΕYST6N€
QUALITY CONTROL TESTS AND SAMPLES:	
visitors on site: Total Gilden : 612020	4 Gleen
SUMMARY OF ACTIVITIES: ARE 7:00 AM	
NEIL T. BLUE-TOP SURVEYE	E) WITH
BONJY + DOUG, THEN BENJ	( GRADED
TOP SOIL TO GET UNIFORM TO	P SURFACE.
STRAW ARRIVAD ABOUT 9:30 AM.	
4ME ARRIVAD 2:10 (= 1000	165). IT WAS
SPREAD WITH RENTAL SPREADER?	DRIVER.
ATTACHMENTS:SIGNATURE:_	T. P. Kudner

BEAZER MATERIALS & SERVICES, INC.  SURFACE IMPOUNDMENT CLOSURE  KOPPERS INDUSTRIES, INC.  GRENADA, MISSISSIPPI PLANT  DATE: 10 36 89  REPORT NO.: 54  SHEET 2 of 2  BY: TPK
SUMMARY OF ACTIVITIES (cont.):
2:20 APPLIED APPROX 660 165 SON 1/ACX 0.8
2:40 DISKED LIME AND FERTILIZER (2 PASSE
5ee6:
1) FESCUE (FALON TAL): 0% ENDEPHYTE, 9/5/89,
LOT * 18-9-5-TF, No. 023798
35 165 / ACRE
(a) HULLED BERMUDA: 66050/1005
20 165/ACRE
(3) RYE: 150 165 TOTAL
COMPACTED LIGHTLY WITH TRACTOR- PULLED
CULTI- PACKER 4:40 -5:10 AM.
SPREAD & 100 BALES OF STRAW BY HAND
COMPACTED WITH TRACTOR-PULLED CRIMPER
FINISHED AT 8:00 PM
ATTACHMENTS:SIGNATURE: T.P. Kinhnen

BEAZER MATERIALS & SERVICES, INC. SURFACE IMPOUNDMENT CLOSURE KOPPERS INDUSTRIES, INC. GRENADA, MISSISSIPPI PLANT	DATE: 10 3189 REPORT NO.:55 SHEET 1 of 3 BY: TPK
WEATHER: OVERLYST, COOL	
PRECIPITATION: O (inches) TEMPERATURE:  CONTRACTOR PERSONNEL ON SITE:	
BENTY HOWARD, DOUG BOYD	
	41
EQUIPMENT EMPLOYED: D3C LGP D52ER,	BACK HSE
INSPECTORS ON SITE: TALKY KIRCHNEYL	! Ktystone
QUALITY CONTROL TESTS AND SAMPLES: Nove	
VISITORS ON SITE: NONE	
SUMMARY OF ACTIVITIES: ARL: 7:50 AN	
SPREAD 4-5 MORE BALES OF	
COVAR ANY SPORS LEFT FROM L	
SPREADING. BULKED ALL LOOSE	
GRAVEL, SAND AND COVER SE	L OVER INTO
ONE SERTION.	
DUG TRENCH AND APPLIED S	
ATTACHMENTS:SIGNATURE:	T. P. Kirhum

BEAZER MATERIALS & SERVICES, INC. SURFACE IMPOUNDMENT CLOSURE KOPPERS INDUSTRIES, INC. GRENADA, MISSISSIPPI PLANT	DATE: 10 3 189 REPORT NO.: SS SHEET 2 of 2 BY: TPK
SUMMARY OF ACTIVITIES (cont.):	
AFTER CHECKING GRADE OF THE	TRENCH.
THE FOSE OF THE FILTER FASRIC	C WAS THEN
CUT / TRIMMEN AROUND THE C	AP,
RAKED GRAVEL TO SLOPE.	
TOO BARK TO THE FINAL AIC-	TURES TOWIGHT
WILL GET THEM IN THE MORE	_
FINISHED AT 6 PM.	
	···
<del></del>	
ATTACHMENTS: SIGNATURE: T.P.	Kusha

BEAZER MATERIALS & SERVICES, INC.  SURFACE IMPOUNDMENT CLOSURE  KOPPERS INDUSTRIES, INC.  GRENADA, MISSISSIPPI PLANT  DATE: 1   1   8    REPORT NO.: 56  SHEET 1 of 1  BY: 1   1   8    REPORT NO.: 56  BY: 1   1   1    REPORT NO.: 56
WEATHER: COOL, HAZY, SUNNY
PRECIPITATION: 0 (inches) TEMPERATURE: LOW 49 HIGH 74
CONTRACTOR PERSONNEL ON SITE: GREEN & GREEN CONST
NEIL TURNAGE, DOUG BOYD, BENTY HOWARD
EQUIPMENT EMPLOYED: NONE
INSPECTORS ON SITE: TERRY KIRCHNER ! KEYSTONE
QUALITY CONTROL TESTS AND SAMPLES: NONE
VISITORS ON SITE: NONE
SUMMARY OF ACTIVITIES: GREEN & GREEN REMOVED  ALL OF THER REMAINING FOLIPMENT.
I TOOK FINAL AICTURES OF CAP & TRENICH
FINISHED 9. AM
ATTACHMENTS:SIGNATURE:_T.P. Kuhn-

### APPENDIX B

Soil Testing Data and Results

### PERMEABILITY TESTING



#### Springer Engineering, Inc. 206 Glenn Street Starkville, MS 39759 601-323-2296

September 29, 1989

MID-SOUTH TESTING LABORATORIES, INC. Attn: Mr. Jeff Vance 133 Mound Street Grenada, Mississippi 38901

RE: Permeability Analysis Kopper's Lagoon Grenada, Mississippi

Dear Mr. Vance:

Attached hereto is a recapitulation of test results obtained on samples submitted from the project referenced above. Please feel free to contact us should you have any questions concerning the information provided or if we may be additional assistance. Our invoice for services rendered is enclosed.

We appreciate the opportunity to assist Mid-South Testing Laboratories on this project.

Sincerely,

Lide L. Pritchard, P.E.

CP:cs

# PERMEABILITY ANALYSIS KOPPER'S LAGOON GRENADA, MISSISSIPPI

*DATE SAMPLED	DESCRIPTION	COEFF. OF PERMEABILITY (cm/sec)
7-31-89	Clay Liner - North Clay Liner - South	1.4 x 10 <sup>-5</sup> 8.2 x 10 <sup>-6</sup>
7- 31-89	Coarse Sand Fill Harris Pit	$6.9 \times 10^{-3}$
8-12-89	Clay Liner - S-1 Clay Liner - S-2	1.4 x 10 <sup>-8</sup> 8.4 x 10 <sup>-9</sup>
8-22-89	Clay Liner - ST-1 Clay Liner - ST-2	7.9 x 10 <sup>-8</sup> 7.7 x 10 <sup>-8</sup>
9-1-89	Clay Liner - North Clay Liner - South	4.2 x 10 <sup>-8</sup> 6.2 x 10 <sup>-8</sup>
9-12-89	Clay Liner - North Clay Liner - South	3.6 x 10 <sup>-8</sup> 8.4 x 10 <sup>-9</sup>
9-12-89	Course Sand Fill	5.6 x 10 <sup>-2</sup>

<sup>\*</sup>Samples Delivered To Laboratory By Keystone Environmental Consultants.

#### DRAINAGE LAYER

Sieve Analysis

TMD-602 (REV. 4-70)

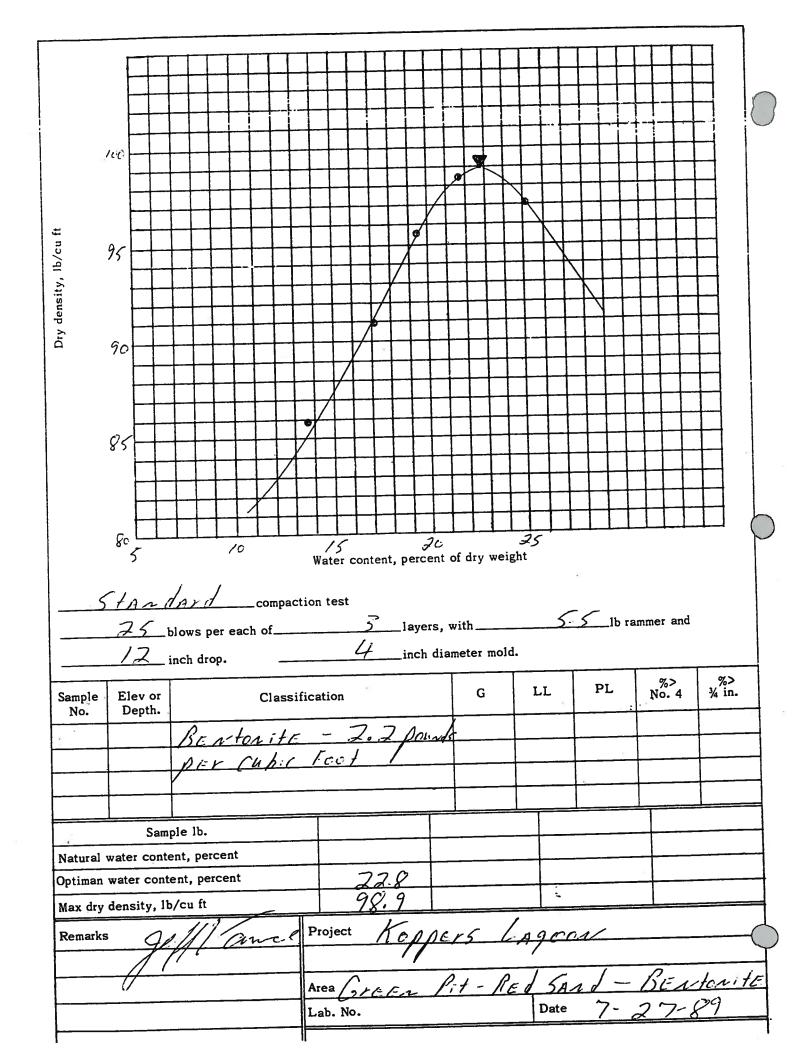
#### MID-SOUTH TESTING LABORATORIES, INC. P. O. Box 147 - 415 First Street Grenada, Mississippi 38901

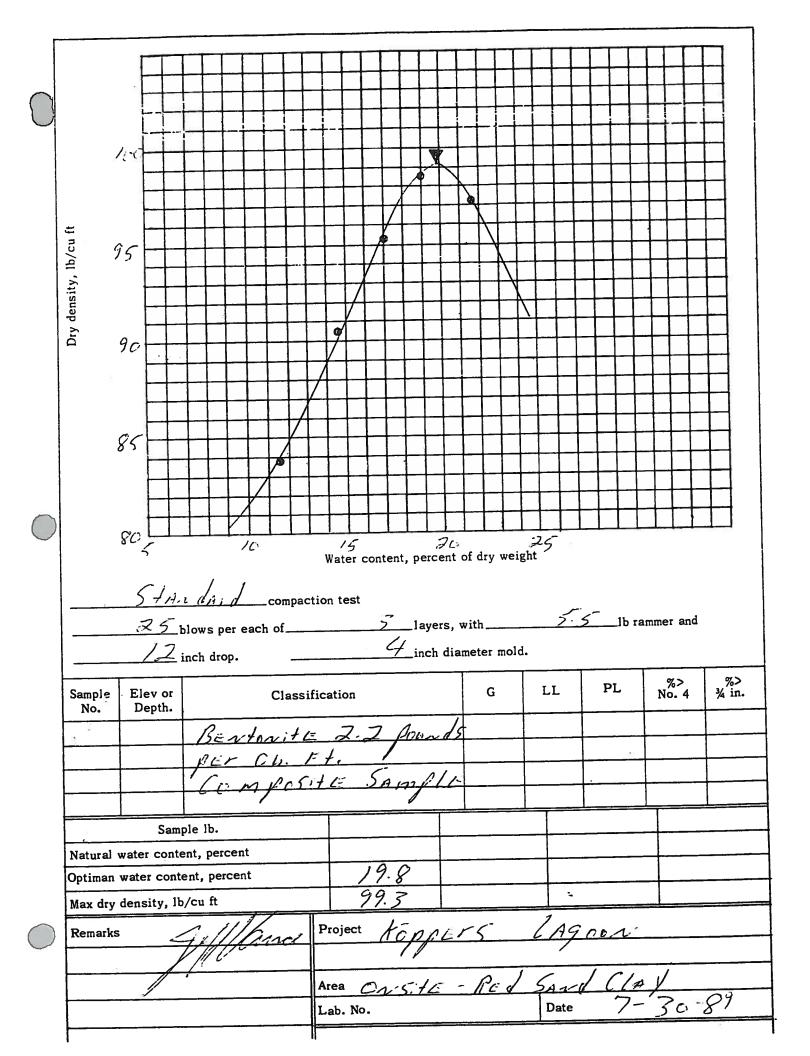
			MISS.	
PLANT LETTER			DATE	9-13-527
REPORT NO. /		PROJ. NO.	Kopper	s lageon
MATERIAL FILL SAM	vd	COUNTY	CIENAL	A
NO. CARS		QUAN. REP		
CONSIGNEE GIEEN	+ GrEEN	DESTINATI	ON 5: + E	
PRODUCER MEnglas	Stene	ADDRESS		
TYPE OF CONSTRUCTION TO				
	SIEVE ANAI	LYSIS (PER CENT	PASSING)	
CAR NO.  SATISFACTORY CARD NO.  2½ SIEVE  1½ SIEVE  1½ SIEVE  1½ SIEVE  1½ SIEVE  1½ SIEVE  3¼ SIEVE  3/8 SIEVE  No. 4 SIEVE  No. 8 SIEVE  No. 10 SIEVE  No. 16 SIEVE  No. 20 SIEVE  No. 30 SIEVE  No. 40 SIEVE  No. 40 SIEVE  No. 50 SIEVE  No. 60 SIEVE  No. 60 SIEVE  No. 100 SIEVE  No. 200 SIEVE  PER CENT LOSS ON WASH  COLOR TEST  FINENESS MODULUS  This material has been inspected construction.  REMARKS:  Distribution:  Original to Testing Engineer  1 copy to District Engineer  1 copy to Project Engineer	er;	SIGNED	J. J	for use in the above
<ul><li>1 copy to District Engineer</li><li>1 copy to Project Engineer</li><li>1 copy for Plant File.</li></ul>			<del>// '                                  </del>	MATERIALS INSPECTOR

#### STANDARD PROCTOR TESTS

Sample   Depth.   Classification   G   LL   PL   No. 4   No.																																	
Water content, percent of dry weight  Standard compaction test  Jayers, with Solb rammer and inch drop.  Jainch drop.  Classification G LL PL No. 4 % in.  Sample Elev or Depth.  Classification G LL PL No. 4 % in.  Sample Ib.  Industry density, 1b/cu ft 1046  Remarks  Project Koppers Lagoor  Area 5: FE - Brown Classification		Г			$\top$	Т	T	1	Т	Т	T	T	T	Т	T	T	T												$\Box$		$\Box$		
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Sample b.  Sample lb.  Sample lb.  Satural water content, percent  ptiman water content, percent  Area 5: +t - brown Classification  G LL PL %> %> No. 4 % in.  PL No. 4 % in.  Area 5: +t - brown Classification  G LL PL No. 4 % in.  Area 5: +t - brown Classification  G LL PL No. 4 % in.  Area 5: +t - brown Classification  Area 5:														F	ie	ıch	dia	met	er	mol	d.												
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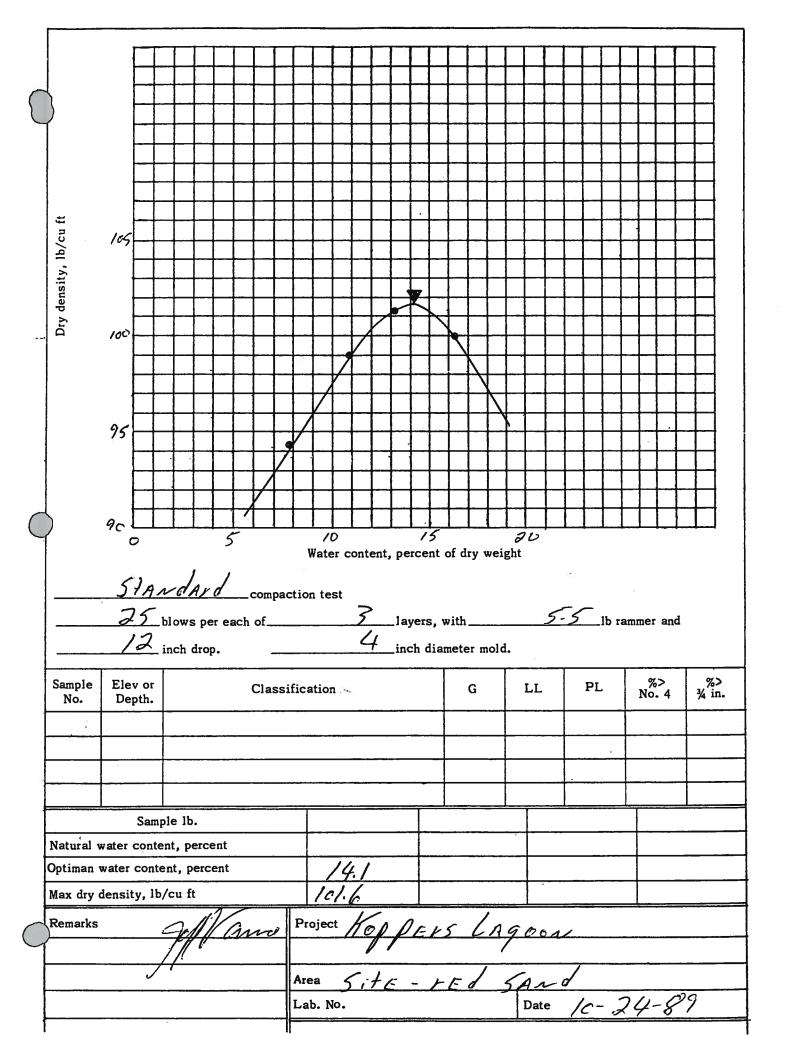


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Dry density, 1b/cu ft 105 100 95 10 75 20 Water content, percent of dry weight 20 Standard compaction test 3 layers, with 5.5 lb rammer and 25 blows per each of 12 inch drop. inch diameter mold. %> ¾ in. %> No. 4 Sample Elev or LL PL Classification No. Depth. Sample 1b. Natural water content, percent Optiman water content, percent 100.7 Max dry density, lb/cu ft Vance Remarks

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Water content, percent of dry weight  Standard compaction test  J5 blows per each of layers, with 5.5 lb rammer and																											
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8														-					-			$\dashv$			+		
No.	e Elevic Depth				Cla	assi ——	ifica ——	tion		<u> </u>				_	<u>.</u>						_	$\dashv$	No	. 4	$\dashv$	<b>¾</b> 1	n.
Sample					Cla	assi	fica	tion							G			LL		I	PL		No	%> 5. 4		% ¾ i	> n.
	12 inch drop. 4 inch diameter mold.																										
	54AvdAld compaction test  25 blows per each of																										
Water content, percent of dry weight  5th vilhi d compaction test																											
90 5 10 15 20 Water content, percent of dry weight																											
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Dry density, 1b/cu ft								1	1	1				•	V		1		Ŧ	$\perp$	$\perp$	L	$\sqcup$			-	
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### SOIL-BENTONITE LAYER

**Atterberg Limits** 

Report	on	SOIL	SAMPL	_ES

Report on soil stant EL	b. Nos							/		
Lab. Nos.					_ Proj. No	Kopp	1.15	LAGEC		
Road					County	GrEN	AdA			
	C 11	7.01								
Submitted by ////	766141	15371	ng		Sampled by MANCE					
Submitted by Mid  Reported to Kry	stone E	11.11			_ Date Sampled 7 3/- 89					
Producer ONS: 10	E Soil	( rAW	Soil)		Date Rece	eived	_	85		
					Date Reported 8-2-89					
		•	TEST RES	JLTS*	·					
Lab. No.										
Sample No.										
Station No.										
Depth										
	_	PH YSIC	AL CHAR	ACTERISTIC	CS		···			
Liquid Limit	28									
Plastic Limit	.70						3/8/6			
Plasticity Index	8									
Sh kage Limit										
Shankage Ratio										
Centrifuge Moisture										
Field Moisture										
Volume Change							<u> </u>			
(4		MEC	HANICAL	ANALYSIS						
%Pass No. 10 Sieve	100	1								
%Pass No. 40 Sieve	90.1									
%Pass No. 60 Sieve	60.5									
%Pass No. 200 Sieve	29.3									
%Pass No. 270 Sieve	19.3									
% Silt	9									
% Clay	10						<u> </u>	8		
% Colloids										
Dust Ratio**			·							
Consistency				<u></u>						
HCL Reaction										
GROUP										
U. S. C.										
Est. CBR										
Bearing Capacity					<u></u>	L	<u> </u>			

\*\*Percentage of material finer than No. 40 sieve passing No. 200 sieve.

Reported by\_

Jeff ance

<sup>\*</sup>Particles above 0.074 mm. in diameter by sieve method; particles below 0.074 mm. in diameter by hydrometer method.

Report on SOIL SAMPLES						W 000	e laco	- 1 -
Lab. Nos					Proj. No	Koppel	5 LAGO	<u> U</u>
Road							Ada	
Reported to King  Producer ON 5: 40	500.4/1	705	ting			by VA		
Reported to 1/2 61	Stone				_ Date Sam	pled <u></u>	7-8.1	_
Braducar CNS: 16	E 5A1	nple	5		_ Date Received			
Producer				W.	Date Rep	orted_ <i>&amp;</i>	- 8-89	
BENTON- toper- Co. Ft.	10.1.	20 1	TEST RESI	JLTS*				
BENTON-TEPEX-CO. Ft.	1 Pour de	of Fouri	3 Pauvas					<u></u>
Lab. No.		<del></del>	3					
Sample No.		d_						
Station No.					<del>                                     </del>			
Depth					CICC .	<del></del>		
			AL CHAR	ACTERIS	1103	<del></del>	T	1
Liquid Limit	30	32	34_					
Plastic Limit	20	20		<u> </u>		<del> </del>	<del>                                     </del>	1
Plasticity Index	10	12				<del></del>		+
Shrinkage Limit						<del> </del>	1	_
Shrinkage Ratio				<u> </u>		<del> </del>	<del> </del> (	)-
				<u> </u>			<del> </del>	7
Centrifuge Moisture		t)					<b></b>	+-
Field Moisture							<del></del>	
Volume Change	1	MEC	HANICAL	ANALYS	IS			<del></del>
	1.00	100	100	T				4-
%Pass No. 10 Sieve	100	91	90	1				
%Pass No. 40 Sieve	93		59					
%Pass No. 60 Sieve	61	63	7/					
%Pass No. 200 Sieve	34		<del> </del>	+				
%Pass No. 270 Sieve				<del>- </del> -				
% Silt				<del> </del>				
% Clay			ļ					$\top$
% Colloids			<b></b>	<del></del>		<del>                                     </del>		7
Dust Ratio**				<del> </del>				
Consistency		<u> </u>		<del> </del>				
HCL Reaction		<u> </u>	<u> </u>				2	$\top$
GROUP			<u> </u>					$\top$
U. S. C.		l	<u> </u>	<b></b>				_
Est. CBR	1							+
Bearing Capacity			l		L			
Dearing Capacity			M	adı martic	les below 0.0	74 mm, in d	liameter by	

\*\*Percentage of material finer than No. 40 sieve passing No. 200 sieve.

All SAMPLES had 2.2 pds

PER CU. Ft. BEFORE Add: trouble

BENTONITE WAS AddEd.

Reported by\_\_\_\_\_

Jeff ance

<sup>\*</sup>Particles above 0.074 mm. in diameter by sieve method; particles below 0.074 mm. in diameter by hydrometer method.

Report on SUIL SAMPLE	.3							/	
Lab. Nos					_ Proj. No	Kopp	Ers	lngran nda	
Road					_ County	6,	EN	A dA	
					_ Sampled b				
Submitted by Mid	South /	ESFIR	9		_ Sampled t		~	0	
Reported to Kegs	tone E	UIV.			_ Date Sam	pled	<u>8-</u>	9-89	
Keported to	0 -	0	*						
Producer ONSite	BEFORE	BEN	torite	<u> </u>	Date Received				
					_ Date Rep	orted	<del>\$2-</del>	10-89	<del></del>
			TEST RES	ULTS*					
Lab No	T							160	
Lab. No. Sample No.									
Station No.									
Depth Depth					<u> </u>				
<u>рерии</u>		PHYSIC	CAL CHAR	RACTERISTI	CS				
Liquid Limit	73	35				ļ			
Plastic Limit	19	20				-			
Plasticity Index	14	. 15							
S nkage Limit					ļ	<u> </u>			
Shankage Ratio			<u></u>		ļ <u>.</u>			<u> </u>	<b></b> -
Centrifuge Moisture									-
Field Moisture					ļ	<del> </del> -			60
Volume Change			0.0		<u> </u>	<u> </u>			
<b>1</b> 0		MEC	CHANICAL	ANALYSIS	<b>.</b>	<del></del>			
%Pass No. 10 Sieve	100	100			ļ	<del>                                     </del>			
%Pass No. 40 Sieve	93.	95			ļ	<del> </del>			<del> </del>
%Pass No. 60 Sieve	89	90			ļ	<del>                                     </del>			
%Pass No. 200 Sieve	87	85				<del> </del>			├─
%Pass No. 270 Sieve				<b></b>					┼
% Silt					<u> </u>				<del> </del>
% Clay			ļ		<del> </del>	<del>                                     </del>	54		<del>                                     </del>
% Colloids					- 11	+			<del>                                     </del>
Dust Ratio**			ļ		<del> </del>	<del> </del>			+
Consistency				<del></del>	<del></del>				<del>                                     </del>
HCL Reaction					<del>                                     </del>	<del></del>			+
GROUP			<del> </del>		<del> </del>	+		<del></del>	
U. S. C.			<del>                                     </del>	<del></del>	<del> </del>	+			<del>                                     </del>
Est. CBR			<del> </del>	<del> </del>			+		+
Posting Canacity	1	I	1	1	1				

Reported by

Alland

<sup>\*</sup>Particles above 0.074 mm. in diameter by sieve method; particles below 0.074 mm. in diameter by hydrometer method.

<sup>\*\*</sup>Percentage of material finer than No. 40 sieve passing No. 200 sieve.

Report on SOIL SAMPLE	S					•	,	
Lab. Nos					Proj. No	Toppil	5 LAG	Con
Road					County	Gren	Ada	
Submitted by Mid	South	TEST	ng_		Sampled by_	VAN	ice	
Submitted by Mid  Reported to Kty	stone				Date Sampled			
Producer 15+ / A VEN	BENTO	rite			_ Date Received			
/					Date Reported			
			TEST RES	ULTS*				
Lab. No.								
Sample No.	1	2						
Station No.								
Depth								
Deptil	28	PH YSI	CAL CHAR	ACTERISTI	cs			
Liquid Limit	38	37						
Plastic Limit	20	19		<u> </u>				
Plasticity Index	18	18						
Shrinkage Limit								h
Shrinkage Ratio			<u> </u>			<del> </del>		
Centrifuge Moisture							ļ	
Field Moisture					<u> </u>			
Volume Change			<u> </u>		<u> </u>		<u> </u>	Щ—
TOTALLIS	-	ME	CHANICAL	ANALYSIS				
%Pass No. 10 Sieve	100	100						<del> </del>
%Pass No. 40 Sieve	94	95	<u> </u>				<del> </del>	
%Pass No. 60 Sieve	28	9/					<del>                                     </del>	<del>├</del> ─
%Pass No. 200 Sieve	86	86			<b></b>		<u> </u>	
%Pass No. 270 Sieve							<del> </del>	-
% Silt			.l		-			-
% Clay							<del> </del>	-
% Colloids								-
Dust Ratio**							<del> </del>	+
Consistency	<u> </u>							+
HCL Reaction			<del></del>		<del>                                     </del>		+	+-
GROUP		L	<b></b>		<del> </del>	<del></del>		+
U. S. C.			<del> </del>		+		<del></del>	+
Est. CBR					<del> </del>		<del> </del>	+
Bearing Capacity	10	<u> </u>			<u> </u>			4

\*\*Percentage of material finer than No. 40 sieve passing No. 200 sieve.

Reported by Jefflanci

<sup>\*</sup>Particles above 0.074 mm. in diameter by sieve method; particles below 0.074 mm. in diameter by hydrometer method.

Report on SOIL SAMPLES							,	
Lab. Nos					_ Proj. No	Koppe	rda	rv
Road					_ County	Gren	rdA	
Submitted by 11.	South	TEST	1.24		_ Sampled b	y 1/1	NCE	
Reported to Kity	Stone				Date Sampled			
Producer DNS. tc Stee	CKP.LI -	2Nd/A	VES -YAL	1 soil	Date Received			
Producer Siv ) i T E Sives			7		Date Reported			7
	.,		TEST RES	ULTS*				
γ	<u> </u>		W	T				T
Lab. No.		2						
Sample No.		· · · · · · · · · · · · · · · · · · ·	<del> </del>			13		
Station No.			+	<u> </u>	-			
Depth		5111/61	CAL CHAR	ACTERISTI	CS	1		
96			CAL CHAR	ACTERISTI	-			_
Liquid Limit	32	34			77			<del> </del>
Plastic Limit	20	20		<b></b>		<b></b>		┼
Plasticity Index	12	14				<del> </del>		+-
S'inkage Limit				ļ		<b> </b>		+
nkage Ratio				ļ		<del> </del>		<del> </del>
Centrifuge Moisture				<u> </u>	ļ	ļ		-
Field Moisture			<u> </u>	<u> </u>	ļ			<del> </del>
Volume Change				<u>.l</u>		L		1
		ME	CHANICAL	ANALYSIS	· · · · · · · · · · · · · · · · · · ·			
%Pass No. 10 Sieve	100	100						<del></del>
%Pass No. 40 Sieve	90	95			<u> </u>			<del> </del>
%Pass No. 60 Sieve	85	89			<u> </u>			┼
%Pass No. 200 Sieve	78	83	<u> </u>		ļ	ļ		┼
%Pass No. 270 Sieve					<u> </u>	ļ	6	+
% Silt				<u> </u>	-			+-
% Clay					<del> </del>			+
% Colloids					1			+
Dust Ratio**				<u> </u>		<del> </del>		+-
Consistency		020						
HCL Reaction		1		LT.		<del> </del>		+
GROUP					<b></b>	<del> </del>		+-
U. S. C.		<u> </u>			<del></del>			+
Est. CBR		L			-	<del> </del>		+
Bearing Capacity		<u> </u>			1			

\*\*Percentage of material finer than No. 40 sieve passing No. 200 sieve.

Reported by Jeff and

<sup>\*</sup>Particles above 0.074 mm. in diameter by sieve method; particles below 0.074 mm. in diameter by hydrometer method.

Report on SOIL SAMPLE	ES							
Lab. Nos.					Proj. No. //	off[1	5 lage	-11
Road					County	3100	Ada	
Submitted by M. d  Reported to his cy	500.4h	Test	119		Sampled by_	l'An	C E	
Reported to // E/	Stene				Date Sample		78-89	<del>7</del>
Producer On Sin	10-	Steck	PilE -	rah soil	Date Received			
THIND 2	14+ - So:1				_ Date Report	ed <i>{\begin{subarray}{c} \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \</i>	29.89	,
			TEST RES	SULTS*				
Lab. No.								<del></del>
Sample No.		2_	11				31	<del> </del>
Station No.		34						—
Depth			<u> </u>					<u> </u>
		PHYSIC	CAL CHAP	RACTERISTIC	CS	#	B\$35	<b></b>
Liquid Limit	35	37						1
Plastic Limit	20	21						
Plasticity Index	15	16						
Shrinkage Limit			<u> </u>					-
Shrinkage Ratio						*		()
Centrifuge Moisture			ļ					ļ <u> </u>
Field Moisture								<del> </del>
Volume Change			<u>1</u>					1
7		MEC	CHANICAL	_ ANALYSIS				
%Pass No. 10 Sieve	100	10C						<del>   </del>
%Pass No. 40 Sieve	9/	45						<del></del>
%Pass No. 60 Sieve	86	90						<del></del>
%Pass No. 200 Sieve	80	84						—
%Pass No. 270 Sieve				<u> </u>				<del>  </del>
% Silt							9	<del></del>
% Clay								↓
% Colloids								<del> </del>
Dust Ratio**								<del></del>
Consistency								<del>↓</del>
HCL Reaction								<del> </del>
GROUP			<u> </u>					<del> </del>
U. S. C.								—
Est. CBR						<del> </del>		₩
Bearing Canacity				1 1				

Reported by Jeff Anns

<sup>\*</sup>Particles above 0.074 mm. in diameter by sieve method; particles below 0.074 mm. in diameter by hydrometer method.

<sup>\*\*</sup>Percentage of material finer than No. 40 sieve passing No. 200 sieve.

Report on SOIL SAMPLES	S							
Lab. Nos			<del></del>		Proj. No	KeffE	rs ling	icen
Road 4th LiF1	<i>t</i>				_ County	Grani	A dA	
Submitted by Mid		TEST	11-1		_ Sampled I	by 1/A1-C		
Reported to KEly	stone	<u>-</u>			_ Date Sam	pled	5-89	
Producer Cosite	Stock	Pile-	YAW	Soil	_ Date Rec	eived		
	a				Date Rep	orted 9.7	39	
			TEST RES	SULTS*				
Lab. No.								ļ. —
Sample No.	/	7						
Station No.						ļ		
Depth						ļ	<u> </u>	<u> </u>
		PHYSIC	AL CHA	RACTERIST	ics	·		
Liquid Limit	54	33			ļ <u> </u>	ļ		<b>!</b>
Plastic Limit	20	19_						ļ
Plasticity Index	14	14					ļ	ļ
Sh kage Limit						ļ		<del> </del>
Sh-mkage Ratio								
Centrifuge Moisture								<u> </u>
Field Moisture	#					ļ		ļ
Volume Change					<u> </u>		<u> </u>	<u> </u>
		MEC	HANICA	L ANALYSIS	5			
%Pass No. 10 Sieve	100	100		T				
%Pass No. 40 Sieve	95	91						
	65	87						
%Pass No. 60 Sieve	1 4 -			<del></del>	+	1		1

\*\*Percentage of material finer than No. 40 sieve passing No. 200 sieve.

%Pass No. 200 Sieve %Pass No. 270 Sieve

% Silt
% Clay
% Colloids
Dust Ratio\*\*
Consistency
HCL Reaction

GROUP U. S. C. Est. CBR

**Bearing Capacity** 

Reported by Afflance

<sup>\*</sup>Particles above 0.074 mm. in diameter by sieve method; particles below 0.074 mm. in diameter by hydrometer method.

#### **BACKFILL DENSITY TESTS**

226-74	15		FIELD DENS	ITY DATA		G	renada, MS
	opport Lagores	County OFE	1 4/8	District		Frame	
	n_1/1.2.51						
Lift		Course: Basen	nent Soil Design	Soil Soil(Type): Sa	andy, Silty, Clayey	None	
Depth Mea	asured Inches	Subbase			i-Gr., Clay-Gr. I		
Unit of De	eviationB	Base		Design Depth	InchesC	Cement (% by Vol.)	
1. Sectio	n No.						
2. Test	No.	1	2		4	5	6
3. Date		7-24-87	7-24-89	7-24-69	7-24-59	7.24.89	7-24
4. Time							
5. Statio	n						
6. Locat	ion	North	South	1-01-11	Conter	South	501:1
7. Depth		15+ 1.Ft	15t 6.Ft	Judliti	Judlift	Indl.Ft	2.1/1
8. Sta. L	imits Sect. Being Tested					-	
	9. Standard Count						
1 11	10. Moisture Count				01		
	11. Moisture Count Ratio						
	12. Moisture, PCF						
1:	13. Standard Count						
	14. Density Count						
Density	15. Air-gap Count(If Used)					ļ	<u> </u>
Ď	16. Density Count Ratio						
	17. Wet Density, PCF					<del> </del>	<del> </del>
ies es	18. Dry Density, PCF		19	40		1.2	
Test Values	19. Moisture Content, %	19.1	18.0	20.5	22.7	18.7	18
sity	From Standard 20. Density Curve	1046	1046	1046	1046	1046	104.
Deni	21. Standard Density Curve Number				0.5-1	01 =	01
Standard Density	22. In-Place Density % of Standard	95.8	96.1	96.4	976	96.5	97
Stan	23. Specified percent of Standard Density	95	95	95	95	95	95
24. No.	of Samples in Lot					<del></del>	<del> </del>
	oraic Sum of Deviations in Lo			<u> </u>			<del> </del>
26. Dev.	from SV = Algebraic sum of Lo	t		<u> </u>			3:
27. Alge	braic sum of deviation oplicable lots		<u> </u>				
28 ta	l No. of Samples Used						<del> </del>
29. Avg 1	Dev. applicable lots = Blk 27 Blk 28						
Distri	bution:				Si/1/	ance	,
	9			Signed	Juli		<del></del>
				Title	11 5.1	-/.	

226-74		•	FIELD DENS				Grenada, MS
Project	Keffer Lagren	County 17/	CNALA	_ District		Frame	
	an /Anci						
Lift		Course: Baser	nent Soil Design	Soil Soil(Type): Sa	andy, Silty, Clayey	None	
Depth Me	asured Inches	Subbase	Base	Sand Clay, Sen	i-Gr., Clay-Gr. I	ime (% by Wt.): 1	st Appl
Lot Size.		Block Base	Binder Base (	Class		2	nd Appl
Unit of D	eviationF	Base	I	Design Depth	InchesC	Cement (% by Vol.	)
1. Section	on No.						
2. Test	No.	7	8	9 725-5°9	/0	//	
3. Date		7-25-89	7-2559	775 509	7-2589	7-76-89	
4. Time							
5. Statio	n 🖾						
6. Locat	ion	CENTER	South	roith	South	North	
7. Depth		3.d litt	3,0 1.5+	3.dlift	411 L.Ft	411.1.11	<del>1</del>
8. Sta. L	imits Sect. Being Tested						<u> </u>
	9. Standard Count						<del> </del>
5. Station 6. Location 7. Depth 8. Sta. Lim 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1	10. Moisture Count						<del> </del>
	11. Moisture Count Ratio						+
	12. Moisture, PCF						
	13. Standard Count						
ج ج	14. Density Count						<del> </del>
ensil	15. Air-gap Count(If Used)						
Ω	16. Density Count Ratio						<del>-</del>
	17. Wet Density, PCF					<u> </u>	<del> </del>
st ues	18. Dry Density, PCF		22				
Te	19. Moisture Content, %	14.6	130	14.9	15-8	16.6	
sity	From Standard 20. Density Curve	101.2	101.2	101.7	101.7	101.7	<del> </del>
Standard Density	21. Standard Density Curve Number				. 3-	960	,
ıdard	In-Place Density 22. % of Standard	100.5	961	1047	103.2	17.8	
Star	23. Specified percent of Standard Density	95	95	95	95	75	
24. No. 0	of Samples in Lot			<u> </u>			<del></del>
	oraic Sum of Deviations in Lo			ļ			+
	from SV = Algebraic sum of Lo						<del></del>
27. Algel	braic sum of deviation oplicable lots				-		-
28. Total	No. of Samples Used					<del> </del>	1-0-
29. Avg 1	Dev. applicable lots = Blk 27 Blk 28						
Distril	bution:			Simed	2:111	aurs	>

226-74	415		FIELD DENS	ITY DATA		C	Grenada, MS
Proj	Ceppers Lagon	County C	EnAda	District	-	Frame	
	an LAACC						
Lift		Course: Baser	ment Soil Design	Soil Soil(Type): Sa	andy, Silty, Clayey	None	
Depth Me	asured Inches	Subbase	Base	Sand Clay, Sem	ii-Gr., Clay-Gr. I	Lime (% by Wt.): 1s	st Appl
Lot Size		Block Base	Binder Base (	Class		2n	d Appl
Unit of D	eviationI	Base	r	Design Depth	InchesC	Cement (% by Vol.)	
1. Section							
2. Test	No.	12	13	14	15	16	17
3. Date		7-26-89	7.26.89			7-27-89	7-27.
4. Time							
5. Statio	n						
6. Locat	ion						
7. Depth	-	5+46.F1	54/1:11	6.46. L.F1	pth. L.Ft	7th L.Ft	TIL Li
8. Sta. L	Limits Sect. Being Tested						
	9. Standard Count						
oisture	10. Moisture Count						
	11. Moisture Count Ratio						
	12. Moisture, PCF						
<del></del>	13. Standard Count						
>	14. Density Count						
Density	15. Air-gap Count(If Used)						
ă	16. Density Count Ratio						
	17. Wet Density, PCF						
st Jes	18. Dry Density, PCF		Įr.	. 6.			
Test Values	19. Moisture Content, %	15.8	189	180	169	168	17.
sity	From Standard 20. Density Curve	101.2	101.2	101.2	101.2	101.2	10/-
Den	21. Standard Density Curve Number						
Standard Density	22. In-Place Density % of Standard	978	10/.6	1036	104-1	103.1	102-
Stan	23. Specified percent of Standard Density	95	95	95	95	95	95
24. No. 0	of Samples in Lot						
	oraic Sum of Deviations in Lo	I					<u> </u>
26. Dev.	from SV = Algebraic sum of Lo	t					
27. Algeb	oraic sum of deviation plicable lots				-		<u> </u>
28. 7º-4a1	No. of Samples Used			<u> </u>			
29. Avg 1	Dev. applicable lots = Blk 27 Blk 28						
Distrib	oution:			<del></del>	1:111		

226-7			FIELD DENS				Grenada, MS
Project	Koppers begre	County Co	1 no di	District		Frame	_0
Technici	an LAACE	COMPONENT:	(circle one)	MATERIAL: (c	rircle one)	TREATMENT:	
Depth Me	easured Inches	Subbase	Base	Band Clay, Sen	ni-Gr., Clay-Gr.	Lime (% by Wt.): 1	st Appl
							nd Appl
Unit of D	Peviation	Base	I	Design Depth	Inches(	Cement (% by Vol.	)
1. Section				=			]
2. Test	No.	18	19	Dr.	21	2.2	23
3. Date							
4. Time							
5. Static	on						
6. Locat	ion	N	5.	N	5	2	5
7. Depth		841 1. F.	8+L 1.F1	91/2 (, 1+	GAL GIFT	10+1. CIFF	10/1
8. Sta. L	imits Sect. Being Tested						
	9. Standard Count						
ture	10. Moisture Count						
1	11. Moisture Count Ratio						
	12. Moisture, PCF				· - · · · · · · · · · · · · · · ·		-0
1	13. Standard Count						
	14. Density Count				<del></del>		
Density	15. Air-gap Count(If Used)						1
De	16. Density Count Ratio						
	17. Wet Density, PCF						
es	18. Dry Density, PCF						
Test Values	19. Moisture Content, %	18.8	168	18.9	18:5	16.6.	18
ity	From Standard 20. Density Curve	101.7	101.7	101.2	181.7	101.2	10/-3
Dens	21. Standard Density Curve Number						
Standard Density	In-Place Density 22. % of Standard	101-8	100.9	100.6	1041	104.0	104.
Stan	23. Specified percent of Standard Density	95	95	95	95	95	95
24. No. o	f Samples in Lot						
25. Algeb	raic Sum of Deviations in Lo						
6. Dev. 1	from SV = Algebraic sum of Lo						
	raic sum of deviation				•		
	No. of Samples Used						
29. Avg 1 1	Dev. applicable lots = Blk 27 Blk 28						
Distrib	ution:	<u> </u>		<del></del>	10/1	1/6	arê
					11011	11 1.11	1-6

226-74	15		FIELD DENSI	TY DATA		Gı	enada, MS
nois O	oppirs lagres	County Gra	1-A d is	District			
rechnicia:	MAICE	_COMPONENT: (c	ircle one)	MATERIAL: (ci	rale one)	TREATMENT:_	
Lift		Course: Basem	ent Soil Design S	Soil Soil(Type): Sa	ndy, Silty, Clayey	None	
	sured Inches			Sand Clay, Sem	i-Gr., Clay-Gr. L		
				lass			i Appl
Unit of De	viationB	ase	D	esign Depth	InchesC	Cement (% by Vol.)	
1. Section	ı No.						
2. Test N	io.	24	25	26	27	28	
3. Date		SK					
4. Time							
5. Station	1						
6. Locati	on .	Noth	South	Sec: 1/2	CENTER FINAL SOIL	North	
7. Depth		117h L.F.	111/ L.FI	Final Soil	Final Scil	FINAL Soil	
8. Sta. L	imits Sect. Being Tested						
	9. Standard Count						
visio 1	10. Moisture Count						
	11. Moisture Count Ratio						
	12. Moisture, PCF						
	13. Standard Count						
_	14. Density Count						
Density	15. Air-gap Count(If Used)						
ŭ	16. Density Count Ratio						
	17. Wet Density, PCF						
e s	18. Dry Density, PCF		72				
Test Values	19. Moisture Content, %	18.8	198	17.0	16.9	182	
sity	From Standard 20. Density Curve	101-2	101.7	101.2	101.2	101.2	<u> </u>
Standard Density	21. Standard Density Curve Number					605	
dard	22. In-Place Density % of Standard	1007	101:4	1029	104.7	99.7	
Stan	23. Specified percent of Standard Density	95	95	95	95	95	ļ
24. No. 0	f Samples in Lot						<u> </u>
	oraic Sum of Deviations in Lo					<del> </del>	
	from SV = Algebraic sum of Lo	t			<u> </u>		
27. Alge	oraic sum of deviation plicable lots				-		ļ
	No. of Samples Used						<del> </del>
29. AVE I	Dev. applicable lots = Blk 27 Blk 28						<u> </u>
Distri	bution:				1.1/1	ano	

## SOIL-BENTONITE LAYER DENSITY TESTS

226-74	115	FIELD DENSITY DATA				Grenada, MS		
Pros Repper LAGICE		County Granda		District		_Frame_,		
Technician 1.7.1 (1		COMPONENT: (circle one)				TREATMENT:		
				Sand Clay, Semi-				
	asureu menes			ass				
	eviationB			esign Depth	InchesCe	ement (% by Vol.)_		
			T	91				
1. Section No.		/	2	3	4	5	6	
2. Test No.		7-31-59	7-31.89	7-31.59	7-31-89	7-31-84	731-8	
3. Date								
4. Time								
5. Station								
6. Location from Q. 7. Depth Below Subgrade(Emb.)								
<del> </del>	imits Sect. Being Tested			•				
Moisture	9. Standard Count							
	10. Moisture Count							
	11. Moisture Count Ratio							
	12. Moisture, PCF	<b>3</b> 1						
Density	13. Standard Count		-					
	14. Density Count						19	
	15. Air-gap Count(If Used)							
	16. Density Count Ratio		of the second					
	17. Wet Density, PCF	**	® ·					
	18. Dry Density, PCF							
Standard Density Values	19. Moisture Content, %	777	22.7	70.9	741	24.7	25	
	From Standard	23.7 99.3	993	993	993	993	99	
	20. Density Curve							
	21. Standard Density Curve Number In-Place Density	98.6	99.7	101.2	95.6	98.5	100.	
	Specified percent of	95	0.5	95	95	95	95	
			7.3					
<del> </del>	of Samples in Lot	-		VITIL I	AR COP	V		
25. Algebraic Sum of Deviations in Lot  26. Dev. from SV = Algebraic sum of Lot No. of Smpls in Lot			MID-S	<del>JUIN L</del>	40 001			
				94	•			
	braic sum of deviation							
28. Total No. of Samples Used					鼓			
	Dev. applicable lots = Blk 27 Blk 28		,		, 1			
Distri	bution: 15+ BE14	onite LAY	Er	Signed	soll 11	anci		
	DENSITY + A random Ar	KEN At			16/10-	T		
random Area. Title 5.C.T.								

226-7415

#### FIELD DENSITY DATA

Grenada, MS

226-74	Keppers Lagar	C.	A.A.da			Frame	
oject	n l'Ance	.County1_2		MATERIAL (cir	cle one)	TREATMENT:	
chnicia	n [ A-1-( C	.COMPONENT: (c	ircle one)	MATERIAL: (CIT	cie olie)		<u> </u>
ft	15 t	Course: Basem	ent Soil Design	Soil Soil(Type): San	dy, Silty, Clayey	None	
epth Mea	asured Inches			Sand Clay, Semi-			
ot Size_		Block Base					
nit of De	eviationBa	se	D	esign Depth	Inches	Cement (% by Vol.)	
. Section	n No.						
2. Test l		7	8	9	10		
		7-31-89	7-31-59	7-31-89	7-31-89		
3. Date							
. Time							
Station							
	ion from Q						
	Below Subgrade(Emb.)						Ä.
Sta. L	imits Sect. Being Tested			<del></del>		1	
	9. Standard Count					-	
iture	10. Moisture Count						
Moisture	11. Moisture Count Ratio					ļ	
	12. Moisture, PCF						
	13. Standard Count						
19	14. Density Count						
Density	15. Air-gap Count(If Used)						
Den	16. Density Count Ratio						
	17. Wet Density, PCF						
- M	18. Dry Density, PCF				<del> </del>		
Test Values	19. Moisture Content, %	23.9	70.6	22.4	201	4	
	From Standard		993	99.3	99.3	<u> </u>	
Standard Density	20. Density Curve	99.3	11-3	1.7			
i De	21. Standard Density Curve Number In-Place Density	60 5	1.70	100 3	100	,	0
ndarc	<sup>22</sup> - % of Standard	98.5	103.8	100.2	105 1	-	
Star	23. Specified percent of Standard Density	95	95	95			-
4. No. 0	f Samples in Lot				D 44-		-
_	raić Sum of Deviations in Lot		MID-SC	JUTH LA	R COL	<u> </u>	
6. Dev.	from SV = Algebraic sum of Lot No. of Smpls in Lot		11110				
	praic sum of deviation						
	No. of Samples Used					•	
	Dev. applicable lots = Bik 27 Bik 28					,	
Distrit	101 0-1	wite las	1 / · /		21	Manes	
DISTRIC	131 DENT	WIL LING	101,	Signed	4.6/1	11 Cares	

226-7	415		FIELD DENS	SITY DATA		(	Grenada, MS
Pro	Keppers Lagera	County /Tr	- n.Ada	District		Frame	
Technici	an <u>l/Avcl</u>	_COMPONENT: (c	circle one)	MATERIAL: (c	ircle one)	TREATMENT:	
Lift	(F) 1.*	Course: Basen	nent Soil Design	Soil Soil(Type)	andy, Silty, Clayey	None	
Depth Me	easured Inches	Subbase	Base	Sand Clay, Sem	i-Gr., Clay-Gr.	Lime (% by Wt.): 1:	st Appl
Lot Size		Block Base	Binder Base	Class	<u> </u>	2r	nd Appl
Unit of D	DeviationE	Base	1	Design Depth	Inches(	Cement (% by Vol.)	)
1. Section	on No.						
		1	2	3	4	5	6
		8-1289	8-12-89	8-12-89	8-12-89	8-12-89	8-17-
			<u> </u>				
			9 9				К
6. Loca	tion from <b>Q</b>						
7. Depth	Below Subgrade(Emb.)						
8. Sta. I	imits Sect. Being Tested		2				
	9. Standard Count						
Technician  Lift	10. Moisture Count						
	11. Moisture Count Ratio						
	12. Moisture, PCF						
Density	13. Standard Count						
	14. Density Count						
nsit	15. Air-gap Count(If Used)						
å	16. Density Count Ratio						
	17. Wet Density, PCF						
ies ies	18. Dry Density, PCF		3	·			
Teg	19. Moisture Content, %	25.2	24.9	22.7	26.1	25.1	20
sity	From Standard 20. Density Curve	98.3	98.3	98.3	98.3	98.3	98
Dent	21. Standard Density Curve Number	81					
dard	22. In-Place Density % of Standard	99.5	102.7	103.4	103.3	100.1	95
Stan	23. Specified percent of Standard Density	95	95	95		95	9
24. No. 0	of Samples in Lot		•				
	oraic Sum of Deviations in Lot		130				
26. Dev.	from SV = Algebraic sum of Lot No. of Smpls in Lot				y <u>.</u>		
27. Algel	braic sum of deviation oplicable lots		<u> </u>				
2/ otal	No. of Samples Used						
29. Avg 1	Dev. applicable lots = Blk 27 Blk 28						+
Distril	oution: 15+ LAYE.	r OF BEN	HONHE		11/1	1/ am	TC
	/			Signed	Jeff		<u> </u>
				Title	// 1.5	.61	
					/		

226-74	15		FIELD DENSIT				enada, MS
Project /	Eppere Lagora	Sounty GAG	- AdA	District		_Frame	()-
Technicia	n L'ANCE	_COMPONENT: (ci	rcle one)	MATERIAL: (cir	cle one)	_TREATMENT:	
Depth Mea	asured Inches	Subbase	BaseBinder Base Cla	_ Sand Clay, Semi-	Gr., Clay-Gr. Li	me (% by Wt.): 1st	Appl
Unit of De	eviationB	ase	De:	sign Depth	InchesCe	ment (% by von)_	
1. Section	n No.						17
2. Test	No.	7	8	9	10	0 10 06	017
3. Date		8-17-89	8-12-89	8-12-89	8-12-89	8-12.89	812
4. Time							
5. Statio	n						
6. Locat	ion from Q_						
7. Depth	Below Subgrade(Emb.)						
8. Sta. L	imits Sect. Being Tested						
	9. Standard Count						
ture	10. Moisture Count						
Moisture	11. Moisture Count Ratio						
	12. Moisture, PCF				ş:		
	13. Standard Count						
	14. Density Count					(1	7
Density	15. Air-gap Count(If Used)						<u> </u>
Ď	16. Density Count Ratio			r'			
	17. Wet Density, PCF						
+ e e	18. Dry Density, PCF						
Test	19. Moisture Content, %	25.7	24.4	26.0	79.0	22.8	7
	From Standard 20- Density Curve	98.3	98.3	98.3	98.3	98.3	98
Standard Density	21. Standard Density Curve Number						
lard	22. In-Place Density % of Standard	96.8	98-5	98.3	950	105.0	105.
Stand	23. Specified percent of Standard Density	95	95	.95	95	95	95
	of Samples in Lot						
	braic Sum of Deviations in Lo	t					ļ
26. Dev.	from SV =Algebraic sum of Lo	t					ļ
	braic sum of deviation opplicable lots						
	1 No. of Samples Used						1
	Dev. applicable lots = Blk 27	āt					
<u> </u>	bution: 15+ LAYEY  # 12- OVER	OF BEN	tonite	Si	Self	anc	Q
	#12- OVEN	moistur	E-25.1	Signed	111		

Component   Comp	226-7	415		FIELD DENSIT	TY DATA			Grenada, M
COMPONENT: (circle one) TREATMENT:  Course: Basement Soil Design Soil Soil(Type)(Sindy, Sity, Cisye) None Depth Measured Inches Subbase Design Soil Soil(Type)(Sindy, Sity, Cisye) None Send Clay, Semi-Gr., Clay-Gr. Line (% by Wt.): Isl Appl. Line (% by Wt.): Isl Appl. Design Depth Inches Cement (% by Wt.): Isl Appl. Design Depth Inches Cement (% by Vol.)  Section No. 2. Test No. 3. Date S19-67 S-19-67	Pr	Keppers Inge	¿County Gree	n Ada	District		Frame	
Depth Measured Inches Subbase Base Send Clay, Semi-Gr., Clay-Gr. Lime (% by Wi.): 1st Appl    Section No.	Technici	an //1.2 (1.	_COMPONENT: (ci	rcle one)	MATERIAL: (ci	rcle one)	TREATMENT	;
Lot Size	Lift		Course: Baseme	ent Soil Design S	oil Soil(Type)	ndy, Silty, Clayey	None	
Unit of Deviation Base Design Depth Inches Cement (7, by Vol.)  1. Section No.  2. Test No.  3. Date \$\textit{Q-19.57}\$ \$\textit{R-19.57}\$ \$\textit{Q-19.57}\$ \$\texti	Depth Me	easured Inches	Subbase	Base	Sand Clay, Semi	-Gr., Clay-Gr.	Lime (% by Wt.):	lst Appl
1. Section No.   2. Test No.   3. Date   4. Time   5. Station   5. Station   6. Location from Q.   7. Depth Below Subgrade(Emb.)   8. Sta. Limits Sect. Being Tested   9. Standard Count   10. Moisture Count Ratio   12. Moisture, PCF   13. Standard Count   14. Denaity Count Ratio   12. Moisture, PCF   16. Density Count Ratio   17. Wet Density, PCF   19. Moisture Count Ratio   17. Wet Density, PCF   19. Moisture Count Ratio   17. Wet Density, PCF   19. Moisture Count Ratio   17. Wet Density, PCF   19. Moisture Count Ratio   17. Wet Density, PCF   19. Moisture Countert, %   19. 7   24. 0   27. 4   27. 4   27. 4   27. 4   27. 4   27. 4   27. 5   27.	Lot Size		Block Base	Binder Base Cl	ass		2	nd Appl
2. Test No. 3. Date  4. Time 5. Station 6. Location from Q. 7. Depth Below Subgrade(Emb.) 8. Sta. Limits Sect. Being Tested 9. Standard Count 10. Moisture Count 11. Moisture Count 11. Moisture Count 12. Moisture, PCF 13. Standard Count 15. Airgap Count(If Used) 16. Density Count Ratio 17. Wet Density, PCF 18. Dry Density, PCF 19. Moisture Count, % 19. Moisture Count 19. Moisture Count 10. Moisture Count 10. Moisture Count 10. Moisture Count 11. Moisture Count 12. Moisture Count 13. Standard Count 14. Density Count 15. Airgap Count(If Used) 16. Density Count Ratio 17. Wet Density, PCF 19. Moisture Counten, % 19. 7. 7. 24.0 25. Managed Density 26. Density Coure 27. Managed Density 28. Specified percent of 98.3 29. 79. 79. 79. 79. 79. 79. 79. 79. 79. 7	Unit of I	DeviationB	ase	De	sign Depth	Inches	Cement (% by Vol	•)
4. Time  5. Station 6. Location from Q. 7. Depth Below Subgrade(Emb.) 8. Sta. Limits Sect. Being Tested 9. Standard Count 11. Moisture Count Ratio 12. Moisture Count 11. Moisture Count 11. Moisture Count 11. Moisture Count 11. Moisture Count 11. Moisture Count 11. Moisture Count 11. Moisture Count 11. Moisture Count 11. Density Count 11. Density Count 11. Density Count 11. Air-gap Count(If Used) 11. Count Ratio 11. Wet Density, PCF 11. Subject Count Ratio 12. Moisture Coutent, % 19. 7. 7. 74. 0 19. 7. 7. 74. 0 19. 7. 7. 74. 0 19. 7. 7. 74. 0 19. 7. 7. 74. 0 19. 7. 7. 74. 0 19. 7. 7. 7. 7. 7. 7. 7. 7. 7. 7. 7. 7. 7.	1. Secti	on No.						
4. Time  5. Station 6. Location from Q. 7. Depth Below Subgrade(Emb.) 8. Sta. Limits Sect. Being Tested 9. Standard Count 11. Moisture Count Ratio 12. Moisture Count 11. Moisture Count 11. Moisture Count 11. Moisture Count 11. Moisture Count 11. Moisture Count 11. Moisture Count 11. Moisture Count 11. Moisture Count 11. Density Count 11. Density Count 11. Density Count 11. Air-gap Count(If Used) 11. Count Ratio 11. Wet Density, PCF 11. Subject Count Ratio 12. Moisture Coutent, % 19. 7. 7. 74. 0 19. 7. 7. 74. 0 19. 7. 7. 74. 0 19. 7. 7. 74. 0 19. 7. 7. 74. 0 19. 7. 7. 74. 0 19. 7. 7. 7. 7. 7. 7. 7. 7. 7. 7. 7. 7. 7.	2. Test	No.	/	2	3	4		
4. Time  5. Station 6. Location from Q. 7. Depth Below Subgrade(Emb.) 8. Sta. Limits Sect. Being Tested 9. Standard Count 11. Moisture Count Ratio 12. Moisture Count 11. Moisture Count 11. Moisture Count 11. Moisture Count 11. Moisture Count 11. Moisture Count 11. Moisture Count 11. Moisture Count 11. Moisture Count 11. Density Count 11. Density Count 11. Density Count 11. Air-gap Count(If Used) 11. Count Ratio 11. Wet Density, PCF 11. Subject Count Ratio 12. Moisture Coutent, % 19. 7. 7. 74. 0 19. 7. 7. 74. 0 19. 7. 7. 74. 0 19. 7. 7. 74. 0 19. 7. 7. 74. 0 19. 7. 7. 74. 0 19. 7. 7. 7. 7. 7. 7. 7. 7. 7. 7. 7. 7. 7.	3. Date		8-19-89	8-1989	8-1954	8-19-59		
6. Location from Q. 7. Depth Below Subgrade(Emb.) 8. Sta. Limits Sect. Being Tested 9. Standard Count 10. Moisture Count 11. Moisture Count 11. Moisture Count 11. Moisture Count 12. Moisture, PCF 13. Standard Count 14. Density Count 16. Density Count 17. Wet Density, PCF 18. Dry Density, PCF 19. Moisture Content, % 19. From Standard 20. Density Count 21. Sandard Membry 22. Sandard Membry 21. Sandard Membry 22. Sandard Membry 22. Sandard Membry 23. Standard Density 24. No. of Samples in Lot 25. Algebraic Sum of Deviations in Lot 26. Dev. from Sty Algebraic Sum of Deviations in Lot 27. Linepphication of Samples Used 28. Avg 1 Dev. applicable lots = Bit 28  Distribution: 15 f L: Ft of F. Bentonitt Refersh A Fter Tain And  Signed.  3. Signed.								#3%) #3
7. Depth Below Subgrade(Emb.)  8. Sta. Limits Sect. Being Tested  9. Standard Count  10. Moisture Count  11. Moisture Count  11. Moisture Count  12. Moisture, PCF  13. Standard Count  14. Density Count  15. Air-gap Count(if Used)  16. Density Count Ratio  17. Wet Density, PCF  18. Dry Density, PCF  19. Moisture Content, %  19. Moisture Content, %  19. To Be Density Count  19. Standard Density Count  20. Density Courte  21. Surve Number  22. Specified percent of  23. Sandard Density  24. No. of Sandard Density  25. Algebraic Sum of Deviations in Lot  26. Dev. from SV Algebraic sum of Lot  27. Lifebpric spin of Seviation  28. Avg 1 Dev. applicable lots = \frac{Bit \frac{27}{Bit \frac{28}{Bit \fr	5. Statio	on						
8. Sta. Limits Sect. Being Tested  9. Standard Count 10. Moisture Count Ratio 11. Moisture Count Ratio 11. Moisture Count Ratio 12. Moisture, PCF  13. Standard Count 14. Density Count 15. Air-gap Count(If Used) 16. Density Count Ratio 17. Wet Density, PCF 18. Dry Density, PCF 19. Moisture Countent, % 19. Moisture Countent, % 19. Prom Standard 20. Density Curve 21. Standard Density 22. Standard Density 23. Specified percent of 23. Standard Density 24. No. of Samples in Lot 25. Algebraic Sum of Deviations in Lot 26. Dev. from SV Algebraic sum of Lot 27. Ligherraic Sum of Deviations in Lot 28. Avg 1 Dev. applicable lots = Bit 28  Distribution: 15 + L: Ft of F Bentonith  Reftost A Fter Yain And  Signed  34. August Standard 25. Signed  35. Signed  36. Signed  37. August Standard 26. Dev. from SV Algebraic sum of Lot 27. Algebraic Sum of Deviations in Lot 28. Avg 1 Dev. applicable lots = Bit 28  Distribution: 15 + L: Ft of F Bentonith  Reftost A Fter Yain And  Signed  38. Signed  39. Signed  30. Signed  3	6. Loca	tion from Q.						
9. Standard Count 10. Moisture Count 11. Moisture Count Ratio 12. Moisture, PCF 13. Standard Count 14. Density Count 15. Air-gap Count(If Used) 16. Density Count Ratio 17. Wet Density, PCF 19. Moisture Content, % /9.7 24.0 23.4 27.4 20. Density Curve 21. Standard Density 22. In-Place Density 23. Specified percent of gas	7. Depti	n Below Subgrade(Emb.)				•		
10. Moisture Count 11. Moisture Count Ratio 12. Moisture, PCF 13. Standard Count 14. Density Count 15. Air-gap Count(If Used) 16. Density Count Ratio 17. Wet Density, PCF 18. Dry Density, PCF 19. Moisture Content, % /9.7 24.0 23.4 27.4 20. Density Curve 21. Standard Density 22. Risenabra 22. Standard Density 22. Moisture Density (Dry Count Martio Courve Number Cou	8. Sta. 1	Limits Sect. Being Tested						81
11. Moisture Count Ratio 12. Moisture, PCF  13. Standard Count 14. Density Count 15. Air-gap Count(If Used) 16. Density, PCF 18. Dry Density, PCF 19. Moisture Content, % / 9.7 34.0 23.4 27.4  20. Density Curve 98.3 98.3 98.3 98.3  20. Density Curve 98.3 98.3 98.3 98.3  21. Standard Density 22. % of Standard 22. % specified pensity 22. % sof Standard 23. Standard Density 62. Standard Density 62. Standard Density 62. Standard Density 62. No. of Samples in Lot 62. Algebraic Sum of Loviations in Lot 62. Dev. from SV -No. of Samples in Lot 62. Dev. from SV -No. of Samples in Lot 62. Dev. from SV -No. of Samples in Lot 62. Dev. from SV -No. of Samples in Lot 62. Dev. from SV -No. of Samples in Lot 62. Dev. from SV -No. of Samples in Lot 62. Dev. from SV -No. of Samples in Lot 62. Dev. from SV -No. of Samples in Lot 62. Dev. from SV -No. of Samples in Lot 62. Dev. from SV -No. of Samples in Lot 62. Dev. from SV -No. of Samples in Lot 62. Dev. from SV -No. of Samples in Lot 62. Dev. from SV -No. of Samples in Lot 62. Dev. from SV -No. of Samples in Lot 62. Dev. from SV -No. of Samples in Lot 63. Algebraic Sum of Loviation 64. Signed 6		9. Standard Count						
11. Moisture Count Ratio  12. Moisture, PCF  13. Standard Count  14. Density Count  15. Air-gap Count(If Used)  16. Density Count Ratio  17. Wet Density, PCF  19. Moisture Content, % / 9.7 24.0 23.4 27.4  20. From Standard Density  20. Density Curve 98.3 98.3 98.3 98.3 98.3  21. Standard Density  22. Specified percent of 23. Standard 23. Specified percent of 23. Specified percent of 23. Standard Density 95 95 95  24. No. of Samples in Lot  25. Algebraic Sum of Deviations in Lot  26. Dev. from St Algebraic sum of Lot  27. Algebraic sum of Seviation  Total No. of Samples tots = Bit 22  28. Avg 1 Dev. applicable lots = Bit 28  Distribution: 15 f L: ff of Benfanith And Signed  PERCENT AFFER FAIN And Signed  Signed  PERCENT AFFER FAIN And Signed  Signed	ture	10. Moisture Count						
13. Standard Count   14. Density Count   15. Air-gap Count(If Used)   16. Density Count Ratio   17. Wet Density, PCF   18. Dry Density, PCF   19. Moisture Content, %   /9.7   24.0   23.4   274   274   275   20. Density Curve   21. Standard Density Curve Quenter   22. In-Place Density   22. In-Place Density   /04. 7   97.7   /02.8   97.7   27.7   /02.8   97.7   27.7   /02.8   97.7   /02.8   /0	sis	11. Moisture Count Ratio						
14. Density Count   15. Air-gap Count(If Used)   16. Density Count Ratio   17. Wet Density, PCF   18. Dry Density, PCF   19. Moisture Content, %   /9.7   34.0   23.4   274   274   274   275   20. Density Curve   983   98.3	Depth Mea Lot Size_ Unit of De 1. Section 2. Test N 3. Date 4. Time 5. Station 6. Locati 7. Depth 8. Sta. Li  Aligeb 24. No. of 25. Algeb 27. Algeb 27. Algeb 27. Angle	12. Moisture, PCF				-		<u> </u>
15. Air-gap Count(If Used)  16. Density Count Ratio  17. Wet Density, PCF  18. Dry Density, PCF  19. Moisture Content, % /9.7 34.0 23.4 27.4  20. Density Curve  21. Standard Density 22. In-Place Density 22. In-Place Density 23. Specified percent of 23. Standard Density 24. No. of Samples in Lot 25. Algebraic Sum of Deviations in Lot 26. Dev. from SV —Algebraic sum of Lot 27. Algebraic Sum of Deviation  Total No. of Samples Used  28. Avg 1 Dev. applicable lots = Bit 278  Distribution: /5 f L: Ff CF BENICNIFE  REferst After Tain And		13. Standard Count						
17. Wet Density, PCF  18. Dry Density, PCF  19. Moisture Content, % /9.7 34.0 23.4 27.4  20. From Standard Density 21. Curve Number 21. Standard Density 22. % of Standard Density 23. Specified percent of 23. Specified percent of 23. Standard Density 24. No. of Samples in Lot 25. Algebraic Sum of Deviations in Lot 26. Dev. from SV —Algebraic sum of Lot No. of Smples in Lot 27. Algebraic sum of Deviation 27. Algebraic sum of deviation 28. Avg 1 Dev. applicable lots = Blk 27. Specified percent of 25. Avg 1 Dev. applicable lots = Blk 28. Distribution: /5 + L: Ft of Bentonite  PETERS A Ftor TAIN And Signed Applicable Lots  Signed Applicable Lots		14. Density Count						
17. Wet Density, PCF  18. Dry Density, PCF  19. Moisture Content, % /9.7 34.0 23.4 27.4  20. From Standard Density 21. Curve Number 21. Standard Density 22. % of Standard Density 23. Specified percent of 23. Specified percent of 23. Standard Density 24. No. of Samples in Lot 25. Algebraic Sum of Deviations in Lot 26. Dev. from SV —Algebraic sum of Lot No. of Smples in Lot 27. Algebraic sum of Deviation 27. Algebraic sum of deviation 28. Avg 1 Dev. applicable lots = Blk 27. Specified percent of 25. Avg 1 Dev. applicable lots = Blk 28. Distribution: /5 + L: Ft of Bentonite  PETERS A Ftor TAIN And Signed Applicable Lots  Signed Applicable Lots	nsit	15. Air-gap Count(If Used)						
18. Dry Density, PCF  19. Moisture Content, %  19. Moisture Content, %  20. From Standard 20. Density Curve  21. Standard Density 22. Mo of Standard 23. Specified percent of 23. Standard Density  24. No. of Samples in Lot  25. Algebraic Sum of Deviations in Lot 26. Dev. from SV = Algebraic sum of Lot 27. Algebraic sum of deviation  28. Avg 1 Dev. applicable lots = Bik 27  29. Avg 1 Dev. applicable lots = Bik 28  Distribution: /5 + L: Ft of Bentonite  Algebraic Sum of Deviations  Signed  Algebraic Sum of Jeviation  Signed  Algebraic Sum of Jeviation  Signed  Algebraic Sum of Jeviation  Signed  Algebraic Sum of Jeviation  Signed  Algebraic Sum of Jeviation  Signed  Algebraic Sum of Jeviation  Signed	۵	16. Density Count Ratio						
20. Dev. from Standard 20. Dev. from Standard 21. Standard Density 22. In-Place Density 23. Specified percent of 23. Standard Density 24. No. of Samples in Lot 25. Algebraic Sum of Deviations in Lot 26. Dev. from SV -Algebraic sum of Lot 27. Algebraic sum of Samples in Lot 28. Aughraic sum of Samples in Lot 29. Avg 1 Dev. applicable lots = Blk 27 Bis 28  Distribution: /5 f L: Ff of Bentonift  Signed  Autoca  Signed  James Signed  Ja		17. Wet Density, PCF						
20. Dev. from Standard 20. Dev. from Standard 21. Standard Density 22. In-Place Density 23. Specified percent of 23. Standard Density 24. No. of Samples in Lot 25. Algebraic Sum of Deviations in Lot 26. Dev. from SV -Algebraic sum of Lot 27. Algebraic sum of Samples in Lot 28. Aughraic sum of Samples in Lot 29. Avg 1 Dev. applicable lots = Blk 27 Bis 28  Distribution: /5 f L: Ff of Bentonift  Signed  Autoca  Signed  James Signed  Ja	ies ies	18. Dry Density, PCF		12		·		
20. Density Curve  21. Standard Density Curve Number  22. In-Place Density 22. 7, of Standard  23. Specified percent of 23. Standard Density 24. No. of Samples in Lot  25. Algebraic Sum of Deviations in Lot 26. Dev. from SV — Algebraic sum of Lot 27. Algebraic sum of deviation 28. Algebraic sum of deviation  29. Avg 1 Dev. applicable lots = Bit 27. Bit 28  Distribution: /5 f L: Ft & F & Bentonite  Refersh A Fter Tain And  Signed  31. Standard Density 32. John Standard Density 33. Standard Density 34. No. of Samples in Lot 35. Algebraic sum of Deviations in Lot 36. Dev. from SV — Algebraic sum of Lot 37. Algebraic sum of deviation 38. Standard Density 39. Standard Density 39. Standard Density 39. John Standard D	Tes	19. Moisture Content, %	19.7	240	23.4	27.4		
24. No. of Samples in Lot  25. Algebraic Sum of Deviations in Lot  26. Dev. from SV = Algebraic sum of Lot No. of Smpls in Lot  27. Algebraic sum of deviation  27. In applicable lots  29. Avg 1 Dev. applicable lots = Blk 27 Blk 28  Distribution: /St Lift of Bentonite  Refer to A Ffor thin And  Signed  Signed	sity		98.3	98.3	98.3	98.3	·	
24. No. of Samples in Lot  25. Algebraic Sum of Deviations in Lot  26. Dev. from SV = Algebraic sum of Lot No. of Smpls in Lot  27. Algebraic sum of deviation  27. In applicable lots  29. Avg 1 Dev. applicable lots = Blk 27 Blk 28  Distribution: /St Lift of Bentonite  Refer to A Ffor thin And  Signed  Signed	Den	21. Standard Density Curve Number						
24. No. of Samples in Lot  25. Algebraic Sum of Deviations in Lot  26. Dev. from SV = Algebraic sum of Lot No. of Smpls in Lot  27. Algebraic sum of deviation  27. In applicable lots  29. Avg 1 Dev. applicable lots = Blk 27 Blk 28  Distribution: /St Lift of Bentonite  Refer to A Ffor thin And  Signed  Signed	dard	22. % of Standard	104.7	97.1	102.8		2	
25. Algebraic Sum of Deviations in Lot  26. Dev. from SV = Algebraic sum of Lot  27. Algebraic sum of deviation  27. In applicable lots  28. Avg 1 Dev. applicable lots = Blk 27  29. Avg 1 Dev. applicable lots = Blk 28  Distribution: /St Lift of Bentonite  Algebraic Sum of Deviation   Samples Used  29. Avg 1 Dev. applicable lots = Blk 28  Signed  Signed	Stan	23. Standard Density	95	95	95	95		
26. Dev. from SV = Algebraic sum of Lot 27. Algebraic sum of deviation 27. in applicable lots  28. Avg 1 Dev. applicable lots = Blk 27  29. Avg 1 Dev. applicable lots = Blk 28  Distribution: /St L:Ft of Bentonite  Refest A Fter tain And  Signed	24. No.	of Samples in Lot						
27. Algebraic sum of deviation  27. In applicable lots  29. Avg 1 Dev. applicable lots = Blk 27  Blk 28  Distribution: /5 + L: Ft of Bentonite  Refest A Fter tain and	25. Alge	braic Sum of Deviations in Lot						
Distribution: 15t Lift of Bentonite  RETEST AFTER TAIN AND Signed	26. Dev.	from SV = Algebraic sum of Lot					<u> </u>	
29. Avg 1 Dev. applicable lots = Blk 27  Distribution: 15t L: Ft OF: Bentonite  Refest A Fter tain And Signed	27. Alge	ebraic sum of deviation pplicable lots				.,		
Distribution: 15t Lift OF Bentonite  Refest A Fter rain And Signed Signed	Tota	l No. of Samples Used						-
	29. Avg						<u></u>	
	Distri	bution: 15+ L:F+	of Ben	lonite.		11/11	1/aux	C
		RETEST A	Ffer PAIN	r and	Signed	7/16		
					Title	/ // 5	S. C. T.	

226-741	.5		FIELD DENSI	TY DATA			renada, MS
k	5 CPGEVS LAGCON	County Cry	NADA	District		Frame	{}
echniciar ift Depth Mea	sured Inches	_COMPONENT: (c Course: Basem Subbase	ent Soil Design	Soil Soil(Type) So Soil Soil(Type) So	andy, Silty, Clayer	None	t Appl
_ot Size_		Block Base					
Jnit of De	viationE	lase		Design Depth	InchesC	Jement (% by Vol.).	
1. Section							
2. Test I	ło.	/	2	5 00	8 22-89	0-77-09	8-27-1
3. Date		8.22-89	8-2781	8-2281	8 22-81	8 22 5	0 00 0
4. Time							
5. Station	1						
6. Locati	ion from Q						
7. Depth	Below Subgrade(Emb.)						
8. Sta. L	imits Sect. Being Tested						
	9. Standard Count					-	
Moist	10. Moisture Count						
	11. Moisture Count Ratio						1
	12. Moisture, PCF			<u> </u>			
ensity	13. Standard Count	\$k			1 -1		<del> </del>
	14. Density Count			<u> </u>	retest		<del> </del>
	15. Air-gap Count(If Used)				# 3		
De	16. Density Count Ratio						<del> </del>
	17. Wet Density, PCF					<del>                                     </del>	
e + s	18. Dry Density, PCF		E	<del></del>	2/2	2/2	<del> </del>
Test Values	19. Moisture Content, %	24.9	25.0		000	90 3	98.
sity	From Standard 20. Density Curve	98.3	18.5	98.3	18.)	18.7	70.
Dens	21. Standard Density Curve Number		7.5		0//	97.6	95
Standard Density	22. In-Place Density % of Standard	95.3	93.5	101.7	966	9/16	95
Stan	23. Specified percent of Standard Density	95	95	95	1 75		
24. No.	of Samples in Lot						
	braic Sum of Deviations in L					<del></del>	
26. Dev.	from SV = Algebraic sum of L	ot ot					
27. Alge	braic sum of deviation pplicable lots					_	
	al No. of Samples Used						10
29. Avg	1 Dev. applicable lots = Blk 27 Blk 28	-11				111	
Distr	ibution: ZNJ L	AGEY-BE.	ntonitE	Signed	Jeff	Mance	2
				Title	11.5	<u>. C - /</u>	

226-7	415		FIELD DENSI				renada, MS
Pr	Koppers lagoes	County Gr	= NADA	District	8	Frame	<del></del>
Technici	an VANCE	_COMPONENT: (	circle one)	MATERIAL: (ci	rcle one)	TREATMENT:_	
Lift							
=				Sand Clay, Semi		ime (% by Wt.): 1s	
				lass			
Unit of E	DeviationE	Base	D	esign Depth	InchesC	ement (% by Vol.)	
1. Section	on No.						
2. Test	No.	7	8	9	10		12
3. Date		8-22-89	8-2289	8-27-579	8-22-89	8-22-89	822
4. Time							
5. Statio	on						
6. Loca	tion from Q						
7. Depti	Below Subgrade(Emb.)						
8. Sta. I	Limits Sect. Being Tested						
	9. Standard Count						
pist	10. Moisture Count						
	11. Moisture Count Ratio						
	12. Moisture, PCF						
	13. Standard Count						
ţ	14. Density Count						
	15. Air-gap Count(If Used)						
Do	16. Density Count Ratio						
	17. Wet Density, PCF						
e c	18. Dry Density, PCF		-				
Test Values	19. Moisture Content, %	24.8	25.3	242	27-5	24.7	2
	From Standard 20. Density Curve	98.3	98.3	98.3	98.3	98.3	98
Dens	21. Standard Density Curve Number						
Standard Density	In-Place Density 22. % of Standard	99-5	97.3	95.3	95-1	99.7	100
Stand	23. Standard Density	95	95	95	95	95	9
	of Samples in Lot						
	braic Sum of Deviations in Lo	t					
26. Dev.	from SV = Algebraic sum of Lo	t					
27. Aige	ebraic sum of deviation pplicable lots						
	l No. of Samples Used						
H	1 Dev. applicable lots = Blk 27 Blk 28					_	
		1.51 12-	ida de		1.11	11/2	
	ibution: 2nd lag	YEY- DE	NICNITE	Signed	- JU	ano	· V
					11/51	CT	
				Title	<u>v ). C</u>		

MID-SOUTH TESTING LABORATORIES, INC. Grenada, MS FIELD DENSITY DATA 226-7415 Project Koppers LAGOON County Grenada District Frame Technician / ANCE COMPONENT: (circle one) MATERIAL: (circle one) \_\_TREATMENT:\_\_\_ Course: Basement Soil Design Soil Soil(Type) Sandy, Silty, Clayey None\_\_\_ Base\_\_\_\_\_ Sand Clay, Semi-Gr., Clay-Gr. Lime (% by Wt.): 1st Appl.\_\_\_\_ Inches \_\_\_\_\_Subbase Depth Measured \_\_\_\_\_2nd Appl.\_\_\_\_ \_\_\_\_Block Base Binder Base Class\_\_\_ Lot Size\_\_\_\_ Cement (% by Vol.)\_\_\_ \_\_\_\_Inches\_\_ \_\_\_\_ Design Depth\_\_\_ Base \_\_ Unit of Deviation\_\_\_ 1. Section No. 2. Test No. 3. Date 4. Time 5. Station 6. Location from Q 7. Depth Below Subgrade(Emb.) 8. Sta. Limits Sect. Being Tested 9. Standard Count Moisture 10. Moisture Count 11. Moisture Count Ratio 12. Moisture, PCF 13. Standard Count

14. Density Count Density 15. Air-gap Count(If Used) 16. Density Count Ratio 17. Wet Density, PCF 18. Dry Density, PCF 19. Moisture Content, % From Standard Standard Density 20. Density Curve 21. Standard Density Curve Number In-Place Density % of Standard 23. Specified percent of Standard Density 24. No. of Samples in Lot 25. Algebraic Sum of Deviations in Lot 26. Dev. from SV = Algebraic sum of Lot 27. Algebraic sum of deviation 28. Total No. of Samples Used 29. Avg 1 Dev. applicable lots = Blk 27
Blk 28 Distribution: 2Nd LAGET - BENTONITE

Signed\_

2~~7	415		FIELD DENS				irenada, M
Project_	Keppies / pycos	County C	nAda	District		Frame	
	an / D. 7 CC						
Lift		Course: Basen	nent Soil Design	Soil Soil(Type): 8a	ndy, Silty, Clayey	None	
		Subbase		Sand Clay, Semi			
Lot Size		Block Base					
Unit of I	DeviationI	3ase	E	esign Depth	InchesC	Cement (% by Vol.)	<del></del>
1. Section	on No.						
2. Test	No.	/	2	5	Cj.	5	6
3. Date	2 5	8.31.51	8-31.57	8.31.84	(37.57	03/59	5 31.
4. Time							
5. Static	on						
6. Loca	tion from Q_						
7. Depth	Below Subgrade(Emb.)					<u> </u>	
8. Sta. I	imits Sect. Being Tested						
	9. Standard Count						
Co.	10. Moisture Count						
	11. Moisture Count Ratio						
	12. Moisture, PCF						
	13. Standard Count						
	14. Density Count						
nsit	15. Air-gap Count(If Used)						
Õ	16. Density Count Ratio	1					
Density	17. Wet Density, PCF						
st ies	18. Dry Density, PCF						
Test Values	19. Moisture Content, %	27.0	29.0	26.0	31-8	31.6	2
sity	From Standard 20. Density Curve	983	98.3	98.3	98.3	953	98
Standard Density	21. Standard Density Curve Number	ā			S#6		
dard	22. In-Place Density % of Standard	966	92.8	98.8	89.8	87.8	9
Stan	23. Specified percent of Standard Density	95	95	95	95	95	9
24. No. 0	of Samples in Lot						
	oraic Sum of Deviations in Lot						, in the second
26. Dev.	from SV = Algebraic sum of Lot						
27. Algel	braic sum of deviation oplicable lots						
2 tal	No. of Samples Used					-	
29. Avg 1	Dev. applicable lots = Blk 27 Blk 28						35
Distrit	oution: 3rd lay	Er-BEN	to Nite	Signed	SIL	1/cm	1. T. C.
	,			orkiten-	1.11		

226-74	15		FIELD DENS	ITY DATA		Gi	enada, ma
oject #	CAPLIS LAGGER	_County	1. Ada	District		_Frame	
	1/1/2/1-	COMPONENT: (c	ircle one)	MATERIAL: (circ	le one)	_TREATMENT:	
ift		Course: Basem	ent Soil Design	Soil Soil(Type): San	dy, Sitty, Clayey		Appl
epth Mea	asured Inches	Subbase	Base	Sand Clay, Semi-	Gr., Clay-Gr. Li	me (% by w.c.). 1st	Appl.
ot Size_		Block Base					
nit of De	eviationB	ase		Design Depth	InchesC	ement (% by vol.)_	
1. Section					1	1	
2. Test I		7	5	9	10	- //	75
3. Date		8-51-59	8-3/51	8.31.87	8-31-87	9-18-9	9-1-8
4. Time							
5. Statio	2						
	ion from Q						
	Below Subgrade(Emb.)						,
	imits Sect. Being Tested						3
o. 3(a. L	9. Standard Count			·			
Moisture	10. Moisture Count						
	11. Moisture Count Ratio					in List	VI- TE
12 13 2	12. Moisture, PCF					FEFES!	11/1
	13. Standard Count	reto # 2	# /	A 6/4			
ţ	14. Density Count						
ensi	15. Air-gap Count(If Used)						
Α	16. Density Count Ratio						
	17. Wet Density, PCF		Design Depth Inches Cement (% by Vol.)  \$\frac{1}{8\cdot 3\cdot 8\cdot 3\cdot 8\cdot 3\cdot 3\cdot 8\cdot 9\cdot 8\cdot 3\cdot 8\cdot 9\cdot 8\cdot 3\cdot 8\cdot 9\cdot 9\cdot 8\cdot 9				
ies ies	18. Dry Density, PCF					000	7
Test Values	19. Moisture Content, %	25.5		26.15	24		98.
ity	From Standard 20- Density Curve	983	983	18.5	98.5	78.3	18.
Dens	21. Standard Density Curve Number				015	0.0	Cj -
ard	In-Place Density % of Standard	98.3	956	94.5	76.5	99	1 //
Standard Density	23. Standard Density	95	95	95	95	75	95
	of Samples in Lot						
	braic Sum of Deviations in Lo	ot					
	from SV = Algebraic sum of Lo						
	braic sum of deviation						
	il No. of Samples Used						
	Dev. applicable lots = Blk 27 Blk 28						
	Dev. applicable for - Blk 28	1	1 40, 11,-	*	0. 111		
Distri	ibution: 5rd [AG	161- 106-	CTUNITE	America (1994)	/10/11/	Mince	

225-7			FIELD DENS				Grenada, MS
Pro 4	Koppers lagon	County_Gr	CARDA	District		Frame	
Technici	an 1/p.100	_COMPONENT: (	circle one)	MATERIAL: (c	ircle one)	TREATMENT:	
Lift		Course: Baser	nent Soil Design	Soil Soil(Type): Sa	andy, Silty, Clayey	None	
Depth Me	easured Inches	Subbase	Base	Sand Clay, Sem	i-Gr., Clay-Gr.	Lime (% by Wt.): 1	st Appl
Lot Size	<u></u>	Block Base	Binder Base C	Class		2	nd Appl
Unit of D	eviationE	ase	r	Design Depth	Inches	Cement (% by Vol.	)
1. Section	on No.						
2. Test	No.	13	14	15	16		
3. Date		9-1-87	9-1-89	9-1-59	9-1-89		
4. Time							
5. Static							
6. Loca	tion from <b>Q</b>						
7. Depth	Below Subgrade(Emb.)						
8. Sta. I	Limits Sect. Being Tested			rEtest	refest		
	9. Standard Count		g:	4 12	11 //:		
iure	10. Moisture Count			* / )	# 14		
isi	11. Moisture Count Ratio						
Density isture	12. Moisture, PCF						
	13. Standard Count						
	14. Density Count						
nsity	15. Air-gap Count(If Used)						
D	16. Density Count Ratio						
	17. Wet Density, PCF						
es es	18. Dry Density, PCF		*	≅			
Test Values	19. Moisture Content,-%	79.8	31.7	25.5	74.8		
	From Standard 20. Density Curve	98.3	98.3	98.3	98.3		
Standard Density	21. Standard Density Curve Number	D#					
dard	22. In-Place Density % of Standard	943	91.0	99.7	99-8		
Stan	23. Specified percent of Standard Density	95	95	95	95		
24. No. 0	of Samples in Lot	· · · · · · · · · · · · · · · · · · ·			_		
25. Algel	oraic Sum of Deviations in Lot						
26. Dev.	from SV = Algebraic sum of Lot No. of Smpls in Lot						
27. Alge	braic sum of deviation oplicable lots						
	No. of Samples Used						
29 .vg 1	Dev. applicable lots = Blk 27 Blk 28						
Distri	oution: 3rd LAGC	r - BEI	rterite		n:1	1///111	~
	0, 2 0, 7	•		Signed	- HH		Ct
				Tist-	// /	S.CT.	
				Title	1/		

226-74	15		FIELD DENSIT	Y DATA			renada, MS
roject /	Keppers begoon	County Gr	NADA	District		_Frame	
`echnicia:	MARCO	COMPONENT: (c)	ircle one)	MATERIAL: (ci	rcle one)	_TREATMENT:_	
Depth Mea	sured Inches	Subbase	Base	Sand Clay, Semi	-Gr., Clay-Gr. L	ime (% by Wt.): 1s	t Appl
	viationB			sign Depth	InchesC	ement (% by Vol.)	
1. Section	n No.						
2. Test I	Vo.	/	2	3	9-17-59	<u> </u>	6
3. Date		9-12-57	9-1289	9-1.7-87	9-17-50	7-17-84	9-12
4. Time						•	
5. Station	n		·				
6. Locat	ion from Q						
7. Depth	Below Subgrade(Emb.)						
8. Sta. L	imits Sect. Being Tested						
	9. Standard Count						
Sensity Moisture SS a	10. Moisture Count						
	11. Moisture Count Ratio						<del>                                     </del>
	12. Moisture, PCF						
Density	13. Standard Count		refest				
	14. Density Count		41				
nsit	15. Air-gap Count(If Used)		TP /				
ď	16. Density Count Ratio						
	17. Wet Density, PCF				ļ		
e s	18. Dry Density, PCF		·	·			1
Test Values	19. Moisture Content, %	28.6	24.9	24.7			
sity	From Standard 20. Density Curve	98.3	98.3	98.3	28.3	98.3	18.
Standard Density	21. Standard Density Curve Number					1.2/	1 103
dard	In-Place Density 22- % of Standard	91.4	100.2	97.8	10/./	103.9	99
Stan	23. Specified percent of Standard Density	95	95	95	95	75	1 / 2
24. No.	of Samples in Lot						
	braic Sum of Deviations in Lo				<del> </del>		
	from SV = Algebraic sum of Lo	<u></u>				-	
27. Alge	braic sum of deviation pplicable lots						-
28. Tota	1 No. of Samples Used						
29. Avg 1	Dev. applicable lots = Blk 27 Blk 28		<u> </u>	3 3 3 3 3		111	
Distri	bution: 4th 1, F,	1-BEN	torite	Signed	Je,	11/Cm	nel
				Title		5.C.T	

226	<b>4</b> 5		FIELD DE	NSITY DATA		G	renada, MS
Projec	Koppers lagor	County 6	enAda	District		Frame	
	an VANCE						
				ign Soil Soil(Type): S			
Depth Me	easured Inches	Subbase	Base	Sand Clay, Sen	ni-Gr., Clay-Gr. I	lime (% by Wt.): 1s	t Appl
Lot Size		Block Base	Binder Base	Class		2n	d Appl
Unit of D	DeviationE	Base		Design Depth	InchesC	Cement (% by Vol.)	
1. Section							<del></del>
2. Test		~7	8	9	10	//	12
3. Date		· · · · · · · · · · · · · · · · · · ·					
4. Time	Œ.						
5. Statio		<u></u>					
	tion from <b>Q</b>						
<del></del>	Below Subgrade(Emb.)						
8. Sta. I	Limits Sect. Being Tested						
	9. Standard Count						
Moist	10. Moisture Count						
	11. Moisture Count Ratio						
	12. Moisture, PCF						
ıty	13. Standard Count	refest	1.E. +E5	+			VEFES
	14. Density Count	1.6/2.3/	11 / 1 ^	7			11 11
nsity	15. Air-gap Count(If Used)	# lo	H GY				771
De	16. Density Count Ratio						
	17. Wet Density, PCF		<del></del>		Cle one)  Indy, Silty, Clayey  Gr., Clay-Gr. Lim  InchesCem  ///  //  //  //  //  //  //  //  //		
e c	18. Dry Density, PCF						
Test Values	19. Moisture Content, %	72.4	76.	9 26.9	25.9	28	28
ity	From Standard 20- Density Curve	98.3	98.	3 98.3	98.3	98.3	98.
Dens	21. Standard Density Curve Number						
Standard Density	In-Place Density 22. % of Standard	102.9	99.	3 96.4	103.1	94.7	96
Stan	23. Specified percent of Standard Density	95	95	95	95	95	95
24. No. 0	of Samples in Lot						
	oraic Sum of Deviations in Lot						
26. Dev.	from SV = Algebraic sum of Lot No. of Smpls in Lot						
27. Alge	braic sum of deviation oplicable lots						
28.	l No. of Samples Used						
29. Avg 1	Dev. applicable lots = $\frac{Blk}{Blk} \frac{27}{28}$						
Distri	bution: 4th L, Ft.	-BENT	crite	-	1/1//	ans	
		<del></del>		Signed	Juli !	-1:0	
				Title	5.6	1	

226-74	15		FIELD DENSI	TY DATA			renada MS
roject /	oppers frances	County Cy	: NA SA	District		Frame	<u> </u>
ochaicia.	1/11166	COMPONENT: (c	ircle one)	MATERIAL: (ci	rcle one)	_TREATMENT:_	
echnicia		Course: Basem	ent Soil Design S	Soil Soil(Type);-82	ndy, Silty, Clayey	None	
	sured Inches		Base	Sand Clay, Semi	i-Gr., Clay-Gr. L	ime (% by Wt.): 1s	t Appl
	isured McNes						d Appl
Lot Size_	eviationB	ase	De	esign Depth	InchesC	ement (% by Vol.)	
1. Section		13	14	15	16	17	18
	10.	9-17-87	9-17-809	9-17-53	9-12.89	9-12.89	9-12:
3. Date							
4. Time							
	ion from Q						
<del></del>	Below Subgrade(Emb.)						
<del></del>	imits Sect. Being Tested						
	9. Standard Count	11					
are	10. Moisture Count						
Moisture	11. Moisture Count Ratio						-
	12. Moisture, PCF				8		1211
	13. Standard Count	VEFEST	YEtast	72.7			FEFG
	14. Density Count						H-1
Density	15. Air-gap Count(If Used)	11+17	11,12,13			<u> </u>	
Ď	16. Density Count Ratio						<del> </del>
	17. Wet Density, PCF		7				-
st res	18. Dry Density, PCF		III.		063	222	
Test Values	19. Moisture Content, %	23.1	24,0			902	98
sity	From Standard 20. Density Curve	98.3	98.3	98.3	98.3	78.5	18
Standard Density	21. Standard Density Curve Number			0//	107/	91.1	94
dard	22. In-Place Density % of Standard	100.2		96.4	102.1	94.6	
Stan	23. Specified percent of Standard Density	95	95	95	95	95	95
24. No.	of Samples in Lot					<del> </del>	
ľ	braic Sum of Deviations in Lo						
·	from SV = Algebraic sum of Lo		<u> </u>		-	<del></del>	
27. Alge	braic sum of deviation pplicable lots		<u> </u>	<del> </del>		+	1
	1 No. of Samples Used					<del>                                     </del>	+-()
29. Avg	Dev. applicable lots = Blk 27 Blk 28		1		21	1	
Distri	ibution: 4th (ifi	1-BEN	ton it E	Signed	Je 11	Mance	?
	, ,				1/1/	(T	

#### DRAINAGE LAYER DENSITY TESTS

226-74			Grenada, MS					
roject /	oppers Laguer	County GrE	n Ada	District		Frame		
<b>r</b> echnicis	n <u>VA265</u>	_COMPONENT: (	circle one)	MATERIAL: (ci	rcle one)	TREATMENT:_		
-	asured Inches		Base		i-Gr., Clay-Gr. L			
	eviationB				InchesC			
		asc						
1. Section			2	3	4	5	6	
2. Test	No.	10-13-89	10-13-59	10-13.89	10-13-89	10-13-89	10/38	
3. Date		101701	70.72.	,	, , , , ,			
4. Time								
5. Statio			1/2					
<del> </del>	ion from Q.  Below Subgrade(Emb.)			5	ly .		40	
	imits Sect. Being Tested							
6. Sta. 1	9. Standard Count					類		
l e	10. Moisture Count							
Moisture	11. Moisture Count Ratio							
Σ	12. Moisture, PCF				£			
	13. Standard Count						•1	
	14. Density Count					20	* "	
Density	15. Air-gap Count(If Used)							
Den	16. Density Count Ratio							
	17. Wet Density, PCF							
- w	18. Dry Density, PCF	108.9	107.1	107.8	106.6	109.9	108.	
Test Values	19. Moisture Content, %	5.7	5.7	5-9	5.1	5.5	4	
	From Standard 20. Density Curve	7:7-	<u> </u>					
ensi	21. Standard Density Curve Number	Ü						
ard D	In-Place Density 22. % of Standard							
Standard Density	Specified percent of Standard Density							
<del> </del>	of Samples in Lot							
	braic Sum of Deviations in Lo	t						
i .	from SV = Algebraic sum of Lo							
	braic sum of deviation pplicable lots	53.7		9				
<del></del>	l No. of Samples Used						1-0-	
	Dev. applicable lots = Blk 27 Blk 28							
	12" Fil	L SAND	LAYEr	Signed	20/1	1/ano	<u></u>	
			/			SCT		
				Title		<u>/, </u>		

226-7			FIELD DENS				Grenada, MS
Proj	KOPPERS LAGGEN	County 3/4	ENADA	District		Frame	
	an MANCE						
Lift		Course: Baser	ment Soil Design	Soil Soil(Type): Sa	indy, Silty, Clayey	None	
		Subbase		Sand Clay, Sem		Lime (% by Wt.): 1	st Appl
Lot Size		Block Base	Binder Base	Class		2	nd Appl
Unit of D	PeviationE	Base	1	Design Depth	Inches	Cement (% by Vol.	)
1. Section	on No.						
2. Test	No.	7	8				
3. Date		10-13-89	10-13-89				
4. Time							
5. Static	n						
6. Locat	ion from <b>Q</b>						
7. Depth	Below Subgrade(Emb.)						
8. Sta. I	imits Sect. Being Tested				-		
	9. Standard Count						
Moisture	10. Moisture Count						
No is	11. Moisture Count Ratio				-		
	12. Moisture, PCF						
	13. Standard Count						
<u>.</u>	14. Density Count						
Density	15. Air-gap Count(If Used)						
Ω	16. Density Count Ratio						
	17. Wet Density, PCF						
Test Values	18. Dry Density, PCF	106.9	106.1				
Yal	19. Moisture Content, %	6-2	4.9				
sity	From Standard 20. Density Curve						
Standard Density	21. Standard Density Curve Number						
ıdard	22. In-Place Density % of Standard						
Star	23. Specified percent of Standard Density						
4. No. o	f Samples in Lot						
	raic Sum of Deviations in Lot						
<del></del>	from SV = Algebraic sum of Lot No. of Smpls in Lot						
7. Algeb	raic sum of deviation plicable lots				··· · · · · · · · · · · · · · · · · ·		
8. Total No. of Samples Used							
9 1	Dev. applicable lots = Blk 27 Blk 28						
					51	11	2

#### COVER SOIL DENSITY TESTS

23~9	415		FIELD DENS	ITY DATA		C	Grenada, MS
roje	Keppers LAGOON	_County	ENAGA	District		Frame	<del></del>
rechnici:	an I/ANCE	COMPONENT: (	circle one)	MATERIAL: (c	circle one)	TREATMENT:	
	asured Inches				ni-Gr., Clay-Gr.		
_	asured inches				n-on, Clay-on		
	eviationF						
1. Section						\\\.	
2. Test		,	ス	3	4	5	6
		10-20-89	10.20.89	10.7009	10-20-89	10-20-89	10.208
3. Date 4. Time		16.26.01	70.00 81	10 200	70 20 0 7	70 20 2	76 000
5. Statio	<u> </u>						<u></u>
	ion from <b>Q</b>		n:				
	Below Subgrade(Emb.)						<u> </u>
<del></del>	imits Sect. Being Tested						
0. 0.0. 2	9. Standard Count						
sture	10. Moisture Count						
aistı	11. Moisture Count Ratio						<del></del>
	12. Moisture, PCF			<del></del>	<u> </u>		,
	13. Standard Count						
	14. Density Count						
Density	15. Air-gap Count(If Used)						
Den	16. Density Count Ratio						- X
<i>m</i>	17. Wet Density, PCF						<u> </u>
Test Values	18. Dry Density, PCF	1-1	10. (		1/ 1	1115	10
	19. Moisture Content, % From Standard	15.1	146	16.4	16.1	14.5	100.
nsit	20. Density Curve	100-7	100.7	100.7	10c.7	100.7	100.
d De	21. Standard Density Curve Number  In-Place Density	961	1.75	004		1-11	99.1
Standard Density	<sup>22</sup> % of Standard	95.1	102.0	99.4	104.1	106.1	90
	23. Specified percent of Standard Density	90	90	90	70	10	70
	f Samples in Lot						<u> </u>
	raic Sum of Deviations in Lot						2
	from SV =Algebraic sum of Lot						
27. Algeb	oraic sum of deviation plicable lots			<del></del>			
_	No. of Samples Used						
29. Avg 1	Dev. applicable lots = Blk 27 Blk 28						
31	· 15+ 9" L	iff OF			sell.	ance	2
	Cover 50	176		Signed	The second		<del></del>

226-74	15		FIELD DENSI				Grenada, MS
roject	Keppers LAGREN	County	ENADA	District		Frame	-
echnicia:	VANCE	_COMPONENT: (c	ircle one)	MATERIAL: (ci	rcle one)	TREATMENT	:
enth Mea	sured Inches	Subbase	Base	Sand Clay, Semi	-Gr., Clay-Gr.	Lime (% by Wt.):	
_ot Size_		Block Base	Binder Base Cl	ass			2nd Appl
Init of De	viationB	ase	De	esign Depth	Inches	Cement (% by Vol	.)
1. Section							
2. Test I	No.	7	8	9			
3. Date		10-20-89	10-20-89	10 2089			
4. Time							
5. Station	n						
6. Locati	ion from <b>Q</b>					ļ	
7. Depth	Below Subgrade(Emb.)				"5		
8. Sta. L	imits Sect. Being Tested						
	9. Standard Count	:4					
iure	10. Moisture Count						
Moisture	11. Moisture Count Ratio					řě	-
-	12. Moisture, PCF						
	13. Standard Count						
	14. Density Count						
Density	15. Air-gap Count(If Used)						
Dei	16. Density Count Ratio						
	17. Wet Density, PCF						
- 60 - 60	18. Dry Density, PCF						Ye G
Test Values	19. Moisture Content, %	14.3	14.6	15.1			
	From Standard 20. Density Curve	100.7	100.7	100.7			
Jens	21. Standard Density Curve Number		М				
ard I	In-Place Density 22. % of Standard	100-1	95.4	1050			
Standard Density	23. Specified percent of Standard Density	90	90	90			
	of Samples in Lot						
	oraic Sum of Deviations in Lo	t					
	from SV = Algebraic sum of Lo						
	braic sum of deviation oplicable lots						
	No. of Samples Used						
	Dev. applicable lots = Blk 27 Blk 28						
	15+ 9" ( Cover 5)	lift of		Signed	Jeff	Come. T.	Q
				must be a first	/ フ・/	- /-	

226-74	15		FIELD DENSI	TY DATA		G	renada, MS
roj )	Koppers LAGOON	County Cr	ENADA	District		Frame	
	VANCE						
Lift		Course: Basen	nent Soil Design	Soil Soil(Type): Sa	andy, Silty, Clayey	None	
Depth Me	asured Inches	Subbase	Base	Sand Clay, Sem	i-Gr., Clay-Gr. I	Lime (% by Wt.): 1s	t Appl
Lot Size_		Block Base	Binder Base C	lass		2n	d Appl
Unit of D	eviationB	lase	D	esign Depth	InchesC	Cement (% by Vol.)	
1. Section	n No.						
2. Test	No.	1		3	4	5	<u></u>
3. Date	10	10-23-89	10-27-89	10-2389	10-23-89	10-23-89	10-238
4. Time	Let						
5. Statio	n						
6. Locat	ion from <b>Q</b>						
7. Depth	Below Subgrade(Emb.)						
8. Sta. L	imits Sect. Being Tested						
	9. Standard Count						
sture	10. Moisture Count		V				
sio	11. Moisture Count Ratio						
	12. Moisture, PCF				9		
	13. Standard Count						
>	14. Density Count		·	_	( <b>4</b> )		
Density	15. Air-gap Count(If Used)						
Ď	16. Density Count Ratio						
	17. Wet Density, PCF						
ies ies	18. Dry Density, PCF			E			
Test Values	19. Moisture Content, %	13.4	11.6	12.0	11.6	10-1	9.
sity	From Standard 20. Density Curve	100-7	100.7	100-7	100.7	100.7	100.
Standard Density	21. Standard Density Curve Number		=				
dard	22. In-Place Density % of Standard	111.4	996	92.2	104.6	100.9	102.1
Stan	23. Specified percent of Standard Density	90	90	90	90	90	90
24. No. 0	f Samples in Lot			19			
_	raic Sum of Deviations in Lot						
26. Dev.	from SV = Algebraic sum of Lot No. of Smpls in Lot						
27. Algel	oraic sum of deviation plicable lots						
	No. of Samples Used						
29 1	Dev. applicable lots = Blk 27 Blk 28						
	Jud 91 Cover 50	LiFt O	<i>[-</i>	Signed	2011	lame	
	Cours 50	oi L			11/1	· –	
				Title	<u> </u>	. /	<del></del>

226-74	15		FIELD DE	NSITY DATA			Grenada, MS
roject_/	Eppers Lagran	County Gre	NADA	District		Frame	{}
echnicia	MANCE	_COMPONENT: (	circle one)	MATERIAL: (	(circle one)	TREATMENT	
-	asured Inches			Sand Clay, Se			
nit of De	eviationE	Base		_Design Depth	Inches	Cement (% by Vol	•)
1. Sectio	n No.		<u> </u>				
2. Test l	No.	7					
3. Date		10-23-89					
4. Time							
5. Station	n						
6. Locat	ion from <b>Q</b>						
7. Depth	Below Subgrade(Emb.)						
8. Sta. L	imits Sect. Being Tested						
	9. Standard Count						
ture	10. Moisture Count						
Moisture	11. Moisture Count Ratio						
_	12. Moisture, PCF					2	
	13. Standard Count						
	14. Density Count						
Density	15. Air-gap Count(If Used)		· · · · · · · · · · · · · · · · · · ·				
Der	16. Density Count Ratio						
	17. Wet Density, PCF						
en en	18. Dry Density, PCF						
Test Values	19. Moisture Content, %	13.0	<u> </u>				
	From Standard	100-7					
lsuo	20. Density Curve 21. Standard Density Curve Number	700 7					
D D	In-Place Density	102.0	<del></del>				
Standard Donsity	22. % of Standard  23. Specified percent of Standard Density	90	<u> </u>		<del>                                     </del>		
	L. — · · · · · · · · · · · · · · · · · ·	70					
	f Samples in Lot		163				
	raic Sum of Deviations in Lot from SV = Algebraic sum of Lot No. of Smpls in Lot				<del> </del>	-	
						<del></del>	· ·
	raic sum of deviation plicable lots						
	No. of Samples Used		<u> </u>				-
	Dev. applicable lots = Blk 27 Blk 28	34. /				<del>                                     </del>	
9	" 2Nd 9	" lift	01-	Signed	In1/1	/aux	e
	Cover	Soil		OVENERT-	1110	Jane C.T.	
	-			Title C	// >	· C · / ·	

#### APPENDIX C

Waste Manifests for Sludge Removal

### Rollins Environmental Services (FS) Inc.

Cine Rollins Plaza, P.O. Box 2349, Wilmington, Delaware 19899 .302) 479 2920



### Rollins

August 26, 1988

Mr. Jack L. Stephenson KOPPERS COMPANY, INC. 801 Koppers Building Pittsburgh, PA 15219

Dear Jack:

Please find corrected invoices for the Florence, SC, and Grenada, MS plants. Sorry for the confusion.

Yours Very Truly,

John C. Robbins, P.E.

her will have been a part of the part of t Koppers Company, Grenada Plant Koppers Company, Florence Plant

JCR:jch

15-LTHS

#### \*\*\*\*\*\* \* INVOICE \* \*\*\*\*\*\*

CUSTOMER: KOPPERS COMPANY, GRENADA, MS CUSTOMER ORDER NO.: 14-8-50523 DATE: AUGUST 25, 1988

PROJ NO.: 8187 SALESMAN: GANCE/ULEKOW

SALESMAN # 089/041

ITEM DESCRIPTION	QUANTITY	UNITS	UNIT PRICE	TRUOMA
MOBILIZATION	1	LS	\$7,835.00	\$7,835.00
STABILIZATION	3031.47	TONS	\$32.09	\$97,279.87
ADMIX USED	800.71	TONS	\$38.36	\$30,715.24
PRIMARY DISPOSAL (CWM)	3031.47	TONS	\$125.19	\$379,509.73
PRIMARY TRANSPORT	3031.47	TONS	\$29.90	\$90,640.95
SECONDARY DISPOSAL (PDC)	0	TONS	N.A.	\$0.00
SECONDARY TRANSPORT	0	TONS	N.A.	\$0.00
			TOTAL	\$605,980.79 ========

DATE	ADMIX (LOADS)	ADMIX (TONS)	DISPOSAL (LOADS)	DISPOSAL (TONS)
14-Jul-88	4	103.42		
15-Jul-88	4	97.62		
16-Jul-88	5	122.77		
17-Jul-88	3	75.06		
18-Jul-88	3	75.64	10	250.4
19-Jul-88	3	75.5	12	301.8
20-Jul-88	4	98.2	14	379.56
21-Jul-88	5	127.5	17	434.08
22-Jul-88	1	25	14	339.6
23-Jul-88	_			
24-Jul-88				
25-Jul-88			25	647.57
26-Jul-88			9	235.66
27-Jul-88			9	215.42
28-Jul-88			9	227.38
29-Jul-88			•	
	32	800.71	119	3031.47



Flea	ise pr	int or type. (Form designed for use on elite	(12-p.tch) t, pewriter.)				Form A	pproved. ON	IB No. 20!	60-0039. Expire	s 9-30-
I		UNIFORM HAZARDOUS WASTE MANIFEST	1. Generator's US EPA I M S D   0 0 7 0	Doci	fanifest Iment No.	2. Pag	ge 1			he shaded ed by Fe	
	3.	Generators Name and Mailing Address		2 7 3 4 5 0 0	y Qi	A. Ste	4	lifest Docu	200 277 12	uniber	Kit-
		P. O. Box 160				A 45 7 180	Carry Not the		. n.7 W	de la	
		Tie Flant, Ms. 38960		244			nar Gen	erenor's d			14
		Generator's Phone (601 ) 226-4 Transporter 1 Company Name	4.3.64 6.	US EPA ID Numb	er	C/ Sta	to Tran	sparier's	D .	and the same	
	en lieuw	Dart Transportation (	Co. 101 H	DO 0 9 8 6 5		W-31 46 12 25	100	s Phone			
	7.	Transporter 2 Company Name	8.	US EPA ID Numb	er	10 march 1	Secretary street	sporter's r's Phone	D		4-2-4
	9.	Designated Facility Name and Site Addres	er	1. 1. 1. 1. 1.	F-18-16-17-18-2	nys ID	1-1-	21.			
		CHEMICAL WASTE MANAGEMENT, INC Emelle Facility	<b>.</b>					938-	7020	nen te	
		Alabama Highway 17 at Mile Marker 163	4.6.4	4 4	15/6	none 52-97	21	. 4.8			
		Emelle, Alabama 35459	· · · · · · · · · · · · · · · · · · ·	D 0 0 0 6 2 2	12. Conta			13.	14.		
1	11.	US DOT Description (Including Proper Shipping	g Name, Hazard Class, an	a ID Number)	No.	Туре		Total Jantity	Unit Wt/Vo	. Ye	NG SY
G	8.	RQ Hazardous Waste, So	olid N.O.S.(	K-001)					1 1		95
N E		ORM-E NA-9189	CWM Profile Number	PES-H-53976	0 10 11	ייות	4151	200	P	1.1	L
R	Ъ.		<del>-</del>	GD II 33770	01012	<u> </u>	7 10 1			1.12	
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			CWM Profile Number				ш				
	ਰ.									10.4	T I
			CWM Profile Number			1					
	J.	Additional Descriptions for Materials Listed	Above			K. Har	ndling C	odes for W	lastes Li	sted Above	
		Work Order No. 88071					olis				
		RES P.O. No. 28-0631: Emergency Contact -		884			Ow	Anna E-A		.11	
	dev e	imergency contact	(001) 220 43			b.			d.		
II	15.	Special Handling Instructions and Additions									
		would prohibit it from							75		love
		protection and protection	scrve equipm	tent sten as	Timber	. VIC	us (	21001	J.IIG	ano 9.	LOVE
	16	GENERATOR'S CERTIFICATION: I hereby of proper shipping name and are classified, pack							9y		
		according to applicable international and national			THE STATE OF THE S						10 ha
		If I am a large quantity generator, I certify that economically practicable and that I have select	ed the practicable method	of treatment, storage, or di	sposal curre	ently av	ailable to	me which	minimiz	es the presen	nt and
		future threat to human health and the environment the best waste management method that is as		n afford	10e a good 18	aith eile	er to mir	ıımıze my v	vaste ger		
۸I		Printed Byped Clary ton		Signature	D. C	Pars	The s	· >>		<i>Month Day</i> D 17 II R	Year 88
H	17.	Transporter 1 Acknowledgement of Receipt	of Materials			O				<u>и и п</u> в	00
Ä		Printed/Typed Name		Signature	2 /	7	41	22		Month Day	Year
SP	-k	Transporter Acknowledgement of Receipt	of Materials	Bellevi	- Vi	eld	T_			D 7 11 B	88
TRANSPORTER		Printed/Typed Name	Or Materials	Signature					-	Month Day	Year
Ē				<u> </u>							$\perp V$
	19.	Discrepancy Indication Space									
E C											
┆┞		Facility Owner or Operator: Certification of	receipt of hazardous m			xcept	as note	d in Item		Month) Day	- Vehr
		BA10/10		Signature	1/_				1	1/1/18	18



12	Manifest	To Pa			050-0039. Expires 9-30
vo. 17   5   4 B 0	Document No.	of	is not law.	t requir	ired by Federa
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I	LINIFORM HAZARDOILS 1. Generator's US EP	A ID No.	Manifest	2. Page	1 Informati	on in t	he shaded areas ed by Federal
	3. Generator's Name and Mailing Address Copper's Name and Mailing Name and Mailing Name and Mailing Name and Mailing Name and Mailing Name and Mailing Name and Mailing Name and	0 2 7 5 4 3 0 0	I dol3	A. State	law.  Manifest Docu	internal	
	P. C. Box 160			C	NMA 4	135	75
	Tie Plant, Ms. 38960		1	B. Statt	Generator's ID		
	4. Generator's Phone (601 ) 226-4584  5. Transporter 1 Company Name 6.	US EPA ID Numb	ber	C, Stets	Transporter's	ID .	a de productivos de la constante de la constan
li	Dart Transportation Co. [0]	HD00019181615		of the better to go	sporter's Phone		
	7. Transporter 2 Company Name 8.	US EPA ID Numb	oer 	and Continue to be seen	Transpörter's I sporter's Phone	D	
	9. Designated Facility Name and Site Address 10.	US EPA ID Numb	per	and the state of	Facility's ID		Prince Commence
	CHEMICAL WASTE MANAGEMENT, INC. Emelle Facility				19-938-	7020	A TANKS OF THE STATE OF THE
	Alabama Highway 17 at Mile Marker 163	L D 0 0 0 0 6 2 2	141614		ty's Phone 5/652-97:	21	
	11. US DOT Description (Including Proper Shipping Name, Hazard Class, a	1	12. Conta		13. Total	14. Unit	
G			No.	Туре	Quantity	Wt/Vo	Weste No.
E	a. RQ Hazardous Waste, Solid N.O.S. ORM-E NA-9189	(V_00T)					4.144
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1	D.		AY .		3		
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1	J. Additional Descriptions for Materials Listed Above			K. Hend	ling Codes for W	estes Lis	ted Above
11	Work Order No. 880718029	4 + 6 1			N 11		
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	Oleman Statement Company			b.		, d.	
П	15. Special distribution and additional of the had would prohibit it from being la						
П	protection and protective equip					. 75	_
H	16 GENERATOR'S CERTIFICATION: I hereby declare that the contents	of this consignment are ful	ly and accura	ately desc	rubed above by		
П	proper shipping name and are classified, packed, marked, and labeled, according to applicable international and national government regulations.	and are in all respects in pr				Y	l.
П	If I am a large quantity generator, I certify that I have a program in place economically practicable and that I have selected the practicable metho						
I	future threat to human health and the environment, OR, if I am a small of the best waste management method that is available to me and that I or	quantity generator, I have ma					
J	Printed/Typed Name y ton	Signature	77.	10-	11/200		Month Day Year
4	17.Transporter 1 Acknowledgement of Receipt of Materials				7.7.7		71888
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	18.Transporter 2 Acknowledgement of Receipt of Materials	XX CO	ike			1	7 1 8 8 8
ŀ	Printed/Typed Name	Signature		-			Month Day Year
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	19.Discrepancy Indication Space						1
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+	20.Facility Owner or Operator: Certification of receipt of hazardous a	Signature	manifest e	xcept as	noted in Item		Month Day Year
1	13 1110/1-1	Signature	11/	(7)		1	1.1.5.5



FI	print or type. (Form designed for use on elite (12-pitch) typewriter.	.)				Form Approved. Of	//B No. 205	0-0039. Expires 9-30-88		
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II	Tie Plant, Ms. 38960					Generator's (		10		
	4. Generator's Phone (601 ) 226-4584  5. Transporter 1 Company Name 6	LIC	EPA ID Numb		可读相处	10.4	1	and extreme entre		
	T	Transporter's porter's Phone	ID							
	7. Transporter 2 Company Name 8.	0  H  D  0   0   US	EPA ID Numbe	er	The state of the	Transporter's	D	TEST TO THE PROPERTY OF THE PARTY		
	9. Designated Facility Name and Site Address 10	9 4								
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1	11. US DOT Description (Including Proper Shipping Name, Hazard Class			No.	Туре	Total Quantity	Unit Wt/Vo	Weste No.		
GEN	RQ Hazardous Waste, Solid N.O.S	3. (K-001)	) [	9			T1			
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K						<u> </u>		37		
II	CWM Profile Num	ber		111				1		
Ш	J. Additional Descriptions for Materials Listed Above	*			K. Handli	ng Codes for Wa	stes List	ed Above		
П	Work Order No. 880718029 RES P.O. No. 28-0631		19,7754		a. 1	\ \ \				
	Emergency Contact - (601) 226-	4584			. J	). ) /				
Н	15. Special Handling Instructions and Additional Information 1.	A been a			b.		d:			
11	15. Special Handling Instructions and Additional Information ha would prohibit it from being l	o been a and fill	led. W	o tne hen h	andl:	ve waste ing wear	e wni eve	ich		
I	protection and protective equi									
ŀ	16 GENERATOR'S CERTIFICATION: I hereby declare that the conter	nts of this consign	ment are fully	and accura	tely descr	bed above by				
	proper shipping name and are classified, packed, marked, and labele according to applicable international and national government regul	ations								
	If I am a large quantity generator, I certify that I have a program in pla economically practicable and that I have selected the practicable met	hod of treatment.	storage or disc	osal currer	tiv availal	de to me which o	ninim. 100	the process and		
	the best waste management method that is available to me and that	ill quantity genera	tor, I have mad	e a good fai	th effort to	minimize my wa	iste genei	ation and select		
1	Printed/Typed Clayton	Signature	9.	D. 1	Or:	1/2		onth Day Year		
1	17.Transporter 1 Acknowledgement of Receipt of Materials	-	/		-	10000	<u> U</u>	7 11 18 8 8		
1	Printed/Typed Name	Signature	.//	/ ;	- /		М	onth Day Year		
ł	18.Transporter 2 Acknowledgement of Receipt of Materials	1 Cha	4/1	and	V			7 11 18 8 8		
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1			•							
H	20.Facility Owner or Operator: Certification of receipt of hazardous	materials cover	ed by this m	anifest ex	cept as n	oted in Item 1	9.	5 V - 1		
Γ	Printed/Typed Name 15 /11 /1/17-	Signature		-				onth Day (Year		
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		future threat	to human healt	h and the environ	ment, OR, if I am a small	quantity generator, I	have made a goo	faith effo	ort to minimize my	waste gen	eration and select
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l	16 GENERATOR'S CERTIFICATION: I hereby declare that the contents	of this consignment are fully	and accura	tely des	cribed above by							
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	future threat to human health and the environment. OR, if I am a small q the best waste management method that is available to me and that I c	uantity generator. I have mad	posal currer de a good fai	th effort	lable to me which n to minimize my wa	nnimizes t iste genera	the present and ation and select					
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	P. O. Box 160	CWMA 413581										
	Tie Plant, Ms. 3836		B. State Generator's ID									
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	5. Transporter 1 Company Name											
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1	economically practicable and that I have select	ed the practicable method of treatment, storage, o	or disposal curre	ently ava	ilable to me which	minimiz	tes the present and					
1	future threat to human health and the environr the best waste management method that is av	ment, OR, il I am a small quantity generator, I hav	e made a good f	aith effor	t to minimize my v	vaste ger	neration and select					
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		would prohibit it fro	m being land r	rifed. A	When h	andl	ing wear	c eye	<u>}</u>					
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		economically practicable and that I have selecter future threat to human health and the environments be best waste management.	int. UK, il i am a small quantity d	enerator. I have ma	sposal curre: ide a good fai	ntiy avadı tir ellert i	able to me which i to minimize my wa	ninimizes aste gene	the present and ration and select					
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1	Emergency Contact - (601)	226-4584			021		
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15	. Special Hauding Insurnations and Additional Haddus						
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	according to applicable international and national govern				and to the dee	real have determined to	he
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	future threat to human health and the environment, OR, the best waste management method that is available to	if I am a small quantity generator. I have	made a good fa	aith effort t	o minimize my v	waste generation and sele	ect
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A		UNIFORM HAZARDOUS WASTE MANIFEST	1. Generator's US EPA ID No.	Manifest 3 10 1 0 0	2 Page	1 Informat	tion in	the shaded areas ired by Federal
Ш	3.	Generator's Name and Mailing Address Koppers Company, Ilic	•		A. State	Manifest Doc	ument	Number .
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6	_	. US DOT Description (Including Proper Shipping	3	4 1 Nd.	Туре	Total Quantity	Unit Wt/Vo	Waste No. 38
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	16	GENERATOR'S CERTIFICATION: I hereby d proper shipping name and are classified, packet	eclare that the contents of this consignmen	nt are fully and accur	ately desc	ribed above by		
		according to applicable international and nation	nal government regulations;	W (4)	ង្ ៈ	W 85		
		If I am a large quantity generator, I certify that I economically practicable and that I have selecte	d the practicable method of treatment, stor	age, or disposal curre	ntly availa	able to me which	minimi	zes the present and
ı		future threat to human health and the environmenthe best waste management method that is avi		I have made a good la	oth effort t	o minimize my w	aste ge	neration and select
A		Printed/Typed Name J. D. Clayton	Signature	7.10/	1/2	1	1	Month Deg Year
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	20.	Facility Owner or Operator: Certification of	eceipt of hazardous materials covered	by this manifest ex	cept as	noted in Item	19.	
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(As Required By The Alabama Department of Environmental Management)

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19.Discrepancy Indication Space													
FACILITY						•							
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II	3.	Generator's Name and Mailing Address,		,	9	A. State	Manifest Do	cument N	lumber
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		Work Order No. 8807	2020						
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		Emergency Contact -	(601) 226-4584			b.			
1	15. 5	Special Handling Instructions and Additiona	I Irformation had bee	hobbs ne	to the	abo	vo wact	e wh	ich
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1		according to applicable international and nation If I am a large quantity generator, I certify that I		W.					
П		economically practicable and that I have selecte	d the practicable method of trea	lment, storage, or di	sposal curre	ntiv avada	ble to me which	minimiza	c the present and
П		future threat to human health and the environm the best waste management method that is ava	ent, OR, if I am a small quantity allable to me and that I can affor	generator, I have mi d	ade a good la	ith effort to	o minimize my w	aste gene	ration and select
H	f	Printed/Typed Name J. D. Clayton	Sign	iture .	7	10	1		Month Pay Year
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#### HAZARDOUS WASTE MANIFEST

(As Required By The Alabama Department of Environmental Management)

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	declare that the contents of this consignment are full ed, marked, and labeled, and are in all respects in pri anal government regulations.				Э
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	ed the practicable method of treatment, storage, or di nent, OR, if I am a small quantity generator. I have ma				
the best waste management method that is av	ailable to me and that I can afford				
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18.Transporter 2 Acknowledgement of Receipt	of Materials	, , ,	3	<del>~~</del>	V 1 11 13 10 0
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19.Discrepancy Indication Space					2

20.Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Signature

Month, Day



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Emelle, Alabama 35459  11. US DOT Description including Proper Shipping Name, Herser Class, and to Number)  2. RQ Hazardous Waste, Solid N.O.S. (K-001)  ORM-E NA-9189  CWM Profile Number									
L	20.Fa	cility Owner or Operator: Certification of re	ceipt of hazardous m	aterials covered by this n	nanifest exc	ept as	noted in Item 1	9.	
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	3. Generator's Name and Mailing Address C.  P. O. Box 160  Tie Plant, Ms. 38960  4. Generator's Phone (601) 226-4  5. Transporter 1 Company Name	) 1584	EPA ID Number	A. State CV B. State	Manifed Doc VMA 4 Génerator's II	123	
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	9. Designated Facility Name and Site Address CHEMICAL WASTE MANAGEMENT, INC. Emelle Facility Alabama Highway 17 at Mile Marker 163		PA ID Number	2. H. Facilit	Facility's ID  19-938-  ty's Phone  (652-07		
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	15. Special Handling Instructions and Additional Certify that no acts would prohibit it from protection and protect	m being land fill tive equipment such FRRCAR 30	ed. When lach as imper	handli rvi.ous	ing wear s cloth	r eye	9
	16 GENERATOR'S CERTIFICATION: I hereby det proper shipping name and are classified, packed according to applicable international and national If I am a large quantity generator. I certify that I heconomically practicable and that I have selected future threat to human health and the environme the best waste management method that is available.	f, marked, and labeled, and are in all res al government regulations have a program in place to reduce the vi d the practicable method of treatment, st ent, OR, if I am a small quantity generate	espects in proper condition  volume and toxicity of waterage, or disposal current	ion for trans  vaste genera	sport by highway	ee I have de	the precent and
1	Printed/Typed Name J. D. Clayton  17.Transporter 1 Acknowledgement of Receipt of	Signature	J. D.C	Say	ton	М 10	onth Day Year
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4. Generator's Phone (601 ) 226- 5. Transporter 1 Company Name		PA ID Number		Transporter s.					
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<ol> <li>Designated Facility Name and Site Addr CHEMICAL WASTE MANAGEMENT, II</li> </ol>	10. 002.	A ID Number	G. State Facility's ID						
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11	Work Order No. 8807D9 RES P.O. No. 28-0631 Emergency Contact - (			b.		\ d.	
11	5 Special Handling-Instructions, and, Additional	KIPTURATE had heen a	nnea to ti	100	DOAR ALCIO	te w	hich
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Ш	proper shipping name and are classified, packet	d, marked, and labeled, and are in all re	spects in proper cond	ition for	transport by highw	γaγ	
11	according to applicable international and nation	ial government regulations					
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T	3.	WASTE MANIFEST GEOGRAPHIC STATE AND ADDRESS OF THE STATE	M SIDI 0 0 7 0	2 7 3 4 3 0	101 U.318	A. State	_ law. Manifēst Doc	ument N	umber
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l	7.	Transporter 2 Company Name	8.	US EPA ID No	ımber	2000 Av 1 - 1 - 1 - 1 - 1	Transporter's	STAPPED THE PERSON	
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l		CHEMICAL WASTE MANAGEMENT, INC Emelle Facility	100				9-938- 's Phone	7020	and a second second
ŀ	-	Alabama Highway 17 at Mile Marker 163	ı Aı Lı	D <sub>1</sub> 0 <sub>1</sub> 0 <sub>1</sub> 0 <sub>1</sub> 6 <sub>1</sub> 2	1 2 1 4 1 6 1 4		652-97	21	
1	<del> </del> -	Emelle, Alabama 35459			12. Cont	and the same of	13.	14.	
	11.	US DOT Description (Including Proper Shipping	Name, Hazard Class, and	I ID Number)	. No.	Туре	Total Quantity	Unit Wt/Vo	Weste No.
G	a:	RQ Hazardous Waste, So	olid N.O.S.(	K-001)					
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١		Work Order No. 88071	029				0-81		A CAMA
I		RES P.O. No. 28-0631		28.			0-01	C.	
1	13.	Emergency Contact -	(601) 226-45	84		ь		d.	
1	15.	Special Handling-Instructions and Addition	al_Information 1a	haan addad	l to the	a box	o wast	7	i zah
ı	PEASO	Special Handling Instructions and Addition would prohibit it from	sorneur uad m being lan	oggo added A Fillod	and out	e anov	ng wasi	S WIT	CH
1		would promine at the	stive equipm	ent cuch a	nnen /	ratons	ing wee	ing:	:: and glove:
l	ŀ	protection and protection							4
١	16	'GENERATOR'S CERTIFICATION: I hereby of proper shipping name and are classified, pack	declare that the contents o	this consignment are	fully and accur	ately descri	bed above by	av	
l		according to applicable international and natio			ii proper concin	W	port by mg	-,	
l		If I am a large quantity generator, I certify that economically practicable and that I have select	I have a program in place t	o reduce the volume a	and toxicity of w	aste genera	ited to the deg	ree I have	determined to be
١		future threat to human health and the environi	nent, OR, if I am a small qu	antity generator, I hav	e made a good la	aith effort to	minimize my	vaste gen	eration and select
١	-	the best waste management method that is as Printed/Typed_Name	railable to me and that I ca	n aflord Signature	7	20	70		Month Day Year
۷		J. D. Clayton			r. <i>D.</i>	Chr	Kan	h	7 10 0 0
<u>+</u>	17	Transporter 1 Acknowledgement of Receipt	of Materials			Ú			I V DESERVATION
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PORL	18	Transporter 2 Acknowledgement of Receipt	of Materials	3.4					
L		Printed/Typed Name	1	Signature				/	Month Day Year
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	19	Discrepancy Indication Space							
F	ii L								
ACTLITY	8			45					
	20	Facility Owner or Operator: Certification of	receipt of hazardous ma	aterials covered by t	his manifest e	xcept as	noted in Item	19	
		figited/Typed Name / 7 1		Signature		C			Month Day Year
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A	•	UNIFORM HAZARDOUS 1. Generator'S US EPA ID No. WASTE MANIFEST 1. Generator'S US EPA ID No. M S D Q 0 7 Q 2	Docu	anifest ment No	2. Pag of			ne shaded areas ed by Federal
	3. 4. 5.	Generator's Phone (601) 226-4584  Transporter   Company Name   6.	US EPA ID Numbe		B. Sta	Manifekt Docu WMA 4 e Generator's ID e Transporter's I	23	
			0 0 9 8 6 5  US EPA ID Numbe	81215	Cales Adverse will	nsporter's Phone te Transporter's I	D	
		Transporter 2 Company Name 8.			F. Tra	nsporter's Phone		
	9.	Designated Facility Name and Site Address 10.	US EPA ID Numbe	er	The state of	e Facility's ID 219-938-	2020	
		CHEMICAL WASTE MANAGEMENT, INC. Emelle Facility			H. Fac	ility's Phone	100	
		Alabama Highway 17 at Mile Marker 163  Emelle, Alabama 35459	0 0 0 6 2 2	4 6 4		13. 13. 15/652-97	14.	
1	11	. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID I	Number)	No.	Туре	Total Quantity	Unit Wt/Vo	Weste No.
G	a.	RQ Hazardous Waste, Solid N.O.S. (K-	001)					
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	15	Special Handling Instructions and Additional Colorestion had be	en added t	to the	ab	ove wast	e wh	ich
П		would prohibit it from being land	filled. V	then h	nand	ling wea	r ey	e and alove
		protection and protective equipmen	30040	2-17	. V.I.(	us Choch	LIIG	am grove
		6 GENERATOR'S CERTIFICATION: I hereby declare that the contents of this proper shipping name and are classified, packed, marked, and labeled, and according to applicable international and national government regulations	s consignment are for re in all respects in pr	oper conditi	on for t	ransport by highwi	зу	
		If I am a large quantity generator, I certify that I have a program in place to re economically practicable and that I have selected the practicable method of tr future threat to human health and the environment, OR, if I am a small quant the best waste management method that is available to me and that I can all	eatment, storage, or di ity generator, I have m	isnosaicurr	entiv av	SHOOLE TO THE ANTHER		CO INC PRODUCTIONS
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ļ	1	20.Facility Owner or Operator: Certification of receipt of hazardous mater Printed/Typed Name;	onature		except	as noted in Item	19.	Month Day Ye
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II	3. Generator's Name and Mailing Address C. Kopper's Company	14 SIDI 0 0 1 1 0 2 1 1 3 4 5	310 101 070		Manifest Doc	ument N	Jumber
II	P. O. Box 160			a traction of	NMA 4	123	58
	Tie Plant, Ms. 38960			B. State	Generator's (		
	4. Generator's Phone (601 ) 226-4  5. Transporter 1 Company Name		ID Number	C. State	Transporter's		
	Dart Transportation C	Co. 10  H D  0  0  9  8	81 61 51 812 15	The Medical William	sporter's Phone	4-35-31 4-35-39	
	7. Transporter 2 Company Name		ID Number	3 3 4 5 W	Transporter's	lD .	
	9. Designated Facility Name and Site Address	10. US EPA	ID Number	4 44	sporter's Phone Facility's ID	700 - 6	4
ı	CHEMICAL WASTE MANAGEMENT, INC.		.o mamber		19-938-	7020	
1	Emelle Facility Alabama Highway 17 at Mile Marker 163			H. Fecili	ty's Phone	SPITE BY	
	Emelle, Alabama 35459	1 A L D 0 0 0 0 6			5/652-97	-	
	11. US DOT Description (Including Proper Shipping	Name, Hazard Class, and ID Number)	12. Cont		13. Total	14. Unit	Weste No.
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11	Emergency Contact - (	601) 226-4584		b.			
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II	would prohibit it from	m being land filled	. When h	andl	ing wear	- 606	_
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	proper shipping name and are classified, packed according to applicable international and national	, marked, and labeled, and are in all respec	ts in proper condition	n for tran	sport by highway	•	- 1
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1	20.Facility Owner or Operator: Certification of re Printed/Typed Name	ceipt of hazardous materials covered b	y this manifest ex	cept as r	noted in Item 1		-16 5
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4 Generator's Phone (601 ) 226-4584	6 US EPA ID Number		C SIAIA	Transporter's II	10.74	<b>《大学》等《</b>
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	less and ID Number)	12. Cont	ainers	Total	Unit	Waste No.
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15. Special Handling Instructions and Additional Information	t 1 less salded	to th	e abo	ve wast	e wh	iich
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	3.	Generator's Name and Mailing. Address C		2 2 7 3 3 3 3 0 0	4-1162	A. Sta	te Manifest Doc		The state of the s
		P. O. Box 160	0				WMA 4		30
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11. US DOT Description (Including Proper Ship		12. Cont		13. Total	14. Unit	14,05
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20.Facility Owner or Operator: Certification of Printed/Typed Name	receipt of hazardous materials covered by this	manifest exc	ept as r	noted in Item 1:	9.	
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#### ATTACHMENT B

**Professional Engineer Certification of Closure** 

#### PROFESSIONAL ENGINEER CERTIFICATION OF CLOSURE

Tie Plant, MS

I, Michael W. Bollinger, a Professional Engineer registered in the State of Mississippi, hereby certify, to the best of my knowledge and belief, that I have verified closure activities at:

Koppers Industries, Inc.

Grenada Plant

for the surface impoundment system, EPA I.D. #MSD007027543, owned by Koppers Industries, Inc. and operated by Beazer Materials and Services, Inc. and that closure of the aforementioned facility has been performed in accordance with the facility's closure plan and as noted herein.

Michael W Bollinger	11 - 12 - 12 - 12 - 12 - 12 - 12 - 12 -	January 3, 1990	
Signature		Date	(
Temporary Permit No. 8907	Hall the second of the second	Mississippi	
Professional Engineer License	No.	for State of	
Keystone Environmen	ntal Resources, Inc. 3000 T	ech Center Drive	
	Business Address		
Monr	oeville, Pennsylvania 1514	.6	
	City/State/Zip Code		
	(412) 825-9600		
Business	s Telephone (With Area C	ode)	



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	1.50	Emergency Contact - (	601) 226-45	84					
8	1E	Special Handling Instructions and Additions	al Information			D.		d.	
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	16	and gloves. GENERATOR'S CERTIFICATION: I hereby of	fectore that the contents	of this consignment a	re fully and accur	ately desc	ribed above by		
1		proper shipping name and are classified, pack- according to applicable international and natio			in proper conditi	on for tran	sport by highw	ау	
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		economically practicable and that I have select future threat to human health and the environs	ed the practicable method	of treatment, storage	e, or disposal curre	ently availa	able to me which	ı mınimız	es the present and
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		economically practicable and that I have select future threat to human health and the environ the best waste management method that is an Printed/Typed Name	led the practicable method o ment, OR, if I am a small qui	of treatment, storage, or di antity generator, I have mi	isposal curre	ently avai	ilable to me which	n minimize waste gene	s the present and
V		J. D. Clayton		7 1	). (( <u>)</u>	ast.	00		7 2 2 8 18
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(As Required By The Alabama Department of Environmental Management)

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16 GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.  If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined.	to be
economically practicable and that I have selected the practicable method in realment, storage, or disposition and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and the best waste management method that is available to me and that I can afford  Month. Da	select
Printed/Typed Name  J. D. Clayton  1017R	3 81
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11. US DOT Description (Including Proper Shippin			12. Con	tainers	13.	14.	
	ig Maine, Hazaro Class, and ID N	lumber)	No.	Туре	Total Quantity	Unit Wt/Vo	Waste No.
a. RCRA Hazardous Waste	,Solid N.O.S. (I	K-001)				188	
ORM-E NA-9189	014/14 0 444					A	
b	CWM Profile Number RES	3-H-539	76 0 0 1	DIT	47750		
				1 1		i.	
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<u> </u>							
J. Additional Descriptions for Materials Listed	CWM Profile Number			1	1111		
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Work Order No. 8807 RES P.O. No. 28-0631	P29			(	180		
Emergency Contact - (	(601) 226 4504			a. \		C.	
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5. Special Handling Instructions and Additions	of being had bee	n adder	to the	aho	VO Wast	a.	ch sould
brourne it tiom beit	ig land filliod.	PERRCI	RA3004 (C	2.1	When ha	andli:	ng wear
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IN GENERATOR'S CERTIFICATION LABOR.							
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ı	4. Generator's Phone (6()   1 2264504			B. Su	ite Generator & J	(b.	120
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ı	Emelle Facility Alabama Highway 17 at Mile Marker 163		ï	H. Fac	9-938-702	100 to 12	Concentration of the concentra
	Emelle, Alabama 35459	L D 0 0 0 6 2 2	4 6 4		5/652-97	21	
1	11. US DOT Description (Including Proper Shipping Name, Hazard Class, a	and ID Number)	12. Conta		13. Total	14. Unit	17444
G	a. RCPA Hazardous Waste, Solid N.O.S	S (K-001)	No.	Туре	Quantity	Wt/Vo	Weste No.
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I	J. Additional Descriptions for Materials Listed Above			K. Hand	lling Codes for Wa	stas Lie	ad Abrata
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ı	RES P.O. No. 28-0631			a.	19-81	c,	
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İ	15. Special Handling Instructions and Additional Information had	hoon added to		b.	and the de	d.	
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L	future threat to human health and the environment, OR, if I am a small quithe best waste management method that is available to me and that I called Typed Name	uantity generator, I have mad in afford	e a good fait	h effort	to minimize my wa	ste gener	ation and select
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r	Printed/Typed Name	Signature			7	M	onth Day Year
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-	18.Transporter Acknowledgement of Receipt of Materials Printed/Typed Name	16:00		1			171-1-181-8
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7	20.Facility Owner or Operator: Certification of receipt of hazardous ma	aterials covered by this	mile				
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sse print or type. (Form designed for use on elite (12-pitch) typewriter.)				Form Approved. O	MB No. 20	50-0039. Expires 9-30-8	38 <b>\</b>
UNIFORM HAZARDOUS WASTE MANIFEST MIS D 0 10 17 0	Dor	Manifest cument No.	2. Pag of		tion in requi	the shaded areas red by Federal	
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P. O. Box 160 Tie Plant, Ms.			Will be at the	WMA 4		180	
4. Generator's Phone (601 ) 226-4584					3 6 7		dy de
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FACILI							•				•	
ļ	20	Facility Own	ner or Operator: Certif	ication of	receipt of hazard	ous materials of	overed by thi	s manifest	except	as noted in Ite	m 19.	
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	3.			Mailing Addre	Fac.	01/1 4 2 /	3 4 3 U	0 07 4	A State	⊥ law. e Manifest Do	ument A	lumber
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II	L	Dart	Transı	ortatio	on Co.	U   H D  0	019181615	18   2   5	1. 公共工程學: 中海15-4	spotter a Phone	NO DESCRIPTION	
11	1	Transporter	2 Company	Name	2 2 25		US EPA ID Num		Carte of the Property	Transporter's	The second	
II	9.	Designated	Facility Nam	e and Site A	dress	10.	US EPA ID Numi	ber	W 3	sporter's Phone Facility's ID	e militaria.	Terre are to be a
II				NAGEMENT	INC.					9-938-7	aka	
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	111,	US DOT Desc	ription <i>(Inclu</i>	ding Proper Shi	pping Name, Hazard	Class, and ID Numi	ber)	No.	Type	13. Total Quantity	14. Unit Wt/Vo	Waste No.
G	a.				te, Solid	N.O.S.()	K-001)	1	1		1,,5,15	
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П		Control of the Contro		o. 28-0		06 4504			a. 1	18	C.	
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П	15.	Special Hand	ing Instruct	ons land, Addi	tional Information	had beer	added	to th	e aho	ove wast	e wh	ich would
П		brour	ort it	trem b	cing land	filled.	PERRCRA	.3004 (±	C-1)	When b	iand]	ing wear
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	16	GENERATOR	R'S CERTIFI	CATION: I here	by declare that the c	ontents of this cons	ignment are full	y and accura	ately desc	ribed above by		
		according to a	ipplicable inti	ernational and r	acked, marked, and I national government	regulations						
		economically	practicable a	na inai inave se	hat I have a program lected the practicable	method of treatme	nt storage or de	enosal curro	ntiv availa	this to our which		the everent and
		inture inreal t	o numan nea	ith and the envi	ronment, OR, if I am a	small quantity gen	erator, I have ma	ide a good fa	ith effort t	o minimize my w	asie gene	ration and select
H		Printed/Typed	Name	W - 2017		Signatur	e _()	D	11	-	٨	fonth Day Year
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se print or type. (Form designed for use on elite	(12-pitch) typewriter.)		F	orm Approved. (	OMB No. 2050	-0039. Expires 9-30-8
UNIFORM HAZARDOUS WASTE MANIFEST	1. Generator's US EPA ID No. MIS   D  0   0   7   0 2   7   5   4	Manifest Document No	2. Page of			e shaded areas d by Federal
P. O. Box 160 Tie Plant, Ms. 3890 4. Generator's Phone (601 ) 226-4	50		CV	Manifest Do VMA 1 Generator a	141	mber 03
5. Transporter 1 Company Name  Dart Transportation	6. US EPA	ND Number 8 16 15 18 1 215	This well show a	Tränspörter's oorter's Phon	Street Walter	
7. Transporter 2 Company Name		ID Number	E. State	Transporter's porter's Phon	CONTRACTOR OF THE PROPERTY OF	
<ol> <li>Designated Facility Name and Site Address</li> <li>CHEMICAL WASTE MANAGEMENT, INCEmelle Facility</li> <li>Alabama Highway 17 at Mile Marker 163</li> <li>Emelle, Alabama 35459</li> </ol>	2.	6   2   2   4   6   4	219 H. Facility	Facility's ID 1-938-7 y's Phone 5/652-97	Certification	
11. US DOT Description (Including Proper Shippin			ntainers	13. Total Quantity	14. Unit Wt/Vo	Wasie No.
RCRA Hazardous Waste ORM-E NA-9189	cwm Profile Number RES- H-5	01)				1 mt. W. wante ja
ь.				1×1 11	933	
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Work Order No. 8807 RES P. O. No. 28-063 Emergency Contact -	125048		a. T	ng Codes for \	c.	id Above
prohibit it from bei eye protection and p	ng land filled. PEF protective equipment	RCRA3004 such as	(C-1) imper	When vious	handl cloth	ing wear
16 GENERATOR'S CERTIFICATION: I hereby of proper shipping name and are classified, packed according to applicable international and national area.	ed, marked, and labeled, and are in all resp	nt are fully and acci ects in proper condi	rately descr tion for trans	ibed above by sport by highw	ray	
If I am a large quantity generator, I certify that economically practicable and that I have select future threat to human health and the environing the best waste management method that is av	ed the practicable method of freatment, stor nent, OR, if I am a small quantity generator, aflable to me and that I can afford	age, or disposal cur	rently availal	ble to me whic	h minimizes waste gener	the present and ation and select
Printed/Typed Name  D. Clayton  17.Transporter 1 Acknowledgement of Receipt	Signature	4. D.,	Clari	la	M (	onth Day Year
Printed/Typed Name  H. C. J. J. J. J. J. J. J. J. J. J. J. J. J.	Signature	Cork	u)		M IU	onth Day Year
Printed/Typed Name	Signature	X200	3-30		м 1	onth Day Year
19.Discrepancy Indication Space					*	
20.Facility Owner or Operator: Certification of	Cianatulad	by this manifest			M	onth Day Year



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3. General & Magie CoduMailide Address	•			e Manifest Do	cument N	umber
P. O. Box 160 Tie Plant, Ms. 3896			A	WMA 4	141	
Tie Plant, Ms. 3896 4. Generator's Phone (601 ) 226-4			B. Stat	e Gënërator's	ID	en de
5. Transporter 1 Company Name	6. US EPA ID	Number	C Stat	e Transporter s		
Dart Transportation (			CONTRACT.	sporter's Phon	THE SHOP SHOW	and the second
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Designated Facility Name and Site Address     CHEMICAL WASTE MANAGEMENT, INC.	10. US EPA ID	Number	G. Stati	Facility's ID		
Emelle Facility				9-938-7	020	
Alabama Highway 17 at Mile Marker 163 Emelle, Alabama 35459	A L D 0 0 0 0 6	7. 2. 4. 6. 4	10 mg 10 mg	ity's Phone	704	A Property of
		12. Cont		5/652-97	14.	ene il tertore.
11. US DOT Description (Including Proper Shipping I	Name, Hazard Class, and ID Number)	No.		Total Quantity	Unit	L Weste No.
a. RCRA Hazaidous Waste,	Solid N.O.S. (K-001	)	Туре	Quantity	Wt/Vol	
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<b>b</b> .	CWM Profile Number RES-H-539	76 0 D 1	DIT	480191C	A	
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J. Additional Descriptions for Materials Listed A					100 100 2	
Work Order No. 88072			K. Hand	ing Codes for W	/astes Liste	ed Above
RES P. O. No. 28-0631	5U48		. T	1 RC	238 18	
. Emergency Contact - (	601) 226-4584	*		- 0 1	C.	
		Asset Francisco (See	b.		d.	
15. Special Handling Instructions and Additional	ក្រោមហ៊ុំ had been adde	ed to the	abo	ove wast	e wh	ich would
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eye protection and pro	otective equipment s	such as i	mper	rvious c	Joth:	ing
16 GENERATOR'S CERTIFICATION: I hereby decl	are that the contents of this consignment ar	e fully and accura	ely desc	ribad about his		
proper shipping name and are classified, packed, according to applicable international and national	marked and labeled and are in all recorde	in brober condition	for tran	Sport by highwa	Ŋ	
If I am a large quantity generator, I certify that I ha	ve a program in place to reduce the volume	and toxicity of was	de gener	ated to the deer	an I bayo di	
future threat to human health and the environmen	t. OR. if I am a small quantity generator. I ha					
the best waste management method that is availal Printed/Typed Name	ble to the and mat i can afford	ve made a good fair	n enon to	o minimize my w	aste genera	ation and select
J. D. Clayton	Signature	M.D.	0	0	Mo	onth Day Year
17.Transporter 1 Acknowledgement of Receipt of	Materials	1	<i></i>	X-0->	<u>&gt; 10</u>	7 1214B 8
Printed/Typed Name	Signature	<i>-</i>	7	<u> </u>	NA.	onth Day Year
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18.Transporter 2 Acknowledgement of Receipt of	Materials	-/	<i>D</i>			17 18 18 18
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19. pancy Indication Space						
	*					2:
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		•				1
20.Facility Owner or Operator: Certification of rece	eipt of hazardous materials covered by	this manifest exc	ept as i	noted in Item	19.	
Printed/Typed Name	Signature	11.7/	1, .		Moi	nth Day Year
5700 00 (Par 0 00) Par 1	75 1 160001	1//5/	11.	21121	$_{1}\mathcal{O}_{1}$	7215180



orint or type. (Form designed for use on elite (12-pitch) typewriter.)  UNIFORM HAZARDOUS 1. Generator's US E	PAID No.	/lanifest	2. Pag	e 1 Informat	AB No. 2050-0039. Expires 9-30-8
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P. O. Box 160 Tie Plant, Ms. 38960			62.00	te Generator's (I	AND TO ME A WARRENDS AND A PARTY OF THE PART
Generator's Phone (601 ) 226-4584					
Transporter 1 Company Name 6.	US EPA ID Numb	64)	CST-ST-	të Trënsporter's	
Dart Transportation Co. 10 Transporter 2 Company Name 8.	H D 0   0 9 8  6  5 US EPA ID Numb	8   2 5 er	a traces	nsporter's Phone te Transporter's	the great military implied a "The Street military in the " which dies
1		1 1 1	SERVICE AND	nsporter's Phone	Company of the Compan
Designated Facility Name and Site Address 10	US EPA ID Numb	er	The many	te Facility's ID	
CHEMICAL WASTE MANAGEMENT, INC. Emelle Facility				19-938-7 ility's Phone	020
Alahama Highway 17 at Mile Marker 163	L D 0 0 0 0 6 2 2	4   6   4	200.0	5/652-97	21
. US DOT Description (Including Proper Shipping Name, Hazard Class,	, and ID Number)	12. Cont No.	ainers Type	13. Total Quantity	14. Unit Wt/Vo Weste Nd.
RCRA Hazardous Waste, Solid N	.O.S.(K-001)				
ORM-E NA-9189		10.10.13	- m	HAHAA	
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Additional Descriptions for Materials Listed Above	liber .		K Ha	ndling Codes for M	/estes Listed Above
Work Order No. 880725048 RES P. O. No. 28-0631 Emergency Contact - (601) 226			a. b.	18-01	c.
Special Handling Instructions and Additional Information L. Certily That no adsorbent h	ad been added	to tl	າຄ ລ	bove was	te which woul
prohibit it from being land f	illed. PERRCRA	N30041	(C1	) When	handling weel
eye protection and protective	equipment suc	:h as	imp	ervious	clothing
5 GENERATOR'S CERTIFICATION: I hereby declare that the conterproper shipping name and are classified, packed, marked, and labele according to applicable international and national government regul	ed, and are in all respects in pr	ly and accur oper conditi	ately de	escribed above by ransport by highwa	ау
If I am a large quantity generator, I certify that I have a program in pl	lace to reduce the volume and	sposal curr	ently av	ailable to me which	n minimizes the present and
future threat to human health and the environment, OR, if I am a smatche best waste management method that is available to me and that	t I can afford	a youd I			Month Day Ye
Printed/Typed Name	Signature	D.	(2	anto-	
7. Transporter 1 Acknowledgement of Receipt of Materials				11.	1 47 124 910
Printed/Typed Name	Signature Ui	llir	M	- Ohe	Month Day Yes
8.Transporter 2 Acknowledgement of Receipt of Materials	Signature				Month Day Yes
Printed/Typed Name	Signature				)
9.Discrepancy Indication Space	<u> </u>				
	•				
Facility Owner or Operator: Certification of receipt of hazardou	s materials covered by this	manifest	except	as noted in Item	1 19.
Printed/Typed Name	Signature	121	1		Month Day Yes



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Ш	Tie ] 4. Generator's	Plant, Marchante (601	s. 3890	50				8. St	ate Ger	erator's	iD .	TO TEAL
11	5. Transporter	1 Company Na	me 1 226-2	1584	6. US	EPA ID Numb	er	G SH	on Tran	sporter's	10	Biorei e e
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11	7. Transporter	2 Company Na	me		B. US	EPA ID Numb	er	100	4412	sporter's	and the second state of	CONTRACTOR OFFI
1	9. Designated	Facility Name a	nd Site Address		للللا	111		NP.	A	s Phone		Service Committee
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IL	Emelle, Alat		- Warker 163		ALL DO O	0 6 2 2 2	141614			52-97	21	
	11. US DOT Des	cription (Including	Proper Shipping	Name, Hazard Clas	ss, and ID Number	)	12. Cont	ainers I	1	13. Total	14. Unit	Weste No.
G 8	RCRA	Hazardou	is Wasto	, Solid N	1.0.S.(K-	-001)	140.	Туре		aritity	Wt/Vo	
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١,	Address B			CWM Profile Nun	nber		111	1	1.1	1.1	i l	
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1	F.7 (21.7)	DATE SEE 1	7. Ohn - 1 Milit 1	ig Jano r	ritea. P	BRKCKV.	3004((	2-d)	L71	ien li	and 1	ing wear
1	eye b	LOLECTIO	n and bi	ctective	equipmen	nt such	าลร่	impe	rvi	ous c	loth	ing
1	6 GENERATO	S CERTIFICAT	ION: I hereby de	clare that the conte	nts of this consider	ment are fully	and secure					
ł	p. opc. or upp.	ישום טוום שיייםיי פיי	. 1835) IEU. DACKEC	l, marked, and label al government regu	eri and are in all re	espects in prop	er conditio	n for tra	insport b	y highway	,	1
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	future threat t	o human health ai	nd the environme	ent. OR. if Lam a sma	ill miantity apports							
-	Printed/Typed		ethod that is avai	lable to me and tha	Signature				4			
		Clayton			3	4	$\mathcal{D}$	0	MI			onth Day Year
L <sup>1</sup>		Acknowledgeme	nt of Receipt o	of Materials		121			1	~~~	7 10	h Myk k
	Printed Typed	Name	NI	-12	Signature	~	1		X2.	4_	M	onth Day Year
1	8.Trensporter 2	Acknowledgeme	nt of Receipt	Materials	1 1/-	ra	Res		)a	<u> </u>	b	1712141818
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13	crepancy Inc	dication Space						W_66_				
	<u> </u>					3.6						
20	Facility Owner	or Operator: Ce	ertification of re	ceipt of hazardous	materials covere	ed by this m	anifest exc	ept as	noted	in Item 1	9.	
	Printed/Typed	Name) //	Kinni.		Signature	19	11/	7/				nth Day Year
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ise print or type. (Form designed for use on	elite (12-pitch) typewriter.)				Form Approved. Of	AB No. 205	0-0039. Expires 9-30-88
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WASTE MANIFEST  3. Generator & Name end Mailing Addre	M S D 0 0 7 0 2 7	5 4 3 4 4	0/7/9		⊥ law. ĕ Manifest Doc	ument N	umber
P. O. Box 160				4 600	WMA 4	141	07.4
•	8960			1500000	e Generator's II		Lalian Land
4. Generator's Phone (601 ) 22 5. Transporter 1 Company Name	6-4584	US EPA ID Numb	er		e Transporter's		
Dart Transportati	ov. Co. IO HIDIO	0 9 8 6 5		The state of the same	išporter's Phone	10.102 - 12.02	
7. Transporter 2 Company Name	8.	US EPA ID Numb	er	E Stat	e Transporter's	<b>iD</b>	A Company
				*** BENEA	sporter's Phone	eri diera k	
9. Designated Facility Name and Site A		US EPA ID Numb	er	140	e Facility's ID	696	
CHEMICAL WASTE MANAGEMENT Emelle Facility	, 1NC:				L9-938-7	020	Committee September 1
Alabama Highway 17 at Mile Marker 1 Emelle, Alabama 35459	A <sub> </sub> L <sub> </sub> D <sub> </sub> 0	0 0 6 2 2 2	14 6 4	20	5/652-97	21	· A.H.S.
11. US DOT Description (Including Proper Sh	nipping Name, Hazard Class, and ID Nur	mber)	12. Conta	Type	13. Total Quantity	14. Unit Wt/Vo	Wester No.
a. RCRA Hazardous Wa	ste, Solid N.O.S.	(K-001)	140.	Type		1	30
ORM-E NA-9189							
	CWM Profile Number RES-	-H-53976	001	D   T	01010190	1	
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J. Additional Descriptions for Materials			a By i =	K. Hen	dling Codes for W	Vestes Li	sted Above
Work Order No. 88	0725048		Ψ,		OX		
RES P. O. No. 28-	0631			a.	יטע	C.	
. Emergency Contact	- (601) 226-4584			b.		d.	
15. Special Handling Instructions and Ad	ditional Information had bee	en added	to th	e al	oove was	te w	hich would
prohibit it from	being land filled.	PERRCRA	3004(	C-1	) When	band	ling wear
	d protective equip	ement suc	ch as	i mpe	ervious	clot	hing
and gloves.	reby declare that the contents of this co	onsignment are ful	ly and accur	ately de	scribed above by		
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## **HAZARDOUS WASTE MANIFEST**

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# HAZARDOUS WASTE MANIFEST

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N UI	WIFORM HAZARDOUS	1. Generator's US EPA ID No.			-	Form Approved	1. OMB No. 2	050-0039. Expires 9-36
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$\ $	15. S	pacial Handling Instructions and Additiona	Information had been	added to th	e ab	ove wast	C W	high would
П		prohibit it from bei	ng land filled. P	ERRCRA3004(	C-1)	When }	iand	ling wear
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П	f	economically practicable and that I have selecte ature threat to human health and the environii	d the practicable method of treatment, s ent, OR, if I am a small quantity general	torage, or disposal curre	ntly avail:	able to me which	minimiz	es the present and
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3. (	Generator - Name end Mailing Addressn C.		W. Orac	WMA 4	141	ΙΔ
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† 20	Facility Owner or Operator: Certification of receipt of hazardous materials covere  Printed/Typed Name // Signature		,			Month ) Day Yea
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print or type. (Form designed	for use on elite (12-pitch)	typewriter.i			Mai Ividi Idi	•				
IN UNIFORM HAZAR	DOUS 1. Gene	rator's US EPA ID No.	Manifest	2. Page	Form Approved.	OMB No. 2050-0	039. Expires 9-30			
WASTE MANIF	EST MS	<u>401070275143</u> 8	ocument No	of	is no	t required	shaded areas by Federa			
P. O. Box 160	rdoresenc.			A. State		cument Num	ber			
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4. Generator's Phone (601	1 226-4504			B: State	Générator à	ID .	The state of			
5. Transporter 1 Company Nam	e 220-4364	6. US EPA ID Nun	obov	200 mg 1 mg	644	100-				
Dart Transpor	tation Co.			C. State	Transporter	<b>ID</b>				
7. Transporter 2 Company Nam	е	10   H D 0   0 9 8 6   8. US EPA ID Num	ober	E State	Transporter's	10				
9. Designated Facility Name and			111	SANTANIAN SANTA	orter's Phon					
CHEMICAL WASTE MANAGE		10. US EPA ID Num	ber		Facility's ID	The second	6 2 5 4 4 6 K			
I I Emelle Facility				300	9-938-	020				
Alabama Highway 17 at Mile ( Emelle, Alabama 35459	Marker 163	A L D O O O		H. Facility	's Phone	room	to the second			
		1 A L D 0 0 0 0 6 2 1 :			/652-97	21				
11. US DO! Description (Including F	11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)									
a. RCRA Hazardou	s Waste, Sol	lid N.O.S.(K-001)	No.	Туре	Total Quantity	Unit Wt/Vo	Waste No.			
OKITE NA-9189			1							
R b.	CWM Pro	ofile Number RES-H-53976	01011	D 1 174	7.41.1	P	75			
A D.		2, 33370	101017	D 1 7	1 7 6 0	1				
			1				7.032			
r   c.	CWM Pro	file Number	111		111		一种			
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J. Additional Descriptions for Mat				K. Handling	Codes for W	ešteš Listed A	1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1			
Work Order No.	8807260	50	1							
RES P. O. No.	28-0631		- 1	a.	Oi.	c				
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15. Special Handling Instructions at probibly the fr	nd Additional Intermatio	9: had been -31 1		b.		d.				
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eye protection	and protect	tive equipment suc	3004 (C	31.) Emmo:⊪	When }	andlin	g wear			
and gloves.			u as .	rmbell	TOUS (	lothin	g			
proper shipping name and are class	N: I hereby declare that the suited, packed, marked, ar	e contents of this consignment are fully not labeled, and are in all respects in pro int regulations.	and accurat	ely describe	ed above by					
according to applicable internation	al and national governme	ent regulations .	per condition	tor transpo	irt by highway					
economically practicable and that	certify that I have a progr have selected the practical	am in place to reduce the volume and to able method of treatment, storage, or dis im a small quantity generator. I have mad	xicity of was	te generate	d to the degre	e i have detern	nined to be			
the best waste management meth	he environment OP III -		posal current le a good fait	lly available h effort to m	to me which n	ninimizes the p	resent and			
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J. D. Clayton			D. C	0001	9	Month				
17.Transporter 1 Acknowledgement Printed/Typed Name	of Receipt of Materials			X	000	1.07	2161818			
COM my	/	Signature	_	1		Month	Day Year			
18.Transporter 2 Acknowledgement	of Receipt of Managina	1 Tommy	Cont	ku-		10   7	$\sim$ 1			
Printed/Typed Name	or materials	Signature					1900			
		Signature			384) -301; ( <del>-1.7.115.11</del>	Month	Day Year			
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		•		4						
20.Facility Owner or Operator: Carrie	ication of re-						- 1			
20.Facility Owner or Operator: Certif Printed/Typed Name	or receipt of haz	sardous materials covered by this m	anifest exce	pt as note	d in Item 1	9.	$\overline{}$			
15.01 1	1.11-	Signature:	1	7-2		Month ]	Day Year			



Printed/Typed Name

### HAZARDOUS WASTE MANIFEST

(As Required By The Alabama Department of Environmental Management)

UNIFORM HAZARDOUS	1. Generator's US EPA ID No.	Manifest	2. Pa			he shaded areas ed by Federa
WASTE MANIFEST	11 S   D   O   O   7   Q 2   7   5	4 3 U U U U		law.		
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Generator's Phone (601 ) 226-			- Parish	e direction of the	The Story	and the same
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Dart Transportation				haportar's Phon	The Part of the State of	de la company
ransporter 2 Company Name	8. US	EPA ID Number	100	ite Transponer's	THE RESERVE AND ADDRESS.	223
San Add.	ss 10 US		2 2 0 4	insporter's Phon		Section Charles
Designated Facility Name and Site Addre		EPA ID Number		eté Facility's ID		
HEMICAL WASTE MANAGEMENT, IN melle Facility	C.			19-938-7	920	production and an in-
Ilabama Highway 17 at Mile Marker 163 melle, Alabama 35459	ا ۱ ا ۱ ا ۱ ا ۱ ا	0   6   2   2   4   6		05/652-97	721	
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		No.	Туре	1	Wt/Vo	Waste No.
RCRA Hazardous Wash	e, Solid M.O.S.(K-	-001)				
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dditional Descriptions for Materials Liste			K Ho	ndling Codes for \	Maaiaa Lid	tail Abolin
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Emergency Contact -	(601) 226-4584	added to t	and when a re-	hove was	d.	
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I	3. Generator & Name (and Mailing, Address C.			200	tè Mahifést Doc	umënt Number			
I	P. O. Box 160			APPENDING.	WMA 4	14136			
11	Tie Plant, Ms. 38960			B. Stat	le Gënerator's II				
II	4. Generator's Phone ( 601 ) 226-4584  5. Transporter 1 Company Name 6.	US EPA ID Numbe	er	C. Stat	is Transporter's	io de la compansión de la compansión de la compansión de la compansión de la compansión de la compansión de la La compansión de la compansión de la compansión de la compansión de la compansión de la compansión de la compa			
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	9. Designated Facility Name and Site Address 10	US EPA ID Numbe	er	G. Státě Fácility's ID					
	CHEMICAL WASTE MANAGEMENT, INC. Emelle Facility				19-938-7				
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		13.	14.						
1	11. US DOT Description (Including Proper Shipping Name, Hazard Class, an	12. Conta	Туре	Total Quantity	Unit Wt/Vo Wasie No.				
G	a. RCRA Hazardous Waste, Solid N.O.	S.(K-001)			(8000)	P			
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	J. Additional Descriptions for Materials Listed Above			K. Han	dling Codes för W	estes Listed Above			
	Work Order No. 880726050		1 20 1						
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П	Emergency Contact - (601) 226-4	584	-						
	15 Special Handling Instructions and Additional Information			ь,		d.			
	15. Special, Handlings Instructions, and Additional Artornation had	been added t	to the	ab	ove wast	c which would			
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	the best waste management method that is available to me and that I ca Printed/Typed Name	an afford Signature ()		00		Month Day Yes			
VI	J. D. Clayton	<b>ノ</b>	D. 1	la	Kow	10 17 2 6 181			
Ī	17.Transporter 1 Acknowledgement of Receipt of Materials			1	1				
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ŀ	20.Facility Owner or Operator: Certification of receipt of hazardous m	naterials covered by this	manifect a	reant c	e noted in team	10			
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WASTE MANIFEST	1  S D   0   0   7   0   2   7   5   4   3   0	1010 75 12	of	law.						
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Dart Transportation	Co.  0  H  D  0  0  9  8   8 US EPA ID	612 8 K 12		Transporter's	ID					
7. Transporter 2 Company Name		1 1 1 1	make the fire or a	sporter's Phone	A CAG HALL					
9. Designated Facility Name and Site Addre	es 10 US EPA ID	Number	G. State Facility's ID							
CHEMICAL WASTE MANAGEMENT, IN			219-938-7020							
Emelle Facility	·		H. Faci	ity's Phone	12.27					
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11. US DOT Description (Including Proper Shipping	ng Name, Hazard Class, and IU Numoer;	No.	Туре	Quantity	Wt/Vo	Weste No.				
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	3. Generator &	Name and Mailing Address		<u> </u>	01017 8	A. State	Manifest Doc				
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-	20.Facility Owner  Printed/Typed 1	or Operator: Certification of r	eceipt of hazardous materia	als covered by this	manifest exc	ept as no	ted in Item 1	9.			
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se print or type. (Form designed for use on elite (12-pitch) typewriter.)	A ID No	Majni(est/	2. Page 1	Informatio	n in the shaded areas
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WASTE MANIFEST M ISID 101017 IC	1 2 7 5 4 5 0 1		32.700 9.	Mänifest Docum	ment Number
3. Generator Name Cand Mailing, Address			CA	/MA 41	4133
P. O. Box 160			B. State	Generator's ID	A CONTRACTOR OF THE STATE OF TH
Tie Plant, Ms. 38960					
4. Generator's Phone ( 601 ) 226-4584	US EPA ID Num	ber	C. State	Transporter's II	
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Emelle, Alabama 35459		12. Cont		13.	14.
11. US DOT Description (Including Proper Shipping Name, Hazard Class,	and ID Number)	No.	Туре	Total Quantity	Unit Waste No.
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П		CHEMICAL	WASTE MANA	AGEMENT, INC	<b>)</b> .					#Z020	G HEW	1-14 ·		
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	11.				g Name, Hazard Class, and		No.	Type	Total Quantity	Unit	Waste Na			
G	а.	RCRA	Hazardou	is Waste	S.O.M Bilos,	S.(K-001)								
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П	1	RES P	.O. No.	28-0631				a. (), () c.						
П		Emerg	ency Co	ntact -	(601) 226-45	284		Ь.		ď.		Lon		
Ш	15.	Special Har	dling_Instruction	ns, and Addition	al information bad	been add	ed to th	e al	SOVO WE	ste w	hich wo	uld		
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Н		future threa	at to human healt	h and the environ	ment, OR, if Lam a small qu	uantity generator, H	have made a good	laith effe	rt to minimize	my waste ge	neration and sel	ect		
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ļ	20	Facility Own	ner or Operator	Certification of	receipt of hazardous m	naterials covered l	by this manifest	excent	as noted in	Item 19				
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9. Designated Facility I CHEMICAL WASTE			00 2. 7.10		219-938-7020							
Emelle Facility		5			H. Fac	ility's Phone	is not it.					
Alabama Highway 1 Emelle, Alabama 35	at Mile Marker 163	1 A L	D 0 0 0 6 2 2		Annual Property lies	<u> 5/652-97</u>	14.					
11. US DOT Description (	450	ng Name, Hazard Class, and	d ID Number)	12. Cont	Type	13. Total Quantity	Unit Wt/Vo	I, Waste No.				
a. RCRA Haza	rdous Waste			42690	1							
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		(601) 226-49			b. d.							
15. Special Handling In	structions and Addition	hal Information had	been added	to th	e al	ove wast	e wh	ich would				
	it from bo	ing land fill	lod. PERRORA	3004	(C-1)	() when	เมลุมต	arng wear				
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proper shipping part	RTIFICATION: I hereb e and are classified, pa	y declare that the contents cked, marked, and labeled, tional government regulation	and are in all respects in p	illy and accu proper condit	rately di	escribed above by transport by highw	νaγ					
H vo			and and the volume and	toxicity of v	waste ge	enerated to the deg	gree I have	e determined to be				
economically practic	able and that I have seld	icted the practicable methor inment, OR, it I am a small c	or freatment, storage, or t juantity generator, I have n									
the best waste man	igement method that is	available to me and that I c	Signature		<u></u>	2 4	100	Month Day Year				
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18.Transporter 2 Ackn	owledgement of Rece	ipt of Materials		0								
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E R					- 4-							
19.Discrepancy Indication	n Space											
F A C C												
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		of receipt of hazardous				as noted in Ite	m 19.	Month, Day Yest				
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	T	UNIFORM HAZARDOUS 1. Generator's US EP		Manifest	2. Pag	e 1 Informa	tion in	250-0039 Expires 9-30-8 the shaded areas red by Federal			
	3.	Generator Manuel and Mailing Address C.	0   2   7   5   4   3   0   0			] law. të Manifest Döc					
		P. O. Box 160			C	WMA 4	141	Committee and the state of the			
I	4.	Tie Plant, Ms. 38960 Generator's Phone (601) 226-4584			B. Sta	te Generator's I	D				
II	5.	Transporter 1 Company Name 6.	US EPA ID Numi	ber	C. Stel	ë Transporter's	ID	ter carbonies			
	7	Dart Transportation Co. 10 Fransporter 2 Company Name 8	L   D   0   9   8   6   5 US EPA ID Numi	18 12 15 per	39.136	isporter's Phone é Transporter's	THE RESERVE OF THE PERSON				
l	-	Designated Facility Name and Site Address 10.	411111	LII.	76 - 200 Publish 484 II	sporter's Phone	200 TO 100 CONT. TO 1				
	1	CHEMICAL WASTE MANAGEMENT, INC.	US EPA ID Numb	oer	1/44/07	e Facility's ID					
		Emelle Facility Alabama Highway 17 at Mile Marker 163			H. Faci	219-938-7020 H. Facility's Phone					
	<u> </u>		L D 0 0 0 6 2 2	14 6 4 12. Conta	_	5/652-97	21	And a Maria			
G	a.	US DOT Description (Including Proper Shipping Name, Hazard Class, a		No.	Туре	Total Quantity	Unit Wt/Vo	Weste No.			
E	1	RCRA Hazardous Waste, Solid N.O. ORM-E NA-9189	S.(K-001)								
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(	<u>)</u>	CWM Profile Number		ш	$\perp$	1111					
				2.5				31437			
	J.	CWM Profile Number Additional Descriptions for Materials Listed Above	r								
	Ť	Work Order No. 880727044			K. Hend	ling Codes for W	estes Lis	fed Above			
		RES P.O. No. 28-0631		l	а.	) 81	c.	24 AVA 1994			
		Emergency Contact - (601) 226-4			b.		d.				
	10.	Special Handling Instructions and Additional Information	been added t	o the	abo	ve waste	e wh	ich would			
		prohibit it from being land fill eye protection and protective er and gloves	ומלו לות מלות אם ו	20041	<b>α 1</b> 1	7.71	-				
ŀ	16	GENERATOR'S CERTIFICATION: I hereby declare that the contents	of this consumment are fully	and seems				ing			
		pròper shipping name and are classified, packed, marked, and labeled, according to applicable international and national government regulation	and are in all recognite in are	per condition	n for trai	ribed above by asport by highway	,	(4)			
1		If I am a large quantity generator, I certify that I have a program in place economically practicable and that I have selected the practicable method future threat to human health and the appropriate OR of these sentings.									
		the best waste management method that is available to me and that I co	tiantity apperator Thave may	de a good fair	th effort i	o minimize my wa	ninimize iste gene	s the present and tration and select			
		I. D. Clayton	Signature	, D.	0	2-4-	Λ	Month Day Year			
Ţ		Fransporter 1 Acknowledgement of Receipt of Materials	()			Curso-	10 P	17 121 /18 lg			
l	f	Bobby Asia	Signature,	6	>	Je,	٨	Month Day Year			
ļ		ransporter 2 Acknowledgement of Receipt of Materials Printed/Typed Name	O O	pre	1	7	<u> </u>	17 KI / 18 R			
L		Timed/Typed Name	Signature			340-1130-300	N	fonth Day Year			
Τ	√9.C	Discrepancy Indication Space		***************************************	*,						
				30							
L	20 F	Brility Owner or Operator Cartification of									
1	P	acility Owner or Operator: Certification of receipt of hazardous m	aterials covered by this n	nanifest exc	ept as	noted in Item 1		onth, Day Year			
L		B110/18	1.11 na	11.				onth Day Year			



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20.Facility Owner or Ope	rator: Certification of receipt of	Signature						Month Day
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	11. US	DOT Desci	ription (Includ	ling Proper Ship	pping Name,	Hazard Class, &	and ID Numbe	er)	12. Con			13. otal	14. Unit	
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lea	uniform HAZARDOUS  1. Generator's US EPA	ID No.	07	2. Page		No. of Concession, Name of Street, or other Persons, Name of Street, or ot	he shaded areas
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П	3. Generator's Name, and Mailing Address ROPPELS COMPANY, MC.			Candilland II in	Manifest Docu	ment N	lumber
П	P. O. Box 1.60			and Contes	VMA 4	141	31
П	Tie Plant, Ms. 38960		1	B. State	Générator's IC		distant with
П	4. Generator's Phone ( 601 ) 226-4584  5. Transporter 1 Company Name 6.	US EPA ID Numb		C CIMA	Transporter's		a de de la companya d
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П	9. Designated Facility Name and Site Address 10.	US EPA ID Numbe	er	G. Ståte	Facility's ID		The second second
П	CHEMICAL WASTE MANAGEMENT, INC.			21	9-918-7	020	
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	11. US DOT Description (Including Proper Shipping Name, Hazard Class, an	nd ID Number)	12. Conta	iners	13. Total	14. Unit	
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П	15.	Special Handling Instructions and Additiona	differmation had been a	dded to	the	ab	ove wast	e wh	ich would
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H	16	Clothing and gloves.  GENERATOR'S CERTIFICATION: I hereby d	eclare that the contents of this consigni	nent are fully and	daccura	tely de	scribed above by		
		proper shipping name and are classified, packe according to applicable international and nation	ed, marked, and labeled, and are in all re	spects in proper	conditio	n for tr	ansport by highwa	У	
П		If I am a large quantity generator, I certify that I	have a program in place to reduce the v	olume and toxici	ly of wa	ste gen	erated to the degr	ee i have	determined to be
		economically practicable and that I have selecte future threat to human health and the environm	nent; OR, if I am a small quantity generat	torage, or disposa or, I have made a	al curre good fa	ntly ava th effor	ilable to me which t to minimize my w	minimize aste geni	s the present and eration and select
	_	the best waste management method that is ava- -Printed/Typed Name	Signature	/\ <del></del>		30			Month Day Year
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F	20.	Facility Owner or Operator: Certification of a Printed/Typed Name		ed by this mani	fest ex	cept a	s noted in Item		27518
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		WASTE MANAGEMENT, INC	C.			21	9-938-7	020	
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	20.Facility Own	er or Operator: Certification of	receipt of hazardous m	naterials covered by this	manifest A	xcept a	as noted in Ite	n 19.	
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3. Generator's Name Cand Mailing Address	C.	V V 1/  -7		J law. Aanifëst Docume	int Number
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Alabama Highway 17 at Mile Marker 163 Emelle, Alabama 35459	. A. I. D. O. O. O. S.		H. Facility's		
	1 A L D 0 0 0 0 6	12. Cont		652-9721	71.00
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15. Special Handling Instructions and Addition  I CEITITY that he are	sortent had been add	ed to the	e above	e waste	which would
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future threat to human health and the environm the best waste management method that is av Printed/Typed Name		ave made a good lai	ith effort to mir	nimize my waste ç	generation and select
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۱		. US DOT Description (Including Proper Shippin	a Name "Hazard Class, and Il	) Number)	12. Conta	ainers	13. Total	14. Unit	
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1	l	according to applicable international and nat	onal government regulations	,					determined to be
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ļ.,	Designated Facility Name and Site Address 10.			The second of the	sporter's Phone	***	
	CHEMICAL WASTE MANAGEMENT, INC.	US EPA	D Number	~ .	Facility's ID		
1	Emelle Facility				938-70	20	
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	according to applicable international and national government regulati	ions					1
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## HAZARDOUS WASTE MANIFEST

(As Required By The Alabama Department of Environmental Management)

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#### ATTACHMENT A

**Operator Certification of Closure** 

### OPERATOR CERTIFICATION OF CLOSURE

_	Matthew C. Plautz
I,	(Authorized Representative)
of	Beazer Materials and Services, Inc. 436 Seventh Avenue, Pittsburgh, PA 15219
Oī	(Name and Address of Facility)
here	eby state and certify that, to the best of my knowledge and belief, the
	•
	Surface Impoundment System, EPA I.D. #MSD007027543
	(Hazardous Waste Management Unit(s)
has	been closed in accordance with the Facility's closure plan.
	Signature Date
	PROGRAM MOR ENVIRONMENTAL SERVICES
	Title

## APPENDIX I-2 INSPECTION LOGS

# FLUOR DANIEL GTI

# GRENADA, MISSISSIPPI PLANT TIE PLANT, MISSISSIPPI CLOSED SURFACE IMPOUNDMENT INSPECTION REPORT KOPPERS INDUSTRIES, INC.

NOIL	Benchmark	Integrity																		_
ANNUAL INSPECTION	Well	Casing																	+	_
ANN	Well	Lock											-						+	
	Surface	Variation								+									-	
NOIL	Grass	i cove																		
MONTHLY INSPECTION Impoundment	Tampering																			
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	Erosion							+										+		
1 A Veneral	warning Signs														+			-		
Security	Lock																		+	
Security Fence Fence	Gate																			
Fence	Perimeter																			
Date of	Inspection																			
Inspected	Ву																			

Notes:

Inspections are to be performed monthly and after unusual heavy rains or winds.
 If inspections identify any deficiencies in the unit's security or cover, they are to be explained on an attached sheet and corrected immediately, if possible.



APPENDIX I-3
SURVEY PLAT

NOTE:
THE AREA DESCRIBED HEREON PREVIDUSLY CONTAINED A WASTE MANAGEMENT UNIT DESIGNATED U.S.EPA IDENTIFICATION NUMBER MSD 007027543.THE USE OF THE DESCRIBED AREA IS RESTRICTED AND ANY FUTURE USES MUST NOT DISTURB THE INTEGRITY OF THE FINAL COVER SYSTEM WITHOUT THE PRIOR APPROVAL OF THE STATE OF MISSISSIPPI DEPARTMENT OF NATURAL RESOURCES, BURIERU OF POLLUTION CONTROL MAINTENANCE, INSPECTIONS AND MONITORING ARE TO BE PERFORMED IN ACCORDANCE WITH THE APPROVED CLOSURE/POST-CLOSURE PLAN. NOTE: , -CONCRETE MONUMENT NO.2 NORTH - 1.178,094.923 EAST ---- 667,133.509 ELEVATION - 204.19 HUB - SET BY OTHERS --NORTH - 1, 178, 054.060 EAST --- 667, 044.436 N81 53 24 E HUB - SET BY OTHERS NORTH - 1, 178, 022.274 EAST ---- 667, 147, 805 -S22<sup>\*</sup>35'18"E 21.71 EDGE OF GRAVEL φ N21 21 48 E 46.44 S20 54 28 W 18.31 EDGE OF GRAVEL 135 49 CONCRETE MONUMENT NO.1 NORTH - 1,177,713.883 EAST --- 888,929.384 ELEVATION - 209.77 101 6 202 N66 23 57 W 27.68 ġ ·\$70°29'20"W 22.25 **95. 19**ـ NB9 21'09"W -P.O.B. CONCRETE MONUMENT NO.3-NORTH - 1, 177, 696, 352 EAST ---- 667, 220,530 ELEVATION - 207,15 HUB - SET BY OTHERS -NORTH - 1, 177, 671.073 EAST ---- 666, 849.674

HUB - SET BY OTHERS NORTH - 1, 177, 640.195 EAST ---- 667, 033.748

#### -- DESCRIPTION --

A PART OR PARCEL OF SECTION 2B, TOWNSHIP 22 NORTH, RANGE 5 EAST, GRENADA COUNTY, MISSISSIPPI AND BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEGINNING AT A POINT THAT IS 9.08 FEET SOUTH AND 35.03 FEET EAST OF CONCRETE MONUMENT NO.1 THENCE RUN NORTH 03 27'42"EAST FOR 135.38 FEET TO A POINT; THENCE RUN NORTH 21"21'46"EAST FOR 244"FEET TO A POINT; THENCE RUN NORTH 31 07'24"EAST FOR 128.53 FEET TO A POINT; THENCE RUN NORTH 81 53'24"EAST FOR 25.48 FEET TO A POINT; THENCE RUN SOUTH 61"42"37" EAST FOR 97.46 FEET TO A POINT; THENCE RUN SOUTH 22 35'18"EAST FOR 21.71 FEET TO A POINT; THENCE RUN SOUTH 28 07'55" WEST FOR 125.89 FEET TO A POINT; THENCE RUN SOUTH 28 07'55" WEST FOR 125.89 FEET TO A POINT; SOUTH 02 07'49" WEST FOR 101.75 FEET TO A POINT; THENCE RUN SOUTH 02 07'49" WEST FOR 101.75 FEET TO A POINT; THENCE RUN SOUTH 70 29'20" WEST FOR 22.25 FEET TO A POINT; THENCE RUN NORTH 89 21'09" WEST FOR 91.95 FEET TO A POINT; THENCE RUN NORTH 89 21'09" WEST FOR 91.95 FEET TO A POINT; THENCE RUN NORTH 89 21'09" WEST FOR 91.95 OF BEGINNING OF HEREIN DESCRIBED PARCEL OF LAND CONTAINING 40, 729.681

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REGISTERED PROFESSIONAL ENGINEER NO. 4040 F M S. REGISTERED LAND SURVEYOR NO. 2344

## APPENDIX I-4 FINANCIAL ASSURANCE FOR POST-CLOSURE CARE

# CLOSURE/POST - CLOSURE CCST ESTIMATE WORKSHEET For Fiscal Year Ending September 27, 1997

STATE:

Mississippi

FACILITY NAME:

Koppers Industries, Inc.

Grenada

MSD 007027543

Program Manager:

Mike Bollinger

1997 Cost Estimat

#### INFORMATION BASE

Unit / Facility	Closure Plan Submittal Date	Closure Cost Estimate	Post-Closure Cost Estimate
Surface Impoundment	06-08-88		\$ 887,250
Less seven (7) years Po	st-Closure Care cost @ \$	29,575 per year.	(207,025)
Adjusted Post-Closure Co	st Estimate		\$ 680,225
Boiler Ash Landfarm	11-30-87		\$ 707,940
Less seven (7) years Pos	st-Closure Care cost @ \$ :	23,598 per year.	(165,186)
Adjusted Post-Closure Co	st Estimate		\$ 542,754
CALCULATIONS			 1997 C

The Surface Impoundment cost reflects 1988 dollars; the adjusted cost estimate has been voluntarily inflated to 1997 dollars.

#### Post-Closure

For 1989:	680,225	Х	1.0357	=	\$	704,509	
For 1990:	704,509	X	1.0378	=	\$	731,139	
For 1991:	731,139	Х	1.0410	==	\$	761,116	
For 1992:	761,116	Х	1.0360	=	\$	788.516	
For 1993:	788,516	X	1.0263	=	\$	809,254	
For 1994:	809,254	Х	1.0186	=	\$	824,306	
For 1995:	824,306	X	1.0150	=	\$	836,671	
For 1996:	836,671	X	1.0250	=	Š	857,588	
For 1997:	857,588	x	1.0227	=	•	657,566	\$ 877.055
							0,000

The Boiler Ash Landfarm cost reflects 1987 dollars; the adjusted cost estimate has been voluntarily inflated to 1997 dollars.

#### Post-Closure

For 1988:	542,754	X	1.0357	=	\$ 562,130
For 1989:	562,130	X	1.0357	=	\$ 582,198
For 1990:	582,198	X	1.0378	=	\$ 604,205
For 1991:	604,205	Х	1.0410	=	\$ 628,977
For 1992:	628,977	X	1.0360	=	\$ 651,620
For 1993:	651,620	X	1.0263	=	\$ 668,758
For 1994:	668,758	X	1.0186	=	\$ 681,197
For 1995:	681,197	X	1.0150	=	\$ 691,415
For 1996:	691,415	Х	1.0250	=	\$ 708,700
For 1997:	708.700	X	1.0227	=	•

\$ 724,787

#### SECTION J. OTHER FEDERAL LAWS

Other than the regulations stated in this permit reapplication, no known other federal laws are applicable to the post-closure care activities detailed herein.

#### SECTION K. CERTIFICATION

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering information, the information submitted is, to be the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violation."

James P. Brennan
(Name)
James G. Brennan
(Signature)
Non-Resident and Committee
Vice President and General Manager
(Title)
Beazer East, Inc.
(Company Name)
12/16/97
(Date)

PIPRO ECIS BEAZER CRENACAPORE APP2 NOT

#### SECTION K. CERTIFICATION

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering information, the information submitted is, to be the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violation."

James P. Brennan
(Name)
(Signature)
Vice President and General Manager
(Title)
Beazer East, Inc.
(Company Name)
(Date)
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## SECTION L. INFORMATION REQUIREMENTS FOR SOLID WASTE MANAGEMENT UNITS

#### L.1 Description of Solid Waste Management Units

A RCRA Facility Assessment (RFA) of the KII Grenada Site was conducted in July 1987 and documented in a report entitled RCRA Facility Assessment of the Koppers Industries, Inc., Grenada, Mississippi (EPA, 1987). The RFA identified the following 13 potential solid waste management units (SWMUs):

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

The locations of the SWMUs identified in the RFA are shown on Figure L-1. A brief description of each SWMU, types of wastes handled, period of operation and status are summarized in Table L-1.

KII upgraded the tank process area by installing a concrete surface around the tanks. From October 1988 through May 1989 soils were excavated within the tank process area and placed inside an existing storage shed. The location of the storage shed is shown on Figure L-1 of the Application.

Additionally, in accordance with 40 CFR Subpart W - Drip Pads, a concrete drip pad and collection system were installed in the Drip Track Area (SWMU 8). Prior to the installation of the concrete pad, visually impacted soils around and under the drip pad were excavated from December 1990 through February 1991, and placed in two (2) soil containment structures totaling approximately 3,200 cubic yards of soil. These structures were located to the south of the Storage Shed Structure as shown on Figure L-1. The original construction of both soil containment structures consisted of the placement of a polyethylene liner to overlay the existing site soils. After placement of the drip track soils, polyethylene sheeting was used to cover the soil piles. The cover was secured and a fence was constructed around the perimeter of the soil containment structures.

In addition to the SWMUs identified in the RFA, the soil containment structures and the storage sheds were identified by the MDEQ as SWMUs in the fall of 1993. The location of these SWMUs are shown on Figure L-1.

#### L.2 Summary of RCRA Facility Investigations (RFI)

The facility began operating under RCRA Part B Post-Closure Care Permit No. MDS 007 027 543 issued by EPA Region IV and under Hazardous Waste Management Permit No. 88-543-01 issued by the MDEQ on June 28, 1988. A requirement of these permits was to evaluate the SWMU's for potential releases of hazardous constituents, and implementing the appropriate corrective action for any such release.

In accordance with these permits, Koppers Company, Inc. performed a Phase I RFI of each SWMU in 1988. The findings of this investigation was presented in the report Soil and Groundwater Investigation of Solid Waste Management Units, Koppers Industries, Inc. Plant, Grenada, Mississippi (Keystone, 1989).

In December 1989, the MDEQ concurred that additional investigations were warranted. Subsequently, Beazer submitted the *Phase II RFI Work Plan, RCRA Facility Investigation (RFI), Koppers Industries, Inc., Grenada, Mississippi* (Keystone, 1990), to outline the scope of work and the procedures to be implemented during the additional investigations of the SWMUs. Responses to comments received from the EPA and MDEQ regarding the Phase II RFI Work Plan were incorporated as revisions titled *Supplemental Work Plan, RCRA Facility Investigation (RFI), Koppers Industries, Inc., Grenada, Mississippi* (Keystone, 1991). In January 1991, the MDEQ and the EPA approved this Work Plan and Phase II RFI field activities began in May 1991.

A draft Phase II RCRA Facility Investigation Report, Koppers Industries, Inc., Grenada, Mississippi was completed in 1992 and revised in 1994 based on EPA comments. A second set of EPA comments regarding the revised Draft Phase II Report were received by Beazer on June 12, 1996. Beazer submitted a response to EPA's comments on August 30, 1996. The RCRA Facility Investigation, Work Plan Addendum, Koppers Industries, Inc., Grenada Facility, Grenada, Mississippi (HSI, 1997) was prepared in accordance with that response, and the supplemental field investigations were conducted during May and June 1997.

The Final Phase II RCRA Facility Investigation (RFI) Report, Koppers Industries, Inc., Grenada Facility, Grenada, Mississippi (HSI, 1997) incorporated data from the Phase I RFI, the Phase II RFI and the 1997 supplemental investigation to define and present the nature and extent of constituent impact at the KII facility. This report also presented an updated Conceptual Site Model of constituents and their potential migration in soil, groundwater, surface water and sediment, and evaluated the constituents, exposure routes, and associated potential risks for current and future human populations and the

environment. Beazer submitted the final report to the EPA and MDEQ for review and approval in January 1998.

#### L.3 Information Pertaining to Releases

The 13 SWMUs were investigated in detail during the Phase I and Phase II RFI studies. Information pertaining to potential releases of hazardous wastes or hazardous constituents from SWMUs at the facility were included in the *Final Phase II RCRA Facility Investigation (RFI) Report, Koppers Industries, Inc., Grenada Facility, Grenada, Mississippi* (HSI, 1997).

#### L.4 Sampling and Analysis Description of Solid Waste Management Units

Results of sampling and analysis of groundwater, soils, surface water, and sediments related to SWMUs at the facility can be found in the *Final Phase II RCRA Facility Investigation (RFI) Report, Koppers Industries, Inc., Grenada Facility, Grenada, Mississippi* (HSI, 1997).

#### L.5 Corrective Action

Process changes and upgrades at the KII facility have minimized or eliminated the potential for further releases from the SWMUs. All corrective action activities implemented or proposed during the existing permit period will continue beyond the expiration date of the existing permit (i.e., June 1998). The following describes corrective action activities completed and proposed interim measure activities.

SWMUs in the northern and southern areas of the facility have either already undergone closure or have recently been addressed through a direct removal action, with the exception of the North Waste Piles. The Spray Irrigation Field (SWMU 3) was taken out of service in mid-1988 and closed in 1991 in accordance with a closure plan approved by EPA in January 1991. The South Waste Piles (SWMU 13) were removed prior to 1989.

The closed SI (SWMU 2) was constructed in the mid-1970's as part of the plant's wastewater treatment system and was used until 1988 to treat wastewater resulting from the wood preserving operations. In the summer of 1988, all K001 sludge and visually contaminated soils were removed from the impoundment and shipped off-site to Chemical Waste Management, Inc., located in Emelle, Alabama for disposal. Prior to closure of the SI, a RCRA permit application was submitted to the MDEQ and a Hazardous Waste Management Permit No. 88-543-01 became effective on June 28, 1988 for the operation and post-closure care of the closed SI. The SI was closed in 1989 and certification of closure for the SI was included in the Closure Construction Documentation Report for the Surface Impoundment

Closure (Keystone, 1989). The State of Mississippi issued Hazardous Waste Management Permit No. 88-543-01 on June 28, 1988, as amended in February 1990, for post-closure care of the closed SI.

The closed Boiler Ash Landfill (SWMU 5) is located in the southern portion of the KII Grenada wood treating facility, and is classified as a RCRA unit because boiler ash was placed at this location beginning in approximately December 1982 and continuing through 1987. RCRA interim-status groundwater monitoring has been performed for the closed boiler ash landfill since 1988. The Boiler Ash Landfill was closed in 1990 by constructing a RCRA cap over the area. The construction documentation report and closure certification were submitted to the MDEQ in June 1990. The Boiler Ash Landfill was closed pursuant to a negotiated Order with MDEQ and documented in the reports Final Report, Groundwater Quality Assessment, Boiler Ash Disposal Area (Chester Environmental, 1993) and Supplemental Investigation Addendum to Boiler Ash Landfill Groundwater Quality Assessment (Dames & Moore, February 1994).

The Supplemental Investigation Addendum to Boiler Ash Landfill Groundwater Quality Assessment (Dames & Moore, February 1994) confirmed that the volatile organics (tetrachloroethylene (TCE) and 1,2-dichloroethene) detected during the RCRA interim status groundwater monitoring program and the Groundwater Quality Assessment are not the result of activities conducted on the KII facility. The data collected from the test borings and monitoring wells installed for the closed boiler ash landfill prove that these volatiles are not present in detectable concentrations in the vadose zone in the closed boiler ash landfill, and that their presence in site groundwater is the result of groundwater transport from an upgradient, off-site source.

During the fourth quarter of 1994, Heatcraft, the adjacent upgradient property owner to the KII facility, performed an investigation to determine the rate of movement and extent of volatile organic constituents in groundwater. The November 1995 report entitled, An Interim Engineering Report (Phase I) for a Comprehensive Groundwater Investigation Program at Heatcraft, Inc. (South Plant), prepared by Hazclean Environmental Consultants, details field activities related to delineating a TCE plume originating from the Heatcraft property located west of the closed boiler ash landfill on property adjacent to the KII property. The report states that "...The TCE contamination plume that originated at the Heatcraft, Inc. South Plant site has migrated toward the north, northwest and northeast to the adjacent properties in the upper three (3) stratigraphic layers. Based on groundwater analytical results, the following properties have been influenced by the TCE contamination plume..," including the KII Grenada facility.

Beazer petitioned to terminate the groundwater monitoring program associated with the closed boiler ash landfill at the KII Grenada wood treating facility on the basis that constituents from the adjacent property are the primary impact on groundwater quality at the facility, and that the closed boiler ash landfill has had minimal, if any, impact on groundwater. Information supporting the elimination of the groundwater monitoring program was provided in the Request for Discontinuation of the Boiler Ash

Monitoring Program (Fluor Daniel GTI, February 1991). Beazer has received verbal concurrence from MDEQ on the discontinuation of the closed boiler ash landfill monitoring program.

KII upgraded the tank process area from October 1988 through May 1989 by excavating soils and installing a concrete surface around the tanks. Soils excavated within the tank process area were stored inside an existing storage shed from May 1989 through October 1996. The location of the storage shed is shown on Figure L-1 of the Application.

Additionally, in accordance with 40 CFR Subpart W - Drip Pads, a concrete drip pad and collection system were installed in the Drip Track Area (SWMU 8). Prior to the installation of the concrete pad, visually impacted soils around and under the drip tracks were excavated from December 1990 through February 1991, and placed in two (2) soil containment structures totaling approximately 3,200 cubic yards of soil. These structures were located south of the storage shed structure, as shown on Figure L-1. The construction of the soil containment structures consisted of the placement of a polyethylene liner to overlay the existing site soils, followed by placement of the drip track soils and finally by covering with polyethylene sheeting. The cover was secured and a fence was constructed around the perimeter of the soil containment structures.

The storage shed and soil containment structures were identified by the MDEQ as SWMUs in the fall of 1993. Subsequently, Beazer provided notification to the U.S. EPA, Region IV of these SWMUs and initiated the soil removal form these SWMUs/soil containment structures on October 23, 1996. Soil removal and completion of site restoration activities was completed on November 15, 1996, in accordance with the *Soil Pile Removal Procedures* (Fluor Daniel GTI, Inc., 1996). The soils were taken off site to Laidlaw's USPCI Lone Mountain, Subtitle "C" landfill facility located in Waynoka, Oklahoma (EPA ID No. OKD065438376), and post-removal samples were collected. The removal and post-removal activities were documented to the EPA and MDEQ in the *Removal Documentation Report* (Fluor Daniel GTI, Inc., 1997).

#### Proposed Interim Measures

Releases from SWMUs in the Central Process Area (i.e., SWMUs 1, 4, 9 and 10), the Drip Track Area (SWMU 8), and the Former Wastewater Treatment System (SWMU 11) were determined to have impacted underlying soils. The Former Wastewater Treatment System was the focus of an interim measures investigation conducted in 1996 and documented in the report RCRA Interim Measures Predesign Investigation Report and Conceptual Design (HSI, 1996).

The proposed interim measure, presented to EPA and MDEQ in the RCRA Interim Measure Predesign Investigation Report and Conceptual Design (HSI, 1996) and the Final Phase II RCRA Facility Investigation Report (HSI, 1997), includes:

- Installation of a subsurface vertical containment barrier along the north bank of the Central Ditch to contain DNAPL and prevent continuing seeps into the Central Ditch;
   and
- Installation of a low-permeability soil cover to reduce precipitation infiltration to the saturated zone and thereby reduce the groundwater hydraulic gradient toward the Central Ditch.

This interim measures is scheduled to be conducted in 1998.

#### Potential Natural Attenuation

As stated in the *Final Phase II RCRA Facility Investigation Report* (HSI, 1997) there are indications of natural attenuation occurring at the KII facility based on the following observations:

- The characteristics of the constituents of concern indicate that biological degradation is likely;
- Substantial decrease in concentrations of site-related constituents over distance from source areas indicates that natural processes are limiting constituent transport; and
- The relatively small areal extent of the groundwater impacts, given more than 90 years of site operation and an average flow velocity of 0.11 ft/day for the Upper Sand Zone further indicates naturally limited constituent migration.

Sampling performed and reported in the RCRA Interim Measures Predesign Investigation Report and Conceptual Design (HSI, 1996) indicated the potential for a high degree of biological activity in the groundwater.

#### TABLE L-1 Summary of SWMUs Koppers Industries, Inc. Grenada, MS

SWMU	Types of Material	Period of Operation	Status
Oil/Water Separator* (SWMU 1)	Creosote, No. 2 diesel fuel, pentachlorophenol and oil	At least 1975 to present	Concrete separator, currently used RFI completed
Surface Impoundment (SWMU 2)	Creosote, No. 2 diesel fuel, pentachlorophenol and oil	At least 1975 to mid-1988	RCRA closure completed; RCRA Post-Closure Care Permit (detection monitoring) RFI completed
Spray Irrigation Field (SWMU 3)	Creosote, No. 2 diesel fuel, pentachlorophenol and oil	At least 1975 to mid-1988	Closure completed RFI completed
Boiler* (SWMU 4)	Creosote byproducts, pentachlorophenol byproducts, impacted soils, bottom sediments and unreclaimed oil	At least 1975 to present	RFI completed
Boiler Ash Landfill (SWMU 5)	K001 bottom sediments boiler ash	At least 1979 to 1993	RCRA closure completed RCRA monitoring discontinued RFI completed
Process Cooling Reservoir (SWMU 6)	Cooling water	At least 1970 to present	Currently used RFI completed
Container Storage Area (SWMU 7)	Creosote, pentachlorophenol, bottom sediments, impacted soils and reclaimed oil	1980 to present	Less than 90-day storage area
Drip Track Area (SWMU 8)	Creosote, No. 2 diesel fuel, pentachlorophenol and oil	1979 to present	Soil removed and disposed off- site in accordance with new Subpart W Concrete drip pad installed in 1991 RFI completed
Chemical Unloading Area* (SWMU 9)	Creosote, No. 2 diesel fuel	At least 1975 to present	RFI completed
Underground Storage Tank* (SWMU 10)	Unknown. Possible creosote, pentachlorophenol impacted run-off	At least 1970 to present	RFI completed
Former Wastewater Treatment System (SWMU 11)	Creosote, No. 2 diesel fuel, pentachlorophenol, oil and wood debris	At least 1970 to about 1980	Interim Measure investigation completed Closure completed RFI completed
North Waste Piles (SWMU 12)	Construction debris, treated and untreated scrap wood, railroad iron, scrap metal, rubber tires, other inert materials	Unknown	RFI completed
South Waste Piles (SWMU 13)	Untreated wood, emply railroad spike drums	Unknown	Removal action completed RFI completed



# TABLE L-1 (Continued) Summary of SWMUs Koppers Industries, Inc. Grenada, MS

SWMU	Types of Material	Period of Operation	Status
Storage Shed (SWMU identified by MDEQ in 1993)	Excavated soils from tank process area upgrade	October 1988 to May 1989	Removal action completed RFI completed
Soil Containment Structures (SWMU identified by MDEQ in 1993)	Excavated soils from drip track area upgrade	December 1990 to February 1991	Removal action completed RFI completed

<sup>\*</sup> The Central Process Area includes SWMUs 1, 4, 9 and 10.

#### ATTACHMENT M

#### SOLID WASTE MANAGEMENT UNIT SUMMARY

Fac	cility Investigation (I	RFI):	eas of concern (AOCs) requiring a RCR.			
SWMU/AO C No/Letter	SWMU/AOC Name	Unit Comment	Dates of Operation			
		CENTRAL PROCESS ARE	A			
1	Oil/Water Separator	Manages No. 2 diesel fuel, pentachlorophenol and oil. RFI Report Under Review.	Approximately. 1975 to Present			
4	Boiler	Managed creosote byproducts, pentachlorophenol byproducts, impacted soils, bottom sediments and unreclaimed oil. RFI Report Under Review. Since 1992, the boiler has used untreated wood, creosote treated wood, and pentachlorophenol treated wood as fuel.	Approximately 1975 to Present			
9	Chemical Unloading Area	Manages creosote, No. 2 diesel fuel. RFI Report Under Review.	Approximately 1975 to Present			
10 Underground Storage Tank		Unknown, possibile creosote, pentachlorophenol, oil and wood debris. RFI Report Under Review.	Approximately 1970 to 1994			
		MISCELLANEOUS UNITS				
6	Process Cooling Reservoir	Manages cooling water. RFI Report Under Review.	Approximately 1970 to Present			
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7	Container Storage Area	Manages creosote, pentachlorophenol, bottom sediments, impacted soils, and unreclaimed oil. RFI Report Under Review.	1980 to Present	
8	Drip Track Area	Manages creosote, No. 2 diesel fuel, pentachlorophenol and oil. RFI Report Under Review.	1903 to Present	
SWMU/AO C No/Letter	SWMU/AOC Name	Unit Comment	Dates of Operation	
111	Former Wastewater Lagoons	Managed creosote, No. 2 diesel fuel, pentachlorophenol, oil and wood debris. RFI Report Under Review.	Approximately 1970 to approximately 1980	
12	North Waste Piles	Managed construction debris, treated and untreated scrap wood, railroad tires, other inert materials. RFI Report Under Review.	Unknown	
13	South Wastes Piles	Managed untreated wood, empty railroad spike drums. RFI Report Under Review.	Unknown. Removal action performed prior to 1989	
14 <sup>2</sup>	Temporary Storage of Contaminated Soils	Managed excavated soil generated during upgrade of the tank process area. Removal Documentation Report Under Review.	October 1988 to May 1989. Removal action undertaken in 1996.	

Interim Measures is required for this SWMU (see Condition II.F.1). These measures include containment actions to control the further discharge of dense nonaqueous phase liquids (DNAPL) into the Central Creek and some contaminated sediment removal from the Central Creek.

Inclusion of these SWMUs in this Appendix is necessary because of the Interim Measures which took place in 1996. The Removal Documentation Report for these SWMUs must be reviewed before a no further action decision can be made (see Condition II.F.1).

15 <sup>2</sup>	Two Soil Containment Structures	Managed excavated soil generated during upgrade of the drip track area. Removal Documentation Report Under Review.	December 1990 to February 1991. Removal action undertaken in 1996.	
16	Old Oil/Water Separator	Manages No. 2 diesel fuel, pentachlorophenol and oil. RFI Report Under Review.	1904 to 1988	
17	Old South Drip Pad/Track	Managed drippage from newly treated ties/poles/etc. RFI Report Under Review.	1904 to 1994	

M.2. List of solid waste management units (SWMUs) and areas of concern (AOCs) requiring no further action at this time:						
SWMU/AO C No/Letter	SWMU/AOC Name	Unit Comment and Basis for NFA	Dates of Operation			
23	Surface Impoundment	Managed creosote, No. 2 diesel fuel, pentachlorophenol and oil	Approximately 1975 to mid-1988			
3⁴	Spray Irrigation Field	Managed creosote, No. 2 diesel fuel, pentachlorophenol and oil.	Approximately 1975 to mid-1988			
55	Boiler Ash Landfill	Managed K001 bottom sediments, boiler ash	Approximately 1975 to 1993			

RCRA Regulated Unit covered under the Post-Closure Permit issued by the Mississippi Department of Environmental Quality

<sup>4</sup> RCRA Regulated Unit covered under a Closure Plan by the State of Mississippi.

<sup>5</sup> RCRA Regulated Unit covered under a Consent Order issued by the State of Mississippi.

M.3. List of solid waste management units (SWMUs) and areas of concern (AOCs) requiring Confirmatory Sampling:							
SWMU/AO C No/Letter	SWMU/AOC Name	Unit Comment	Dates of Operation	Potentially Affected Media			

There are no units identified at this time as requiring Confirmatory Sampling (CS).

#### ATTACHMENT N

#### RCRA FACILITY INVESTIGATION (RFI) OUTLINE

The purpose of the RFI portion of the RCRA corrective action process is to evaluate the nature and extent of the releases of hazardous wastes and/or hazardous constituents and to gather necessary data to support the Corrective Measures Study (CMS) and/or Interim Measures. Planning for the investigation is best accomplished through a logical progression of tasks:

- 1. gather information on the source of the release(s) to the environment (Source Characterization),
- 2. gather information on the physical aspects of the environment which will affect the migration and fate of the release and identification of exposure pathways for both humans and non-human members of the environment (Environmental Setting),
- 3. use Source Characterization and Environmental Setting to develop a conceptual model of the release which will be used to plan and conduct a program to define the nature, rate and extent of the release (Sampling and Analysis Plan).

An RFI Work Plan and RFI Report are generally required elements of the RCRA corrective action process. The requirements for a full, detailed RFI are listed in this Appendix. EPA recognizes that each facility is unique. Therefore, the scope and requirements of the RFI shall be focused to fit the complexity of the site-specific situation. The work plan requirements listed in this Appendix in no way limit the site-specific opportunities for Permittees. For example, the RFI may be implemented in phases. Relevant information contained in previously developed documents, such as a RCRA Part B permit application, may be referenced as appropriate, but must be summarized in either the RFI Work Plan or the RFI Report. In addition, EPA understands that Risk Assessments are becoming more widely utilized to place characterization information into context and to aid in determining remedial solutions. If a Risk Assessment is expected to be performed in the future, note that Region 4 has developed a series of Risk Bulletins to provide Permittees and their contractors with the general format and process Region 4 expects a Risk Assessment to follow.

In some cases, it may be possible to implement the RFI concurrent with the CMS (also see Appendix O). This approach can save time and money because the earlier in the corrective action process potential remedies can be identified, the more effectively information gathering can be focused. The Agency anticipates that a concurrent RFI/CMS approach may be appropriate in the following types of situations, among others: facilities where removal remedies have been proposed by the owner/operator, facilities with straightforward remedial solutions or where presumptive remedies can be applied, facilities where few remedial options are available, and facilities where the remedy is phased. The Agency will determine on a case-by-case basis if a combined RFI/CMS is appropriate. Because of the unique data collection requirements necessary for a remedial solution which includes natural attenuation of contaminants in groundwater, if natural attenuation is expected to be part of the remedial solution, then the Sampling and Analysis Plan should be crafted to include monitoring of specific water quality parameters unique to natural attenuation (e.g., nitrites/nitrates, ferrous iron, sulfides, dissolved oxygen, methane, hydrogen, etc.).

#### I. RFI WORK PLAN REQUIREMENTS - ELEMENTS OF THE RFI WORK PLAN

The RFI Work Plan shall include, at a minimum, the following elements:

A.Introduction - Summary of any relevant existing assessment data

The Permittees shall describe the purpose or objective of the RFI Work Plan and provide a summary of any existing environmental data which is relevant to the investigation. The summary should provide the following items, at a minimum:

- 1. land ownership history,
- 2. facility operating dates,
- 3. facility's product(s),
- 4. raw materials used in facility operations, wastes generated,
- 5. nature and extent of any known contamination,
- 6. summary of an ongoing Interim Measures and past assessments,
- 7. summary of permit objective and how this objective will be satisfied.

#### B. Environmental Setting

The Permittees shall provide information on the environmental setting at the facility. The Permittees shall characterize the Environmental Setting as it relates to identified sources, pathways and areas of releases of hazardous constituents from Solid Waste Management Units (SWMUs) and/or Areas of Concern (AOCs). Data gaps pertinent to characterization of releases shall be identified and provisions made in Section E to obtain the relevant information to fill the data gap. The Environmental Setting shall cover the following items, at a minimum:

#### 1. Hydrogeology

The Permittees shall provide a summary of the hydrogeologic conditions at the facility. This discussion shall include, but not be limited to, the following information:

- a. A description of the regional and facility specific geologic and hydrogeologic characteristics affecting ground-water flow beneath the facility, including:
  - I) Regional and facility specific stratigraphy: description of strata including strike and dip, identification of stratigraphic contacts;
  - ii) Structural geology: description of local and regional structural features (e.g., folding, faulting, tilting, jointing, metamorphic foliation, etc.);
  - iii) Depositional history;
  - iv) Regional and facility specific ground-water flow patterns (porous media, fracture media, karst media); and
  - v) Identification and characterization of areas and amounts of recharge and discharge (springs in karst terrane, base level streams and rivers).
- b. An analysis of any topographic features that might influence the ground-water flow system (e.g., sinkholes and sinking streams in karst terranes).
- c. Based on any existing field data, tests (e.g., pump tests, tracer tests), and cores, a representative and accurate classification and description of the hydrogeologic units which may be part of the migration pathways at the facility (I. e., the aquifers and any intervening saturated and unsaturated units), including:
  - Hydraulic conductivity and porosity (total and effective), groundwater flow velocity, groundwater basin discharge;
  - ii) Lithology, grain size, sorting, degree of cementation;

- iii) An interpretation of hydraulic interconnections between saturated zones (i.e., aquifers) and surface waters; and
- iv) The attenuation capacity and mechanisms of the natural earth materials (e.g., ion exchange capacity, organic carbon content, mineral content, etc.).
- d. Based on data obtained from groundwater monitoring wells and piezometers installed upgradient, water wells and/or springs downgradient of the potential contaminant source, a representative description of water level or fluid pressure monitoring including:
  - I) Water-level contour and/or potentiometric maps, including seasonal variations:
  - ii) Hydrologic cross sections showing vertical gradients;
  - iii) The flow system, including the vertical and horizontal components of flow; and
  - iv) Any temporal changes in hydraulic gradients, for example, due to tidal or seasonal influences and for karst terrane, stormflow.
- e. A description of man-made influences that may affect the hydrology of the site, identifying:
  - Local water-supply and production wells with an approximate schedule of pumping; and
  - ii) Man-made hydraulic structures (pipelines, french drains, ditches, roofs, runways, parking lots, etc.).

#### 2. Soils

The Permittees shall provide an explanation of the soil and rock units above the water table in the vicinity of contaminant release(s). This summary may include, but not be limited to, the following types of information as appropriate:

- i) Surface soil distribution;
- ii) Soil profile, including ASTM classification of soils;
- iii) Transects of soil stratigraphy;
- iv) Hydraulic conductivity (saturated and unsaturated);
- v) Relative permeability;
- vi) Bulk density;
- vii) Porosity;
- viii) Soil sorption capacity;
- ix) Cation exchange capacity (CEC);
- x) Soil organic content;
- xi) Soil pH;
- xii) Particle size distribution;
- xiii) Depth of water table;
- xiv) Moisture content;
- xv) Effect of stratification on unsaturated flow;
- xvi) Infiltration:
- xvii) Evapotranspiration;
- xviii) Storage capacity;

- xix) Vertical flow rate; and
- xx) Mineral content.

#### 3. Surface Water and Sediment

The Permittees shall provide a description of the surface water bodies in the vicinity of the facility. This summary may include, but not be limited to, the following activities and information:

- a. Description of the temporal and permanent surface water bodies including:
  - For lakes and estuaries: location, elevation, surface area, inflow, outflow, depth, temperature stratification, and volume;
  - ii) For impoundments: location, elevation, surface area, depth, volume, freeboard, and construction and purpose;
  - iii) For streams, ditches, and channels: location, elevation, flow, velocity, depth, width, seasonal fluctuations, flooding tendencies (i.e., 100 year event), discharge point(s), and general contents.
  - iv) Drainage patterns; and
  - v) Evapotranspiration.
- b. Description of the chemistry of the natural surface water and sediments. This includes determining the pH, total dissolved solids, total suspended solids, biological oxygen demand, alkalinity, conductivity, dissolved oxygen profiles, nutrients, chemical oxygen demand, total organic carbon, specific contaminant concentrations, etc.
- c. Description of sediment characteristics including:
  - i) Deposition area;
  - ii) Thickness profile; and
  - iii) Physical and chemical parameters (e.g., grain size, density, organic carbon content, ion exchange capacity, pH, etc.)

#### 4. <u>Air</u>

The Permittees shall provide information characterizing the climate in the vicinity of the facility. Such information may include, but not be limited to:

- a. A description of the following parameters:
  - i) Annual and monthly rainfall averages;
  - ii) Monthly temperature averages and extremes;
  - iii) Wind speed and direction;
  - iv) Relative humidity/dew point;
  - v) Atmospheric pressure;
  - vi) Evaporation data;
  - vii) Development of inversions; and
  - viii) Climate extremes that have been known to occur in the vicinity of the facility, including frequency of occurrence (i.e., Hurricanes)

- b. A description of topographic and man-made features which affect air flow and emission patterns, including:
  - i) Ridges, hills or mountain areas;
  - ii) Canyons or valleys;
  - iii) Surface water bodies (e.g., rivers, lakes, bays, etc.); and
  - iv) Buildings.

#### C. Source Characterization

For those sources from which releases of hazardous constituents have been detected, the Permittees shall provide analytical data to completely characterize the wastes and the areas where wastes have been placed, to the degree that is possible without undue safety risks, including: type, quantity; physical form; disposition (containment or nature of deposits); and facility characteristics affecting release (e. g., facility security, and engineering barriers). Data gaps on source characterization shall be identified and provisions made in Section E to obtain the relevant information to fill the data gap. This summary shall include quantification of the following specific characteristics, at each source area:

#### 1. <u>Unit/Disposal Area Characteristics:</u>

- a. Location of unit/disposal area;
- b. Type of unit/disposal area;
- c. Design features;
- d. Operating practices (past and present)
- e. Period of operation;
- f. Age of unit/disposal area;
- g. General physical conditions; and
- h. Method used to close the unit/disposal area.

#### 2. Waste Characteristics:

- a. Type of wastes placed in the unit;
  - i) Hazardous classification (e. g., flammable, reactive, corrosive, oxidizing or reducing agent);
  - ii) Quantity; and
  - iii) Chemical composition.
- b. Physical and chemical characteristics such as:
  - i) Physical form (solid, liquid, gas);
  - ii) Physical description (e.g., powder, oily sludge);
  - iii) Temperature;
  - iv) pH;
  - v) General chemical class (e.g., acid, base, solvent);
  - vi) Molecular weight;
  - vii) Density;
  - viii) Boiling point;
  - ix) Viscosity;
  - x) Solubility in water;

- xi) Cohesiveness of the waste; and
- xii) Vapor pressure.
- c. Migration and dispersal characteristics of the waste such as:
  - i) Sorption capability;
  - ii) Biodegradability, bioconcentration, and biotransformation;
  - iii) Photodegradation rates;
  - iv) Hydrolysis rates; and
  - v) Chemical transformations.

#### D. Potential Receptors

The Permittees shall provide data describing the human populations and environmental systems that are susceptible to contaminant exposure from the facility. Data gaps pertinent to receptor analysis shall be identified and provisions made in Section E to obtain the relevant information to fill the data gap. The following characteristics shall be identified at a minimum:

- 1. <u>Current local uses and planned future uses of groundwater:</u>
  - a. Type of use (e.g., drinking water source: municipal or residential, agricultural, domestic/non-potable, and industrial);
  - Location of groundwater users, to include withdrawal and discharge wells and springs, within one mile of the impacted area.

The above information should also indicate the aquifer or hydrogeologic unit used and/or impacted for each item.

- 2. <u>Current local uses and planned future uses of surface waters directly impacted by the facility:</u>
  - a. Domestic and municipal (e.g., potable and lawn/gardening watering);
  - b. Recreational (e.g., swimming, fishing);
  - c. Agricultural;
  - d. Industrial; and
  - e. Environmental (e.g., fish and wildlife propagation).
- 3. Human use of or access to the facility and adjacent lands, including but not limited to:
  - a. Recreation;
  - b. Hunting;
  - c. Residential;
  - d. Commercial; and
  - e. Relationship between population locations and prevailing wind direction.
- 4. A general description of the biota in surface water bodies on, adjacent to, or affected by the facility.
- 5. A general description of the ecology within the area adjacent to the facility.

- 6. A general demographic profile of the people who use have access to the facility and adjacent land, including, but not limited to: age; sex; and sensitive subgroups.
- 7. A description of any known or documented endangered or threatened species near the facility.

### E. Sampling and Analysis Plan(s) for Characterization of Releases of Hazardous Waste/Hazardous Constituents

The Permittees shall prepare a plan to document all monitoring procedures necessary to characterize the extent, fate and transport of releases (i.e., identify sampling locations, sampling procedures and sample analysis to be performed during the investigation to characterize the environmental setting, source, and releases of hazardous constituents, so as to ensure that all information and data are valid and properly documented). The sampling strategy and procedures shall be in accordance with EPA Region 4 Environmental Compliance Branch's <u>Standard Operating Procedure and Quality Assurance Manual</u> (SOP) (most recent version). Any deviations from this reference must be requested by the applicant and approved by EPA. If a Risk Assessment is expected to be performed once release characterization is complete or nearly complete, Data Quality Objectives (DQO) for a Human Health Risk Assessment requires a Data Quality Objective of Level 3 or greater.

The Sampling and Analysis Plan must specifically discuss the following unless the SOP procedures are specifically referenced.

#### 1. <u>Sampling Strategy</u>

- a. Selecting appropriate sampling locations, depths, etc.;
- b. Obtaining all necessary ancillary data;
- c. Determining conditions under which sampling should be conducted;
- d. Determining which media are to be sampled (e.g., groundwater, air, soil, sediment, subsurface gas);
- e. Determining which parameters are to be measured and where;
- f. Selecting the frequency of sampling and length of sampling period;
- g. Selecting the types of samples (e.g., composite vs. grab) and number of samples to be collected.

#### 2. <u>Sampling Procedures</u>

- a. Documenting field sampling operations and procedures, including;
  - Documentation of procedures for preparation of reagents or supplies which become an integral part of the sample (e.g., filters, preservatives, and absorbing reagents);
  - ii) Procedures and forms for recording the exact location and specific considerations associated with sample acquisition;
  - iii) Documentation of specific sample preservation method;
  - iv) Calibration of field instruments;
  - v) Submission of appropriate blanks (e.g., field, equipment, trip, etc.);
  - vi) Potential interferences present at the facility;
  - vii) Construction materials and techniques, associated with monitoring wells and piezometers;

- viii) Field equipment listing and sampling containers;
- ix) Sampling order; and
- x) Decontamination procedures.
- b. Selecting appropriate sample containers;
- c. Sampling preservation; and
- d. Chain-of-custody, including:
  - i) Standardized field tracking reporting forms to establish sample custody in the field prior to shipment; and
  - ii) Pre-prepared sample labels containing all information necessary for effective sample tracking.
  - iii) Chain-of-custody seals for sample containers and shipping coolers.

#### 3. Sample Analysis

Sample analysis shall be conducted in accordance with SW-846: "Test Methods for Evaluating Solid Waste - Physical/Chemical Methods" (most recent version) or an alternate approved method. The sample analysis section of the Sampling and Analysis Plan shall specify the following:

- a. Chain-of-custody procedures, including:
  - Identification of a responsible party to act as sampling custodian at the laboratory facility authorized to sign for incoming field samples, obtain documents of shipment, and verify the data entered onto the sample custody records;
  - ii) Provision for a laboratory sample custody log consisting of serially numbered standard lab-tracking report sheets; and
  - iii) Specification of laboratory sample custody procedures for sample handling, storage, and dispersement for analysis.
- b. Sample storage (e.g., maximum holding times for constituents);
- c. Sample preparation methods;
- d. Analytical Procedures, including:
  - i) Scope and application of the procedure;
  - ii) Sample matrix;
  - iii) Potential interferences;
  - iv) Precision and accuracy of the methodology; and
  - v) Method Detection Limits; and
  - vi) Practical Quantitative Limits
- e. Calibration procedures and frequency;
- f. Data reduction, validation and reporting;

- g. Internal quality control checks, laboratory performance and systems audits and frequency, including:
  - i) Method blank(s);
  - ii) Laboratory control sample(s);
  - iii) Calibration check sample(s);
  - iv) Replicate sample(s);
  - v) Matrix-spiked sample(s);
  - vi) "Blind" quality control sample(s);
  - vii) Control charts;
  - viii) Surrogate samples;
  - ix) Zero and span gases; and
  - x) Reagent quality control checks.
- h. External quality control checks by EPA, including:
  - i) Spikes and blanks at sampling events for which EPA or its technical representative provides oversight; and
  - ii) The equivalent of a CLP data package for samples split with EPA or for which EPA specifically requests the package.
- i. Preventive maintenance procedures and schedules:
- j. Corrective action (for laboratory problems); and
- k. Turnaround time.

#### F. Data Management Plan

The Permittees shall develop and initiate a Data Management Plan to document and track investigation data and results. This plan shall identify and set up data documentation materials and procedures, project file requirements, and project-related progress reporting procedures and documents. The plan shall also provide the format to be used to present the raw data and conclusions of the investigation.

#### 1. Data Record

The data record shall include the following:

- a. Unique sample or field measurement code;
- b. Sampling or field measurement location and sample or measurement type;
- c. Sampling or field measurement raw data;
- d. Laboratory analysis ID number;
- e. Property or component measures; and
- f. Result of analysis (e.g. concentration, data qualifiers).

#### 2. Tabular Displays

The following data shall be presented in tabular displays:

a. Unsorted (raw) data;

- b. Results for each medium, or for each constituent monitored;
- c. Data reduction for statistical analysis, as appropriate;
- d. Sorting of data by potential stratification factors (e.g., location, soil layer, topography); and
- e. Summary data

#### 3. Graphical Displays

The following data shall be presented in graphical formats (e.g., bar graphs, line graphs, area or plan maps, isopleth plots, cross-sectional plots or transects, three dimensional graphs, etc.):

- a. Display sampling location and sampling grid:
- b. Indicate boundaries of sampling area, and area where more data are required;
- c. Display geographical extent of contamination, both horizontally and vertically;
- d. Illustrate changes in concentration in relation to distances from the source, time, depth or other parameters; and
- e. Indicate features affecting inter-media transport and show potential receptors.

#### G. Project Management Plan - Schedule of Implementation

Permittees shall prepare a Project Management Plan which will cover qualifications of personnel categories and the management control structure for the project. The Permittees shall also provide a schedule for completing the planned RFI activities. The schedule shall be as specific as possible (i.e., it should indicate the number of days/weeks/months required for each major work plan task).

#### II. RFI REPORT REQUIREMENTS - ELEMENTS OF THE RFI REPORT

The RFI Report shall include, at a minimum, the following elements:

#### A. Introduction

The Permittees shall describe the purpose of the RFI Work Plan and provide a summary description of the project.

#### B. Environmental Setting

The Permittees shall describe the Environmental Setting in and around the facility. The RFI Work Plan should contain some, if not all, of the information on the Environmental Setting. Any information collected during work plan implementation which clarifies or improves understanding of the Environmental Setting should be provided in this section.

#### C. Source Characterization

The Permittees shall summarize the sources of contamination and nature of releases identified at the facility. The RCRA Facility Assessment and the RFI Work Plan should contain some, if not all, of the information on Source Characterization. Any information collected during work plan implementation or obtained from the sources (e.g., voluntarily or from other Environmental Programs) which directly addresses Source Characterization should be provided in this section.

#### D. Sampling and Anaylsis Results

The Permittees shall present data results obtained pursuant to the RFI Work Plan. The Permittees shall identify any work plan proposals which were not completed and explain why such actions were not finished. The Permittees shall also present its analysis/interpretation of how the sampling data meet the RFI objective and how the sampling data fits or modifies the contaminant conceptual model. For all analytical data, the Permittees shall discuss the results of data quality/data review.

#### E. Data Quality Assurance/Data Quality Data Review

The Permittees shall perform a Quality Assurance/Quality Control data review on all data present in the RFI. The Quality Assurance/Quality Control data review shall be in accordance with the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (EPA-540/R94-013) and the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (EPA-540/R94-012). The data review shall address the following, at minimum:

- a. Holding times;
- b. Blanks;
- c. Laboratory Control Samples;
- d. Field Duplicates;
- e. Surrogate Recoveries;
- f. Matrix Spike/Matrix Spike Duplicates
- g. Data Assessment Data Usability.

#### F. Conclusions

The Permittees shall summarize the major conclusions reached after analysis of the environmental setting, source characterization, sampling and analysis results and data quality. Any data gaps, needed to complete characterization of the scope and extent of the releases from SWMUs and/or AOCs or to refine further the contaminant conceptual model, shall be identified and recommendations made in the Recommendations Section of the report.

#### G. Recommendations

The Permittees shall provide its recommendations on what, if any, further action is needed to complete the characterization of release(s) from SWMUs and/or AOCs.

#### H. Work Plan for Additional Investigations

If further investigations are determined to be needed to complete the objective of the RFI, then the Permittees shall provide a work plan to complete characterization of the release(s).

#### **ATTACHMENT O**

#### CORRECTIVE MEASURE STUDY (CMS) OUTLINE

The purpose of the CMS portion of the RCRA corrective action process is to identify and evaluate potential remedial alternatives for the releases of hazardous constituents that have been identified at the facility through the RFI or other investigations to need further evaluation. The scope and requirements of the CMS are balanced with the expeditious initiation of remedies and rapid restoration of contaminated media. The scope and requirements of the CMS should be focused to fit the complexity of the site-specific situation. It is anticipated that Permittees with sites with complex environmental problems may need to evaluate a number of technologies and corrective measure alternatives. For other facilities, however, the evaluation of a single corrective measure alternative may be adequate. Therefore, a streamlined or focused approach to the CMS may be initiated. Information gathered during any stabilizations or interim measures will be used to augment the CMS and in cases where corrective action goals are met, may be a substitute for the final CMS.

Regardless of whether a streamlined/focused or a detailed CMS is required, a CMS Work Plan and CMS Report are generally required elements. The requirements for a full, detailed CMS are listed below. The Agency has the flexibility not to require sections of the plan and/or report, where site-specific situations indicate that all requirements are not necessary. Additionally, the Agency may require additional studies besides these discussed in order to support the CMS.

#### I. Corrective Measures Study (CMS) Work Plan

#### A. <u>Elements of the CMS Work Plan</u>

The Corrective Measures Study (CMS) Work Plan shall include at a minimum the following elements:

- 1. A brief site-specific description of the overall purpose of the CMS;
- A brief description of the corrective measure objectives, including proposed target media cleanup standards (e.g., promulgated federal and state standards) and preliminary points of compliance or a description of how a risk assessment will be performed (e.g., guidance documents);
- 3. A brief description of the specific corrective measure technologies and/or corrective measure alternatives which will be studied;
- 4. A brief description of the general approach to investigating and evaluating potential corrective measures;
- 5. A detailed description of any proposed pilot, laboratory and/or bench scale studies;
- 6. A proposed outline for the CMS Report including a description of how information will be presented;
- A brief description of overall project management including overall approach, levels of authority (include organization chart), lines of communication, project schedules, budget and

personnel. Include a description of qualifications for personnel directing or performing the work;

- 8. A project schedule that specifies all significant steps in the process and when key documents (e.g., CMS Progress Reports, draft CMS Report) are to be submitted to the Agency;
- 9. A detailed Public Involvement Plan.

## II. Corrective Measures Study (CMS) Report

The detail of a CMS may vary based upon the complexity of the site, on-going Interim Measures, etc. However, the CMS Report may include the following elements:

## A. <u>Introduction/Purpose</u>

The Permittees shall describe the purpose of the CMS Report and provide a summary description of the project.

# B. <u>Description of Current Situation</u>

The Permittees shall submit a summary and an update to the information describing the current situation at the facility and the known nature and extent of the contamination as documented by the RCRA Facility Investigation (RFI) Report. This discussion should concentrate on those issues which could significantly affect the evaluation and selection of the corrective measures alternative(s). The Permittees shall provide an update to information presented in the RFI regarding previous response activities and interim measures which have or are being implemented at the facility. The Permittees shall also make a facility-specific statement of the purpose for the response, based on the results of the RFI. The statement of purpose should identify the actual or potential exposure pathways that should be addressed by corrective measures.

## C. Establishment of Proposed Media Specific Cleanup Standards

The Permittees shall describe the proposed media cleanup standards and point of compliance. The standards must be either background, promulgated federal and state standards or risk-derived standards. If media clean-up standards are not proposed, then the Agency will unilaterally propose setting media clean-up standards to either background, promulgated federal and state standards or the most conservative risk-derived standards.

# D. <u>Identification, Screening and Development of Corrective Measure Technologies</u>

1. Identification: List and briefly describe potentially applicable technologies for each affected media that may be used to achieve the corrective action objectives. Include a table that summarizes the available technologies.

The Permittees should consider innovative treatment technologies, especially in situations where there are a limited number of applicable corrective measure technologies.

 Screening: The Permittees shall screen the corrective measure technologies to eliminate those that may prove infeasible to implement, that rely on technologies unlikely to perform satisfactorily or reliably, or that do not achieve the corrective measure objective within a reasonable time period. This screening process focuses on eliminating those technologies which have severe limitations for a given set of waste and site-specific conditions. The screening step may also eliminate technologies based on inherent technology limitations.

Site, waste, and technology characteristics which are used to screen inapplicable technologies are described in more detail below:

- a. Site Characteristics: Site data should be reviewed to identify conditions that may limit or promote the use of certain technologies. Technologies whose use is clearly precluded by site characteristics should be eliminated from further consideration.
- b. Waste Characteristics: Identification of waste characteristics that limit the effectiveness or feasibility of technologies is an important part of the screening process. Technologies clearly limited by these waste characteristics should be eliminated from consideration. Waste characteristics particularly affect the feasibility of in-situ methods, direct treatment methods, and land disposal (on/off-site).
- c. Technology Limitations: During the screening process, the level of technology development, performance record, and inherent construction, operation, and maintenance problems should be identified for each technology considered. Technologies that are unreliable, perform poorly, or are not fully demonstrated may be eliminated in the screening process. For example, certain treatment methods have been developed to a point where they can be implemented in the field without extensive technology transfer or development.
- 3. Corrective Measure Development: The Permittees shall assemble the technologies that pass the screening step into specific alternatives that have the potential to meet the corrective action objectives for each media. Options for addressing less complex sites could be relatively straight-forward and may only require evaluation of a single or limited number of alternatives. Each alternative may consist of an individual technology or a combination used in sequence (i.e., treatment train). Different alternatives may be considered for separate areas of the facility, as appropriate. List and briefly describe each corrective measure alternative.

## E. Evaluation of a Final Corrective Measure Alternative

For each remedy which warrants a more detailed evaluation (i.e., those that passed through the screening step), including those situations when only one remedy is being proposed, the Permittees shall provide detailed documentation of how the potential remedy will comply with each of the standards listed below. These standards reflect the major technical components of remedies including cleanup of releases, source control and management of wastes that are generated by remedial activities. The specific standards are as follows:

- I. Protect human health and the environment.
- Attain media cleanup standards set by EPA.
- Control the source of releases so as to reduce or eliminate, to the extent practicable, further releases that may pose a threat to human health and the environment.
- 4. Comply with applicable standards for management of wastes.
- Other factors.

In evaluating the selected alternative or alternatives, the Permittees shall prepare and submit information that documents that the specific remedy will meet the standards listed above. The following guidance should be used in completing this evaluation.

## 1. Protect Human Health and the Environment

Corrective action remedies must be protective of human health and the environment. Remedies may include those measures that are needed to be protective, but are not directly related to media cleanup, source control or management of wastes. An example would be a requirement to provide alternative drinking water supplies in order to prevent exposures to releases from an aquifer used for drinking water purposes. Therefore, the Permittees shall provide a discussion of any short term remedies necessary to meet this standard, as well as discuss how the corrective measures alternative(s) meet this standard.

## 2. Attain Media Cleanup Standards

Remedies will be required to attain media cleanup standards. As part of the necessary information for satisfying this requirement, the Permittees shall address whether the potential remedy will achieve the remediation objectives. An estimate of the time frame necessary to achieve the goals shall be included. Contingent remedies may be proposed if there is doubt if the initial remedy will be successful (e.g., contingent remedies to innovative technologies).

#### Control of Sources of Releases

The Permittees shall address the issue of whether source control measures are necessary, and if so, the type of actions that would be appropriate. Any source control measure proposed should include a discussion on how well the method is anticipated to work given the particular situation at the facility and the known track record of the specific technology.

### 4. Comply With any Applicable Standards for Management of Wastes

The Permittees shall include a discussion of how the specific waste management activities will be conducted in compliance with all applicable state and federal regulations (e.g., closure requirements, LDRs)

#### Other Factors

There are five general factors that will be considered as appropriate by EPA in selecting/approving a remedy that meets the four standards listed above. These five decision factors include:

- a. Long-term reliability and effectiveness;
- b. Reduction in the toxicity, mobility or volume of wastes;
- c. Short-term effectiveness;
- d. Implementability; and
- e. Cost.

Examples of the type of information to include are provided below:

- a. Long-term reliability and effectiveness: The Permittees may consider whether the technology, or combination of technologies, have been used effectively under analogous site conditions, whether failure of any one technology in the alternative would have any immediate impact on receptors, and whether the alternative would have the flexibility to deal with uncontrollable changes at the site. Operation and maintenance requirements include the frequency and complexity of necessary operation and maintenance. In addition, each corrective measure alternative should be evaluated in terms of the projected useful life of the overall alternative and of its component technologies. Useful life is defined as the length of time the level of effectiveness can be maintained.
- b. Reduction in the toxicity, mobility or volume of wastes: As a general goal, remedies will be preferred that employ techniques that are capable of eliminating or substantially reducing the potential for the wastes in SWMUs and/or contaminated media at the facility to cause future environmental releases. Estimates of how the corrective measure alternative will reduce toxicity, mobility and or volume of the waste is required and may be accomplished through a comparison of initial site conditions to expected post-corrective measures conditions.
- c. Short-term effectiveness: The Permittees shall evaluate each corrective measure alternative for short-term effectiveness. Possible factors to consider are fire, explosion, exposure to hazardous constituents and potential threats associated with the treatment, excavation, transportation and re-disposal or containment of the waste material.
- d. Implementability: Information to consider when assessing implementability include:
  - i) The administrative activities needed to implement the corrective measure alternative (e.g. permits, rights of way, etc.) and the length of time these activities will take;
  - ii) The constructibility, time for implementation, and time for beneficial results;
  - iii) The availability of adequate off-site treatment, storage capacity, disposal services, needed technical services and materials; and
  - iv) The availability of prospective technologies for each corrective measure alternative.
- e. Cost: The Permittees shall develop an estimate of the cost of each corrective measure alternative (and for each phase or segment of the alternative). The cost estimate shall include both capital and operation and maintenance costs. The capital costs shall include, but are not limited to, costs for: engineering, site preparation, construction, materials, labor, sampling/analysis, waste management/disposal, permitting, health and safety measures, etc. The operation and maintenance costs shall include labor, training, sampling and analysis, maintenance materials, utilities, waste disposal and/or treatment, etc. Costs shall be calculated as the net present value of the capital and operation and maintenance costs.
- F. <u>Justification and Recommendation of the Corrective Measure or Measures</u>

The Permittees shall justify and recommend in the CMS Report a corrective measure alternative for consideration by the Agency. Such a recommendation should include a description and supporting rationale for the preferred alternative that is consistent with the corrective action standards and remedy selection decision factors discussed above. In addition, this recommendation shall include summary tables which allow the alternative or alternatives to be understood easily. Trade-offs among health risks, environmental effects, and other pertinent factors shall be highlighted. The Regional Administrator will select the corrective measure alternative or alternatives to be implemented based on the results presented in the CMS Report.

# G. Preliminary Identification of the Financial Assurance Mechanism

The Permittees shall also tentatively identify the Financial Assuance mechanism to be utilized to eventually satisfy Condition V.H.3.

# ATTACHMENT P

# SCHEDULE OF COMPLIANCE SUMMARY

Schedule of Compliance	Due Date
Notification of Newly Identified SWMUs and AOCs Condition V.B.1. and Condition V.B.2.	Within fifteen (15) calendar days of discovery
SWMU Assessment Report  Condition V.B.3.	Within ninety (90) calendar days of notification
Notification for Newly Discovered Releases at Previously Identified SWMUs and AOCs Condition V.C.1.	Within fifteen (15) calendar days of discovery
Confirmatory Sampling Work Plan for SWMUs identified under Condition V.B.4. or AOCs identified under Condition V.B.1.  Condition V.D.2.	Within forty-five (45) calendar days of notification by the Regional Administrator (RA)
Confirmatory Sampling Report  Condition V.D.5.	In accordance with the approved CS Work Plan
RFI Work Plan for SWMU(s) and AOC(s) Identified under Condition V.B.4., Condition V.C.2., or Condition V.D.5.  Condition V.E.1.b.	Within ninety (90) calendar days after receipt of notification by Regional Administrator (RA) which SWMUs or AOCs require an RFI
Draft RFI Report  Condition V.E.3.a.	In accordance with the approved RFI Work Plan
Final RFI Report  Condition V.E.3.c	Within thirty (30) calendar days after receipt of RA's final comments on Draft RFI Report
RFI Progress Reports  Condition V.E.3.d.	Quarterly, beginning ninety (90) calendar days from the start date specified by the RA *
Interim Measures for SWMU(s) and AOC(s) identified under Condition V. A.1.  Condition V.F.1.a.	Dependent on the Interim Measures Stage of the SWMUs and AOCs (see Condition V.F.1.a.)
Interim Measures Work Plan  Condition V.F.1.b.	Within thirty (30) calendar days of notification by RA
Interim Measures Progress Reports  Condition V.F.3.a.	In accordance with the approved Interim Measures Work Plan ** or semi-annually for Permittee initiated IM

Schedule of Compliance	Due Date
Interim Measures Report  Condition V.F.3.b.	Within ninety (90) calendar days of completion
CMS Work Plan  Condition V.G.1.a.	Within ninety (90) calendar days of notification by RA that a CMS is required
Implementation of CMS Work Plan  Condition V.G.2.	Within fifteen (15) calendar days after receipt of RA approval of Plan
Draft CMS Report  Condition V.G.3.a.	In accordance with the schedule in the approved CMS Work Plan
Final CMS Report  Condition V.G.3.a.	Within thirty (30) calendar days of RA's final comments on Draft CMS Report
Demonstration of Financial Assurance Condition V.H.3.	Within one hundred twenty (120) calendar days after permit modification for remedy
Noncompliance/Imminent Hazard Report Condition I.D.14.	Oral within 24 hours and written within fifteen (15) calendar days of becoming aware of the hazardous circumstances
Permit Modification for New Units Subject to Subpart CC Air Emission Standards <i>Condition IV.B.</i>	According to Permit Modification procedures in Part 270

The above reports must be signed and certified in accordance with 40 CFR 270.11.

This applies to Work Plan execution that requires more than one hundred eighty (180) calendar days This applies to Work Plan execution that requires more than one year.

### ATTACHMENT Q

#### **ACTION LEVELS**

#### Definition

Action levels are conservative health-based concentrations of hazardous constituents determined to be indicators for the protection of human health or the environment. Action levels shall be set for all hazardous constituents, a subset of hazardous wastes, identified in the RFI Report(s) or for those hazardous constituents which the Regional Administrator has reason to believe may have been released from a solid waste management unit (SWMU) or Area of Concern (AOC) at the facility. Should the concentration of a hazardous constituent(s) in an aquifer, surface water, soils, or air exceed its action level for any environmental medium, the Regional Administrator may require the Permittees to conduct a Corrective Measure Study (CMS) to meet the requirements of permit Condition V.G., Attachment O, and 40 MHWMR 264.101. If the Regional Administrator determines that a constituent(s) released from a SWMU or AOC in quantities below its respective action level(s) may pose a threat to human health or the environment, given site-specific exposure conditions, cumulative effects, ecological concerns, etc., then the Regional Administrator has the authority to require a CMS to meet the requirements of permit Condition V.G., Attachment O, and 40 MHWMR264.101.

Action levels shall be concentration levels which satisfy the following criteria:

- A. 1. Is derived in a manner consistent with EPA guidelines for assessing human and environmental health risks from hazardous constituents; and
  - 2. Is based on scientifically valid studies conducted in accordance with the Toxic Substances Control Act (TSCA) Good Laboratory Practice Standards, or equivalent; and
  - 3. For human health action levels to address carcinogens, represents a concentration associated with an excess upper bound lifetime cancer risk of 1 X 10<sup>-6</sup> for carcinogens due to continuous constant lifetime exposure; and
  - 4. For human health action levels to address systemic toxicants, represents a concentration to which the human population (including sensitive subgroups) could be exposed on a daily basis that is likely to be without appreciable risk of deleterious effects during a lifetime.
- B. For constituent(s) detected in groundwater, air, surface water, or soils, for which a concentration level that meets the criteria specified in section I.A.1 through I.A.4 of this appendix is not available or possible, the action level for the constituent(s) shall be the background concentration of the constituent(s).

### II. Groundwater

- A. Action levels for constituents in groundwater shall be concentrations specified as:
  - 1. MCLs; or

- 2. For constituents for which MCLs have not been promulgated, a concentration which satisfies the criteria specified in section I.A.1 through I.A.4 of this appendix shall be calculated.
- B. In deriving human health action levels for constituents for which MCLs have not been promulgated, the recommended equations/assumptions shall be that followed by Region 3 in its Quarterly Risk-Based Concentration Tables. Because the science of risk assessment is in flux and technical criteria/opinion of today (e.g., content of standardized equations, use of default exposure assumptions, etc.) may change, the Regional Administrator reserves that right to revise the above recommended equations/assumptions as needed to meet the criteria listed in section I.A.1 through I.A.4.

#### III. Surface Water

- A. Action levels for constituents in surface water shall be concentrations specified as:
  - 1. Water Quality Standards established pursuant to the Clean Water Act by the State in which the facility is located, where such standards are expressed as numeric values; or
  - 2. Numeric interpretations of State narrative water quality standards where water quality standards expressed as numeric values have not been established by the State; or
  - 3. MCLs for constituents in surface water designated by the State for drinking water supply, where numeric values or numeric interpretations, described in paragraphs 1 and 2, are not available; or
  - 4. For constituents in surface waters designated by the State for drinking water supply for which numeric values, numeric interpretations, or MCLs are not available, a concentration which meets the criteria specified in section I.A.1 through I.A.4 of this appendix shall be calculated assuming exposure through consumption of the water contaminated with the constituent; or
  - 5. For constituents in surface waters designated for use or uses other than drinking water supply and for which numeric values or numeric interpretations have not been established, a concentration established by the EPA Regional Administrator which meets the criteria specified in section I.A.1 through I.A.4 of this appendix shall be calculated.
- B. In deriving human health action levels for constituents in surface water, the recommended equations/assumptions shall be that followed by Region 3 in its Quarterly Risk-Based Concentration Tables. Because the science of risk assessment is in flux and technical criteria/opinion of today (e.g., content of standardized equations, use of default exposure assumptions, etc.) may change, the Regional Administrator reserves that right to revise the above recommended equations/assumptions as needed to meet the criteria listed in section I.A.1 through I.A.4.

# IV. Air

A. Action levels for constituents in air shall be defined as concentrations which meet the criteria specified in section I.A.1 through I.A.4. The action levels for air shall be measured or estimated at the facility boundary, or another location closer to the unit if necessary to protect human health and the environment.

B. In deriving human health action levels for constituents in air, the RfC should be utilized as the action level, where available. The RfC includes exposure assumptions, and no calculations are necessary to calculate an action level. If a RfC is not available, the recommended methodology/assumptions shall be that followed in the Region 3 Quarterly Risk-Based Concentration Tables. Because the science of risk assessment is in flux and technical criteria/opinion of today (e.g., content of standardized equations, use of default exposure assumptions, etc.) may change, the Regional Administrator reserves that right to revise the above recommended equations/assumptions as needed to meet the criteria listed in section I.A.1 through 1.A.4.

#### V. Soils

- A. Action levels for constituents in soils shall be concentrations which meet the criteria specified in section I.A.1 through I.A.4 of this appendix.
- B. The calculation of human health action levels for soil includes several specific exposure routes which must be evaluated individually: 1) ingestion, 2) inhalation and 3) leachability to groundwater. In deriving action levels to address ingestion, inhalation and leaching, the methodology/assumptions found in the most recent Soil Screening Level Guidance should be reviewed for appropriate equations and assumptions. Because the science of risk assessment is in flux and technical criteria/opinion of today (e.g., content of standardized equations, use of default exposure assumptions, etc.) may change, the Regional Administrator reserves that right to revise the above recommended equations/assumptions as needed to meet the criteria listed in section I.A.1 through I.A.4

#### VI. Sediment

A. Action levels for constituents in sediment shall be based on whether human health or ecological health is the major concern. If ecological concerns are deemed to predominate, then action levels for constituents in sediment shall be concentrations based on the latest sediment screening values as calculated by Region 4. Because the science of risk assessment is in flux and technical criteria/opinion of today (e.g., content of standardized equations, use of default exposure assumptions, etc.) may change, the Regional Administrator reserves that right to revise the above recommended equations/assumptions as needed to meet the criteria listed in section I.A.1 through I.A.4.

If an ecological sediment screening value for a constituent of concern has not been generated by Region 4 and cannot be generated using the criteria in sections I.A.1 and I.A.2, then the ecological action level for sediment shall be background. If human health is the prevailing concern, then the human health action level for sediment shall address all applicable exposures.

# **Koppers Inc**

# **General Information**

ID	Branch	SIC	County	Basin	Start	End
876	Energy and Transportation	2491	Grenada			

# Address

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

# **Telecommunications**

	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 Industries, Inc.	Air-AIRS AFS	10/12/2000	
096000012	Koppers Industries, Inc.	Air-Title V Fee Customer	03/11/1997	
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	
MSR220005	Koppers Industries, Inc.	GP-Wood Treating	09/25/1992	
MSD007027543	Koppers Industries, Inc.	Hazardous Waste-EPA	08/27/1999	
HW8854301	Koppers Industries, Inc.	Hazardous Waste-TSD	06/28/1988	06/28/1908
HW8854301	Koppers Industries, Inc.	Hazardous Waste-TSD	11/10/1999	
876	Koppers Industries, Inc.	Historic Site Name	11/09/1981	
876	Koppers, Inc.	Official Site Name	12/11/2006	12/11/2000
MSP090300	Koppers Industries, Inc.	Water-Pretreatment	11/14/1995	11/13/2000
MSP090300	Koppers Industries, Inc.	Water-Pretreatment	09/18/2001	
	Koppers Industries, Inc.	Water-SOP	11/09/1981	

# **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	
	PT CIU - Timber Products		

Water	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)		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

12/20/2006 12:16:40 PM