PRELIMINARY DETERMINATION

PERMIT RENEWAL

SABIC Innovative Plastics US, LLC.
1 Plastics Drive
Burkville, Alabama 36752

SABIC Innovative Plastics C/D Landfill
Permit No. 43-04

May 17, 2024

SABIC Innovative Plastics US, LLC. applied to the Alabama Department of Environmental Management (ADEM) for renewal of the Solid Waste Disposal Facility Permit for the SABIC Innovative Plastics C/D Landfill. The waste stream for the SABIC Innovative Plastics C/D Landfill would remain non-putrescible and non-hazardous construction and demolition waste, empty paint cans, scrap HDPE liner, and rubbish as defined by ADEM Admin. Code 335-13-1-.03. The service area for the SABIC Innovative Plastics C/D Landfill would remain the SABIC Innovative Plastics US, LLC, facility located in Burkville, Alabama. The maximum average daily volume of waste disposed at the SABIC Innovative Plastics C/D Landfill would remain 80 cubic yards a day. All previous variances have been requested and shall be approved by the Department.

The landfill is located in NE Corner of Section 35, Township 16 North, Range 15 East in Lowndes County, Alabama. The permitted facility consists of approximately 17.50 acres with approximately 8.57 acres for disposal operations.

The Land Division has determined that the permit application meets the applicable requirements of ADEM's Administrative Codes Division 13.

Technical Contact:

Isabel Bela
Solid Waste Engineering Section
Land Division
(334) 271-7954

ALABAMA
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

SOLID WASTE DISPOSAL FACILITY PERMIT

PERMITTEE:	**SABIC Innovative Plastics US, LLC.**
FACILITY NAME:	**SABIC Innovative Plastics C/D Landfill**
FACILITY LOCATION:	**NE Corner of Section 35, Township 16 North, Range 15 East in Lowndes County, Alabama. The total permitted area is approximately 17.50 acres with approximately 8.57 acres approved for disposal.**
PERMIT NUMBER:	**43-04**
PERMIT TYPE:	**Construction/Demolition (C/D) Landfill**
WASTE APPROVED FOR DISPOSAL:	**Non-putrescible and non-hazardous construction and demolition waste, empty paint cans, scrap HDPE liner, and rubbish as defined by ADEM Admin. Code 335-13-1-.03.**
APPROVED WASTE VOLUME:	**Maximum Daily Volume of 80 cubic yards per day**
APPROVED SERVICE AREA:	**SABIC Innovative Plastics US, LLC., site located in Burkville, Alabama.**

In accordance with and subject to the provisions of the Alabama Solid Wastes and Recyclable Materials Management Act, as amended, Code of Alabama 1975, SS 22-27-1 to 22-27-27 ("SWRMMA"), the Alabama Environmental Management Act, as amended, Code of Alabama 1975, SS 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:	**XXX XX, 2024**
EFFECTIVE DATE:	**XXX XX, 2024**
EXPIRATION DATE:	**XXX XX, 2034**

_____
Alabama Department of Environmental Management

ALABAMA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
SOLID WASTE PERMIT

Permittee:	SABIC Innovative Plastics US, LLC. One Plastics Drive Burkville, Alabama 36752
Landfill Name:	SABIC Innovative Plastics C/D Landfill
Landfill Location:	NE Corner Section 35, Township 16 North, Range 15 East in Lowndes County, Alabama
Permit Number:	43-04
Landfill Type:	Construction and Demolition Landfill

Pursuant to the Alabama Solid Wastes and 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 SABIC Innovative Plastics US, LLC. (hereinafter called the Permittee), to operate a solid waste disposal facility, known as the SABIC Innovative Plastics C/D 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 ADEM on May 16, 2023 for permit renewal and 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 ADEM 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 **XXX XX, 20XX** and shall remain in effect until **XXX XX, 20XX**, 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 Administrative Code, Division 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, Section 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 Administrative 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, Section 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, Paragraph E, Subparagraph 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 ADEM, within a reasonable time, any information that ADEM 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, Section 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 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, Paragraph 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 of phases unless the permittee is notified that the Department will waive the inspection.

c. The Permittee may not commence disposal activities in any new 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 associated ADEM 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 ADEM, 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 ADEM, and the reports shall be submitted at least semi-annually, or as directed by ADEM. The reports should contain all monitoring results and conclusions from samples and measurements conducted during the sampling period. Explosive gas monitoring must be submitted once each year, and the reports should be submitted to ADEM and placed in the operating record within 30 days of the monitoring event. 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 ADEM.

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 the course of any unresolved enforcement action regarding the facility, or as requested by ADEM.

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

I. Documents to be Maintained by the Permittee. The Permittee shall maintain, at the SABIC Innovative Plastics C/D 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:

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

2. Physical Address.
Chief, Solid Waste Branch
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 ADEM, 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 335-13.

B. Open Burning. The Permittee shall not allow open burning without prior written approval from ADEM and other appropriate agencies. A burn request should be submitted in writing to ADEM 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 detecting and preventing the disposal of free liquids, regulated hazardous waste, PCB's, 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 Waste Disposal. The Permittee shall not dispose of industrial process waste at this landfill. Only those wastes shown in Section III, Paragraph B are allowed for disposal in 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 C/D 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 Section III, Paragraph 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 SABIC Innovative Plastics C/D Landfill is approximately 17.50 acres with a disposal area of approximately 8.57 acres.

3. The maximum average daily volume of waste disposed at the facility shall not exceed 80 cubic yards/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 construction and demolition waste, empty paint cans, scrap HDPE liner, and rubbish as defined by ADEM Admin. Code 335-13-1-.03.

C. Service Area. The Permittee is allowed to receive for disposal waste from the SABIC Innovative Plastics US, LLC site located in Burkville, Alabama

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 or placing the monthly cover. A minimum of six inches of compacted earth or other alternative cover material approved by ADEM and listed in Section VIII shall be added at the conclusion of the last full week of operation in the month. (See Section VIII.2.) Also, the Permittee is allowed to use uncontaminated soil excavated during repairs of mill, potable or fire water lines as an alternative cover material. (See Section VIII.3.)

E. Liner Requirements. At this time, the Permittee shall not be required to install a liner system. 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 ADEM.

N. Other Requirements. ADEM 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 ADEM.

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:

Groundwater monitoring is not being required at this landfill provided that the waste stream is in accordance with Section III, Paragraph B. Should any waste be disposed other than the waste streams indicated in Section III, Paragraph B, the Department may require that groundwater-monitoring wells be installed.

SECTION V. GAS MONITORING REQUIREMENTS

The Permittee is not required to install and maintain an explosive gas monitoring system in accordance with ADEM Administrative Code, Division 13. (See Section VIII.1)

SECTION VI. SURFACE WATER MANAGEMENT

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 be constructed as specified in the application.

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 ADEM 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 ADEM 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. ADEM 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 ADEM. Monitoring requirements shall continue throughout the post closure period as determined by ADEM unless all waste is removed and no unpermitted discharge to waters of the State have 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 ADEM a certification, signed by a 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 execute 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 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

1. The Permittee is granted a variance from ADEM Admin. Code 335-13-4-.16 for installation and maintenance of an explosive gas monitoring system. (See Section V.)

2. The Permittee is granted variance from ADEM Admin. Code 335-13-4-.23(1)(b) concerning weekly cover. However, the Permittee shall add a cover of a minimum of six inches of compacted earth or other

alternative cover material approved by the Department at the conclusion of the last full week of operation in the month. (See Section III.D.)

3. The Permittee is granted a variance from ADEM Admin. Code 335-13-4-.15(2) concerning alternative cover material. The Permittee shall be allowed to use uncontaminated soil excavated during repairs of mill, potable or fire water lines as an alternative cover material. (See Section III.D.)

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.

May 12, 2023

DELIVERED VIA Hand Delivery

Ms. Mary Catherine Muscha
Solid Waste Branch, Land Division
Alabama Department of Environmental Management
1400 Coliseum Blvd.
Montgomery, AL 36110-2400

Subject: SABIC Innovative Plastics US LLC; Burkville, AL
Construction/Demolition Landfill Permit Number 43-04
Application for Permit Renewal

Dear Ms. Muscha:

Enclosed is the final, signed, and certified copy of the application to renew Permit No. 43-04 for our Construction and Demolition landfill at the SABIC, Burkville facility. This application is being submitted to ADEM in accordance with the requirement to submit the application at least 180 days prior to expiration of the existing permit, which will occur on November 18, 2023.

The enclosed application includes a completed ADEM Form 439, certification statements signed by SABIC Responsible Official and Certifying Professional Engineer, a request for the extension of existing variances granted in the current permit and consistent with our understanding of ADEM requirements and practices, includes copies of, previously documented/submitted information and approvals that have not changed.

Per ADEM Code r. 335-1-6-.04(1)(b) and 335-1-6-.07(1), the application fee specified by Fee Schedule E for reissuance of a Construction/Demolition waste landfill permit of $5,400.00 is enclosed with this application.

If you have any questions or need additional information, please do not hesitate to contact me at (334) 832-5690 or via email at christopher.griffin@sabic.com.

Sincerely,

Chris Griffin, P.E.
Lead Engineer, Environmental
SABIC Burkville, EHSS

Enclosures

CHEMISTRY THAT MATTERS™

Received
MAY 16 2023
Land Division

PERMIT RENEWAL APPLICATION

SABIC Innovative Plastics C/D Landfill
Permit Number 43-04
May 2023

PREPARED BY:
SABIC
1 PLASTICS DRIVE
BURKVILLE, ALABAMA
36752

Contents

SOLID WASTE DISPOSAL FACILITY

PERMIT APPLICATION PACKAGE

January 16, 2018

MEMORANDUM

TO: Applicants Seeking a Permit for Solid Waste Facilities

FROM: Stephen A. Cobb, Chief
Land Division
Alabama Department of Environmental Management

RE: Processing Solid Waste Permits by ADEM

Any permit issued by ADEM must be in accordance with §22-27-48 and §22-27-48.1 Code of Alabama. This section indicates that ADEM may not consider an application for a new or modified permit unless such application has received approval by the affected unit of local government having an approved plan. ADEM, therefore, will require the following before it can process a new or modified permit application:

1. The local government having jurisdiction must approve the permit application in accordance with §22-27-48 and §22-27-48.1 Code of Alabama.

2. Local governments should follow the procedures outlined in §22-27-48 and §22-27-48.1 Code of Alabama and the siting standards included in the local approved plan in considering approval of a facility.

This procedure applies to applications for new or modified permits. ADEM cannot review an application unless it includes approval from the affected local government. This procedure shall not apply to exempted industrial landfills receiving waste generated on site only by the permittee.

Please contact the Solid Waste Branch of ADEM at (334) 274-4201 if there are any questions.

SAC/sss/abj

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

1. **Facility type:**
   - _____ **Municipal Solid Waste Landfill (MSWLF)**
   - _____ **Industrial Landfill (ILF)**
   - _X_ **Construction and Demolition Landfill (C/DLF)**
   - _____ **CCR Landfill (CCRLF)**
   - _____ **CCR Surface Impoundment (CCRSI)**
   - _____ **Other (explain)**_____

2. **Facility Name** SABIC Innovative Plastics C&D Landfill

3. **Applicant/Permittee:**

   Name: SABIC Innovative Plastics US LLC

   Address: One Plastics Drive
   Burkville, Alabama 36752

   Telephone: (334) 832-5000

   If applicant/permittee is a Corporation, please list officers:
   Darrell Bollier, Site General Manager
   Christopher Witte, Vice President

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

   Township 16 North **Range** 15 East
   Section 35 **County** Lowndes

5. **Land Owner:**

   Name: SABIC Innovative Plastics US LLC

   Address: 2500 CityWest Blvd., Suite 650
   Houston, Texas 77042

   Telephone: (713) 532-4999

   (Attach copy of agreement from landowner if applicable.)

6. **Contact Person:**

Name Christopher Griffin

Position or Affiliation Lead Engineer, Environmental

Address: One Plastics Drive
Burkville, Alabama 36752

Telephone: (334) 832-5690

7. **Size of Facility:** 17.501 **Acres**

Size of Disposal Area(s): 8.57 **Acres**

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

The landfill will only receive waste generated on the SABIC Innovative Plastics US LLC Burkville site.

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

_____ **Tons/Day** 80 **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-hazardous and non-putrescible rubbish, construction and demolition waste, concrete, empty paint cans, bricks, old asphalt, trees/limbs, pallets, rock, scrap HDPE liner, and soils associated with clean construction and daily cover use. No tires are accepted.

SIGNATURE (Responsible official of permit applicant):

TITLE: Site General Manager

Darrell Bollier

DATE: 12 May 2023

(please print or type name)

ADDITIONAL REQUIRED INFORMATION

Applicants seeking to obtain a permit to construct and/or continue to operate a municipal solid waste (MSW) landfill, industrial landfill, construction and demolition (C/D) landfill, coal combustion residuals (CCR) landfill, or CCR surface impoundment are required to submit additional information as part of the Solid Waste Disposal Facility Permit Application. These additional information requirements vary depending on the facility type.

For new and existing landfill units, refer to ADEM Admin Code 335-13-5-.02 for a list of additional information to be submitted in the permit application. Some requirements apply only to MSW landfills and CCR landfills, while other requirements apply to industrial landfills and C/D landfills. You need only to address the requirements that pertain to your type landfill. For new and existing CCR surface impoundments, refer to ADEM Admin Code 335-13-15-.09 for additional information to be submitted in the permit application.

Each rule that is applicable to your type landfill or surface impoundment must be addressed in detail in the operational narrative and/or engineering drawings before the review process can be completed. All operational narratives, engineering drawings, survey maps and legal descriptions are to be prepared by licensed engineers or surveyors registered in the State of Alabama and with their stamp or seal on each drawing/map and cover of the narrative.

Act No. 89-824 Section 9(a) states "The department may not consider an application for a new or modified permit for a facility unless such application has received approval by the affected unit of local government having an approved plan." This document must be received by the Department prior to processing the application.

The referenced rules are covered in greater detail in ADEM's Administrative Code, Division 13. Clarification can be obtained by reviewing the regulations. Copies of the ADEM Administrative Code, Division 13 regulations, can be obtained for a fee by contacting ADEM's Permits and Services Division. If the Department can answer any questions, please contact the Solid Waste Branch at (334) 274-4201.

CERTIFICATION OF LOCAL GOVERNMENT APPROVAL:

Upon submittal of this application, we the undersigned certify that local approval has been obtained from NOT APPLICABLE (city/county). Evidence of this local approval is contained in documents which are on file at the permit applicant's business address.

CERTIFICATION OF COMPLIANCE:

Upon submittal of this application, we the undersigned certify that this document and all attachments submitted are to the best of our knowledge and belief, true, accurate and complete. We also understand that if any of the material certified to above has not been received, or is not complete or is not accurate, that shall be grounds for the Department to revoke the landfill permit if issued.

SIGNATURE (Responsible official of permit applicant):

Darrell Bollier

TITLE: Site General Manager

DATE: 12 May 2023

SIGNATURE (Certifying Engineer):

Christopher M. Griffin, P.E.

TITLE: Lead Engineer, Environmental

DATE: 12 May 2023

FIRM: SABIC

STAMP OR SEAL

DELEGATION OF AUTHORITY

I am a Vice President of SABIC Innovative Plastics US LLC, a Delaware limited liability company with a mailing address of 2500 CityWest Blvd., Suite 100, Houston, TX 77042 ("**SABIC**"). The purpose of this document is to delegate my authority to sign documents regarding environmental management/protection concerning U.S.-based locations.

A. SABIC owns and operates U.S.-based manufacturing facilities at the following locations:

Bay St. Louis, Mississippi	Ottawa, Illinois
Burkville, Alabama	Mt. Vernon, Indiana

The Plant Manager of each such facility is responsible for the overall operation of the respective facility.

I hereby delegate to the person holding the position of Plant Manager of each such facility, as well as to a person delegated by the Plant Manager to act as the temporary, or acting, Plant Manager, the authority to sign and submit all applications, reports and other submissions to the fullest extent allowed by applicable regulations of the United States Environmental Protection Agency and each respective State's environmental management/protection agency.

B. In addition, SABIC used to operate a manufacturing facility that was located at Washington, WV. The Senior Manager, Americas Region Support, is responsible for completing the closure activities at that facility.

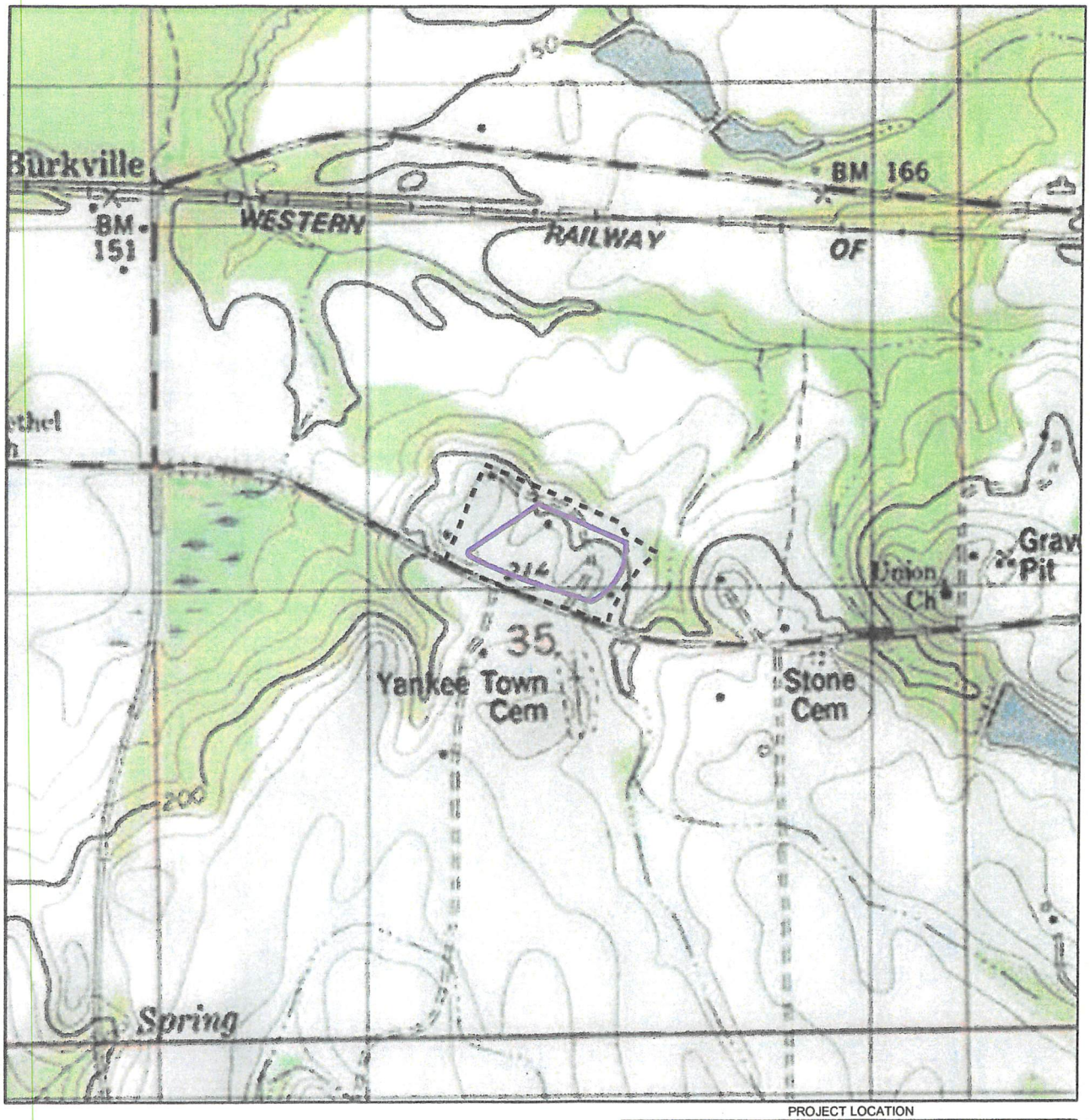
I hereby delegate to the person holding the position of Senior Manager, Americas Region Support (or, in their absence or upon their departure, the person holding the position of Specialist, AMR, Water, Waste & HMT), the authority to sign and submit all applications, reports and other submissions to the fullest extent allowed by applicable regulations of the United States Environmental Protect ion Agency and the State of West Virginia's Department of Environmental Protection.

By: 

Name: Christopher Witte

Dated: January 30, 2023

SABIC Innovative Plastics US LLC
2500 CityWest Blvd., Suite 100
Houston, TX 77042
E: Info@sabic.com
www.sabic.com



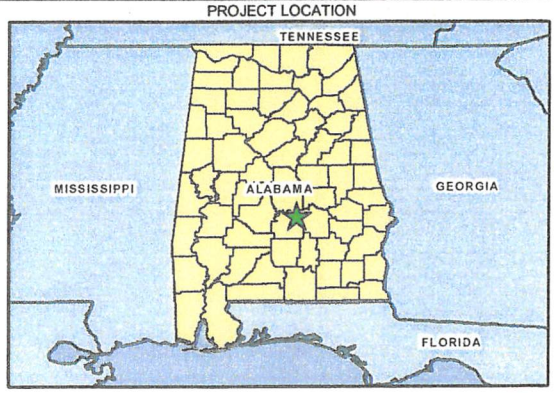
Legend

- Landfill Site Boundary
- Landfill Disposal Boundary
- Project Location

N

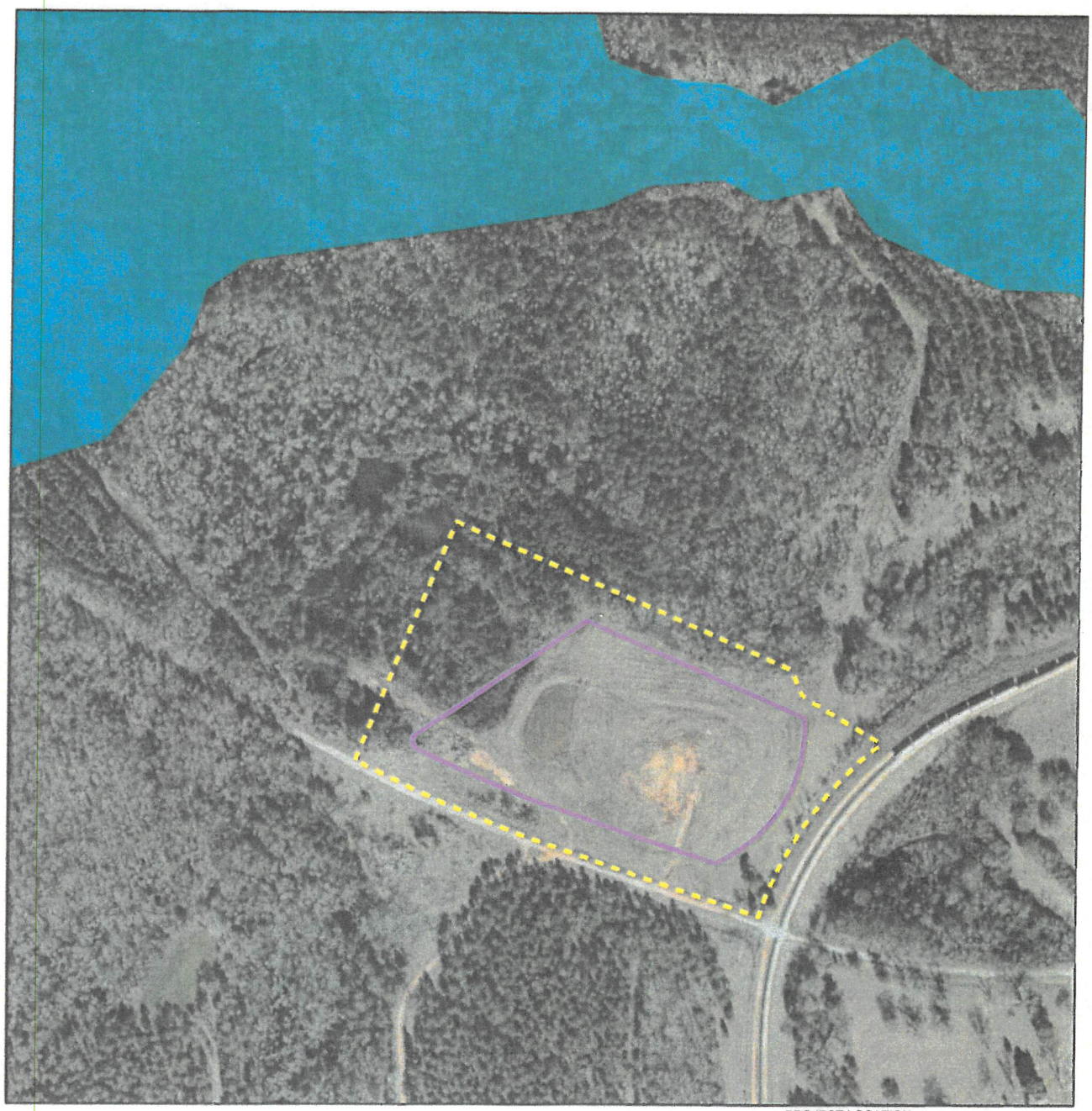
0 500 1,000 2,000 Feet

PROJECT LOCATION



Source:
USGS 7.5' Topographic Quadrangle;
Lowndesboro, 1977

Figure IX a
Project Location
SABIC Landfill Permit Renewal
Lowndes County, Alabama



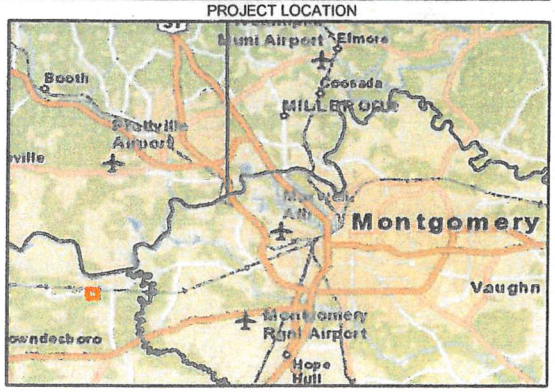
Legend

- Landfill Site Boundary
- Landfill Disposal Boundary
- FEMA 100-Year Floodplain
- Project Location

N

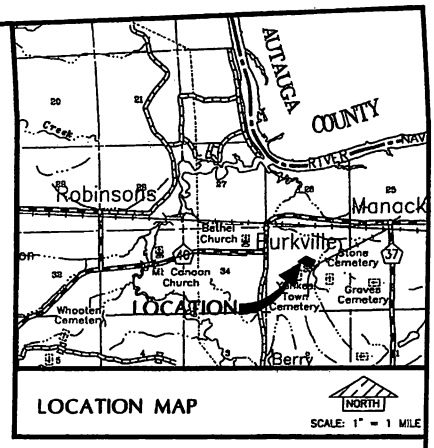
0 200 400 800 Feet

PROJECT LOCATION



Source:
FEMA Digital Flood Insurance Rate Maps (DFIRM)
ESRI World Imagery online imagery service

Figure X a
100-Year Floodplain Map
SABIC Landfill Permit Renewal
Lowndes County, Alabama



LOCATION MAP

*BEARINGS ROTATED TO MATCH AND TIE CALCULATED FROM BOUNDARY SURVEY BY BCM ENGINEERS INC. DATED: APRIL 1994

N
W E
S

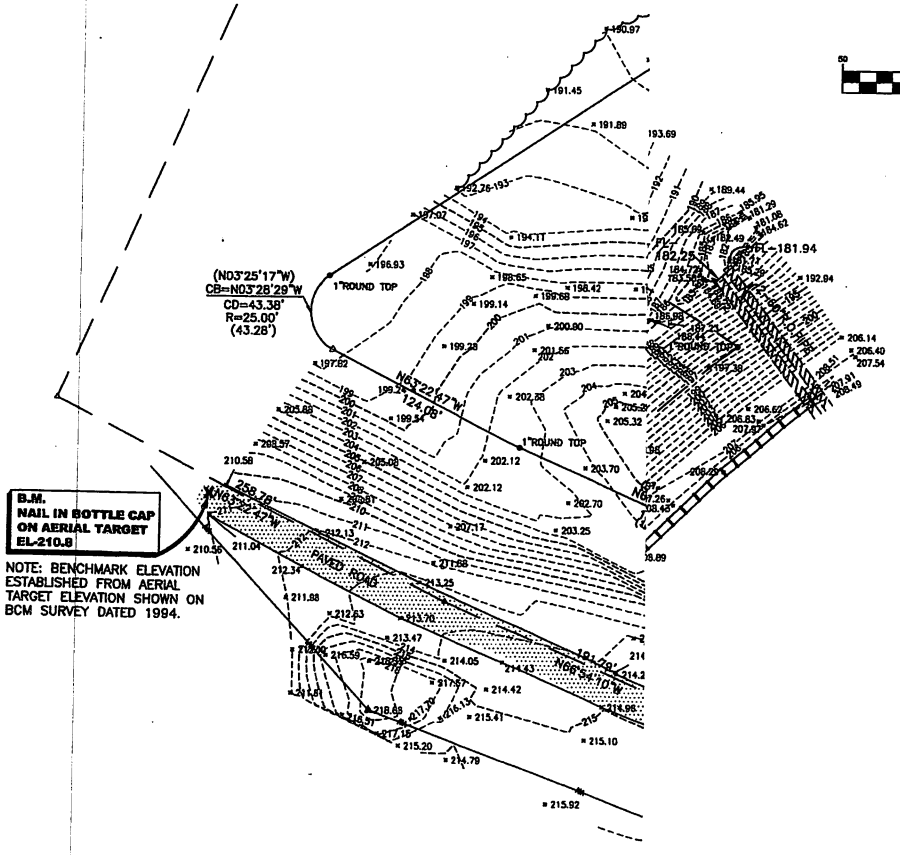
GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 ft.

LEGEND

- CONCRETE
- ASPHALT
- FOUND IRON PIN
- SET IRON PIN (5/8" REBAR CAPPED) W/# CA-00017-LS
- CALCULATED POINT
- POWER POLE / LINE
- TELEPHONE BOX
- SIGN
- STORM PIPE
- 198.50 SPOT ELEVATION
- EXISTING CONTOUR
- STEEL POLE
- RAILROAD TRACKS
- WOODLINE
- ( ) BOUNDARY SURVEY BY BCM ENGINEERS INC. DATED: APRIL 1994



NOTE: BENCHMARK ELEVATION ESTABLISHED FROM AERIAL TARGET ELEVATION SHOWN ON BCM SURVEY DATED 1994.

POINT OF COMMENCEMENT
*NORTHEAST CORNER OF SECTION 35, T-16-N, R-15-E LOWNDES COUNTY

26 25
35 36

*SOUTH 2657.36'

STATE OF ALABAMA
LOWNDES COUNTY

I, Steven E. Speaks, a Licensed Professional Engineer and Licensed Profess Surveyor, hereby certify that all parts of this Topographic Survey and draw completed in accordance with the current requirements of the Standards o Surveying in the State of Alabama to the best of my knowledge, informatic

According to my survey this the 18th day of November, 2005.

Steven E. Speaks
Alabama Registration No. 20897

ALABAMA REGISTERED No. 20897 LAND SURVEYOR STEVEN E. SPEAKS

DRAWING DATE: 11/22/05

LARRY E. SPEAKS & ASSOCIATES
CONSULTING ENGINEERS & LAND SURVEYORS
535 HERRON STREET
MONTGOMERY, AL. 36104
TEL.-334/262-1091

THIS SURVEY IS NOT VALID WITHOUT AN EMBOSSED SEAL AFFIXED HEREON OF THE REGISTERED LAND SURVEYOR WHO SIGNED THE SURVEY.

Figure IX C

BCM

LEGAL DESCRIPTION OF THE G.E. CONSTRUCTION LANDFILL BOUNDARY

COMMENCE AT THE NORTHEAST CORNER OF SECTION 35, T-16-N, R-15-E, LOWNDES COUNTY, ALABAMA; THENCE RUN ALONG THE EAST LINE OF SAID SECTION 35, S 00° 15' 15" E, 2346.37 FEET; THENCE LEAVE SAID SECTION LINE AND RUN S 89° 43' 47" W, 182.84 FEET; THENCE RUN S 01° 54' 40" W, 331.46 FEET TO THE NORTH SIDE OF ROAD; THENCE RUN ALONG SAID ROAD S 85° 49' 04" W, 1286.95 FEET TO A POINT LYING AT THE BEGINNING OF A CURVE (CONCAVE NORTHERLY); THENCE CONTINUE ALONG SAID ROAD AND SAID CURVE A CHORD OF N 82° 40' 42" W, 748.42 FEET TO A POINT LYING AT THE END OF SAID CURVE; THENCE CONTINUE ALONG SAID ROAD N 71° 05'15" W, 60.37 FEET TO THE POINT OF BEGINNING; THENCE FROM SAID POINT OF BEGINNING CONTINUE ALONG SAID ROAD N 71° 05' 15" W, 398.27 FEET; THENCE RUN N 69° 46' 42" W, 268.30 FEET; THENCE RUN N 66° 54' 10" W, 191.79 FEET; THENCE RUN N 63° 22' 47" W, 258.78 FEET' THENCE RUN N 23° 37' 24" E, 683.42 FEET; THENCE RUN S 65° 40' 18" E, 948.65 FEET; THENCE RUN S 19° 36' 48" E, 69.85 FEET; THENCE RUN S 58° 01' 37" E, 241.79 FEET TO A POINT LYING 50.00 FEET WESTERLY OF THE CENTERLINE OF A RAILROAD SPUR, SAID POINT ALSO LYING IN A 1003.03 FOOT RADIUS CURVE (CONCAVE SOUTHEASTERLY); THENCE RUN PARALLEL TO SAID SPUR AND ALONG SAID CURVE, A DISTANCE OF 569.62 FEET (A CHORD OF S 36° 01' 28" W, 562.00 FEET) TO THE POINT OF BEGINNING.

SAID DESCRIBED PROPERTY LYING IN SECTION 35, T-16-N, R-15-E, LOWNDES COUNTY, ALABAMA. CONTAINING 17.501 ACRES MORE OR LESS.

Attachment 3.1

BCM

LEGAL DESCRIPTION OF THE G.E. CONSTRUCTION LANDFILL DISPOSAL AREA BOUNDARY

COMMENCE AT THE NORTHEAST CORNER OF SECTION 35, T-16-N, R-15-E, LOWNDES COUNTY, ALABAMA; THENCE RUN ALONG THE EAST LINE OF SAID SECTION 35, S 00° 15' 15" E, 2346.37 FEET; THENCE LEAVE SAID SECTION LINE AND RUN S 89° 43' 47" W, 182.84 FEET; THENCE RUN S 01° 54' 40" W, 331.46 FEET TO THE NORTH SIDE OF ROAD; THENCE RUN ALONG SAID ROAD S 85° 49' 04" W, 1286.95 FEET TO A POINT LYING AT THE BEGINNING OF A CURVE (CONCAVE NORTHERLY); THENCE CONTINUE ALONG SAID ROAD AND SAID CURVE A CHORD OF N 82° 40' 42" W, 748.42 FEET TO A POINT LYING AT THE END OF SAID CURVE; THENCE CONTINUE ALONG SAID ROAD N 71° 05'15" W, 60.37 FEET; THENCE RUN N 37° 25' 14" W, 180.39 FEET TO THE POINT OF BEGINNING; THENCE RUN N 71° 05' 15" W, 247.00 FEET; THENCE RUN N 69° 46' 42" W, 264.65 FEET; THENCE RUN N 66° 54' 10" W, 186.21 FEET; THENCE RUN N 63° 22' 47" W, 124.08 FEET TO A POINT ON A 25 FOOT RADIUS CURVE; THENCE RUN ALONG SAID CURVE TO THE RIGHT (CONCAVE EASTERLY), A DISTANCE OF 52.32 FEET, WITH A CHORD OF N 03° 25' 17" W, 43.28 FEET; THENCE RUN N 56° 32' 14"E, 532.32 FEET; THENCE RUN S 65° 24' 33" E, 616.72 FEET TO A POINT ON A 395.60 FOOT RADIUS CURVE; THENCE RUN ALONG SAID CURVE TO THE RIGHT (CONCAVE WESTERLY), A DISTANCE OF 480.87 FEET, WITH A CHORD OF S 32° 19' 57" W, 451.81 FEET TO THE POINT OF BEGINNING.

SAID DESCRIBED PROPERTY LYING IN SECTION 35, T-16-N-, R-15-3, LOWNDES COUNTY, ALABAMA. CONTAINING 8.582 ACRES MORE OR LESS.

Attachment 3.1 Continued

STATE OF ALABAMA
DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES
WILDLIFE AND FRESHWATER FISHERIES DIVISION

64 North Union Street, Ste. 567
P. O. Box 301456
Montgomery, AL 36130-1456
Phone: (334) 242-3465 Fax: (334) 242-3032
www.outdooralabama.com

The mission of the Wildlife and Freshwater Fisheries Division is to manage, protect, conserve, and enhance the wildlife and aquatic resources of Alabama for the sustainable benefit of the people of Alabama.

May 3, 2013

Ms. Virginia Wilson
CH2M HILL
4121 Carmichael Road
Suite 400
Montgomery, AL 36106

RE: SABIC Innovative Plastics US LLC
Construction and Demolition Landfill Permit Renewal

Dear Ms. Wilson:

The Division of Wildlife and Freshwater Fisheries (DWFF), Department of Conservation and Natural Resources has reviewed the above-referenced project and provides the following comments and recommendations:

- Based on the information provided in your letter dated April 8, 2013 and our own research, it does not appear that the proposed project will adversely affect any state-protected species. CH2M HILL is requesting Endangered Species Act (ESA) concurrence for proposed activities within Alabama; however, the DWFF is unable to provide concurrence for federally listed species. ESA documentation must be obtained from U. S. Fish and Wildlife Service (USFWS). If protected species are adversely impacted by the project, additional coordination with the Department of Conservation and Natural Resources (334-242-3851) and/or with USFWS (251-441-5181) will be required.

We appreciate the opportunity to comment on this project. Please contact me if we may be of further assistance (334-242-3851).

Sincerely,

Matthew D. Marshall
Environmental Coordinator

11:10:11 04-11-2013

APR 10 2013

CH2M HILL
4121 Carmichael Road
Suite 400
Montgomery, AL 36106
Tel 334-271-1444
Fax 334-277-5763

April 8, 2013

462967.A1.01

Post-it® Fax Note 7671	Date 4-11-13	# of pages ▶
To Virginia Wilson	From USFWS	
Co./Dept.	Co.	
Phone #	Phone #	
Fax # 334-277-5763	Fax #	

Mr. Dan Everson
U.S. Fish and Wildlife Service, Daphne Field Office
1208-B Main Street
Daphne, Alabama 36526

Subject: SABIC Innovative Plastics US LLC
Construction and Demolition Landfill Permit Renewal

Dear Mr. Everson: 2013-TA-0339

CH2M HILL, on behalf of our client, SABIC Innovative Plastics US, LLC (SABIC), conducted a site visit of a 17-acre, permitted landfill (site) in Burkville, Lowndes County, Alabama, on March 6, 2013. This permitted landfill is used by SABIC for disposing onsite construction and demolition debris. This site was assessed for protected species and wetlands in response to a request made by SABIC as part of its solid waste disposal facility permit renewal application process.

The site is approximately 10 miles west of Montgomery (Figure 1, attached). The site is bordered to the south by a paved road, to the east by railroad tracks, and to the west and north by woods. The eastern portion of the site has higher elevation than the western portion of the site. SABIC performs the site operations and maintenance.

No threatened or endangered species or habitat were observed during the site visit. It is CH2M HILL's opinion that no threatened or endangered species or potentially suitable habitat occurs within the permitted site boundary. To provide compliance with the Endangered Species Act of 1973, CH2M HILL is requesting a review and letter of concurrence that renewal of the permit will have no effect on federally protected species.

Please call me at 334-271-1445, ext. 59061, or call Melanie Wiggins at 678-530-4387 if you have questions or need additional information.

Sincerely,

CH2M HILL

Virginia H. Wilson

Virginia Wilson
Project Scientist

mgm13/sabic/permit_renewal/SABIC CD LF_USFWS.docx
Enclosure: Figure 1, Site Location Map

c: Sharon Trippany/SABIC Innovative Plastics
Kelly Moody/CH2M HILL

U.S. Fish and Wildlife Service
1208-B Main Street – Daphne, Alabama 36526
Phone: 251-441-5181 Fax: 251-441-6222

No federally listed species/critical habitat are known to occur in the project area. As described, the project will have no significant impact on fish and wildlife resources. IF PROJECT DESIGN CHANGES ARE MADE, PLEASE SUBMIT NEW PLANS FOR REVIEW. We recommend use of best management practices specific to your project (See http://www.fws.gov/daphne/section7/bmp.html).

William J. Pearson, Field Supervisor — 4/11/2013 Date — #3

: ES04D813202535MGM

STATE OF ALABAMA
ALABAMA HISTORICAL COMMISSION
725 MONROE STREET
MONTGOMERY, ALABAMA 36130-5101

F. LAWERENCE OAKS
EXECUTIVE DIRECTOR

TELEPHONE NUMBER
261-3184

October 13, 1988

Ms. Ruth Arisman, Ph.D.
Manager, Environmental Programs
General Electric Co.
One Plastics Drive
Burkeville, Alabama 36752

Re: Landfill for Construction Debris
Lowndes County, Alabama

Dear Dr. Arisman:

The Alabama Historical Commission has determined that the above referenced project will not have an effect on any cultural resources listed on or eligible for the National Register of Historic Places. The proposed project is in conformance with the Memorandum of Agreement and therefore our office concurs with the proposed activities.

Thank you for your cooperation in helping us preserve Alabama's heritage. If we may be of further service, please contact this office.

Sincerely,

F. Lawerence Oaks

F. Lawerence Oaks
State Historic Preservation Officer

FLO/GCR/cds

R. K. ARISMAN

OCT 17 1988

RECEIVED

Appendix B

4.10 Cultural Resources

This baseline study identifies and evaluates the historic structures and archeological sites on 5,200 acres of the approximately 6,000 acres that constitute the area of the project's undertaking for regulatory compliance purposes. The additional 800 acres represent properties which are now identified as buffer for the project.

The investigation of cultural resources was conducted by the Office of Archeological Research, University of Alabama. During May to July 1981 the field identification and evaluation portion of the study was completed, followed by laboratory analysis and report preparation. To protect the resources disclosed by the survey from disturbance or removal by unauthorized personnel, precise locational data are not provided in this report. Complete technical support documentation (Cole and Alexander 1981) for regulatory compliance purposes has been provided to the Corps of Engineers under separate cover.

4.10.1 Resource Overview

Cultural history at the GE site spans the past 8,000 years and contains cultural resource sites representative of the prehistoric periods beginning with the Early Archaic through Late Woodland (7000 B.C. to 800 A.D.). Almost no evidence exists of Mississippian period occupation (800 A.D. to 1500 A.D.) on any portion of the site. The distribution of prehistoric sites is directly related to certain topographic features. Clusters of the Archaic and Woodland period sites are located along the river margin in close proximity to surface stream drainages. Upland portions of the GE site contain a series of river terraces cut by small springs or streams. Parallel to many of these streams are small prehistoric camp sites also with Archaic and sometimes Woodland period components. The most southerly and inland portion of the GE site contains an impervious subsurface geological formation and consequently possesses the least amount of natural surface water. The fewest prehistoric sites were found in this upland portion of the project area.

Historic occupation by settlers from the Carolinas and other east coast areas began in the late 1820s and continued through the 1840s. Large farms exceeding 1,000 acres, previously belonging to at least four planters, once divided the GE site property. The residences of three early settler families remain on the site, one of which is located on land granted in 1825.

Certain outbuildings and cemeteries associated with the plantations also define the area's historic settlement pattern. Small residences associated with the shift to tenant farming during the 1870-1930 period are also distributed throughout the property. Archeological sites indicating commercial activities that once served the local economy, such as cotton ginning and brickmaking, are located near early transportation routes traversing the GE property. Although examples of sites from most previous periods of human occupation remain, mechanized agricultural activities during the past 30 years have significantly altered the soil horizons where these cultural resources were often located. As a result, the integrity of many archeological sites has been affected.

4.10.2 Identified Resources

A total of 136 cultural resource locations was identified on the surveyed properties, including:

- 27 standing structures constructed before 1930,
- 25 historic archeological sites,
- 39 prehistoric archeological sites, and
- 35 prehistoric sites with historic components.

Ten cemeteries were also identified, nine of which are associated with the historic occupation period of 1830-1930.

Several methods of field survey were used for the resource investigation. Pedestrian reconnaissance was conducted over the entire project property considered by the survey. An intensive surface inspection was first conducted for archeological sites on all areas where surface visibility was over 75%. Where surface visibility

was less than 75%, terrain was disced or plowed in transects at 50- to 100-meter intervals. A surface inspection for evidence of previous occupation followed. In terrain with dense surface vegetation where surface visibility was 25% or less, shovel testing, discing, or a combination of both evaluation methods were used.

Representative collections were made at all sites encountered. These collections formed the basis for determining which areas would be subject to further subsurface testing. Heavy equipment was used to expose subsurface soil horizons. A grader removed plowzone soils along the disced or plowed transects in an attempt to locate possible sub-plowzone components of archeological sites. In areas of exceptionally dense vegetation, a small bulldozer cleared 4- to 5-meter wide transects for evaluating subsurface features.

An inventory of structures constructed prior to 1930 (more than 50 years of age) was conducted and accompanied by documentary research. General descriptions and photographs were prepared for each structure. Those buildings judged to be of potential historic significance were further structurally analyzed and had floor plans prepared.

4.10.3 Resource Evaluation

All resources were evaluated according to the criteria of eligibility for the National Register of Historic Places (36 CFR 63). For this project, the eligibility criteria were interpreted for the separate categories of resources as indicated in Table 4.10-1.

When the total resource inventory was evaluated against this criteria, the following list of potentially eligible National Register cultural resources resulted:

- 8 standing structures,
- 4 historic archeological sites,
- 6 prehistoric archeololgical sites, and
- 10 archeological sites with prehistoric and historic components.

DRAFT

TABLE 4.10-1

NATIONAL REGISTER CRITERIA AS APPLIED TO PROPERTIES

IN THE GE PROJECT STUDY AREA

Historic Structures	Prehistoric & Historic Archeological Sites
1) Possess distinctive architectual and construction features whose integrity is preserved	1) Possess information important for interpreting patterns or events that characterize the the prehistory or history of the study area
-or-	-and-
2) Provide an exceptional or sole remaining example of of construction or use of materials	2) Possess sufficient integrity to enable a meaningful explanation of specific locations
-or-	
3) Characteristic of the patterns of historic development which typify the study area and can contribute to an understanding of local traditions or styles	

These 28 structures and archeological sites are a representative sample of physical evidence characterizing the human occupation of the Burkville area.

The standing structures include three antebellum planter residences, a church associated with the residences, and four folk structures used by the post-Civil War tenants who farmed the plantation lands. The folk structures include a woodframe commercial structure that once served as a commissary store for nearby tenants. The antebellum residences and folk houses are resources characteristic of the patterns of historic development that typify the study area. Several of the structures also possess distinctive architectural features whose integrity is preserved.

The archeological sites represent not only the historic period, but also the prehistoric Archaic and Woodland occupations of the area. The integrity of certain archeological sites has been affected by the use of certain locations for habitation during both the prehistoric and historic periods. Ten of the archeological sites judged potentially significant contain evidence of both major occupation periods. Four additional sites were occupied exclusively during the historic period, and six exclusively occupied during the prehistoric period. These archeological sites possess sufficient integrity to permit an interpretation of the area's pattern of prehistoric and historic development.

The majority of the ten identified cemeteries can be identified as associated with the families of the planter-landowners and slave-tenants who resided in the project area during its 100 year historic period. Cemeteries are not ordinarily considered eligible for the National Register unless they are associated with historically important individuals or events, possess distinctive design features, or are of exceptional age.

4.10.4 References

Cole, G., and L. S. Alexander 1981. Cultural Resource Survey, General Electric Montgomery Operation Burkville, Alabama. Report of Investigation No. 22, Office of Archeological Research, University of Alabama, Moundville, AL.

Legend

- Potential Jurisdictional Wetlands
- Landfill Site Boundary
- Landfill Disposal Boundary
- Project Location

N

0 125 250 500 Feet

PROJECT LOCATION

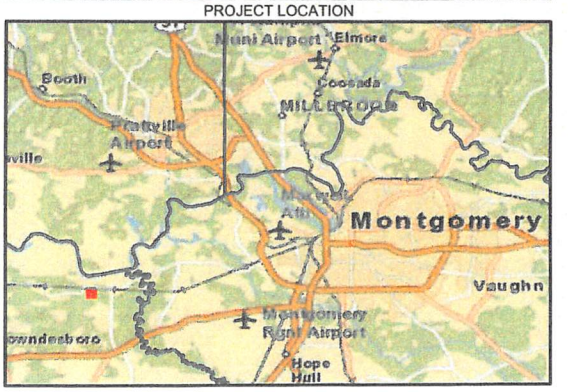


Figure X c
Potential Jurisdictional Wetlands
SABIC Landfill Permit Renewal
Lowndes County, Alabama

Source:
ESRI World Imagery online imagery service

5.0 SITING STANDARDS

Section 5.0 addresses the siting standards outlined in ADEM Administrative Code R.335-13-4-0.1. compliance with these standards is required in order to prevent adverse effects on health or the environment. The landfill complies with all the siting standards as described in the following paragraphs.

5.1 FLOODPLAIN

The site is not located within the 100 year flood boundary as defined by the Federal Emergency Management Agency (FEMA), Flood Insurance Rate Map (FIRM). The 100-year flood line is shown on the map included in Appendix B.

5.2 ENDANGERED OR THREATENED SPECIES

The presence of endangered or threatened species has been addressed on the SABIC site, both in the Environmental Report prepared by ERT in 1981, and in the Permit Application for the SABIC Lined Industrial Landfill prepared in 1992. The documents conclude that no endangered or threatened species are known to exist on the SABIC site. Furthermore, areas of the SABIC Construction Landfill have been previously disturbed by landfill and borrow operations.

5.3 WATER QUALITY

SABIC has an NPDES Permit (AL0054704) for stormwater discharges from the site. The stormwater runoff from the landfill operations is addressed in the permit for outfall number DSN008.

5.4 WETLANDS

Based on the field guide for identifying and delineating wetlands (Corps of Engineers Wetlands Delineation Manual, January 1987) there are no wetlands present on the landfill site.

5.5 GROUNDWATER OR BEDROCK SEPERATION

Based on the data presented in Section 4, "Site Geology and Hydrogeology", the lowest point of the disposal area unit will be at least 5 feet above the seasonal high groundwater. The groundwater and disposal area contours are shown on Drawing C-5.

5.6 AIRPORTS

The landfill is not located within five miles of any known airport runway. Also, putrescible waste, which may attract birds, is not disposed of at the landfill; therefore, operations would not pose a bird hazard to aircraft.

5.7 ZONES OF ACTIVE FAULTS, SINKHOLES, AND KARST TERRAIN

Based on a literature review, there are no known active faults within a one-mile radius of the perimeter of the site. Subtitle D rules define a seismic impact zone as an area with a 10 percent or greater probability that the maximum horizontal acceleration in lithified earth material, expressed as a percentage of the earth's gravitational pull (g), will not exceed 0.10g in 250 years. According to the 1992 (revised) Algermissen Map (referred in the U.S. EPA's guidance for solid waste disposal facility criteria), the site lies within an area with a maximum horizontal acceleration of less than 0.075g. Therefore, the site does not lie within a seismic impact zone.

Karst features, such as sinkholes and / or disappearing streams, have not been identified within the vicinity of the site.

5.8 ARCHAELOLOGICAL OR HISTORICAL SIGNIFICANCE

The Office of Archaeological Research, University of Alabama conducted an investigation of cultural resources during 1981 for the SABIC site. The investigation report, which was included in the 1981 GE Site Environmental Report, is included in Appendix B. A site map is also included in the appendix which shows the location of the cultural resources which were identified. The landfill site is not located in an area identified as being archaeologically or historically sensitive.

Appendix A

4.3 Geology and Groundwater

This section discusses the existing geological and groundwater characteristics in the project region and in the immediate vicinity of the GE site. Issues addressed include regional physiography, seismicity, geology, and major aquifers and groundwater use. More detailed information is furnished concerning site-specific conditions, including surficial geology (soils, terrace and floodplain deposits), underlying strata (the Mooreville Chalk, the Eutaw Formation, the Tuscaloosa Group consisting of the Gordo and Coker Formations), groundwater hydrology and quality, and groundwater use. Table 4.3-1 is a glossary of geologic terms used in this section.

4.3.1 Regional Setting

Physiography

The GE site (see Figure 4.3-1) is located within the northernmost portion of the Black Prairie or Black Prairie Belt physiographic division of the Coastal Plain physiographic province. In this area, which covers much of Lowndes County, black topsoil overlies the Cretaceous age Mooreville and Demopolis Chalks that occur at or near the land surface. The Black Prairie is characterized by gently rolling topography (Scott 1957). Figure 4.3-2 shows the areal extent of physiographic divisions in Alabama.

Seismicity

There are no significant faults or other tectonic features in the vicinity of the GE site, and the minor tectonic features in the area have probably been inactive for over 60 million years (Clark, Skrzniecki, and Nordstrom 1974; Clark, Szabo and Dickens 1972).

The GE site is located in a Zone 1 seismic risk area, which has a potential for only minor earthquake damage (seismic risk areas range from Zone 0, no damage, to Zone 3, major destruction) (U.S. Department

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TABLE 4.3-1

GLOSSARY OF GEOLOGICAL TERMS

Alluvial	deposited by a stream or other moving water
Aquifer	a body of rock or soil capable of yielding economically significant quantities of water to wells and springs
Artesian	confined under hydrostatic pressure
Calcareous	containing significant amounts of calcium carbonate
Cation Exchange Capacity (CEC)	a measure of a material's ability to absorb certain positively charged ions in exchange for releasing others
Confining Bed	a body of significantly less permeable material stratigraphically adjacent to one of more aquifers
Cretaceous	65 to 136 million years in age
Glauconitic	containing the greenish mica mineral glauconite
Karst Topography	a terrain resulting from the solution of carbonate rock (such as limestone) and characterized by sinkholes, caves and underground drainage
Marl	a mixture of clay and calcium carbonate in varying proportions
Permeability	the capacity of a material to transmit fluid
Physiographic	pertaining to the description and origin of land forms
Piezometer	an observation well in which the screened interval is sealed off
Pleistocene	the glacial epoch, beginning approximately 2.5 to 3 million years ago and ending approximately 10,000 years ago
Potentiometric Surface	an imaginary surface representing the level to which water will rise in a well
Recharge Area	an area in which water is absorbed to eventually reach an aquifer's zone of saturation

TABLE 4.3-1 (Continued)

GLOSARY OF GEOLOGICAL TERMS

Saturated Zone	the subsurface zone in which all the pores are filled with water under greater-than-atmosphere pressure
Tectonic	pertaining to movements in the earth's crust
Uncomformably	said of a rock unit directly overlying another unit but separated in time by a period of erosion or a change in depositional environment
Water Table	the surface of a body of unconfined groundwater at which the pressure is equal to that of the atmosphere

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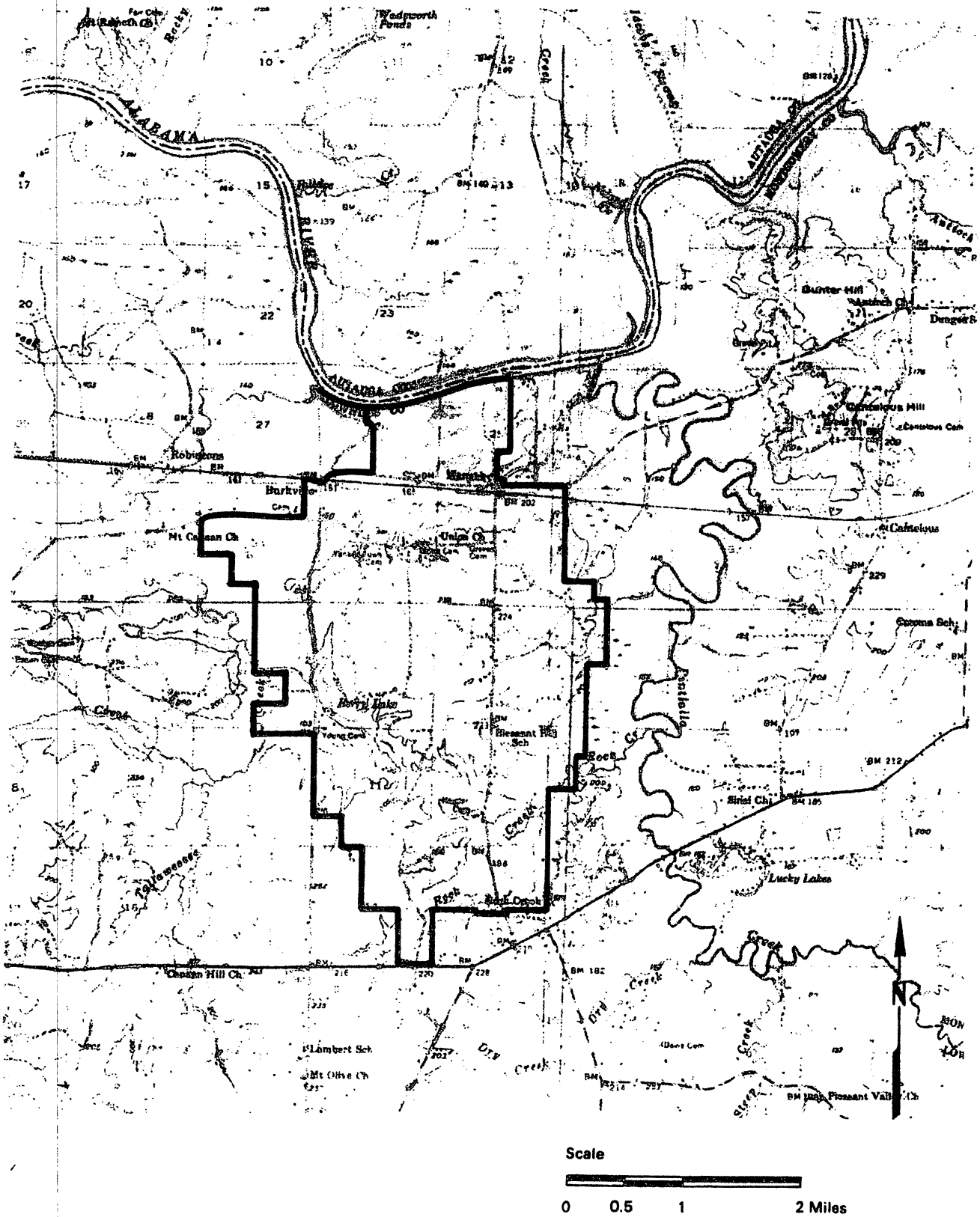
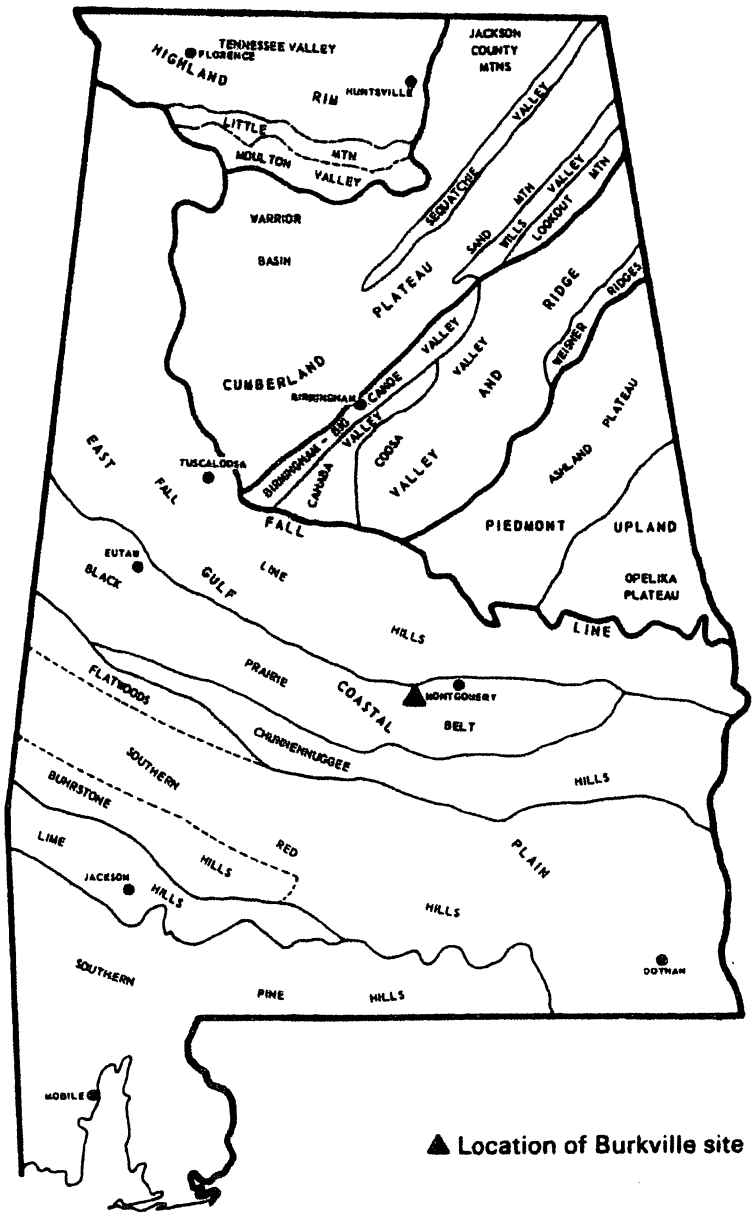


Figure 4.3-1 EMM Project - Proposed Site Boundaries



Source: Copeland 1968.

Figure 4-3.2 Physiographic Divisions of Alabama

of Commerce 1973). Alabama's earthquake record consists of only 14 earthquakes with an intensity of V or greater (an earthquake of intensity V is felt by practically all people indoors and many people outdoors) (U.S. Department of Commerce 1979). Only 3 of these earthquakes have been recorded within 100 miles of the site. Of these 3 earthquakes, 2 earthquakes (of intensity VI) occurred near Birmingham (approximately 95 miles north of the site), and 1 earthquake (of intensity V) occurred in Huxford (approximately 95 miles southwest of the site) (U.S. Department of Commerce 1973; 1979).

Regional Geology

The coastal plain sediments dip gently southwest at an approximate rate of 30 to 50 feet per mile. These Cretaceous age sediments unconformably overlie the crystalline basement complex and crop out as crescent-shaped bands, shown on Figure 4.3-3. Table 4.3-2 shows the geologic units present in the study area.

Major Aquifers

The major aquifers in the project region are the Eutaw, Gordo and Coker Aquifers. Each is contained within Cretaceous age formations that crop out north of the project area and dip to the south and southwest beneath the site.

Eutaw Formation

The recharge area and regional potentiometric surface of the Eutaw Aquifer are shown in Figure 4.3-4. The water in the Eutaw Formation is under artesian conditions and is confined below by the clays of the upper part of the Gordo Formation and above by the Mooreville Chalk. Water that recharges the Eutaw Formation west of Montgomery flows down-gradient to the south where it is largely intercepted by the Alabama River. Groundwater movement in the Eutaw Aquifer is very slow (approximately a few feet per year).

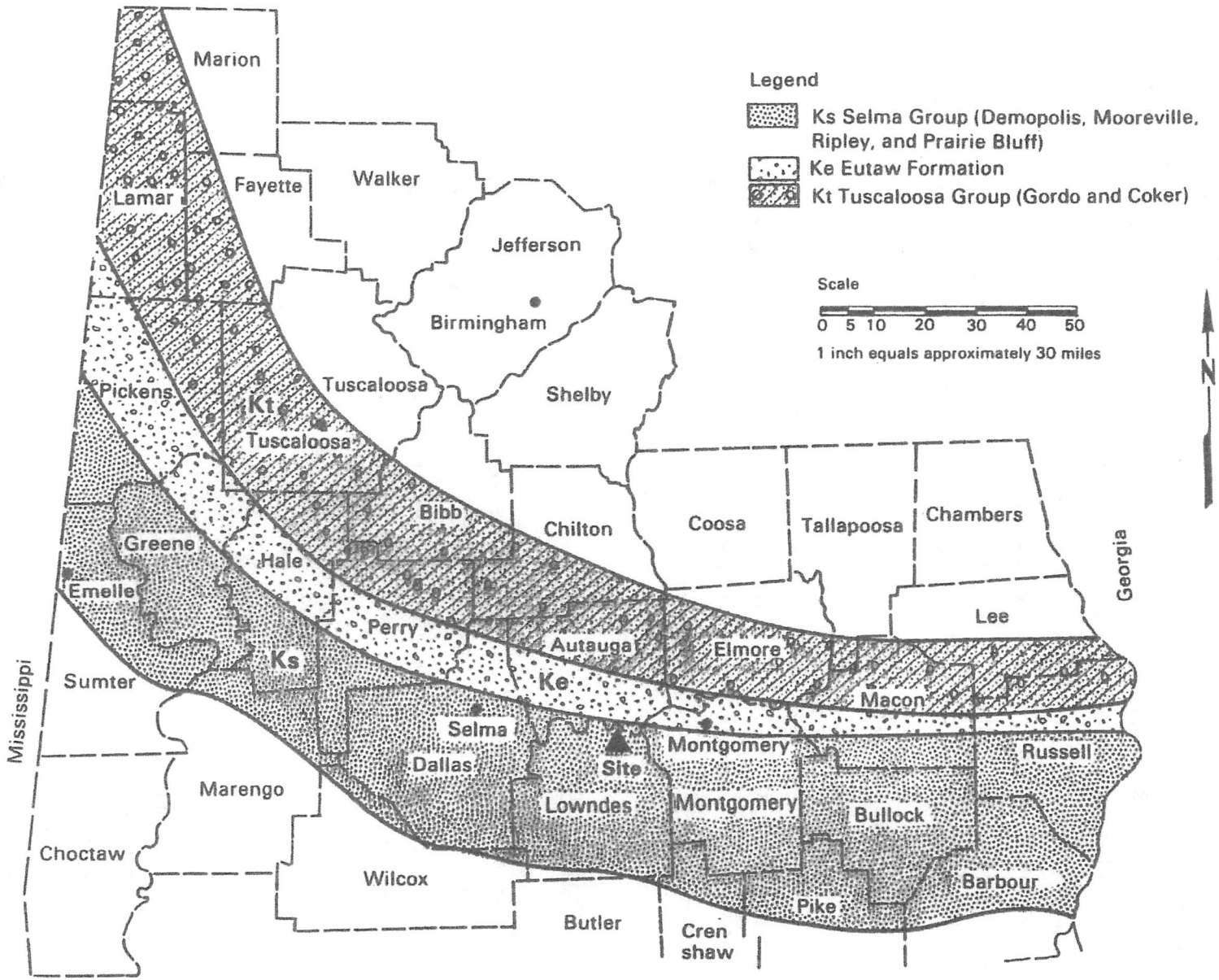


Figure 4.3-3 Outcrop Areas of Cretaceous Formations in Alabama

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TABLE 4.3-2

MAJOR GEOLOGIC UNITS IN THE BURKVILLE AREA

System	Series	Formation	Thickness (ft)	General Description	Water-Bearing Properties
Quaternary	Recent	Alluvium	0-20	Sand, gravel, silt, and clay; poorly sorted.	Yields small amounts of water to domestic wells.
Quaternary	Pleistocene	Terrace Deposits	0-50	Sand, gravel, and clay; reddish-brown and poorly sorted.	Regionally, may yield large quantities of water; locally, yields small amounts to domestic wells.
Cretaceous	Upper Cretaceous	Selma: Moore-ville Chalk	0-260	Calcareous clay, chalk, and marl; rests unconformably on Eutaw formation.	Relatively impermeable; not known to yield water in useable quantities.
	Upper Cretaceous	Eutaw	200-400	Greenish-grey sand, fine-to-medium grained, glauconitic; greenish-grey clay. Unconformably overlies Gordo Formation.	Sands may be good aquifers, yield medium-to-large quantities of water to municipal and industrial wells. High mineralization limits its use.
	Upper Cretaceous	Tuscaloosa: Gordo	210-350	Yellow sand, medium-coarse grained, poorly sorted, some clay imbedded. Beds of gravel in lower part.	Sand portions are good aquifers, supply water for municipal, industrial and domestic use.
	Upper Cretaceous	Tuscaloosa: Coker	550	Light-grey medium-to-coarse grained micaceous sand interbedded with micaceous sandy clay.	Sand beds used as source of municipal water in Montgomery County but not in Lowndes because of depth.
	Lower Cretaceous	Undifferentiated			
Pre-Cretaceous				Mica schist	Yields no water to wells.

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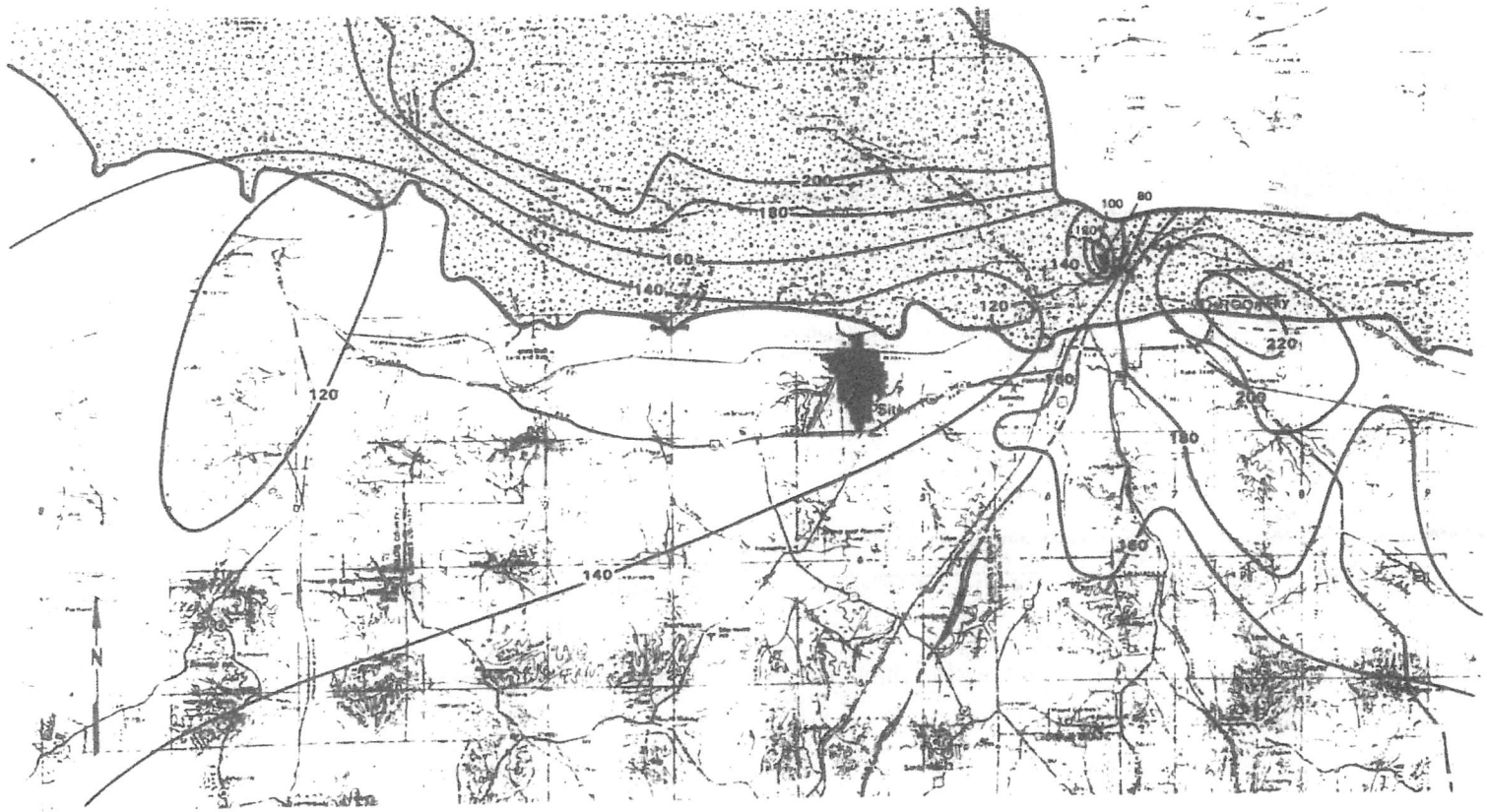

Modified from: Gardner, 1980; Knowles et al, 1960; Powell et al, 1957; Scott, 1960; and Scott, 1957.

Scale
5 0 5 10 Miles
5 0 5 10 Kilometers

Legend
Outcrop (recharge) area of Eutaw Formation
Contour drawn on potentiometric surface of Eutaw Formation (contour interval = 20 ft.)

Figure 4.3-4 Recharge Area and Regional Potentiometric Surface of the Eutaw Aquifer

Chloride concentrations in the Eutaw Formation vary from less than 100 milligrams per liter (mg/l) in Montgomery to approximately 3,500 mg/l in central Lowndes County. The chloride concentration is high throughout central Lowndes County but decreases rapidly in the northwest corner of the county to less than 100 mg/l (Scott 1957). It is thought that the chloride content of the Eutaw Formation is due to incomplete flushing of salt water trapped in the formation during deposition (Carlston 1944).

Gordo Formation

The Gordo Formation crops out as a crescent-shaped band adjacent to and north of the Eutaw Formation (see Figure 4.3-3). Groundwater in the Gordo Aquifer is under artesian conditions; the Gordo is confined above by the clays in its upper unit and below by clay and shale at the top of the Coker Formation. Figure 4.3-5 shows contours of the potentiometric surface of the Gordo Aquifer; the generalized direction of flow is perpendicular to the contour lines shown in this figure.

Groundwater flow in the Gordo Aquifer in the project region is generally toward the Alabama River. In the area of the river, the Gordo flows upward through its confining bed to the Eutaw Aquifer and to the river. Figure 4.3-5 also shows the influence of two municipal well fields in Montgomery on the Gordo Aquifer.

The chloride concentration of water in the Gordo Aquifer is very low throughout the northern portion of the project region. However, it increases to the south and southwest, and in southern Lowndes County exceeds 4,000 mg/l.

Coker Formation

The Coker Formation crops out north of the Gordo Formation. The hydrology of the Coker is similar to that of the overlying Cretaceous aquifers in that it is recharged at its outcrop area and under artesian conditions. Because of its great depth throughout the

region, the Coker is rarely used; hence little regional hydrologic information is available.

Groundwater Use

Regional use of the Eutaw Aquifer reflects its quality. The city of Montgomery taps the Eutaw in several of its 40 municipal wells. Use of the Eutaw in eastern Lowndes County, northwestern Lowndes County, and adjacent Autauga and Dallas counties is predominantly domestic. Selma operates two of its five wells in the Eutaw Aquifer (Chandler 1981). The Eutaw Aquifer is virtually unusable in central Lowndes County because of high chloride concentrations.

The Gordo Aquifer is used as a major source of municipal water in the project region because of its good quality. Most of Montgomery's 40 wells, including the 25 wells in the West Well Field (located approximately 6.5 miles northeast of the GE site) and two of Selma's five wells, are screened in the Gordo Aquifer (Bryant 1981; Chandler 1981). The town of Lowndesboro, four miles west of the GE site, operates one well in the Gordo Aquifer. This well yields 150 gallons per minute and supplies approximately 125 houses (Kelly 1981). There is some domestic use of the Gordo Aquifer in Lowndes County, especially where the water quality in the overlying Eutaw Aquifer is poor; however, the cost of drilling to the deeper Gordo Aquifer is often prohibitive for domestic supply purposes.

Because of its great depth, the Coker Aquifer is rarely used. Selma operates one of its five wells in the Coker Aquifer (Chandler 1981). There is no known domestic usage of the Coker Aquifer in the project region.

4.3.2 Site Conditions

Geology

The surficial geology of the GE site is shown in Figure 4.3-6. The Mooreville Chalk is encountered onsite at depths ranging from 0 to

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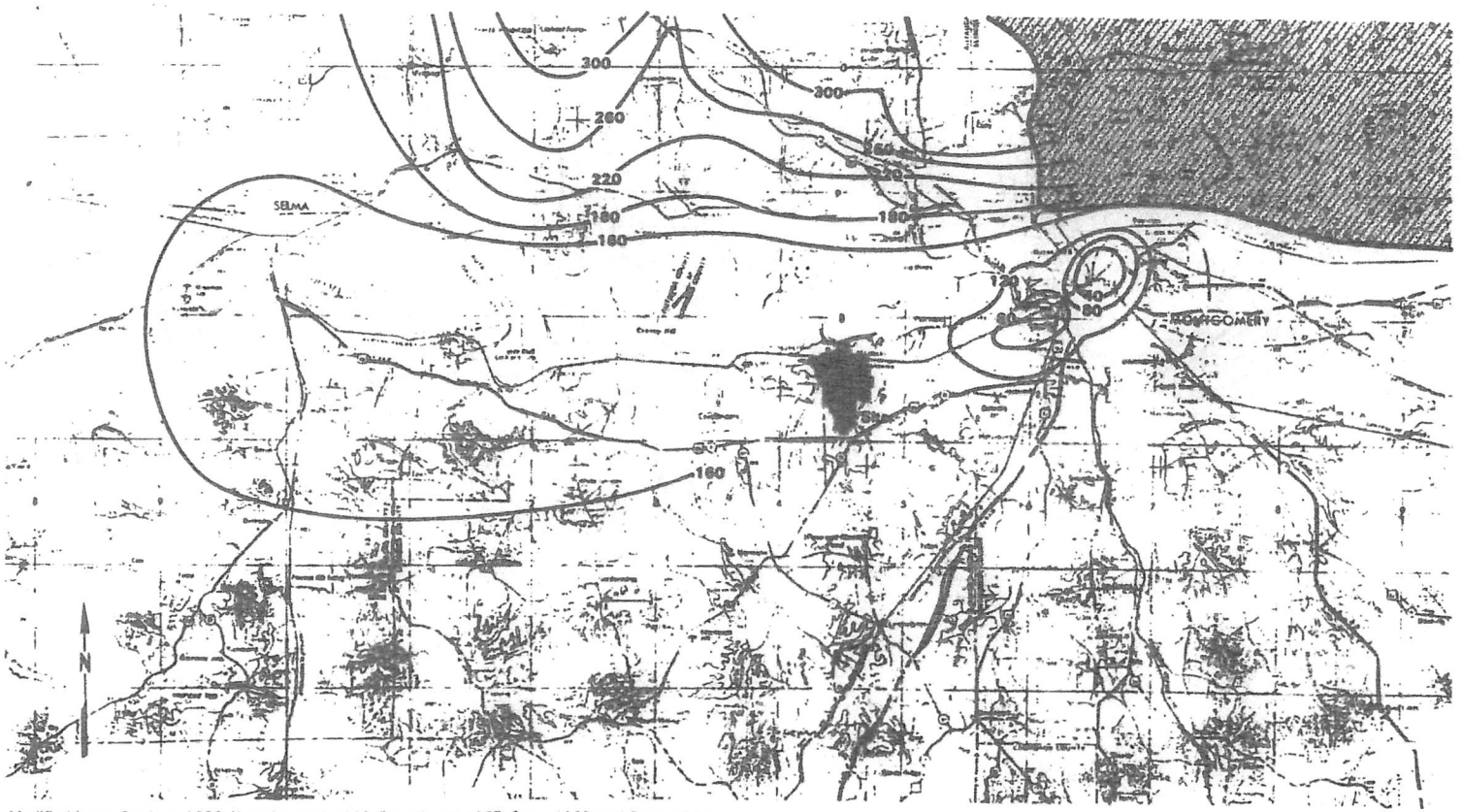


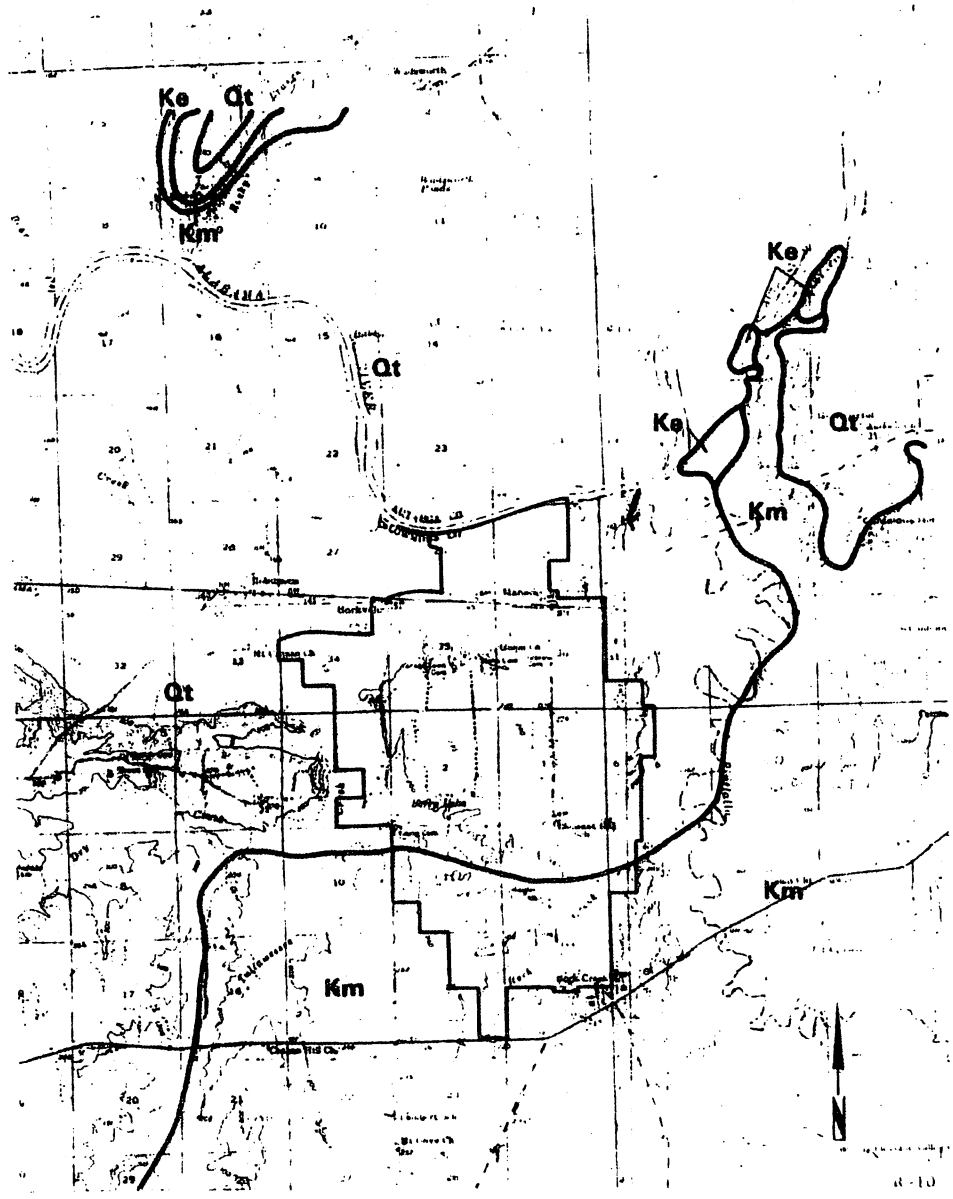
Modified from: Gardner, 1980; Knowles et al, 1960; Powell et al, 1957; Scott, 1960; and Scott, 1957.

Scale
5 0 5 10 Miles
5 0 5 10 Kilometers

Legend
Outcrop (recharge) area of Gordo Formation
Contour drawn on potentiometric surface of Gordo (contour interval = 40 ft.).

Figure 4.3-5 Recharge Area and Regional Potentiometric Surface of the Gordo Aquifer

Symbol	Age	Formation	Composition
Qt	Quaternary	Alabama River Terrace Deposits	light brown to red brown, stratified clay, sand, and gravel (locally may be overlain by a thin discontinuous veneer of alluvial material)
Km	Cretaceous	Mooreville Chalk	grey calcareous clay (locally may be overlain by a thin, discontinuous veneer of terrace or alluvial material).
Ke	Cretaceous	Eutaw	greenish-grey coarse to medium grained sand and sandy clay (locally may be overlain by a thin discontinuous veneer of terrace on alluvial material).



Notes. 1) Thin deposits of alluvial material along narrow stream channels are not shown.
2) Contacts between geologic units are approximate only

Scale
0 0.5 1 2 Miles

Sources Scott, 1960; Scott, 1957; Knowles, et al. 1960)

Figure 4.3-6 Surficial Geology of the Burkville Site

approximately 50 feet. This formation is present at or near the land surface in the southern portion of the site. In the central and northern portions of the site, the Mooreville Chalk is obscured by a veneer of terrace and alluvial deposits consisting of sand, gravel, and clay. In the central portion of the site, these deposits consist of generally permeable sand and gravel constituting a terrace formed by the Alabama River. Lower-lying areas to the west and north contain more recent alluvial sediments, typically consisting of silty and sandy clay.

As shown on Figure 4.3-7, the Mooreville Chalk ranges in thickness from less than 10 feet in the extreme northern portion of the site to more than 215 feet near U.S. 80. The Eutaw Formation directly underlies the Chalk and is in turn underlain by the Gordo and Coker Formations (Tuscaloosa Group).

Soils

The soils on the northern and central portions of the GE site belong to the Cahaba-Chewacla-Myatt Series. These soils, typically present along bottomland and cultivated fields on or near major floodplains, are typically deep and well-drained and occupy flat to very gentle slopes. The Sumter-Oktibbeha-Leeper soils of the Black Prairie Belt occupy the southern portion of the site. These soils are also characteristically found on nearly level to gentle slopes (Law 1981).

Terrace Deposits

As shown in Figure 4.3-5, the central and northern portions of the site are underlain by alluvial terrace and floodplain deposits. Data derived from numerous on-site borings (see Figure 4.3-8) (Law 1981) indicate that these deposits include two broad classes of material: the upper, more clayey soils and the lower, sandy to gravelly soils. The upper soil component typically consists of clays with varying quantities of sand, silt, and gravel. These soils are

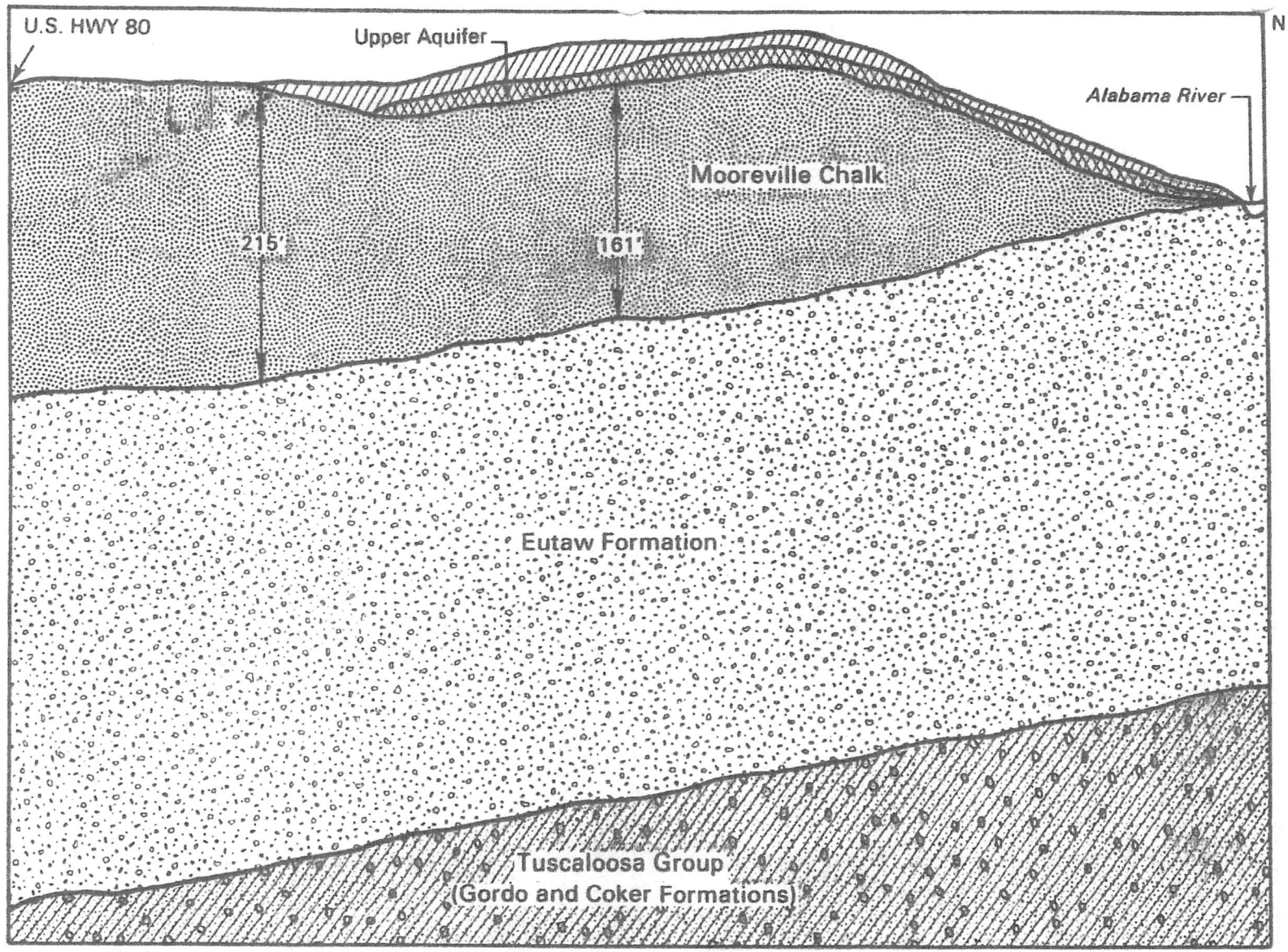


Figure 4.3-7 Schematic North-South Section Through the Burkville Site

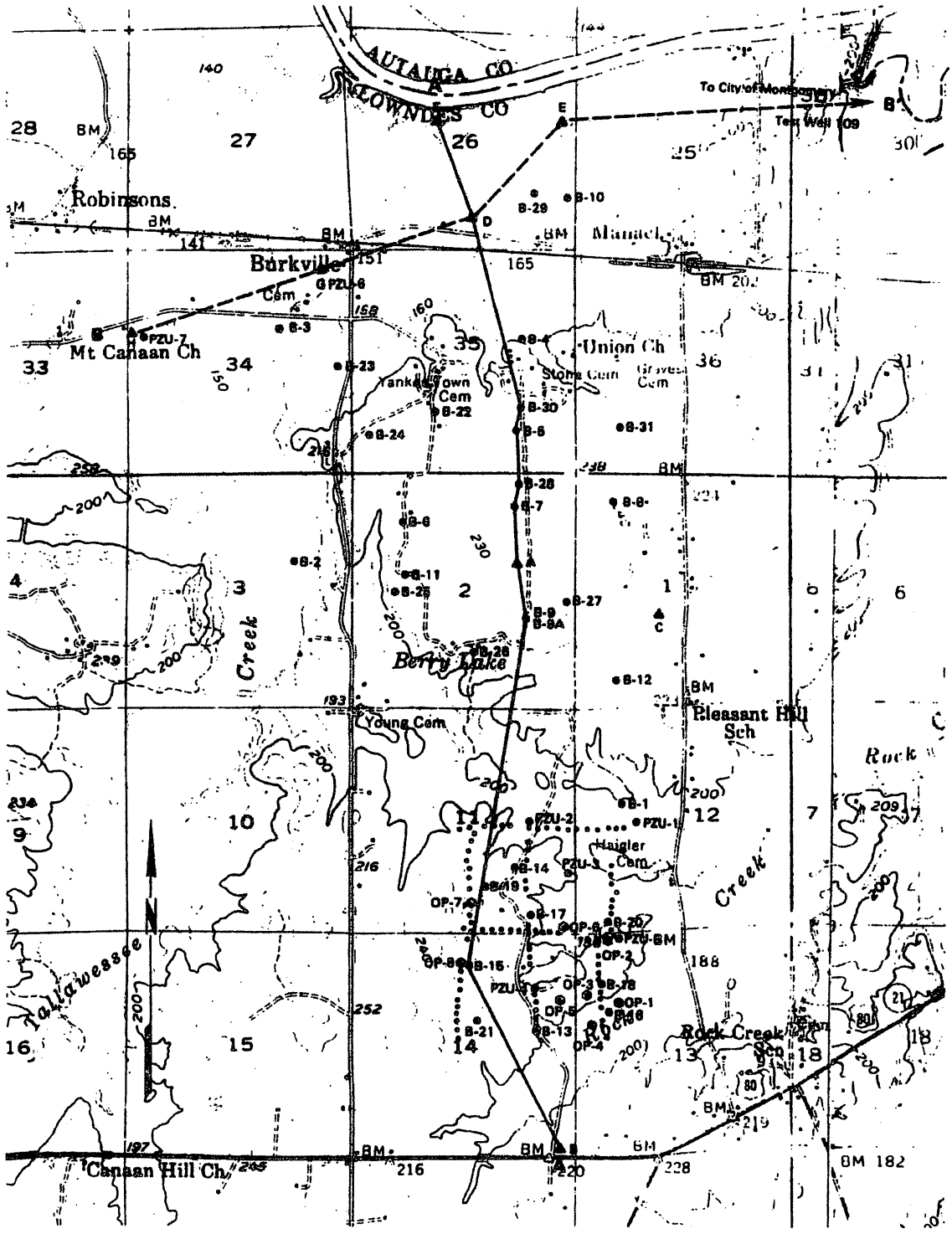


Figure 4.3-8 Map Showing Hydrogeologic Data Points and Key to Cross Section

generally found to depths of 10 to 20 feet. At lower levels, the terrace deposits are typically more granular. The Mooreville Chalk is generally encountered directly below the alluvial deposits. In most of the terrace soil areas, there appears to be no transition zone of weathered Chalk above the hard, unweathered material. Several of the borings on the central portion of the site encountered a stratum of soft to stiff clay above the Chalk. The thickness of the terrace and floodplain deposits ranges from 23 to 43 feet.

Mooreville Chalk

Laboratory analysis of samples obtained from the Mooreville Chalk indicated that the unweathered portion of the Chalk is a uniform, hard (partially cemented) calcareous clay with traces of calcite crystals. Fossil molds, small shells, pyrite cystals, and nodules occasionally occur on horizontal bedding planes. The character of the unweathered Chalk changes slightly with depth. Several samples indicated an increase in clay content below depths of 55 to 65 feet (Law 1981).

Selected samples of the unweathered Mooreville Chalk were analyzed to determine pH, cation exchange capacity (CEC), and calcium carbonate content. The slightly alkaline pH values (7.2-8.7) are typical of chalks and calcareous clays in Alabama and Mississippi. The relatively high CEC values (16-33 meq/100g) result from the high concentrations of montmorillonite clay, which has a comparatively high CEC. The Mooreville Chalk at the site has a calcium carbonate content ranging from 30%-63% (Law 1981).

On-site subsurface investigations have shown that the Mooreville Chalk is virtually devoid of structural features (such as joints, fractures or faults) (Law 1981). Some small cracks were observed in the weathered Chalk; however, they did not extend downward into the unweathered Chalk. This evidence suggests that these features are the result of seasonal moisture changes in the weathered Chalk (Law 1981).

The permeability of the unweathered Chalk was tested in the field and in the laboratory. These tests indicated a coefficient of permeability in the range of 10^{-8} to 10^{-9} cm/sec (Law 1981).

These values represent practically impermeable material. No features or conditions were encountered which would suggest the presence of more permeable zones (ERT 1981).

Eutaw Formation

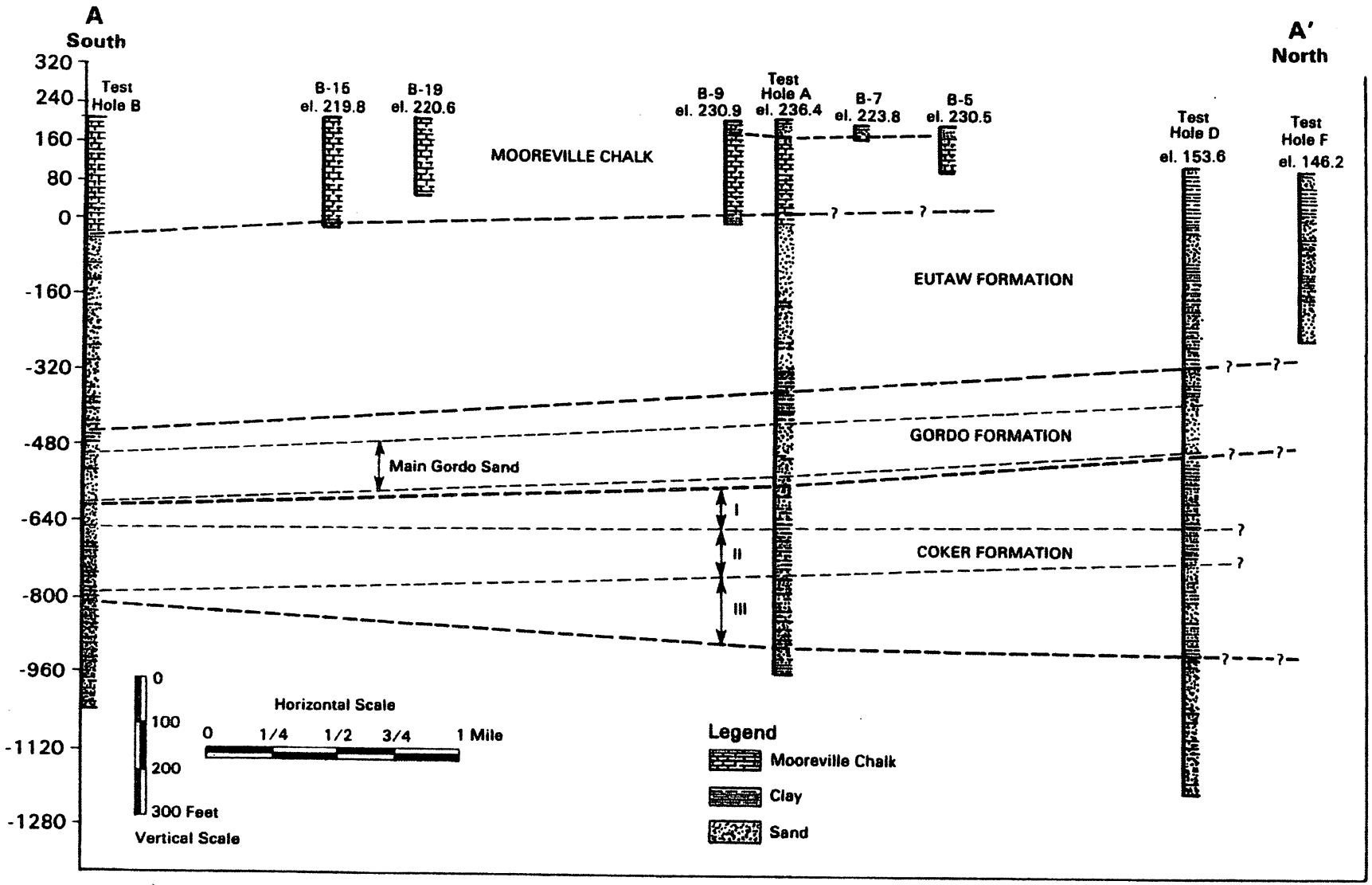
The Eutaw Formation underlies the Mooreville Chalk at the GE site. The Eutaw is encountered at depths ranging from 37 feet in the northern portion of the site to 246 feet at the southern end of the site. Four deep test wells show that the thickness of the Eutaw Formation at the site ranges from 339 to 414 feet (as shown in Figure 4.3-9). The dip of the Eutaw over the site is approximately 40 feet per mile to the south and southwest.

The Eutaw Formation at the site consists of interlayered sand, clayey sand, sandy clay, clay, shell, and occasional solid rock (see Figure 4.3-9). Portions of the Eutaw consist predominantly of sand and have been shown to be productive water-bearing zones. The uppermost of these zones is the Tombigbee sand member, consisting of massively bedded fine-grained sand containing some shells and occasional layers of calcareous sandstone.

Tuscaloosa Group

The Gordo Formation, which is the upper member of the Tuscaloosa Group, underlies the site at a depth of 420 feet in the north to 660 feet in the south. Site data indicate that the Gordo Formation has a dip of 34 feet per mile to the south and southwest. The thickness of the Gordo Formation at the site ranges from 160 to 230 feet. The relationship of the Gordo to other formations at the site is shown in Figure 4.3-9.

The Gordo Formation in this area consists of a thick zone of sand with some layers of clay in the upper part of the Formation. The main sand zone of the Gordo is encountered at a depth of 505 feet at the northern end of the site to 635 feet at the southern end and ranges in thickness from 100 to 115 feet (Layne 1981). Test wells encountered a



Source of well log data: Layne 1981

Figure 4.3-9 North-South Cross Section A-A' Showing Test Well Logs

zone of red and yellow clay at the top of the Gordo Formation. This clay zone, from 26 to 70 feet thick, acts as a confining bed between the permeable sands of the Eutaw and Gordo Formations.

The Coker Formation is the lower member of the Tuscaloosa Group and is encountered at a depth of 608 feet in the northern portion of the site and 818 feet in the southern portion. The Coker Formation has a total thickness of 200 to 425 feet at the GE site and dips approximately 45-50 feet per mile (Layne 1981).

In the Burkville area, the Coker Formation consists of three to five sand units interlayered with clay strata. Three units have been identified in the Coker Formation onsite: the basal unit consists of sand, gravel, and boulders with some clay; the middle unit consists of well-sorted sand interbedded with fissile clay and calcareous sandstone; the upper unit consists of sand, gravel, and varicolored clay (see Figure 4.3-9).

Groundwater Hydrology and Water Quality

Upper Aquifer

Test borings and piezometers were installed in the terrace deposits found in the central and northern portion of the GE site (see Figure 4.3-8). Field permeability tests were conducted at several borehole locations in the terrace deposits. Observed values ranged from 1×10^{-2} to 2×10^{-8} cm/sec with a mean of 2×10^{-3} cm/sec. The results of laboratory permeability tests conducted on several samples of terrace materials ranged from 3×10 to 2×10^{-7} cm/sec (Law 1981). These figures range from high to very low permeability.

A water table contour map of the Upper Aquifer in late February 1981 is presented in Figure 4.3-10. Generally, the water table is 10 to 20 feet below the ground surface. As shown on Figure 4.3-10, the groundwater movement in the upper aquifer radiates outward from the central terrace area and feeds local surface water. Groundwater velocity was calculated to be approximately 20 feet per year.

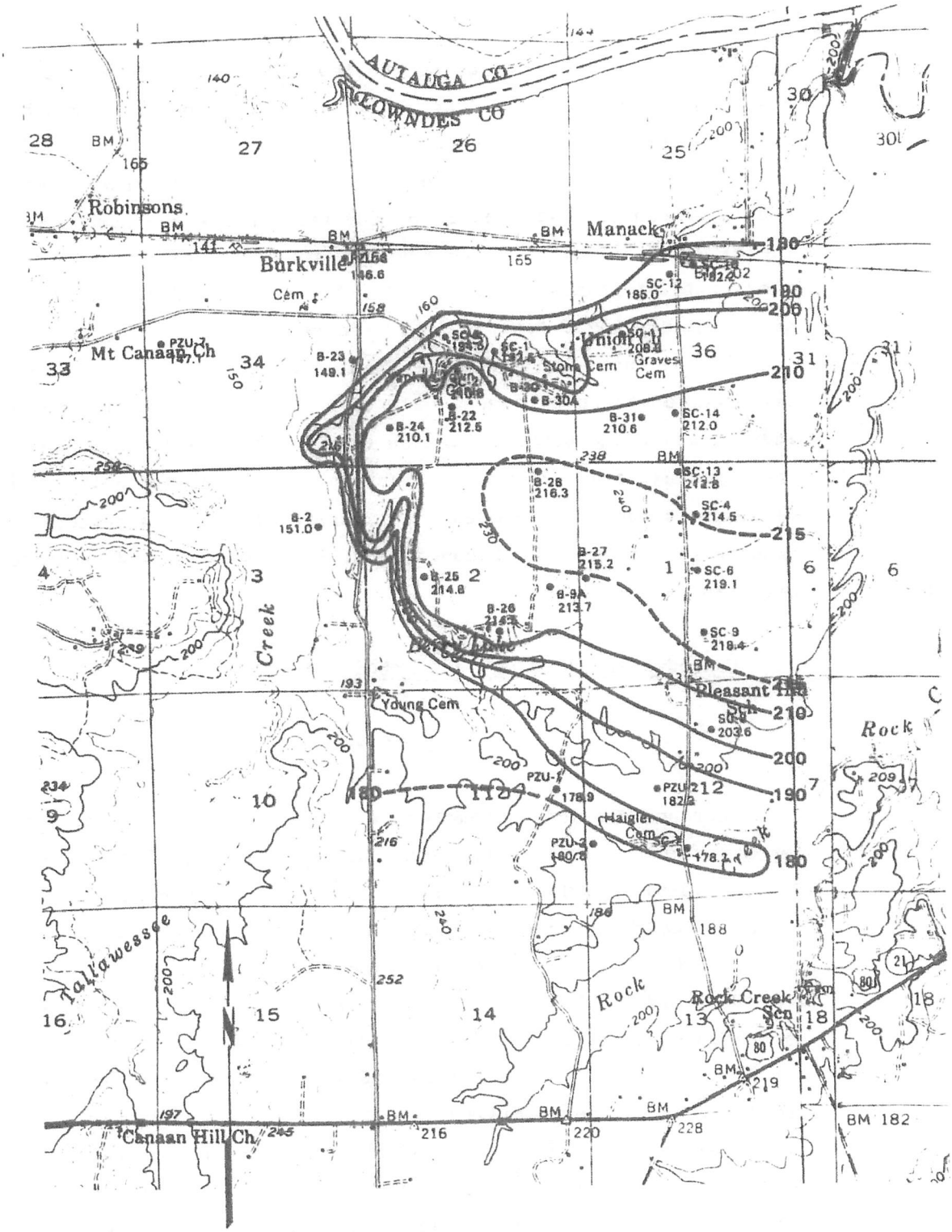


Figure 4.3-10 Contour Map Showing the Elevation of the Water Table - Upper Aquifer

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Eutaw Aquifer

Figure 4.3-11 shows the potentiometric surface of the Eutaw Aquifer at the GE site. As noted earlier, the Eutaw is an artesian aquifer (confined under hydrostatic pressure). The potentiometric surface of an artesian aquifer is the level to which water will rise in a well tapping that aquifer. The elevation of the potentiometric surface is usually expressed in feet above mean sea level (msl). As shown in this figure, the potentiometric surface slopes gently to the northeast. These data indicate that movement in the Eutaw Aquifer is very slow (approximately a few feet per year) and is generally to the northeast. The direction of flow probably reflects the influence of the West Well Field in Montgomery County.

The Eutaw Aquifer at the GE site is characterized by high sodium chloride concentrations. Carlston (1944) suggests that the high salinity in this area is due to incomplete flushing of formation water trapped within the Eutaw sediments at the time of deposition. Marked variations in quality of Eutaw water were observed in on-site test wells (see Table 4.3-3). Variations in quality in the Eutaw Aquifer may be related to geologic variations that permitted differential leakage from the underlying (high-quality) Gordo Aquifer.

Gordo Aquifer

Figure 4.3-12 shows the potentiometric surface of the Gordo Aquifer at the GE site. The potentiometric surface slopes to the northeast at a rate of approximately 9 feet per mile. This figure indicates the influence of the West Well Field in Montgomery County. The West Well Field contains 25 wells screened predominantly in the Gordo Aquifer. It is estimated that pumping at the West Well Field has resulted in a lowering of the Gordo potentiometric surface at the Burkville site of 10 to 15 feet (Layne 1981).

Water from the Gordo Formation was sampled from test wells A, B, C, and D (see Figure 4.3-8). Analyses show the Gordo water to be soft with a low solids content and close to pH 7. The principal

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TABLE 4.3-3
WATER QUALITY DATA FOR ARTESIAN AQUIFERS AT THE GE SITE

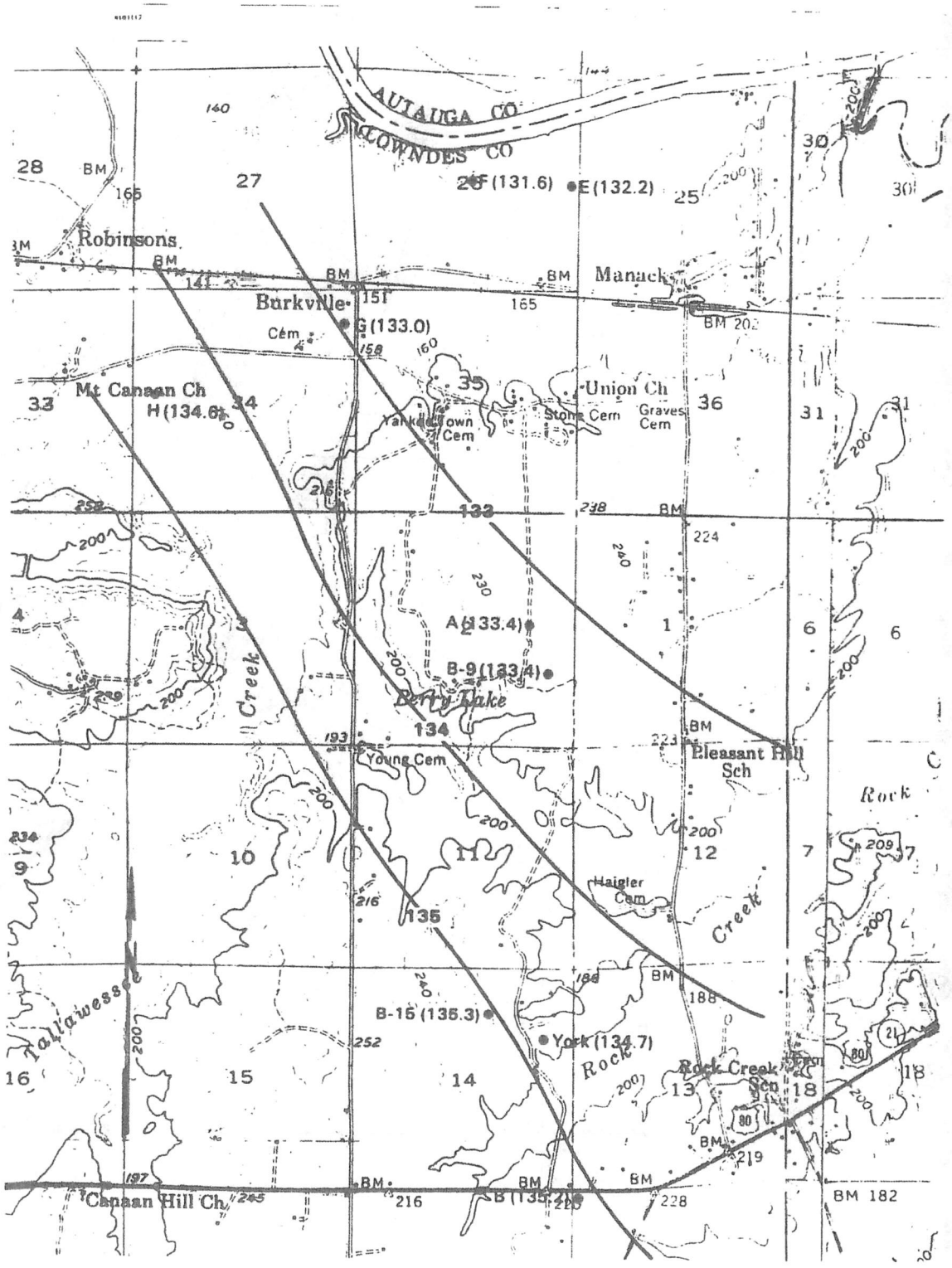
Well	No. of Samples	TDS	Ca	Na	HCO_3	Cl	SO_4	Hardness	pH
Eutaw Aquifer									
A	2	695-777	10.0-21.5	250-450	165-217	260-380	15-18.2	25-31	7.89-8.45
D	2	396-460	12.8	111-136	93-96	120-168	11-12.5	36	7.63-7.98
E	5	274-387	6.4-16.7	69-243	74-116	16-188	0-10	21-27	7.70-7.85
F	4	610-1736	16-46	200-560	89-310	260-800	0-2.3	45-143	7.65-8.00
G	4	2806-3697	109-308	335-1430	112-214	1426-2508	0-1	321-454	7.40-7.90
H	5	2962-4396	102-355	1070-1690	88-347	1450-3040	0-1.04	301-469	7.60-7.81
Gordo Aquifer									
A	4	69-173	0.7-3.0	7.1-97	45-69	2.2-21	2.7-12.5	8.3-91	7.0-8.7
B*	3	115-128	0.4-3.2	10.8-30.1	60-62	2.5-3.6	0-10.0	8.4-9.2	8.1-8.8
C	1	101	1.6	18.7	54	4.4	2.5	--	7.12
D	3	68-127	1.9-8.0	5.6-42	34-115	0-5.0	0-4.0	5.0-22.0	6.7-9.1
Coker Aquifer									
A	7	123-176	0.7-22.5	29-93	55-71	1.2-8.5	6.0-15.6	8.5-27	8.8-9.3
D	4	125-158	0-3.2	39-82	20-66	2.5-4.6	5.7-10.0	7.98	9.4-9.6

Source: Layne 1981.

Notes: 1. All parameters measured in milligrams per liter except pH which is measured in pH units.

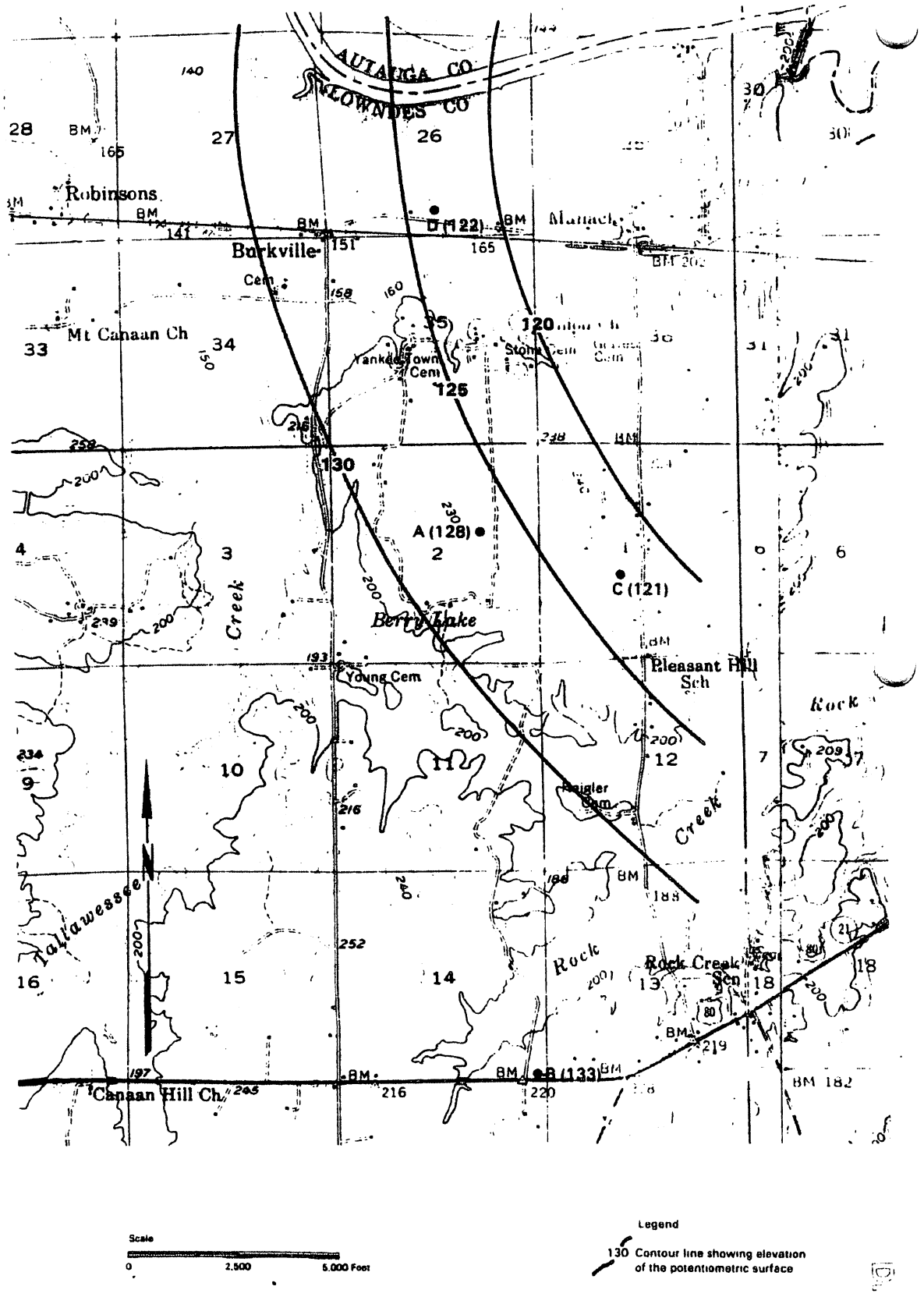
2. Federal drinking water standards (40 CFR 143 Proposed National Secondary Drinking Water Regulations) are: TDS, 500 mg/l; Cl, 250 mg/l; SO_4, 250 mg/l; pH, 6.5-8.5. There are no standards for the other parameters.

*Water from this well also from Coker Formation.



Source: Modified after Leyne 1981.

Figure 4.3-11 Potentiometric Surface of the Eutaw Aquifer at the Burkville Site



Source: Layne 1981.

Figure 4.3-12 Potentiometric Surface of the Gordo Aquifer at the Burkville Site

constituent is sodium bicarbonate with some dissolved silica and iron (Layne 1981). Water quality data are provided in Table 4.3-3.

Coker Aquifer

Figure 4.3-13 shows the potentiometric surface of the Coker Aquifer at the GE site. As shown in this figure, the potentiometric surface slopes to the south at a rate of approximately 15 feet per mile.

Water from the Coker Formation was sampled from test wells A, B, and D; the sample from test well B is combined with water from the Gordo Formation. Water from the Coker is characterized as a sodium bicarbonate water having a pH of 9. Because of its ionic instability, it is considered highly corrosive to metal (Layne 1981). Further water quality data from the Coker are provided in Table 4.3-3.

Groundwater Use

A groundwater use inventory was conducted in the two-mile area surrounding the GE site. Property owners were surveyed door to door concerning their source and use of water. Twenty-five wells (terrace) and 182 deep wells (Eutaw or Gordo) were inventoried (Figure 4.3-14).

Throughout the northern portion of Lowndes County, which borders the Alabama River, most wells are shallow and tap the Upper Aquifer. South of the terrace deposits, the shallowest aquifer is the Eutaw Formation. Deep wells are drilled through the Chalk to tap the sands of the Eutaw Formation or the deeper Tuscaloosa Group.

Within the two-mile area surrounding the site, there are no high yield (greater than 100 gpm) wells. Most wells serve as domestic water supply for one or several houses. Some wells (primarily domestic) are also used to water livestock, and some are used exclusively for livestock. Municipal water mains are presently being installed throughout the project area. Most property owners plan to tap the municipal water system but also to use their wells for supplying livestock, watering gardens, or as an emergency backup to

the municipal system. Two notable exceptions to this trend are property owners whose homes are far removed from the water mains and livestock owners whose wells are also far from the mains. For both, the cost of installing the necessary supply pipe is prohibitive (ERT 1981).

4.3.3 References

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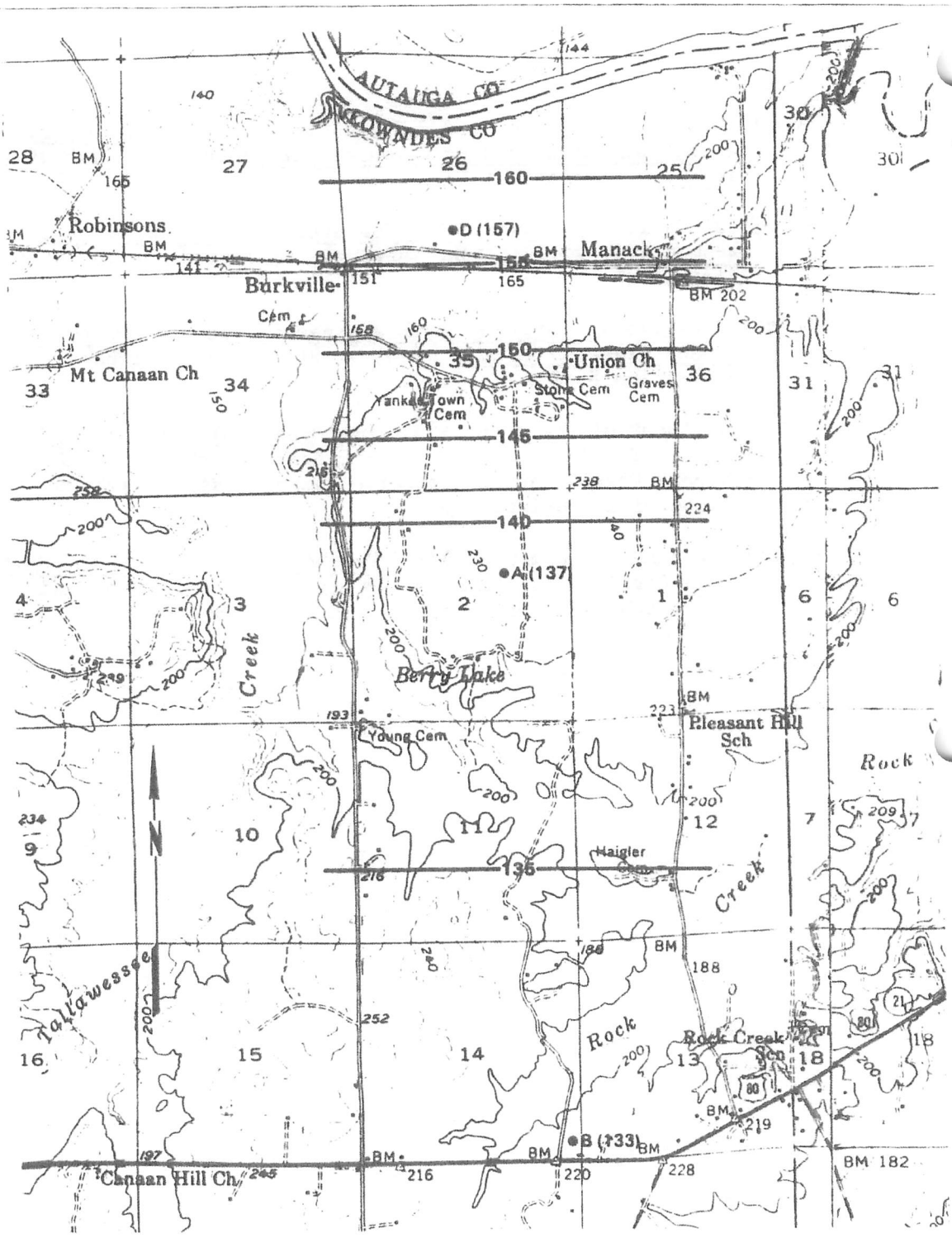


Source Layne 1981.

Figure 4.3-13 Potentiometric Surface of the Coker Aquifer at the Burkville Site

DRAFT

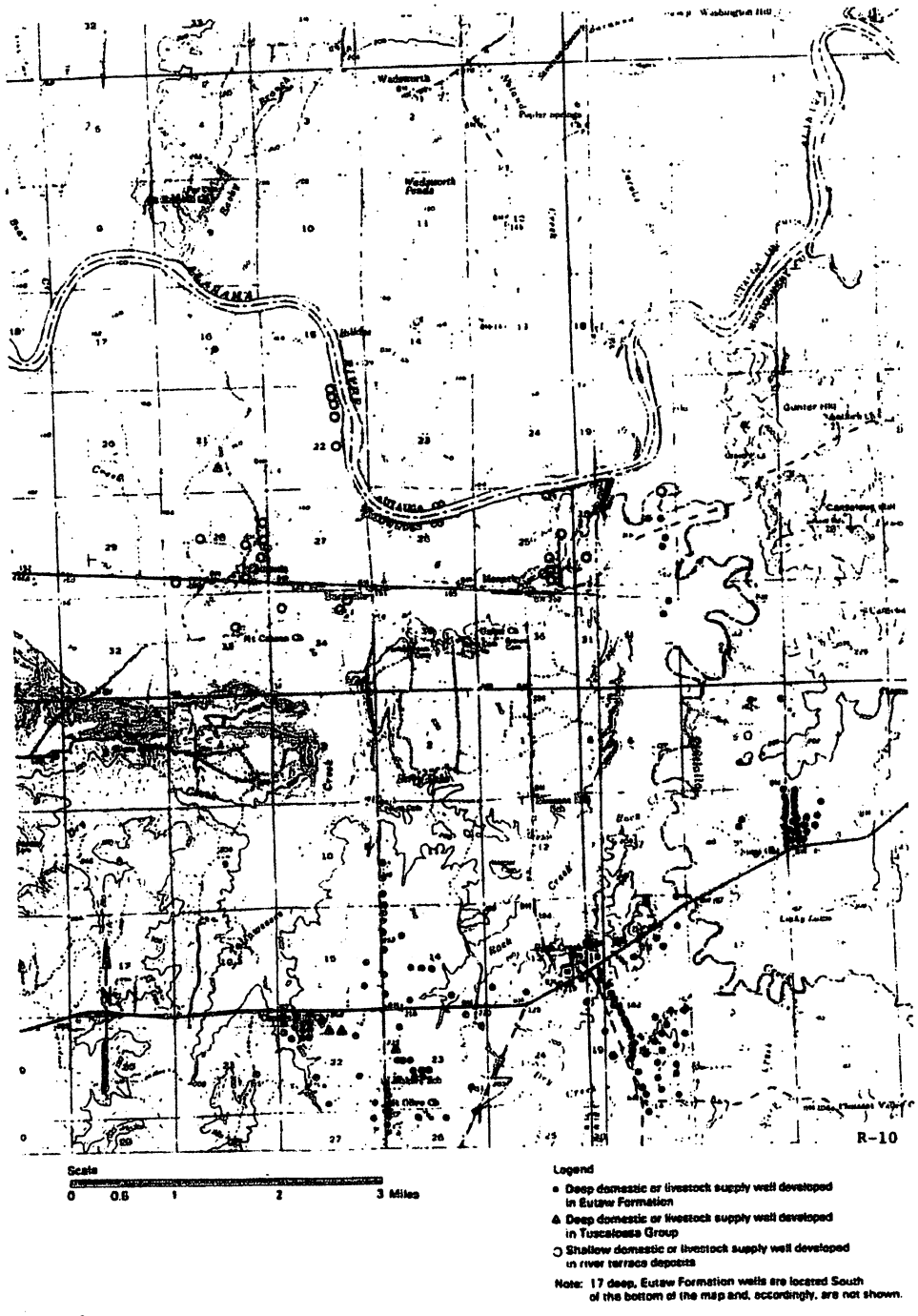
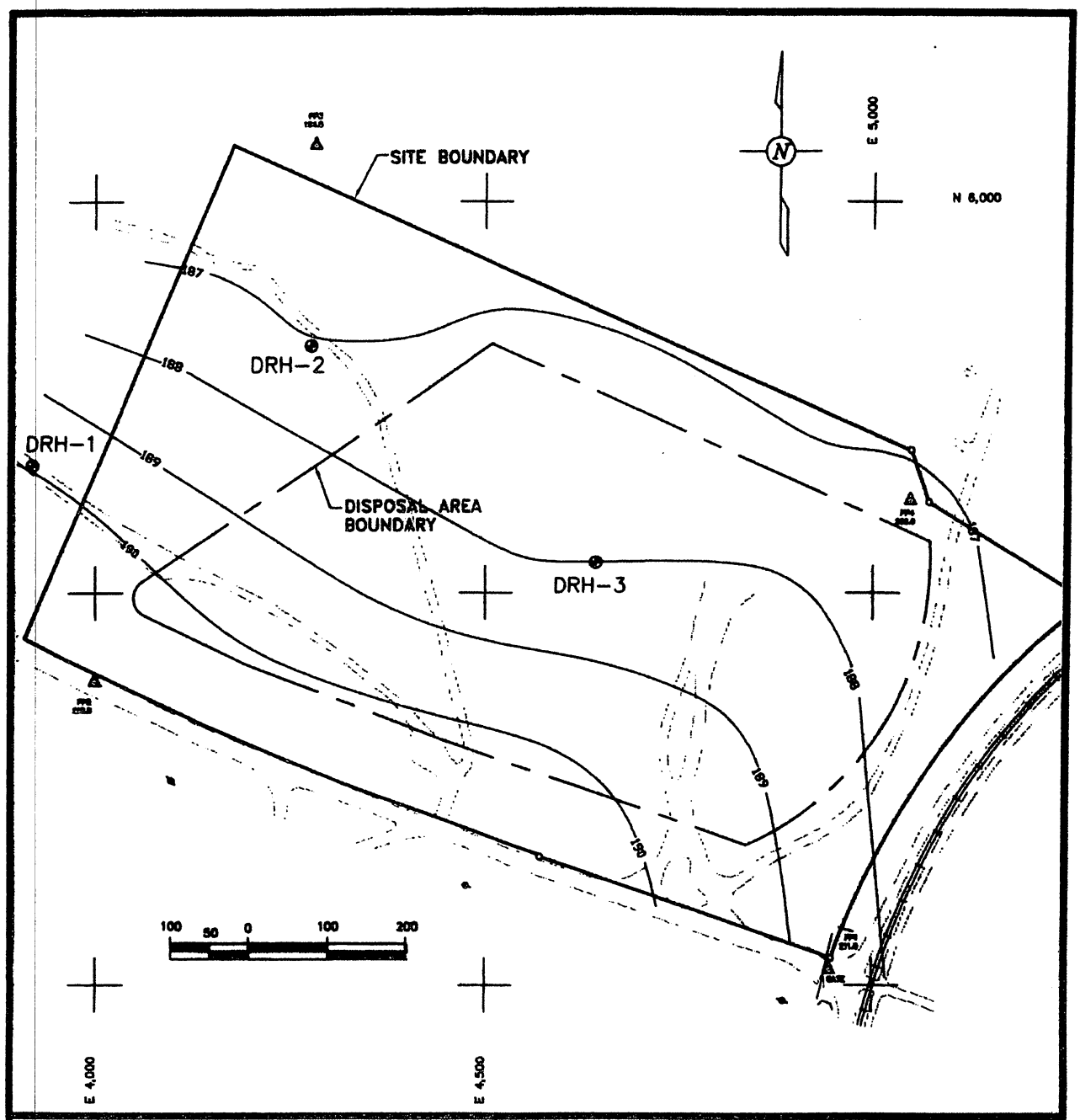


Figure 4.3-14 Map Showing Existing Wells Within Two Miles of the Site Boundary

DRAFT



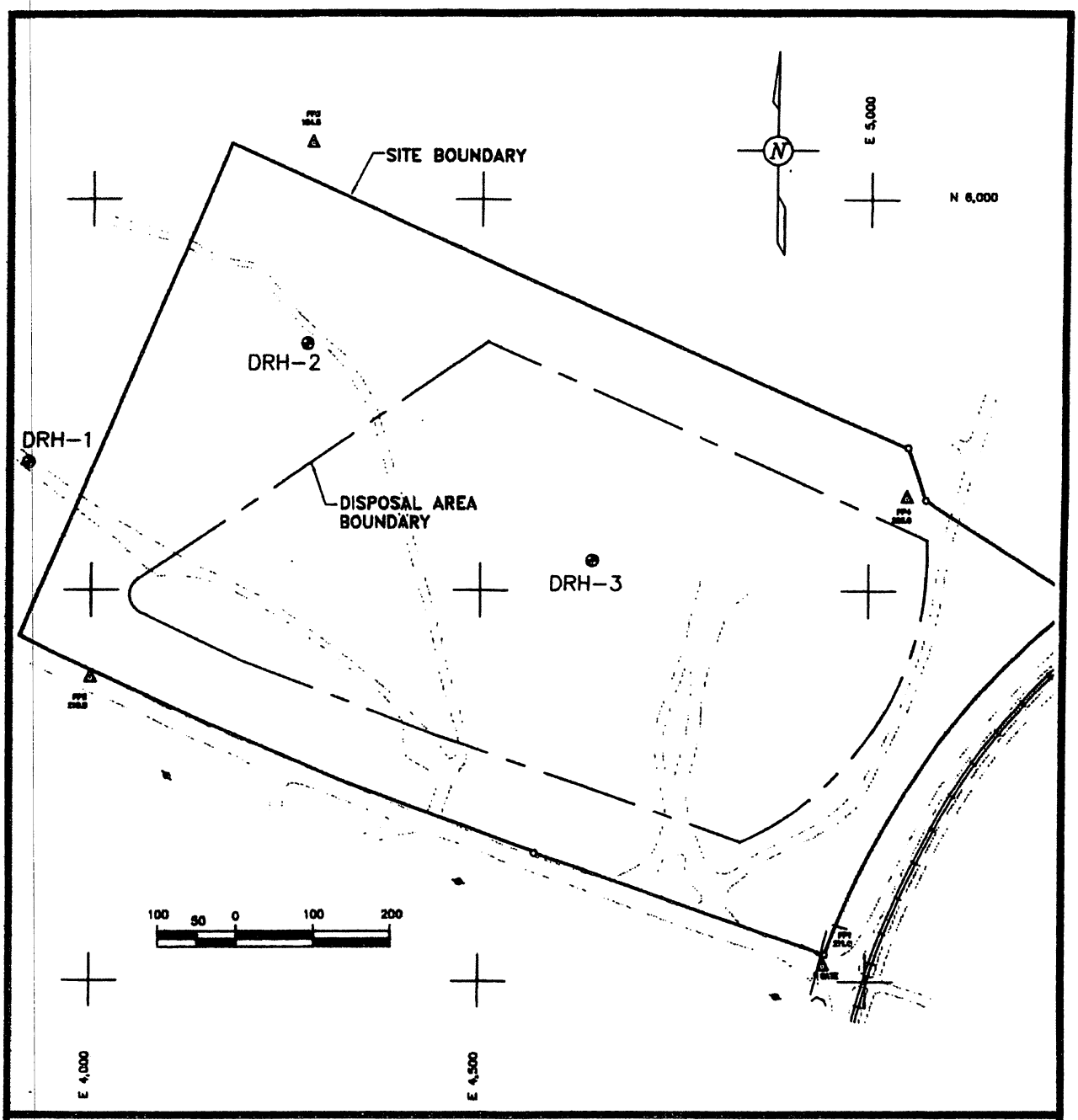
GE PLASTICS CONSTRUCTION LANDFILL

BURKVILLE, ALABAMA

GROUNDWATER CONTOUR MAP

FIGURE 4-2

BCM



GE PLASTICS CONSTRUCTION LANDFILL

BURKVILLE, ALABAMA

SOIL BORING LOCATION MAP

FIGURE 4-1

BCM

DLOGIC SHEET

PROJECT

GE PLASTICS - LOWNDESBORO, AL

HOLE NO. DRH-1 GE-1 Page / of /

Hole Location

Elevation 193.3 Depth 52 FEET

Bearing Inclination Logged By R. H. SPENCER (NAME) 11-29-93 (DATE)

MEASURED BREAKS OR PARTINGS ACROSS CORE
CHIPS, CAVITY, LOST CORE
MEASURED HIGH-ANGLE JOINT (JT=JOINT)
D CORE BROKEN BY DRILLER
M CORE PARTED ALONG MICA CONCENTRATION

WX: WEATHERED - WEATHERING
SL - SLIGHT
MOD - MODERATE
SEV - SEVERE

DIP: DIP OF LAYERING TEXTURE, FOLIATION, BEDDING, ETC.

SAMPLE INTERVAL

DEPTH	CONDITION OF CORE, WX, ETC.	Elev.	GRAPHIC LOG		ROCK TYPE, GRAIN SIZE, COLOR, TEXTURE, ETC.
	Auger to 5 feet BGS. Examine cuttings. Gravel and sand w/ silt and clay. Red and yellow. Upper 3 feet may be disturbed. Former borrow pit. Piles of gravel distributed around area	193.3		GM	SAND & GRAVEL w/ SILT AND CLAY - POORLY SORTED
5	Groundwater encountered @ Elev 190	190		CL	SILTY CLAY - YELLOWISH BROWN, MICACEOUS, plastic. SATURATED
					DEGREE OF SATURATION DECREASES w/ DEPTH
		185		ML	MOOREVILLE CHALK - V. FINE GRAIN, DARK GRAY, DRY HARD, CRUMBLY, SOME PYRITE CRYSTALS NOTED
10					
		180			
15					SAME AS ABOVE
		175			
20					SAME - MICA FLAKES
		170			
25					SAME AS ABOVE
		165			
30					SAME - BECOMING SLIGHTLY LIGHT OLIVE GREEN-GRAY
		160			
35					SAME AS ABOVE
		145			SAME TO BORING TERMINATION
50					

LOGIC SHEET

PROJECT

GE PLASTICS - LOWNDESBORO, AL

HOLE No. DRH-2 GE-2 Page 1 of 1

Hole Location

Elevation 187.4 Depth 22 FEET

Bearing Inclination

Logged By R.H. SPENCER (NAME) 11-29-93 (DATE)

SAMPLES

MEASURED BREAKS OR PARTINGS ACROSS CORE

CHIPS, CAVITY, LOST CORE

MEASURED HIGH-ANGLE JOINT (JT=JOINT)

D CORE BROKEN BY DRILLER

M CORE PARTED ALONG MICA CONCENTRATION

WX: WEATHERED - WEATHERING
SL - SLIGHT
MOD - MODERATE
SEV - SEVERE

DIP: DIP OF LAYERING TEXTURE, FOLIATION, BEDDING, ETC.

DEPTH	CONDITION OF CORE, WX, ETC.	Elev.	GRAPHIC LOG		ROCK TYPE, GRAIN SIZE, COLOR, TEXTURE, ETC.
	AUGERED FIRST FIVE FEET.	187.4		CL	SILTY CLAY - YELLOWISH BROWN, MICACEOUS
	GROUNDWATER AT OR NEAR GROUND SURFACE.	185		ML	MOOREVILLE CHALK - DARK GRAY, HARD, BRITTLE, DRY.
5		180			
10		175		ML	SAME AS ABOVE Very uniform, occas pyrite crystal
15		170			SAME AS ABOVE NO WATER ENCOUNTERED IN CHALK
20		165			SAME AS ABOVE
					BORING TERMINATED AT 22 FEET
		160			
		150			
		145			

GEOLOGIC SHEET

PROJECT

GE PLASTICS - LOWNDESBORO, AL

HOLE No. DRH-3 GE-3 Page 1 of 1

Hole Location

Elevation 210.2 Depth 37 FEET

Bearing Inclination Logged By NAME R. H. SPENCER DATE 11-29-93

MEASURED BREAKS OR PARTINGS ACROSS CORE
CHIPS, CAVITY, LOST CORE
MEASURED HIGH-ANGLE JOINT (JT=JOINT)
D CORE BROKEN BY DRILLER
M CORE PARTED ALONG MICA CONCENTRATION

WX: WEATHERED - WEATHERING
SL - SLIGHT
MOD - MODERATE
SEV - SEVERE

DIP: DIP OF LAYERING TEXTURE, FOLIATION, BEDDING, ETC.

SAMPLES

DEPTH	CONDITION OF CORE, WX, ETC.	Elev.	GRAPHIC LOG		ROCK TYPE, GRAIN SIZE, COLOR, TEXTURE, ETC.
	AUGERED TO FIVE FEET BGS	210.2			FILL, RED CLAYEY SAND, CONCRETE PCS.
				SC	RED CLAYEY SAND
5		205			
				SC	CLAYEY SAND - RED W/ FEW PEBBLES. SAMPLE IS HARD, SL. MOISTURE LESS SAND THAN ABOVE
10		200			
				CL	SILTY CLAY - YELLOWISH-BROWN PLASTIC
15		195			
				SC	CLAYEY SAND - RED, DENSE, HARD, SLIGHTLY MOTTLED
20		190			
	GROUNDWATER ENCOUNTERED AT APPROX 188 FEET MSL			GM	SAND AND GRAVEL MIXED W/ SOME RED SILT AND CLAY
25		185		CL	Silty Clay - Yellowish Brown
					MOOREVILLE CHALK - DARK GRAY, HARD, DRY
30		180		ML	
35		175			
					BORING TERMINATED AT 37 FEET

DLOGIC SHEET

PROJECT

GE PLASTICS - LOWNDESBORO, AL

HOLE No. DRH-1 GE-1 Page 1 of 1

Hole Location

Elevation 193.3 Depth 52 FEET

Bearing Inclination

Logged By R. H. SPENCER (NAME) 11-29-93 (DATE)

SAMPLE INTERVAL

MEASURED BREAKS OR PARTINGS ACROSS CORE
CHIPS, CAVITY, LOST CORE
MEASURED HIGH-ANGLE JOINT (JT = JOINT)

D CORE BROKEN BY DRILLER

M CORE PARTED ALONG MICA CONCENTRATION

WX: WEATHERED - WEATHERING
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MOD - MODERATE
SEV - SEVERE

DIP: DIP OF LAYERING TEXTURE, FOLIATION, BEDDING, ETC.

DEPTH	CONDITION OF CORE, WX, ETC.	Elev.	GRAPHIC LOG		ROCK TYPE, GRAIN SIZE, COLOR, TEXTURE, ETC.
		193.3			
	Auger to 5 feet BGS. Examine cuttings. Gravel and sand w/ silt and clay. Red and yellow. Upper 3 feet may be disturbed. Former borrow pit. Piles of gravel distributed around area			GM	SAND; GRAVEL w/ SILT AND CLAY: POORLY SORTED
		190			
5	Groundwater encountered @ Elev 190			CL	SILTY CLAY - YELLOWISH BROWN, micaceous, plastic. SATURATED
					DEGREE OF SATURATION DECREASES w/ DEPTH
		185			
10				ML	MOOREVILLE CHALK - V. FINE GRAIN, DARK GRAY, DRY HARD, CRUMBLY, SOME PYRITE CRYSTALS NOTED
		180			
15					SAME AS ABOVE
		175			
20					SAME - MICA FLAKES
		170			
25					SAME AS ABOVE
		165			
30					SAME - BECOMING SLIGHTLY LIGHT OLIVE GREEN-GRAY
		160			
35					SAME AS ABOVE
		155			
50					SAME TO BORING TERMINATION

LOGIC SHEET

PROJECT

GE PLASTICS - LOWNDESBORO, AL

HOLE NO. DRH-2 GE-2 Page 1 of 1

Hole Location

Elevation 187.4 Depth 22 FEET

Bearing Inclination Logged By NAME R. H. SPENCER DATE 11-29-93

MEASURED BREAKS OR PARTINGS ACROSS CORE
CHIPS, CAVITY, LOST CORE
MEASURED HIGH-ANGLE JOINT (JT=JOINT)
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DEPTH	SAMPLES	CONDITION OF CORE, WX, ETC.	Elev.	GRAPHIC LOG		ROCK TYPE, GRAIN SIZE, COLOR, TEXTURE, ETC.
		AUGERED FIRST FIVE FEET.	187.4		CL	SILTY CLAY - YELLOWISH BROWN, MICACEOUS
		GROUNDWATER AT OR NEAR GROUND SURFACE.	185		ML	MOOREVILLE CHALK - DARK GRAY, HARD, BRITTLE, DRY.
5			180			
10			175		ML	SAME AS ABOVE Very uniform, occas pyrite crystal
15			170			SAME AS ABOVE NO WATER ENCOUNTERED IN CHALK
20			165			SAME AS ABOVE
						BORING TERMINATED AT 22 FEET
			160			
			150			
			145			

GEOLOGIC SHEET

PROJECT

GE PLASTICS - LOWNDESBORO, AL

HOLE No. DRH-3 GE-3 Page 1 of 1

Hole Location

Elevation 210.2 Depth 37 FEET

Bearing Inclination

NAME DATE

Logged By R. H. SPENCER 11-29-93

MEASURED BREAKS OR PARTINGS ACROSS CORE
CHIPS, CAVITY, LOST CORE
MEASURED HIGH-ANGLE JOINT (JT=JOINT)
D CORE BROKEN BY DRILLER
M CORE PARTED ALONG MICA CONCENTRATION

WX: WEATHERED - WEATHERING
SL - SLIGHT
MOD - MODERATE
SEV - SEVERE

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DEPTH	SAMPLES	CONDITION OF CORE, WX, ETC.	Elev.	GRAPHIC LOG		ROCK TYPE, GRAIN SIZE, COLOR, TEXTURE, ETC.
		AUGERED TO FIVE FEET BGS	210.2			FILL, RED CLAYEY SAND, CONCRETE PCS.
					SC	RED CLAYEY SAND
5			205			
					SC	CLAYEY SAND - RED W/ FEW PEBBLES. SAMPLE IS HARD, SL. MOISTURE LESS SAND THAN ABOVE
10			200			
					CL	SILTY CLAY - YELLOWISH-BROWN PLASTIC
15			195			
					SC	CLAYEY SAND - RED, DENSE, HARD, SLIGHTLY MOTTLED
20			190			
		GROUNDWATER ENCOUNTERED AT APPROX 188 FEET MSL			GM	SAND AND GRAVEL MIXED W/ SOME RED SILT AND CLAY
25			185		CL	Silty Clay - Yellowish Brown
						MOOREVILLE CHALK - DARK GRAY, HARD, DRY
30			180		ML	
35			175			
						BORING TERMINATED AT 37 FEET

May 12, 2023

Ms. Mary Catherine Muscha
Solid Waste Branch, Land Division
Alabama Department of Environmental Management
P.O. Box 301463
Montgomery, AL 36130-1463

Subject: SABIC Innovative Plastics US LLC; Burkville, AL
Construction/Demolition Landfill Permit Number 43-04
Application for Permit Renewal
Existing Variances Extension Request

Dear Ms. Muscha:

Please note that as part of this 2023 permit renewal package, SABIC is requesting that the existing variances in Section VIII of the above-referenced permit for installation and maintenance of an explosive gas monitoring system, weekly cover, and alternative cover material be extended during the next permit cycle.

If you have any questions or need additional information, please do not hesitate to contact me at (334) 832-5690 or via email at christopher.griffin@sabic.com.

Sincerely,

Chris Griffin, P.E.
Lead Engineer, Environmental
SABIC Burkville, EHSS

Waste generated off of the GE site will not be accepted at the landfill. Also, containers larger than 10 gallons, which are capable of holding liquids, will not be accepted unless they have been rendered unsuitable for holding liquids prior to delivery to the disposal facility.

7.5 ACCEPTED WASTE CONTROL

7.5.1 Waste Inspections

The landfill only accepts waste that is generated at the plant site. This affords a high degree of control over the disposed wastes. Each load of waste taken to the landfill is inspected and given a "GE Transportation and Disposal Permit." A copy of the GE Waste Segregation Policy and GE Transportation and Disposal Permit is included in Appendix C.

The waste inspections are conducted by the GE EHS Group for detecting and preventing the disposal of non-permitted wastes. Records of inspections (permits) include at a minimum: description of waste, size of load, date, time of day, and name of driver delivering waste. The records will be maintained on file at the plant for three years.

Wastes inspected for delivery to the landfill, which are prohibited under the terms of the permit, or which are suspected to be hazardous, will not be placed in the landfill. If, upon further investigation, it is determined that the material is a hazardous waste, it shall be handled and disposed of as required by the applicable ADEM and EPA hazardous waste regulations.

7.5.2 Discovery of Non-Permitted Waste

If it is suspected or discovered that, in spite of the foregoing procedures, hazardous wastes have been placed in the landfill, an investigation will be conducted immediately. If investigations by GE confirm that hazardous wastes have been placed in the landfill, the Alabama Department of Environmental Management shall be notified by telephone, followed by confirmation in writing. The materials shall be removed and properly handled and disposed of according to applicable regulations.

7.5.3 Personnel Training

Personnel responsible for the supervision of the landfill operation and waste inspections will have formal classroom training in the recognition and identification of hazardous and infectious wastes. Operating personnel shall receive on-the-job training to be conducted by qualified supervisory personnel.

7.6 MEASURING OR WEIGHING DEVICE

The measurement of all waste disposals at the site will be estimated or measured by truck or trailer bed size. Should the transportation vehicle not be full, the volume will be adjusted proportionally.

7.7 SIGN

No signs are proposed at the landfill as the site is only used by GE.

7.8 DAILY OPERATIONS (UNLOADING AND COMPACTING)

All waste transportation vehicles entering the site will be directed to the disposal area. The waste will be unloaded at the tow of the active working face. The waste will then be spread up and over the working face to a depth of approximately 2 feet. The working face will be confined to as small an area as possible and at a slope of approximately 4 to 1 (25 percent). During the spreading process, the equipment operator will attempt to mix and place the carious types of wastes so that greater compaction of the wastes can be

Memo

SUBJECT
Stormwater Calculations for Permit Renewal
Construction and Demolition Landfill No. 43-04

DATE
March 4, 2024

DEPARTMENT
Environment

COPIES TO
Jason Hughes, P.G. (AL #1118)

TO
Chris Giffin, P.E.
Sabic BKV EHSS

OUR REF
30216692

PROJECT NUMBER
30216692

NAME
Allen Long, P.E. (AL #39937)
724-466-3355
Allen.Long@arcadis.com

Introduction

SABIC Innovative Plastics U.S., LLC (SABIC) is seeking a permit renewal for its construction and demolition landfill No. 43-04, located within its Burkville, Alabama facility. As part of the application process, the Alabama Department of Environmental Management (ADEM) has requested calculations that show the adjacent stormwater pond is sized appropriately to sufficiently handle stormwater from the 25-year, 24-hour storm event.

Arcadis U.S., Inc. (Arcadis) has reviewed existing documentation provided by SABIC along with publicly available data to provide the necessary calculations as described below.

1. Determine the watershed area and time of concentration of the pond by reviewing a topographical survey prepared by an Alabama-Licensed Professional Land Surveyor and provided by SABIC.
2. Determine existing land cover types by reviewing publicly available aerial images (e.g., Google Earth) and soil maps from the United States Department of Agriculture (USDA).
3. Determine pond size, geometry, and outlet locations based on historical documents provided by SABIC.
4. Calculate the peak water elevation within the pond utilizing the stormwater software HydroCAD® (version 10.20-4b).

Watershed Delineation, Cover Type and Time of Concentration

The watershed of the stormwater pond was delineated using a topographic survey performed in 2005 (Appendix A). Historical aerial images were reviewed to confirm that no major regrading has occurred since 2005 that would alter the watershed. Based on the topographic survey, the total watershed of the pond was calculated to be 5.23 acres. Existing soil types were determined using the USDA Web Soil Survey (Appendix B). The soil survey indicated the landfill area is comprised of Bama fine sandy loam and Pits, the latter of which is likely based on outdated aerial images. Based on an Arcadis inspection of the landfill on February 6, 2024, the entire landfill is currently covered with well-established vegetation. As a result, the entire landfill was assumed to be covered with the Bama fine sandy loam. The entire area was assumed to be non-grazed meadow cover type based on recent aerial imagery and an average curve number of 71 was used for the watershed area. Finally, the time of concentration was calculated using the topographic survey. The first 100 feet was assumed to be sheet flow in range cover, then 215 feet was assumed to be shallow concentrated flow in short grass pasture, and the final 335

feet in channel flow before flowing into the basin. Using these inputs, the time of concentration was calculated to be 14.9 minutes.

Stormwater Pond Geometry

The original basin construction documents were provided to Arcadis by SABIC (Appendix C). The documents show that the pond was required to be constructed with a minimum volume of 2,700 cubic yards. The documents also provide top and bottom of pond elevations (194 feet and 199 feet, respectively) in addition to outlet details documenting an invert elevation (197 feet). Arcadis utilized AutoCAD Civil 3D® to recreate the pond using the topographic survey to determine the area of the pond using pond side slopes of 3 horizontal to 1 vertical (3H:1V). Using this method, the total basin capacity was calculated to be 2.312 acre-feet, or 3,730 cubic yards. However, for the purposes of modeling, a pond volume of 2,700 cubic yards was used as provided in the original construction documents.

Hydrographs

Using the above information and rainfall data from the National Oceanic and Atmospheric Administration (NOAA) (Appendix D), hydrographs were produced within HydroCAD® (Appendix E). Figure 1 below shows the hydrograph for the 25-year, 24-hour storm event.

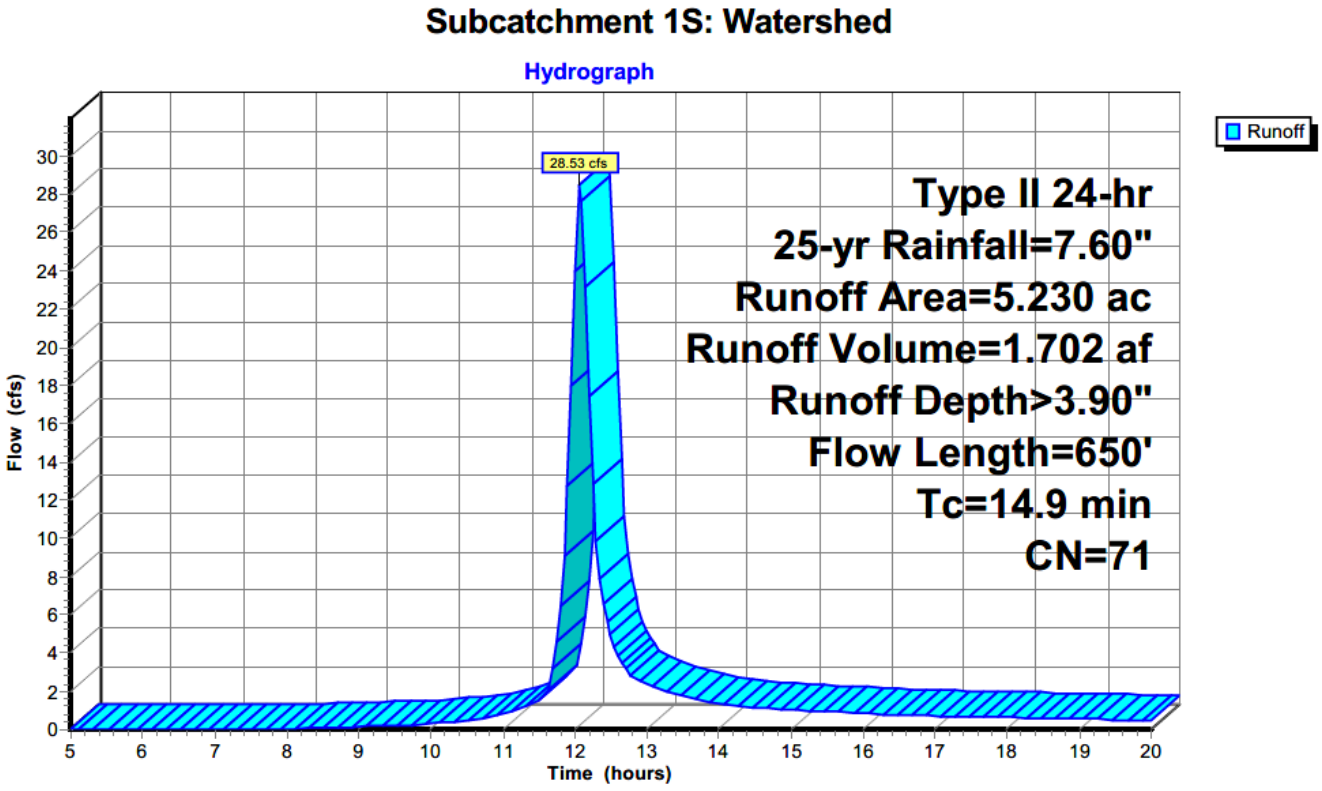


Figure 1: 25-year, 24 hour Watershed Hydrograph

Figure 2 below shows the water level in the basin and the Hydrograph for the 25-year, 24-hour storm event. The peak elevation is 197.4 feet, which is 1.6 feet below the top of the pond.

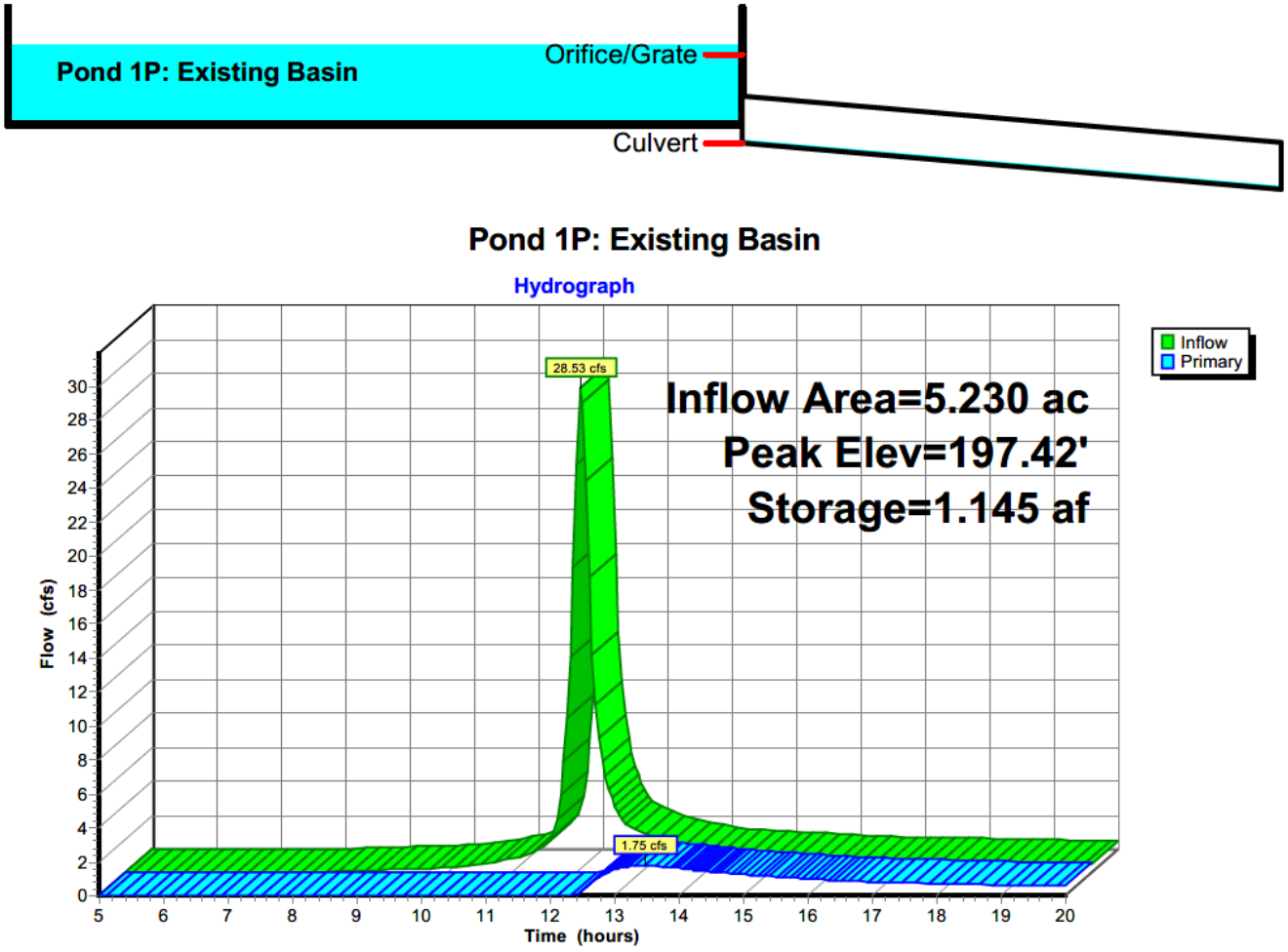


Figure 2: 25-year, 24 hour Basin Hydrograph and Water Level

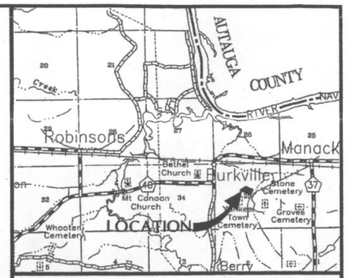
Conclusion

Using historical documents provided by SABIC, publicly available aerial imagery, and soil maps, Arcadis determined that the existing stormwater pond is sized appropriately to sufficiently handle stormwater from the 25-year, 24-hour storm event.

Appendix A

Watershed Delineation Figure

BOUNDARY AND TOPOGRAPHIC SURVEY
FOR G.E. PLASTICS LANDFILL (8.57 ACRES, more or less)
LOCATED IN THE SW $\frac{1}{4}$
OF THE NE $\frac{1}{4}$ AND THE SE $\frac{1}{4}$ OF
THE NW $\frac{1}{4}$ OF SECTION 35, T-16-N, R-15-E
LOWNDES COUNTY, ALABAMA



LOCATION MAP — NORTH — SCALE: 1" = 1 MILE

SITE BOUNDARY

DISPOSAL BOUNDARY AREA

5.23 ac

373,148 sq.ft.
8.57 ACRES,

Time of Concentration = 14.9 min

POND
WATER SURFACE ELEVATION:194.40

CONCRETE INLET BOX TOP OF RIM ELEVATION:198.17

B.M.
NAIL IN BOTTLE CAP ON AERIAL TARGET EL-210.8

NOTE: BENCHMARK ELEVATION ESTABLISHED FROM AERIAL TARGET ELEVATION SHOWN ON BCM SURVEY DATED 1994.

T.B.M. 11-18-05
RAILROAD SPIKE IN POWER POLE
EL-216.34

P.O.B.
1"ROUND TOP-BLUE

POINT OF COMMENCEMENT
*NORTHEAST CORNER OF SECTION 35, T-16-N, R-15-E LOWNDES COUNTY

*SOUTH 2857.36'
*WEST 2266.73'

NOTE: PIPE HAS CONCRETE IN BOTTOM

STEEL POST IN CONCRETE

PAVED ROAD
DIRT ROAD

*BEARINGS ROTATED TO MATCH AND TIE CALCULATED FROM BOUNDARY SURVEY BY BCM ENGINEERS INC. DATED: APRIL 1994

N
W E
S

GRAPHIC SCALE
50 0 25 50 100 200
(IN FEET)
1 inch = 50 ft.

LEGEND

- CONCRETE
- ASPHALT
- FOUND IRON PIN
- SET IRON PIN (5/8" REBAR CAPPED) W/# CA-00017-LS
- CALCULATED POINT
- POWER POLE / LINE
- TELEPHONE BOX
- SIGN
- STORM PIPE
- 198.50 SPOT ELEVATION
- EXISTING CONTOUR
- STEEL POLE
- RAILROAD TRACKS
- WOODLINE
- ( ) BOUNDARY SURVEY BY BCM ENGINEERS INC. DATED: APRIL 1994

STATE OF ALABAMA
LOWNDES COUNTY

I, Steven E. Speaks, a Licensed Professional Engineer and Licensed Professional Land Surveyor, hereby certify that all parts of this Topographic Survey and drawing have been completed in accordance with the current requirements of the Standards of Practice for Surveying in the State of Alabama to the best of my knowledge, information, and belief.

According to my survey this the 18th day of November, 2005.

Steven E. Speaks
Alabama Registration No. 20897

ALABAMA REGISTERED No. 20897 LAND SURVEYOR STEVEN E. SPEAKS

DRAWING DATE: 11/22/05

LARRY E. SPEAKS & ASSOCIATES
CONSULTING ENGINEERS & LAND SURVEYORS
535 HERRON STREET
MONTGOMERY, AL. 36104
TEL.-334/262-1091

THIS SURVEY IS NOT VALID WITHOUT AN EMBOSSED SEAL AFFIXED HEREON OF THE REGISTERED LAND SURVEYOR WHO SIGNED THE SURVEY.

Figure IX C

Appendix B

USDA SOIL SURVEY

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Lowndes County, Alabama

February 23, 2024

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map

Map Scale: 1:2,090 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 30 60 120 180

Feet
0 100 200 400 600

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 16N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Lowndes County, Alabama
Survey Area Data: Version 18, Sep 11, 2023

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Oct 26, 2021—Dec 22, 2021

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
BaB	Bama fine sandy loam, 2 to 5 percent slopes	7.7	67.4%
Pt	Pits, sand and gravel	3.7	32.6%
Totals for Area of Interest		**11.4**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however,

onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Lowndes County, Alabama

BaB—Bama fine sandy loam, 2 to 5 percent slopes

Map Unit Setting

National map unit symbol: 2s69h
Elevation: 60 to 390 feet
Mean annual precipitation: 52 to 56 inches
Mean annual air temperature: 61 to 70 degrees F
Frost-free period: 211 to 270 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Bama and similar soils: 85 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Bama

Setting

Landform: Fluviomarine terraces
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Loamy marine deposits

Typical profile

Ap - 0 to 7 inches: fine sandy loam
BE - 7 to 12 inches: sandy clay loam
Bt1 - 12 to 24 inches: sandy clay loam
Bt2 - 24 to 87 inches: sandy clay loam

Properties and qualities

Slope: 2 to 5 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 8.8 inches)

Interpretive groups

Land capability classification (irrigated): 2e
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: A
Forage suitability group: Unnamed (G133AP340FL)
Other vegetative classification: Unnamed (G133AP340FL)
Hydric soil rating: No

Pt—Pits, sand and gravel

Map Unit Setting

National map unit symbol: 2qcvk
Elevation: 170 to 500 feet
Mean annual precipitation: 52 to 60 inches
Mean annual air temperature: 60 to 68 degrees F
Frost-free period: 230 to 260 days
Farmland classification: Not prime farmland

Map Unit Composition

Pits: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Pits

Setting

Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex

Typical profile

C - 0 to 80 inches: variable

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8s
Hydric soil rating: No

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Appendix C

ORIGINAL BASIN CONSTRUCTION INSTRUCTIONS

Provide labor and equipment for the following:

Sedimentation Pond construction standards

1. Sedimentation Pond - Construct sedimentation basin in south west portion of the site with a volume of 2700 cubic yards . The pond dam should be 5 feet higher than the bottom of the pond. Slope exterior sidewalls at a maximum 3:1. Slope interior sidewalls at a maximum 1:1. All materials for the construction of the dam shall be dug with in the pond site. Should materials for the pond dam need to be brought in , the cost of such shall be added to this contract. The dam will be seeded with seed, fertilizer and wheat straw .

2. Construct sedimentation pond outlet of 24 inch concrete pipe with an upright or box . The top of the upright being three feet higher than the bottom of the pond. The pipe should extend beyond the dam at least one foot.

3. Construct a 4' X 20 ' concrete pad followed by a 4' X 12' discharge swale consisting of 4 inches bed gravel, overlain by riprap, Class 1.

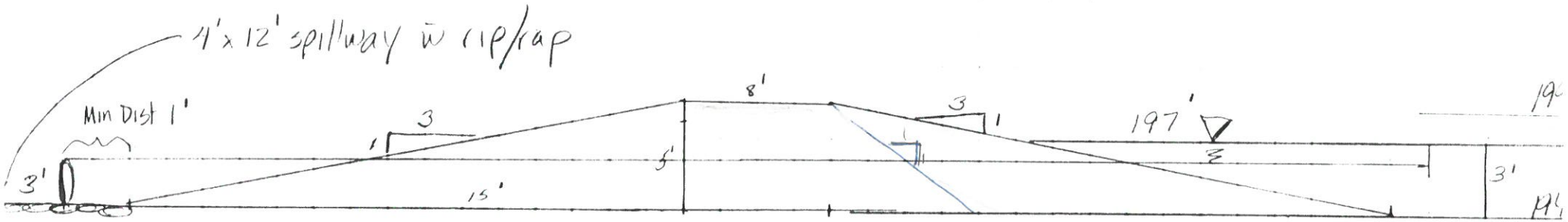
4. One compaction test shall be done on pond walls to insure 95 - 98 percent compaction obtained by the Standard Procter or Modified Procter Test.

5. Phase 1 Disposal Area Berm- Construct a berm along the north, east and south of the Phase 1 active area. The berm should be staked or marked by G E Plastics before the work begins. The berm length is 650 feet with exterior slopes of 6:1 and interior slopes 1:1, Four feet above grade level and a top berm width of eight feet.
Soils shall meet the requirements as mentioned in the prospectus and one soils test shall be provided from the pit where the soil is being extracted. The soil from the pit is furnished by GE Plastics. The berm will be seeded, fertilized and covered with wheat straw.

6. The compaction of the berm walls will be 95 - 98 % compaction obtained by the Standard Procter or the Modified Procter Test.

7. Diversion Berm and Swale - Construct a Diversion Berm and Swale along the exterior of the Disposal Berm. The swale on the outside of the Disposal Area Berm shall be six to seven feet wide underlain by 4 inches size 57 bed gravel with class 1 rip rap on top. On the outside of the swale, a small terraced berm will be constructed that is one to two feet high and one to two feet wide.

Construction Landfill Sediment Pond Layout



- Scale is approximate
- set pond bottom elevation at 194' MSL
-

MMCCC
12/6/15

Appendix D

NOAA DATA

NOAA Atlas 14, Volume 9, Version 2
Location name: Lowndesboro, Alabama, USA*
Latitude: 32.3222°, Longitude: -86.5283°
Elevation: 224 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Deborah Martin, Sandra Pavlovic, Ishani Roy, Michael St. Laurent, Carl Trypaluk, Dale Unruh, Michael Yekta, Geoffery Bonnin

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	**0.452** (0.365-0.562)	**0.516** (0.417-0.643)	**0.621** (0.499-0.775)	**0.706** (0.565-0.885)	**0.821** (0.634-1.06)	**0.909** (0.687-1.19)	**0.995** (0.727-1.34)	**1.08** (0.758-1.49)	**1.19** (0.806-1.69)	**1.28** (0.841-1.85)
10-min	**0.661** (0.535-0.823)	**0.756** (0.610-0.941)	**0.909** (0.731-1.13)	**1.03** (0.827-1.30)	**1.20** (0.929-1.55)	**1.33** (1.01-1.74)	**1.46** (1.06-1.95)	**1.58** (1.11-2.18)	**1.75** (1.18-2.48)	**1.87** (1.23-2.70)
15-min	**0.807** (0.652-1.00)	**0.922** (0.744-1.15)	**1.11** (0.892-1.38)	**1.26** (1.01-1.58)	**1.47** (1.13-1.89)	**1.62** (1.23-2.12)	**1.78** (1.30-2.38)	**1.93** (1.35-2.66)	**2.13** (1.44-3.02)	**2.28** (1.50-3.30)
30-min	**1.16** (0.937-1.44)	**1.33** (1.07-1.66)	**1.60** (1.29-2.00)	**1.83** (1.46-2.29)	**2.13** (1.65-2.75)	**2.36** (1.79-3.09)	**2.59** (1.89-3.48)	**2.82** (1.98-3.89)	**3.11** (2.10-4.42)	**3.33** (2.20-4.82)
60-min	**1.53** (1.24-1.90)	**1.74** (1.40-2.16)	**2.09** (1.68-2.61)	**2.38** (1.91-2.99)	**2.80** (2.17-3.62)	**3.12** (2.37-4.10)	**3.46** (2.53-4.66)	**3.80** (2.67-5.26)	**4.26** (2.88-6.06)	**4.62** (3.04-6.68)
2-hr	**1.90** (1.54-2.34)	**2.15** (1.75-2.66)	**2.57** (2.08-3.19)	**2.94** (2.37-3.66)	**3.46** (2.71-4.47)	**3.88** (2.97-5.08)	**4.32** (3.19-5.79)	**4.78** (3.39-6.59)	**5.41** (3.69-7.66)	**5.90** (3.91-8.48)
3-hr	**2.14** (1.75-2.63)	**2.41** (1.97-2.97)	**2.88** (2.34-3.56)	**3.31** (2.67-4.10)	**3.92** (3.09-5.06)	**4.43** (3.41-5.79)	**4.97** (3.69-6.66)	**5.54** (3.95-7.63)	**6.34** (4.35-8.98)	**6.98** (4.65-10.0)
6-hr	**2.58** (2.12-3.15)	**2.92** (2.40-3.57)	**3.54** (2.90-4.34)	**4.10** (3.33-5.04)	**4.93** (3.92-6.34)	**5.63** (4.36-7.33)	**6.38** (4.78-8.51)	**7.19** (5.17-9.86)	**8.34** (5.76-11.7)	**9.26** (6.21-13.2)
12-hr	**3.07** (2.54-3.71)	**3.54** (2.92-4.29)	**4.37** (3.60-5.31)	**5.12** (4.20-6.26)	**6.25** (5.00-7.99)	**7.19** (5.61-9.30)	**8.20** (6.18-10.9)	**9.29** (6.72-12.6)	**10.8** (7.53-15.1)	**12.1** (8.14-17.0)
24-hr	**3.62** (3.01-4.35)	**4.20** (3.49-5.05)	**5.23** (4.34-6.31)	**6.17** (5.09-7.48)	**7.60** (6.12-9.66)	**8.79** (6.90-11.3)	**10.1** (7.64-13.3)	**11.5** (8.35-15.5)	**13.4** (9.42-18.7)	**15.0** (10.2-21.1)
2-day	**4.25** (3.56-5.07)	**4.87** (4.08-5.81)	**6.01** (5.02-7.20)	**7.09** (5.89-8.53)	**8.75** (7.13-11.1)	**10.2** (8.07-13.0)	**11.7** (8.98-15.4)	**13.4** (9.88-18.1)	**15.9** (11.2-22.0)	**17.9** (12.3-25.0)
3-day	**4.66** (3.92-5.54)	**5.31** (4.46-6.31)	**6.52** (5.47-7.78)	**7.68** (6.40-9.20)	**9.49** (7.77-12.0)	**11.1** (8.81-14.1)	**12.8** (9.84-16.7)	**14.7** (10.8-19.7)	**17.4** (12.4-24.1)	**19.7** (13.5-27.3)
4-day	**4.99** (4.21-5.91)	**5.67** (4.78-6.72)	**6.96** (5.85-8.27)	**8.19** (6.84-9.77)	**10.1** (8.31-12.8)	**11.8** (9.42-15.0)	**13.6** (10.5-17.8)	**15.7** (11.6-21.0)	**18.6** (13.3-25.6)	**21.0** (14.5-29.1)
7-day	**5.81** (4.93-6.84)	**6.61** (5.60-7.79)	**8.09** (6.83-9.55)	**9.48** (7.96-11.2)	**11.6** (9.59-14.5)	**13.5** (10.8-17.0)	**15.5** (12.0-20.1)	**17.7** (13.2-23.6)	**20.9** (15.0-28.7)	**23.6** (16.4-32.5)
10-day	**6.55** (5.58-7.68)	**7.43** (6.32-8.71)	**9.02** (7.65-10.6)	**10.5** (8.86-12.4)	**12.8** (10.5-15.8)	**14.7** (11.8-18.4)	**16.8** (13.0-21.6)	**19.0** (14.2-25.2)	**22.3** (16.0-30.4)	**25.0** (17.4-34.2)
20-day	**8.74** (7.50-10.2)	**9.76** (8.36-11.4)	**11.5** (9.85-13.5)	**13.1** (11.1-15.4)	**15.4** (12.8-18.9)	**17.4** (14.0-21.5)	**19.4** (15.1-24.7)	**21.6** (16.2-28.2)	**24.6** (17.8-33.1)	**27.0** (19.0-36.8)
30-day	**10.6** (9.15-12.3)	**11.8** (10.1-13.7)	**13.7** (11.8-16.0)	**15.4** (13.1-18.0)	**17.8** (14.7-21.5)	**19.7** (15.9-24.2)	**21.7** (17.0-27.3)	**23.7** (17.8-30.8)	**26.6** (19.2-35.5)	**28.8** (20.3-39.0)
45-day	**13.1** (11.3-15.1)	**14.5** (12.5-16.7)	**16.7** (14.4-19.3)	**18.6** (15.9-21.6)	**21.1** (17.5-25.3)	**23.1** (18.7-28.1)	**25.0** (19.6-31.3)	**27.0** (20.4-34.8)	**29.6** (21.5-39.3)	**31.6** (22.4-42.7)
60-day	**15.2** (13.2-17.5)	**16.8** (14.6-19.4)	**19.4** (16.8-22.4)	**21.5** (18.5-24.9)	**24.3** (20.1-28.9)	**26.4** (21.4-31.9)	**28.4** (22.3-35.2)	**30.3** (22.9-38.8)	**32.8** (23.8-43.3)	**34.6** (24.6-46.7)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

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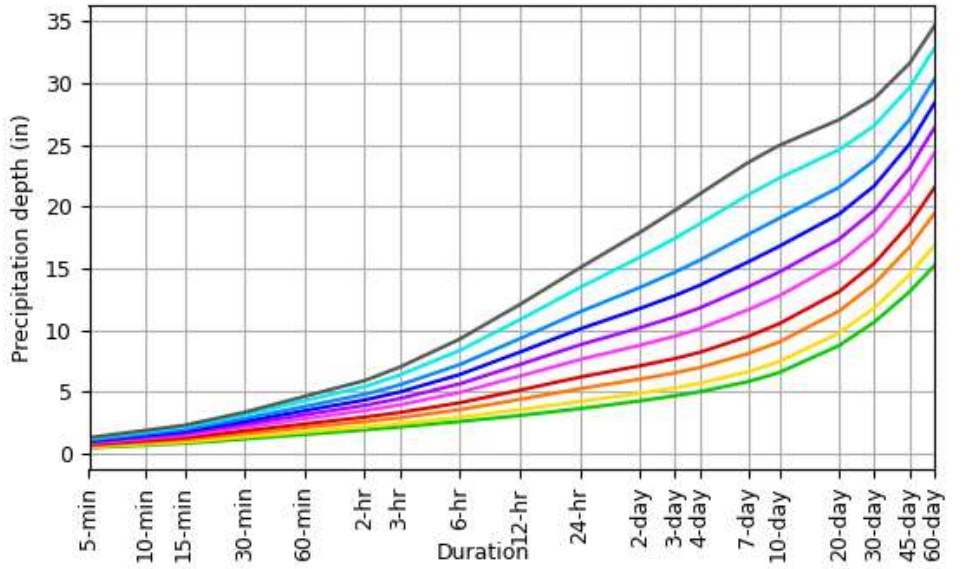
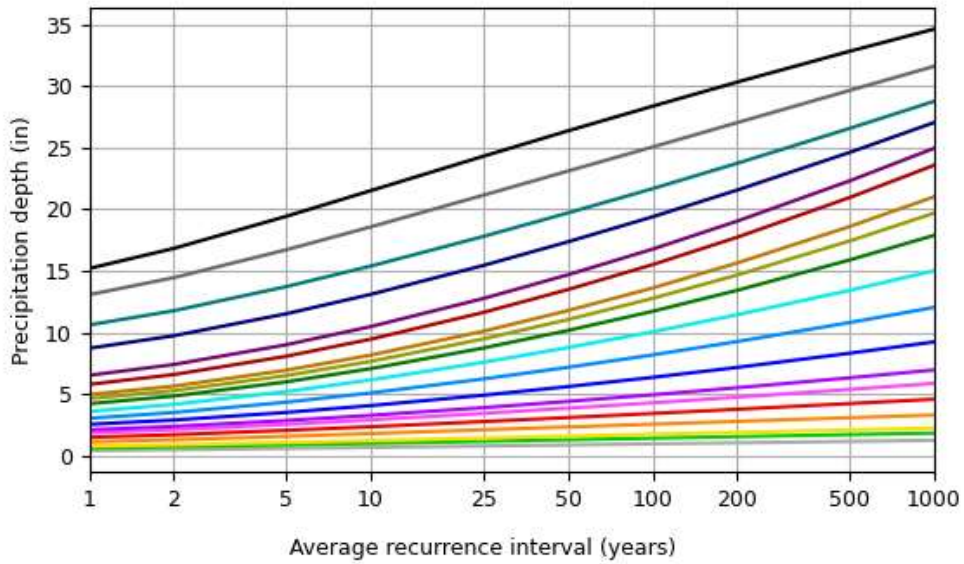
PF graphical

PDS-based depth-duration-frequency (DDF) curves
Latitude: 32.3222°, Longitude: -86.5283°





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Created (GMT): Wed Feb 21 20:21:27 2024

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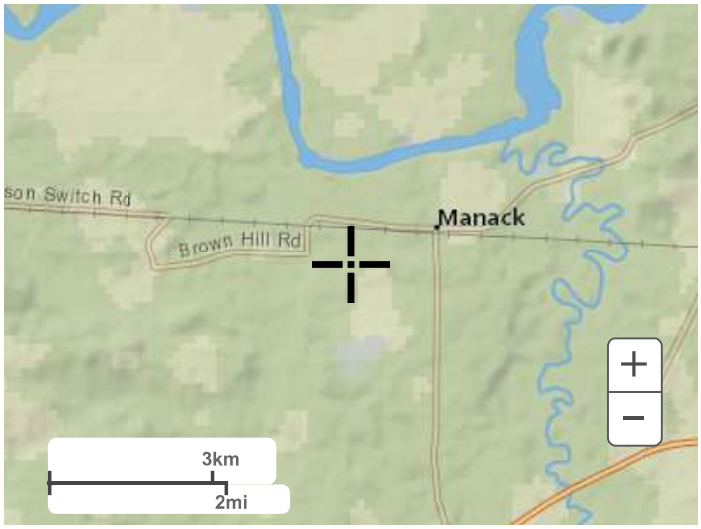
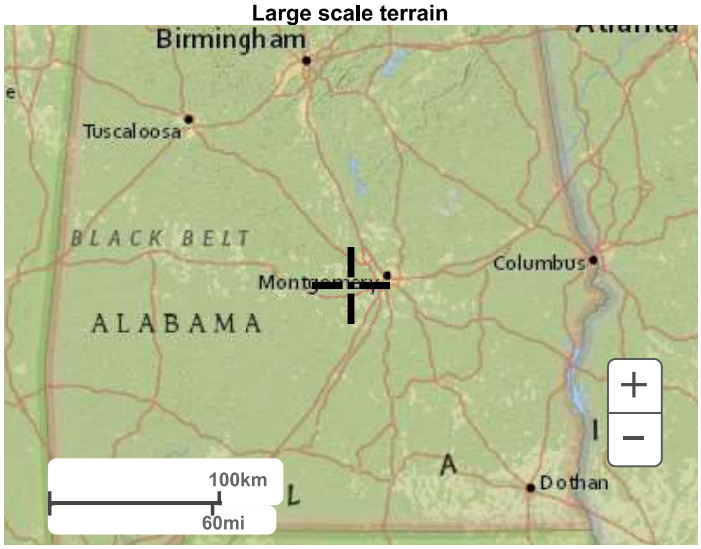
Maps & aerials

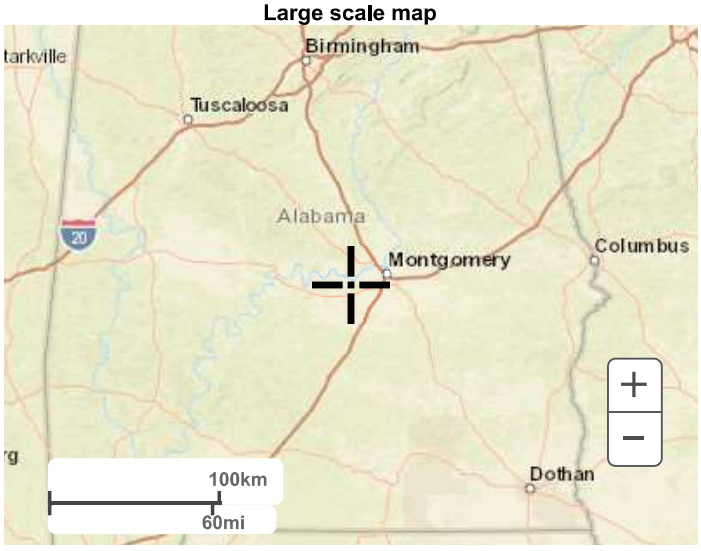
Small scale terrain



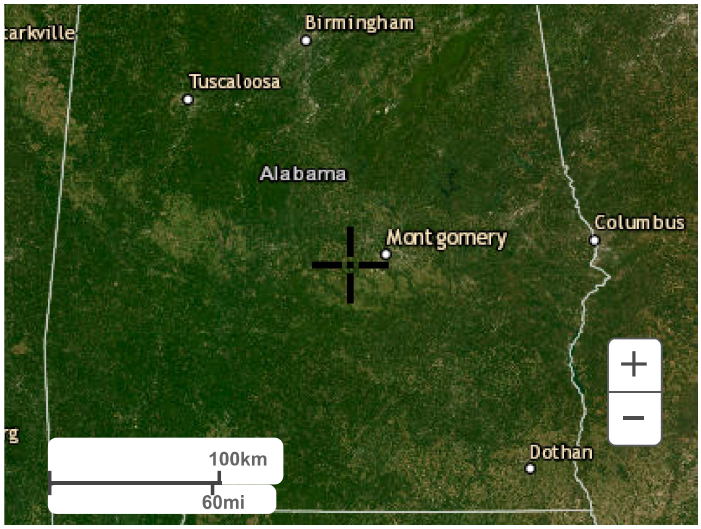
Large scale terrain



Large scale map



Large scale aerial



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US Department of Commerce
National Oceanic and Atmospheric Administration
National Weather Service
National Water Center
1325 East West Highway
Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

Disclaimer

Appendix E

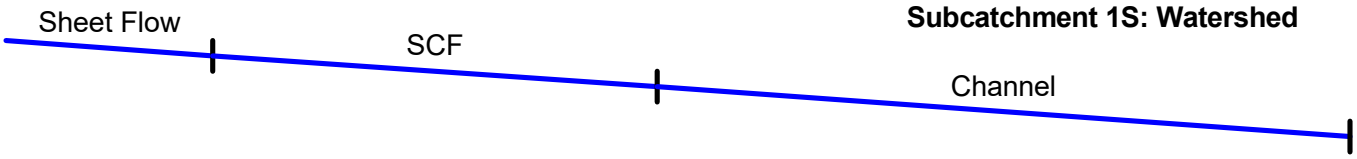
HYDROGRAPHS

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

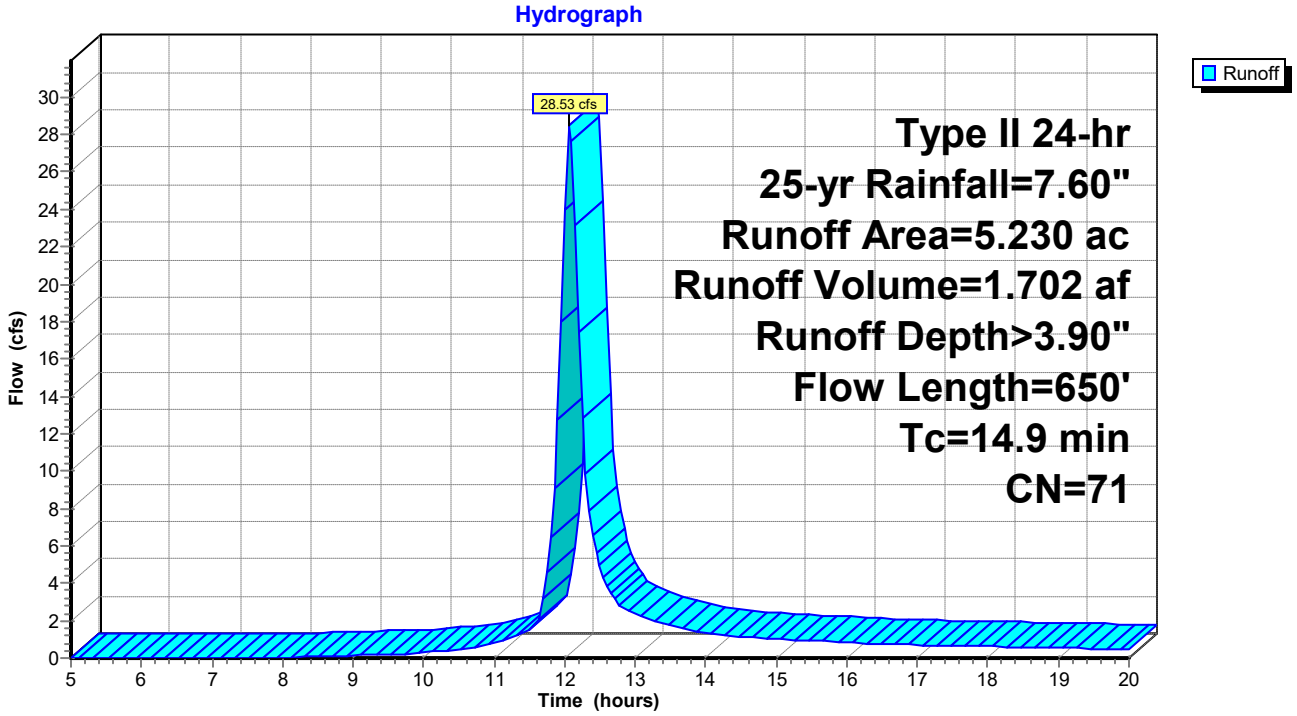
Subcatchment 1S: Watershed Runoff Area=5.230 ac 0.00% Impervious Runoff Depth>3.90"
Flow Length=650' Tc=14.9 min CN=71 Runoff=28.53 cfs 1.702 af

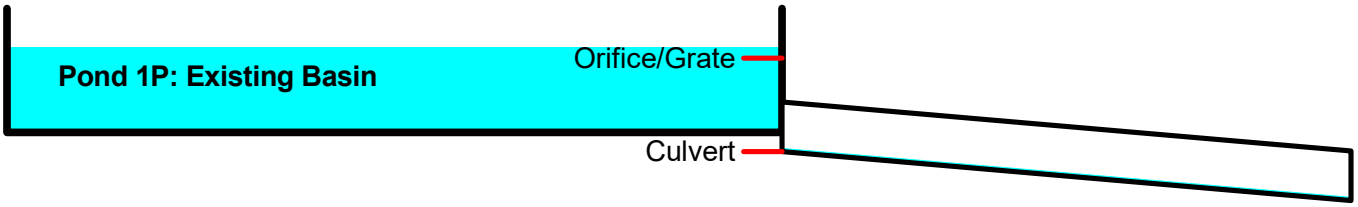
Pond 1P: Existing Basin Peak Elev=197.42' Storage=1.145 af Inflow=28.53 cfs 1.702 af
Outflow=1.75 cfs 0.633 af

Total Runoff Area = 5.230 ac Runoff Volume = 1.702 af Average Runoff Depth = 3.90"
100.00% Pervious = 5.230 ac 0.00% Impervious = 0.000 ac

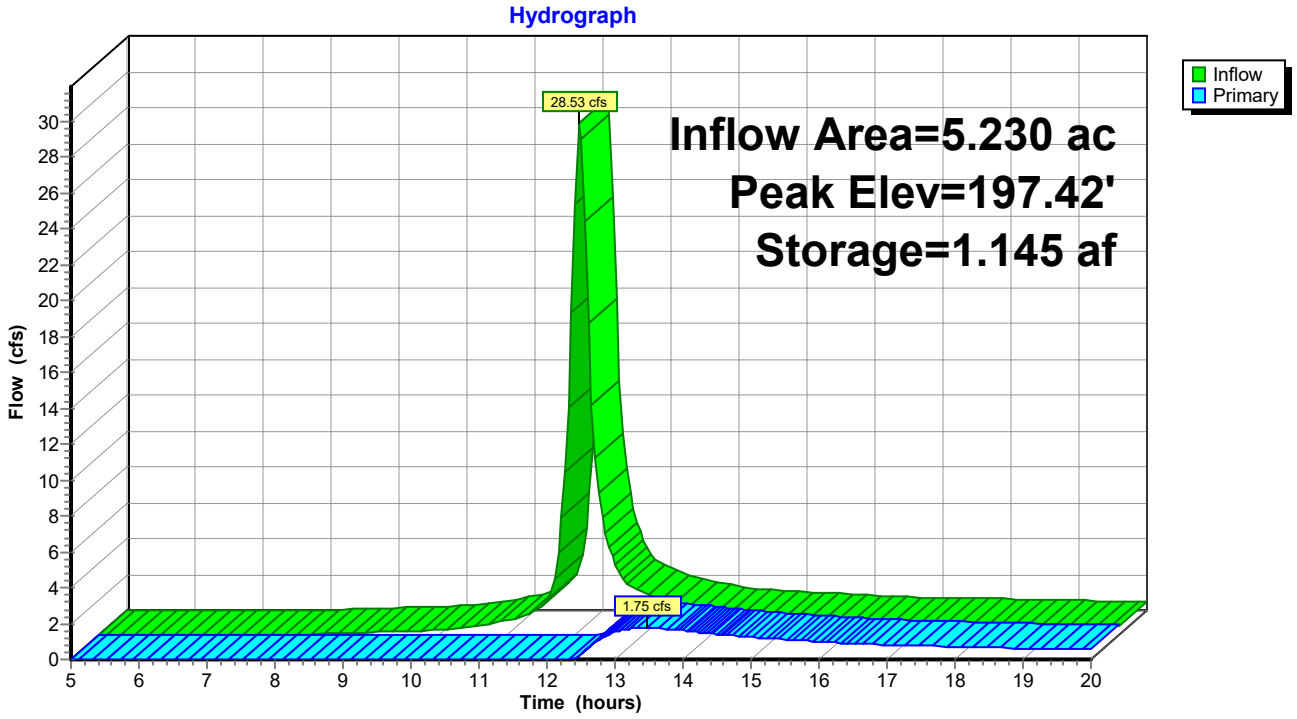


Subcatchment 1S: Watershed





Pond 1P: Existing Basin



FEE SHEET FOR SOLID WASTE PERMITS

ADEM No.: 5082

Applicant: SABIC US Innovative Plastics, LLC.
Location: One Plastics Drive
Burkville, AL 36752
Coordinates: 32.40772076, -86.32112685
Permit No.: 43-04 Date Application Received: 05/16/23

Permit Fees Required	Initial Issuance	Modification	Reissuance	Total
Municipal Solid Waste Landfill	$83,880		$37,270	
Minor Modification [1]		$3,275		
Major Modification [2]		$32,615		
Construction/Demolition Landfill	$7,145		$5,400	$5,400
Minor Modification [1]		$1,460		
Major Modification [2]		$2,915		
Industrial Landfill	$12,670		$8,150	
Minor Modification [1]		$1,460		
Major Modification [2]		$4,375	-	
Compost Facility	$4,860		$3,670	
Minor Modification [1]		$1,225		
Major Modification [2]		$1,945		
Environmental Covenants				
Engineering Controls	$6,425	$1,610		
Registry Fee for Class 1 Controls	$13,705	$635		
Registry Fee for Class 2 Controls	$9,420	$635		
Registry Fee for Class 3 Controls	$5,245	$635		

Additional Fees				
Geological Review:	$4,865	$3,275	$3,275	
Greenfield Site:	$1,610			
Public Hearing:	$8,450	$8,450	$8,450	
Name Change/Transfer:		$800		
Variance Request	$1,460	$1,460	$1,460	
Solid Waste Disposal Notification	$215	$215	$215	

[1] These are modifications as included in ADEM Admin. Code Rule 335-13-5-.06(2)

[2] These are modifications as included in ADEM Admin. Code Rule 335-13-5-.06(1)

Total Fee Due:	$5,400
Amount Submitted with Application:	$5,400
Amount Received:	$5,400
Amount to be Billed:	$0
Amount Received:	
Date Received:	MLR 5/9/23
Amount to be Refunded:	0

RECEIVED
MAY 18 2023
ADEM
EDDS

Fee Schedule Prepared by: MCM Date: 5/18/23 CK "0200011276"
Fee Schedule Reviewed by: JDK Date: 5/19/23

SABIC Innovative Plastics US LLC
2500 CityWest Blvd Suite 100
Houston, TX 77042

2100185 01 SD T 6088 CRDB -P00185 C07

ALABAMA DEPARTMENT OF ENVIRONMENTAL
MANAGEMENT WATER DEPT
PO BOX 301463
MONTGOMERY AL 36130-1463

INVOICE NUMBER	DATE	VOUCHER	INVOICE AMOUNT	DISCOUNT	NET AMOUNT
PERMIT43-04	05/02/23		5,400.00	0.00	5,400.00

CHECK NUMBER	DATE	VENDOR NO.	NAME	TOTAL AMOUNT
0200011276	05/05/23		ALABAMA DEPARTMENT OF ENVIRONMENTAL	5,400.00

RECEIVED

MAY 18 2023

ADEM
EDDS

SD2100185-0001_of_0001 6088-0000196 (F23S)