PRELIMINARY DETERMINATION

PERMIT RENEWAL AND NAME CHANGE

Packaging Corporation of America
4585 Industrial Rd.
Jackson, Alabama 36545

Packaging Corporation of America Industrial Waste Landfill
Permit No. 13-05

February 6, 2026

Packaging Corporation of America has applied for a permit to continue to operate an industrial waste landfill known as the Boise White Paper, LLC Industrial Waste Landfill (Permit No. 13-05) and to change the name of the Boise White Paper, LLC Industrial Waste Landfill to Packaging Corporation of America Industrial Waste Landfill (Permit No. 13-05). The waste stream for the Packaging Corporation of America Industrial Waste Landfill would remain non-putrescible and non-hazardous industrial waste, waste lime, boiler ash, woodyard rejects, clarifier solids, water treatment plant backwash solids, mix pond solids, miscellaneous wood waste, black liquor tank bottoms, waste from the wastepaper recycling plant, and primary and secondary rejects from the Old Corrugated Cardboard recycling facility. The service area for the Packaging Corporation of America Industrial Waste Landfill would remain the Packaging Corporation of America's Jackson Mill. The maximum average daily volume of waste disposed of at the Packaging Corporation of America Industrial Waste Landfill would remain 2000 cubic yards per day. All previously approved variances and special conditions have been requested and would remain in the permit.

The landfill is located in the Southwest ¼ of Section 16, Township 6 North, Range 2 East, in Clarke County, Alabama. The permitted facility consists of approximately 70.25 acres with approximately 41 acres for disposal operations.

The Land Division has determined that the permit renewal and name change applications comply with the requirements of ADEM's Administrative Code Division 13 regulations.

Technical Contact:

Dr. Dontavious Sippial
Solid Waste Engineering Section
Land Division
(334) 270-5651

Alabama Department of Environmental Management

SOLID WASTE DISPOSAL FACILITY PERMIT

PERMITTEE:	**Packaging Corporation of America**
FACILITY NAME:	**Packaging Corporation of America Industrial Waste Landfill**
FACILITY LOCATION:	**Southwest ¼ of Section 16, Township 6 North, Range 2 East, in Clarke County, Alabama. The total permitted area is approximately 70.25 acres with approximately 41 acres for disposal operations.**
PERMIT NUMBER:	**13-05**
PERMIT TYPE:	**Industrial Landfill**
WASTE APPROVED FOR DISPOSAL:	**Non-putrescible and non-hazardous industrial waste, waste lime, boiler ash, woodyard rejects, clarifier solids, water treatment plant backwash solids, mix pond solids, miscellaneous wood waste, black liquor tank bottoms, waste from the wastepaper recycling plant, primary and secondary rejects from the Old Corrugated Cardboard recycling facility.**
APPROVED WASTE VOLUME:	**Maximum Average Daily Volume of waste is 2000 cubic yards per day**
APPROVED SERVICE AREA:	**Packaging Corporation of America's Jackson Mill**

In accordance with and subject to the provisions of the Alabama Solid Wastes and Recyclable Materials Management Act, as amended, Code of Alabama 1975, §§ 22-27-1 to 22-27-27 ("SWRMMA"), the Alabama Environmental Management Act, as amended, Code of Alabama 1975, §§ 22-22A-1 to 22-22A-15, and rules and regulations adopted thereunder, and subject further to the conditions set forth in this permit, the Permittee is hereby authorized to dispose of the above-described solid wastes at the above-described facility location.

ISSUANCE DATE:	**XXXXXXXX, 2026**
EFFECTIVE DATE:	**XXXXXXXX, 2026**
EXPIRATION DATE:	**XXXXXXXX, 2036**

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Alabama Department of Environmental Management

ALABAMA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
SOLID WASTE PERMIT

Permittee:	Packaging Corporation of America 4585 Industrial Road Jackson, Alabama 36545
Landfill Name:	Packaging Corporation of America Industrial Waste Landfill
Landfill Location:	Southwest ¼ of Section 16, Township 6 North, Range 2 East, in Clarke County, Alabama
Permit Number:	13-05
Landfill Type:	Industrial Landfill

Pursuant to the Alabama Solid Wastes & Recyclable Materials Management Act, Code of Alabama 1975, §§ 22-27-1, *et seq*., as amended, and attendant regulations promulgated thereunder by the Alabama Department of Environmental Management (ADEM), this permit is issued to Packaging Corporation of America (hereinafter called the Permittee), to operate a solid waste disposal facility, known as the Packaging Corporation of America Industrial Waste Landfill.

The Permittee must comply with all terms and conditions of this permit. This permit consists of the conditions set forth herein (including those in any attachments), and the applicable regulations contained in Chapters 335-13-1 through 335-13-16 of the ADEM Administrative Code (hereinafter referred to as the "ADEM Admin. Code"). Rules cited are set forth in this document for the purpose of Permittee reference. Any Rule that is cited incorrectly in this document does not constitute grounds for noncompliance on the part of the Permittee. Applicable ADEM Administrative Codes are those that are in effect on the date of issuance of this permit or any revisions approved after permit issuance.

This permit is based on the information submitted to the Department on August 20, 2025, for permit renewal, and on August 26, 2025, for permittee and facility name changes, as amended, and is known as the Permit Application (hereby incorporated by reference and hereinafter referred to as the Application). Any inaccuracies found in this information could lead to the termination or modification of this permit and potential enforcement action. The Permittee must inform the Department of any deviation from or changes in the information in the Application that would affect the Permittee's ability to comply with the applicable ADEM Admin. Code or permit conditions.

This permit is effective as of **XXXXXXXXXX**, and shall remain in effect until **XXXXXXXXXX**, unless suspended or revoked.

_____ _____

Alabama Department of Environmental Management Date Signed

SECTION I. STANDARD CONDITIONS

A. Effect of Permit

The Permittee is allowed to dispose of nonhazardous solid waste in accordance with the conditions of this permit and ADEM Admin. Code Div. 13. Issuance of this permit does not convey property rights of any sort or any exclusive privilege, nor does it authorize any injury to persons or property, any invasion of other private rights, or any infringement of state or local laws or regulations. Except for actions brought under Code of Alabama 1975, §§ 22-27-1, *et seq*., as amended, compliance with the conditions of this permit shall be deemed to be compliance with applicable requirements in effect as of the date of issuance of this permit and any future revisions.

B. Permit Actions

This permit may be suspended, revoked or modified for cause. The filing of a request for a permit modification or the notification of planned changes or anticipated noncompliance on the part of the Permittee, and the suspension or revocation does not stay the applicability or enforceability of any permit condition.

C. Severability

The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.

D. Definitions

For the purpose of this permit, terms used herein shall have the same meaning as those in ADEM Admin. Code Division 13, unless this permit specifically provides otherwise; where terms are not otherwise defined, the meaning associated with such terms shall be as defined by a standard dictionary reference or the generally accepted scientific or industrial meaning of the term.

1. "EPA" for purposes of this permit means the United States Environmental Protection Agency.

2. "Permit Application" for the purposes of this permit, means all permit application forms, design plans, operational plans, closure plans, technical data, reports, specifications, plats, geological and hydrological reports, and other materials which are submitted to the Department in pursuit of a solid waste disposal permit.

E. Duties and Requirements

1. Duty to Comply

The Permittee must comply with all conditions of this permit except to the extent and for the duration such noncompliance is authorized by a variance granted by the Department. Any permit noncompliance constitutes a violation of Code of Alabama 1975, §§ 22-27-1 *et seq*., as amended, and is grounds for enforcement action, permit suspension, revocation, modification, and/or denial of a permit renewal application.

2. Duty to Reapply

If the Permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the Permittee must apply for and obtain a new permit. The renewal application must be submitted to the Department at least 180 days before this permit expires.

3. Permit Expiration

This permit and all conditions therein will remain in effect beyond the permit's expiration date if the Permittee has submitted a timely, complete application as required by Section I.E.2., and, through no fault of the Permittee, the Department has not made a final decision regarding the renewal application.

4. Need to Halt or Reduce Activity Not A Defense

It shall not be a defense for the Permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity to maintain compliance with the conditions of this permit.

5. Duty to Mitigate

In the event of noncompliance with this permit, the Permittee shall take all reasonable steps to minimize releases to the environment and shall carry out such measures as are reasonable to prevent significant adverse impacts on human health or the environment.

6. Proper Operation and Maintenance

The Permittee shall at all times properly operate and maintain all facilities and systems of control (and related appurtenances) that are installed or used by the Permittee to achieve compliance with the conditions of this permit.

7. Duty to Provide Information

If requested, the Permittee shall furnish to the Department, within a reasonable time, any information that the Department may reasonably need to determine whether cause exists for denying, suspending, revoking, or modifying this permit, or to determine compliance with this permit. If requested, the Permittee shall also furnish the Department with copies of records kept as a requirement of this permit.

8. Inspection and Entry

Upon presentation of credentials and other documents as may be required by law, the Permittee shall allow the employees of the Department or their authorized representative to:

a. Enter at reasonable times the Permittee's premises where the regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit.

b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit.

c. Inspect, at reasonable times, any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit.

d. Sample or monitor, at reasonable times, any substances or parameters at any location for the purposes of assuring permit compliance or as otherwise authorized by Code of Alabama 1975, §§ 22-27-1 *et seq*.

9. Monitoring, Corrective Actions, and Records

a. Samples and measurements taken for the purpose of monitoring or corrective action shall be representative of the monitored activity. The methods used to obtain representative samples to be analyzed must be the appropriate method from ADEM Admin. Code 335-13-4 or the methods as specified in the Application attached hereto and incorporated by reference. Laboratory methods must be those specified in Standard Methods for the Examination of Water and Wastewater (American Public Health Association, latest edition), Methods for Chemical Analysis of Water and

Wastes (EPA-600/4-79-020), Test Methods for Evaluating Solid Waste, Physical/Chemical Methods (EPA Publication SW-846, latest edition), other appropriate EPA methods, or as specified in the Application. All field tests must be conducted using approved EPA test kits and procedures.

b. The Permittee shall retain records, at the location specified in Section I.I., of all monitoring, or corrective action information, including all calibration and maintenance records, copies of all reports and records required by this permit, and records of all data used to complete the application for this permit for a period of at least three years from the date of the sample, measurement, report or record or for periods elsewhere specified in this permit. These periods may be extended by the request of the Department at any time and are automatically extended during the course of any unresolved enforcement action regarding this facility.

c. Records of monitoring and corrective action information shall include:

i. The exact place, date, and time of sampling or measurement.

ii. The individual(s) and company who performed the sampling or measurements.

iii. The date(s) analyses were performed.

iv. The individual(s) and company who performed the analyses.

v. The analytical techniques or methods used.

vi. The results of such analyses.

d. The Permittee shall submit all monitoring and corrective action results at the interval specified elsewhere in this permit.

10. Reporting Planned Changes

The Permittee shall notify the Department, in the form of a request for permit modification, at least 120 days prior to any change in the permitted service area, increase in the waste received, or change in the design or operating procedure as described in this permit, including any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.

11. Transfer of Permit

This permit may be transferred to a new owner or operator. All requests for transfer of permits shall be in writing and shall be submitted on forms provided by the Department. Before transferring ownership or operation of the facility during its operating life, the Permittee shall notify the new owner or operator in writing of the requirements of this permit.

12. Certification of Construction.

Before the Permittee may commence disposal of waste in any new cell or phase:

a. The Permittee must submit a letter to the Department signed by both the Permittee and a professional engineer stating that the facility has been constructed in compliance with the permit.

b. The Department must inspect the constructed cells or phases unless the Permittee is notified that the Department will waive the inspection.

c. The Permittee may not commence disposal activities in any cells or phases until approval of the new cells or phases is granted by the Department.

13. Noncompliance

The Permittee shall report all instances of noncompliance with the permit at the time noncompliance is discovered.

14. Other Information

If the Permittee becomes aware that information required by the Application was not submitted or was incorrect in the Application or in any report to the Department, the Permittee shall promptly submit such facts or information. In addition, upon request, the Permittee shall furnish to the Department, within a reasonable time, information related to compliance with the permit.

F. Design and Operation of Facility

The Permittee shall maintain and operate the facility to minimize the possibility of a fire, explosion, or any unplanned sudden or non-sudden release of contaminants (including leachate and explosive gases) to air, soil, groundwater, or surface water, which could threaten human health or the environment.

G. Inspection Requirements

1. The Permittee shall comply with all requirements of ADEM Admin. Code 335-13-4-.21(1)(b).

2. The Permittee shall conduct random inspections of incoming loads.

3. Records of all inspections shall be included in the operating record.

H. Recordkeeping and Reporting

1. The Permittee shall maintain a written operating record at the location specified in Section I.I. The operating record shall include:

a. Documentation of inspection and maintenance activities.

b. Daily Volume reports.

c. Personnel training documents and records.

d. Solid/Hazardous Waste Determination Forms for Industrial Wastes, and the associated Department disposal approval correspondence for industrial waste and special waste.

e. Groundwater monitoring records.

f. Explosive gas monitoring records.

g. Surface water and leachate monitoring records.

h. Copies of this Permit and the Application.

i. Copies of all variances granted by the Department, including copies of all approvals of special operating conditions.

2. Quarterly Volume Report

Beginning with the effective date of this permit, the Permittee shall submit, within thirty (30) days after the end of each calendar quarter, a report summarizing the daily waste receipts for the previous (just ended) quarter. Copies of the quarterly reports shall be maintained in the operating record.

3. Monitoring and Corrective Action Reports

The Permittee shall submit reports on all monitoring and corrective action activities conducted pursuant to the requirements of this permit, including, but not limited to, groundwater, surface water, explosive gas and leachate monitoring. The groundwater monitoring shall be conducted in March and September of each year, or as directed by the Department, and the reports shall be submitted at least semi-annually, or as directed by the Department. The reports should contain all monitoring results and conclusions from samples and measurements conducted during the sampling period. A variance has been granted that reduces the groundwater monitoring frequency to annually. (See Section VIII.3.) Explosive gas monitoring is not required at this time, but if it is determined that monitoring is necessary, the Permittee shall conduct monitoring and submit reports as directed by the Department. Copies of the groundwater and explosive gas monitoring reports shall be maintained in the operating record.

4. Availability, Retention, and Disposition of Records

a. All records, including plans, required under this permit or ADEM Admin. Code 335-13 must be furnished upon request, and made available at reasonable times for inspection by any officer, employee, or representative of the Department.

b. All records, including plans, required under this permit or ADEM Admin. Code 335-13 shall be retained by the Permittee for a period of at least three years. The retention period for all records is extended automatically during any unresolved enforcement action regarding the facility, or as requested by the Department.

c. A copy of records of waste disposal locations and quantities must be submitted to the Department and local land authority upon closure of the facility.

I. Documents to be maintained by the Permittee

The Permittee shall maintain, at the Packaging Corporation of America Industrial Waste Landfill office, the following documents and amendments, revisions and modifications to these documents until an engineer certifies closure.

1. Operating record.

2. Closure Plan.

J. Mailing Location

All reports, notifications, or other submissions which are required by this permit should be sent via signed mail (i.e. certified mail, express mail delivery service, etc.) or hand delivered to:

Mailing Address:
Chief, Solid Waste Branch, Land Division
Alabama Department of Environmental Management
P.O. Box 301463
Montgomery, AL 36130-1463

Physical Address:
Chief, Solid Waste Branch, Land Division
Alabama Department of Environmental Management
1400 Coliseum Blvd.
Montgomery, Alabama 36110-2400

K. Signatory Requirement

All applications, reports or information required by this permit, or otherwise submitted to the Department, shall be signed and certified by the owner as follows:

1. If an individual, by the applicant.

2. If a city, county, or other municipality or governmental entity, by the ranking elected official, or by a duly authorized representative of that person.

3. If a corporation, organization, or other legal entity, by a principal executive officer, of at least the level of Vice President, or by a duly authorized representative of that person.

L. Confidential Information

The Permittee may claim information submitted as confidential pursuant to ADEM Admin. Code 335-1-1-.06.

M. State Laws and Regulations

Nothing in this permit shall be construed to preclude the initiation of any legal action or to relieve the Permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable state law or regulation.

SECTION II. GENERAL OPERATING CONDITIONS

A. Operation of Facility

The Permittee shall operate and maintain the disposal facility consistent with the Application, this permit, and ADEM Admin. Code 335-13.

B. Open Burning

The Permittee shall not allow open burning without prior written approval from the Department and other appropriate agencies. A burn request should be submitted in writing to the Department outlining why that burn request should be granted. This request should include, but not be limited to, specifically what areas will be utilized, types of waste to be burned, the projected starting and completion dates for the project, and the projected days and hours of operation. The approval, if granted, shall be included in the operating record.

C. Prevention of Unauthorized Disposal

The Permittee shall follow the approved procedures, as provided in the Application, for detecting and preventing the disposal of free liquids, regulated hazardous waste, regulated PCB waste, regulated medical waste, and other unauthorized waste streams at the facility.

D. Unauthorized Discharge

The Permittee shall operate the disposal facility in such a manner that there will be no water pollution or unauthorized discharge. Any discharge from the disposal facility or practice thereof may require a National Pollutant Discharge Elimination System permit under the Alabama Water Pollution Control Act.

E. Industrial and Medical Waste Disposal

The Permittee shall dispose of industrial process waste in accordance with ADEM Admin. Code 335-13, and as specified in the Application. The Permittee, prior to disposal of industrial waste and/or medical waste, shall obtain from each generator a written certification that the material to be disposed does not contain free liquids, regulated hazardous wastes, regulated medical waste, or regulated PCB wastes.

F. Boundary Markers

The Permittee shall ensure that the facility is identified with a sufficient number of permanent boundary markers that are at least visible from one marker to the next.

SECTION III. SPECIFIC REQUIREMENTS FOR INDUSTRIAL LANDFILLS

A. Waste Identification and Management

1. Subject to the terms of this permit, the Permittee may dispose of the nonhazardous solid wastes listed in III.B. Disposal of any other wastes is prohibited, except waste granted a temporary or one time waiver by the Director.

2. The total permitted area for the Packaging Corporation of America Industrial Waste Landfill is approximately 70.25 acres, with approximately 41 acres permitted for disposal operations.

3. The maximum average daily volume of waste disposed at the facility shall not exceed 2000 cubic yards per day, except as provided under ADEM Admin. Code 335-13-5-.06(2)(b)2. The average daily volume shall be computed as specified by ADEM Admin. Code 335-13-4-.23(2)(f).

B. Waste Streams

The Permittee may accept for disposal non-putrescible and non-hazardous industrial waste, waste lime, boiler ash, woodyard rejects, clarifier solids, water treatment plant backwash solids, mix pond solids, miscellaneous wood waste, black liquor tank bottoms, waste from the wastepaper recycling plant, primary and secondary rejects from the Old Corrugated Cardboard recycling facility.

C. Service Area:

The Permittee is allowed to receive for disposal waste from Packaging Corporation of America's Jackson Mill.

D. Waste Placement, Compaction, and Cover

All waste shall be confined to an area as small as possible within a single working face and placed onto an appropriate slope not to exceed 4 to 1 (25%) or as approved by the Department. All waste shall be spread in layers two feet or less in thickness and thoroughly compacted weekly with adequate landfill equipment prior to placing additional layers of waste. A minimum of six inches of compacted earth or other alternative cover material approved by the Department and listed in Section VIII shall be added at the conclusion of each week's operation unless a variance is granted in Section VIII. The Permittee is granted a variance to cover at the time of closure. (See Section VIII.1.)

E. Liner Requirements

The Permittee shall be required to install a composite liner system. The composite liner will consist of 24 inches of compacted clay with a soil permeability of 1×10^{-7} cm/sec, 60 mil HDPE liner, 1-foot angular layer and 1 foot select soil layer with a permeability of 1×10^{-3} cm/sec. The base of the landfill shall be a minimum of five (5) feet above the highest measured groundwater level as determined by

ADEM Admin. Code 335-13-4-.11(2)(a).

F. Security

The Permittee shall provide artificial and/or natural barriers, which prevent entry of unauthorized vehicular traffic to the facility.

G. All Weather Access Roads

The Permittee shall provide an all-weather access road to the dumping face that is wide enough to allow passage of collection vehicles.

H. Adverse Weather Disposal

The Permittee shall provide for disposal activities in adverse weather conditions.

I. Personnel

The Permittee shall maintain adequate personnel to ensure continued and smooth operation of the facility.

J. Environmental Monitoring and Treatment Structures

The Permittee shall provide protection and proper maintenance of environmental monitoring and treatment structures.

K. Vector Control

The Permittee shall provide for vector control as required by ADEM Admin. Code 335-13.

L. Bulk or Noncontainerized Liquid Waste

The Permittee shall not dispose of bulk or noncontainerized liquid waste, or containers capable of holding liquids, unless the conditions of ADEM Admin. Code 335-13-4-.23(1)(j) are met.

M. Empty Containers

Empty containers larger than 10 gallons in size must be rendered unsuitable for holding liquids prior to disposal in the landfill unless otherwise approved by the Department.

N. Other Requirements

The Department may enhance or reduce any requirements for operating and maintaining the landfill as deemed necessary by the Land Division.

O. Other Permits

The Permittee shall operate the landfill according to this and any other applicable permits.

P. Scavenging and Salvaging Operations

The Permittee shall prevent scavenging and salvaging operations, except as part of a controlled recycling effort. Any recycling operation must be in accordance with plans submitted and approved by the Department.

Q. Signs

If the landfill is available to the public or commercial haulers, the Permittee shall provide a sign outlining

instructions for use of the site. The sign shall be posted and have the information required by ADEM Admin. Code 335-13-4-.23(1)(f).

R. Litter Control

The Permittee shall control litter.

S. Fire Control

The Permittee shall provide fire control measures.

SECTION IV. GROUNDWATER MONITORING REQUIREMENTS

A. The Permittee shall install and/or maintain a groundwater monitoring system, as specified below.

1. The permittee shall maintain the groundwater monitoring wells and piezometers identified in Table IV.1. at the locations specified in the Application, and any other groundwater monitoring wells which are added (Section IV.A.3.) during the active life and the post closure care period.

2. The Permittee shall maintain groundwater monitoring well MW-1, MW-7 and MW-8 as the background groundwater monitoring wells for the entire facility.

3. The Permittee shall install and maintain additional groundwater monitoring wells as necessary to assess changes in the rate and extent of any plume of contamination or as otherwise deemed necessary to maintain compliance with the ADEM Admin. Code 335-13.

4. Prior to installing any additional groundwater monitoring wells, the Permittee shall submit a plan to the Department with a permit modification request specifying the design, location and installation of any additional monitoring wells. This plan shall be submitted at least one hundred and twenty (120) days prior to the installation which, at a minimum, shall include.

    a. Well construction techniques including proposed casing depths, proposed total depth, and proposed screened interval of well(s);

    b. Well development method(s);

    c. A complete analysis of well construction materials;

    d. A schedule of implementation for construction; and

    e. Provisions for determining the lithologic characteristics, hydraulic conductivity and grain-size distribution for the applicable aquifer unit(s) at the location of the new well(s).

B. Groundwater Monitoring Requirements

1. The Permittee shall determine the groundwater surface elevation at each monitoring well and piezometer identified in Table IV.1. each time the well or piezometer is sampled and at least annually throughout the active life and post-closure care period. The Permittee has been approved to perform annual groundwater monitoring. (See Section VIII.3.)

2. The Permittee shall determine the groundwater flow rate and direction in the first zone of saturation at least annually or each time groundwater is sampled and submit as required by ADEM Admin. Code 335-13.

3. Prior to the initial receipt of waste at the facility, the Permittee shall sample, and analyze for the parameters specified by the Department in Table IV. 2., all monitoring wells identified in Section

IV.,A.,2. to establish background water quality and/or as directed by ADEM Admin. Code 335-13-4-.27(2)(j) and 335-13-4-.27(2)(a)(1).

4. The Permittee shall sample, and analyze all monitoring wells identified in Table IV.1 for the parameters specified by the Department in Table IV.3, on an annual basis throughout the active life of the facility and the post- closure care period in accordance with ADEM Admin. Code 335-13-4-.27(3). Sampling shall be conducted annually, beginning with the effective date of this permit (See Section VIII.3.). **The records and results of this sampling and analysis activity shall be submitted to the Department, within ninety (90) days of the date of sampling.**

5. In addition to the requirements of Section IV., B.1., B.2., B.3. and B.4., the Permittee shall record water levels, mean sea level elevation measuring point, depth to water, and the results of field tests for pH and specific conductance at the time of sampling for each well.

C. Sampling and Analysis Procedures

The Permittee shall use the following techniques and procedures when obtaining and analyzing samples from the groundwater monitoring wells described in Section IV.A. to provide a reliable indication of the quality of the groundwater.

1. Samples shall be collected, preserved, and shipped (when shipped off-site for analysis) in accordance with the procedures specified in the Application. Monitoring wells shall be bailed or pumped to remove at least three to five times the well volume of water. Slow recharge wells shall be bailed until dry. Wells shall be allowed to recharge prior to sampling.

2. Samples shall be analyzed according to the procedures specified of the Application, Standard Methods for the Examination of Water and Wastewater (American Public Health Association, latest edition), Methods for Chemical Analysis of Water and Wastes (EPA-600/4-79-020), Test Methods for Evaluating Solid Waste, Physical/Chemical Methods (EPA Publication SW-846, latest edition), or other appropriate methods approved by this Department. All field tests must be conducted using approved EPA test kits and procedures.

3. Samples shall be tracked and controlled using the chain-of-custody and QA\QC procedures specified of the Application.

4. The Permittee is approved to use an inter-well approach for statistical analysis.

D. Recordkeeping and Reporting Requirements

1. Recording of Results

For each sample and/or measurement taken pursuant to the requirements of this permit, the Permittee shall record the information required by Section I.E.9.c.

2. Recordkeeping

Records and results of all groundwater monitoring, sampling, and analysis activities conducted pursuant to the requirements of this permit shall be included in the operating record required by Section I.I.1.

E. Permit Modification

If at any time the Permittee or the Department determines that the groundwater monitoring system no longer satisfies the requirements of ADEM Admin. Code 335-13-4-.14 or Section IV.A. of this permit, the Permittee must, within 120 days, submit an application for a permit modification to make any necessary and/or appropriate changes to the system.

TABLE IV.1.
GROUNDWATER MONITORING WELLS

Monitoring Well Number	Top of Casing (PVC) (feet msl)	Part Monitoring
UPGRADIENT/BACKGROUND MONITORING WELL		
MW-1	188.66	Entire Landfill
MW-7	186.00	Entire Landfill
MW-8	177.20	Entire Landfill
DOWNGRADIENT MONITORING WELLS		
MW-6	34.40	Entire Landfill
MW-10	87.40	Entire Landfill
MW-12	67.70	Entire Landfill

TABLE IV.2.
BACKGROUND GROUNDWATER MONITORING

Appendix I metals of ADEM Admin. Code 335-13-4-.27
Bicarbonate
Carbonate
Alkalinity
Chloride
Sulfate

TABLE IV.3.
ANNUAL GROUNDWATER MONITORING PARAMETERS

Appendix I metals of ADEM Admin. Code 335-13-4-.27
Bicarbonate
Carbonate
Alkalinity
Chloride
Sulfate

SECTION V. GAS MONITORING REQUIREMENTS

At this time, gas monitoring is not being required (See Section VIII.2.). If at any time the Department determines that a explosive gas monitoring system is deemed necessary for the protection of human health and the environment, the Permittee must, within 120 days, submit an application for permit modification for the installation of an explosive gas monitoring system that meets the proper regulatory requirements of the Alabama Department of Environmental Management.

SECTION VI. LEACHATE AND SURFACE WATER MANAGEMENT REQUIREMENTS

The Permittee must collect and dispose of any leachate that is generated at the facility, and the leachate must be managed at a facility permitted to treat leachate. The Permittee shall install a leachate collection system designed to maintain less than 12 inches (30 cm) depth of leachate over the liner.

The permittee shall construct and maintain run-on and run-off control structures. Any discharges from drainage control structures shall be permitted through a discharge permit issued by the ADEM Water Division.

SECTION VII. CLOSURE AND POST-CLOSURE REQUIREMENTS

The Permittee shall close the landfill and perform post-closure care of the landfill in accordance with ADEM Admin. Code 335-13.

A. Final Cover

The Permittee shall grade final soil cover such that surface water does not pond over the permitted area as specified in the Application. The final cover system shall comply with ADEM Admin. Code Division 13.

B. Vegetative Cover

The Permittee shall establish a vegetative or other appropriate cover, as approved by the Department, within 90 days after completion of final grading requirements in the Application. Preparation of a vegetative cover shall include, but not be limited to, the placement of seed, fertilizer, mulch, and water.

C. Notice of Intent

The Permittee shall place in the operating record and notify the Department of their intent to close the landfill prior to beginning closure.

D. Completion of Closure Activities

The Permittee must complete closure activities of each landfill unit in accordance with the Closure Plan within 180 days of the last known receipt of waste.

E. Certification of Closure

Following closure of each unit, the Permittee must submit to the Department a certification, signed by a registered professional engineer, verifying the closure has been completed according to the Closure Plan.

F. Post-Closure Care Period

Post-closure care activities shall be conducted after closure of each unit throughout the life of this permit and continuing for a period of a minimum of thirty (30) years following closure of the facility. The Department may shorten or extend the post-closure care period applicable to the solid waste disposal facility.

G. Post-Closure Maintenance

The Permittee shall provide post closure maintenance of the facility to include regularly scheduled inspections. This shall include maintenance of the cover, vegetation, monitoring devices and pollution control equipment and correction of other deficiencies that may be observed by the Department. Monitoring requirements shall continue throughout the post closure period as determined by the Department unless all waste is removed and no unpermitted discharge to waters of the State has occurred.

H. Post-Closure Use of Property

The Permittee shall ensure that post closure use of the property never be allowed to disturb the integrity of the final cover, liner, or any other component of the containment system. This shall preclude the growing of deep-rooted vegetation on the closed area.

I. Certification of Post-Closure

Following post-closure of each unit, the Permittee must submit to the Department a certification, signed by an independent registered professional engineer, verifying the post-closure has been completed according to the Post-Closure Plan.

J. Recording Instrument. The Permittee must provide documentation of compliance with the requirements of the Uniform Environmental Covenants Program in ADEM Admin. Code 335-5 and shall executed the following:

1. Record a notation onto the land deed within 90 days from the certification of closure. This notation shall state that the land has been used as a solid waste disposal facility, the name of the Permittee, type of disposal activity, location of the disposal facility, and beginning and closure dates of the disposal activity.

2. File the covenant at the courthouse where the land deed is held within thirty (30) days of receipt of the covenant signed by ADEM's Land Division Chief.

3. The Permittee shall submit a certified copy of the recording instrument to ADEM within 120 days after permit expiration, revocation, or as directed by ADEM as described in the Application.

K. Removal of Waste

If the Permittee, or any other person(s), wishes to remove waste, waste residues, or any liner or contaminated soils, the owner must request and receive prior approval from ADEM.

SECTION VIII. VARIANCES & SPECIAL CONDITIONS

1. The Permittee is granted a variance from ADEM Admin. Code 335-13-4-.23(1)(a) which requires a minimum of six inches of weekly soil cover. The Permittee will be required to cover at the time of closure. (See Section III.D.)

2. The Permittee is granted a variance from ADEM Admin. Code 335-13-4-.16 which requires monitoring of explosive gases. The Permittee is not required to monitor explosive gases at this time. (See Section V.)

3. The Permittee is approved to reduce the groundwater monitoring frequency to annually. (See Section IV.B.1., IV.B.4.)

4. The Permittee is granted a variance from ADEM Admin. Code 335-13-4-.12(2)(f) requiring a 100-foot buffer. The variance is granted along the southern boundary of the landfill.

Any variance or special condition granted by the Department may be terminated by the Department whenever the Department finds, after notice and opportunity for hearing, that the petitioner is in violation of any requirement, condition, schedule, limitation or any other provision of the variance, or that operation under the variance or special condition does not meet the minimum requirements established by state and federal laws and regulations or is unreasonably threatening the public health.

PERMIT

APPLICATION

August 18, 2025

Alabama Department of Environmental Management
Post Office Box 301463
Montgomery, Alabama 36130-1463

Attention: Dr. Dontavious Sippial
Solid Waste Branch

RE: **Response to ADEM Comment Letter Dated July 22, 2025**
Boise White Paper LLC Industrial Waste Landfill Permit Renewal Application
Boise White Paper LLC Industrial Waste Landfill Groundwater Monitoring Plan
Clarke County, Alabama
Permit No.: 13-05
LaBella Project No.: 2254125.00

Dear Dr. Sippial:

On behalf of the Packaging Corporation of America (PCA), LaBella Associates, D.P.C. (LaBella) is submitting this response to the Alabama Department of Environmental Management (ADEM) comment letter dated July 22, 2025. Note the Department's comments are included in separate sections of the comment letter.

Permit Renewal Application

The Department's comments 1 through 5 associated with the Permit Renewal Application dated February 2024 have been addressed in the revised Permit Application dated August 2025 prepared by Spivey Engineering Solutions, LLC and included as Attachment A.

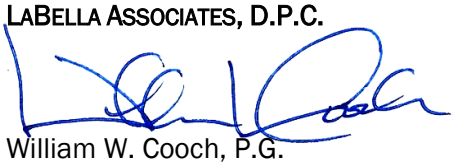
Revised Groundwater Monitoring Plan

The Department's comments 1 through 8 are associated with review of the Groundwater Monitoring Plan (GWMP) previously submitted by PCA and dated January 2019, and updated January 2024 and June 2025. The Department's comments address the requested general contents of the GWMP and the appropriate statistical methods to be used as part of evaluating groundwater quality beneath the subject landfill.

LaBella has recently been retained by PCA to assist with preparing the revisions to the GWMP to address the ADEM comments provided in the July 22, 2025 letter (Attachment B). To allow sufficient time to prepare the revised GWMP, LaBella and PCA are requesting an additional 30 days from the date of the Department's approval of this request for submittal of the revised GWMP.

LaBella Associates, D.P.C. appreciates your consideration in this matter. If you have any questions concerning this submittal or require any additional information, please contact me at (205) 516-8735 or wcooch@labellapc.com.

Sincerely,
LABELLA ASSOCIATES, D.P.C.



William W. Cooch, P.G.
Principal Geologist

Attachment A: Permit Renewal Application
Attachment B ADEM Comment Letter July 22, 2025

ATTACHMENT A

APPLICATION FOR PERMIT RENEWAL
SOLID WASTE FACILITY PERMIT NO. 13-05

Prepared for:

PACKAGING CORPORATION OF AMERICA
JACKSON PAPER MILL
JACKSON, ALABAMA

August 2025

Prepared by:

Spivey
Engineering
Solutions, LLC

Table of Contents

Appendixes

Professional Engineer's Statement

This application for renewal of the Alabama Department of Environmental Management (ADEM) solid waste facility permit No. 13-05 for Packaging Corporation of America's Jackson Mill Industrial Waste Landfill was prepared under the direct supervision and care of Donald W. Spivey, Alabama Registered Professional Engineer No. 20723. Drawings located in Appendix C were prepared and certified by others and are the sole responsibility of RMT, Inc., design engineer in charge. I hereby certify that the information being submitted with this application is accurate and correct.

Donald W. Spivey, P.E., Alabama No. 20723
Principal Engineer
Spivey Engineering Solutions, LLC

Facility Owner/Operator's Statement

I hereby certify that the information being submitted with this application is accurate and correct.

David R. Powell
Mill Manager
Packaging Corporation of America – Jackson Mill

Section 1. Introduction

Packaging Corporation of America (PCA) owns and operates an integrated unbleached Kraft pulp and paper mill in Jackson, Alabama, and produces light-weight linerboard and corrugating medium. The Jackson Paper Mill is located on the east bank of the Tombigbee River approximately 60 miles north of Mobile, Alabama.

1.1 Current Solid Waste Disposal Permit

PCA owns and operates a permitted industrial waste landfill (formerly known as the "Boise White Paper, LLC Industrial Waste Landfill") exclusively for disposal of non-hazardous industrial wastes generated by Jackson Paper Mill operations. The landfill commenced operation in July 1994. The landfill is located in the southwestern quarter of Section 16, Township 6 North, Range 2 East in Clarke County, Alabama. The constructed portion of the landfill comprises approximately 20 acres. The landfill was originally permitted for operation by ADEM on July 11, 1991, under ADEM Permit No. 13-05, and currently accepts the following non-hazardous solid wastes:

- Non-putrescible and non-hazardous industrial waste
- Waste lime
- Boiler ash
- Woodyard rejects
- Clarifier solids
- Water treatment plant backwash solids
- Mix pond solids
- Miscellaneous wood waste
- Black liquor tank bottoms
- Waste from the wastepaper recycling plant
- Primary and secondary rejects from the Old Corrugated Cardboard recycling facility

A modification to the original permit was issued by ADEM on November 29, 1993, allowing the Jackson Mill to dispose of 600 cubic yards of waste per day in the landfill. Permit 13-05 was reissued by ADEM on September 5, 2019 with a variance from Rule 335-13-4-.12(2)(f) requiring a 100 foot buffer; the variance was granted for the southern boundary of the landfill. Since the most recent permit reissuance, a modification to the permit was issued by ADEM on October 30, 2019 allowing PCA to increase the average daily disposal volume from 600 cubic yards per day to 2,000 cubic yards per day. A second permit modification was issued on June 11, 2021 adding primary and secondary rejects from the Old Corrugated Cardboard recycling facility as waste streams approved for disposal in the landfill.

A copy of the current permit is provided in Appendix A. PCA acquired Boise White Paper, LLC in October 2013 as a wholly-owned subsidiary. PCA changed the legal name of the Jackson Mill from Boise White Paper, LLC to Packaging Corporation of America in July 2025.

1.2 Permit Renewal

This application for renewal of solid waste disposal facility permit No. 13-05, on behalf of Packaging Corporation of America, is provided in response to the ADEM requirement to submit a solid waste disposal facility permit renewal application at least 180 days prior to expiration of the current permit (September 4, 2024). The renewal application also documents current operating plans and current projected final contours for the landfill.

Other pertinent sections of this renewal application include the following:

- ADEM Solid Waste Disposal Facility Permit Renewal Form (see Section 2);
- Current operation plan for the PCA Industrial Waste Landfill (see Appendix B);
- Current permit drawings showing phasing and development, facility boundaries, and final grades (see Appendix C);
- Current Landfill Operation and Maintenance Plan (see Appendix D);
- Landfill groundwater monitoring plan (see Appendix E); and
- Storm Water Runoff Calculations (see Appendix F).

Should PCA elect to expand the current disposal footprint into the remaining facility area west of Cell 4 (Phase III), additional permit drawings and other appropriate components sufficient to modify the permit will be submitted.

1.3 Variance Requests

PCA requests that the following variances from the current permit be incorporated into the renewed permit for the solid waste disposal facility:

1. Continuing the existing variance from placement of weekly cover as required under ADEM Administrative Code R. 335-13-4-.23(1)(a).
2. Continuing the existing variance from monitoring of explosive gases in accordance with ADEM Administrative Code R. 335-13-4-.16.
3. Continuing the existing variance granting annual groundwater monitoring in lieu of semi-annual groundwater monitoring (see Section IV.B.1 of current permit).
4. Continuing the existing variance from ADEM Administrative Code R. 335-13-4-.12(2)(f) requiring a 100-foot buffer along the southern boundary of the landfill.

1.3.1 Weekly Cover Variance

PCA requests that the variance granted from ADEM Administrative Code R. 335-13-4-.23(1)(a) requiring weekly cover in the existing permit be continued in the proposed renewed permit. This variance was first granted in the original (1993) permit for the facility and has been demonstrated to be appropriate based on the types of waste permitted for disposal at the landfill.

1.3.2 Explosive Gas Monitoring Variance

PCA requests that the variance granted from ADEM Administrative Code R. 335-13-4-.16 requiring explosive gas monitoring in the existing permit be continued in the proposed renewed permit. This variance was first granted in the original (1993) permit for the facility and has been demonstrated to be appropriate based on the types of waste permitted for disposal at the landfill.

1.3.3 Groundwater Monitoring Variance

PCA requests that the variance granted from ADEM Administrative Code R. 335-13-4-.27(3)(b)(1) requiring semi-annual groundwater monitoring be continued in the proposed renewed permit. This variance was first granted in the 2014 permit reissuance for the facility and has been demonstrated to be appropriate based on the annual groundwater flow of less than 800 feet per year and the approximately 7,000 feet distance to the Tombigbee River.

1.3.4 Buffer Variance Along Southern Boundary

PCA requests that the variance granted from ADEM Administrative Code R. 335-13-4-.12(2)(f) requiring a 100-foot buffer around the landfill perimeter be continued with respect to the southern boundary of the landfill in the proposed renewed permit. This variance was first granted in the 2019 permit reissuance for the facility.

1.4 List of Adjacent Property Owners

PCA owns the parcel of land upon which the facility's Industrial Landfill is located. Pursuant to Rule 335-13-5-.02(1)(a)6, the following individuals or entities own property adjacent to the Industrial Landfill:

Bedsole Foundation
777 Taylor Street Ph 1 Suite A
Fort Worth, TX 76102

City of Jackson
P. O. Box 1096
Jackson, AL 36545

Alice D. Etheredge
305 Marley Drive
Atlanta, GA 30349

Durst Lee McCorquodale
3605 Dairy Pond Place
Durham, NC 27705

White Smith Land Company Inc.
2011 U. S. Highway 43
Jackson, AL 36545

Section 2. ADEM Permit Renewal Form 439

SOLID WASTE APPLICATION

PERMIT APPLICATION
SOLID WASTE DISPOSAL FACILITY
ALABAMA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
(Submit in Triplicate)

1. **Facility type:**
   - _____ Municipal Solid Waste Landfill (MSWLF)
   - __X__ Industrial Landfill (ILF)
   - _____ CCR Landfill (CCRLF)
   - _____ CCR Surface Impoundment (CCRSI)
   - _____ Other (explain)_____

2. **Facility Name** Packaging Corporation of America Industrial Landfill (Permit No. 13-05)

3. **Applicant:**

   Name: Packaging Corporation of America

   Address: 4585 Industrial Road, Jackson, Alabama 36545

   Telephone: (251) 246-4461

4. **Location: (include county highway map or USGS map)**

   Township 6 North **Range** 2 East
   Section SW ¼ Section 16 **County** Clarke

5. **Land Owner:**

   Name: Packaging Corporation of America

   Address: 4585 Industrial Road, Jackson, Alabama 36545

   Telephone: (251) 246-4461

   (Attach copy of agreement from landowner if applicable.)

6. Contact Person:

Name Randy Abston

Position or
Affiliation Environmental Manager

Address: 4585 Industrial Road, Jackson, AL 36545

Telephone: (251) 246-8282

7. Size of Facility: Size of Disposal Area(s):

70.25 Acres 41 ± 1 Acres

8. Identify proposed service area or specific industry that waste will be received from:

Forest products manufacturing wastes generated on site at Packaging Corporation of America's Jackson Mill.

9. Proposed maximum average daily volume to be received at landfill (choose one):

_____ Tons/Day 2,000 Cubic Yards/Day

10. List all waste streams to be accepted at the facility (i.e., household solid waste, wood boiler ash, tires, trees, limbs, stumps, etc.):

Non-putrescible and non-hazardous industrial waste, waste lime, boiler ash, woodyard rejects, clarifier solids, water treatment plant backwash solids, mix pond solids, miscellaneous wood waste, black liquor tank bottoms, waste from the wastepaper recycling plant, primary and secondary rejects from the Old Corrugated Cardboard recycling facility.

SIGNATURE (RYAN POWELL, MILL MANAGER) DATE 8/15/25

Application for Name Change or Transfer of Permit or Exemption
Alabama Department of Environmental Management

Received
AUG 26 2025
Land Division

Existing Facility: The facility, site or location with the current permit or registration.

Permit or Registration No. 13-05

Expiration Date (if applicable): _____

County: Clarke

Facility Name: Boise White Paper, LLC Industrial Waste Landfill

Address: A part of the SW 1/4 of section 16 Township 6 North, Range 2 E, In Clarke County Alabama.

Telephone: 251-246-4461

Application for Name Change: An application for name change must be made by the current permittee or registrant. A name change does not change any condition of the permit or registration approval.

Responsible Official Making the Request to Change the Name of the Permittee or Registrant:

Name: Jack Carter Title: Senior Vice President

Signature: [signature]

Address: 4585 Industrial Road
Jackson, AL 36545

Telephone: 251-246-4461 Change of Mailing Address: N

E-mail: jackcarter@packagingcorp.com Date: 8/20/2025

Current Name: Boise White Paper, LLC

Proposed Name: Packaging Corporation of America

Effective Date of Name Change: July 1, 2025

Person Requesting Transfer of Permit or Registration: An application to transfer must be made by the current permittee or registrant.

Name: Jack Carter Title: Senior Vice President

Signature: [signature]

Address: 4585 Industrial Road
Jackson, AL 36545

Telephone: 251-246-4461

E-mail: jackcarter@packagingcorp.com Date: 8/20/2025

Person Accepting Transfer of Permit or Registration: Transfer of a permit or registration does not change any condition of the permit or registration approval. By their signature below, the person accepting transfer of the permit or registration assumes all responsibility for the facility and agrees to abide by all permit or registration conditions.

Name: Jack Carter Title: Senior Vice President

Signature:

Address: 4585 Industrial Road
Jackson, AL 36545

Telephone: 251-246-4461 Change of Mailing Address: N

E-mail: jackcarter@packagingcorp.com Date: 8/20/2025

Landowner: (Signature of the landowner(s) acknowledges that this application is being made and is required if the applicant is different from the landowner).

Name: Title:

Signature:

Address:

Telephone:

Fees: Include the appropriate application fees with this form. Appropriate fees may be found in ADEM Admin. Code 335-1-6.

7. Submittal: Submit this form and applicable fees to:

Alabama Department of Environmental Management
Solid Waste Branch

P.O. Box 301463 (mailing address)
Montgomery, AL 36130-1463

1400 Coliseum Blvd. (physical address)
Montgomery, AL 36110-2059

An electronic version of this application may be submitted to ADEM at: TireMail@adem.alabama.gov. All attachments to this application must also be submitted in an electronic version.

For additional information, contact the Solid Waste Branch at: 334-271-7988.

APPENDIX A

ADEM Solid Waste Facility Permit No. 13-05

LANCE R. LEFLEUR
DIRECTOR

KAY IVEY
GOVERNOR

Alabama Department of Environmental Management
adem.alabama.gov

1400 Coliseum Blvd. 36110-2400 ▪ Post Office Box 301463
Montgomery, Alabama 36130-1463
(334) 271-7700 ▪ FAX (334) 271-7950

September 5, 2019

Mr. Randy Abston
Boise White Paper, LLC
4585 Industrial Road
Jackson, Alabama 36545

RE: Permit Renewal
Boise White Paper, LLC Industrial Waste Landfill
Permit No. 13-05
Clarke County, Alabama

Dear Mr. Abston:

Enclosed is the Solid Waste Disposal Facility Permit for the Industrial Waste Landfill known as Boise White Paper, LLC Industrial Waste Landfill. The permit is effective September 5, 2019 and will expire September 4, 2024.

If you have any questions on this matter, please contact Mr. Blake Holden of the Solid Waste Engineering Section at (334) 274-4248.

Sincerely,

S. Scott Story, Chief
Solid Waste Engineering Section
Land Division

SSS/bh

Birmingham Branch
110 Vulcan Road
Birmingham, AL 35209-4702
(205) 942-6168
(205) 941-1603 (FAX)

Decatur Branch
2715 Sandlin Road, S.W.
Decatur, AL 35603-1333
(256) 353-1713
(256) 340-9359 (FAX)

Mobile Branch
2204 Perimeter Road
Mobile, AL 36615-1131
(251) 450-3400
(251) 479-2593 (FAX)

Mobile-Coastal
3664 Dauphin Street, Suite B
Mobile, AL 36608
(251) 304-1176
(251) 304-1189 (FAX)

FINAL DETERMINATION

PERMIT RENEWAL & VARIANCE

Boise White Paper, LLC – Jackson Mill
4585 Industrial Rd.
Jackson, Alabama 36545

Boise White Paper, LLC Industrial Waste Landfill
Permit No. 13-05

September 5, 2019

The Boise White Paper, LLC – Jackson Mill has submitted to the Alabama Department of Environmental Management (ADEM) an application for renewal and variance of the Solid Waste Disposal Facility Permit for the Boise White Paper, LLC Industrial Waste Landfill (Permit No. 13-05). The application includes a variance request from Rule 335-13-4-.12(2)(f) requiring a 100 foot buffer zone. The variance is granted along the southern boundary of the landfill. The landfill is described as being located in the Southwest ¼ of Section 16, Township 6 North, Range 2 East, in Clarke County, Alabama. The permitted facility consists of approximately 70.25 acres with 41 acres for disposal operations. All previously approved variances have been requested and shall remain in the permit.

The waste stream for the Boise White Paper, LLC Industrial Waste Landfill would remain non-putrescible and non-hazardous industrial waste, waste lime, boiler ash, woodyard rejects, clarifier solids, water treatment plant backwash solids, mix pond solids, miscellaneous wood waste, black liquor tank bottoms, and waste from the wastepaper recycling plant. The service area for the Boise White Paper, LLC Industrial Waste Landfill would remain the Boise White Paper, LLC's Jackson Mill. The maximum average daily volume of waste disposed at the Boise White Paper, LLC Industrial Waste Landfill would remain 600 cubic yards per day.

A public comment period was announced by ADEM on August 1, 2019 and ended on September 4, 2019. The permit application and draft permit was available for inspection at the Alabama Department of Environmental Management. The Department received no comments during the comment period.

The Solid Waste Branch has determined that the permit application complies with the applicable requirements of ADEM's Administrative Codes Division 13 for an industrial waste landfill.

Technical Contact:
Mr. Blake Holden
Solid Waste Engineering Section
Land Division
(334) 274-4248

ALABAMA
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

SOLID WASTE DISPOSAL FACILITY *PERMIT*

PERMITTEE:	**Boise White Paper, LLC – Jackson Mill**
FACILITY NAME:	**Boise White Paper, LLC Industrial Waste Landfill**
FACILITY LOCATION:	**Southwest ¼ of Section 16, Township 6 North, Range 2 East, in Clarke County, Alabama. The total permitted area is approximately 70.25 acres with 41 acres for disposal operations.**
PERMIT NUMBER:	**13-05**
PERMIT TYPE:	**Industrial Landfill**
WASTE APPROVED FOR DISPOSAL:	**Non-putrescible and non-hazardous industrial waste, waste lime, boiler ash, woodyard rejects, clarifier solids, water treatment plant backwash solids, mix pond solids, miscellaneous wood waste, black liquor tank bottoms, and waste from the wastepaper recycling plant.**
APPROVED WASTE VOLUME:	**Maximum Average Daily Volume of waste is 600 cubic yards per day**
APPROVED SERVICE AREA:	**Boise White Paper, LLC's Jackson Mill**

In accordance with and subject to the provisions of the Alabama Solid Wastes and Recyclable Materials Management Act, as amended, Code of Alabama 1975, §§ 22-27-1 to 22-27-27 ("SWRMMA"), the Alabama Environmental Management Act, as amended, Code of Alabama 1975, §§ 22-22A-1 to 22-22A-15, and rules and regulations adopted thereunder, and subject further to the conditions set forth in this permit, the Permittee is hereby authorized to dispose of the above-described solid wastes at the above-described facility location.

ISSUANCE DATE:	**September 5, 2019**
EFFECTIVE DATE:	**September 5, 2019**
EXPIRATION DATE:	**September 4, 2024**

Alabama Department of Environmental Management

ALABAMA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
SOLID WASTE PERMIT

Permittee:	Boise White Paper, LLC – Jackson Mill 4585 Industrial Rd. Jackson, Alabama 36545
Landfill Name:	Boise White Paper, LLC Industrial Waste Landfill
Landfill Location:	A part of the Southwest ¼ of Section 16, Township 6 North, Range 2 East, in Clarke County, Alabama
Permit Number:	13-05
Landfill Type:	Industrial Landfill

Pursuant to the Alabama Solid Wastes & Recyclable Materials Management Act, Code of Alabama 1975, §§ 22-27-1, *et seq.*, as amended, and attendant regulations promulgated thereunder by the Alabama Department of Environmental Management (ADEM), this permit is issued to Boise White Paper, LLC – Jackson Mill (hereinafter called the Permittee), to operate a solid waste disposal facility, known as the Boise White Paper, LLC Industrial Waste Landfill.

The Permittee must comply with all terms and conditions of this permit. This permit consists of the conditions set forth herein (including those in any attachments), and the applicable regulations contained in Chapters 335-13-1 through 335-13-15 of the ADEM Administrative Code (hereinafter referred to as the "ADEM Admin. Code"). Rules cited are set forth in this document for the purpose of Permittee reference. Any Rule that is cited incorrectly in this document does not constitute grounds for noncompliance on the part of the Permittee. Applicable ADEM Administrative Codes are those that are in effect on the date of issuance of this permit or any revisions approved after permit issuance.

This permit is based on the information submitted to the Department October 16, 2018, for permit renewal, and known as the Permit Application (hereby incorporated by reference and hereinafter referred to as the Application). Any inaccuracies found in this information could lead to the termination or modification of this permit and potential enforcement action. The Permittee must inform the Department of any deviation from or changes in the information in the Application that would affect the Permittee's ability to comply with the applicable ADEM Admin. Code or permit conditions.

This permit is effective as of **September 5, 2019** and shall remain in effect until **September 4, 2024**, unless suspended or revoked.

Alabama Department of Environmental Management

9/5/19
Date Signed

SECTION I. STANDARD CONDITIONS

A. Effect of Permit

The Permittee is allowed to dispose of nonhazardous solid waste in accordance with the conditions of this permit and ADEM Admin. Code Div. 13. Issuance of this permit does not convey property rights of any sort or any exclusive privilege, nor does it authorize any injury to persons or property, any invasion of other private rights, or any infringement of state or local laws or regulations. Except for actions brought under Code of Alabama 1975, §§ 22-27-1, *et seq.*, as amended, compliance with the conditions of this permit shall be deemed to be compliance with applicable requirements in effect as of the date of issuance of this permit and any future revisions.

B. Permit Actions

This permit may be suspended, revoked or modified for cause. The filing of a request for a permit modification or the notification of planned changes or anticipated noncompliance on the part of the Permittee, and the suspension or revocation does not stay the applicability or enforceability of any permit condition.

C. Severability

The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.

D. Definitions

For the purpose of this permit, terms used herein shall have the same meaning as those in ADEM Admin. Code Division 13, unless this permit specifically provides otherwise; where terms are not otherwise defined, the meaning associated with such terms shall be as defined by a standard dictionary reference or the generally accepted scientific or industrial meaning of the term.

1. "EPA" for purposes of this permit means the United States Environmental Protection Agency.

2. "Permit Application" for the purposes of this permit, means all permit application forms, design plans, operational plans, closure plans, technical data, reports, specifications, plats, geological and hydrological reports, and other materials which are submitted to the Department in pursuit of a solid waste disposal permit.

E. Duties and Requirements

1. Duty to Comply

The Permittee must comply with all conditions of this permit except to the extent and for the duration such noncompliance is authorized by a variance granted by the Department. Any permit noncompliance, other than noncompliance authorized by a variance, constitutes a violation of Code of Alabama 1975, §§ 22-27-1 *et seq.*, as amended, and is grounds for enforcement action, permit suspension, revocation, modification, and/or denial of a permit renewal application.

2. Duty to Reapply

If the Permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the Permittee must apply for and obtain a new permit. The renewal application must be submitted to the Department at least 180 days before this permit expires.

3. Permit Expiration

This permit and all conditions therein will remain in effect beyond the permit's expiration date if the Permittee has submitted a timely, complete application as required by Section I.E.2., and, through no fault of the Permittee, the Department has not made a final decision regarding the renewal application.

4. Need to Halt or Reduce Activity Not A Defense

It shall not be a defense for the Permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity to maintain compliance with the conditions of this permit.

5. Duty to Mitigate

In the event of noncompliance with this permit, the Permittee shall take all reasonable steps to minimize releases to the environment, and shall carry out such measures as are reasonable to prevent significant adverse impacts on human health or the environment.

6. Proper Operation and Maintenance

The Permittee shall at all times properly operate and maintain all facilities and systems of control (and related appurtenances) that are installed or used by the Permittee to achieve compliance with the conditions of this permit.

7. Duty to Provide Information

If requested, the Permittee shall furnish to the Department, within a reasonable time, any information that the Department may reasonably need to determine whether cause exists for denying, suspending, revoking, or modifying this permit, or to determine compliance with this permit. If requested, the Permittee shall also furnish the Department with copies of records kept as a requirement of this permit.

8. Inspection and Entry

Upon presentation of credentials and other documents as may be required by law, the Permittee shall allow the employees of the Department or their authorized representative to:

a. Enter at reasonable times the Permittee's premises where the regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit.

b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit.

c. Inspect, at reasonable times, any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit.

d. Sample or monitor, at reasonable times, any substances or parameters at any location for the purposes of assuring permit compliance or as otherwise authorized by Code of Alabama 1975, §§ 22-27-1 *et seq.*

9. Monitoring, Corrective Actions, and Records

a. Samples and measurements taken for the purpose of monitoring or corrective action shall be representative of the monitored activity. The methods used to obtain representative samples to be analyzed must be the appropriate method from Chapter 335-13-4 or the methods as specified in the Application attached hereto and incorporated by reference. Laboratory methods must be those specified in Standard Methods for the Examination of Water and Wastewater (American Public Health Association, latest edition), Methods for Chemical Analysis of Water and Wastes

(EPA-600/4-79-020), Test Methods for Evaluating Solid Waste, Physical/Chemical Methods (EPA Publication SW-846, latest edition), other appropriate EPA methods, or as specified in the Application. All field tests must be conducted using approved EPA test kits and procedures.

b. The Permittee shall retain records, at the location specified in Section I.I., of all monitoring, or corrective action information, including all calibration and maintenance records, copies of all reports and records required by this permit, and records of all data used to complete the application for this permit for a period of at least three years from the date of the sample, measurement, report or record or for periods elsewhere specified in this permit. These periods may be extended by the request of the Department at any time and are automatically extended during the course of any unresolved enforcement action regarding this facility.

c. Records of monitoring and corrective action information shall include.

i. The exact place, date, and time of sampling or measurement.

ii. The individual(s) and company who performed the sampling or measurements.

iii. The date(s) analyses were performed.

iv. The individual(s) and company who performed the analyses.

v. The analytical techniques or methods used.

vi. The results of such analyses.

d. The Permittee shall submit all monitoring and corrective action results at the interval specified elsewhere in this permit.

10. Reporting Planned Changes

The Permittee shall notify the Department, in the form of a request for permit modification, at least 90 days prior to any change in the permitted service area, increase in the waste received, or change in the design or operating procedure as described in this permit, including any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.

11. Transfer of Permit

This permit may be transferred to a new owner or operator. All requests for transfer of permits shall be in writing and shall be submitted on forms provided by the Department. Before transferring ownership or operation of the facility during its operating life, the Permittee shall notify the new owner or operator in writing of the requirements of this permit.

12. Certification of Construction

The Permittee may not commence disposal of waste in any new cell or phase until the Permittee has submitted to the Department, by certified mail or hand delivery, a letter signed by both the Permittee and a professional engineer stating that the facility has been constructed in compliance with the permit.

The Department must inspect the constructed cells or phases before the owner or operator can commence waste disposal unless the Permittee is notified that the Department will waive the inspection.

13. Compliance Schedules

Reports of compliance or noncompliance with or any progress reports on interim and final requirements contained in any compliance schedule required and approved by the Department shall be submitted no later than 14 days following each schedule date.

14. Other Noncompliance

The Permittee shall report all instances of noncompliance with the permit at the time monitoring reports are submitted.

15. Other Information

If the Permittee becomes aware that information required by the Application was not submitted or was incorrect in the Application or in any report to the Department, the Permittee shall promptly submit such facts or information. In addition, upon request, the Permittee shall furnish to the Department, within a reasonable time, information related to compliance with the permit.

F. Design and Operation of Facility

The Permittee shall maintain and operate the facility to minimize the possibility of a fire, explosion, or any unplanned sudden or non-sudden release of contaminants (including leachate and explosive gases) to air, soil, groundwater, or surface water, which could threaten human health or the environment.

G. Inspection Requirements

1. The Permittee shall comply with all requirements of ADEM Admin. Code Division 13.

2. The Permittee shall conduct random inspections of incoming loads.

3. Records of all inspections shall be included in the operating record.

H. Recordkeeping and Reporting

1. The Permittee shall maintain a written operating record at the location specified in Section I.I. The operating record shall include:

a. Documentation of inspection and maintenance activities.

b. Daily Volume reports.

c. Personnel training documents and records.

d. Solid/Hazardous Waste Determination Forms for Industrial Wastes, and the associated Department disposal approval correspondence for industrial waste and special waste.

e. Groundwater monitoring records.

f. Explosive gas monitoring records.

g. Surface water and leachate monitoring records.

h. Copies of this Permit and the Application.

i. Copies of all variances granted by the Department, including copies of all approvals of special operating conditions.

2. Quarterly Volume Report

Beginning with the effective date of this permit, the Permittee shall submit, within thirty (30) days after the end of each calendar quarter, a report summarizing the daily waste receipts for the previous (just ended) quarter. Copies of the quarterly reports shall be maintained in the operating record.

3. Monitoring and Corrective Action Reports

The Permittee shall submit reports on all monitoring and corrective activities conducted pursuant to the requirements of this permit, including, but not limited to, groundwater, surface water, explosive gas and leachate monitoring. The groundwater monitoring shall be conducted in March and September of each year, or as directed by the Department, and the reports shall be submitted at least semi-annually, or as directed by the Department. The reports should contain all monitoring results and conclusions from samples and measurements conducted during the sampling period. A variance has been granted reducing the groundwater monitoring frequency to annually. (See Section VIII.3.) Explosive gas monitoring is not required at this time, but if it is determined that monitoring is necessary, the Permittee shall conduct monitoring and submit reports as directed by the Department. Copies of the groundwater and explosive gas monitoring reports shall be maintained in the operating record.

4. Availability, Retention, and Disposition of Records

a. All records, including plans, required under this permit or Division 13 must be furnished upon request, and made available at reasonable times for inspection by any officer, employee, or representative of the Department.

b. All records, including plans, required under this permit or Division 13 shall be retained by the Permittee for a period of at least three years. The retention period for all records is extended automatically during the course of any unresolved enforcement action regarding the facility, or as requested by the Department.

c. A copy of records of waste disposal locations and quantities must be submitted to the Department and local land authority upon closure of the facility.

I. Documents to be maintained by the Permittee

The Permittee shall maintain, at the Boise White Paper, LLC Industrial Waste Landfill office, the following documents and amendments, revisions and modifications to these documents until an engineer certifies closure.

1. Operating record.

2. Closure Plan.

J. Mailing Location

All reports, notifications, or other submissions which are required by this permit should be sent via signed mail (i.e. certified mail, express mail delivery service, etc.) or hand delivered to:

Mailing Address:
Chief, Solid Waste Branch, Land Division
Alabama Department of Environmental Management
P.O. Box 301463
Montgomery, AL 36130-1463

Physical Address:
Chief, Solid Waste Branch, Land Division
Alabama Department of Environmental Management
1400 Coliseum Blvd.
Montgomery, Alabama 36110-2400

K. Signatory Requirement

All applications, reports or information required by this permit, or otherwise submitted to the Department, shall be signed and certified by the owner as follows:

1. If an individual, by the applicant.

2. If a city, county, or other municipality or governmental entity, by the ranking elected official, or by a duly authorized representative of that person.

3. If a corporation, organization, or other legal entity, by a principal executive officer, of at least the level of Vice President, or by a duly authorized representative of that person.

L. Confidential Information

The Permittee may claim information submitted as confidential if the information is protected under Code of Alabama 1975, §§ 22-39-18, as amended.

M. State Laws and Regulations

Nothing in this permit shall be construed to preclude the initiation of any legal action or to relieve the Permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable state law or regulation.

SECTION II. GENERAL OPERATING CONDITIONS

A. Operation of Facility

The Permittee shall operate and maintain the disposal facility consistent with the Application, this permit, and ADEM Admin. Code Division 13.

B. Open Burning

The Permittee shall not allow open burning without prior written approval from the Department and other appropriate agencies. A burn request should be submitted in writing to the Department outlining why that burn request should be granted. This request should include, but not be limited to, specifically what areas will be utilized, types of waste to be burned, the projected starting and completion dates for the project, and the projected days and hours of operation. The approval, if granted, shall be included in the operating record.

C. Prevention of Unauthorized Disposal

The Permittee shall follow the approved procedures for the detecting and preventing the disposal of free liquids, regulated hazardous waste, PCB's, and medical waste at the facility.

D. Unauthorized Discharge

The Permittee shall operate the disposal facility in such a manner that there will be no water pollution or unauthorized discharge. Any discharge from the disposal facility or practice thereof may require a National Pollutant Discharge Elimination System permit under the Alabama Water Pollution Control Act.

E. Industrial Waste Disposal

The Permittee shall dispose of industrial waste at this landfill.

F. Boundary Markers

The Permittee shall ensure that the facility is identified with a sufficient number of permanent boundary markers that are at least visible from one marker to the next.

SECTION III. SPECIFIC REQUIREMENTS FOR INDUSTRIAL LANDFILLS

A. Waste Identification and Management

1. Subject to the terms of this permit, the Permittee may dispose of the nonhazardous solid wastes listed in III.B. Disposal of any other wastes is prohibited, except waste granted a temporary or one time waiver by the Director.

2. The total permitted area for the Boise White Paper, LLC Industrial Waste Landfill is approximately 70.25 acres, with approximately 41 acres permitted for disposal operations.

3. The maximum average daily volume of waste disposed at the facility shall not exceed 600 cubic yards per day, except as provided under Rule 335-13-5-.06(2)(a)5. The average daily volume shall be computed as specified by Rule 335-13-5-.06(2)(a)5.(i).

B. Waste Streams

The Permittee may accept for disposal non-putrescible and non-hazardous industrial waste, waste lime, boiler ash, woodyard rejects, clarifier solids, water treatment plant backwash solids, mix pond solids, miscellaneous wood waste, black liquor tank bottoms, and waste from the wastepaper recycling plant.

C. Service Area:

The Permittee is allowed to receive for disposal waste from Boise White Paper, LLC's Jackson Mill.

D. Waste Placement, Compaction, and Cover

All waste shall be confined to an area as small as possible and placed onto an appropriate slope not to exceed 4 to 1 (25%) or as approved by the Department. All waste shall be spread in layers two feet or less in thickness and thoroughly compacted weekly with adequate landfill equipment prior to placing additional layers of waste. A minimum of six inches of compacted earth or other alternative cover material approved by the Department shall be added at the conclusion of each week's operation unless a variance is granted in Section VIII. The Permittee is granted a variance to cover at the time of closure.(See Section VIII.1.)

E. Liner Requirements

The Permittee shall be required to install a composite liner system. The composite liner will consist of 24 inches of compacted clay with a soil permeability of 1×10^{-7} cm/sec, 60 mil HDPE liner, 1 foot angular layer and 1 foot select soil layer with a permeability of 1×10^{-3} cm/sec. The base of the landfill shall be a minimum of five (5) feet above the temporal fluctuation of the groundwater table.

F. Security

The Permittee shall provide artificial and/or natural barriers, which prevent entry of unauthorized vehicular traffic to the facility.

G. All Weather Access Roads

The Permittee shall provide an all-weather access road to the dumping face that is wide enough to allow passage of collection vehicles.

H. Adverse Weather Disposal

The Permittee shall provide for disposal activities in adverse weather conditions.

I. Personnel

The Permittee shall maintain adequate personnel to ensure continued and smooth operation of the facility.

J. Environmental Monitoring and Treatment Structures

The Permittee shall provide protection and proper maintenance of environmental monitoring and treatment structures.

K. Vector Control

The Permittee shall provide for vector control as required by ADEM Admin. Code Division 13.

L. Bulk or Noncontainerized Liquid Waste

The Permittee shall not dispose of bulk or noncontainerized liquid waste, or containers capable of holding liquids, unless the conditions of Rule 335-13-4-.23(1)(j) are met.

M. Empty Containers

Empty containers larger than 10 gallons in size must be rendered unsuitable for holding liquids prior to disposal in the landfill unless otherwise approved by the Department.

N. Other Requirements

The Department may enhance or reduce any requirements for operating and maintaining the landfill as deemed necessary by the Land Division.

O. Other Permits

The Permittee shall operate the landfill according to this and any other applicable permits.

P. Scavenging and Salvaging Operations

The Permittee shall prevent scavenging and salvaging operations, except as part of a controlled recycling effort. Any recycling operation must be in accordance with plans submitted and approved by the Department.

Q. Signs

If the landfill is available to the public or commercial haulers, the Permittee shall provide a sign outlining instructions for use of the site. The sign shall be posted and have the information required by Rule 335-13-4-.23(1)(f).

R. Litter Control

The Permittee shall control litter.

S. Fire Control

The Permittee shall provide fire control measures.

SECTION IV. GROUNDWATER MONITORING REQUIREMENTS

A. The Permittee shall install and/or maintain a groundwater monitoring system, as specified below.

1. The permittee shall maintain the groundwater monitoring wells and piezometers identified in Table IV.1. at the locations specified in the Application, and any other groundwater monitoring wells which are added (Section IV.A.3.) during the active life and the post closure care period.

2. The Permittee shall maintain groundwater monitoring well MW-1, MW-7 and MW-8 as the background groundwater monitoring wells for the entire facility.

3. The Permittee shall install and maintain additional groundwater monitoring wells as necessary to assess changes in the rate and extent of any plume of contamination or as otherwise deemed necessary to maintain compliance with the ADEM Admin. Code.

4. Prior to installing any additional groundwater monitoring wells, the Permittee shall submit a report to the Department with a permit modification request specifying the design, location and installation of any additional monitoring wells. This report shall be submitted within ninety (90) days prior to the installation which, at a minimum, shall include.

   a. Well construction techniques including proposed casing depths, proposed total depth, and proposed screened interval of well(s);

   b. Well development method(s);

   c. A complete analysis of well construction materials;

   d. A schedule of implementation for construction; and

   e. Provisions for determining the lithologic characteristics, hydraulic conductivity and grain-size distribution for the applicable aquifer unit(s) at the location of the new well(s).

5. The Permittee is approved to use an interwell approach for statistical analysis.

B. Groundwater Monitoring Requirements

1. The Permittee shall determine the groundwater surface elevation at each monitoring well and piezometer identified in Table IV.1. each time the well or piezometer is sampled and at least semi-annually throughout the active life and post-closure care period. The Permittee is allowed to perform annual groundwater monitoring. (See Section VIII.3.)

2. The Permittee shall determine the groundwater flow rate and direction in the first zone of saturation at least annually or each time groundwater is sampled and submit as required by ADEM Admin. Code Division 13.

3. Prior to the initial receipt of waste at the facility, the Permittee shall sample, and analyze for the parameters listed in Appendix I of Rule 335-13-4-.27, and/or any other parameters specified by the Department in Table IV. 2., all monitoring wells identified in Section IV.,A.,2. to establish background water quality and/or as directed by Rule 335-13-4-.27(2)(j) and 335-13-4-.27(2)(a)(1).

4. The Permittee shall sample, and analyze all monitoring wells identified in Table IV.1 for the parameters listed in Appendix I of Rule 335-13-4-.27(3), and/or any other parameters specified by the Department in Table IV.3, on a semi-annual basis throughout the active life of the facility and the post- closure care period in accordance with Rule 335-13-4-.27(3). Sampling shall be conducted during March and September of each year, beginning with the effective date of this permit. The records and results of this sampling and analysis activity shall be submitted to the Department, within ninety (90) days of the date of sampling. **Groundwater monitoring shall be conducted according to the groundwater monitoring plan submitted April 17, 2019.**

5. In addition to the requirements of Section IV., B.,1., B.,2., B.,3. and B.,4., the Permittee shall record water levels, mean sea level elevation measuring point, depth to water, and the results of field tests for pH and specific conductance at the time of sampling for each well.

C. Sampling and Analysis Procedures

The Permittee shall use the following techniques and procedures when obtaining and analyzing samples from the groundwater monitoring wells described in Section IV.,A. to provide a reliable indication of the quality of the groundwater.

1. Samples shall be collected, preserved, and shipped (when shipped off-site for analysis) in accordance with the procedures specified in the Application. Monitoring wells shall be bailed or pumped to remove at least three to five times the well volume of water. Slow recharge wells shall be bailed until dry. Wells shall be allowed to recharge prior to sampling.

2. Samples shall be analyzed according to the procedures specified of the Application, Standard Methods for the Examination of Water and Wastewater (American Public Health Association, latest edition), Methods for Chemical Analysis of Water and Wastes (EPA-600/4-79-020), Test Methods for Evaluating Solid Waste, Physical/Chemical Methods (EPA Publication SW-846, latest edition), or other appropriate methods approved by this Department. All field tests must be conducted using approved EPA test kits and procedures.

3. Samples shall be tracked and controlled using the chain-of-custody and QA\QC procedures specified of the Application.

D. Recordkeeping and Reporting Requirements

1. Recording of Results

For each sample and/or measurement taken pursuant to the requirements of this permit, the Permittee shall record the information required by Section I.,E.,9.,c.

2. Recordkeeping

Records and results of all groundwater monitoring, sampling, and analysis activities conducted pursuant to the requirements of this permit shall be included in the operating record required by Section I.,I.,1.

E. Permit Modification

If at any time the Permittee or the Department determines that the groundwater monitoring system no longer satisfies the requirements of 335-13-4-.14 or Section IV.A. of this permit, the Permittee must, within 90 days, submit an application for a permit modification to make any necessary and/or appropriate changes to the system.

TABLE IV.1.
GROUNDWATER MONITORING WELLS

Monitoring Well Number	Top of Casing (PVC) (feet msl)	Part Monitoring
UPGRADIENT/BACKGROUND MONITORING WELL		
MW-1	188.66	Entire Landfill
MW-7	186.00	Entire Landfill
MW-8	177.20	Entire Landfill
DOWNGRADIENT MONITORING WELLS		
MW-6	34.40	Entire Landfill
MW-10	87.40	Entire Landfill
MW-12	67.70	Entire Landfill

TABLE IV.2.
BACKGROUND GROUNDWATER MONITORING

pH
Conductivity
Alkalinity
Chloride
Sulfate

TABLE IV.3.
SEMI-ANNUAL GROUNDWATER MONITORING PARAMETERS

pH
Conductivity
Alkalinity
Chloride
Sulfate

SECTION V. GAS MONITORING REQUIREMENTS

At this time, gas monitoring is not being required (See Section VIII.2.). If at any time the Department determines that a explosive gas monitoring system is deemed necessary for the protection of human health and the environment, the Permittee must, within 90 days, submit an application for permit modification for the installation of an explosive gas monitoring system that meets the proper regulatory requirements of the Alabama Department of Environmental Management.

SECTION VI. LEACHATE AND SURFACE WATER MANAGEMENT REQUIREMENTS

The Permittee must collect and dispose of any leachate that is generated at the facility, and the leachate must be managed at a facility permitted to treat leachate. The Permittee shall install a leachate collection system designed to maintain less than 12 inches (30 cm) depth of leachate over the liner.

The permittee shall construct and maintain run-on and run-off control structures. Any discharges from drainage control structures shall be permitted through a discharge permit issued by the ADEM Water Division.

SECTION VII. CLOSURE AND POST-CLOSURE REQUIREMENTS

The Permittee shall close the landfill and perform post-closure care of the landfill in accordance with Division 13.

A. Final Cover

The Permittee shall grade final soil cover such that surface water does not pond over the permitted area as specified in the Application. The final cover system shall comply with ADEM Admin. Code Division 13.

B. Vegetative Cover

The Permittee shall establish a vegetative or other appropriate cover within 90 days after completion of final grading requirements in the Application. Preparation of a vegetative cover shall include, but not be limited to, the placement of seed, fertilizer, mulch, and water.

C. Notice of Intent

The Permittee shall place in the operating record and notify the Department of their intent to close the landfill prior to beginning closure.

D. Completion of Closure Activities

The Permittee must complete closure activities of each landfill unit in accordance with the Closure Plan within 180 days of the last known receipt of waste.

E. Certification of Closure

Following closure of each unit, the Permittee must submit to the Department a certification, signed by an engineer, verifying the closure has been completed according to the Closure Plan.

F. Post-Closure Care Period

Post-closure care activities shall be conducted after closure of each unit throughout the life of this permit and continuing for a period of thirty (30) years following closure of the facility. The Department may shorten or extend the post-closure care period applicable to the solid waste disposal facility. The Permittee shall reapply in order to fulfill the post-closure care requirements of this permit.

G. Post-Closure Maintenance

The Permittee shall provide post closure maintenance of the facility to include regularly scheduled inspections. This shall include maintenance of the cover, vegetation, monitoring devices and pollution control equipment and correction of other deficiencies that may be observed by the Department. Monitoring requirements shall continue throughout the post closure period as determined by the Department unless all waste is removed and no unpermitted discharge to waters of the State has occurred.

H. Post-Closure Use of Property

The Permittee shall ensure that post closure use of the property never be allowed to disturb the integrity of the final cover, liner, or any other component of the containment system. This shall preclude the growing of deep-rooted vegetation on the closed area.

I. Certification of Post-Closure

Following post-closure of each unit, the Permittee must submit to the Department a certification, signed by an engineer, verifying the post-closure has been completed according to the Post-Closure Plan.

J. Notice in Deed to Property

The Permittee shall record a notation onto the land deed containing the property utilized for disposal within 90 days after permit expiration, revocation or when closure requirements are achieved as determined by the Department as stated in the Application. This notation shall state that the land has been used as a solid waste disposal facility, the name of the Permittee, type of disposal activity, location of the disposal facility and beginning and closure dates of the disposal activity.

K. Recording Instrument

The Permittee shall submit a certified copy of the recording instrument to the Department within 120 days after permit expiration, revocation, or as directed by the Department as described in the Application.

L. Removal of Waste

If the Permittee, or any other person(s), wishes to remove waste, waste residues, or any liner or contaminated soils, the owner must request and receive prior approval from the Department.

SECTION VIII. VARIANCES

1. A variance is granted from Rule 335-13-4-.23(1)(a) which requires a minimum of six inches of weekly soil cover. The Permittee will be required to cover at the time of closure. (See Section III.D.)

2. A variance is granted from Rule 335-13-4-.16 which requires monitoring of explosive gases. (See Section V.)

3. A variance has been granted reducing the groundwater monitoring frequency to annually. (See SectionIV.B.1.)

4. **The Permittee is granted a variance from rule 335-13-4-.12(2)(f) requiring a 100 foot buffer. The variance is granted along the southern boundary of the landfill.**

Any variance granted by the Department may be terminated by the Department whenever the Department finds, after notice and opportunity for hearing, that the petitioner is in violation of any requirement, condition, schedule, limitation or any other provision of the variance, or that operation under the variance does not meet the minimum requirements established by state and federal laws and regulations or is unreasonably threatening the public health.

APPENDIX B

Jackson Mill Landfill Operation Plan

PCA's industrial waste landfill operates under Alabama Department of Environmental Management (ADEM) Solid Waste Disposal Facility Permit No. 13-05. The facility is permitted to accept the following wastes generated at PCA's Jackson Paper Mill:

- Non-putrescible and non-hazardous industrial waste;
- Waste lime;
- Boiler ash;
- Woodyard rejects;
- Clarifier solids;
- Water treatment plant backwash solids;
- Mix pond solids;
- Miscellaneous wood waste;
- Black liquor tank bottoms;
- Waste from the wastepaper recycling plant; and
- Primary and secondary rejects from the Old Corrugated Cardboard recycling facility.

Placement and disposal of these wastes are performed according to the following operational requirements specified by ADEM Administrate Code Rules 335-13-4-.21 and 335-13-4-.23, as described below.

General Operations

The operation and use of the industrial waste landfill will be conducted in accordance with Permit No. 13-05. Because the PCA Industrial Waste Landfill is permitted to accept only those specified wastes generated by the Jackson Paper Mill, outside source wastes are prohibited unless special approval is requested from, and granted by, ADEM. Updated waste certifications for the wastes described above are not required, because the landfill is exempt pursuant to the requirements of ADEM Administrative Code R. 335-13-4-.21(6).

The landfill is operated such that no water pollution or unauthorized discharges occur. Leachate is contained by the composite base liner system and conveyed to the Jackson Paper Mill for effluent treatment. The facility is equipped with a sufficient number of permanent markers that are visible from one marker to the next, indicating the areal extent of the landfill. Incoming waste loads are measured by cubic yardage as they enter the facility by truck. Daily waste volume records are maintained at the facility, and quarterly volume reports are submitted to ADEM and maintained on file at the facility.

Open burning of solid waste is prohibited at the PCA Industrial Waste Landfill. Should emergency conditions prevail that require burning of debris at the landfill, PCA will seek approval from ADEM and other appropriate agencies before beginning burning activities. Burning of stumps and trees as a result of clearing will be performed only with permission from ADEM and the Alabama Forestry Commission.

Industrial Waste Landfill Operating Requirements

Wastes are placed and compacted upon delivery to the landfill. Weekly cover is not necessary, because disease vectors, fires, odors, blown litter, and scavenging are not conditions associated with PCA's approved waste streams. Placement of wastes is performed on slopes of 4:1 or less.

The landfill is not open to the public or to commercial haulers. The entire facility is secured by fencing and locking gates to prevent unauthorized entry during non-operational hours.

Adequate equipment and operating personnel are maintained to ensure proper operations in accordance with the landfill permit and ADEM regulations, including during adverse weather conditions (during periods of extended severe weather, the Jackson Mill can postpone waste shipments to the landfill until normal operating capabilities are restored).

Bulk or non-containerized liquid waste is not typically accepted at the landfill, although such wastes would be acceptable under ADEM Administrative Code R. 335-13-4-.23(1)(j), because the existing liner and leachate management system are capable of properly containing and removing the resulting leachate from the landfill.

Scavenging, uncontrolled salvaging, disease vectors, and blowing litter do not occur at the PCA Industrial Waste Landfill, because of the nature of the wastes entering the facility. Structures required for environmental monitoring (groundwater wells) and control (leachate management system) are maintained in good repair and are easily accessible to authorized personnel.

APPENDIX C

Current Permit Drawings

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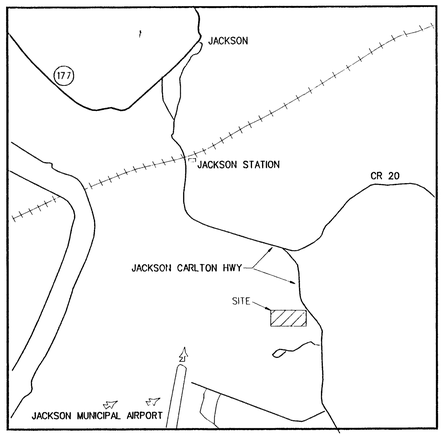
DMC 9-10-97

BOISE CASCADE - JACKSON MILL
JACKSON, ALABAMA
SOLID WASTE LANDFILL △2

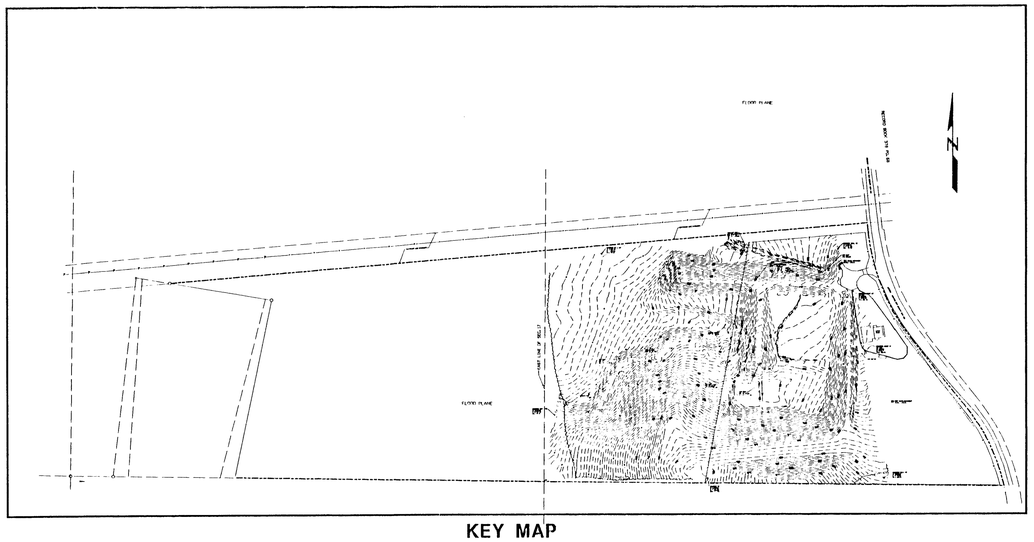
RECORD DRAWING

THIS RECORD DRAWING HAS BEEN PREPARED, IN PART, ON THE BASIS OF INFORMATION COMPILED AND FURNISHED BY OTHERS. WHILE SUCH DATA HAS BEEN COLLECTED WITH REASONABLE CARE, THERE IS NO GUARANTEE THAT THE CONDITIONS INDICATED ARE ENTIRELY REPRESENTATIVE OF THOSE ACTUALLY EXISTING. USE OF INFORMATION SHOWN WITHOUT VERIFICATION WILL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY OR LEGAL EXPOSURE TO RMT OR TO RMT'S ASSOCIATES, CONSULTANTS AND AGENTS. USER SHALL HOLD HARMLESS RMT AND RMT'S ASSOCIATES, CONSULTANTS AND AGENTS FROM ALL CLAIMS, DAMAGES, LOSSES AND EXPENSES INCLUDING ATTORNEY'S FEES ARISING OUT OF OR RESULTING THEREFROM.

LOCATION MAP



VICINITY MAP



KEY MAP

0 400 800 1200 1600
SCALE: 1" = 400'

LEGEND

	EXISTING	NEW
ACCESS ROAD		
BUILDING		
FENCE		
CONTOUR	620	620
DRAINAGE FLOW DIRECTION		
HEADWALL		HW
MONITORING WELL	MW-1	
SURVEY CONTROL POINT	△	
SPRING BOX		
SOIL BORING		
STORM SEWER MANHOLE		
BOLLARD		
CLEANOUT		
MANHOLE		
MONUMENT		
LEACH-WASH STAND PIPE		
POWER POLE (LIGHT POLE)	PP	
RIP RAP (OUTLET PROTECTION)		
SPOT ELEVATION	x610	x610
TREE LINE		
PROPERTY LINE		
STORM DRAIN	ESD	SD
BUFFER LIMITS		
WASTE LIMITS		
UNDERDRAIN		UD
LEACHATE COLLECTION PIPE	ELC	LC
COMBINED SEWER	ECS	CS
△2 CLAY LIMITS		

ABBREVIATIONS

ADEM	ALABAMA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT	INV	INVERT
AGG	AGGREGATE	LP	LIGHT POLE
AHD	ALABAMA HIGHWAY DEPARTMENT	MAX	MAXIMUM
ASTM	AMERICAN SOCIETY FOR TESTING MATERIALS	MH	MANHOLE
BX	BIAXIAL	MIN	MINIMUM
CC	CURVE COORDINATE	MISC	MISCELLANEOUS
℄	CENTERLINE	N	NORTH
CONC	CONCRETE	NO	NUMBER
CHDPE	CORRUGATED HIGH DENSITY POLYETHYLENE	NTS	NOT TO SCALE
		OD	OUTSIDE DIAMETER
		PC	POINT OF CURVATUE
CMP	CORRUGATED METAL PIPE	PI	POINT OF INTERSECTIONI
CO	CLEANOUT	PL	PROPERTY LINE
DIA	DIAMETER	PP	POWER POLE
DET	DETAIL	PSI	POUNDS PER SQUARE INCH
DI	DROP INLET	PT	POINT OF TANGENCY
DWG	DRAWING	R	RADIUS
E	EAST	RCP	REINFORCED CONCRETE PIPE
EL	ELEVATION	RD	ROAD
ELEV	ELEVATION	REV	REVISION
EXIST	EXISTING	S	SOUTH
FIN	FINISHED	SGV	SURFACE GAS VENT
FT	FOOT	STA	STATION
HDPE	HIGH DENSITY POLYETHYLENE	STD	STANDARD
		TYP	TYPICAL
HW	HEADWALL	UX	UNIAXIAL
ID	INSIDE DIAMETER	VFD	VERTICAL FRENCH DRAIN
IG	INSTRUMENTATION GROUP	W	WEST

GENERAL NOTES

1. EXISTING TOPOGRAPHIC INFORMATION WAS PROVIDED BY SAIN ASSOCIATES, DATED MAY, 1996. ELEVATIONS ARE IN FEET AND BASED ON NAVD 29 MSL DATUM. BOUNDARY INFORMATION WAS PROVIDED BY ROWE SURVEYING DATED OCTOBER, 1996.
2. COORDINATES SHOWN ARE IN FEET AND ARE BASED ON THE PLANT GRID SYSTEM. △2
3. THE PROPOSED SITE IS LOCATED IN CLARKE COUNTY, NEAR JACKSON, ALABAMA AS SHOWN ON THE VICINITY MAP.
4. EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE IMPLEMENTED, MONITORED AND MAINTAINED ON A REGULAR BASIS DURING AND AFTER EARTHWORK OPERATIONS UNTIL THE DISTURBED AREAS ARE REVEGETATED OR OTHERWISE STABILIZED. REFER TO DRAWING NO. 7055202-C18 FOR EROSION CONTROL DETAILS AND NOTES.
5. ALL GEOTEXTILE IS 16 OZ. PER SQUARE YARD NON-WOVEN.

DRAWING LIST

DRAWING NO.	PACKAGE	TITLE
7055202-C01	A,B,C	TITLE SHEET
7055202-C02	A,B,C	EXISTING SITE PLAN
7055202-C03	A	OVERALL GRADING PLAN
7055202-C04	A	CELL 2 GRADING PLAN
△2 7055202-C05	C	CELL 3 GRADING PLAN
7055202-C06	C	CELL 4 GRADING PLAN
7055202-C07	B	CELL 2 LEACHATE COLLECTION
7055202-C08	C	CELL 3 LEACHATE COLLECTION
7055202-C09	C	CELL 4 LEACHATE COLLECTION
7055202-C10	C	FINAL GRADING PLAN
7055202-C11	C	PHASING AND DEVELOPMENT PLAN
7055202-C12	A,B	SECTIONS - CELL 2
7055202-C13	C	SECTIONS - CELL 3
7055202-C14	C	SECTIONS - CELL 4
7055202-C15	B,C	LEACHATE COLLECTION DETAILS
7055202-C16	A,B	MISCELLANEOUS DETAILS - SHEET 1
7055202-C17	C	MISCELLANEOUS DETAILS - SHEET 2
7055202-C18	A	EROSION CONTROL DETAILS
7055202-C19	C	PARSHALL FLUME INSTALLATION PLAN AND DETAILS

△2

EROSION CONTROL LEGEND

HAY BALE BARRIER (HB) SILT FENCE (SF)
OUTLET PROTECTION (OP) SEDIMENT TRAP (ST)
INLET PROTECTION (HAY BALES) (IP)

NO.	DATE		BY	CK.	APVD.	ID.	DATE		BY	CK.	APVD.
6	9-12-97	RECORD DRAWING - PACKAGE "A"	DMC	RKN							
5	6-5-97	ISSUED FOR CONSTRUCTION - PACKAGE "C"	DMC	RKN							
4	6-5-97	ISSUED FOR REVIEW - PACKAGE "C"	DMC	RKN							
3	3-21-97	ISSUED FOR CONSTRUCTION - PACKAGE "B"	DMC	RKN							
2	3-5-97	ADDED NOTE 2, REVISED TITLE, LEGEND & DRAWING LIST - PACKAGE "A"	DMC	RKN							
1	2-21-97	PIPE MODIFICATIONS AND LIMITS OF CLAY LINER DESIGN PACKAGE "A"	MPM	RKN							
0	2-6-97	ISSUED FOR DESIGN PACKAGE "A" - CELL 2 CONSTRUCTION	MPM	RKN							

ALABAMA REGISTERED NO: 20300 PROFESSIONAL ENGINEER R. KENT NILSSON

BOISE CASCADE
JACKSON MILL
JACKSON ALABAMA

PROJECT MGR:	E.W.T.
DESIGNED BY:	E.W.T. & D.M.C.
DRAWN BY:	M.P.M. & D.M.C.
CHECKED BY:	
APPROVED BY:	
APPROVED BY:	
APPROVED BY:	
DATE:	JANUARY, 1997
JOB NO:	70552.03

RMT, Inc.
100 Verdae Boulevard
P.O. Box 16778
Greenville, SC 29606
(864) 281-0030

△2 **SOLID WASTE LANDFILL**
TITLE SHEET

SCALE		DRAWING NO.	REV.
AS SHOWN		7055202-C01	6

c:\cad\civil\boise\7042001c\exsite.pln
9-10-97

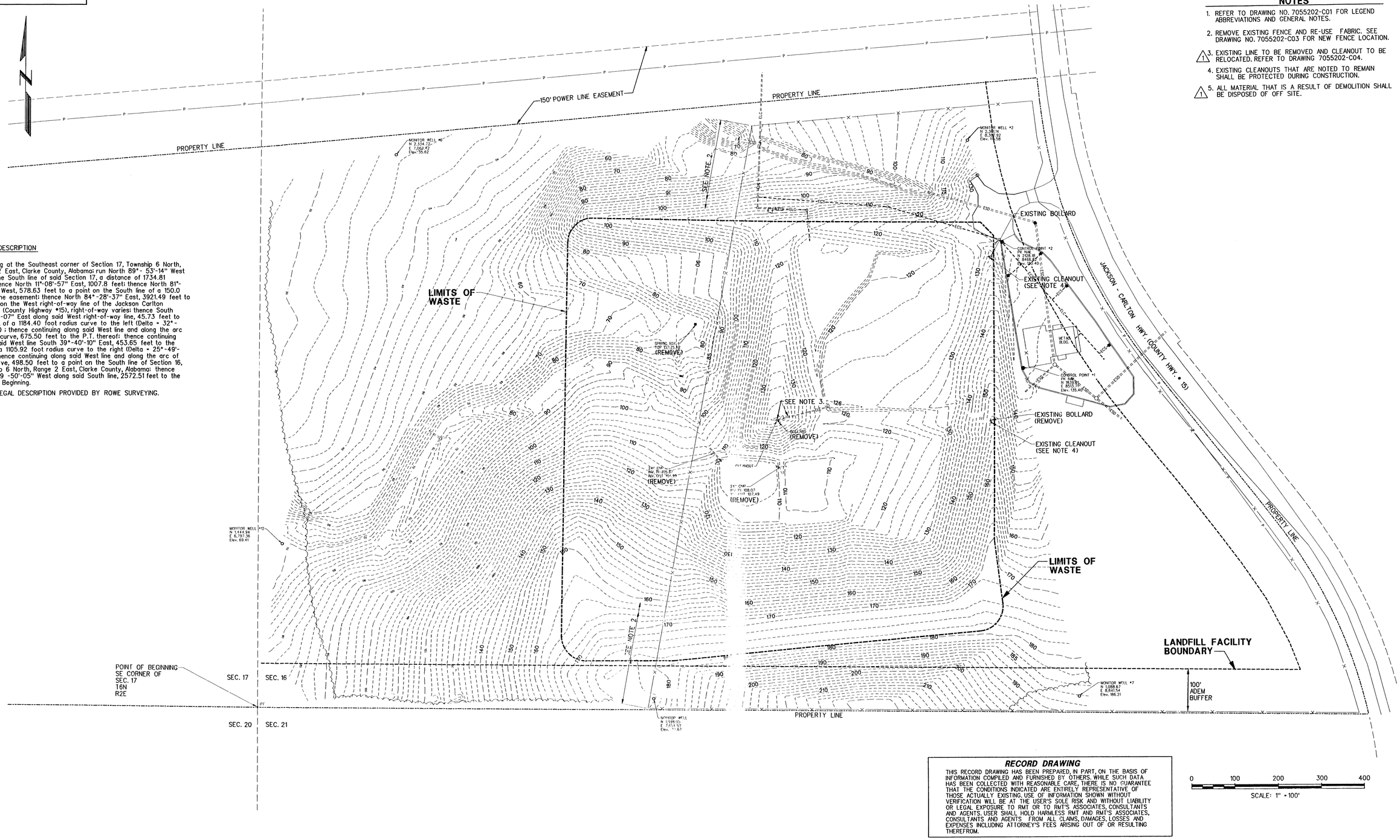
NOTES

1. REFER TO DRAWING NO. 7055202-C01 FOR LEGEND ABBREVIATIONS AND GENERAL NOTES.
2. REMOVE EXISTING FENCE AND RE-USE FABRIC. SEE DRAWING NO. 7055202-C03 FOR NEW FENCE LOCATION.
3. (1) EXISTING LINE TO BE REMOVED AND CLEANOUT TO BE RELOCATED. REFER TO DRAWING 7055202-C04.
4. EXISTING CLEANOUTS THAT ARE NOTED TO REMAIN SHALL BE PROTECTED DURING CONSTRUCTION.
5. (1) ALL MATERIAL THAT IS A RESULT OF DEMOLITION SHALL BE DISPOSED OF OFF SITE.

LEGAL DESCRIPTION

Beginning at the Southeast corner of Section 17, Township 6 North, Range 2 East, Clarke County, Alabama; run North 89° - 53'-14" West along the South line of said Section 17, a distance of 1734.81 feet; thence North 11°-08'-57" East, 1007.8 feet; thence North 81°-28'-41" West, 578.63 feet to a point on the South line of a 150.0 power line easement; thence North 84°-28'-37" East, 3921.49 feet to a point on the West right-of-way line of the Jackson Carlton Highway (County Highway #15), right-of-way varies; thence South 07°-02'-07" East along said West right-of-way line, 45.73 feet to the P.C. of a 1184.40 foot radius curve to the left (Delta = 32°-40'-39"); thence continuing along said West line and along the arc of said curve, 675.50 feet to the P.T. thereof; thence continuing along said West line South 39°-40'-10" East, 453.65 feet to the P.C. of a 1105.92 foot radius curve to the right (Delta = 25°-49'-36"); thence continuing along said West line and along the arc of said curve, 498.50 feet to a point on the South line of Section 16, Township 6 North, Range 2 East, Clarke County, Alabama; thence South 89 -50'-05" West along said South line, 2572.51 feet to the Point of Beginning.

NOTE: LEGAL DESCRIPTION PROVIDED BY ROWE SURVEYING.



RECORD DRAWING

THIS RECORD DRAWING HAS BEEN PREPARED, IN PART, ON THE BASIS OF INFORMATION COMPILED AND FURNISHED BY OTHERS. WHILE SUCH DATA HAS BEEN COLLECTED WITH REASONABLE CARE, THERE IS NO GUARANTEE THAT THE CONDITIONS INDICATED ARE ENTIRELY REPRESENTATIVE OF THOSE ACTUALLY EXISTING. USE OF INFORMATION SHOWN WITHOUT VERIFICATION WILL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY OR LEGAL EXPOSURE TO RMT OR TO RMT'S ASSOCIATES, CONSULTANTS AND AGENTS. USER SHALL HOLD HARMLESS RMT AND RMT'S ASSOCIATES, CONSULTANTS AND AGENTS FROM ALL CLAIMS, DAMAGES, LOSSES AND EXPENSES INCLUDING ATTORNEY'S FEES ARISING OUT OF OR RESULTING THEREFROM.

0 100 200 300 400
SCALE: 1" = 100'

DATE		BY	CK.	APVD.	NO.	DATE		BY	CK.	APVD.
9-12-97	RECORD DRAWING - PACKAGE "A"	DMC	RKN							
8-7-97	ISSUED FOR CONSTRUCTION - PACKAGE "C"	DMC	RKN							
3-21-97	ADDED NOTE 5, REV. NOTE 3 AND ISSUED FOR CONSTRUCTION DESIGN PACKAGE "B"	DMC	RKN							
2-6-97	ISSUED FOR DESIGN PACKAGE "A" - CELL 2 CONSTRUCTION	MPM	RKN							

ALABAMA REGISTERED NO. 20390 PROFESSIONAL ENGINEER KENT NILSSON 1/14/97

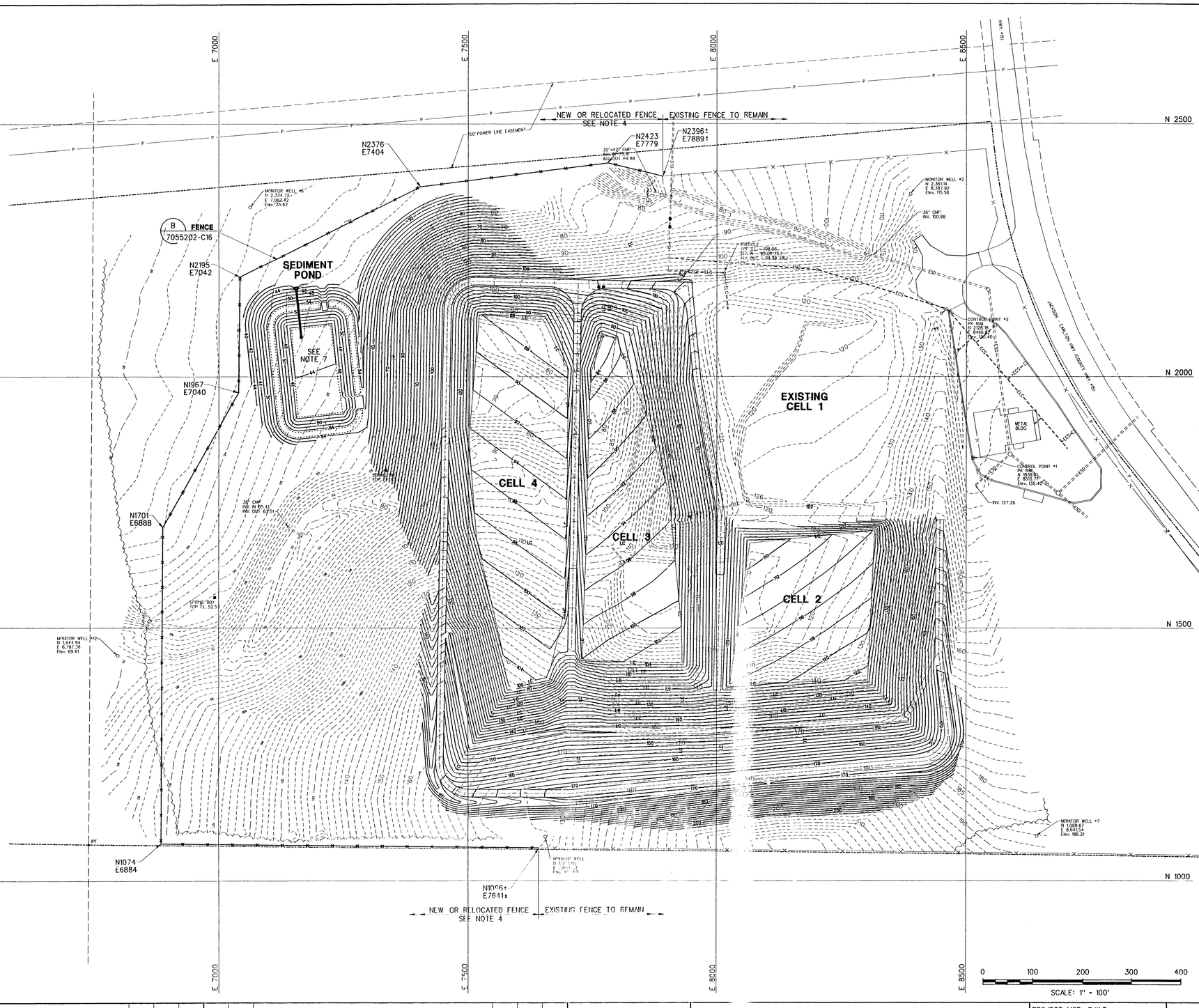
BOISE CASCADE
JACKSON MILL
JACKSON ALABAMA

PROJECT MGR:	E.W.T.
DESIGNED BY:	E.W.T. & D.M.C.
DRAWN BY:	M.P.M. & D.M.C.
CHECKED BY:	
APPROVED BY:	
APPROVED BY:	
APPROVED BY:	
DATE:	JANUARY, 1997
JOB NO:	70552.03

RMT, Inc.
100 Verdae Boulevard
P.O. Box 16778
Greenville, SC 29606
(864) 281-0030

SOLID WASTE LANDFILL
EXISTING SITE PLAN

SCALE		DRAWING NO.	REV.
AS SHOWN		7055202-C02	3



NOTES

1. REFER TO DRAWING 7055202-C01 FOR LEGEND, ABBREVIATIONS AND GENERAL NOTES.
2. REFER TO DRAWING 7055202-C04 FOR CELL 2 GRADING PLAN.
3. CELL 3 AND 4 GRADING IS NOT IN THIS CONTRACT.
4. CONTRACTOR SHALL RE-USE EXISTING FENCE FABRIC IN CONSTRUCTION OF NEW FENCE. REFER TO DRAWING 7055202-C02 FOR EXISTING FENCE TO BE REMOVED AND DRAWING 7055202-C16 FOR NEW FENCE DETAIL. WHERE EXISTING FABRIC IS TO BE RE-USED CONTRACTOR SHALL PROVIDE ALL OTHER MATERIAL REQUIRED.
5. ELEVATIONS SHOWN WITHIN THE LIMITS OF CELLS 2, 3, AND 4 ARE TOP OF CLAY ELEVATIONS. ALL OTHER ELEVATIONS ARE FINISHED GRADE.
6. ALL SIDE SLOPES ARE 3' (HORIZONTAL) TO 1' (VERTICAL) UNLESS NOTED OTHERWISE.
7. REFER TO DRAWING 7055202-C04 FOR INTERIM DRAINAGE TO SEDIMENT POND DURING CELL 2 CONSTRUCTION.
8. REFER TO DRAWING 7055202-C05 FOR CELL 3 GRADING PLAN AND DRAWING 7055202-C06 FOR CELL 4 GRADING PLAN.
9. REFER TO DRAWING 7055202-C05 FOR INTERIM DRAINAGE TO SEDIMENT POND DURING CELL 3 CONSTRUCTION.

RECORD DRAWING

THIS RECORD DRAWING HAS BEEN PREPARED, IN PART, ON THE BASIS OF INFORMATION COMPILED AND FURNISHED BY OTHERS. WHILE SUCH DATA HAS BEEN COLLECTED WITH REASONABLE CARE, THERE IS NO GUARANTEE THAT THE CONDITIONS INDICATED ARE ENTIRELY REPRESENTATIVE OF THOSE ACTUALLY EXISTING. USE OF INFORMATION SHOWN WITHOUT VERIFICATION WILL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY OR LEGAL EXPOSURE TO RMT OR TO RMT'S ASSOCIATES, CONSULTANTS AND AGENTS. USER SHALL HOLD HARMLESS RMT AND RMT'S ASSOCIATES, CONSULTANTS AND AGENTS FROM ALL CLAIMS, DAMAGES, LOSSES AND EXPENSES INCLUDING ATTORNEY'S FEES ARISING OUT OF OR RESULTING THEREFROM.

NO.	DATE	BY	CK.	APVD.
1	9-12-97	DMC	RKN	
0	2-6-97	MPM	RKN	

ALABAMA REGISTERED NO. 20390 PROFESSIONAL ENGINEER R. KENT NILSSON

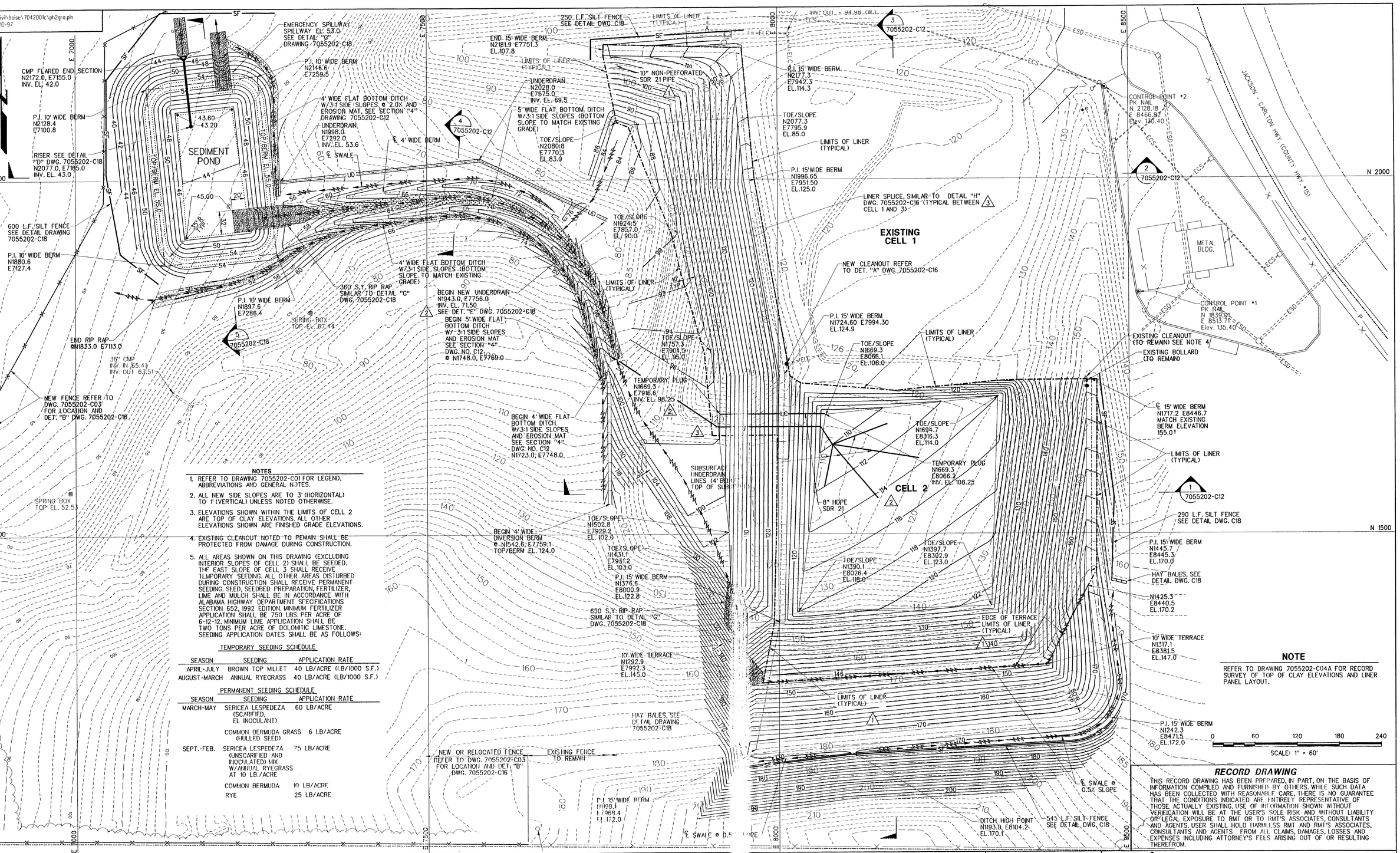
BOISE CASCADE
JACKSON MILL
JACKSON ALABAMA

PROJECT MGR:	E.W.T.
DESIGNED BY:	E.W.T. & D.M.C.
DRAWN BY:	M.P. D. CROCKER
CHECKED BY:	
APPROVED BY:	
APPROVED BY:	
APPROVED BY:	
DATE:	JANUARY, 1997
JOB NO:	70552.03

RMT, INC.
100 Verdae Boulevard
P.O. Box 16778
Greenville, SC 29606
(864) 281-0030

SOLID WASTE LANDFILL
OVERALL GRADING PLAN

SCALE		DRAWING NO.	REV.
AS SHOWN		7055202-C03	1



NOTES

1. REFER TO DRAWING 7055202-C01 FOR LEGEND, ABBREVIATIONS AND GENERAL NOTES.
2. ALL NEW SIDE SLOPES ARE TO 3' (HORIZONTAL) TO 1' (VERTICAL) UNLESS NOTED OTHERWISE.
3. ELEVATIONS SHOWN WITHIN THE LIMITS OF CELL 2 ARE TOP OF CLAY ELEVATIONS. ALL OTHER ELEVATIONS SHOWN ARE FINISHED GRADE ELEVATIONS.
4. EXISTING CLEANOUT NOTED TO REMAIN SHALL BE PROTECTED FROM DAMAGE DURING CONSTRUCTION.
5. ALL AREAS SHOWN ON THIS DRAWING (EXCLUDING INTERIOR SLOPES OF CELL 2) SHALL BE SEEDED. THE EAST SLOPE OF CELL 3 SHALL RECEIVE TEMPORARY SEEDING. ALL OTHER AREAS DISTURBED DURING CONSTRUCTION SHALL RECEIVE PERMANENT SEEDING. SEED, SEEDBED PREPARATION, FERTILIZER, LIME AND MULCH SHALL BE IN ACCORDANCE WITH ALABAMA HIGHWAY DEPARTMENT SPECIFICATIONS SECTION 652, 1992 EDITION. MINIMUM FERTILIZER APPLICATION SHALL BE 750 LBS. PER ACRE OF 6-12-12. MINIMUM LIME APPLICATION SHALL BE TWO TONS PER ACRE OF DOLOMITIC LIMESTONE. SEEDING APPLICATION DATES SHALL BE AS FOLLOWS:

TEMPORARY SEEDING SCHEDULE

SEASON	SEEDING	APPLICATION RATE
APRIL-JULY	BROWN TOP MILLET	40 LB/ACRE (LB/1000 S.F.)
AUGUST-MARCH	ANNUAL RYEGRASS	40 LB/ACRE (LB/1000 S.F.)

PERMANENT SEEDING SCHEDULE

SEASON	SEEDING	APPLICATION RATE
MARCH-MAY	SERICEA LESPEDEZA (SCARIFIED, EL INOCULANT)	60 LB/ACRE
	COMMON BERMUDA GRASS (HULLED SEED)	6 LB/ACRE
SEPT.-FEB.	SERICEA LESPEDEZA (UNSCARIFIED AND INOCULATED) MIX W/ANNUAL RYEGRASS AT 10 LB./ACRE	75 LB/ACRE
	COMMON BERMUDA	10 LB/ACRE
	RYE	25 LB/ACRE

NOTE

REFER TO DRAWING 7055202-C04A FOR RECORD SURVEY OF TOP OF CLAY ELEVATIONS AND LINER PANEL LAYOUT.

RECORD DRAWING

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DATE	BY	CK.	APVD.	NO.	DATE	BY	CK.	APVD.
9-12-97	RECORD DRAWING PACKAGE "A"	DMC	RKN					
6-6-97	REVISED LINER LIMITS AND ADDED NOTE - PACKAGE "A"	DMC	RKN					
3-13-97	REVISED INVERTS & ADDED REFERENCE - PACKAGE "A"	DMC	RKN					
2-21-97	PIPE MODIFICATIONS AND LIMITS OF CLAY LINER DESIGN PACKAGE "A"	MPM	RKN					
2-6-97	ISSUED FOR DESIGN PACKAGE "A" - CELL 2 CONSTRUCTION	MPM	RKN					

ALABAMA REGISTERED NO. 21330 PROFESSIONAL ENGINEER R. KENT NILSSON 9/10/97

BOISE CASCADE
JACKSON MILL
JACKSON ALABAMA

PROJECT MGR:	E.W.T.
DESIGNED BY:	D.M.C.
DRAWN BY:	D.M.C.
CHECKED BY:	
APPROVED BY:	
APPROVED BY:	
APPROVED BY:	
DATE:	JANUARY, 1997
JOB NO:	70552.03

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Greenville, SC 29606
(864) 281-0030

SOLID WASTE LANDFILL
CELL 2 GRADING PLAN

SCALE		DRAWING NO.	REV.
AS SHOWN		7055202-C04	4

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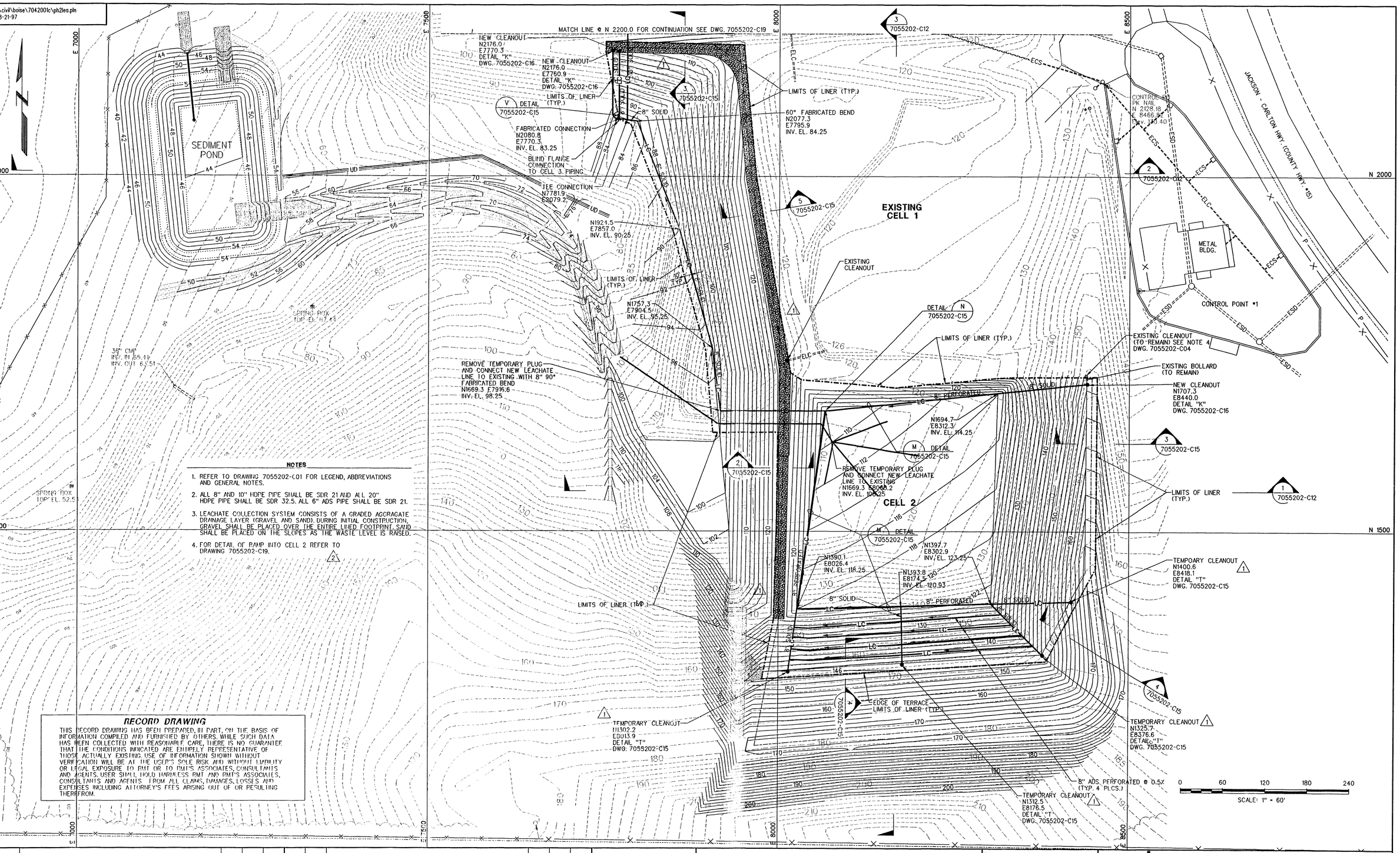
8-21-97



NOTES

1. REFER TO DRAWING 7055202-C01 FOR LEGEND, ABBREVIATIONS AND GENERAL NOTES.
2. ALL 8" AND 10" HDPE PIPE SHALL BE SDR 21 AND ALL 20" HDPE PIPE SHALL BE SDR 32.5. ALL 6" ADS PIPE SHALL BE SDR 21.
3. LEACHATE COLLECTION SYSTEM CONSISTS OF A GRADED AGGREGATE DRAINAGE LAYER (GRAVEL AND SAND) DURING INITIAL CONSTRUCTION, GRAVEL SHALL BE PLACED OVER THE ENTIRE LINED FOOTPRINT. SAND SHALL BE PLACED ON THE SLOPES AS THE WASTE LEVEL IS RAISED.
4. FOR DETAIL OF RAMP INTO CELL 2 REFER TO DRAWING 7055202-C19. (2)

DATE	BY	CK.	APVD.	NO.	DATE	BY	CK.	APVD.
9-12-97	RECORD DRAWING- PACKAGE "A"	DMC	PKN					
8-21-97	ADDED NOTE 4- PACKAGE "B"	DMC	PKN					
6-6-97	REVISED CLEANOUT TYPES, ADDED STONE TO BERM- PACKAGE "B"	DMC	PKN					
3-21-97	ISSUED FOR CONSTRUCTION - DESIGN PACKAGE "B"	MDM	PKN					

ALABAMA REGISTERED NO. 20320 PROFESSIONAL ENGINEER KENT NILSSON

BOISE CASCADE
JACKSON MILL
JACKSON ALABAMA

PROJECT MGR:	E.W.T.
DESIGNED BY:	M.M.K. & D.M.C.
DRAWN BY:	D.M.C.
CHECKED BY:	
APPROVED BY:	
APPROVED BY:	
APPROVED BY:	
DATE:	JANUARY, 1997
JOB NO:	70552.03

RMT
100 Verdae Boulevard
P.O. Box 16778
Greenville, SC 29606
(864) 281-0030

SOLID WASTE LANDFILL
CELL 2 LEACHATE COLLECTION PLAN

SCALE		DRAWING NO.	REV.
AS SHOWN		7055202-C07	3

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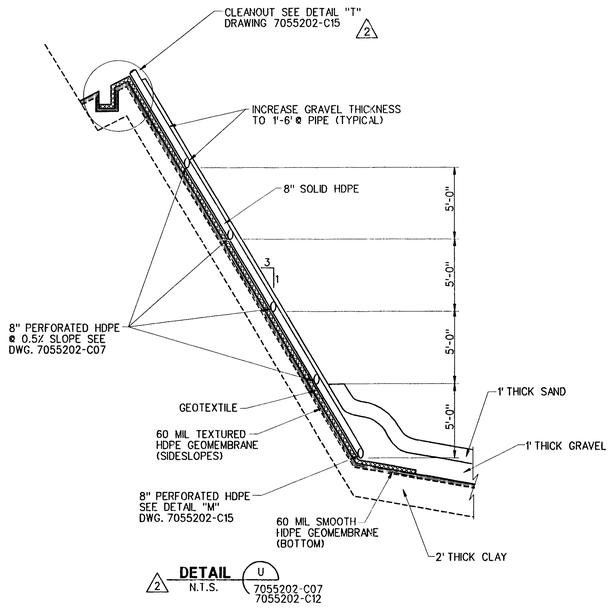
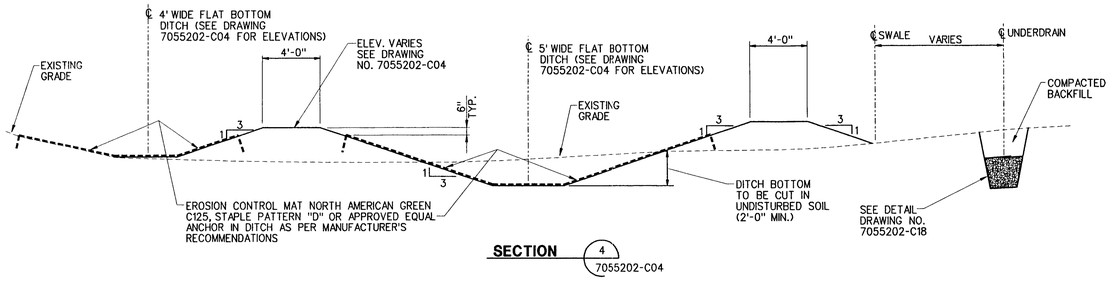
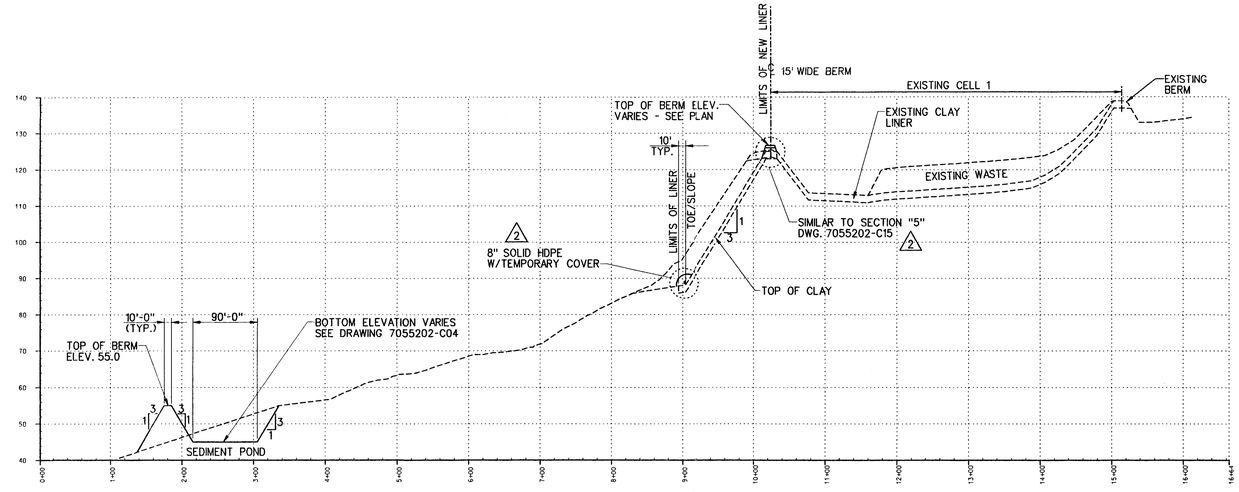


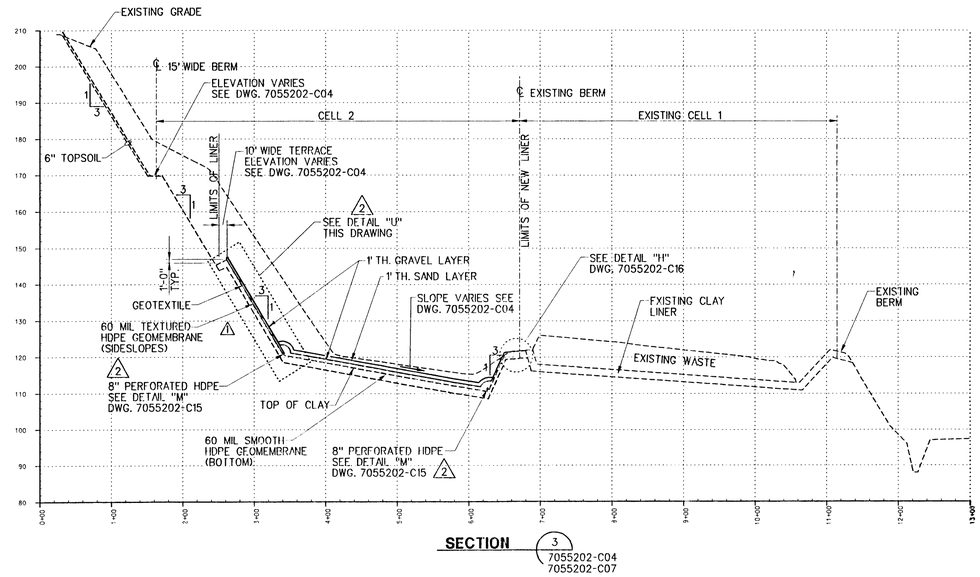
2 **DETAIL** U
N.T.S. 7055202-C07
7055202-C12



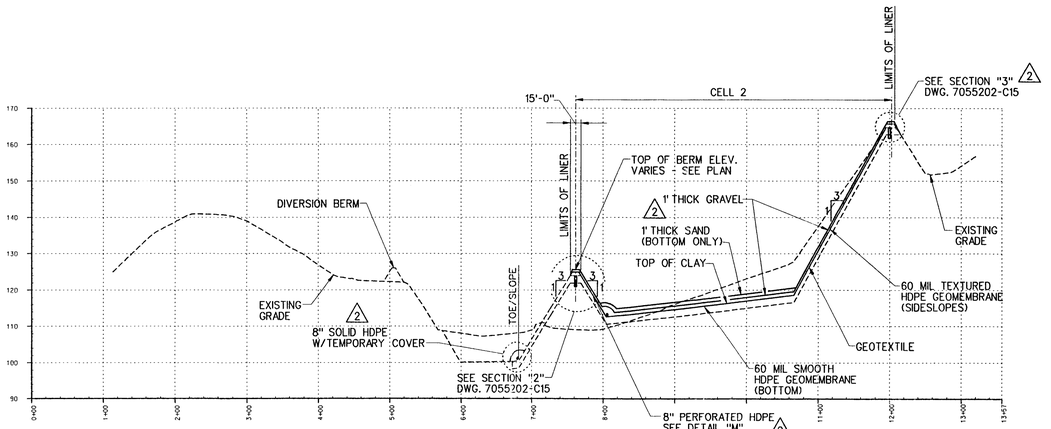
SECTION 4
7055202-C04



SECTION ?
7055202-C04
7055202-C07



SECTION 3
7055202-C04
7055202-C07



SECTION 1
7055202-C04
7055202-C07

0 100 200 300 400
HORIZONTAL SCALE: 1" = 100'

0 20 40 60 80
VERTICAL SCALE: 1" = 20'

RECORD DRAWING

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DATE		BY	CK.	APVD.	NO.	DATE		BY	CK.	APVD.
9-12-97	RECORD DRAWING PACKAGE "A"	MPM	RKN							
5-21-97	ISSUED FOR CONSTRUCTION - DESIGN PACKAGE "B"	MPM	RKN							
2-21-97	PIPE MODIFICATIONS AND LIMITS OF CLAY LINER DESIGN PACKAGE "A"	MPM	RKN							
2-6-97	ISSUED FOR DESIGN PACKAGE "A" - CELL 2 CONSTRUCTION	MPM	RKN							

ALABAMA REGISTERED NO. 20390 PROFESSIONAL ENGINEER R. KENT NILLSSON 9/17/97

BOISE CASCADE
JACKSON MILL
JACKSON ALABAMA

PROJECT MGR:	E.W.T.
DESIGNED BY:	E.W.T. & D.M.C.
DRAWN BY:	M.P.M. & D.M.C.
CHECKED BY:	
APPROVED BY:	
APPROVED BY:	
APPROVED BY:	
DATE:	JANUARY, 1997
JOB NO:	70552.03

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Greenville, SC 29606
(864) 281-0030

SOLID WASTE LANDFILL
SECTIONS - CELL 2

SCALE		DRAWING NO.	REV.
AS SHOWN		7055202-C12	2

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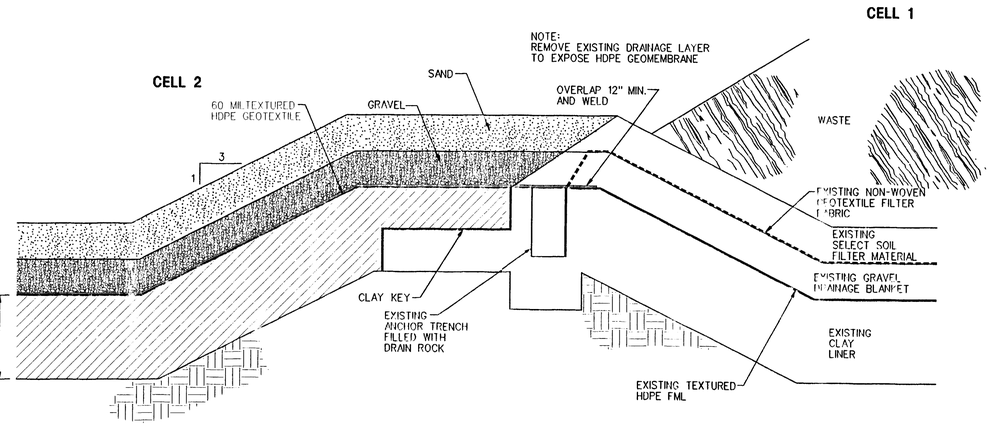
9-10-97

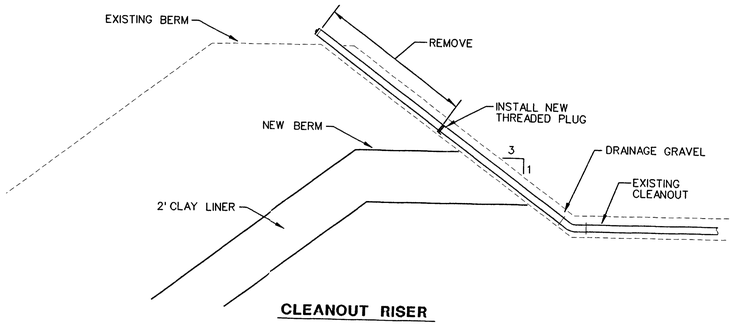


LINER SPLICE SECTION

DETAIL H
NTS 7055202-C12

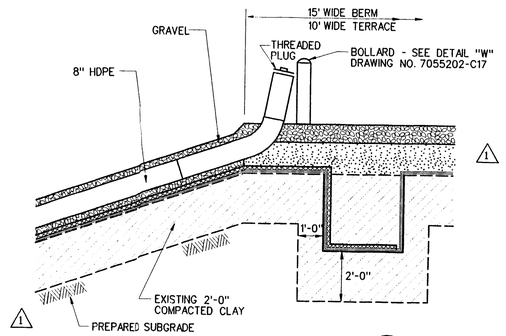
NOTES:

1. REFER TO DRAWING NO. 7055202-C01 FOR LEGEND, ABBREVIATIONS AND GENERAL NOTES.



CLEANOUT RISER

DETAIL A
NTS 7055202-C04

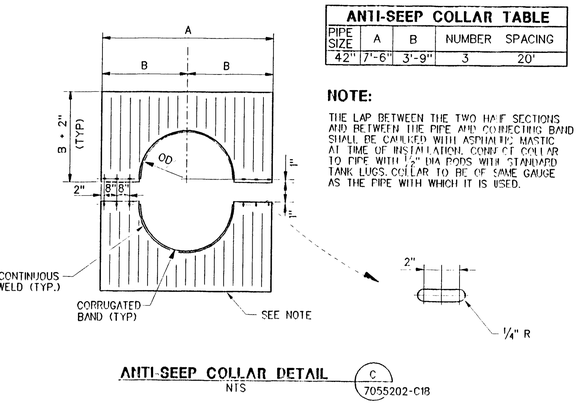


CLEANOUT DETAIL K
7055202-C07
7055202-C12

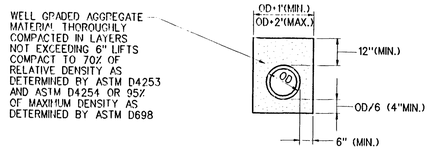
ANTI-SEEP COLLAR TABLE				
PIPE SIZE	A	B	NUMBER	SPACING
42"	7'-6"	3'-9"	3	20'

NOTE:

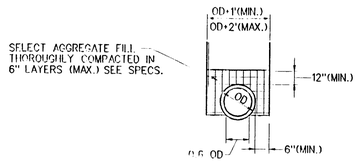
THE LAP BETWEEN THE TWO HALF SECTIONS AND BETWEEN THE PIPE AND CONNECTING BAND SHALL BE CAULKED WITH ASPHALTIC MASTIC AT TIME OF INSTALLATION. CONN'CT COLLAR TO PIPE WITH 1/4" DIA RODS WITH STANDARD TANK LUGS. COLLAR TO BE OF SAME GAUGE AS THE PIPE WITH WHICH IT IS USED.



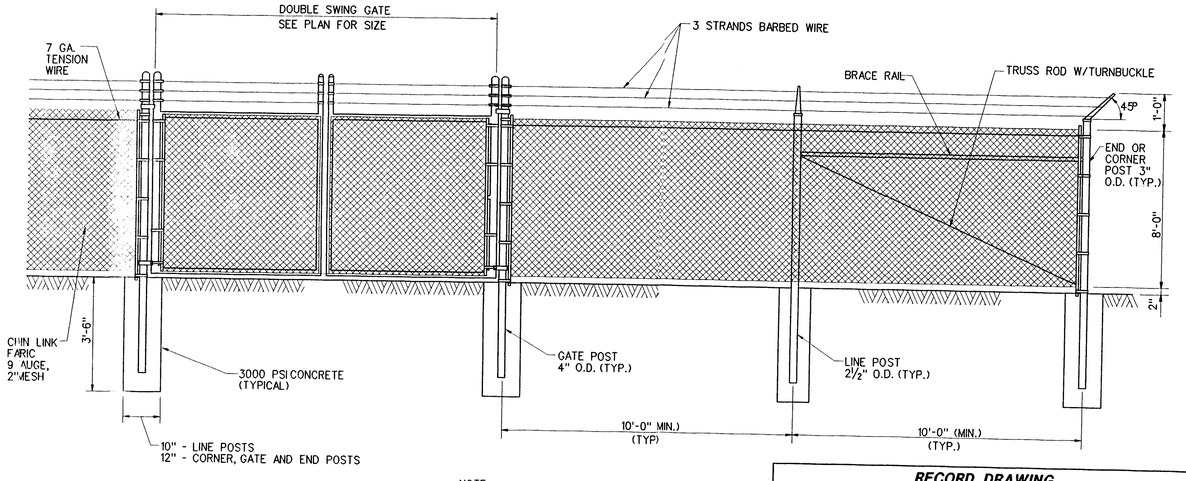
ANTI-SEEP COLLAR DETAIL C
NTS 7055202-C18



BEDDING DETAIL
POLYVINYL CHLORIDE PIPE (PVC) AND HIGH DENSITY POLYETHYLENE PIPE (HDPE)
NTS



BEDDING DETAIL
CORRUGATED METAL PIPE (CMP)
NTS



NOTE:
ALL FENCING MATERIAL AND APPURTINANCES SHALL BE HOT DIPPED GALVANIZED

CHAIN LINK FENCE DETAIL B
NTS 055202-C04

RECORD DRAWING

THIS RECORD DRAWING HAS BEEN PREPARED, IN PART, ON THE BASIS OF INFORMATION COMPILED AND FURNISHED BY OTHERS. WHILE SUCH DATA HAS BEEN COLLECTED WITH REASONABLE CARE, THERE IS NO GUARANTEE THAT THE CONDITIONS INDICATED ARE ENTIRELY REPRESENTATIVE OF THOSE ACTUALLY EXISTING. USE OF INFORMATION SHOWN WITHOUT VERIFICATION WILL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY OR LEGAL EXPOSURE TO RMT OR TO RMT'S ASSOCIATES, CONSULTANTS AND AGENTS. USER SHALL HOLD HARMLESS RMT AND RMT'S ASSOCIATES, CONSULTANTS AND AGENTS FROM ALL CLAIMS, DAMAGES, LOSSES AND EXPENSES INCLUDING ATTORNEY'S FEES ARISING OUT OF OR RESULTING THEREFROM.

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9-97	ISSUED FOR DESIGN PACKAGE "A" - CELL 2 CONSTRUCTION	MPM	RKN							
ITE		BY	CK.	APVD	BY	DATE		BY	CK.	APVD

ALABAMA REGISTERED NO. 20390 PROFESSIONAL ENGINEER KENT NILSSON 9/16/97

BOISE CASCADE
JACKSON MILL
JACKSON ALABAMA

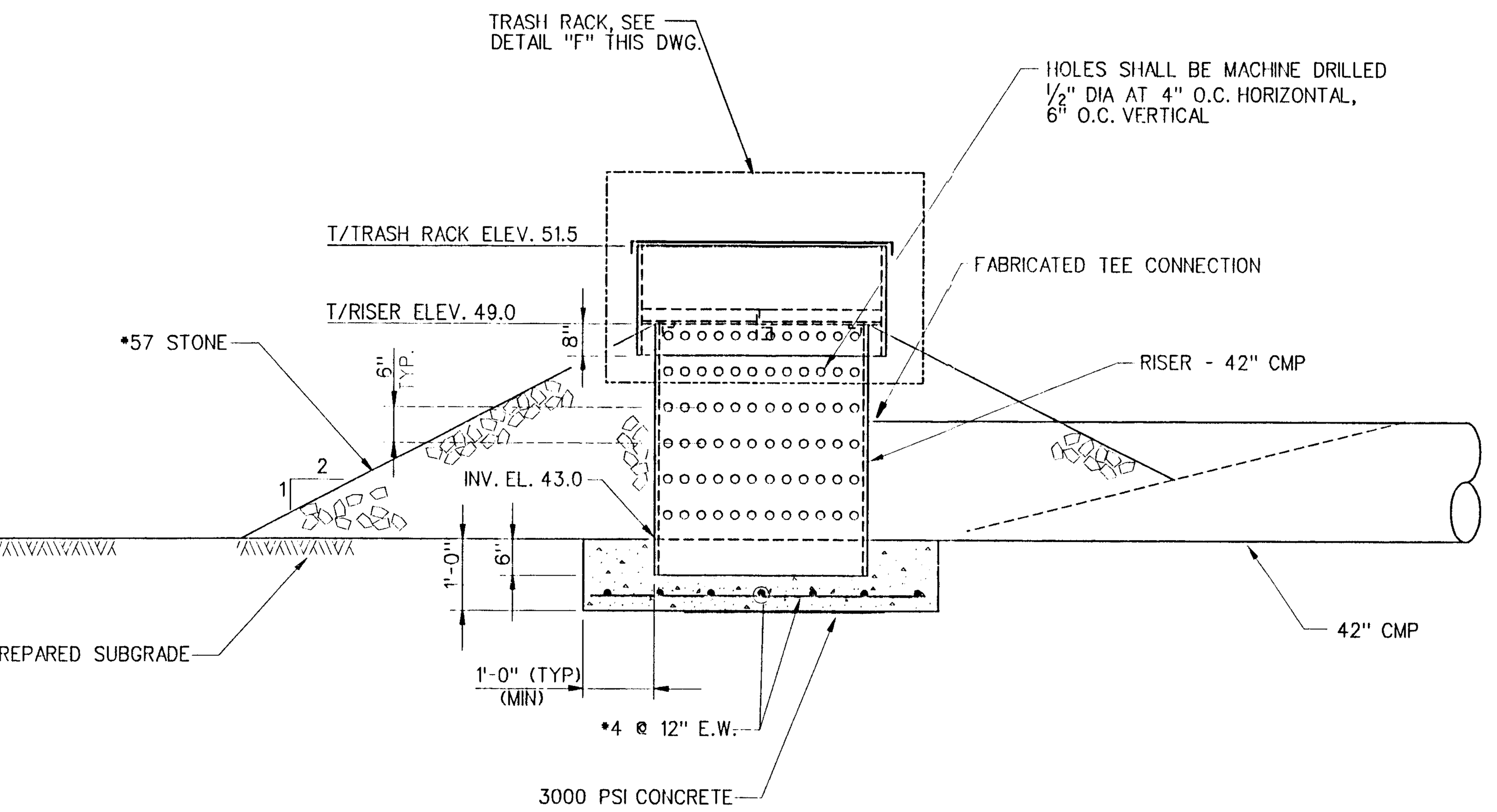
PROJECT MGR:	E.W.T.
DESIGNED BY:	E.W.T. &D.M.C.
DRAWN BY:	M.P.M. &D.M.C.
CHECKED BY:	
APPROVED BY:	
APPROVED BY:	
APPROVED BY:	
DATE:	JANUARY, 1997
JOB NO:	7052.03

RMT INC
100 Verdae Boulevard
P.O. Box 16778
Greenville, SC 29606
(864) 281-0030

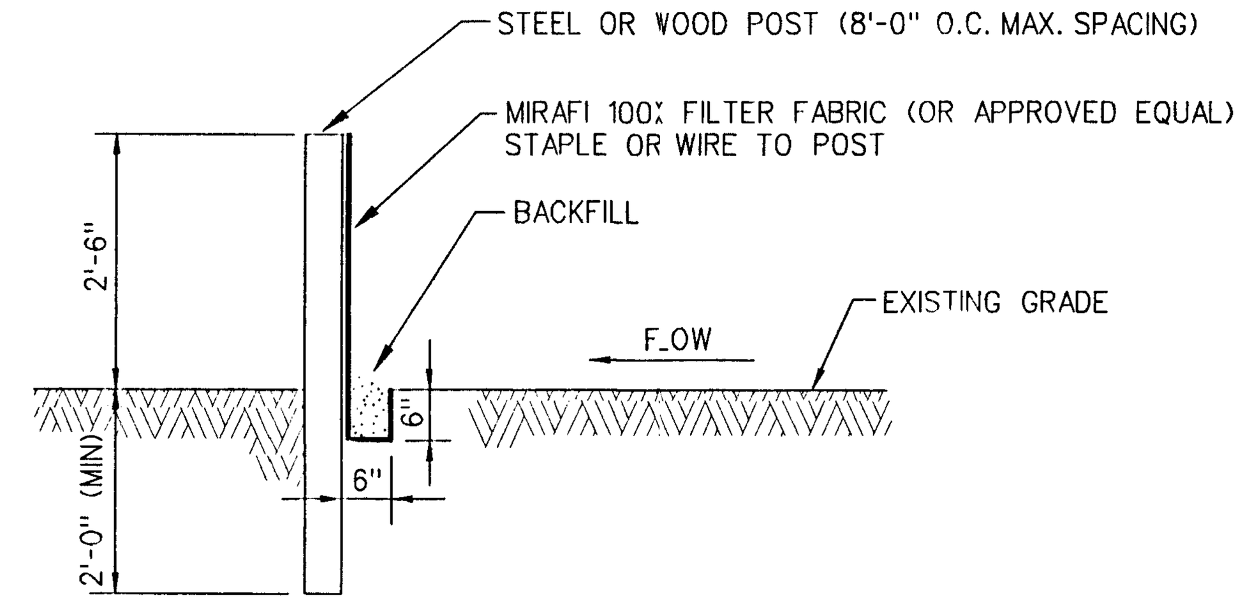
SOLID WASTE LANDFILL
MISCELLANEOUS DETAILS - SHEET 1

SCALE		DRAWING NO.	REV.
AS SHOWN		7055202-C16	2

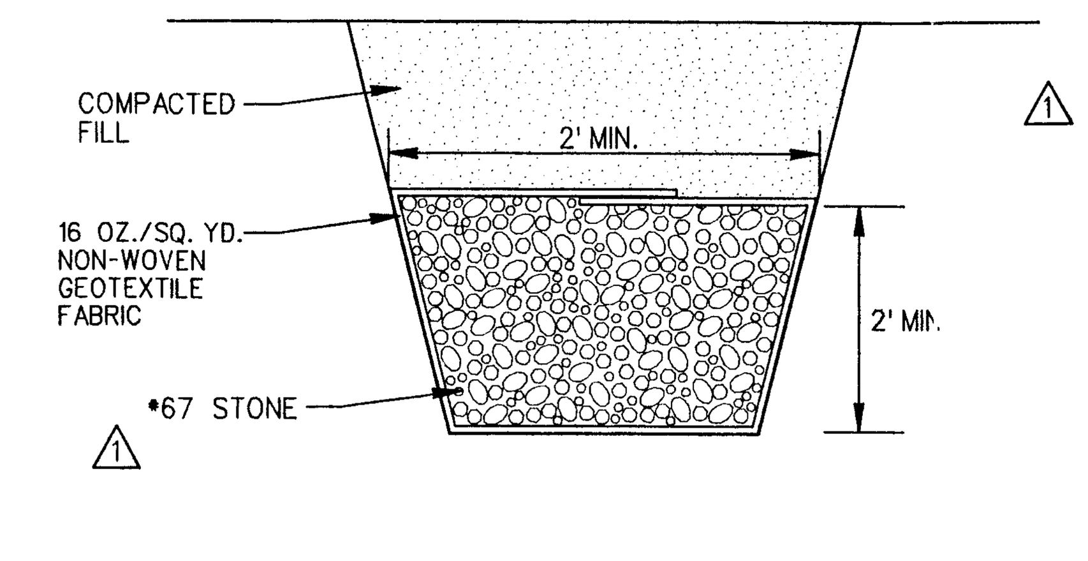
d\civil\boise\7055202c\erosion.det
10-97



RISER DETAIL (D / THIS DWG.)
NTS

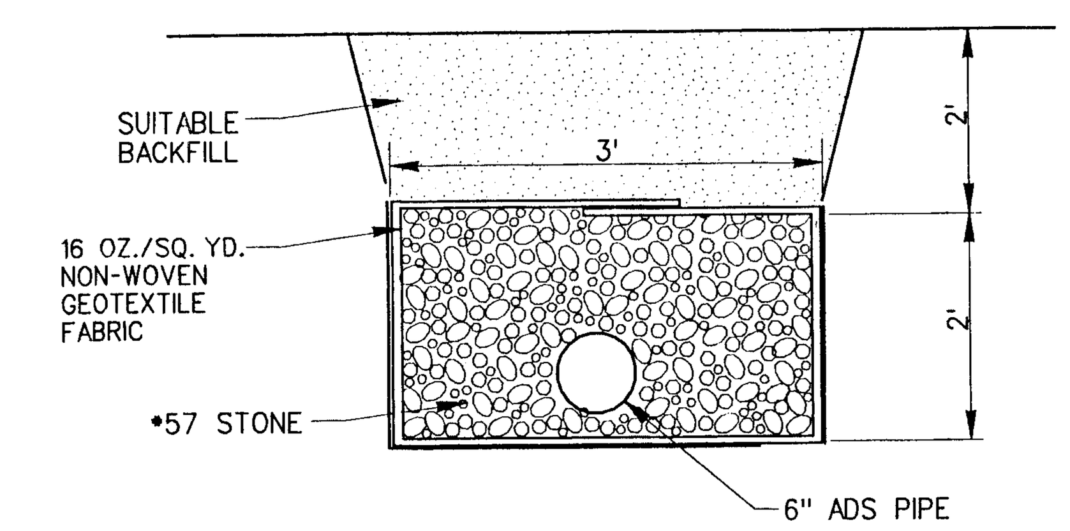


SILT FENCE (SF)

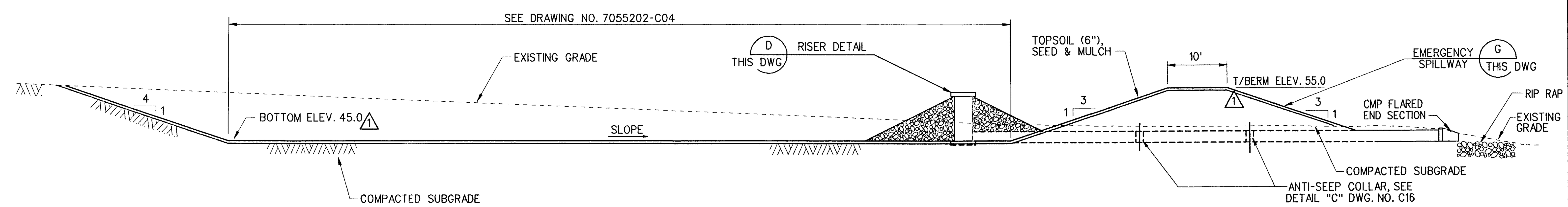


UNDERDRAIN DETAIL (E / 7055202-C04)
NTS

1. REFER TO DRAWING NO. 7055202-C01 FOR LEGEND, ABBREVIATIONS AND GENERAL NOTES.



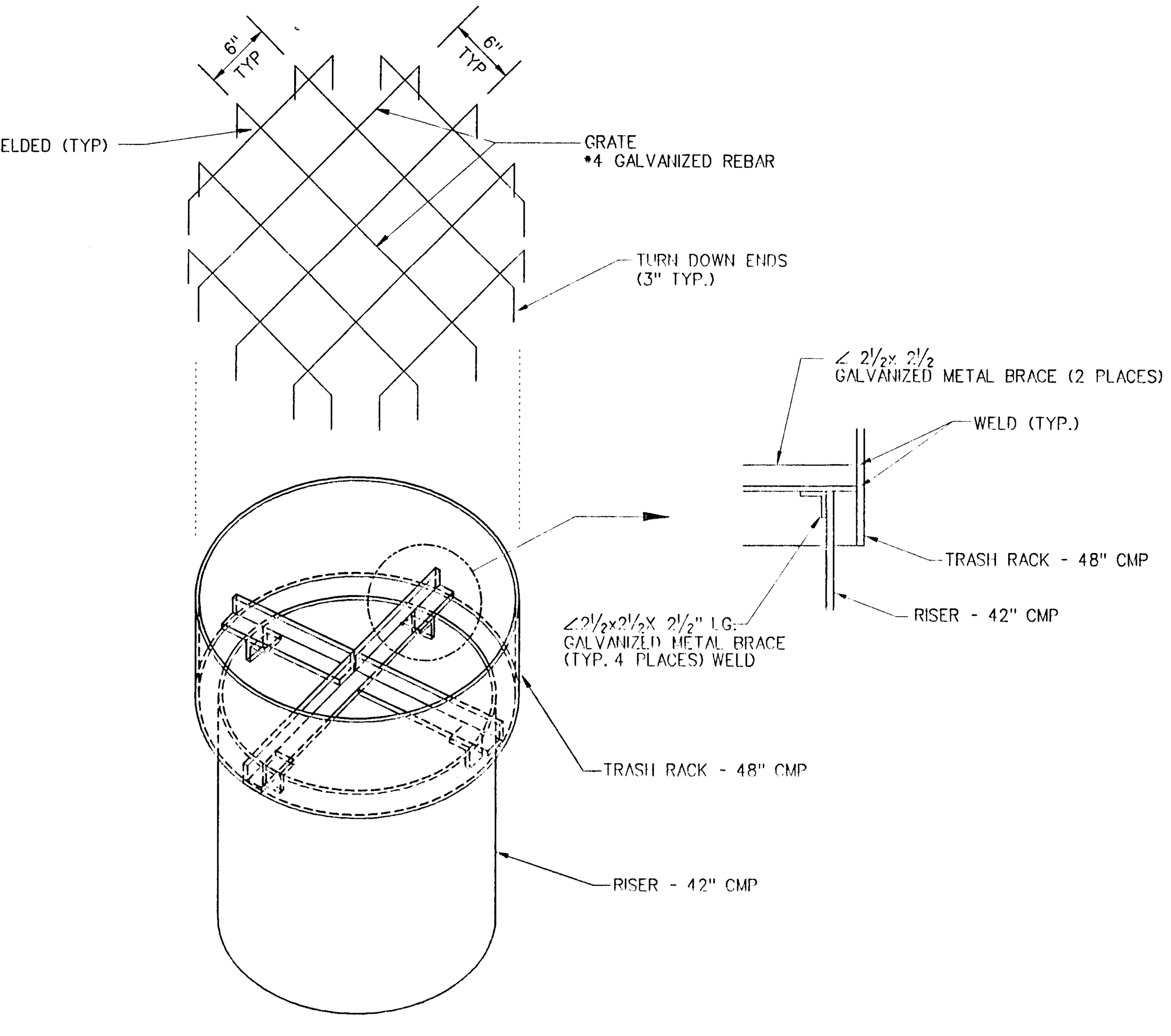
CELL 2 SUBSURFACE UNDERDRAIN DETAIL
NTS



SEDIMENTATION POND DATA				
ELEVATION BOTTOM (MSL)	ELEVATION TOP OF DIKE (MSL)	SEDIMENT STORAGE VOLUME (AC-FT)	REQUIRED STORM VOLUME (AC-FT)	TOTAL* STORAGE (AC-FT)
VARIES	55.0	2.36	1.95	4.31

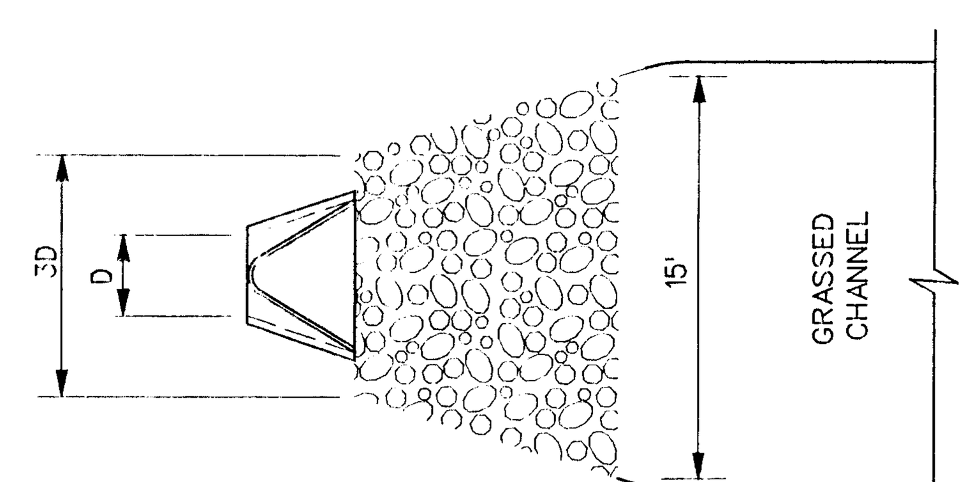
* TOTAL AND WATER STORAGE VOLUME ARE WITH WATER SURFACE AT ELEVATION OF EMERGENCY SPILLWAY CONTROL SECTION

SECTION (5 / 7055202-C04)
NTS



ISOMETRIC

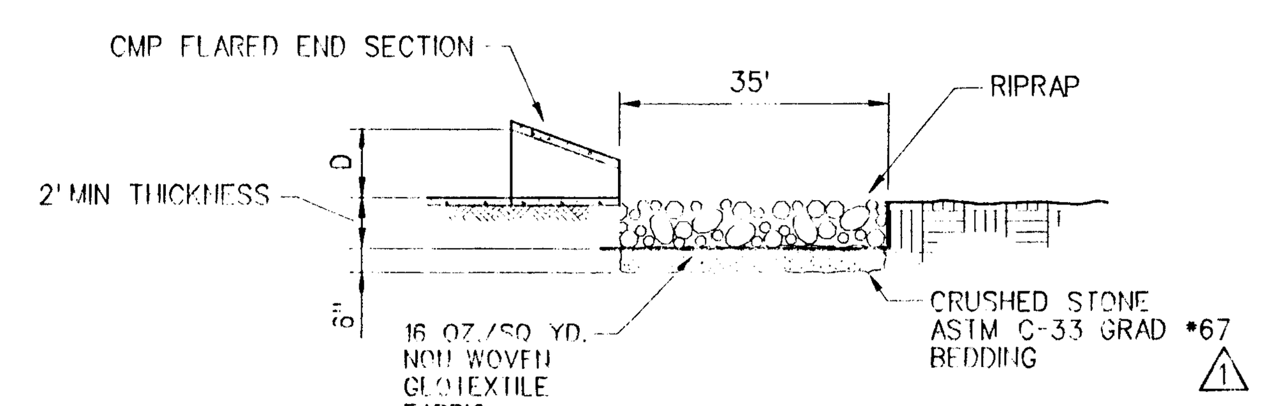
TRASH RACK DETAIL (F / THIS DWG.)
NTS



PLAN

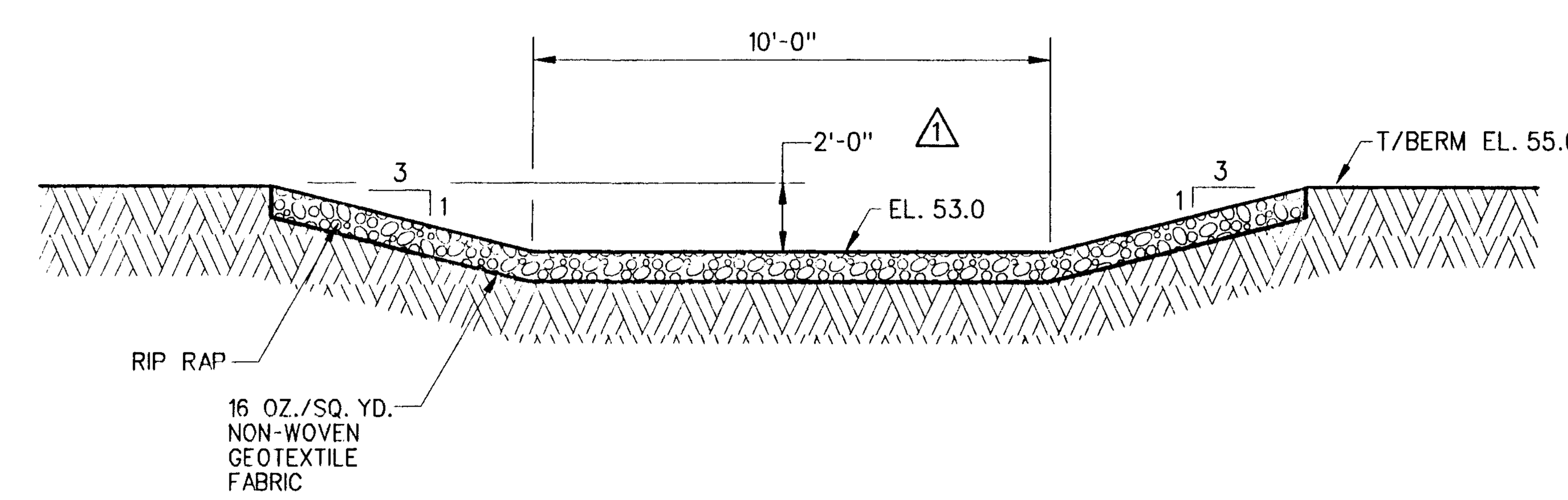
GRADED RIP RAP

RIPRAP CLASS	D_{15} MEAN SPHERICAL DIAMETER (ft.)	D_{50} MEAN SPHERICAL DIAMETER (ft.)
CLASS I	0.33	0.8

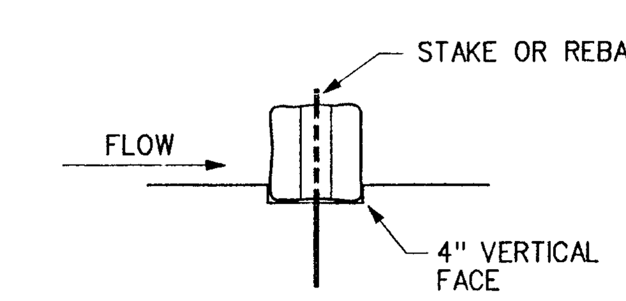


SECTION

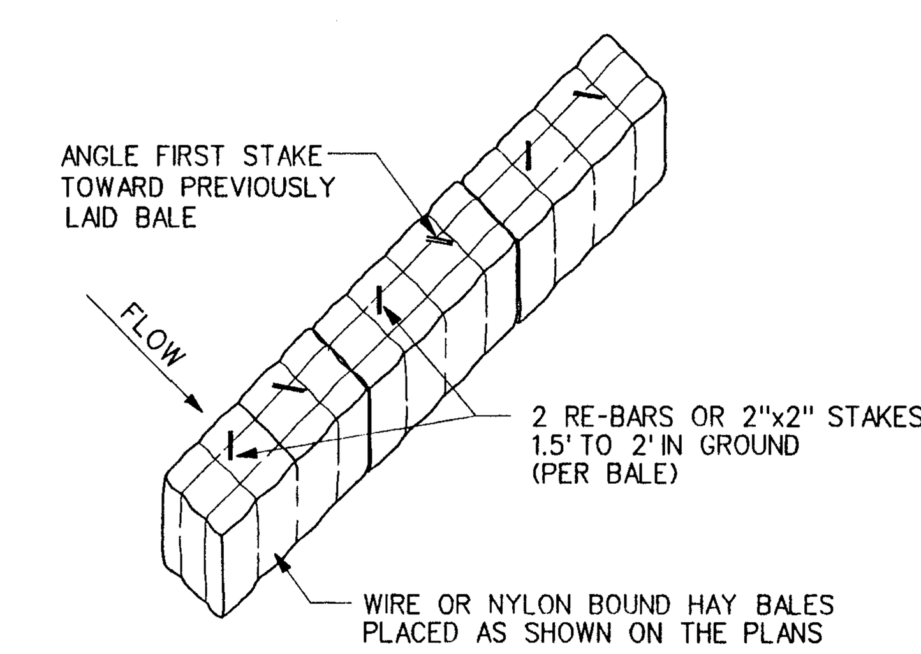
OUTLET PROTECTION - RIP RAP (OP)



EMERGENCY SPILLWAY DETAIL (G / 7055202-C04 / 7055202-C18)
NTS



EMBEDDING DETAIL



ANCHORING DETAIL

TYPICAL HAY BALE BARRIER (HB)
NTS

RECORD DRAWING

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DATE	DESCRIPTION	BY	APP.
-12-97	RECORD DRAWING PACKAGE "A"	DMC	RKN
-7-97	REVISED STONE SIZE, ELEVATIONS AND DIMENSIONS DESIGN PACKAGE "A"	MPM	RKN
-6-97	ISSUED FOR DESIGN PACKAGE "A" - CELL 2 CONSTRUCTION	MPM	RKN

ALABAMA REGISTERED PROFESSIONAL ENGINEER NO. 20300 KENT NILSSON 6/16/97

BOISE CASCADE
JACKSON MILL
JACKSON ALABAMA

PROJECT MGR: E.W.T.
DESIGNED BY: E.W.T. & D.M.C.
DRAWN BY: M.P.M. & D.M.C.
CHECKED BY:
APPROVED BY:
APPROVED BY:
APPROVED BY:
DATE: JANUARY, 1997
JOB NO: 70552.03

RMT
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P.O. Box 16778
Greenville, SC 29606
(864) 281-0030

SOLID WASTE LANDFILL
EROSION CONTROL DETAILS

SCALE	DRAWING NO.	REV.
AS SHOWN	7055202-C18	2

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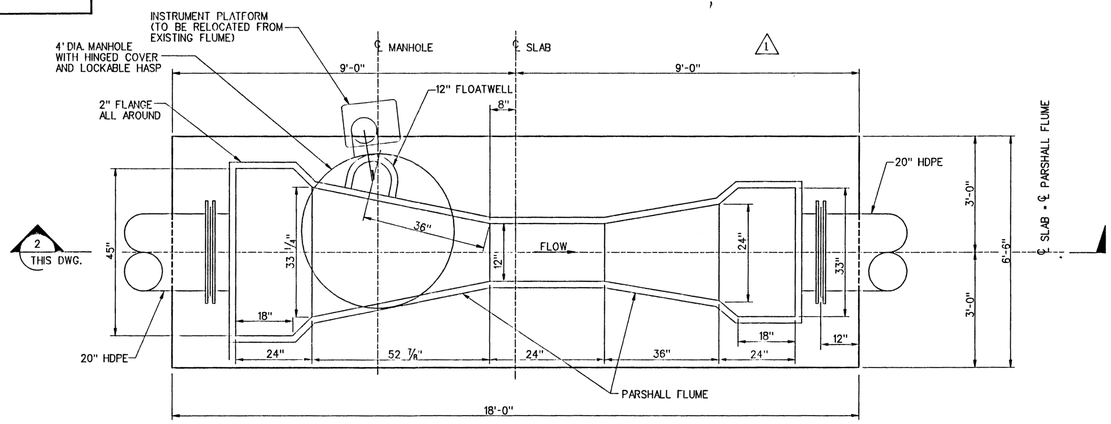
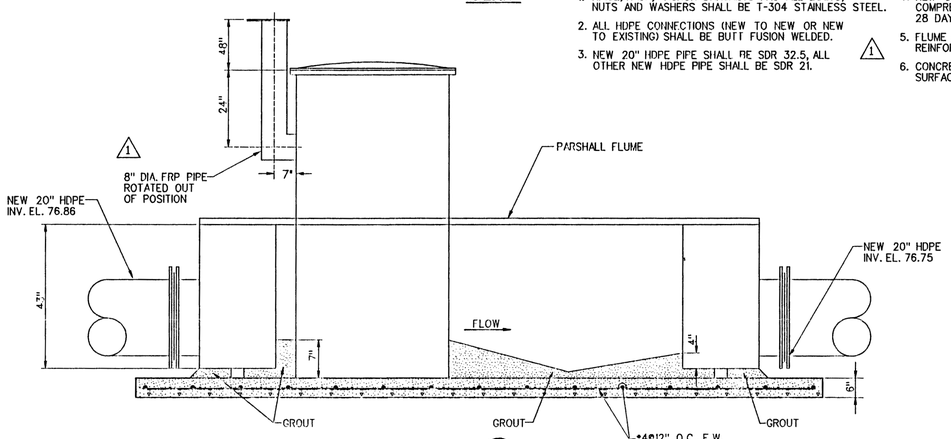
-15-97



1 **PLAN**

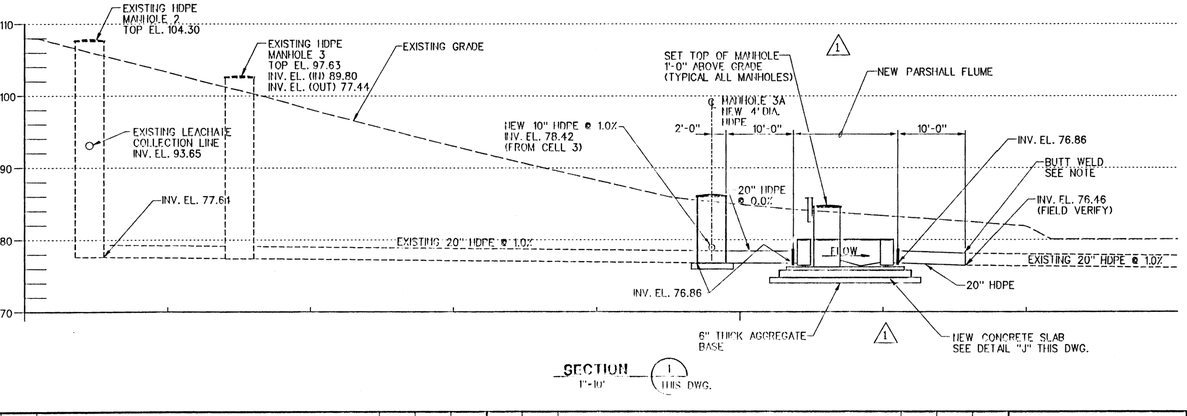
NOTES

1. HINGE, HASP, ANCHOR BRACKETS AND ALL BOLTS, NUTS AND WASHERS SHALL BE T-304 STAINLESS STEEL.
2. ALL HDPE CONNECTIONS (NEW TO NEW OR NEW TO EXISTING) SHALL BE BUTT FUSION WELDED.
3. NEW 20" HDPE PIPE SHALL BE SDR 32.5, ALL OTHER NEW HDPE PIPE SHALL BE SDR 21.
4. NEW CONCRETE SHALL DEVELOP A MIMMUM COMPRESSIVE STRENGTH OF 4,000 P.S.I. AT 28 DAYS.
5. FLUME MATERIAL IS FRP (FIBERGLASS REINFORCED POLYESTER)
6. CONCRETE SLAB SHALL BE LEVEL TO 1/8". SURFACE SHALL BE TROWELED SMOOTH.

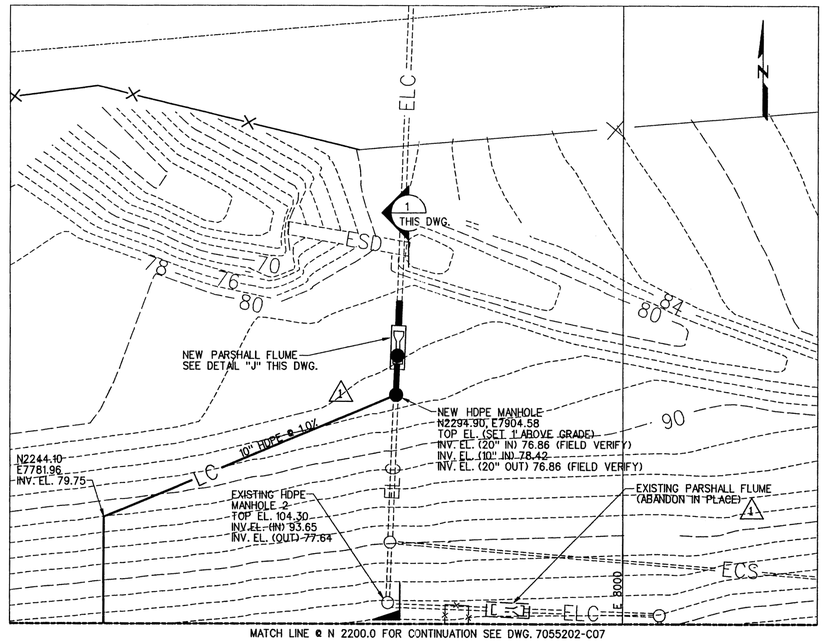


SECTION 2 / 7055202-C19

PARSHALL FLUME INSTALLATION DETAIL J / 7055202-C19 — 1"=10'

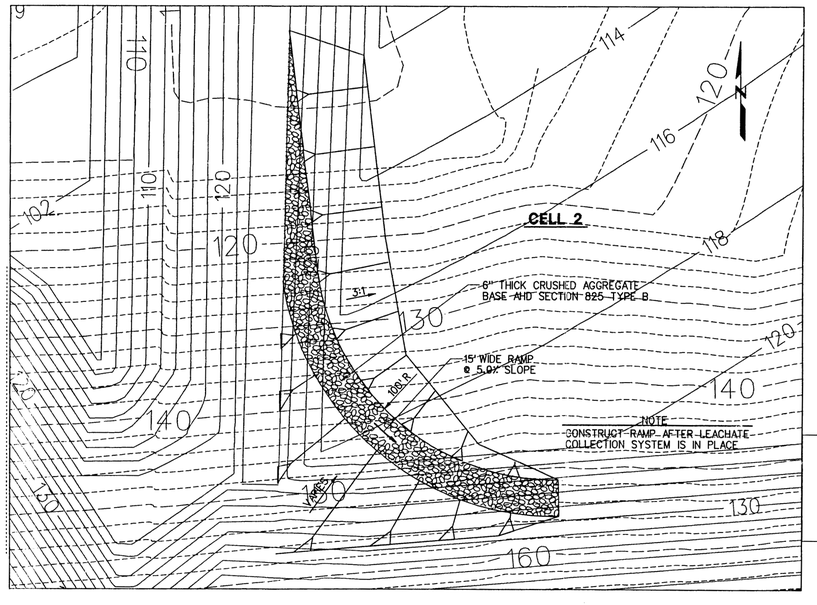


SECTION 1 / THIS DWG. — 1"=10'



MATCH LINE @ N 2200.0 FOR CONTINUATION SEE DWG. 7055202-C07

ENLARGED PLAN AT PARSHALL FLUME
1"=30'



3 **ENLARGED PLAN AT RAMP IN CELL 2**
1"=30'

RECORD DRAWING

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0 30 60 90 120
SCALE: 1" = 30'

0 10 20 30 90
SCALE: 1" = 10'

9-12-97	RECORD DRAWING - PACKAGE "A"	DMC	RKN							
8-21-97	ADDED ENLARGED PLAN AT RAMP IN CELL 2 - PACKAGE "B"	DMC	RKN							
8-7-97	ISSUED FOR CONSTRUCTION - PACKAGE "C"	DMC	RKN							
6-6-97	CHANGED RELOCATED FLUME TO NEW FLUME, DELETED P.U. 3A & 3B, DELETED 20" HDPE LINE, RE-ROUTED 10" HDPE-PACKAGE "B"	DMC	RKN							
3-13-97	ISSUED FOR CONSTRUCTION - DESIGN PACKAGE "A"	MDM	RKN							
DATE		BY	CK.	PROJ. MGR.	IN	DATE		BY	CK.	P.E.

ALABAMA REGISTERED NO. 20220 PROFESSIONAL ENGINEER R. KENT NELSON

BOISE CASCADE
JACKSON MILL
JACKSON ALABAMA

PROJECT MGR:	E.W.T.
DESIGNED BY:	M.M.K.
DRAWN BY:	D.M.C.
CHECKED BY:	
APPROVED BY:	
APPROVED BY:	
APPROVED BY:	
DATE:	JANUARY, 1997
JOB NO:	70552.03

RMT INC.
100 Verdae Boulevard
P.O. Box 16778
Greenville, SC 29606
(864) 281-0030

SOLID WASTE LANDFILL
PARSHALL FLUME INSTALLATION
PLAN AND DETAILS

SCALE		DRAWING NO.	REV.
AS SHOWN		7055202-C19	4

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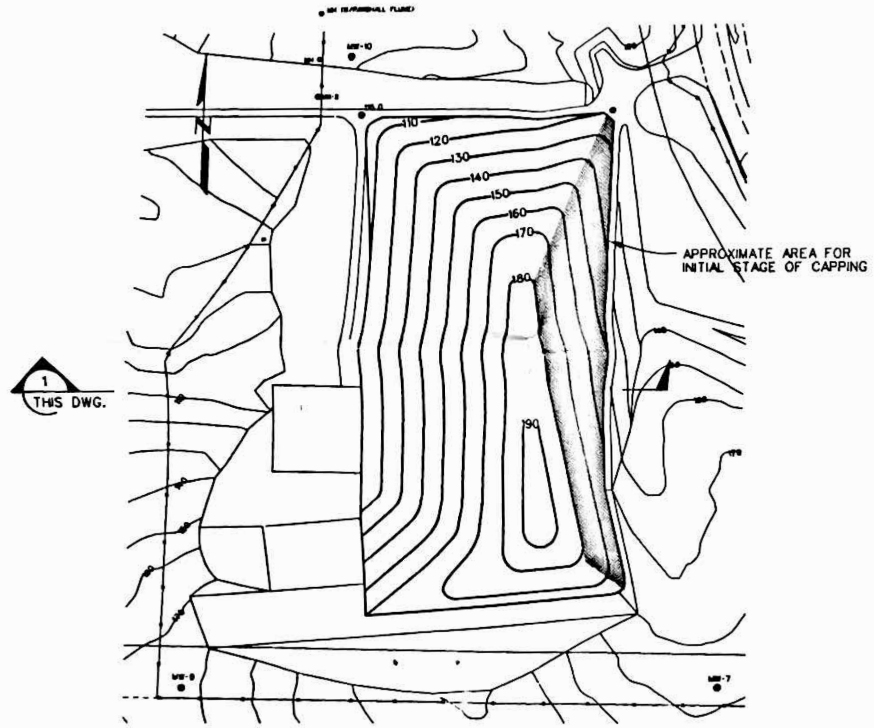
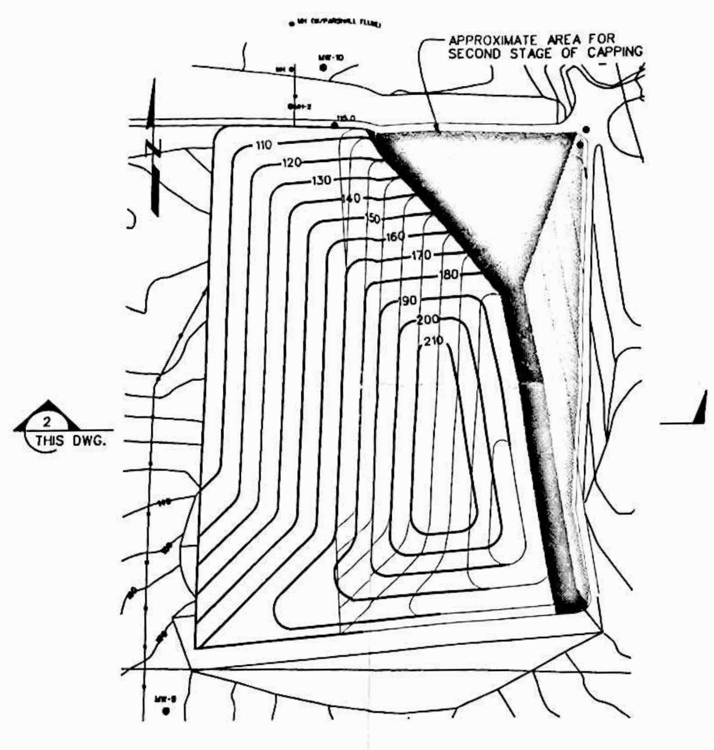
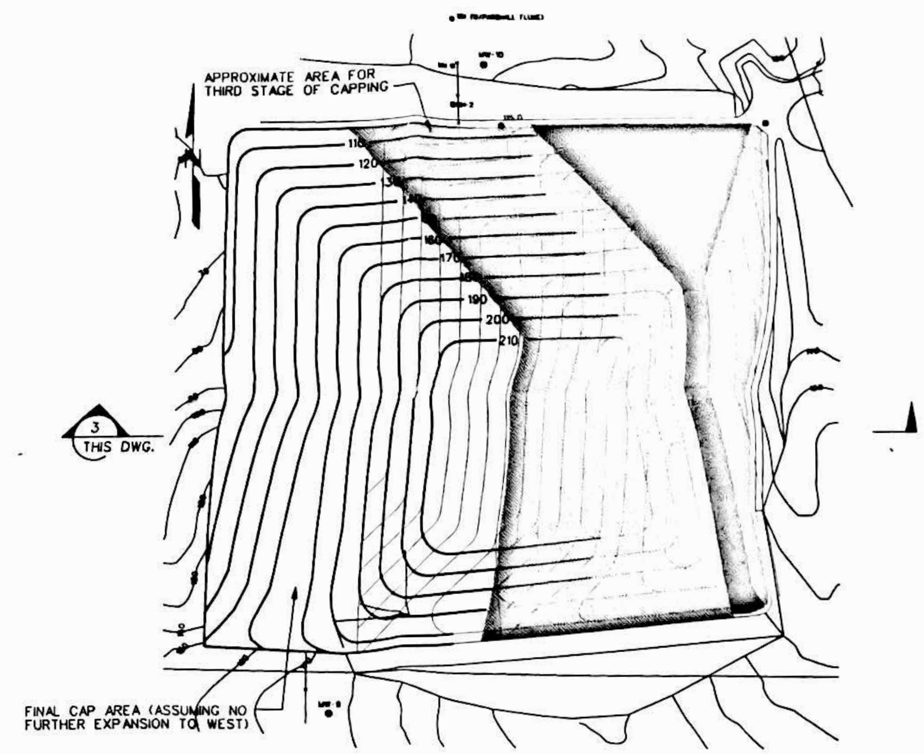
MPM 11-30-95



PHASE I - CELLS 1 AND 2
NTS



PHASE II - CELL 3
NTS



PHASE II - CELL 4
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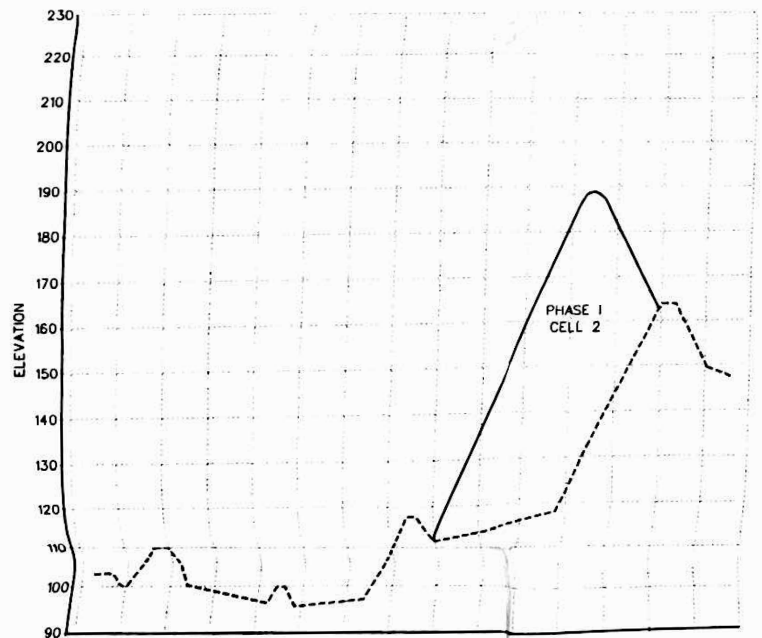

CROSS SECTION (1) THIS DWG.
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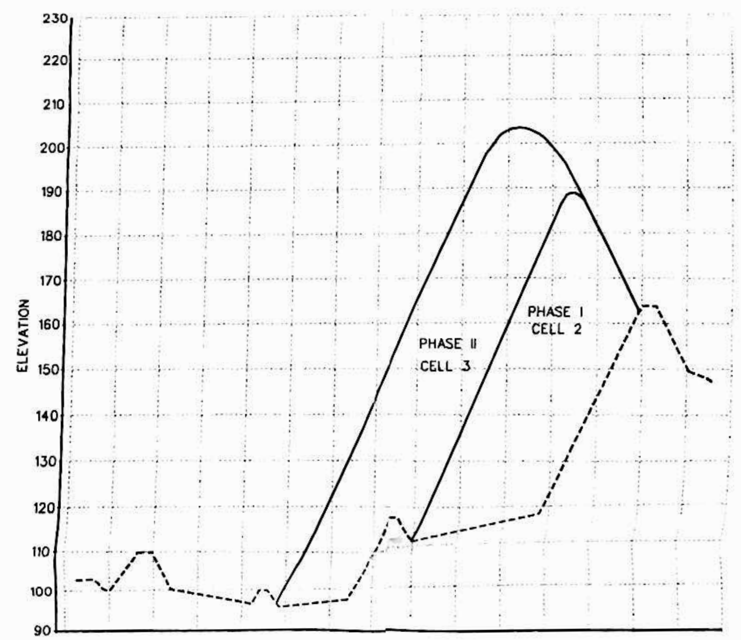

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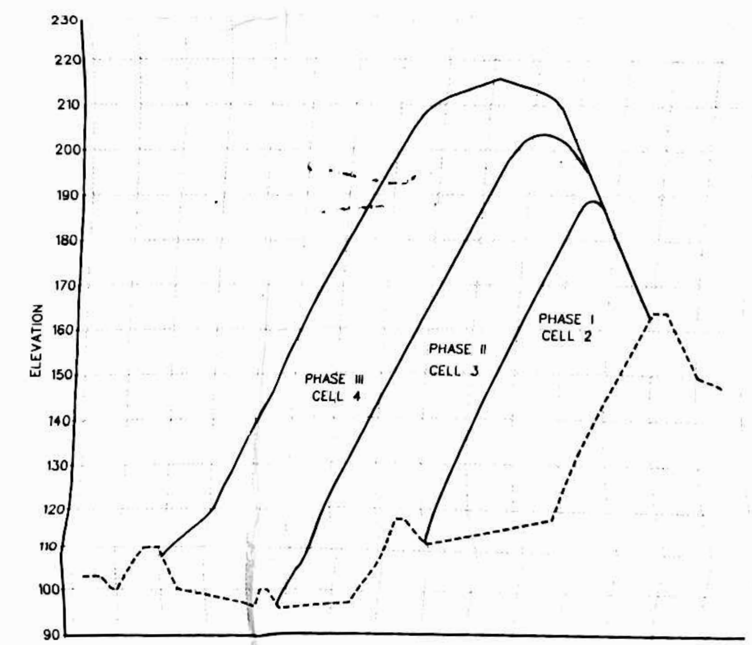

CROSS SECTION (3) THIS DWG.
NTS

CONCEPTUAL - NOT FOR CONSTRUCTION

NO.	DATE		BY	CK.	APVD.
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A	11-14-95	ISSUED FOR CLIENT REVIEW	MPM	RKN	

JACKSON ALABAMA
BOISE CASCADE
JACKSON MILL

PROJECT MGR:	M. TAYLOR
DESIGNED BY:	K. NILSSON
DRAWN BY:	M. MYERS
CHECKED BY:	
APPROVED BY:	
APPROVED BY:	
APPROVED BY:	
DATE:	NOVEMBER, 1995
JOB NO:	7042001

RMT
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Greenville, SC 29606
(803) 281-0030

LANDFILL DRAINAGE REDESIGN
FINAL GRADING AND SECTIONS

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AS SHOWN	D-271-025-1038	B

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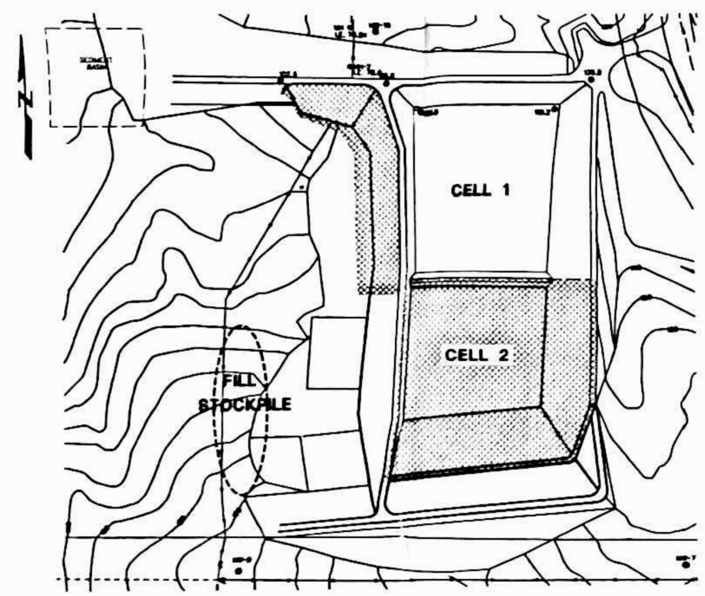
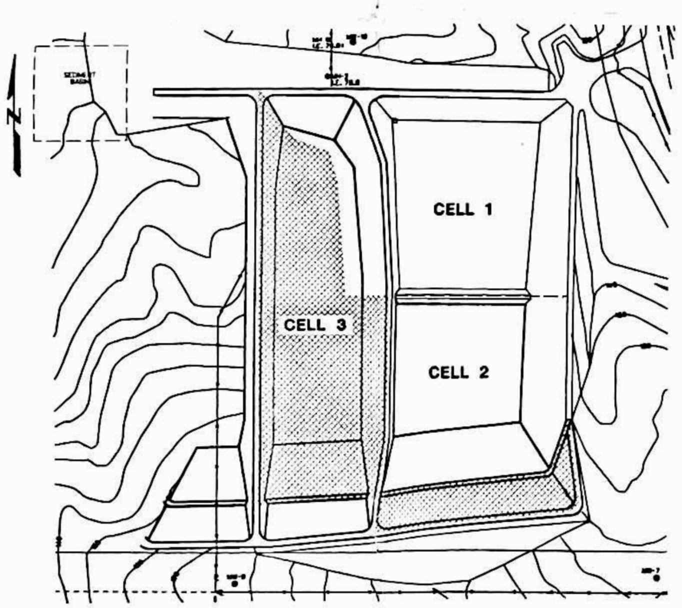
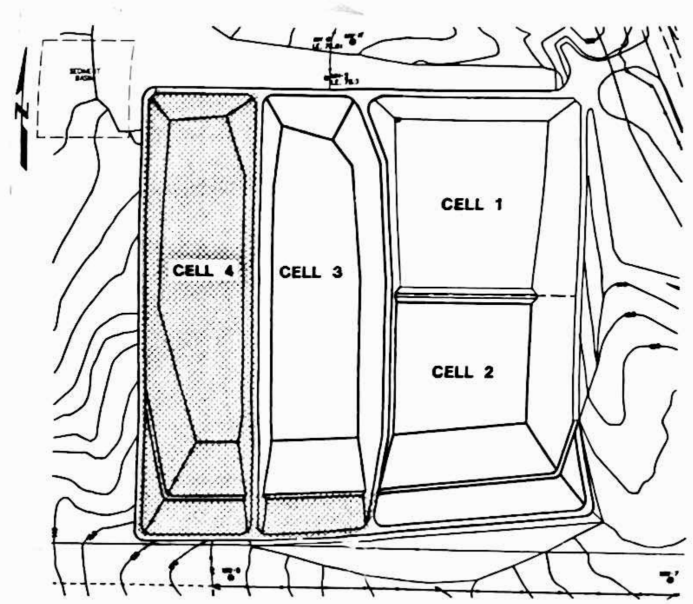
MPM 11-30-95







PHASE I - CELL 2 CONSTRUCTION

1. RELOCATE SEDIMENT PONDS.
2. REGRADE WEST BERM OF CELL 1.
3. CONSTRUCT SUBGRADE AND WEST BERM FOR CELL 2.
4. INSTALL LINER SYSTEM: (SHADED AREA)
   - CELL 2 BASE AND EAST INTERIOR SLOPE
   - CELL 2 SOUTH SLOPE UP TO TERRACE
   - CELL 3 EAST AND NORTH INTEPIOR SLOPE (UNDER LEACHATE CONVEYANCE PIPE)
5. INSTALL LEACHATE PIPING AND LEACHATE COLLECTION LAYER IN CELL 2.
6. CONSTRUCT DRAINAGE BLANKET AND ASSOCIATED PIPING ON CELL 2 SOUTH SLOPE UP TO TERRACE.
7. INSTALL LEACHATE COLLECTION HEADER AND METERING MANHOLE.
8. ROUGH GRADE NORTH, SOUTH INTERIOR SLOPE OF PHASE 2.
9. STOCKPILE EXCESS FILL.

PHASE II - CELL 3 CONSTRUCTION

1. CONSTRUCT SUBGRADE AND WEST BERM FOR CELL 3..
2. INSTALL LINER SYSTEM: (SHADED AREA)
   - CELL 3 BASE, REMAINDER OF EAST INTERIOR SLOPE, AND WEST INTERIOR SLOPE.
   - CELL 3 SOUTH SLOPE UP TO TERRACE
   - CELL 2 SOUTH SLOPE FROM TERRACE TO TOP OF SLOPE
3. INSTALL LEACHATE PIPING AND LEACHATE COLLECTION LAYER IN CELL 3.
4. TIE LEACHATE COLLECTION INTO EXISTING LEACHATE HEADER.
5. CONSTRUCT DRAINAGE BLANKET AND ASSOCIATED PIPING ON CELL 3 WEST SLOPE, SOUTH SLOPE UP TO TERRACE AND CELL 2 SOUTH SLOPE FROM TERRACE TO TOP OF SLOPE.
6. ROUGH GRADE NORTH, SOUTH INTERIOR SLOPES OF CELL 4.

PHASE II - CELL 4 CONSTRUCTION

1. CONSTRUCT SUBGRADE AND WEST BERM FOR CELL 4.
2. INSTALL LINER SYSTEM: (SHADED AREA)
   - CELL 4 BASE AND ALL INTERIOR SLOPES
   - CELL 3 SOUTH SLOPE FROM TERRACE TO TOP OF SLOPE.
3. INSTALL LEACHATE PIPING AND LEACHATE COLLECTION LAYER IN CELL 4.
4. TIE LEACHATE COLLECTION INTO EXISTING LEACHATE HEADER.
5. CONSTRUCT DRAINAGE BLANKET AND ASSOCIATED PIPING ON CELL 4 WEST SLOPE, SOUTH SLOPE UP TO TERRACE AND CELL 3 SOUTH SLOPE FROM TERRACE UP TO TOP OF SLOPE.

0 200 400 600 800
SCALE: 1" = 200'

CONCEPTUAL - NOT FOR CONSTRUCTION

NO.	DATE		BY	CK.	APVD.
B	11-16-95	ISSUED FOR REGULATORY APPROVAL	MPM	RKN	
A	11-14-95	ISSUED FOR CLIENT REVIEW	MPM	RKN	

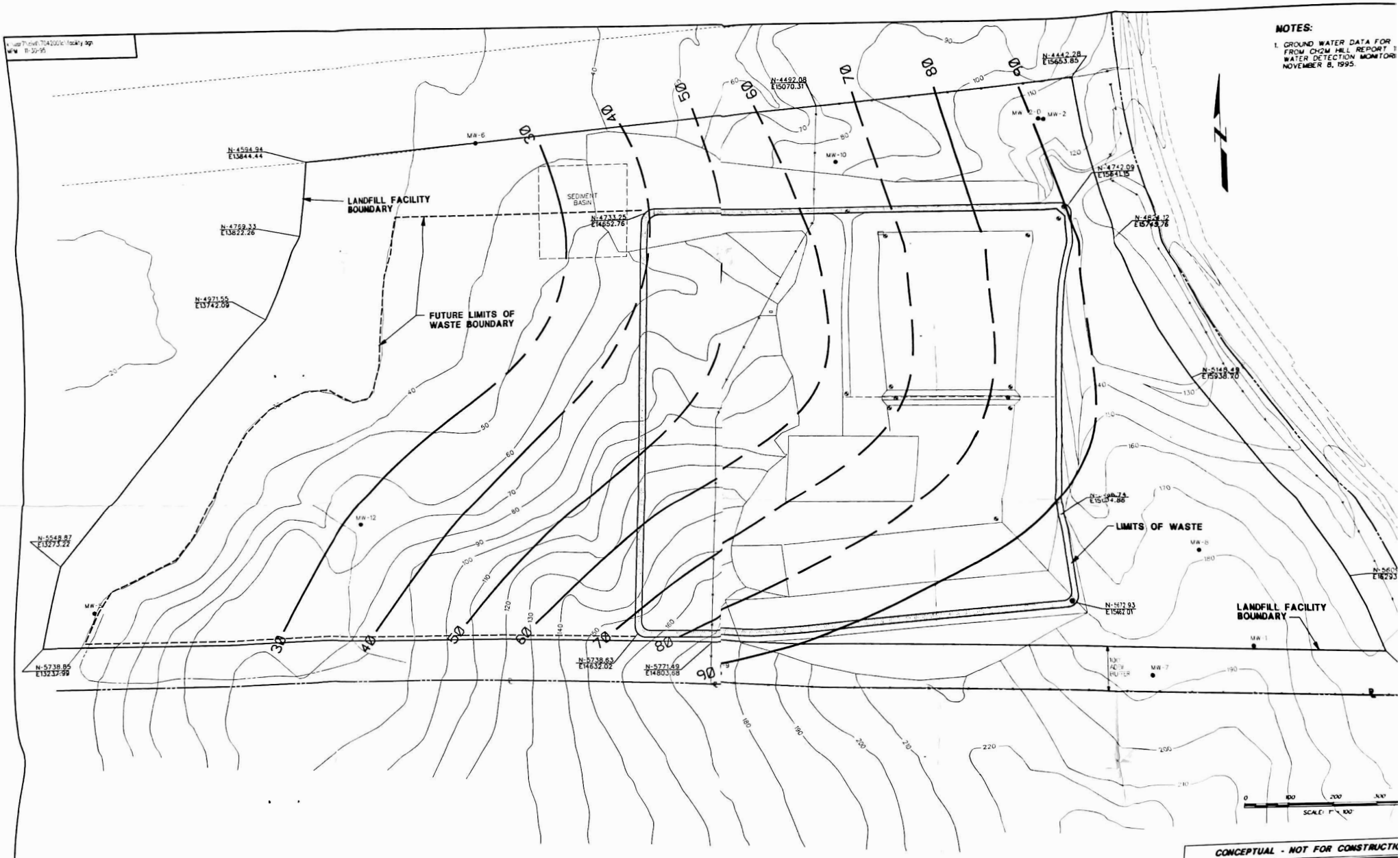
BOISE CASCADE
JACKSON MILL
JACKSON ALABAMA

PROJECT MGR:	M. TAYLOR
DESIGNED BY:	K. NILSSON
DRAWN BY:	M. MYERS
CHECKED BY:	
APPROVED BY:	
APPROVED BY:	
APPROVED BY:	
DATE:	NOVEMBER, 1995
JOB NO:	70420.01

RMT
100 Verdae Boulevard
P.O. Box 16778
Greenville, SC 29606
(803) 281-0030

LANDFILL DRAINAGE REDESIGN
PHASING AND DEVELOPMENT PLAN

SCALE		DRAWING NO.	REV.
AS SHOWN		D-271-025-1039	B



NO.	DATE		BY	CK.	APVD.
B	11-16-95	ISSUED FOR REGULATORY APPROVAL	MPM	RKN	
A	11-16-95	ISSUED FOR REGULATORY APPROVAL	MPM	RKN	

BOISE CASCADE
JACKSON MILL
JACKSON ALABAMA

PROJECT MGR:	M. TAYLOR
DESIGNED BY:	K. NELSON
DRAWN BY:	M. MYERS
CHECKED BY:	
APPROVED BY:	
APPROVED BY:	
APPROVED BY:	
DATE:	NOVEMBER, 1995
JOB NO:	704101

RMT
100 Verdae Bo
P.O. Box 16776
Greenville, SC 2
(803) 281-0030

LANDFILL DRAINAGE REDESIGN FACILITY BOUNDARIES

SCALE: AS SHOWN

DRAWING NO. D-271-025-10

APPENDIX D

Landfill Operation and Maintenance Manual

OPERATION AND MAINTENANCE MANUAL

Prepared for:

PACKAGING CORPORATION OF AMERICA
INDUSTRIAL WASTE LANDFILL
JACKSON, ALABAMA

Prepared: November 1996
Updated: August 2025

Prepared by:

Table of Contents

Table of Contents (continued)

Section 1. Introduction

The purpose of this manual is to provide guidance to the contractor responsible for the operations and maintenance of the Packaging Corporation of America – Jackson Mill Industrial Waste Landfill, and to assist them in conducting operations in a manner consistent with federal and local regulations and the engineer's design throughout the life of the facility. The landfill was developed to provide permanent disposal of the plant process wastes, which include waste lime, boiler ash, primary clarifier solids, recycle plant sludge, water treatment backwash, mix pond solids, miscellaneous wood waste, black liquor tank bottoms, and woodyard rejects. The landfill facility will accept no waste generated outside the Jackson Paper Mill.

This document is designed to meet the standards of the Alabama Department of Environmental Management (ADEM) Administrative Code Division 13 – Solid Waste Program (specifically, Rule 335-13-4-.23 relating to industrial landfills). A copy of the current code is provided in Appendix A.

Proper management of this facility requires that the contracted personnel fully understand the regulations pertaining to site operations, record-keeping and reports required by Packaging Corporation of America (PCA) and ADEM.

1.1 Definitions

Whenever the terms listed below are used, the intent and meaning is to be interpreted as indicated:

ADEM: Alabama Department of Environmental Management

PCA: Packaging Corporation of America – Jackson Mill

Contract Services Coordinator: The designated PCA representative responsible for the landfill facility.

Contractor: The contractor responsible for the operation and maintenance of the landfill facility.

Department: Alabama Department of Environmental Management

Engineer: The engineer responsible for design of the landfill facility.

HDPE: High density polyethylene

Landfill: That portion of the landfill site used to receive solid waste materials from PCA's Jackson Mill. Components included are currently constructed cells and the dump pad/turnaround.

Landfill Facility: The Jackson Mill Industrial Waste Landfill facility. Components included are the landfill site, leachate transfer line and maintenance facility.

Landfill Site: The portion of the landfill facility within and including the perimeter fencing, the soil stockpile area and all areas cleared during the construction of the landfill facility, ditches and their lining systems, rip rap entrance and exit structures, rip rap dissipater dams, culverts and silt fencing. Also, included are all underground piping, manholes, and culverts and utilities not included under the maintenance facility category. It does not include the leachate transfer line.

Leachate Transfer Line: The piping system conveying the leachate from the landfill to the Jackson Mill's aerated stabilization basin (ASB). Components include the underground HDPE piping, package flow metering station with solar-powered flow recorder, overhead ductile iron piping and piling support. It does not include the outfall structure.

Maintenance Facility: That portion of the landfill facility within concrete curb and gutter used to maintain, fuel, wash and store equipment used to load, transport, place and compact solid waste materials from the Jackson Mill to the industrial waste landfill. Components include the maintenance building, the fuel storage/containment structure, fenced storage area and fire protection system. The maintenance building contains a 10-ton overhead crane and compressed air system. Also included are paved and striped surfaces, concrete aprons and entrance stoops, catch basins, manholes, grates, associated underground piping and utilities.

Operations Manager: The contractor's on-site representative responsible for overseeing the day-to-day operation of the landfill facility.

O&M: Operations and maintenance

O&M Manual: The governing document providing specific instructions for the operation and maintenance of the landfill facility.

Section 2. Personnel

Proper management and operation of this landfill will require staffing with appropriately-trained personnel. Both management and operations personnel are required for operation of the landfill facility. Section 2.1 describes the typical operating personnel needed to operate the facility on a day-to-day basis.

2.1 Staffing and Functions

Operations and Maintenance Personnel

Two equipment operators

- Operate track loader
- Operate track excavator
- Operate sealed body dump truck
- Operate bulldozer
- Perform equipment maintenance

Management and Administrative Personnel

One operations manager

- Overall landfill management
- Administrative duties
- Reporting
- On-site safety coordinator
- Security

2.2 Personnel Training

On-site training of personnel will be performed to ensure the effective and proper operation of this facility. All employees will be adequately trained to perform their jobs in a safe and efficient manner.

In addition to the training on their specific job functions, supplemental training for all employees will also be performed. This supplemental training will include:

- Emergency procedures such as notification protocol, fire response, first aid and CPR;
- An understanding of the leachate system operation;
- Recognition of non-acceptable wastes;
- Filling operations of the cell;
- Preventive maintenance for equipment; and
- Using and inspecting facility emergency equipment.

Section 3. Landfill Safety

Safety is the primary responsibility of every employee on site. The landfill operations manager will ensure by inspection, instruction and remedial action that the site is operated in a safe and efficient manner.

A safety coordinator familiar with PCA's safety program and fully trained in landfill facility operations and OSHA requirements will be appointed. His or her responsibilities will include:

- Establishing a landfill facility safety program.
- Training all landfill facility personnel in safety matters.
- Ensuring operating and maintenance equipment is both used and maintained according to manufacturer's safety recommendations.
- Ensuring that all safety equipment is fully operational, periodically inspected, and certified.
- Coordinating activities in the event of an emergency.
- Keeping certification current.
- Maintaining safety and training records.

3.1 General Safety Measures

- All site employees will receive training in safe work practices and they will be encouraged to exercise caution in their work.
- Employees will receive training in basic first aid and CPR.
- First aid kits and fire extinguishers will be maintained and clearly accessible.
- All vehicles and equipment will be operated in accordance with the manufacturer's requirements and appropriate OSHA regulations.
- Engine covers and guards provided around moving parts will not be removed during equipment operation.
- Equipment operators and personnel on the ground must be constantly aware of activity around them. Unsafe practices will be corrected immediately.
- Proper hygiene must be exercised at all times.
- Landfill equipment will be equipped with roll-over protective cabs and fire extinguishers.

The following personal protective equipment will be made available to landfill employees and used when appropriate:

- Hard hats;
- Steel-toed boots;
- Gloves;
- Hearing protection;
- Eye protection;
- Respiratory protection will be made available if deemed necessary by PCA and/or the contractor.

3.2 Enforcement of Landfill Site Rules

Site rules will be posted at the front gate. They will include the following in addition to the name of the contractor:

- Not Open to the Public
- Restricted Access
- Authorized Personnel Only

All employees will have the authority to enforce the posted rules.

Section 4. Equipment and Maintenance

Reliable equipment with manufacturer-approved modifications (as appropriate for landfills) will be used. The contractor shall provide properly equipped, well-maintained vehicles that enhance employee safety and work productivity and minimize operating expenses.

4.1 Operating Equipment

For the purposes of this facility, the following types of equipment are required:

- One general-purpose front-end loader for loading waste into hauling trucks or trailers.
- One general-purpose hydraulic track excavator.
- Sealed body dump trucks, tractors with sealed body trailers or removable drop boxes for hauling the waste from the mill to the landfill.
- One bulldozer, suitable for this type of waste material, properly equipped for landfill use. The bulldozer will be used for pushing waste from the dump pad to the working face and for compacting waste.
- Pick-up truck(s) for general transportation.
- Appropriate site maintenance equipment and tools, such as a backhoe, mowing machine, shovels and rakes.

All vehicles designed for site operations will be equipped with fire extinguishers, first aid kits, roll-over protection and seat belts. Some type of warning device (either visual, audible or both) will be required to indicate when a vehicle is in reverse. Reversible fans, perforated engine enclosures, underbody protection and two-way communications are also recommended for contractor vehicles.

Support facilities are provided for the equipment. These facilities include a maintenance building equipped with an air compressor, pneumatic tools, cutting torch systems, hand tools, water hoses, fuel supply and spare parts. It also includes a fully-equipped office, break room and restrooms.

4.2 Equipment Preventive Maintenance

Preventive maintenance of equipment should be conducted on site by operators whenever possible. This will increase operator familiarity with equipment and reduce maintenance costs. Preventive maintenance is the responsibility of the landfill operations manager.

At a minimum, routine preventive maintenance will consist of the following:

- Visual inspection of tires or tracks for serviceability.
- Check of all fluid levels.

- Visual inspection of all hydraulic hoses for leaks or damage.
- Visual inspection of radiators and coolers for clogging.
- Test of all safety features for proper operation.
- Inspection of fire extinguisher for serviceability.

In addition, the equipment manufacturer's recommended periodic maintenance schedule should be followed. This will include, at a minimum:

- Oil changes;
- Oil sample analyses;
- Filter changes; and
- Transmission, differential and final drive fluid changes.

Oil, hydraulic fluid, antifreeze and fuel must be contained and transported to the maintenance shop for proper disposal if repairs or servicing require that they are drained from a piece of equipment in the landfill area. No free liquids can be disposed of in the landfill. Landfill equipment can be washed down in the landfill.

Section 5. Waste Acceptance

This industrial waste landfill is permitted to deposit only the wastes generated on the Packaging Corporation of America mill site. These wastes include:

- Waste Lime. Alkaline wastes (waste lime, slaker grits, green liquor dregs, lime mud, and black liquor tank bottoms) are generated in the recausticizing area of the Kraft pulping process. These materials are very fine-grained and can become caustic if wet.
- Boiler Ash. Ash is the residual from firing mill boilers.
- Water Treatment Backwash. Solids from the water treatment system which are backwashed.
- Woodyard Wastes. Wood is generally not considered a waste at the mill. Nearly all bark and wood chips are either burned or processed into paper. Wood waste (woodyard rejects and miscellaneous wood waste) is generated when bark and chips become too wet and too dirty to be burned. Wood waste may be used in the landfill to stabilize other wastes.
- Recycle Plant Sludge. Recycle plant sludge is a byproduct of recycled paper production and includes old corrugated container (OCC) rejects.
- Clarifier Solids. Solids from the waste clarifier are ran through a screw press before disposal.
- Mix Pond Solids. The dewatered dippings from the Mix Pond.
- Other Industrial Waste. Other industrial wastes are non-putrescible and non-hazardous industrial wastes generated by Packaging Corporation of America's Jackson mill.

5.1 Excluded Wastes

Wastes excluded by ADEM regulations include:

- Free liquids, including oils;
- Drums, unless rinsed and crushed or punctured;
- Hazardous waste, including lead-acid batteries, mercury thermostats and switches, and mercury vapor lamps;
- Tires;
- Oil-contaminated wastes;
- Medical wastes; and
- Waste materials from outside the Jackson Mill complex.

5.2 Hazardous Contamination Control

Hazardous contamination may be bacteriological, chemical, or radiological. All of these are defined in detail by the U. S. Environmental Protection Agency's (EPA's) hazardous materials definition. Disposal of hazardous waste at this site is not permitted.

To prevent unauthorized waste from entering the Jackson Mill's Industrial Landfill, training is provided to landfill personnel to recognize unacceptable wastes. Each truck load of industrial waste is visually inspected by the landfill contractor representative operating the truck prior to transporting the waste to the Industrial Waste Landfill. The landfill contract operator maintains records of random load inspections at the Industrial Waste Landfill.

If contamination of a hazardous nature exists, the operations manager will immediately notify PCA's environmental department and take steps to control and begin remediation of the hazardous material immediately. The facility's Emergency Response Plan is provided as Appendix B to this document.

Section 6. Waste Handling, Placement and Operating Procedures

The solid industrial waste will be transported by truck to the landfill turnaround and dump pad by way of County Road 15 (Depot Road). Contractors will back their trucks to the edge of the pad and dump the waste materials into the landfill cell.

The equipment operator will push the waste to the active working face where it will be thoroughly spread in layers of two feet or less in thickness and compacted prior to placing additional layers of waste.

ADEM requires that all waste placed in the landfill be generated on site by Packaging Corporation of America's Jackson Mill. No free liquid waste, hazardous waste, or medical waste is permitted in the landfill. No open burning of waste is permitted and wind-blown litter must be controlled. If an unpermitted waste is discovered in the landfill, the operations manager will notify PCA; PCA will in turn notify ADEM in accordance with the terms of the industrial waste landfill permit.

The waste, as previously described, will consist of separate loads of ash, dredgings, sludges and wood wastes. It is important for the equipment operator to mix these wastes as uniformly as possible, trying to avoid pockets of ash dredgings or woodyard rejects, which could cause slides and damage the liner. The first two feet of waste should be selected waste, free from objects that could damage the liner. Large-diameter logs should be placed closer to the bottom of the working face, and adequately covered with smaller waste to reduce the risk of rolling and damaging the liner; long pieces of wood will be reduced in length with a chainsaw. Proper mixing of waste will help stabilize the slopes of the landfill.

All waste should be confined to as small an area as possible and placed onto an appropriate slope of 4:1 (25%), or as approved by the Department. To avoid slides, the waste should be placed in lifts no higher than 20 feet, and progress of the lift should be no steeper than 3:1. It is recommended that the entire cell be covered with a lift before starting with the second lift, and that the second lift completely cover the first lift before starting the third lift, and so forth.

6.1 Hours of Operation

The site will be open for disposal of waste from 6:30 AM to 3:30 PM Monday through Friday (five days per week). This schedule will be subject to adjustments based upon PCA's requirements. The landfill is scheduled to be closed on the following holidays:

- New Year's Day
- Independence Day
- Labor Day
- Thanksgiving Day

- Christmas Day

6.2 Safety

Safety is of paramount importance in operating the landfill. The following procedures must be performed to satisfy safety requirements:

- The maximum final slope of waste allowed by ADEM is 4 horizontal to 1 vertical (4:1). The working face slopes may be as steep as 2:1. Should maintenance traffic ever be required on or near these slopes, care **must be** taken to protect personnel from vehicular accident resulting from slope failure. Fill placement must adhere to OSHA guidelines as prescribed in Title 29 *Code of Federal Regulations* Part 1926 Subpart P, Excavations.
- Landfill operations are performed using heavy equipment on surfaces that are occasionally steep or unstable. All equipment operators must be fully trained in the safe operation of heavy equipment.
- The landfill operations manager will ensure by inspection, instruction, and remedial action that the site is operated in a safe and efficient manner.
- Landfill equipment will be equipped with roll-over protective cabs and fire extinguishers.
- Equipment operators will be furnished with hard hats and hearing protection.
- A completely stocked first aid kit will be maintained at the site office at all times and will be inspected on a monthly basis for deficiency.

PCA's Jackson Mill is committed to safe, efficient solid waste disposal practices that are protective of human health and the environment. The landfill operating requirements in this manual are intended to accomplish the following objectives:

- Maintain a workable waste surface to insure uninterrupted waste disposal operations.
- Establish a structurally stable fill so that final grades can be achieved.
- Control waste materials to prevent releases to the environment.
- Place wastes in a manner that does not damage the liner system.
- Provide a safe working environment for personnel.

In general, these objectives are met by a combination of the following practices:

- Placing waste materials, except sludge, in compacted lifts.
- Grading and shaping the waste to promote run-off to leachate collection systems.
- Proper maintenance of landfill components.
- Mixing of sludge wastes with wood wastes for stable placement.
- Efficient placement of unstable sludges.

- Containment of sludges to allow time for in-place dewatering and consolidation to achieve the long-term stability required to reach final grades.
- Effective surface drainage to minimize re-saturation of the waste materials.

6.3 Equipment Limitations

The landfill design specifications require that a bulldozer of no more than 8.0 pounds per square inch be placed on top of the liner without at least two feet of cover between the machinery and the liner. The facility was built with two feet of sand on top of the liner at all points. The refuse will initially be dumped from the dump pad into the cell. After appreciable accumulation of debris, the operator will then spread the waste into the operating cells of the facility.

The operator will first cover the banks in order to control erosion and then fill in the floor of the cell in accordance with the approved site development plan.

It is recommended that the one-foot thick gravel layer be left uncovered at both the landfill low point and adjacent side slope. In this manner, leachate, if it should collect at the low point, can be aggressively removed via the highly permeable gravel leachate collection layer.

Section 7. Landfill Cover

In accordance with the facility operating permit, no daily or weekly cover is required for the waste type being deposited. At the time of closure, final cover is to be applied in accordance with the Department-approved Site Development Plan and will consist of five major components listed in order from the top of the cover to the top of the waste:

- An erosion control layer;
- Clean water drainage system;
- Top cap liner;
- Gas collection system; and
- A select soil leveling course.

Section 8. Leachate Collection, Transfer and Disposal System

To meet the state and federal requirements relating to groundwater protection design and operation, a leachate collection, transfer, and disposal system has been installed at PCA's Industrial Waste Landfill.

8.1 Leachate Collection System

The leachate collection system is comprised of the following components:

- A washed drain rock layer separated from the soil filter material by geotextile filter fabric;
- Perforated HDPE collection laterals;
- A solid HDPE collection main;
- Three HDPE manholes; and
- A fiberglass packaged flow metering station with Parshall flume, solar powered flow meter, and chart recorder.

All of the piping is designed to direct the leachate to the concrete vault for flow metering.

8.2 Leachate Transfer System

The leachate transfer system is also a combined sewer line for storm water run-off from the impervious surface areas of the maintenance facilities, the building sanitary sewage, and wastewater from the adjacent truck wash pad. The leachate, sewage, and water are conveyed to the Jackson Mill's aerated stabilization basin (ASB) ponds via a 20-inch gravity-draining pipeline system.

The first segment of the pipeline consists of approximately 1,650 feet of 20-inch diameter HDPE piping installed underground, extending from the landfill to a transition vault.

The second segment extends from the transition vault to the outfall structure at the ASB, and consists of approximately 5,200 feet of 20-inch ductile iron (DI) piping supported overhead on timber pile with concrete pile caps, each bent spanning 45 feet. The DI piping has expansion joints and inspection ports at key points along the pipeline.

Section 9. Groundwater Monitoring

This facility is in full compliance with ADEM Administrative Code R. 335-13-4-.27. Six active groundwater monitoring wells are used for groundwater monitoring in support of the facility's solid waste disposal permit. The active monitoring wells include the upgradient wells (MW-1, MW-7, and MW-8) and the downgradient wells (MW-6, MW-10, and MW-12). Water samples from these wells are to be collected by the Jackson Mill Environmental Department (or an approved environmental contractor), analyzed by an approved contract laboratory, and the results reported to the PCA contract services coordinator and the Department throughout the active life and post-closure care period of the landfill as outlined in the site Groundwater Monitoring and Corrective Action Plan.

Section 10. Landfill Gas Control

Due to the inert nature of the waste approved for placement in the landfill, landfill gas generation is not expected to be significant. Consequently, landfill gas generation is not addressed during fill placement operations. The soil conditions, hydrogeological and hydraulic conditions surrounding the site and the lack of structures within 1,000 feet of the facility exclude the requirement of a perimeter and structure gas monitoring program. It is recommended that sumps, manholes, cleanouts, and any underground structure be periodically monitored prior to entrance for routine maintenance for the accumulation of gas. Packaging Corporation of America has been granted a variance from explosive gas monitoring in Section VIII of Permit No. 13-05 such that monitoring of explosive gases from the industrial landfill is neither required nor performed.

At the time of closure, however, a passive-type gas collection system will be incorporated into the final cover design. The final cover HDPE flexible membrane liner (FML) is an impermeable barrier to the methane gas generated by degradation of the enclosed waste material. The geonet layer, with geotextile filter fabric on either side, accepts methane gas from the soil leveling course when a pressure differential is created in the venting process. Perforated HDPE gas collection laterals in drain rock trenches are located between the gas collection layer and the final layer HDPE FML at the highest points. The laterals are located to follow the inside ridge lines of the HDPE FML. At the high points, HDPE vent pipes penetrate the final cover and spinner type vent assemblies installed at the top of the vent pipes develop the pressure differential necessary for gas migration and passive gas extraction.

Maintenance of the gas extraction system consists of quarterly inspections of each gas venting assembly to ensure that the venting pipes are not damaged, that the spinner is free to turn, and that the assembly is securely staked.

Section 11. Fire Protection

All employees directly involved in the operation of the landfill facility must be trained in fire response procedures. This training will include the proper use and locations of fire extinguishers, evacuation plans, and notification procedures.

Deliberate burning of solid waste will not be practiced at the facility. The potential for accidental fires will be minimized by proper compaction of waste.

In the event of a major fire, the local volunteer fire department can be contacted for assistance. Their telephone number will be properly posted and maintained with other emergency numbers in the facility office.

Section 12. Landfill Site Security

Only authorized PCA and contract landfill operating personnel will be allowed access to the facility. A six-foot chain link fence has been installed around the perimeter of the landfill site with the main gate across the access road from the highway. All on-site access roads will be maintained and cleaned as required to assure access and minimize dust.

Fuel storage and dispensing facilities available on-site shall be locked and secured when not in use. Lubricants, tools, and small equipment shall be properly secured in storage bins when not in use.

Section 13. Air Quality Control

13.1 Open Burning

No open burning will be permitted at this site. All employees at this facility will be trained to prevent fires.

13.2 Dust

Water may be required to prevent fugitive dust emissions during truck unloading and spreading of the waste.

13.3 Odors

Odors will be controlled by preventing the ponding of water at the landfill and by use of adequate compaction and grading.

Section 14. Animal and Insect Control

Because of the lack of food sources, vectors are not likely to be present in PCA's Industrial Waste Landfill and control may be limited to insects (i.e., mosquitoes). Mosquito populations will be controlled by preventing the accumulation of stagnated water. This can be accomplished through continuous grading of slopes and contours to eliminate water ponding, and spraying insecticides, if required.

Section 15. Facility Inspection and Maintenance

Maintenance activities at PCA's Industrial Waste Landfill may be performed by PCA personnel or by the landfill operations contractor, as determined appropriate by PCA. The maintenance schedule is provided in Table 1.

15.1 Safety

The following safety guidelines should be followed during landfill maintenance activities:

- When entering manholes, proper confined space entry procedures and health and safety procedures should be followed. It is possible that explosive (methane) and toxic (hydrogen sulfide) landfill gases will collect in manholes unless they are displaced. Confined space entry is potentially the most dangerous activity associated with landfill operation and maintenance.

15.2 Drainage Structures, Surface Drainage Pipe, and Leachate Transfer Pipe

Drainage structures, ditches, perimeter berms, and slopes should be inspected periodically for the following adverse conditions:

- Surface drainage crossing roads – the facility has been designed to channel water through ditches and culverts.
- Excessive sedimentation and silting of ditches which might inhibit flow – sedimentation should be removed and free flow re-established.
- Clogged drain inlets – inlets should be inspected and any debris shall be removed which may be impeding flow.

The surface drainage pipes should be inspected at least four times per year to ensure unimpeded flow.

1. Visual inspection is required at both the inlet and outlet for any debris that inhibits flow.
2. Observed debris should be removed as part of regularly scheduled maintenance.

The Industrial Waste Landfill leachate collection and transfer system is an all-gravity system; there are no pumps or valves to monitor or maintain. Maintenance of the system will consist of a periodic inspection of the piping and supports to ensure that no damage has occurred causing leaks or blockage.

In the event that leachate removal is interrupted for any reason, contingency methods of leachate removal should be implemented. Leachate removal may be performed by pumping to the Jackson Mill's aerated stabilization basin (ASB).

15.3 Roads

Roads should be inspected monthly for erosion and rutting. If either of these should occur, the proper means of repair is to add stone and not scrape away and regrade existing material.

15.4 Site Equipment

When feasible, site operating equipment will be maintained and repaired on site. If major damage or failure of the equipment occurs, the operations manager will secure replacement equipment during the repair period or make other provisions for loading, hauling, and spreading. If adequate provisions cannot be made or if replacement equipment is unavailable within 48 hours, the site manager will reduce or restrict access to the site.

15.5 Fences and Gates

Fences, gates, and locks will be checked for structural integrity on a monthly basis.

15.6 Groundskeeping

All grass must be maintained throughout the facility in order to control erosion of the soil. Grass will be cut whenever necessary and at least twice per year. Silt fences and hay bales will be kept in place and intact. Erosion control systems will be replaced when necessary. Any necessary ground work and improvements will be taken care of in a timely fashion so as to avoid excessive erosion.

Table 1 – Landfill Maintenance Schedule						
Inspection, Maintenance, and Repair Task	**Daily**	**Monthly**	**Annual**	**After Major Storm Event**	**As Necessary**	**Notes**
Landfill						
Gravel Road (top of berms)					**X**	Reshape, remove rut holes
Vegetated Areas and Drainage Ditches		**X**		**X**		Mow and repair erosion
Security Fencing		**X**				
Trash and Litter Control	**X**					
Flush Leachate Collection Piping					**X**	
Maintenance Facility and Office						
Maintenance Facility	**X**					
Maintenance Building	**X**					General Housekeeping
Overhead Crane System		**X**	**X**			General Housekeeping
Compressed Air System		**X**				
Catch Basins, Manholes, and Washdown System			**X**			
Lighting Systems					**X**	
Plumbing Systems					**X**	
Pavement					**X**	
Fuel Storage System		**X**	**X**		**X**	
Fire Protection System		**X**			**X**	
Refueling					**X**	
Leachate Collection and Transfer Systems						
Leachate Transfer Pipeline			**X**		**X**	Periodic Visual Inspections
Leachate Collection Pipeline					**X**	Video Camera Inspection
Manholes		**X**		**X**		
Flow Meter Station		**X**		**X**		
Flow Meter and Chart Recorder	**X**			**X**		
Operating Equipment						
Light Equipment and Hand Tools					**X**	
Heavy Equipment	**X**	**X**	**X**	**X**	**X**	In accordance with manufacturer's recommendations

Section 16. Reporting and Record–Keeping

The landfill O&M contractor will be required to generate several different reports and logs to document performance and assure that the landfill facility is being operated and maintained in conformance with the ADEM Solid Waste Program and Landfill Permit No. 13-05, the Operations and Maintenance Manual, and PCA's policies and procedures. Records, reports, logs, drawings, and similar documents must be kept on file in the operation manager's office in the maintenance building or in the environmental department filing system.

All the documents generated by the operations manager must be maintained electronically on the computer hard drive. A duplicate copy of the electronic files will be sent to the contract services coordinator. A physical copy of the documents will also be given to the contract services coordinator. Physical copies of Waste and Leachate Volume Reports, Maintenance Reports, and Operations Reports will be delivered to the contract services coordinator on the first working day of each month for the previous month.

All reports and written correspondence must be completed in a neat and orderly fashion and transmitted in a timely manner. When critical, the contract services coordinator will establish deadlines for certain reports. To be in conformance with the contract, the operations manager must meet these reporting deadlines. Failure to do so can be interpreted by PCA as breach of contract.

IT IS IMPORTANT TO EMPHASIZE THAT SOME OF THESE REPORTS ARE INCLUDED IN MORE COMPREHENSIVE DOCUMENTS TO BE PROVIDED BY PCA PERSONNEL TO GOVERNMENTAL AGENCIES, OF WHICH FAILURE TO MEET DEADLINES MAY RESULT IN FINES AND/OR OTHER PENALTIES.

The operations manager will attend all meetings deemed necessary by the contract services coordinator.

16.1 Operating Record

The permittee or contractor operating an industrial waste landfill must record and retain in an operating record at the facility or in an alternative location approved by the Department the following information as it becomes available:

- A copy of the Solid Waste Disposal Facility Permit;
- The approved site development plan;
- Site operating plan;
- Landfill gas management plan;
- Final closure plan;
- Post-closure maintenance plan; and
- Any other related document.

All information contained in the operating record will be furnished upon request to the executive director of the Department and will be made available at all reasonable times for inspection by the Department.

16.2 Daily Operating Records

The permittee or contractor must promptly record and retain in the operating record the following information:

- Any and all demonstrations, findings, monitoring, testing, and analytical data relating to groundwater monitoring and corrective action;
- Storm water monitoring and corrective action;
- Copies of all correspondence relating to the operation of the facility, modifications to the permit, approvals, and other matters relating to technical assistance;
- Records of random load inspections performed at the facility; and
- Any other documents as specified by the approved permit or by the Department.

A reporting schedule is provided in Table 2.

16.3 Notifications

The contractor will provide written notification to the executive director for each occurrence that documentation from Subsection 16.1 of this section is placed into or added to the operating record.

16.4 Record Retention Period

The contractor will retain all information contained within the operating record and the different plans required for the facility for the life of the facility, including the post-closure care period of 30 years.

Table 2 – Landfill Reporting Schedule						
Reporting Task	**Daily**	**Weekly**	**Monthly**	**After Event**	**As Requested**	**Notes**
Waste and Leachate Volume Reports						
Haul Volumes	**X**		**X**		**X**	
Leachate Volumes			**X**		**X**	
Maintenance Reports						
Landfill Site Work		**X**			**X**	
Facility Maintenance Reports		**X**			**X**	
Equipment Maintenance Reports			**X**		**X**	
Inspection Reports			**X**		**X**	
Safety and Personnel Reports						
Equipment and Staffing Reports	**X**				**X**	
Safety Meeting Minutes		**X**	**X**		**X**	
Drug Testing				**X**	**X**	
Accident Report				**X**	**X**	
Operations Reports						
Vandalism Investigations				**X**	**X**	

Appendix A

Alabama Department of Environmental Management
Administrative Code, Division 13 – Solid Waste Program

(Under Separate Cover)

Appendix B

Emergency Response Plan

Packaging Corporation of America Industrial Waste Landfill

Table of Contents

Section 1. Introduction

The purpose of this Emergency Response Plan is to minimize possible fires, explosions and unplanned releases of waste or waste constituents to air or water. The provisions of this plan will be carried out immediately upon discovery of any incident or existing situation.

Routine cleanup operations will be performed by operating personnel without implementing this plan.

Section 2. Implementation Criteria

The purpose of this section is to guide the emergency coordinators through decision-making criteria when conditions warrant the need for contingency action response. Emergencies may occur at any time as a result of natural forces, accidents and other situations that disrupt normal operations. The following list summarizes the types and natures of situations that would require implementation of the contingency plan.

The Emergency Response Plan will be implemented if any of the following events occur:

- On-site injury;
- Fire;
- Detection of explosive gases;
- Excessive dust;
- Odor complaints;
- Equipment breakdown;
- Unusual traffic conditions;
- Animal or insect problems;
- Receipt or discovery of unauthorized waste;
- Groundwater or surface water contamination; or
- Fuel tank spills or leaks.

Section 3. Coordination of Emergency Services

3.1 Emergency Coordination

A list of names, addresses, and telephone numbers (office and home) of all individuals qualified to act as an emergency coordinator is provided in Table 1.

Table 1. List of Emergency Coordinators

Notification Priority	Position Title	Employee Name	Telephone Numbers
1	Emergency Coordinator	Randy Abston	(251) 246-8282 (251) 589-5843
2	Operations Manager	Dean Turner	(251) 387-5353
3	Security Coordinator		(251) 246-8200 EMERGENCY # (251) 246-8400
4	Safety Coordinator	Ed Bahr	(251) 246-8327 (251) 463-5708

In the event of an emergency, the emergency coordinator (or designee) will perform the following tasks:

- Assess the extent of the emergency;
- Contact appropriate emergency support agencies;
- Designate someone in charge at incident area to temporarily supervise immediate control action, radio reports to the emergency coordinator for updates on conditions, and notify all personnel;
- Take precautions to prevent spreading of fire or other emergency conditions to other waste disposal areas and secure the area;
- Evacuate non-essential personnel from incident area, particularly during operating hours;
- Assemble all personnel at a designated area for instructions and personnel count. Direct company personnel in responding to fire or explosion, if appropriate, and wait for outside emergency personnel to arrive. Upon their arrival, assist in their efforts as required;
- Prevent additional traffic from entering incident area;
- Clear roads for emergency vehicles and equipment;

- Determine the need to evacuate the site based on evaluation of the following:
    1. The real extent of the incident;
    2. The nature of waste involved;
    3. Weather conditions (especially wind);
    4. An estimate of the time required and equipment needed to bring the incident under control;
    5. Any other special conditions or factors that may have a bearing on the severity of the incident.
- In the event of fire, consider smoke visibility in off-site areas and advise the responding fire department personnel;
- For occurrences requiring local traffic control, contact the local law enforcement authority to coordinate activities, if necessary;
- Immediately after the incident, make an assessment to determine the need for disposing of recovered waste, contaminated or surface waters, or any other material that results from measures taken to control fire or explosion at the facility; and
- Evaluate the nature of materials (such as fire suppressants, neutralizing agents, waste residuals) in the affected area of the facility to determine if special cleanup efforts must be initiated before operation is resumed.

In the event of an emergency, the permittee or contractor will perform the following tasks:

- Notify the Packaging Corporation of America contract services coordinator, safety director, and environmental engineer who will confirm that it is safe to resume operations in the affected areas of the facility;
- Note in the operating record the time, date, and details of any incident that requires implementing the contingency plan. Within 15 days after the incident, the permittee/contractor must submit a written report on the incident to the Department. The report must include the following information:
    1. Name, address, and telephone number of the permittee;
    2. Name, address, and telephone number of the facility;
    3. Date, time, and type of incident (e.g., fire, explosion);
    4. Name and quantity of materials involved;
    5. The extent of injuries, if any;
    6. An assessment of actual or potential hazards to human health or the environment, where applicable; and
    7. Estimated quantity and description of recovered material that resulted from the incident.

3.2 Emergency Response Team

Packaging Corporation of America's Jackson mill emergency response team will also act as the emergency response team for the landfill facility. The emergency response team has been established to provide incident control and remediation during emergency situations.

3.3 Coordination Agreements with Local Authorities

Packaging Corporation of America's Jackson Mill will maintain close ties with local police and fire departments, hospitals, contractors, equipment suppliers, and state and local emergency response teams to coordinate emergency services. The Jackson Mill will familiarize local authorities with the layout of the facility; properties of the waste handled and potential hazards; places where facility personnel normally would be working; entrances to and roads inside the facility; and possible evacuation routes. Refer to Table 3 for a list of local emergency contacts.

3.4 Hospitals

The operations manager must identify the two hospitals closest to the facility and alert these facilities as to the nature and extent of emergency and the type of medical service required. The medical facilities servicing this facility are the Vaughan Jackson Medical Center (251-246-9021) located in Jackson, Alabama, and Grove Hill Memorial Hospital (251-275-3191) located in Grove Hill, Alabama. A map is provided in this Emergency Response Plan which shows the locations and easiest routes to these facilities. The location and phone number of the emergency services providers will be maintained on site in a clearly visible and accessible location. The maps to these medical facilities are presented as Figures 1, 2, and 3.

Section 4. Emergency Response Procedures

4.1 Notification Procedures

Should an emergency situation arise, the emergency coordinator or designee will be notified immediately. The emergency coordinator will then contact the appropriate personnel.

- Emergency services can be obtained by contacting PCA security, and dialing 911, if necessary;
- Business numbers are listed in Table 3.

Table 3. Business Numbers for Emergency Assistance

Service Provider	Telephone Number
PCA Main Mill Security	(251) 246-8400 X-8200 for non-emergency
Jackson Police Department	(251) 246-4484
Jackson Fire Department	(251) 246-4483
Vaughan Jackson Medical Center	(251) 246-9021
Grove Hill Memorial Hospital	(251) 275-3191
Hazardous Materials Team	(251) 246-4461
Alabama Department of Environmental Management	Business Hours: (334) 271-7700 After Hours: (800) 843-0699

4.2 On-Site Personal Injury

The primary on-site personal injuries that may occur at the industrial waste landfill are the following:

- Accidents involving the use of heavy equipment;
- Minor cuts, scrapes, and bruises;
- Injuries resulting from slipping and falling;
- Asphyxiation caused by entrance into confined spaces or excavation;
- Injuries resulting from fire or explosion.

Training on the prevention of injuries should help to minimize and prevent many of these injuries. In the event that a serious or potentially serious injury occurs at or near the site, the assisting personnel should make a decision as to whether immediate first aid is required. If confined space is involved, the assisting personnel should not enter the confined space until

the situation has been corrected or a corrective action has been taken to assure the health and safety of the assisting personnel.

If immediate first aid is required, it should be given to the injured person. If possible, the assisting person or other available personnel should contact the emergency coordinator for additional help (i.e., ambulance, fire department, etc.) if necessary.

If the injury is not serious and only requires minor first aid, first aid kits are available at designated areas on the site. All injuries, minor or serious, should be reported to the emergency coordinator for instructions and for injury records.

4.3 Fire or Explosion

Upon discovery of a fire or explosion at or near the facility, the emergency coordinator will contact the necessary personnel to fight the fire. This may include employees trained in the proper methods of fire fighting and/or other emergency response personnel. All untrained personnel will be required to leave the area. In addition, the emergency coordinator will direct all cleanup operations, determine the proper level of personal protective equipment and decide on the appropriate cleanup materials.

Regardless of the location of the fire or explosion, the emergency coordinator is responsible for:

- Determination of environmental impact potential;
- Determination of property-threatening potential;
- Determination of life-threatening potential.

On-site fire-fighting equipment that will be used to control fires or explosions in the facility will include:

- Hand-held fire extinguishers; and
- Hydrant and hose stations.

Upon discovery of a fire or explosion, individuals will initiate the fire/explosion action procedure as described below.

4.4 Fire/Explosion Action Procedure

1. Notify the emergency coordinator or designee.

   Office: (251) 246-8282, or Mobile: (251) 589-5843

   The emergency coordinator or designee will subsequently notify the local law enforcement authority and the emergency response team as necessary.

2. Control access to area. Clear all non-essential personnel from area.
3. Extinguish fire with available equipment, if possible, or take other immediate action to mitigate the emergency until emergency response team and/or the local volunteer fire department arrives.

4. Take all reasonable measures necessary to ensure that subsequent fires, explosions, or releases do not occur or spread to other areas. These measures may include but are not limited to the removal of unaffected equipment from the area, separation of affected and unaffected wastes, and dowsing adjacent areas with water.

Cleanup of fire residuals involving waste material is aimed at collecting as much of the waste material as possible for disposal as quickly as possible. Cleanup procedures may require the use of sorbents, portable pumps, tank trucks, and/or removal equipment. Similarly, the level and type of personal protective equipment required depends upon the type of materials involved.

All waste generated from post-fire cleanups involving waste material will be collected and disposed of according to its characteristics. Any equipment used in collected fire residuals involving waste materials will be decontaminated prior to use elsewhere. Any liquid generated from decontamination procedures will be collected for proper disposal.

4.5 Detection of Explosive Gases

The soil conditions, hydrogeological and hydraulic conditions surrounding the site, and the lack of structures within 1,000 feet of the facility exclude the requirement of a perimeter and structure gas monitoring program.

4.6 Unauthorized Wastes

Training of facility personnel will include identification of unauthorized waste. If unauthorized waste is detected prior to disposal, it will be immediately rejected. The facility personnel will then contact the operations manager, identify the source involved and action will be taken to assure that the incident does not recur.

4.7 Release of Hazardous Materials

No bulk liquids will be placed in the waste facility. Unauthorized wastes, including regulated hazardous wastes such as petroleum or organic-based solvents and oil-based paints which may originate at Packaging Corporation of America's Jackson Mill, are not to be placed in the industrial waste landfill.

In the unlikely event that unauthorized waste is delivered to or spilled at the facility, the following procedures will be implemented:

- The emergency coordinator will be immediately notified of the discharge;
- The Department must be contacted and informed of facility location and spill description;
- If necessary, berms will be constructed to prevent the spill from migrating; and
- All spilled material will be collected and disposed of properly (see General Spill Cleanup Procedures below).

Section 5. General Spill Cleanup Procedures

On-site spill cleanup is aimed at recovering as much of the spilled material as possible for disposal as quickly as possible. There are several techniques available for on-site cleanup. Choice of a cleanup method must be determined at the time of the incident, taking into account the extent of the spill. Some cleanup alternatives include the following.

5.1 Sorbents

Spill scavengers and cleanup agents which absorb the spilled product are the most common method for handling spills or residual product. These agents may be packaged in pillows, large bats or booms which can absorb a large amount of liquid and make disposal easier. For corrosive materials, lime or other neutralizers are practical. Three classes of sorbents are natural products (straw, sawdust, clays and vermiculite); modified natural products (expanded perlite, cloth rags, charcoal, silicone-coated sawdust, surfactant-treated asbestos); and synthetic products (imbiber beads, imbiber bead blankets, and foam products). When using sorbents, it is necessary to dispose of spent products properly unless recoverable sorbents are used.

5.2 Suction

Spills of free liquids may be removed by direct suction pumping into tank trucks.

5.3 Removal

This is an initial, rapid-response method for the removal of a contaminant before it reaches groundwater. Soil that is excavated from a spill site, however, must be properly disposed of.

APPENDIX E

Groundwater Monitoring Plan

(Under Separate Cover)

APPENDIX F

Storm Water Runoff Calculations

25-Year 24-Hour Rainfall Event
9 inches over a 24-hour period

Sediment Pond and Runoff Drainage Areas

Sediment Pond:	1.21 acres
Grassy Sloped Drainage Area:	2.63 acres
Wooded Drainage Area:	3.39 acres

Rainfall Volume During a 25-Year 24-Hour Rainfall Event
9 inches in 24-hour period yields 244,372 gallons of water per acre
Average Rainfall Intensity = 9 inches ÷ (24 hours) ÷ (12 inches/foot) = 0.03125 ft/hr

Rainfall Volume Draining Directly Into Sediment Pond
1.21 acres x 244,372 gallons/acre = 295,690 gallons

Rational Method
$Q = C \times I \times A \div Z$
Z = 1 for English units

Rainfall Volume Discharging to Sediment Pond from Grassy Sloped Drainage Area

Runoff Coefficient (C)	0.70
Average Rainfall Intensity (I)	0.03125 ft/hr
Drainage Area (A)	2.63 acres
Maximum Rate of Runoff (Q)	0.0575 acre-ft/hr
Runoff Volume to Pond	449,888 gallons

Rainfall Volume Discharging to Sediment Pond from Wooded Drainage Area

Runoff Coefficient (C)	0.45
Average Rainfall Intensity (I)	0.03125 ft/hr
Drainage Area (A)	3.39 acres
Maximum Rate of Runoff (Q)	0.0477 acre-ft/hr
Runoff Volume to Pond	372,789 gallons

Total Volume of Storm Runoff to Sediment Pond During 25-Year 24-Hour Rainfall Event
295,690 gallons + 449,888 gallons + 372,789 gallons = <u>1,118,367 gallons</u>

Sediment Pond Capacity
4.31 acre-feet = 4.31 x 43,560 ft^2/acre-feet x 7.48 gallons/ft^3 = <u>1,404,322 gallons</u>

ATTACHMENT B

Jeffery W. Kitchens
Acting Director

Kay Ivey
Governor

Alabama Department of Environmental Management
adem.alabama.gov
1400 Coliseum Blvd. 36110-2400 ▪ Post Office Box 301463
Montgomery, Alabama 36130-1463
(334) 271-7700 ▪ FAX (334) 271-7950

July 22, 2025

Mr. Jonathan R. Abston, Environmental Manager
Boise White Paper, LLC – Jackson Mill
4585 Industrial Road
Jackson, Alabama 36545

Re: Permit Renewal Application & Revised Groundwater Monitoring Plan Comments
Boise White Paper, LLC Industrial Waste Landfill
Permit No. 13-05
Clarke County, Alabama

Dear Mr. Abston,

The Department has reviewed the Permit Renewal Application dated February 2024 and the Groundwater Monitoring Plan (GWMP) dated January 2019, updated January 2024 and June 2025 for the above referenced facility. After review, the following comments and recommendations were made. For your convenience, the comments and recommendations for the revised GWMP are in a separate section from the rest of the Permit Renewal Application comments.

Permit Renewal Application

1) The Professional Engineer's Statement does not contain any language that explicitly states that "the information being submitted is accurate and correct". ADEM Admin. Code r. 335-13-5-.02(1)(d) requires a statement including that language. Therefore, add a sentence in the Professional Engineer's Statement that explicitly certifies that the information being submitted is accurate and correct.

2) Currently, the application only includes a Professional Engineer's statement. However, ADEM Admin. Code r. 335-13-5-.02(1)(d) requires the application also includes a statement signed by a representative of the facility that explicitly certifies that "the information being submitted is accurate and correct". Therefore, please add a statement signed by a representative of the facility (e.g. mill manager, environmental manager, etc.). The facility representative's statement can be combined with the professional engineer's statement on 1 page with both signatures if preferred.

3) The last sentence of the Professional Engineer's Statement states that the Appendix C drawings were prepared and certified by RMT Inc. However, the Appendix C drawings do not have the design engineer's stamp certifying that they are correct. ADEM Admin. Code r. 335-13-5-.02(1)(a)5.(i) requires the seal or signature and registration number of the design

engineer to be affixed to plans, specifications, and reports. Therefore, submit new drawings with the design engineer's professional seal OR submit a certification statement with the design engineer's seal or signature and registration number to go along with the non-stamped drawings.

4) Add the fourth variance listed in Section 1.3 of the Introduction (Variance Requests) to the cover letter.

5) While Section 5.2 of the Operation Plan states that hazardous waste is not permitted at the site and discusses emergency response procedures if hazardous material is detected in the landfill, revise the Operation Plan to include waste screening procedures to *prevent* unauthorized waste from entering the landfill in accordance with ADEM Admin. Code r. 335-13-4-.21(1)(b).

Revised Groundwater Monitoring Plan

1) The *Alabama Groundwater Monitoring Reporting Guidance for Solid Waste Facilities* found on the ADEM website at https://adem.alabama.gov/waste/guidance-and-reports in the "Solid Waste" section details what information should be included in a groundwater monitoring report. The Department recommends including this information in the GWMP.

2) The Department recommends sampling Appendix I parameters while in detection monitoring. However, if the facility would like to continue using an alternative list, justification for doing so must be submitted in accordance with ADEM Admin. Code r. 335-13-4-.27(3)(a)(3.).

3) Referring to Bullet Point List in Section 6:

- **2nd bullet point:** Dixon's and Rosner's are parametric tests, so a non-parametric test is needed for non-parametric situations. Therefore, revise this bullet to also include a non-parametric statistical test for outliers (e.g. Tukey's Outlier Test, as it's not based on normality) in accordance with the 2009 edition of the *Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities Unified Guidance*.

- **3rd bullet point**: List the specifics or criteria for excluding outliers, in accordance with the 2009 edition of the *Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities Unified Guidance*, instead of just saying "professional judgement".

- **5th bullet point:** The Poisson distribution is no longer used in the current version of the *Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities Unified Guidance*. Therefore, delete bullet #5 and revise bullet #4 to say that for parameters with ≥ 15-100% non-detects the facility will use a non-parametric test.

- **8th bullet point:** While transformations are allowed to normalize data, using extreme transformations as noted in the bullet can sometimes cause issues with the subsequent statistical tests. Therefore, revise this portion to say that the same transformation used on the background dataset will be used in subsequent statistical tests.

4) Replace "may" with "will" in the second sentence of the last paragraph on page 3.

5) The last paragraph on page 3 discusses two topics: (1) updating the background data sets and (2) pooling the background data sets. The Department recommends adding a portion to the GWMP which describes the procedures used to update the background datasets. This portion should state that an ANOVA will be performed on each background well, comparing the older background data with newly acquired data to determine statistical significance within the dataset for the purpose of updating the dataset in each well. Also, the GWMP mentions that an ANOVA will be performed on the three upgradient wells to see if the data is statistically similar so the background data can be pooled. The GWMP should be revised to state that after background has been properly updated in each well, an ANOVA will be performed comparing the data from the three background wells, to ensure the data is statistically similar prior to pooling the data, in accordance with the 2009 edition of the *Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities Unified Guidance*. As such, the ANOVA will be used for two purposes in this case.

6) In the first paragraph on page 4, the facility mentions using Appendix IV parameters if they enter assessment monitoring. However, these are the Coal Combustion Residual (CCR) constituents for assessment monitoring, and this facility is not a CCR site. Revise the paragraph to say Appendix II parameters will be used for assessment monitoring in accordance with ADEM Admin. Code r. 335-13-4-.27(4).

7) Revise the last sentence of the first paragraph on page 4 to state "When the lower confidence interval (LCL) exceeds the GWPS, the facility will enter into an assessment of corrective measures in accordance with ADEM Admin. Code r. 335-13-4-.27(4)(g)."

8) Provide boring logs and how all compliance wells were constructed as part of the GWMP.

In order for the Department to consider the permit renewal, please review all the comments and provide the suggested information within the next 30 days of receipt of this letter. If you should have any questions, please contact Dr. Dontavious Sippial of the Solid Waste Branch at (334) 270-5651.

Sincerely,

Jared D. Kelly, Chief
Solid Waste Engineering Section
Land Division

JDK/djs

GROUNDWATER MONITORING PLAN

PACKAGING CORPORATION OF AMERICA INDUSTRIAL LANDFILL
4585 INDUSTRIAL ROAD
JACKSON, ALABAMA 36545
CLARKE COUNTY, ALABAMA
PERMIT NO.: 13-05
PROJECT NO.: 2254125.00

PREPARED FOR:

PACKAGING CORPORATION OF AMERICA
4585 INDUSTRIAL ROAD
JACKSON, ALABAMA 36545

SEPTEMBER 22, 2025
REVISED NOVEMBER 4, 2025

PREPARED BY:

LABELLA ASSOCIATES, D.P.C.
528 MINERAL TRACE
BIRMINGHAM, ALABAMA 35244
PHONE: (205) 985-4874

Trey Helms, P.G.
Project Geologist

William W. Cooch, P.G.
Principal Geologist

OWNER CERTIFICATION

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

Ryan Powell

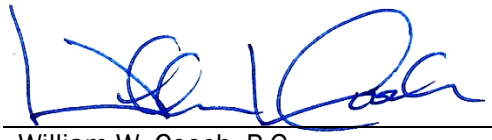
Packaging Corporation of America

9/22/25

Date

GEOLOGIST CERTIFICATION

I certify under penalty of law that I am a Registered Professional Geologist, licensed to practice in the State of Alabama and experienced in conducting hydro-geological investigations. The information submitted herein, to the best of my knowledge and belief, is true, accurate and complete.



September 22, 2025

William W. Cooch, P.G.
Principal Geologist
LaBella Associates, D.P.C.

Date

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FIGURES

APPENDICES

1.0 PURPOSE AND SCOPE

The Packaging Corporation of America (PCA) has prepared this *Groundwater Monitoring Plan* (GWMP) for the Packaging Corporation of America Industrial Landfill (PCA Landfill) located in Jackson, Clarke County, Alabama, Solid Waste Facility Disposal Permit Number 13-05. This GWMP has been prepared in accordance with the Alabama Department of Environmental Management (ADEM) Administrative Code 335-13. The following is a discussion of the site history, environmental setting, description of the monitoring requirements, and activities to be conducted over the life of the permitted facility.

2.0 SITE LOCATION AND STATUS

The PCA Landfill (Permit No.: 13-05) is located at 4585 Industrial Road in Jackson, Alabama. The Landfill is located predominantly in the Southwestern ¼ of Section 16, Township 6 North, Range 2 East in Clarke County, Alabama. The site location is displayed on Figure 1.

The facility consists of 70.25 acres and has a total disposal area of 41 acres, 10 acres of which are currently being utilized. The landfill was originally permitted for operation by ADEM on July 11, 1991 under ADEM Permit No 13-05 and currently accepts the following non-hazardous solid wastes:

- Non-putrescible and non-hazardous industrial waste
- Waste lime
- Boiler ash
- Woodyard rejects
- Clarifier solids
- Water treatment plant backwash solids
- Mix pond solids
- Miscellaneous wood waste
- Black liquor tank bottoms
- Waste from the wastepaper recycling plant
- Primary and secondary rejects from the Old Corrugated Cardboard recycling facility

The waste approved for disposal in the subject landfill are predominantly inert solids, wood wastes and byproducts of paper production. Given the nature of these materials, various metals may be present in the wastes that occur naturally in the environment and could accumulate in the waste mass within the landfill. Therefore, PCA will include analysis for Appendix I metals as part of future annual groundwater monitoring events and statistical analysis. Future statistical analysis will require establishing a background dataset for Appendix I metals prior to performing statistical analysis. A discussion of establishing the background dataset is provided in Section 4.5 of this Plan.

The waste streams presented above are not known to contain any petroleum or chlorinated hydrocarbons compounds. As such, no volatile organic compounds (VOCs) would be present in the wastes that would have the potential to adversely impact groundwater beneath and downgradient of

the landfill. Given that no VOCs are present in the wastes disposed of in the landfill, PCA should not be required to include analysis for VOCs as part of future annual monitoring events.

3.0 ENVIRONMENTAL SETTING

3.1 SITE GEOLOGY AND HYDROGEOLOGY

According to geologic information published by the Geological Survey of Alabama, the site is underlain by the Pliocene and Miocene Series, undifferentiated. The Pliocene and Miocene Series, undifferentiated typically consists of Sand and gravel, yellow, pink, and tan; light-gray and varicolored clay; blue to green sand, clay, and sandy clay; bluish-gray fossiliferous marl; light-gray sandstone; bluish-green fossiliferous sandy clay at base of series.

According to the *Hydrogeology and Vulnerability to Contamination of Major Aquifers in Alabama: Area 10*, 2000 prepared by the Geological Survey of Alabama (GSA), the Landfill is located in the recharge area of the Miocene-Pliocene Aquifer and is highly vulnerable to contamination from the surface.

3.2 SURFACE WATER

Surface water from the PCA Landfill generally flows west from higher topographic elevations on the Landfill towards the Tombigbee River.

4.0 MONITORING WELL NETWORK AND GROUNDWATER FLOW

4.1 MONITORING WELL NETWORK

Currently, the PCA Landfill maintains six (6) monitoring wells (MW-1, MW-6, MW-7, MW-8, MW-10, and MW-12). Monitoring wells MW-1, MW-7, and MW-8 are designated as the upgradient (background) wells for groundwater quality comparisons. Monitoring wells MW-6, MW-10, and MW-12 are designated as the downgradient (compliance) wells for the purpose of monitoring groundwater quality and for statistical analysis. The monitoring well locations are shown in Figure 2. The available well construction details for monitoring wells at the site are included in Table 4.1 below.

TABLE 4.1 – MONITORING WELL CONSTRUCTION DETAILS

WELL ID	WELL DESIGNATION	TOP OF CASING ELEVATION (FT-AMSL)	CASING DIAMETER	SCREENED INTERVAL (FT-BGS)
MW-1	BACKGROUND	188.66	4-inch	95 - 105
MW-7	BACKGROUND	186.00	4-inch	164 - 174
MW-8	BACKGROUND	177.20	4-inch	108 - 128
MW-6	COMPLIANCE	34.40	4-inch	15 - 25
MW-10	COMPLIANCE	87.40	4-inch	57 - 77
MW-12	COMPLIANCE	67.70	4-inch	47 - 57

ft-amsl – feet above mean sea level
ft-btoc – feet below top of casing
NA – Not Available

4.2 HISTORICAL SITE INFORMATION

Monitoring wells MW-1, MW-6, MW-7, MW-8 MW-10 and MW-12 were installed during the completion of a geotechnical engineering study conducted in 1990 as part of the original landfill siting activities. In addition to the above-referenced wells, monitoring wells MW-2, MW-9 and MW-5 were installed along with numerous other soil borings to aide in the completion of the geotechnical study. Wells MW-2, MW-9 and MW-5 remain onsite however they have not been and are not planned to be included in the facility's Permit as compliance wells.

4.3 GROUNDWATER FLOW

During the annual monitoring event, static water level depth will be measured in each of the monitoring wells prior to purging. For reference, groundwater elevations measured during the March 2025 annual groundwater monitoring event, that was conducted by PPM Consultants, ranged from 25.10 to 99.28 feet above mean sea level (ft-amsl). Groundwater elevation data is included in Table 4.3 below. A map depicting the potentiometric surface and flow direction for shallow groundwater beneath the site at the time of the March 2025 event is provided as Figure 3.

TABLE 4.3 – GROUNDWATER ELEVATIONS – MARCH 2025

WELL ID	TOP OF CASING ELEVATION (FT-AMSL)	MEASURED TOTAL DEPTH (FT-BTOC)	MEASURED DEPTH TO GW (FT-BTOC)	GROUNDWATER ELEVATION (FT-AMSL)
MW-1	188.66	NA	89.38	99.28
MW-6	34.40	NA	9.30	25.10
MW-7	186.00	NA	137.70	48.03
MW-8	177.20	NA	81.05	96.15
MW-10	87.40	NA	45.36	42.04
MW-12	67.70	NA	33.76	33.94

ft-btoc = feet below top of casing
ft-amsl = feet above mean sea level
NA – Not Available for March 2025 Monitoring Event

As illustrated by the potentiometric surface map, the direction of groundwater flow beneath the Landfill at the time of the March 2025 groundwater monitoring event was generally to the west-toward the Tombigbee River.

At the time of the March 2025 monitoring event the hydraulic gradient (dh/dl) was calculated using the elevation difference between MW-10 and MW-6 to be approximately 0.021 feet per foot (ft/ft). Groundwater flow velocity in the subsurface materials underlying the Landfill was calculated using the formula V = (K) (dh/dl)/ne, where K is hydraulic conductivity and ne is effective porosity. Using an estimated hydraulic conductivity of 7.0×10^{-4} (PPM, March 2025) centimeters per second (cm/sec), an effective porosity of 10%, and the calculated hydraulic gradient of 0.021 ft/ft, the groundwater flow rate was estimated to be approximately 15.20 feet per year (ft/year) at the time of the March 2025 event. This flow rate is consistent with past groundwater monitoring events. An example of the groundwater flow rate calculations (March 2025) is provided in Appendix A.

Since the calculated gradient and flow rate are derived under the assumption that groundwater flow occurs through a homogeneous, isotropic, porous medium, these calculations should only be considered a rough estimate of actual groundwater flow. This seepage velocity does not take into account the effects of vertical flow gradients, flow along secondary fracture pathways, or other conditions caused by lateral heterogeneity.

It should be noted that the potentiometric surface elevation map (Figure 3) is a model of the groundwater potentiometric surface based upon available measured groundwater levels and should be considered only a general depiction of groundwater flow direction for the local area of the Landfill. While the potentiometric surface typically parallels surface topography, the accuracy of the

potentiometric surface map is limited to available data from the control points and may conflict with surface topography and/or the actual groundwater potentiometric surface at certain locations.

4.4 MONITORING WELL INSPECTION

During each annual monitoring event, the monitoring wells will be inspected for damage. Additionally, MW-2S, MW-2D, MW-5, and MW-9 will be inspected during each monitoring event. If it is determined that a well should be replaced for any reason, a *Monitoring Well Abandonment and Installation Plan* will be prepared for submittal to ADEM within 60 days of making the determination. The *Monitoring Well Abandonment and Installation Plan* will be accompanied by a request for a Minor Permit Modification and a revised *Groundwater Monitoring Plan* to update the facility Permit to include the proposed new well into the Permit compliance well network and payment of the appropriate ADEM fee. The plan will include, at a minimum, consideration of the following:

- The appropriate method for abandonment.
- The need for relocation to protect the replacement well from future damage.
- The anticipated replacement well type, depth, screened interval, casing diameter and surface completion in accordance with ADEM Admin Code 335-13-4-.27(2)(c).
- The need for background sample collection and, if required, the number of background samples and a schedule for completing sample collection.

Upon approval of the *Monitoring Well Abandonment and Installation Plan*, and the subsequent replacement of the new well, a report documenting the abandonment and replacement activities will be prepared and submitted to the ADEM along with a revised *Groundwater Monitoring Plan* which will include the monitoring well construction details for the newly installed well(s). Background sampling and analysis will be conducted in accordance with Section 4.5 of this Plan to determine if pooling data from the abandoned well with the new well is appropriate. Once this analysis is complete, the results will be submitted to the ADEM in the annual report following completion of the background sampling activities.

4.5 BACKGROUND SAMPLING

Background sampling events will be conducted for existing compliance wells for Appendix I metals and all constituents for newly installed background wells and compliance wells on a quarterly basis. Samples collected from newly installed monitoring wells will be analyzed for Appendix I metals,

alkalinity, chloride, and sulfate. Statistical analysis will be conducted for the monitoring wells as follows:

- For existing wells to establish a background dataset for Appendix I metals, at least four quarterly background sampling events will be conducted for Appendix I metals parameters. Groundwater analytical data and field sampling logs from each of the sampling events will be submitted to the ADEM in the annual report following completion of the background sampling activities.

- For replacement wells installed in close proximity to an original well, an Analysis of Variance (ANOVA) test will be conducted in order to determine if pooling data from the abandoned well with the replacement well is appropriate following the collection and analysis of a minimum of four background groundwater samples for Appendix I metals, alkalinity, bicarbonate, carbonate, chloride, and sulfate. Either a parametric or non-parametric ANOVA test will be conducted, depending on normality. The results from these tests will be submitted to the ADEM in the annual report following the completion of the background sampling activities, along with the groundwater analytical data and field sampling logs from each of the sampling events.

- For a newly installed monitoring well, or a replacement well that was not installed in close proximity to an original well that it is replacing, at least four quarterly background sampling events will be conducted for Appendix I metals, alkalinity, bicarbonate, carbonate, chloride, and sulfate. Groundwater analytical data and field sampling logs from each of the sampling events will be submitted to ADEM in the annual report following completion of the background sampling activities.

5.0 GROUNDWATER SAMPLING AND ANALYSIS

Groundwater samples will be collected at the PCA Landfill on an annual basis throughout the active life of the facility and the post-closure care period in accordance with ADEM Administrative Rule 335-13-4-.27. Unless otherwise specified by the ADEM, groundwater sampling will be conducted during March of each year.

During the annual groundwater monitoring events, and prior to sample collection, static water level measurements will be taken in each monitoring well using an electronic water-level indicator to determine the depth of water and the measured water level as it relates to the screened interval of the well.

All groundwater samples will be collected using either a peristaltic or bladder pump following low-flow sampling protocols. In order to collect water in the screened interval, low-flow purging will be conducted by situating the pump-intake in the middle or slightly above the middle of the screened interval of the well. The intake velocity of the pump will then be set to a flow rate that minimizes draw-down inside the well casing, thereby reducing turbidity and agitation of the water column in the well, and the introduction of suspended sediment into the water column. The pumping rate will be maintained between 200 to 500 milliliters per minute and the water level will be monitored every three to five minutes to determine steady-state flow. An attempt will be made to maintain a draw-down of one foot or less during purging.

Prior to sample collection, groundwater will be purged from each well at a rate approximately equal to the well recharge rate. The turbidity, temperature, specific conductance, dissolved oxygen (DO), oxidation-reduction (redox) potential, and pH of groundwater will be monitored and recorded every three to five minutes as the wells are purged. Samples will be collected when stabilization of these indicator parameters is recorded in three consecutive readings. The three successive readings should be within ± 0.1 for pH, ± 3% for conductivity, ± 10 mv for redox potential, and ± 10% for turbidity and DO. DO and turbidity usually require the longest time for stabilization. Conductivity, DO, and turbidity are the most sensitive parameters. The above stabilization guidelines are provided as estimates and may not always be achieved. Samples will be collected after field indicator parameters have stabilized and will be placed directly into the laboratory containers with minimal agitation to minimize volatilization of chemicals of concern (COCs), if present. The field indicator parameters will be recorded for each well on a field sampling log. An example field sampling log is included as Appendix B.

Groundwater samples will be obtained by filling appropriate laboratory-prepared sample containers directly from the discharge tubing connected to the pump or from disposable polyethylene bailers. New tubing will be used for each sample and the pump will be decontaminated prior to use at each sample location. Subsequent to sample collection, the containers will be labeled and placed in a cooler with ice in an effort to achieve and maintain a sample temperature of < 6°Celcius (C). In the event one or more wells is purged dry, those wells will be allowed to recharge sufficiently prior to sampling. Once recharged, samples from those wells will be collected using a disposal bailer.

The samples will be delivered to a National Environmental Laboratory Accreditation Program (NELAP) certified laboratory, along with proper chain of custody documentation including project name and number; sampler's name and signature; sample identification numbers; sample date, time, and location; requested analyses; and sample container type and quantity.

The samples collected from monitoring wells MW-1, MW-6, MW-7, MW-8, MW-10 and MW-12 will be analyzed for Appendix I metals, alkalinity, bicarbonate, carbonate, chloride, and sulfate using the EPA Methods shown in Table 5.0 below.

TABLE 5.0 – LABORATORY ANALYTICAL METHODS

PARAMETER	SAMPLE MATRIX	EPA METHOD
Appendix I Metals Including Mercury	Water	6010 or 6020 7470 (mercury)
Alkalinity	Water	2320B
Chloride	Water	300.0
Sulfate	Water	300.0

The laboratory analysis will follow the protocols provided in the *Test Methods for Evaluating Solid Waste: Physical/Chemical Methods SW-846* (SW-846), *Standard Methods for the Examination of Water and Wastewater (latest edition),* or other appropriate methods approved by the ADEM.

5.1 GROUNDWATER SAMPLE MANAGEMENT

In accordance with this GWMP, each groundwater sample will be tracked from the time of collection by completing sample custody documentation. The sample custody documentation will include the field documentation and the chain of custody report. All samples will be placed in laboratory-provided containers and preserved in a manner appropriate to the analytical method requested. Sample containers will be stored in a clean, secure area prior to use. Containerized samples will be

labeled as they are collected and placed in a cooler with ice to maintain a sample temperature of < 6°C until delivered to the analytical laboratory. Sample criteria are summarized in Table 5.1 below.

TABLE 5.1 – GROUNDWATER SAMPLING CRITERIA

PARAMETER	SAMPLE MATRIX	BOTTLE TYPE	PRESERVATIVE	HOLDING TIME
Appendix I Metals	Water	(1) 250 ml Plastic	6°C / HNO_3	180 Days Mercury 28 Days
Alkalinity	Water	125 ml Plastic	6°C	14 days
Chloride	Water	125 ml Plastic	6°C	28 days
Sulfate	Water	250 ml Amber Glass	NaOH+ZnAc	28 days
pH	Water	Measured in the field		
Conductivity	Water	Measured in the field		

ml – Milliliter
C – Celsius
HNO_3 – Nitric Acid
HCL – Hydrochloric Acid

Sample labels will be filled out and affixed to appropriate containers immediately prior to or following sample collection, as appropriate. The label will be filled out in indelible ink and will include the following information on the portion affixed to the sample container: sample ID number; analyses requested; project name; the person's name collecting the sample; and sample location number.

The field data recorded at the time of sample collection provides an unambiguous identification of each sample. These field data will be recorded on groundwater monitoring well field logs. Field notes will include the date and time of sampling; name(s) of field personnel conducting sampling; name(s) of any observers at the sampling site; purpose of sampling; description of sample point; number and size(s) of sample(s) taken; field sample identification number(s); deviation from sampling plan, if any; field observations; references (such as maps) of sampling site; and sample handling and shipping information.

Sample handling and shipping procedures will assure that samples are properly preserved, protected, and secured until delivered to the analytical laboratory. After sample containers are labeled, they will be sealed in plastic air cushion bags and wrapped in clear plastic bags to protect sample bottles and labels from potential moisture damage. Ice packs will be sealed in plastic bags and placed on top of samples in order to maintain an optimum temperature of <6°C until the

samples are delivered to the laboratory. Any remaining void space in the ice chest will be filled with appropriate bubble-wrap packing material.

Samples will be hand delivered or shipped via overnight delivery service to the laboratory. Shipped samples will be accompanied by an appropriate freight (shipment) bill of lading form with the completed freight bill number recorded on the Chain of Custody accompanying each cooler shipment. The Chain of Custody will be sealed in a plastic bag and taped to the underside of the cooler lid. Coolers will be sealed with tape and a custody seal that will be initialed and dated to prevent any tampering during shipping and handling. The laboratory will be notified prior to shipment of samples that would arrive at the laboratory on a weekend or holiday to assure that the samples are properly received.

Sample custody documentation procedures will be maintained throughout initial sample collection; transportation from sample collection site to analytical laboratory; receipt and preparation of laboratory sample extracts and digestives; storage at laboratory until an evaluation of analytical results determines that re-analysis is not required; and final sample disposition.

At the time of sample collection, samples will be labeled and a record of the sampling activity will be recorded in the daily field log. Sample labeling procedures were discussed previously. Information required to identify sample custody and to request sample analyses are then entered on the Chain of Custody. The information recorded on the Chain of Custody will include the project name and number; sampler's name and signature; sample identification numbers; sample date, time, and location; requested analyses; sample container type and quantity; requested analytical turnaround time; and person to receive results and a contact telephone number to call in case problems arise.

A Sample Chain of Custody is included as Appendix D.

6.0 DECONTAMINATION OF EQUIPMENT

All non-disposable equipment and tools will be decontaminated in accordance with the most recent edition of the *Alabama Environmental Investigation and Remediation Guidance* (AEIRG). Personnel decontamination will be performed on an as-needed basis only. Sampling equipment will be either disposable or decontaminated prior to use and between sampling locations. New disposable nitrile gloves will be used during the collection each groundwater sample. Disposable polyethylene tubing will be used with the purge-pump during well purging. The water level indicator and bladder pump will be decontaminated by washing with distilled water and laboratory grade detergent wash, followed by rinsing with distilled water.

7.0 ANNUAL REPORTING

Upon receipt of the laboratory analytical results, and within ninety (90) days of the date of sampling, an annual report will be submitted to the ADEM discussing groundwater quality beneath the subject facility. The report will include a statistical analysis of groundwater in accordance with ADEM Administrative Code R. 335-13-4-.27(2)(l) and the Environmental Protection Agency (EPA) standards referenced in the *Statistical Analysis of Groundwater Monitoring Data at Resource Conservation Recovery Act (RCRA) Facilities Unified Guidance*, U.S. EPA, 2009 (Unified Guidance).

7.1 STATISTICAL PROCEDURES

In the application of statistics to groundwater monitoring data from this site, all data will be treated as independent and representative of the quality of groundwater at the site. Statistical methods used, and their application to data from this site, will be in general accordance with the EPA standards referenced in the Unified Guidance. The groundwater monitoring data will be analyzed statistically using the Sanitas statistical software or comparable statistical software.

Upon receipt of the laboratory analytical results, the results will be reviewed to assess the potential for statistically significant increases (SSIs) of detected target chemicals of concern (COCs) in groundwater samples collected from the monitoring well network. Statistical analysis will only be conducted for parameters that were reported in groundwater samples collected during each groundwater monitoring event.

Monitoring wells MW-1, MW-7 and MW-8 are designated as the background groundwater quality monitoring locations used for statistical evaluations. Monitoring wells MW-6, MW-10 and MW-12, will be used as compliance wells for the PCA Landfill.

7.2 TARGET CHEMICALS OF CONCERN

Target COCs for the PCA Landfill will include each of the Appendix I metals, alkalinity, chloride, and sulfate.

7.2.1 Double Quantification Rule

Pursuant to the Unified Guidance, when background sample data consists entirely of non-detects for a specific constituent, but there are detections above the laboratory detection limit in samples collected from compliance wells, then the Double Quantification Rule (DQR) can be applied. The DQR states that an SSI is declared when a constituent/compliance well pair displays consecutive quantified detections above the detection limit and the background contains only non-detects. If

there are no consecutive detects (either from scheduled events and/or sampling following a detection), then the constituent/compliance well pair is not subjected to statistical analysis.

In the event a target constituent is detected in a compliance monitoring well that has a history of non-detects, the DQR will be applied. If the constituent is detected during a retesting event, to be completed within two months of the original event, then that constituent/well pair will be subjected to statistical analysis as discussed in Section 7.3.5.

7.3 STATISTICAL ANALYSIS

7.3.1 Statistical Method for Detection Monitoring – Appendix I Metals

An inter-well statistical analysis will be completed for the determination of SSIs for Appendix I metals concentrations in groundwater samples collected from the compliance wells during each annual event. The type of statistical method that will be used for evaluating groundwater data will be the Parametric or Non-Parametric Prediction Limit analysis in accordance with ADEM Administrative Code R. 335-13-4-.27(2)(l)3. As discussed in Section 7.3.2, the decision to use Parametric or Non-Parametric analysis will depend on the percentage of non-detects for each constituent, and if required, the results of tests for normality for constituents with a non-detect rate of less than 50%.

7.3.2 Test For Normality

In accordance with the EPA Unified Guidance, a test for normality should be conducted to determine the appropriate statistical method to be used to evaluate groundwater analytical data as it relates to the distribution of the data. A test for normality will be completed for the appropriate constituents and will satisfy the performance standards required for the selection of the statistical procedures to be used at a facility in accordance with ADEM Administrative Code R. 335-13-4-.27(2)(m)1. It should be noted that any transformation performed on a dataset will be the same transformation used for subsequent statistical tests.

Typically, groundwater analytical data is subjected to a distribution analysis to determine if the data is normally distributed or can be transformed to a normal distribution using either log-normal or ladder of powers data transformations. If data is normally distributed, or can be transformed to create a normal distribution, a parametric statistical analysis is recommended. However, when the data contains a large percentage of non-detects (greater than 50%), the validity of distribution tests are questionable, suggesting that a non-parametric statistical analysis be used.

In order to determine if a parametric or non-parametric statistical analysis should be conducted, a test for normality will be completed for the detected constituent(s) with less than 50% non-detects in an effort to determine if the data set for the detected constituent(s) is normally distributed or can be transformed to a normal distribution. The Shapiro-Wilks Test for Normality will be used for constituents with less than 50 measurements and the Shapiro-Francia Test for Normality will be used for constituents with greater than 50 measurements, as discussed in Chapter 10 of the Unified Guidance.

If data is normally distributed, or can be transformed to create a normal distribution, a parametric statistical method will be used. Datasets that are determined to be normally distributed, using the referenced distribution analysis, will not undergo additional transformations according to ADEM Admin code r. 335-13-4-.27(2)(m)(1). When the data is not normally distributed, or cannot be transformed to create a normal distribution, a non-parametric statistical method will be used. Additionally, when the data contains a large percentage of non-detects (greater than 50%), the validity of distribution tests are questionable and it is suggested that a non-parametric method be used. The results for the tests for normality will be submitted in each annual groundwater monitoring report.

7.3.3 Tests for Outliers

Tests for outliers will be conducted in accordance with the Unified Guidance. In order to screen for outliers a Dixon's Test (for smaller sample sizes) or a Rosner's Test will be conducted if the data is determined to be normally distributed, and the Tukey's Outlier Screening will be utilized if the data is determined to not be normally distributed.

Prior to conducting outlier analysis, a test for normality will be conducted using either the Shapiro-Wilks or Shapiro-Francia Test for Normality, depending on the number of datapoints. If the normality test indicates that the data is normally distributed, then the Dixon's or Rosner's Outlier Analysis (depending on sample size), will be conducted. Per the Unified Guidance, a Rosner's test, as an alternative to Dixon's test, will be conducted if the sample size is at least 20 or more. In the event it is determined that the data is not normally distributed then the outlier analysis will be conducted using Tukey's analysis.

If an outlier is identified using either Dixon's/Rosner's or Tukey's, an attempt will be made to determine the cause of the outlier, i.e. lab error, field error, etc., if possible, and a determination will be made as to whether the outlier(s) should remain in, or be removed, from the dataset prior to

completing the statistical analysis. Justification for any identified outliers that remain in the dataset will be provided in each annual groundwater monitoring report.

It should be noted that additional datapoints may be removed from a data set even if they are not identified as outliers during outlier testing. These may include elevated non-detect values, that could potentially increase the prediction limit if included with detected values, etc. Datapoints will not be removed from the dataset without justification. Justification for the removal of any datapoints will be provided in each annual groundwater monitoring report, and subject to Department approval.

If an outlier is identified using one of the referenced outlier screenings, the datapoint will be identified with an (o) on the historical analytical summary pages in each annual report. Any additional datapoints that are removed prior to conducting statistical analysis (for example elevated non-detects, etc.) will also been identified with an (o) on the statistical analytical data summary pages in each annual report. Data points removed, and justification for their removal, will be provided in each annual report, and subject to Department approval.

7.3.4 Updating Background Datasets

Background screening will be conducted in accordance with the Unified Guidance for constituents analyzed using prediction limit analysis. Updating background datasets will be completed after four new compliance observations have been collected (every 2 years for sites undergoing annual groundwater monitoring). Following receipt of the results of the fourth monitoring event, either a t-test (non-detects ≤ 75%) or Wilcoxon rank-sum comparison (non-detects ≥ 75%) will be conducted.

Historical data in background wells MW-1, MW-7, and MW-8 will be evaluated. Should the comparison indicate no significant difference between the newer data and the existing background data, the newer data will be re-classified as background measurements and added to background. Should the comparison indicate a significant difference between newer data and historical background data, background will not be updated. Additionally, an investigation may be conducted using trend tests to determine if there has been a natural shift in background groundwater quality. Should an investigation indicate that there has been a natural shift in background quality the newer data will not be re-classified as background measurements and added to background without prior ADEM approval.

Results of the background screening will be submitted to the ADEM for review with the annual groundwater report following the results of the fourth monitoring event.

In the event a replacement monitoring well is installed, background samples will be collected from the replacement monitoring well on a quarterly basis as discussed in Section 4.5 of this Plan. Once four background samples have been collected, the historical dataset from the original well and the four newly acquired background samples will be analyzed using ANOVA to determine if the historical dataset for the original well should be combined with the current data from the new well.

Background screening using an Analysis of Variance (ANOVA) will be conducted for each of the Appendix I metals following the completion of background monitoring activities. Once the statistical dataset is established, the ANOVA analysis will be completed for background wells MW-1, MW-7, and MW-8 to determine if the background data should be pooled. If there is no significant difference between background wells, the background data will be pooled. Based on the ANOVA results, if there is a difference in mean concentrations between the background wells for a particular constituent, then intra-well analysis may be appropriate for said constituent. If a change to intra-well statistical analysis is indicated for one or more Appendix I metal, the GWMP will be revised accordingly and submitted to the Department for review and approval.

7.3.5 Sen's Slope/Mann-Kendall Statistical Evaluation – Indicator Parameters

According to the Unified Guidance, the Sen's Non-Parametric Estimator of Slope is a method of estimating the true slope (change over time) of analytical data. If the data shows an upward slope, there is evidence of an upward trend or increase in a constituent concentration. No identifiable trend would indicate no significant increase or decrease in a particular constituent concentration over time. A decreasing trend would indicate decreasing constituent concentrations over time. Since this method is non-parametric, it is considered suitable for a high percentage of non-detects and is not significantly affected by outliers.

During each annual groundwater monitoring event, samples are collected from the monitoring well network for analysis of alkalinity, chloride, and sulfate. In the event there is an initial exceedance of one of these parameters, the procedures discussed in Section 7.4 of this Plan will be initiated and will include a notification to the ADEM, as well as retesting of the well to confirm the existence of the constituent, if needed.

A Sen's Slope/Mann-Kendall statistical evaluation will be performed for each detected constituent/well pair that has been designated as an SSI to determine if there is an identifiable

trend in the target constituent concentration over time. Confidence intervals will also be generated for constituents identified as SSIs in compliance wells as discussed in Section 7.4.2 of this Plan.

7.4 IDENTIFICATION OF AN SSI (OR INITIAL EXCEEDANCE)

Should the statistical analysis confirm the presence of an initial exceedance for one or more target constituents over background groundwater quality, the Landfill will comply with the requirements of ADEM Admin. Code 335-13-4-.27(2)(n)3 and notify the Department within 14 days of the finding, and a retesting plan will be initiated in accordance with the Unified Guidance and this Plan as discussed in Section 7.4.1 below, if needed.

7.4.1 Retesting Plan

In the event there is an initial exceedance over background, the results will be verified by conducting one retesting event (1 of 2), if needed. The retesting event will be completed for each of the constituents in each of the monitoring wells that returned an initial exceedance, if needed, and will be completed within 30-90 days of the initial groundwater sampling event. It should be noted that an initial exceedance could be identified in the annual groundwater report as an SSI without conducting a retesting event if, for example, the detected concentration is consistent with historical concentrations. In the event a retesting event is not conducted for an initial exceedance (SSI) for a constituent/well pair, justification for not retesting will be provided in the annual groundwater monitoring report.

The results of the retesting event will be submitted to the ADEM as part of the annual report. If the results will not be available by the time the annual report is due to ADEM (90 days from the date of original sample collection) a request for an extension to the due date for the report will be submitted to ADEM in order to include the retesting results in the annual report. If the results of the retesting event indicate an SSI for a constituent/well pair, statistical analysis using confidence intervals will be conducted for those constituent/well pairs as discussed in Section 7.4.2.

7.4.2 Confidence Intervals

Confidence Intervals will be generated for each of the target constituents in each well that is in limited assessment monitoring. Confidence intervals will also be generated for each metal in each well that has been identified as an SSI through prediction limit analysis. The compliance limits (Groundwater Protection Standards [GWPS]) will be set at the EPA Maximum Contaminant Level (MCL), the EPA Regional Screening Level (RSL) for tap water if an MCL is not available, or at an

alternate background concentration with the approval of ADEM. If the constituent is in assessment monitoring, the lower confidence limit (LCL) will be compared to the GWPS.

If the results of the confidence intervals indicate an LCL above the GWPS, an assessment of corrective measures (ACM) will be initiated within 90 days unless a determination can be made that a source other than the Landfill unit caused the exceedance, or there was an error in sampling, analytical testing, or statistical analysis. When conducting the ACM, the upper confidence limit (UCL) will be compared to the GWPS. In the event there is a determination of an alternate source, a report will be submitted to the ADEM for approval and placed in the operating record.

7.5 REPORTING

In addition to statistical analysis discussed above, the annual report will also include, at a minimum, the following information:

- A discussion of the environmental setting of the facility.
- Summary tables of the laboratory analysis.
- Monitoring well sampling records.
- A table of historic groundwater elevations.
- Historical groundwater analytical results.
- Copies of the laboratory reports.
- Potentiometric surface map(s) illustrating groundwater elevation and flow direction.
- Time versus Concentration Graphs for each detected constituent.
- Other supporting figures, such as site and well location maps.

8.0 REFERENCES

Alabama Department of Environmental Management, Administrative Code R. 335-13-x-xx.

Alabama Department of Environmental Management, Boise White Paper LLC Industrial Waste Landfill , Solid Waste Disposal Permit No. 13-05, Issuance Date and Effective Date September 5, 2019, Most Recent Modification Date June 11, 2021, 2023, Expiration Date September 4, 2024.

Raymond et all. 2000. *Hydrogeology and Vulnerability to Contamination of Major Aquifers in Alabama: Area 10*: Geological Survey of Alabama.

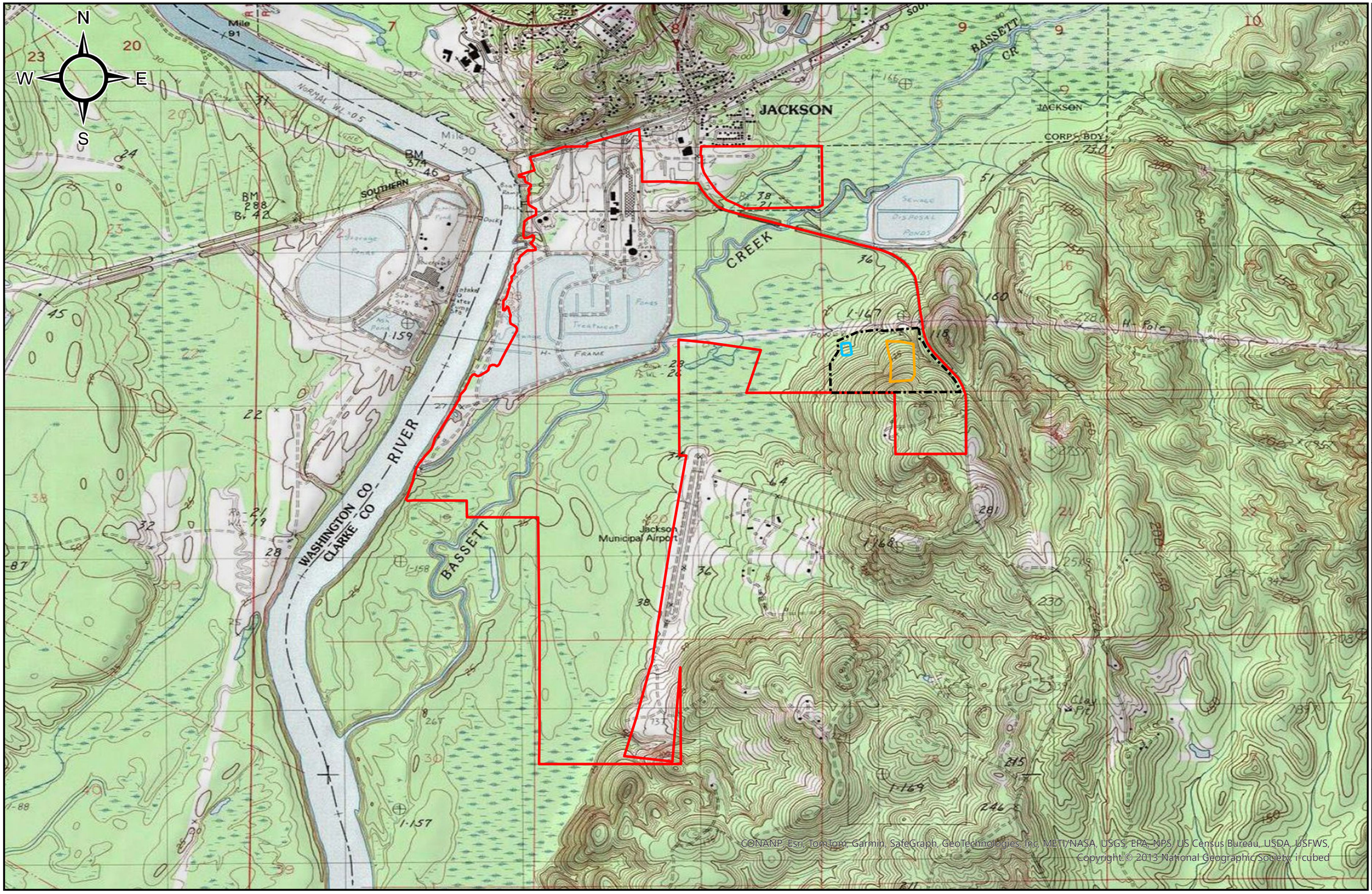
Geological Survey of Alabama, Special Map 220, Geologic Map of Alabama 1988.

PPM Consultants, Annual Landfill Groundwater Sampling Event of 2025, July 3, 2025.

US EPA Region II, Ground Water Sampling Procedure Low Stress (Low Flow) Purging and Sampling, September 2001.

US EPA, Office of Solid Waste, Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Unified Guidance, March 2009.

FIGURES



Legend

- Approximate Landfill Cell Area
- Approximate Sediment Pond Area
- Approximate Landfill Fence Area
- Approximate Property Boundary

SCALE:
0 1,000 2,000
1:24,000

TITLE:

Groundwater Monitoring Plan

Site Location Map

Packaging Corporation of America

Jackson, Alabama

FIGURE NO.	PROJECT NO.
1	2254125
DRAWN BY:	DRAWN DATE:
TH	09-18-2025

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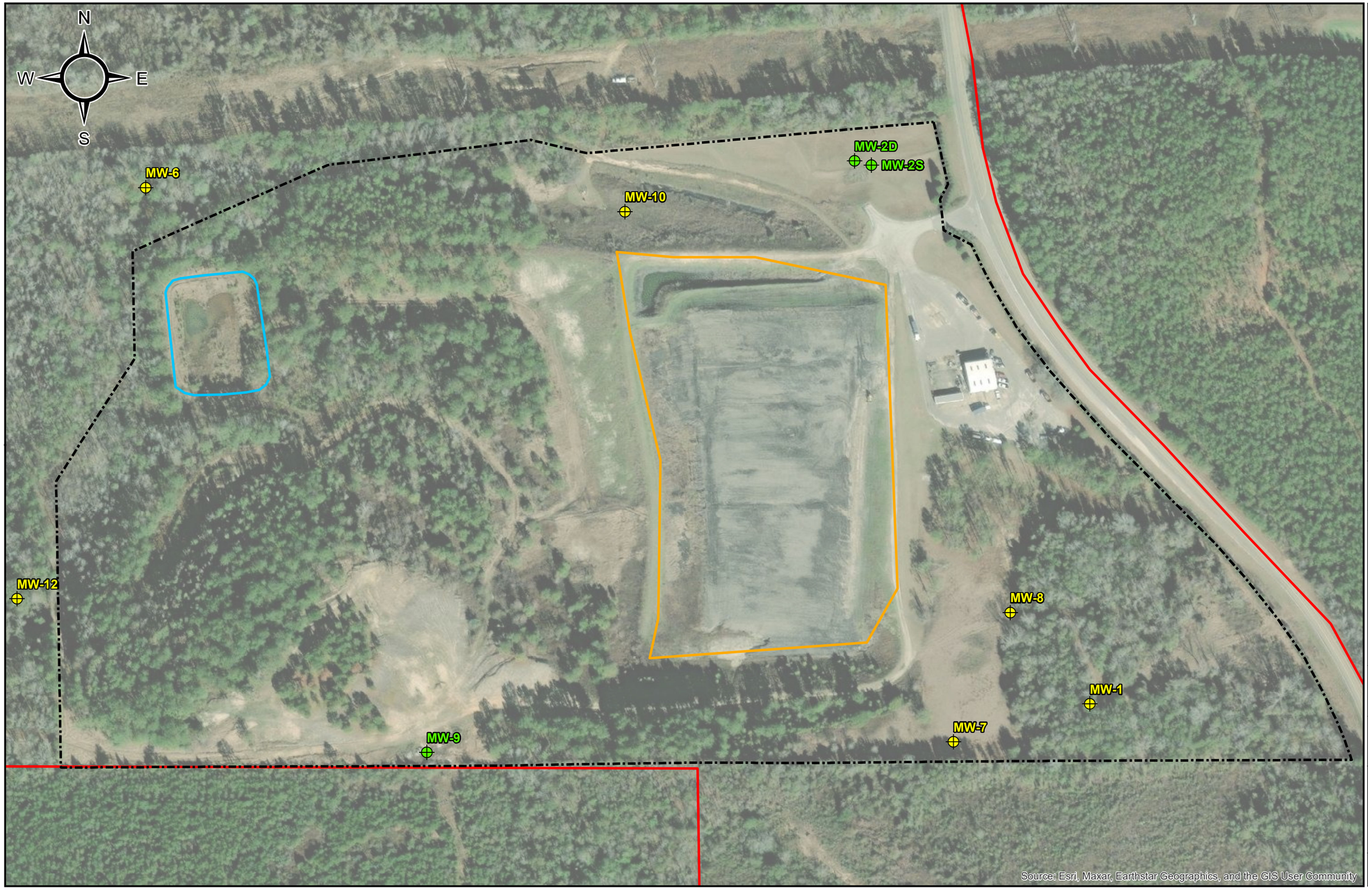
HOOVER, AL 35244
(205) 985-4874



Legend

- Monitoring Well
- Monitoring Well - Not Currently Included in Permit
- Approximate Landfill Cell Area
- Approximate Sediment Pond Area
- Approximate Landfill Fence Area
- Approximate Property Boundary

SCALE:
0 100 200
1 inch = 200 feet

TITLE:
Groundwater Monitoring Plan

Monitoring Well Location Map

Packaging Corporation of America

Jackson, Alabama

FIGURE NO.	PROJECT NO.
2	2254125

DRAWN BY:	DRAWN DATE:
AJH	08-06-2025

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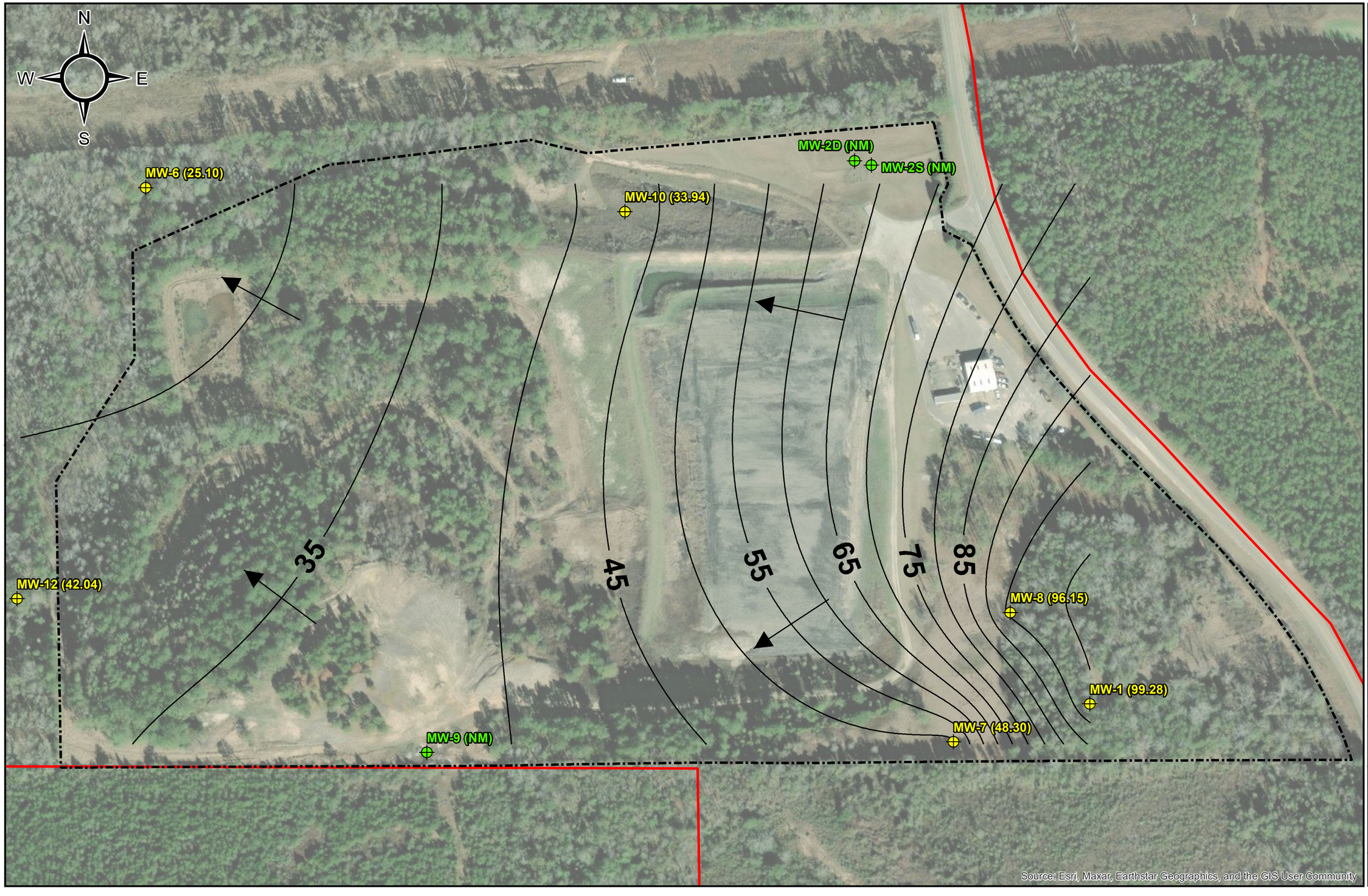

Legend

- Monitoring Well
- Monitoring Well - Not Currently Included in Permit
- Potentiometric Contour Line
- Flow Direction
- Approximate Landfill Fence Area
- Approximate Property Boundary

SCALE:
0 100 200
1 inch = 200 feet

TITLE:
Groundwater Monitoring Plan

Potentiometric Contour Map - March 2025

Packaging Corporation of America

Jackson, Alabama

FIGURE NO.	PROJECT NO.
3	2254125

DRAWN BY:	DRAWN DATE:
AJH	08-06-2025

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APPENDIX A

Appendix A Calculated Groundwater Flow Velocities March 2025						
Monitoring Well	Groundwater Elevation (ft-amsl)	Distance from up- to down- gradient well (feet)	Gradient (i)	Hydraulic Conductivity (cm/sec)	effective porosity (ne)	Estimated Flow Velocity (feet/year)
MW-7	48.03	1763.00		0.000001	0.10	
MW-12	33.94		0.0080	0.000001	0.10	0.083
MW-8	96.15	1851.00		0.000001	0.10	
MW-6	25.10		0.0384	0.000001	0.10	0.397
		average gradient	0.0232		average velocity	0.240

Notes:

1. Effective porosity value from Freeze & Cherry (1979) Table 2.4.
2. Hydraulic conductivity value from Freeze & Cherry (1979) Table 2.2.

ft-amsl - feet above mean sea level

cm/sec - centimeters per second

APPENDIX B

GROUNDWATER SAMPLING LOG

SITE NAME:	PROJECT:	PROJECT NO:
FIELD PERSONNEL/SAMPLER:	WEATHER CONDITIONS:	DATE:
WELL NO:	WELL DIAMETER (in):	PURGE PUMP TYPE OR BAILER:
TOTAL WELL DEPTH (feet):	SCREEN (feet):	
STATIC WATER LEVEL (feet):	TIME:	
DEPTH TO FREE PRODUCT (feet):		
LENGTH OF WATER COLUMN:		
WELL VOLUME (gallons):		

PURGING DATA

INITAIL PUMP OR TUBING DEPTH IN WELL (feet):	FINAL PUMP OR TUBING DEPTH IN WELL (feet):	
PURGING INITIATED AT:	PURGING ENDED AT:	TOTAL VOLUME PURGED (gallons):

TIME	DEPTH TO WATER (feet)	pH (standard units)	COND. (mS/cm)	TURBIDITY (NTUs)	DISSOLVED OXYGEN (mg/L)	TEMP. (°C)	REDOX (ORP) (mV)	COLOR	ODOR

REMARKS:

SAMPLING DATA

SAMPLE DATE:	SAMPLE TIME:	SAMPLE METHOD:

ANALYSIS AND/OR METHOD	VOLUME	#CONTAINERS	PRESERVATIVE USED:	COMMENTS:

REMARKS:

Verify Well Cap Secured and Locked*	**Yes:**		

CALIBRATION INFORMATION:

SAMPLED BY (PRINT):	SAMPLER(S) SIGNATURES:

LaBella Associates, D.P.C.
528 Mineral Trace
Hoover, Alabama 35244
Phone (205) 985-4874 Fax (205) 987-6080

APPENDIX C

APPENDIX C - MONITORING WELL SAMPLING RECORD

PROJECT NO:
PROJECT NAME: PCA Industrial Landfill
SITE LOCATION: Jackson, Alabama
RECORDED BY:

WELL NUMBER	MW-1	MW-7	MW-8	MW-6	MW-10	MW-12
GENERAL WELL DATA						
Top of Casing (TOC) Elevation (ft)	188.66	186.00	177.20	34.40	87.40	67.70
Original Total Depth (ft below TOC)	NR	NR	NR	NR	NR	NR
TOC Height (ft above/below grade)	NR	NR	NR	NR	NR	NR
Screened Interval (ft below grade)	95 - 105	164 - 174	108 - 128	15 - 25	57 - 77	47 - 57
Well Diameter (in)/Material	4 in./PVC	4 in./PVC	4 in./PVC	4 in./PVC	4 in./PVC	4 in./PVC
Current Well Condition	Good	Good	Good	Good	Good	Good
WATER LEVEL DATA						
Date (mm/dd/yyyy)						
Time (military)						
Measured Total Depth (ft below TOC)						
Static Water Level (ft below TOC)						
Static Water Elevation (ft - AMSL)						
WELL PURGE DATA						
Purge Date (mm/dd/yyyy)						
Purge Time (military)						
Minimum Purge Volume (gal)						
Actual Purge Volume (gal)						
Equipment Used						
WELL SAMPLING DATA						
Sampling Date (mm/dd/yyyy)						
Sampling Time (military)						
Weather Conditions						
Equipment Used						
Groundwater pH (std units)						
Specific Conductance (mS/cm)						
Turbidity (NTU)						
Dissolved Oxygen (mg/L)						
Groundwater Temperature (degrees C)						
Oxidation-Reduction Potential (mV)						
Number of Containers Filled						
Water Clarity						
Parameters to be Analyzed						

I certify that all water level measurement devices, purging equipment, and sampling equipment were properly cleaned prior to use in each well. Signature

REMARKS
NR = Not Recorded
NA = Not Applicable
NS = Not Sampled

LABELLA ASSOCIATES, D.P.C.
528 Mineral Trace
Birmingham, Alabama 35244
Phone (205) 985-4874 Fax (205) 987-6080

APPENDIX D

LABELLA ASSOCIATES, D.P.C.
528 MINERAL TRACE
BIRMINGHAM, ALABAMA 35244
PHONE: (205) 985-4874
FAX: (205) 987-6080
EMAIL:

Analysis Required

Remarks:

Collected By:	Project Name:	Laboratory Name:
Signature:	Project No.:	Laboratory Address:

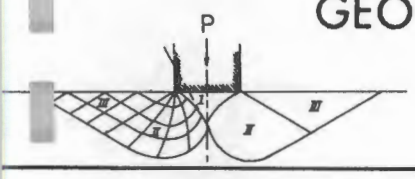
Sample ID	Lab ID	Comp/ Grab	Sample Matrix	Sample Date	Sample Time	Sample Preservative

Matrix: **SS** – Soil/Solid **GW** – Groundwater **WW** – Waste Water
DW – Drinking Water **SW –** Stormwater **OT** - Other

Special Instructions:

Relinquished By:	Date:	Time:	Received By:	Date:	Time:	Samples Shipped Via:
Relinquished By:	Date:	Time:	Received By:	Date:	Time:	Lab Remarks:
Relinquished By:	Date:	Time:	Received for Lab By:	Date:	Time:	

APPENDIX E



GEOTECHNICAL ENGINEERING-TESTING, INC.

904 BUTLER DRIVE
MOBILE, ALABAMA 36609
(205) 666-7197

LOG OF BORING

PROJECT: Boise Cascade Paper Proposed Landfill
JOB NO.: 87-219
ELEVATION: 187.0'

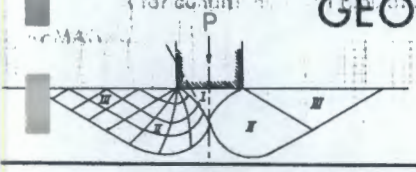
BORING NO.: B-1 (MW-1) N 1159, E 8898
TYPE BORING: ASTM D 1586
DATUM: MSL

LOCATION: Jackson, AL
DATE: 3/6-8/89
GR. WATER: El.96.1' *

DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	S.P.T. N_c	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	UNIT WT pcf	% MINUS #200	SHEAR STRENGTH	UNIFIED CLASS
0		Loose orange clayey sand	1	8								(SC)
10		Loose orange silty sand w/thin clay layer	2	7								(SM)
		Firm to dense orange fine sand w/traces of gravel	3	19		15				10.6		SP-SM
20			4	23								(SP-SM)
			5	30								(SP-SM)
30			6	31		16				10.4		SP-SM
		Dense orange fine to med.sand w/clay seams & traces of gravel	7	30								(SP-SM)
40			8	43								(SP-SM)
		Very dense orange and tan fine sand w/trace of gravel and clay seams @ 45'	9	83								(SP-SM)
50			10	82		21				6.6		SP-SM
			11	44								(SP-SM)
60			12	73								(SP-SM)
			13	91		24				8.3		SP-SM
70			14	79								(SP-SM)

NOTE: The stratification lines shown represent the approximate boundry between soil types and the transition may be gradual. The ground water level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

REMARKS: * Well screen 95' to 105'



GEOTECHNICAL ENGINEERING-TESTING, INC.

904 BUTLER DRIVE
MOBILE, ALABAMA 36609
(205) 666-7197

LOG OF BORING

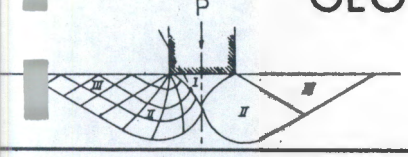
PROJECT: Boise Cascade Paper Proposed Landfill
JOB NO.: 87-219
ELEVATION: 187.0'
BORING NO.: B-1 (cont'd.)
TYPE BORING: ASTM D 1586
DATUM: MSL
LOCATION: Jackson, AL
DATE: 3/6-8/89
GR. WATER: El.96.1

DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	S.P.T. N_c	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	UNIT WT pcf	% MINUS #200	SHEAR STRENGTH	UNIFIED CLASS
70		Very dense tan and orange fine sand	14	79								(SP-SM)
			15	52								(SP-SM)
80		Hard light gray clay w/small amt. of sand	16	33		21	41	23				CL
		Very dense orange and tan fine sand	17	100+								(SP)
90		Dense tan fine to med. sand w/trace of gravel	18	43								(SP)
		Very dense gravel and tan fine to med. sand	19	82		32				4.6		GP
100		Very dense tan and orange silty sand w/gravel	20	100+								(SM)
			21	100+								(SM)
110		Hard orange sandy clay w/gravel and sand	22	100+		19	19	2				ML
		Hard light gray silty clay	23	45		19	46	33				CL
		B. T. @ 115.5'										
120												

NOTE: The stratification lines shown represent the approximate boundry between soil types and the transition may be gradual. The ground water level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

REMARKS:

GEOTECHNICAL ENGINEERING-TESTING, INC.



904 BUTLER DRIVE
MOBILE, ALABAMA 36609
(205) 666-7197

LOG OF BORING

PROJECT: Boise Cascade Paper Proposed Landfill
JOB NO.: 87-219
ELEVATION: 115.0'

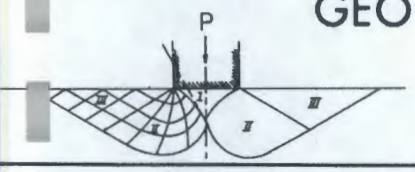
BORING NO.: B-2 (MW-2) N 2362, E 8388
TYPE BORING: ASTM D 1586
DATUM: MSL

LOCATION: Jackson, AL
DATE: 3/14, 4/13/89
EL + 89.6'*
GR. WATER: EL + 45.7'**

DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	S.P.T. N_c	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	UNIT WT pcf	% MINUS #200	SHEAR STRENGTH	UNIFIED CLASS
0		Dense orange fine to med.sand w/clay seams and trace gravel	1	30								(SP-SM)
10		Dense tan fine to coarse sand and gravel	2	40		8				6.5		SP-SM
		Dense orange silty sand w/clay seams	3	46								(SM)
20		Hard light gray clay w/thin sand layer	4	43		20	38	21				CL
		Dense orange fine to med. sand w/trace gravel & clay seams	5	30								(SP-SM)
30		Dense light gray fine sand	6	35		30				9.6		SP-SM
		Very stiff light gray silty clay	7	17		24	35	19				CL
40		Very stiff to hard gray-green clay w/ silt lenses	8	22		23	37	24				CL
			9	26		24	42	26				CL
50			10	40								(CL)
			11	66		25	44	26				CL
60		Very dense tan and orange silty sand	12	60		23						(SM)
			13	28								-
70		Hard gray-green silty clay	14	70		18	34	16				CL

NOTE: The stratification lines shown represent the approximate boundry between soil types and the transition may be gradual. The ground water level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

REMARKS: * Well screen 25' to 35'



GEOTECHNICAL ENGINEERING-TESTING, INC.

904 BUTLER DRIVE
MOBILE, ALABAMA 36609
(205) 666-7197

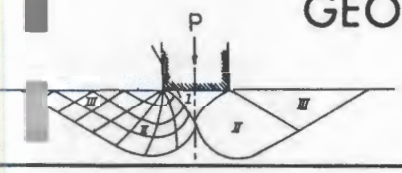
LOG OF BORING

PROJECT: Boise Cascade Paper Proposed Landfill
JOB NO.: 87-219
ELEVATION: 115.0'
BORING NO.: B-2 (cond't.)
TYPE BORING: ASTM D 1586
DATUM: MSL
LOCATION: Jackson, AL
DATE: 3/14,4/13/89
GR. WATER:

DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	S.P.T. N_c	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	UNIT WT pcf	% MINUS #200	SHEAR STRENGTH	UNIFIED CLASS
70		Hard gray-green silty clay	14	70		18	34	16				CL
			15	52		36						(CL)
80			16	100+		18	33	17				CL
			17	-								-
		Very dense orange silty sand w/traces of gravel										
90			18	53		25				15.3		SM
			19	100+		26				15.2		SM
00			20	100+		24				14.6		SM
		Hard orange sandy clay w/gravel	21	100+		25						(CL)
110		Hard gray-green clayey silty sand	22	58		24	26	5		28.5		SM-SC
		B. T. @ 110.5'										

NOTE: The stratification lines shown represent the approximate boundry between soil types and the transition may be gradual. The ground water level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

EMARKS:



GEOTECHNICAL ENGINEERING-TESTING, INC.

904 BUTLER DRIVE
MOBILE, ALABAMA 36609
(205) 666-7197

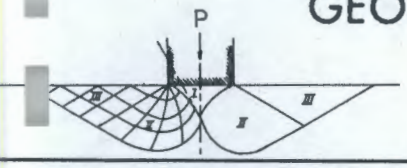
LOG OF BORING

PROJECT: Boise Cascade Paper Propose Landfill
JOB NO.: 87-219
ELEVATION: 31.2'
BORING NO.: B-5 (MW-5) N 1238, E 6194
TYPE BORING: ASTM D 1586
DATUM: MSL
LOCATION: Jackson, AL
DATE: 3/15/89
GR. WATER: EL24.5'*

DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	S.P.T. N_c	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	UNIT WT pcf	% MINUS #200	SHEAR STRENGTH	UNIFIED CLASS
0		Loose tan clayey silty sand	1	7								(SM)
10		Stiff tan and orange sandy clay	2	12		22	29	13				CL
		Dense tan fine sand	3	38		25				10.3		SP-SM
20			4	-								-
			5	20		26	27	8				CL
		Very stiff to hard gray-green sandy silty clay	6	33		29	30	14				CL
30			7	22		29	30	10				CL
		B. T. @ 35.5'										
40												

NOTE: The stratification lines shown represent the approximate boundry between soil types and the transition may be gradual. The ground water level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

REMARKS: * Well screen 17' to 27'



GEOTECHNICAL ENGINEERING-TESTING, INC.

904 BUTLER DRIVE
MOBILE, ALABAMA 36609
(205) 666-7197

LOG OF BORING

PROJECT: Boise Cascade Paper Proposed Landfill
JOB NO.: 87-219
ELEVATION: 34.4'
BORING NO.: B-6 (MW-6) (N 2335, E 7062)
TYPE BORING: ASTM D 1586
DATUM: MSL
LOCATION: Jackson, AL
DATE: 3/16/89
GR. WATER: EL 27.7'*

DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	S.P.T. N_c	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	UNIT WT pcf	% MINUS #200	SHEAR STRENGTH	UNIFIED CLASS
0		Firm to very loose tan silty sand w/thin clay layer	1	28		16				18.4		SM
10			2	0								-
		Dense tan fine to medium sand w/trace of gravel	3	40		12				4.4		SP
20		Firm gravel and tan fine to medium sand	4	29		8				1.1		GP
		Dense gray clayey silty sand w/s.a. wood	5	33								(SM)
30		Very stiff gray-green silty clay	6	20		23	40	21				CL
		B. T. @ 30.5'										

34.4
27
07.4

NOTE: The stratification lines shown represent the approximate boundry between soil types and the transition may be gradual. The ground water level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

REMARKS: * Well screen 15' to 25'

GEOTECHNICAL ENGINEERING—TESTING, INC.
LOG OF BORING

PROJECT: BOISE CASCADE PAPER INDUSTRIAL WASTE LANDFILL
JOB NO.: 90-134
ELEVATION: 186.0
BORING NO.: MW-7
TYPE BORING: ASTM D 1586
DATUM: MSL
LOCATION: JACKSON, ALABAMA
DATE: 2/13-26/90
GR. WATER: EL. +52.7 *

DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	S.P.T. N_c	w.c. %	ATTERBERG LIMITS LL.	ATTERBERG LIMITS P.I.	UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
0		Loose dark brown clayey silty sand	1	6								
		Loose red clayey sand	2	5								
		Loose to firm red & orange clayey silty sand w/trace gravel	3	7								
			4	12								
10		Firm orange fine to medium to coarse sand w/ small amount of pea gravel	5	15								
			6	15								
			7	18								
		Firm orange fine sand	8	24								
			9	27								
20			10	21								
			11	21								
		Firm tan fine sand w/gravel	12	23								
		Dense tan fine to medium sand w/4" gravel layer @ 26'	13	34								
			14	42								
30		Dense tan fine sand w/ trace gravel	15	32								
			16	39								
		Dense tan fine to medium sand w/ small amount gravel	17	32								
			18	36								
			19	24								
40			20	46								
		Very dense orange fine to coarse sand w/ gravel	21	57								
			22	55								
		Very dense gravel & tan fine to coarse sand	23	62								
		Dense tan fine sand & gravel w/ clay seams	24	48								
		Stiff lt. gray silty clay with gravel	25	23								
50			26	125								
			27	102								
			28	74								
			29	110								
			30	83								
60		Very dense tan, red & yellow fine sand with traces of gravel	31	112								
			32	93								
			33	78								
			34	66								
			35	60								
70			36	75								
			37	56								
			38	97								

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other

GEOTECHNICAL ENGINEERING—TESTING, INC.
LOG OF BORING

PROJECT: BOISE CASCADE PAPER INDUSTRIAL WASTE LANDFILL
BORING NO.: MW-7 (cont.)
LOCATION: JACKSON, ALABAMA

JOB NO.: 90-134
TYPE BORING: ASTM D 1586
DATE: 2/13-26/90

ELEVATION: 186.0
DATUM: MSL
GR. WATER: EL. +52.7 *

DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	S.P.T. N_c	w.c. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
80		Very dense tan, yellow & orange fine sand w/ traces of gravel	38	97								
			39	70								
			40	40								
			41	112								
			42	91								
			43	88								
			44	113								
90			45	38								
			46	189								
			47	49								
		Very stiff lt. gray clay w/ red spots	48	21								
			49	30								
100		Very dense tan fine to med. sand & gravel	50	130								
		Very dense brown fine to med. sand w/ gravel & clay layer	51	161								
		Very dense gravel	52	200+								
		Very dense orange fine to med. sand w/ gravel	53	370								
		Very dense orange fine sand and gravel	54	400								
110			55	34								
			56	55								
			57	59								
		Dense & very dense tan fine to medium to coarse sand and gravel	58	140+								
			59	51								
120			60	50								
			61	39								
			62	20								
			63	27								
		Very stiff to stiff dark gray clay	64	11								
130			65	11								
			66	13								
		Very stiff gray-green silty clay w/ sand lenses	67	33								
		Very dense gray-green silty sand w/ clay seams	68	67								
			69	41								
140		Hard & very stiff gray-green silty clay w/ sand lenses	70	24								
			71	55								
			72	72								
		Hard gray-green sandy clay	73	49								
			74	41								
150			75	23								

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

GEOTECHNICAL ENGINEERING—TESTING, INC.
LOG OF BORING

PROJECT: BOISE CASCADE PAPER
INDUSTRIAL WASTE LANDFILL
BORING NO.: MW-7 (cont.)
LOCATION: JACKSON, ALABAMA

JOB NO.: 90-134
TYPE BORING: ASTM D 1586
DATE: 2/13-26/90

ELEVATION: 186.0
DATUM: MSL
GR. WATER: EL. +52.7 *

DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	S.P.T. N_c	w.c. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
150			76	30								
			77	30								
		Hard & very stiff gray-green sandy clay	78	46								
			79	68								
			80	36								
160			81	18								
		Very dense yellow clayey silty sand	82	89								
			83	247								
		Very dense tan fine sand w/ clay seams	84	138								
			85	106								
170			86	300+								
		Very dense gray fine to medium sand w/ clay seams	87	133								
		B.T. @ 174.0 FT										
180												
190												

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

GEOTECHNICAL ENGINEERING–TESTING, INC.
LOG OF BORING

PROJECT: BOISE CASCADE PAPER INDUSTRIAL WASTE LANDFILL | JOB NO.: 90–134 | ELEVATION: 177.2

BORING NO.: MW–8 | TYPE BORING: ASTM D 1586 | DATUM: MSL

LOCATION: JACKSON, ALABAMA | DATE: 3–1–90 | GR. WATER: EL. +99.7 *

DESCRIPTION	SAMPLE NO.	S.P.T. N_f	S.P.T. N_c	w.c. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	1	4								
Loose to firm orange fine sand w/ small amount of pea gravel below 18'	2	9								
	3	12								
	4	17								
	5	17								
Firm orange fine to medium to coarse sand w/ small clay balls	6	27								
	7	44								
Dense & firm orange fine sand w/ 4" clay layer near 35'	8	27								
Very stiff tan clay	9	16								
Very dense orange & tan fine sand	10	52								
Firm tan & orange silty sand w/ clay layer and s.a. gravel	11	29								
Very stiff tan & orange sandy clay w/ sand layers	12	24								
	13	49								
Very dense & dense tan fine to medium sand w/ clay layers and gravel	14	31								
Very dense gravel	15	100+								

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

* Well screen set [illegible]

GEOTECHNICAL ENGINEERING—TESTING, INC.
LOG OF BORING

PROJECT: BOISE CASCADE PAPER INDUSTRIAL WASTE LANDFILL
BORING NO.: MW-8 (cont.)
LOCATION: JACKSON, ALABAMA

JOB NO.: 90-134
TYPE BORING: ASTM D 1586
DATE: 3-1-90

ELEVATION: 177.2
DATUM: MSL
GR. WATER: EL. +99.7 *

DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	S.P.T. N_c	w.c. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
80		Very dense gravel										
		Very dense red fine to med. sand w/ trace gravel	16	63								
			17	125								
90		Very dense to dense tan & red fine sand w/ gravel layer	18	36								
		Dense gravel	19	34								
100			20	54								
		Very dense tan & red fine to medium to coarse sand & gravel	21	75								
110			22	51								
		Very dense tan & red fine sand	23	100+								
120												
		Dense gray fine sand	25	49								
		Very stiff gray sandy clay	26	16								
130		B.T. @ 130.0 FT										
140												
150												

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

GEOTECHNICAL ENGINEERING—TESTING, INC.

LOG OF BORING

PROJECT: BOISE CASCADE PAPER INDUSTRIAL WASTE LANDFILL
JOB NO.: 90-134
ELEVATION: 177.3
BORING NO.: MW-9
TYPE BORING: ASTM D 1586
DATUM: MSL
LOCATION: JACKSON, ALABAMA
DATE: 3/7-8/90
GR. WATER: EL. +93.7 *

DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	S.P.T. N_c	w.c. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
0												
		Loose red clayey silty sand	1	6								
10			2	6								
			3	11								
20		Firm red & orange fine sand w/ s.a. pea gravel below 20'	4	31								
			5	26								
30			6	28								
		Firm red fine to medium sand w/ small pockets of white clay	7	30								
40			8	26								
		Dense fine to med. to coarse sand w/ pea gravel & pockets of white clay	9	45								
50		Dense orange fine sand	10	43								
		Firm orange fine to med. to coarse sand & gravel w/ pockets of white clay	11	22								
60			12	60								
			13	50								
70		Very dense orange, pink, tan, red, white & yellow fine sand w/ thin sandstone layers below 75'	14	56								
			15	66								

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

GEOTECHNICAL ENGINEERING—TESTING, INC.

LOG OF BORING

PROJECT: BOISE CASCADE PAPER INDUSTRIAL WASTE LANDFILL
BORING NO.: MW-9 (cont.)
LOCATION: JACKSON, ALABAMA

JOB NO.: 90-134
TYPE BORING: ASTM D 1586
DATE: 3/7-8/90

ELEVATION: 177.3
DATUM: MSL
GR. WATER: EL. +93.7 *

DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	S.P.T. N_c	w.c. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
80		Very dense orange, pink tan, red, white & yellow fine sand w/ thin sandstone layers below 75'	16	90								
			17	70								
90			18	80								
		Very stiff pink sandy clay w/ gravel	19	30								
100		Dense tan fine to med. to coarse sand & large gravel	20	46								
			21	40								
110			22	38								
		Dense gravel	23	33								
120		Very stiff yellow & lt. gray clay	24	30								
		B.T. @ 120.0 FT										
130		* Well screen set 96' to 116'										
140												
150												

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

GEOTECHNICAL ENGINEERING—TESTING, INC.
LOG OF BORING

PROJECT: BOISE CASCADE PAPER INDUSTRIAL WASTE LANDFILL
JOB NO.: 90-134
ELEVATION: 87.4
BORING NO.: MW-10
TYPE BORING: ASTM D 1586
DATUM: MSL
LOCATION: JACKSON, ALABAMA
DATE: 3/5/90
GR. WATER: EL. +46.4 *

DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	S.P.T. N_c	w.c. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
0												
		Firm to dense to very dense orange & tan fine sand w/ small amount gravel & clay seams	1	20								
10			2	26								
			3	45								
20			4	55								
		Dense to firm orange silty sand w/ small amount gravel	5	38								
30			6	19								
		Firm tan clayey silty sand	7	12								
40		Firm orange & tan silty sand	8	14								
		Firm orange fine sand	9	22								
50			10	25								
		Very stiff gray-green silty clay	11	23								
60			12	20								
			13	100+								
70		Very dense tan fine sand w/ thin clay layer	14	100+								
		B.T. @ 75.0 FT	15	100+								

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

GEOTECHNICAL ENGINEERING—TESTING, INC.

LOG OF BORING

PROJECT: BOISE CASCADE PAPER INDUSTRIAL WASTE LANDFILL
BORING NO.: MW-12
LOCATION: JACKSON, ALABAMA

JOB NO.: 90-134
TYPE BORING: ASTM D 1586
DATE: 3/6/90

ELEVATION: 67.7
DATUM: MSL
GR. WATER: EL. +40.3 *

DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	S.P.T. N_c	w.c. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
0												
			1	14								
10			2	18								
		Firm & dense tan, white & orange fine to medium sand w/ s.a. coarse sand near 15' & w/ traces of gravel &	3	36								
20		w/ clay seams throughout	4	45								
			5	28								
30			6	10								
			7	42								
40			8	50								
			9	38								
		Dense to firm orange & tan fine sand w/ clay seams										
50			10	32								
		67.7 57/10@.7	11	22								
		Very stiff gray-green silty clay w/ sand lenses										
60			12	16								
		B.T. @ 60.0 FT										
		* Well screen set 47' to 57'										
70												

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Boise White Paper, LLC
Jackson Mill
4585 Industrial Road
Jackson, AL 36545

June 13, 2024

Jared D. Kelly, Chief
Solid Waste Engineering Section
Land Division
Alabama Department of Environmental Management
1400 Coliseum Boulevard
Montgomery, AL 36110-2400

RE: Summary of Documents Relevant to Industrial Landfill Permit Renewal

Dear Mr. Kelly:

This letter is provided in response to your request dated May 16, 2024 for a summary list detailing the names and dates of any documents relevant to Boise White Paper, LLC's (Boise's) landfill permit renewal application. The information requested by the Department has been provided in order of the bullet items in your letter.

Any Current Variances and Special Conditions

Permit No. 13-05 currently contains the following variances and special conditions (Section VIII) that we request to remain in effect in the permit reissuance, as follows:

1. Continuing the existing variance from placement of weekly cover as required under ADEM Administrative Code R. 335-13-4-.23(1)(a);
2. Continuing the existing variance from monitoring of explosive gases in accordance with ADEM Administrative Code R. 335-13-4-.16;
3. Continuing the existing variance granting annual groundwater monitoring in lieu of semi-annual groundwater monitoring (see Section IV.B.1 of current permit);
4. Continuing the existing variance from ADEM Administrative Code R. 335-13-4-.12(2)(f) requiring a 100-foot buffer along the southern boundary of the landfill.

Variance items 1 and 2 listed above were requested in the initial permit application submitted by Boise Cascade Corporation to the Department submitted in 1990. ADEM approved these requests but did not send a formal approval letter. The initial Permit No. 13-05 was granted by ADEM to Boise Cascade Corporation in 1991, and this initial permit included variance items 1 and 2. These variance items have remained

in each landfill permit modification and reissuance issued by ADEM since 1991.

On July 16, 2013, Boise submitted a five-year permit renewal application (ADEM Document No. 13-05 025 07-16-2013 PERM PJL 01985 Renew & Mod Application) that repeated the requests for variance items 1 and 2 and also requested variance item 3 for annual groundwater monitoring instead of semi-annual groundwater monitoring. Although no formal response letter was sent to Boise, ADEM granted these requests with the permit reissuance on May 2, 2014 (ADEM Document No. 13-05 025 05-02-2014 PERM PJL 01985 Renewal Permit) and variance items 1, 2, and 3 listed above were summarized in Section VIII of the 2014 permit.

On October 16, 2018, Boise submitted a five-year permit renewal application (ADEM Document No. 13-05 025 10-16-2018 PERM PJL 01985 Renewal & Variance Application) that repeated the requests for variance items 1, 2 and 3 and also requested variance item 4. Although no formal response letter was sent to Boise, ADEM granted these requests with the permit reissuance on September 5, 2019 (ADEM Document No. 13-05 025 09-05-2019 PERM PJL 01985 Renewal & Variance Permit) and variance items 1, 2, 3, and 4 listed above were summarized in Section VIII of the 2019 permit.

Copy of the Original Local Approval and Any Subsequent Local Approvals

Boise has searched its files and has not located a copy of the original local approval or any subsequent local approvals for Permit No. 13-05. Boise has also searched ADEM's electronic filing system (app.adem.alabama.gov/eFile) and failed to find a copy of the original local approval for Permit No. 13-05.

Siting Requests and Approvals Relevant to Current Operations

The landfill siting requests were addressed in the initial permit application submitted by Boise to the Department in 1990. There have been no proposed changes to siting since the original permit application.

Hydrogeological Evaluation Relevant to Current Operations

The hydrogeological evaluation for the industrial landfill was prepared by Russ Fetrow Engineering, Inc. (ADEM Document No. 13-05 025 10-13-1989 CORR PJL 01985 Geotechnical Assessment) in August 1989. A supplemental soils evaluation was prepared by Geotechnical Engineering Testing, Inc. in March 1990 (ADEM Document No. 13-05 025 04-26-1990 CORR PJL 01985 Soils Explorations & Geotechnical Engineering Study).

Stormwater Runoff Calculations Used to Size Sediment Ponds Relevant to Current Operations

Stormwater runoff calculations were provided to the Department as Appendix F to the

permit renewal application submitted on February 28, 2024 (ADEM Document No. 13-05 025 02-29-2024 PERM CBH Renewal Application).

Liner and Leachate QA/QC Plan Relevant to Current Operations

The construction QA/QC plan relevant to current operations was prepared by RMT, Inc. in January 1997 prior to construction of the second cell. This QA/QC plan is relevant to current operations at Boise's landfill. The landfill leachate is collected from the industrial landfill and pumped to Boise's effluent treatment system for sedimentation and biological treatment prior to discharge through outfall DSN 001 to the Tombigbee River in accordance with NPDES Permit No. AL0002755. (see Appendix A)

Most Recent Operations Plan and Any Additional Modifications Made

The current Operations Plan was provided to the Department as Appendix B to the permit renewal application submitted on February 28, 2024 (ADEM Document No. 13-05 025 02-29-2024 PERM CBH Renewal Application). No substantive modifications were made since the previous operations plan was submitted with the October 2018 renewal application.

Most Recent Closure Plan and Any Modifications Made

Boise submitted a modified closure plan drawing to ADEM on December 7, 2001 (ADEM Document No. 13-05 025 12-07-2001 PERM 01985 Overall Grading Plan). The 2001 closure plan drawing is the most recent and current plan for landfill closure. Additional detail drawings related to landfill closure are provided with this letter.

Most Recent Groundwater Monitoring Plan and Any Additional Modifications Made

The current Groundwater Monitoring Plan was provided to the Department as Appendix E to the permit renewal application submitted on February 28, 2024 (ADEM Document No. 13-05 025 02-29-2024 PERM CBH Renewal Application). No substantive modifications were made since the previous plan was submitted on April 17, 2019 in support of the October 2018 renewal application.

Cell Certification and Subsequent Approval Letter from ADEM

The landfill cells were included in the initial permit application from 1990 and are shown in the drawings provided in Appendix C to the permit renewal application submitted on February 28, 2024 (ADEM Document No. 13-05 025 02-29-2024 PERM CBH Renewal Application). Certifications by a registered professional engineer in the State of Alabama for the clay liner, geosynthetic liner, and the leachate collection system for Cell 2 were prepared by RMT, Inc. in September 1997 and provided to ADEM.

Most Recent Permit Drawings Relevant to Site Operations

The following permit drawings relevant to site operations were provided in Appendix C to the permit renewal application submitted on February 28, 2024 (ADEM Document No. 13-05 025 02-29-2024 PERM CBH Renewal Application):

- Facility Boundaries (Drawing No. D-271-025-1036)
- Final Grading and Sections (Drawing No. D-271-025-1038)
- Phasing and Development Plan (Drawing No. D-271-025-1039)

As noted above, the most recent closure plan drawing was submitted to ADEM on December 7, 2001 (ADEM Document No. 13-05 025 12-07-2001 PERM 01985 Overall Grading Plan).

Boundary Plat and Legal Property Description Prepared, Signed and Sealed by Land Surveyor

The boundary plat and legal property description should have been submitted as part of the initial permit application in 1990. Boise has searched its files and has also searched ADEM's electronic filing system (app.adem.alabama.gov/eFile) and failed to find a copy of the original boundary plat and legal property description. As we discussed, we will have the landfill surveyed to produce an updated boundary plat and property description and submit it to ADEM at a later date.

Boise White Paper, LLC appreciates your consideration of the additional information provided with this letter in support of the reissuance of the facility's permit 13-05. If you have any additional questions, please do not hesitate to contact me at (251) 246-8282.

Sincerely,

Boise White Paper, LLC

Jonathan R. Abston
Environmental Manager
Jackson Mill

Enclosures

Appendix A
Construction Specifications

TECHNICAL SPECIFICATIONS
SOLID WASTE LANDFILL DEVELOPMENT
CELL #2 CONSTRUCTION
AND SITE IMPROVEMENTS

BOISE CASCADE
JACKSON, AL

January 1997

Prepared by:
RMT, Inc.

TABLE OF CONTENTS

SECTION 02071
MONITORING WELL PROTECTION

1. GENERAL

1.1 REQUIREMENTS INCLUDED

A. Protection of monitoring wells.

B. Grade adjustment of wells by OWNER or ENGINEER, if required.

C. Repair or replacement of damage to wells by OWNER or ENGINEER at the expense of the CONTRACTOR, if required.

2. PRODUCTS

Not used.

3. EXECUTION

3.1 PROTECTION

A. Protect all existing monitoring wells from damage. Clearly mark all monitoring wells prior to commencement of Work.

B. Prevent infiltration of surface water, other water, soil, and any foreign materials.

C. Use hand equipment when excavating, filling, or conducting other operations around monitoring wells.

D. Notify OWNER immediately of any and all damage to monitoring wells.

3.2 ADJUSTMENT

If required, the CONTRACTOR will perform the grade adjustment of the wells at the request of the OWNER and ENGINEER.

3.3 REPAIR OR REPLACEMENT

If required, the CONTRACTOR, OWNER and ENGINEER will perform the repair or replacement of the well as follows:

A. CONTRACTOR will repair any well damaged by the CONTRACTOR's or its subcontractor and/or supplier's operations by excavating below the broken casing, extending PVC to previous grade, and replacing protective casing and top seal as specified for adjustment.

B. ENGINEER will observe the damaged well to determine if well is contaminated. If further repair or replacement is needed, it shall be done at no expense to the OWNER or ENGINEER.

C. ENGINEER and/or OWNER will decide if repair or replacement of existing monitoring wells is necessary. The work shall be conducted by the CONTRACTOR at the expense of the CONTRACTOR.

END OF SECTION

SECTION 02111
STRIPPING, TOPSOIL REMOVAL, AND STOCKPILING

1. GENERAL

1.1 WORK INCLUDED

A. Stripping shall consist of excavating to a depth sufficient to remove all vegetable matter and sod.

B. Erosion and sediment control measures shall be provided in accordance with applicable state and local regulations and as shown on the drawings. All erosion control features shall be in place prior to removal of existing vegetation and shall be maintained throughout the duration of the earthwork operation. Obtain all necessary permits for grading operations.

C. Topsoil removal and stockpiling shall consist of stripping all topsoil and stockpiling it for later operations in connection with finish grading. Stockpile locations shall be approved by the OWNER.

1.2 RELATED WORK

A. SECTION 02200 - Earthwork

B. SECTION 02270 - Slope Protection and Erosion Control

2. PRODUCTS

Not applicable.

3. EXECUTION

3.1 Stripping. Within the designated areas as shown on the drawings, excavate to a depth sufficient to remove all vegetable matter, sod, topsoil (6" min.). The OWNER will identify the material to be removed.

3.2 Material removed as a result of the stripping operation, and not classified as topsoil or suitable fill material, shall be wasted on-site as directed by OWNER.

3.3 Stockpiling. All excavated topsoil suitable for reuse shall be stockpiled in areas designated by the OWNER and where the stockpiles will not impede job progress or collect debris generated by the job construction. The stockpiles shall be neatly shaped and free to drain with a minimum cross slope of 2%. Side slopes shall be 3:1 or flatter. Erosion control features shall be constructed and maintained until the area is revegetated and stable growth is obtained.

END OF SECTION

SECTION 02200
EARTHWORK

1. GENERAL

1.1 RELATED WORK

A. Section 02111 - Stripping, Topsoil Removal, and Stockpiling

B. Section 02250 - Soil Compaction Control and Test

C. Section 02270 - Slope Protection and Erosion Control

1.2 Work under this section generally consists of furnishing all labor, equipment, materials, and incidentals necessary to complete the excavation and fill operations required for the project.

1.3 Before beginning any Work specified in this section, ensure that all soil erosion and sediment control specifications are complied with and the proper state, county, or local authorities have been duly informed of the construction schedule. All erosion control features shall be installed prior to commencing earthwork operations and maintained throughout the duration of the work.

1.4 Geotechnical Engineer. A qualified geotechnical engineer/soils engineer will be retained to conduct tests and make recommendations. All earthwork shall be observed by the soils engineer or OWNER'S representative for conformance to the specifications.

1.5 Field Engineering. The CONTRACTOR shall establish all lines and grades necessary to accomplish the work.

1.6 The CONTRACTOR shall examine the site and the plans thoroughly to determine the existing conditions and the difficulty of the work to be performed and to establish a schedule for the grading operations. Schedule to be approved by OWNER.

1.7 PROTECTION

A. Existing facilities, services, and pipelines on, above, or under the surface of the area where earthwork operations are to be performed and which are not designated for abandonment, relocation or removal shall be protected from damage during construction operations. If such facilities are damaged, they shall be repaired to the satisfaction of the OWNER and at no expense to the OWNER.

B. All benchmarks, permanent monuments, and property corners shall be protected from disturbance or destruction. Any such point disturbed or destroyed shall be immediately replaced by qualified surveyors at no expense to the OWNER. Documentation of any such relocation shall be given to the OWNER.

C. Protect from any movement, damage or settlement all existing or new construction, utilities, piping, monitoring wells, conduit, or any other structure designated to remain. Provide bracing, sheeting, shoring, underpinning or other retaining structures necessary to provide proper protection.

1.8 Excavation shall include the satisfactory removal, loading, hauling, placing either in areas to be filled or other designated area depending on the classification of the material excavated, and spreading of all materials encountered regardless of the nature of the materials.

1.9 Fill shall include any adjustment to moisture content required as specified herein, compaction and shaping of suitable fill material to form finished surfaces suitable for their intended use. Fill shall include backfill of areas excavated of unsuitable material, embankments, berms, and general fill.

1.10 Excavation and filling operations shall be performed in a manner and sequence that will provide adequate drainage at all times. When required, provide temporary drains, ditches, pumps, drainage lines, or other equipment to intercept, divert, or remove water which may affect the execution or condition of the work. Water shall be satisfactorily removed from the site. The operation of earthwork shall be suspended at any time when satisfactory results cannot be obtained because of inclement weather, or other unsatisfactory conditions in the field. At all times provide and maintain proper drainage for the working area limits.

1.11 If it is necessary during the execution of the work to interrupt existing surface drainage, or utilities, all necessary precautions to protect and preserve or provide temporary services for same shall be taken.

1.12 SUBMITTALS

A. Comply with OWNER'S general and special conditions.

B. Verify in writing, before placement, that all "Fill" conforms to the specifications in Section 02200.

C. Submit laboratory test results within one week of obtaining the samples.

D. The submittal for the "General Fill" shall include the results from the following analyses: Natural Moisture Content, Standard Proctor, Atterberg limits and Grain Size.

E. The submittal for the "Select Clay Fill" shall include the results from the following analyses: Natural Moisture Content, Standard Proctor, Atterberg limits, Grain Size and Hydraulic Conductivity (Permeability). The Hydraulic Conductivity test shall be performed on a sample of select clay fill remolded to 95 percent of the Standard Proctor (ASTM D 698) maximum dry density at 2 percent over the optimum moisture content.

F. The submittal for the "Aggregate Fill (Gravel)" shall include the results from the following analyses: Grain Size.

G. The submittal for the "Granular Fill (Sand)" shall include the results from the following analyses: Grain Size.

H. Submit two copies to: RMT, Inc., 100 Verdae Blvd., Greenville, SC 29607-3825; Attention: Solid Waste Management (Geotechnical) Department; and one copy to the on-site OWNER'S REPRESENTATIVE.

1.13 SITE CONDITIONS

A. The OWNER will locate existing underground utilities in the areas of work. If utilities are to remain in place the CONTRACTOR will be responsible for providing adequate means of support and protection during earthwork operations. Should uncharted, or incorrectly charted, piping or other utilities be encountered during excavation, consult the OWNER immediately for directions. The CONTRACTOR will cooperate with the OWNER in keeping respective services and facilities in operation.

2. PRODUCTS

2.1 MATERIALS

A. General Fill Material (Bedding Soil and Grading Soil Layers)

Non-waste material from on-site earthwork operations or borrow material of such type and characteristics approved by the ENGINEER. It shall have a plasticity index of less than 30, a maximum dry density of at least 90 pounds per cubic foot, and a maximum particle size of 1.5 inches. No broken concrete, demolition material, frozen material, topsoil, nor any material designated as unsuitable material or as waste fill material shall be used for general fill material.

B. Unsuitable Fill Material

Waste material and non-waste material from on-site earthwork operations including grass, weeds, vegetation of any type, roots, trash, boulders, debris, demolition materials, or any layer, strata, formation, or deposit of soil determined by the soils ENGINEER to be unsuitable for use as select clay fill, topsoil, topsoil substitute, general fill, or any other intended purpose. No material will be classified as unsuitable solely on the basis of excessive moisture content.

C. Borrow Material

Borrow material shall be selected to meet requirements and conditions of the particular fill or embankment for which it is to be used. Borrow material shall be obtained from borrow sites approved by the ENGINEER. CONTRACTOR shall be responsible for obtaining, placing, testing and compacting any borrow material required.

D. Select Clay Fill

Select clay fill shall consist of natural clay classified as CL, CH or SC MH according to the Unified Soil Classification System and meeting the following requirements:

1. Maximum clump size of 8 inches and capable of being broken down with normal construction equipment.

2. Maximum permeability of 1×10^{-7} cm/sec when compacted to 95 percent of its Standard Proctor maximum dry density (ASTM D698) at moisture contents within an "acceptable zone" defined by the relationship between moisture content, dry density, and permeability. An acceptable zone shall be established for each type

of "select clay." The CONTRACTOR shall provide sufficient water to obtain and maintain the specified moisture content. Moisture shall be uniformly distributed by tilling, plowing or a method approved by the OWNER'S REPRESENTATIVE. Material with excessive moisture content shall be dried prior to compaction operations.

3. Less than 5 percent gravel or crushed stone with a maximum particle size of 0.5 inch.

E. Granular Fill (sand):

1.

Sieve Size	Percent Passing
1/2 inch	100
3/8 inch	90-100
#4	60-100
#8	40-85
#50	10-25
#200	0-5

2. Granular Fill to be furnished by the CONTRACTOR.

3. Granular fill shall be pre-approved by the ENGINEER.

4. Limestone and dolomite stone will not be used for granular fill.

5. Granular fill will be rounded to sub-angular.

6. Minimum hydraulic conductivity shall be $1x10^{-2}$ cm/sec.

F. Aggregate Fill (Gravel): #67 AHD

1.

Sieve Size	Percent Passing
1 inch	100
3/4 inch	90-100
3/8 inch	20-55
#4	0-10
#8	0-5

2. Aggregate Fill to be furnished by the CONTRACTOR.

3. Aggregate Fill used for corrugated drain pipe bedding will be rounded to sub-angular.

4. Material used in the landfill for bedding and backfill of perforated leachate collection pipe shall be free of limestone and dolomite, or other materials containing greater than 15% carbonate.

5. Aggregate fill shall be pre-approved by the ENGINEER.

6. Minimum hydraulic conductivity shall be 1×10^{-2} cm/sec.

3. EXECUTION

3.1 All erosion and sediment control measures shall be in accordance with applicable state and local regulations and as shown on the drawings. All erosion control features shall be in place prior to commencing earthwork operations.

3.2 Preparation of ground surface for fill: Existing sloped ground surfaces steeper than 4 horizontal to 1 vertical on which fill is to be placed shall be plowed, stepped, or benched in such manner that the fill material will bond with the existing surface. Prepared surfaces on which compacted fill is to be placed shall be wetted or dried as may be required to obtain the compaction specified herein.

3.3 EXCAVATION

A. Excavation shall be classified as "common excavation."

B. Excavation of every description regardless of material encountered within the grading limits of the project shall be performed to the line and grades indicated on the drawings. Excavated material suitable for its intended use shall be transported to and placed in fill areas within limits of the work. In the event water is encountered during excavation, all necessary measures to control ground water shall be implemented.

C. Borrow operations: Borrow material shall be selected to meet the requirements and conditions of the particular fill or embankment for which it is to be used. Borrow material shall be obtained from borrow areas to be determined. Excavation, loading, hauling and placing the material shall also be considered related operations to the cost of borrow material. Only material approved as suitable by the ENGINEER shall be delivered to the site.

D. Utilization of Excavated Materials: Material removed during borrow operations and classified as unsuitable for Select Clay Fill, General Fill, or Topsoil shall be retained within the limits of the borrow area for use in the final grading of the borrow areas.

Material classified as Topsoil shall be stripped and retained to be spread as part of the revegetation operation for the cap and the borrow area.

Material classified as General Fill shall be used as bedding and grading soil and in construction of fills, as backfill or similar purposes indicated on the drawings. Excess excavated material suitable for general fill shall remain in the Borrow Area until used in the final grading operation or stockpiled for future use.

Materials classified as Select Clay Fill shall be used for the clay layer in the liner.

3.4 SITE PROOFROLLING

A. After the site has been initially graded and prior to the placing of any fill, liner or facilities thereon, the site shall be proofrolled with a fully-loaded tandem-axle dump truck or similar equipment to detect any unstable area. The proofrolling shall be observed by a qualified

geotechnical engineer. Any areas which pump or rut excessively shall be undercut and backfilled with suitable general fill or scarified and re-compacted. Following successful completion or proofrolling and remedial work, fill placement may begin.

3.5 GENERAL FILL PLACEMENT

A. Fills, backfills, and embankments shall be constructed at the locations and to the lines and grades indicated on the drawings. Only approved material shall be used in the construction of fills, backfills, and embankments. Soil material for fills, backfills, and embankments shall be placed in successive horizontal layers of not more than 10 to 12 inches in loose depth for the full width of the fill unless otherwise indicated. Each lift for embankments shall be constructed at least one foot beyond the slope line and cut back to line and grade after completion. Each layer shall be spread uniformly on a prepared surface; *i.e.*, a soil surface that has been moistened or aerated as necessary to maintain the range of moisture content as specified herein and scarified, or otherwise broken up in such a manner that the fill will bond with the surface on which it is being placed.

B. The CONTRACTOR shall place and compact general fill to 95 percent of the maximum dry density as determined by Standard Proctor (ASTM D 698), at ±3 percent of the optimum moisture content.

C. The CONTRACTOR shall provide sufficient water to obtain and maintain the specified moisture content. Moisture shall be uniformly distributed by tilling, plowing or a method approved by the OWNER'S REPRESENTATIVE. Material with an excessive moisture content shall be dried prior to compaction operations.

D. Fill shall be compacted with multiple passes of the appropriate compaction equipment as approved by the OWNER'S REPRESENTATIVE.

E. Backfill around structures shall be compacted, by hand or small compactor within 4 feet of the structure, to a density of 95% of maximum dry density based on the Standard Proctor Test (ASTM D 698 or ASHTO T99) at ±3 percent of the optimum moisture content.

3.6 SELECT CLAY FILL PLACEMENT

A. The clay liner shall be constructed at the location and to the lines and grades indicated on the drawings and as specified herein. Only approved material shall be used in this construction. The select clay fill shall be placed in compacted lift thicknesses not exceeding 8 inches. It shall be compacted with multiple passes using appropriate compaction equipment as approved by the OWNER'S REPRESENTATIVE. Each layer shall be spread uniformly on a prepared surface, *i.e.*, a soil surface that has been moistened or aerated as necessary to maintain the percentage of moisture content as specified herein and scarified, or otherwise broken up in such a manner that the fill will bond with the surface on which it is being placed.

B. The CONTRACTOR shall place and compact the select clay fill to at least 95 percent of the maximum dry density as determined by the Standard Proctor (ASTM D 698), at moisture contents within an "acceptable zone" defined by the relationship between moisture content, dry density, and permeability. An acceptable zone shall be established

for each type of "select clay" and shall be approved by engineer or owner's representative.

C. The CONTRACTOR shall provide sufficient water to obtain and maintain the specified moisture content. Moisture shall be uniformly distributed by tilling, plowing or a method approved by the OWNER'S REPRESENTATIVE. Material with excessive moisture content shall be dried prior to compaction operations.

D. If an area of the select clay layer fails to meet the testing requirements, re-working that section of the clay layer will be required. Re-working shall be defined by the ENGINEER. Re-working typically consists of scarifying, moisture conditioning or aerating, blending and re-compacting the surface with the appropriate equipment.

E. The final surface of the clay layer shall be rolled with a smooth drum roller to prepare the surface for laying of the geomembrane.

3.7 AGGREGATE AND GRANULAR FILL PLACEMENT

Refer to Specification Section 02221 -- Trenching, Backfilling and Compaction for pipe bedding and backfill placement. Refer to Specification Section 02271 - Geotextiles for placement of aggregate and granular fill used in the leachate collection system.

3.8 FIELD QUALITY CONTROL

The following tests will be performed by under provisions of Section 02250:

A. Select Clay Fill:

1. One field density test will be performed on an approximate 100 by 100 foot (10,000 square feet) grid pattern for each lift.

2. Representative soil samples will be collected from the select clay borrow source and analyzed for Atterberg Limits, grain-size analyses (sieve and hydrometer), moisture-density relationship using Standard Proctor Compaction, and moisture content, for every 4,000 cubic yards of clay placed.

3. For every 4,000 cubic yards of clay placed, at least one hydraulic conductivity test (ASTM D5084) shall be performed on the sample remolded to cover a range of moisture contents and densities. The moisture content and density of the specimens subjected to permeability testing shall be plotted on the Proctor graph, with the corresponding permeability results.

4. One permeability test will be performed on an undisturbed Shelby tube sample obtained from each acre (43,560 square feet) per lift of select clay placed. In addition, one grain size (P200 content), one Atterberg Limits test, and one moisture-dry density determinations will be performed on a sample obtained from each acre per lift of select clay placed.

B. General Fill

1. One field density test will be performed for every 500 cubic yards of fill placed, but not less than three tests, under provisions of Section 02250.

2. Representative soil samples will be collected for every 10,000 cubic yards of fill placed and when noticeable material changes occur. Moisture/density relationships for each sample will be established using Standard Proctor Compaction ASTM D 698.

C. Aggregate Fill (Gravel):

1. Field tests will not be performed.

2. Before the material is placed, the CONTRACTOR shall submit certifications to the OWNER that the material meets the specified sieve size gradation and minimum hydraulic conductivity, and the material is free of limestone and dolomite.

D. Aggregate Fill (Sand):

1. Compaction testing will be performed at the discretion of the OWNER under the provisions of Section 02250. In the event that inadequate compaction is indicated, the material shall be re-worked until a passing test is obtained. All costs of the additional testing will be the responsibility of the CONTRACTOR.

2. Before the material is placed, the CONTRACTOR shall submit certifications to the OWNER that the material meets the specified sieve size gradation and minimum hydraulic conductivity and the material used for bedding and backfill of perforated leachate collection pipe is free of limestone and dolomite.

3.9 OVEREXCAVATION.

A. Should excavations extend below design depths, backfill these excavations in accordance with this specification without extra cost to the OWNER.

3.10 DRAINAGE

A. Both temporary and permanent drainage shall be constructed and maintained during the performance of the work. Existing drains, culverts, and ditches not interfering with new work shall be kept clean and operating during construction operations. The surface of unfinished fills shall be bladed smooth to a crown or grade at the conclusion of the day's work, or before shutdown for any cause, to permit water runoff. Fill, which has become saturated with water because of improper drainage, shall be dried out in place if only wet to a maximum depth of one lift, or removed to a depth determined by the soils ENGINEER. Such saturated fill shall be disposed of as directed, or reconditioned to conform to these specifications. Control grading so that ground is pitched to prevent water from running into excavated areas and provide all pumping required to keep excavation free of water. Should springs or running water be encountered in excavation, the ENGINEER shall be notified immediately. Dispose of running water by providing trenching which shall drain to an appropriate point of disposal.

END OF SECTION

SECTION 02221
TRENCHING, BACKFILLING AND COMPACTING

1. GENERAL

1.1 WORK INCLUDED

A. Excavation of trenches and subsequent backfilling and compaction of fill material for installation of leachate collection piping, manholes, storm drainage lines, and force mains.

B. Dewatering, protection and maintenance of trench, sheeting and shoring.

C. Contractor has the responsibility for selection of the means of protection against slides and cave-ins, and the performance of the entire work.

1.2 RELATED WORK

A. Section 02200 - Earthwork

B. Section 02250 - Soil Compaction Control and Test

1.3 SUBMITTALS

A. Comply with OWNER'S General and Special Conditions.

B. Submit confirmation to the OWNER that the pipe manufacturers concur with the specified bedding materials and compaction requirements.

C. Before placement, verify to the OWNER that the bedding materials conform to the specifications, or to any alternate materials recommended by the pipe manufacturer and approved by the OWNER.

2. PRODUCTS

2.1 MATERIALS

A. Bedding material for the pipe (CMP) shall be Aggregate Fill as specified in Section 02200-Earthwork.

B. The backfill material in trenches above the bedding material (more than one foot above the top of the pipe) for all pipe shall be general fill, free from rock, sharp-edged material, frozen material, large clods of earth, broken concrete, boulders, chunks of wood, any material with a dimension larger than 3 to 4 inches in size, or other material determined by the OWNER'S REPRESENTATIVE to be unsuitable for its intended use, except that under roads and structures backfill shall be well graded granular material conforming to ASTM C-33, gradation #67.

3. EXECUTION

3.1 PREPARATION AND RESTORATION

A. Remove sod, topsoil, and other surface treatment and restore to original condition or better upon completion of the Work.

3.2 PROTECTION

A. Shoring, sheeting and bracing, or other safety measures (as may be required to support the side of the excavation and prevent any movement which may in any way endanger personnel, injure or delay the work or endanger adjacent building or other structures), shall be put in place and maintained. Trench sheeting shall remain in place until pipe has been laid, tested for defects, repaired if necessary, and the fill material around it compacted to a depth 1 foot over the top of the pipe. Steel or wood sheeting and bracing shall be removed in such a manner as not to disturb or endanger the constructed pipe or other structures, utilities or property, whether public or private. A trench shield or trench box made of steel or wood adequately braced may be used. This shield shall be pulled along the trench and the pipe bedded and jointed inside the box. Care shall be exercised in moving the shield so that previously laid pipe and backfill are not disturbed. All work shall be in compliance with local, state, and federal rules and regulations relating to this type of work.

B. Notify ENGINEER immediately of unexpected subsurface conditions.

3.3 TRENCHING

A. Trench excavation shall be open cut (unless noted otherwise) to the depth, line and grade as shown on the drawings. The sidewalls of trenches shall be cut to meet the requirements of local, state and federal codes and regulations, but in general, as nearly vertical as possible to one foot above the top of pipe or conduit. During excavation, materials suitable for backfilling shall be stockpiled in an orderly manner a sufficient distance from the trench to prevent slides or cave-ins. Keep the trench clean of water during the progress of the work. Pump or otherwise remove all surface, ground and perched water that accumulates in the trenches.

B. For all pipe lines and conduit, the width of the trench from the bottom to one foot above the top of the pipe or conduit shall be not greater than that necessary for proper laying and thorough bedding, backfilling and compaction. The trench width for all pipes up through 36" diameter shall in no case be greater than the outside of the pipe or conduit plus 2 feet. The width of the trench above the one foot level shall be as wide as necessary for sheeting and bracing and the proper performance of the work.

Trenches for underground lines shall be excavated to a minimum depth of 4 inches or 1/6 the outside diameter of the pipe (whichever is greater) below the required elevation of the bottom of the pipe. Trenches for underground lines to be installed in waste material within the limits of the landfill shall be over-excavated to at least 2 feet below the proposed elevation of the bottom of the pipe and backfilled as described below.

C. Faulty grades. Wherever the grades are over-excavated, refill all over-excavated areas with well graded granular material confirming the requirements of ASTM C-33, gradation #67, and compact to a density of not less than 95% of maximum dry density as defined by ASTM D 698.

3.4 PIPE BEDDING

A. Carefully prepare bedding so that the pipe after installation will be true to line and grade.

The bedding material beneath the pipe shall be graded to provide a uniform and continuous support beneath the pipe at all points between pipe joints.

After each pipe has been brought to grade, aligned and placed in final position, deposit and compact sufficient bedding material under the pipe haunches and on each side of the pipe to hold the pipe in proper position during subsequent pipe jointing, bedding, and backfilling operations. Deposit bedding material uniformly in layers not exceeding 6" in compacted depth and simultaneously on each side of the pipe to prevent lateral displacement.

The equipment used for compaction shall be the best suited to obtain the specified density.

Aggregate-fill bedding shall be compacted to 85% of maximum density as defined by ASTM D 698. ASTM C-33, #67 granular bedding shall be compacted to 95% of maximum density as defined by ASTM D 698.

3.5 BACKFILL PLACEMENT AND COMPACTION

A. Backfill material shall be placed only after the installed pipe or conduit has been inspected, tested and approved. Gravel shall be deposited from the trench bottom to a level one foot above the pipe or conduit in horizontal layers not exceeding 6 inches in thickness. Stone shall not be dropped from a height greater than three feet above the top of the pipe. Gravel shall be tamped to OWNER REPRESENTATIVE'S satisfaction. Soil layers shall be thoroughly compacted with hand-mechanical tampers to a minimum of 95% of maximum density as specified by ASTM D 698.

B. Backfill under access roads and at other places subject to vehicular traffic or other superimposed loads, shall be compacted in 6 inch layers for the full depth of the trench and consolidated in such a manner to provide an unyielding foundation for vehicular traffic. The minimum compaction density shall be 95% of maximum density as specified by ASTM D 698.

C. No stone larger than 3 to 4 inches in its greatest dimension shall be used in any backfilling.

D. Any deficiency in the quantity of material for backfilling the trenches, or for filling depressions caused by settlement, shall be provided from borrow.

E. Moisture content. The soil shall either be dried or moisture added so that the densities required can be attained.

F. Trenches in fill areas shall be excavated after the fill has been placed and compacted to at least 2 feet above the proposed elevation of the top of pipe or conduit. Backfill shall be as specified above.

G. Granular bedding material shall be encapsulated with geotextile fabric where shown on the drawings.

H. Clean-up: Immediately after completion of the work as described herein, all debris, construction material, and equipment shall be removed from the site of the work. The area shall be graded and smoothed over and left in a clean, neat and free-draining condition.

3.6 FIELD QUALITY CONTROL

A. Compaction Testing will be performed at the discretion of the OWNER'S REPRESENTATIVE under the provision of Section 02250.

B. In the event that inadequate compaction is indicated, the backfill material shall be reworked until a passing test is obtained. All cost of the additional testing will be the responsibility of the CONTRACTOR.

END OF SECTION

SECTION 02250
SOIL COMPACTION CONTROL AND TESTING

1. GENERAL

1.1 REQUIREMENTS INCLUDED

A. This section is included to provide guidance to the CONTRACTOR for the requirements to perform Testing Services and inspections as the ENGINEER may direct and as specified herein.

1.2 RELATED WORK

A. Section 02200 - Earthwork

1.3 REFERENCES

A. ANSI/ASTM D 3740 - Practice for Evaluation of Agencies Engaged in Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction.

B. ANSI/ASTM E 329 - Standard Recommended Practice for Inspection and Testing Agencies for Concrete, Steel, and Bituminous Materials as Used in Construction.

C. ASTM D 422 - Standard Test Method for Particle-Size Analysis of Soils: Sieve Analysis and Hydrometer.

D. ASTM D 423 - Standard Method of Test for Liquid Limit of Soils.

E. ASTM D 424 - Standard Method of Test for Plastic Limit and Plasticity Index of Soils.

F. ASTM D 698 - Standard Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 5.5 lb. Rammer and 12 inch Drop: Standard Proctor.

G. ASTM D 1140 - Standard Test Method for Amount of Material in Soils Finer than the No. 200 Sieve: P200 Content.

H. ASTM D 1556 - Standard Test Method for Density of Soil In Place by the Sand-Cone Method: Sand Cone Density Test.

I. ASTM D 1557 - Standard Test Methods for Moisture-Density Relations of Soils & Soil-Aggregate Mixtures Using 10 lb. Rammer and 18 inch Drop: Modified Proctor.

J. ASTM D 2216 - Standard Test Method for Laboratory Determination of Water (Moisture) Content of Soil, Rock, and Soil-Aggregate Mixtures: Natural Moisture Content.

K. ASTM D 2922 - Standard Test Methods for Density of Soil and Soil-Aggregate In Place by Nuclear Methods (Shallow Depth): Nuclear Density Test.

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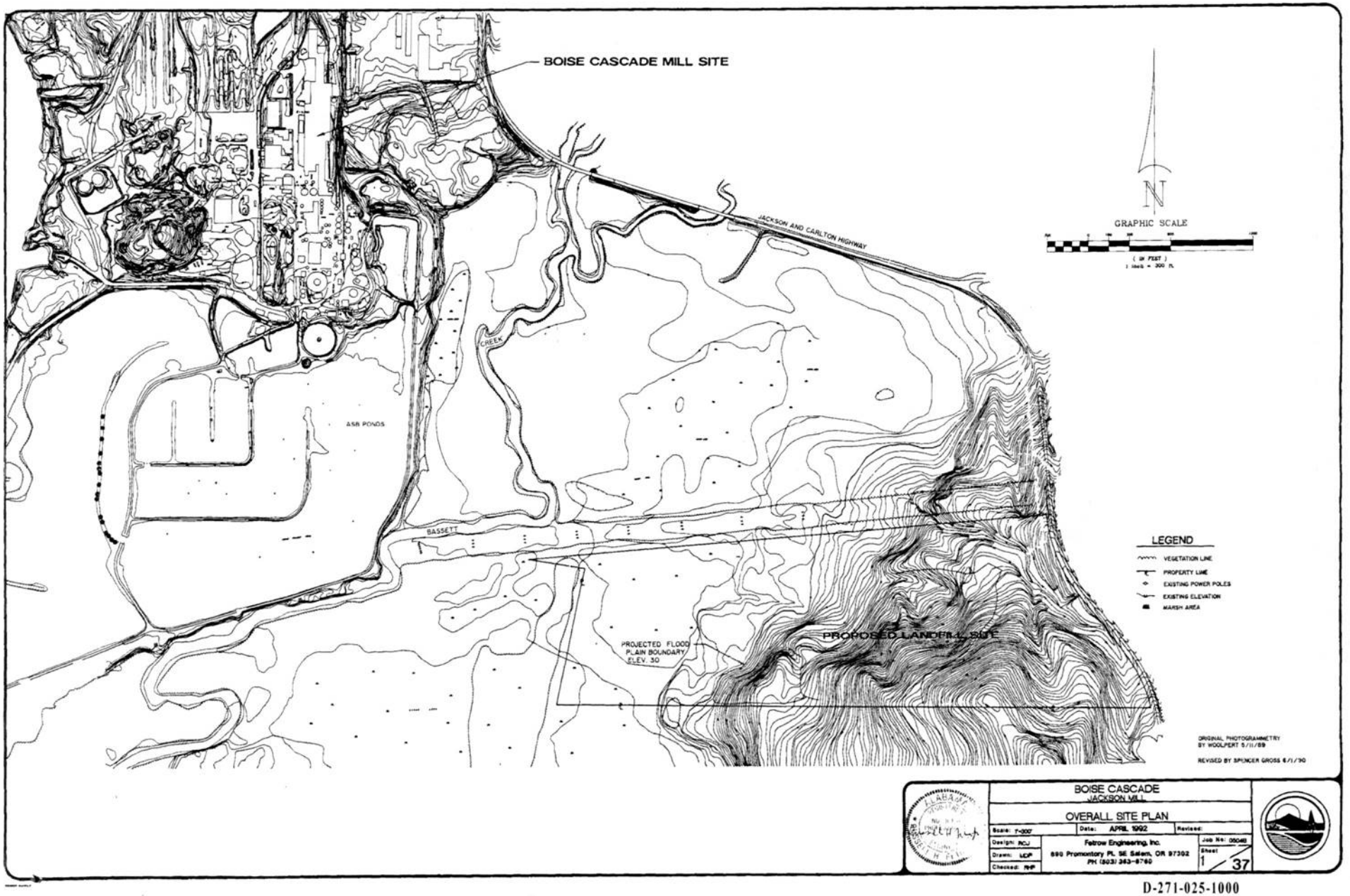

BOISE CASCADE
JACKSON MILL

OVERALL SITE PLAN

Scale: 1"=200'	Date: APRIL 1992	Revised:
Design: RCJ	Fetrow Engineering, Inc.	Job No: 05048
Drawn: LDP	890 Promontory Pl. SE Salem, OR 97302 PH (503) 363-8760	Sheet 1 / 37
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