PRELIMINARY DETERMINATION
PERMIT RENEWAL

City of Fort Payne
100 Alabama Avenue NW
Fort Payne, Alabama 35967

Fort Payne Landfill
Permit No. 25-02

November 25, 2026

The City of Fort Payne has submitted to the Alabama Department of Environmental Management (ADEM) an application for renewal of the Solid Waste Disposal Facility Permit for Fort Payne Landfill (Permit No. 25-02). The waste stream for the Fort Payne Landfill would remain non-hazardous industrial waste and construction/demolition wastes including, but not limited to, white goods, clothing, yard wastes, untreated wood waste, roofing shingles, tires, dried paint, dried sludge, mattresses, paper, appliances, uncontaminated metal, asbestos, petroleum-contaminated soil or waste, and foundry sand. The service area for the Fort Payne Landfill would remain the Dekalb, Cherokee, Marshall, and Jackson Counties in Alabama. The maximum average daily volume of waste disposed at the Fort Payne Landfill would remain 200 tons per day. All conditions of the current permit have been requested and would be granted in the renewed permit.

The Fort Payne Landfill is described as being located in Section 7, Township 7 South, Range 9 East in Dekalb County, Alabama. The permitted facility consists of approximately 104 acres with approximately 44 acres approved for disposal.

The Land Division has determined that the permit renewal application complies with the requirements of ADEM's Administrative Code 335-13 regulations for an industrial waste landfill.

Technical Contact:

Melissa H. Adornato
Solid Waste Engineering Section
Land Division
(334) 270-5605

SOLID WASTE DISPOSAL FACILITY PERMIT

PERMITTEE:	**City of Fort Payne**
FACILITY NAME:	**Fort Payne Landfill**
FACILITY LOCATION:	**Section 7, Township 7 South, Range 9 East in Dekalb County, Alabama. The total permitted facility area for the Fort Payne Landfill is approximately 104 acres with approximately 44 acres approved for disposal.**
PERMIT NUMBER:	**25-02**
PERMIT TYPE:	**Industrial Landfill**
WASTE APPROVED FOR DISPOSAL:	**Non-hazardous industrial waste and construction/demolition wastes including, but not limited to, white goods, clothing, yard wastes, untreated wood waste, roofing shingles, tires, dried paint, dried sludge, mattresses, paper, appliances, uncontaminated metal, asbestos, petroleum-contaminated soil or waste, and foundry sand**
APPROVED WASTE VOLUME:	**Average Daily Volume of 200 tons per day**
APPROVED SERVICE AREA:	**Dekalb, Cherokee, Marshall, and Jackson Counties in Alabama**

In accordance with and subject to the provisions of the Solid Wastes & 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:	**????????????????**
EFFECTIVE DATE:	**????????????????**
EXPIRATION DATE:	**????????????????**

Alabama Department of Environmental Management

ALABAMA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
SOLID WASTE PERMIT

Permittee:	City of Fort Payne 100 Alabama Avenue NW Fort Payne, Alabama 35967
Landfill Name:	Fort Payne Landfill
Landfill Location:	Section 7, Township 7 South, Range 9 East in Dekalb County, Alabama
Permit Number:	25-02
Landfill Type:	Industrial

Pursuant to the Solid Wastes & Recyclable Materials Management Act, Code of Alabama 1975, Section 22-27-1, *et seq*., as amended (the "Act"), and attendant regulations promulgated thereunder by the Alabama Department of Environmental Management (ADEM), this permit is issued to the City of Fort Payne, Alabama (hereinafter called the Permittee), to operate a solid waste disposal facility, known as the Fort Payne 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 July 22, 2022 and as amended, for permit renewal, 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 **??????????????** and shall remain in effect until **????????????????** unless suspended or revoked.

_____ _____

Alabama Department of Environmental Management Date Signed

SECTION I. STANDARD CONDITIONS

A. Effect of Permit

The Permittee is allowed to dispose of nonhazardous solid waste in accordance with the conditions of this permit and ADEM Admin. Code 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 Admin. Code Division 13, unless this permit specifically provides otherwise; where terms are not otherwise defined, the meaning associated with such terms shall be as defined by a standard dictionary reference or the generally accepted scientific or industrial meaning of the term.

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

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

E. Duties and Requirements

1. Duty to Comply

The Permittee must comply with all conditions of this permit except to the extent and for the duration such noncompliance is authorized by a variance granted by the Department. Any permit noncompliance constitutes a violation of Code of Alabama 1975, 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 attached hereto and incorporated by reference. Laboratory methods must be those specified in Standard Methods for the Examination of Water and Wastewater (American Public Health Association, latest edition), Methods for Chemical Analysis of Water and Wastes (EPA-600/4-79-020), Test Methods for Evaluating Solid Waste, Physical/Chemical Methods (EPA Publication SW-846, latest edition), other appropriate EPA methods, or as specified in the Application. All field tests must be conducted using approved EPA test kits and procedures.

b. The Permittee shall retain records, at the location specified in Section I, 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 at 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 submitted electronically via the Department-approved electronic system. Before transferring ownership or operation of the facility during its operating life, the Permittee shall notify the new owner or operator, in writing, of the requirements of this permit.

12. Certification of Construction

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

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

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

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

13. Noncompliance

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

14. Other Information

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

F. Design and Operation of Facility

The Permittee shall maintain and operate the facility to minimize the possibility of a fire, explosion, or any unplanned sudden or nonsudden 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, Paragraph 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 the Department, including copies of all approvals of special operating conditions.

2. Quarterly Volume Report

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

3. Monitoring and Corrective Action Reports

The Permittee shall submit reports on all monitoring and corrective action activities conducted pursuant to the requirements of this permit, including, but not limited to, groundwater, surface water, explosive gas and leachate monitoring. The groundwater monitoring shall be conducted in March and September of each year, or as directed by the Department, and the reports shall be submitted at least semi-annually, or as directed by the Department. The reports should contain all monitoring results and conclusions from samples and measurements conducted during the sampling period. Explosive gas monitoring must be conducted once each year, and the reports should be submitted to the Department 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 the Department.

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

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

I. Documents to be Maintained by the Permittee

The Permittee shall maintain, at the Fort Payne Landfill, the following documents and amendments, revisions and modifications to these documents until an engineer certifies closure of the permitted landfill:

1. Operating record.

2. Closure Plan.

J. Submissions

All reports, notifications, or other submissions which are required by this permit should be submitted electronically via the Department-approved electronic system. The electronic submittal shall contain all required information and be formatted in an electronic file format approved by the Department.

K. Signatory Requirement

All applications, reports required by permits, or other information requested by the Department shall be signed and certified electronically by a responsible official under the following conditions:

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.

Any document submitted electronically is considered by the Department to have been submitted on behalf of the responsible official.

The applicant assumes the responsibility of assuring himself that any electronic document submitted on his behalf would have been certified by his written signature.

L. Confidential Information

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

M. State Laws and Regulations

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

SECTION II. GENERAL OPERATING CONDITIONS

A. Operation of Facility

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

B. Open Burning

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

C. Prevention of Unauthorized Disposal

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

D. Unauthorized Discharge

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

E. Industrial Waste Disposal

The Permittee shall dispose of industrial waste as required by ADEM Admin. Code 335-13-4-.21(1)(c), and as specified in the Application.

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.

G. Certified Operator

The Permittee shall be required to have an operator certified by the Department on-site during hours of operation, in accordance with the requirements of ADEM Admin. Code 335-13-12.

SECTION III. SPECIFIC REQUIREMENTS FOR INDUSTRIAL WASTE LANDFILLS

A. Waste Identification and Management

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

2. The total permitted facility area for the Fort Payne Landfill is approximately 104 acres with approximately 44 acres approved for disposal.

3. The maximum average daily volume of waste disposed at the facility shall not exceed 200 tons per day. Should the average daily volume exceed this value by 20% of 100 tons/day, whichever is less, for two (2) consecutive quarters, the Permittee shall be required to modify the permit in accordance with 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-hazardous industrial waste and construction/demolition wastes including, but not limited to, white goods, clothing, yard wastes, untreated wood waste, roofing shingles, tires, dried paint, dried sludge, mattresses, paper, appliances, uncontaminated metal, asbestos, petroleum contaminated soil or waste, and foundry sand.

C. Service Area:

The Permittee is allowed to accept waste for disposal from Dekalb, Cherokee, Marshall, and Jackson Counties in 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%). 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 weekly cover. A minimum of six inches of compacted earth or other alternative cover material approved by the Department and listed in Section VIII shall be added at the conclusion of each week's operation. These are minimum requirements for waste placement, compaction, and cover unless a variance is granted in Section VIII.

E. Liner Requirements

The Permittee shall not be required to install a composite liner system at this time. The base of the landfill shall be a minimum of five (5) feet above the highest measured groundwater level as determined by ADEM Admin. Code 335-13-4-.11(2)(a).

F. Security

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

G. All Weather Access Roads

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

H. Adverse Weather Disposal

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

I. Personnel

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

J. Environmental Monitoring and Treatment Structures

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

K. Vector Control

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

L. Bulk or NonContainerized Liquid Waste

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

M. Empty Containers

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

N. Other Requirements

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

O. Other Permits

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

P. Scavenging and Salvaging Operations

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

Q. Signs

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

R. Litter Control

The Permittee shall control litter.

S. Fire Control

The Permittee shall provide fire control measures.

SECTION IV. GROUNDWATER MONITORING REQUIREMENTS

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

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

2. The Permittee shall maintain groundwater monitoring wells MW-4 and MW-5 as the background groundwater monitoring wells for the entire facility.

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

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

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

   b. Well development method(s);

   c. A complete analysis of well construction materials;

   d. A schedule of implementation for construction; and

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

B. Groundwater Monitoring Requirements

1. The Permittee shall determine the groundwater surface elevation at each monitoring well and piezometer identified in Table IV.1. each time the well or piezometer is sampled and at least semi-annually throughout the active life and post-closure care period.

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

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

4. The Permittee shall sample and analyze all monitoring wells identified in Table IV.1 for the parameters listed in Appendix I of ADEM Admin. Code 335-13-4-.27(3), and/or any other parameters specified by the Department in Table IV.3, on a semi-annual basis throughout the active life of the facility and the post-closure care period in accordance with ADEM Admin. Code 335-13-4-.27(3). Sampling shall be conducted during

March and September of each year beginning with the effective date of this permit. **The records and results of this sampling and analysis activity shall be submitted to ADEM within ninety (90) days of the date of sampling.**

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

C. Sampling and Analysis Procedures

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

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

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

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

D. Recordkeeping and Reporting Requirements

1. Recording of Results

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

2. Recordkeeping

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

E. Permit Modification

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

TABLE IV.1.
GROUNDWATER MONITORING WELLS

Monitoring Well Number	Top of Casing (feet msl)	Part Monitoring
UPGRADIENT/BACKGROUND MONITORING WELL		
MW-4	851	Entire Landfill
MW-5	848	Entire Landfill
DOWNGRADIENT MONITORING WELLS		
MW-2*	859	Entire Landfill
MW-8	920	Entire Landfill

* Monitoring Well MW-2 shall be abandoned and replaced within 6 months of the date of issuance of this permit. The Permittee shall be required to submit an abandonment, replacement, and installation plan prior to abandonment and replacement of MW-2. The Permittee shall be required to submit an abandonment, replacement, and installation report and the updated groundwater monitoring plan, including boring logs, within 30 days of the installation of the replacement of MW-2.

TABLE IV.2.
BACKGROUND GROUNDWATER MONITORING

NOTE: The parameters in this Table are those listed in Appendix I of ADEM Admin. Code 335-13-4.

NOTE: The Permittee shall conduct a minimum of four independent sampling events as the initial sampling event and analyze for the parameters listed above in order to establish background water quality. Following the four independent events, the Permittee can submit a request, with justification, for the deletion of or change in these parameters.

TABLE IV.3.
SEMI-ANNUAL GROUNDWATER MONITORING PARAMETERS

NOTE: The parameters to be monitored for in this Table are those listed in Appendix I of ADEM Admin. Code 335-13-4 and/or any other waste stream specific parameters.

SECTION V. GAS MONITORING REQUIREMENTS

The Permittee must install and maintain an explosive gas monitoring system in accordance with ADEM Admin. Code Rule 335-13.

SECTION VI. LEACHATE AND SURFACE WATER MANAGEMENT REQUIREMENTS

The Permittee shall, upon recognition of leachate, notify the Department within 14 days. At that time the Permittee shall inform the Department of measures which will be taken to address leachate problems

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.

B. Vegetative Cover

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

C. Notice of Intent

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

D. Completion of Closure Activities

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

E. Certification of Closure

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

F. Post-Closure Care Period

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

G. Post-Closure Maintenance

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

H. Post-Closure Use of Property

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

I. Certification of Post-Closure

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

J. Recording Instrument

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

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

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

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

K. Removal of Waste

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

SECTION VIII. VARIANCES

There are no approved variances for the Fort Payne Landfill.

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

Permit No. 25-02 Renewal

Application

SOLID WASTE APPLICATION

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

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

2. **Facility Name** FORT PAYNE LANDFILL (25-02)

3. **Applicant/Permittee:**

   Name: THE CITY OF FORT PAYNE

   Address: 100 ALABAMA AV. NW
   FORT PAYNE, AL 35967

   Telephone: 256 845 8897

   If applicant/permittee is a Corporation, please list officers:

   NA

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

   Township 7S **Range** 9E
   Section 7 **County** Dekalb

5. **Land Owner:**

   Name: THE CITY OF FORT PAYNE

   Address: 100 ALABAMA AV. NW
   FORT PAYNE, AL 35967

   Telephone: 256 845 8897

   (Attach copy of agreement from landowner if applicable.)

6. Contact Person:

Name PATRICK DUNNÉ

Position or Affiliation SOLID WASTE COORDINATOR, CITY OF FORT PAYNE

Address: 100 ALABAMA AV NW
FORT PAYNE, AL 35967

Telephone: 256 845 8897

7. Size of Facility: 104 Acres

Size of Disposal Area(s): 44 Acres

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

DeKalb, Marshall, Cherokee and Jackson Counties in ALABAMA.

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

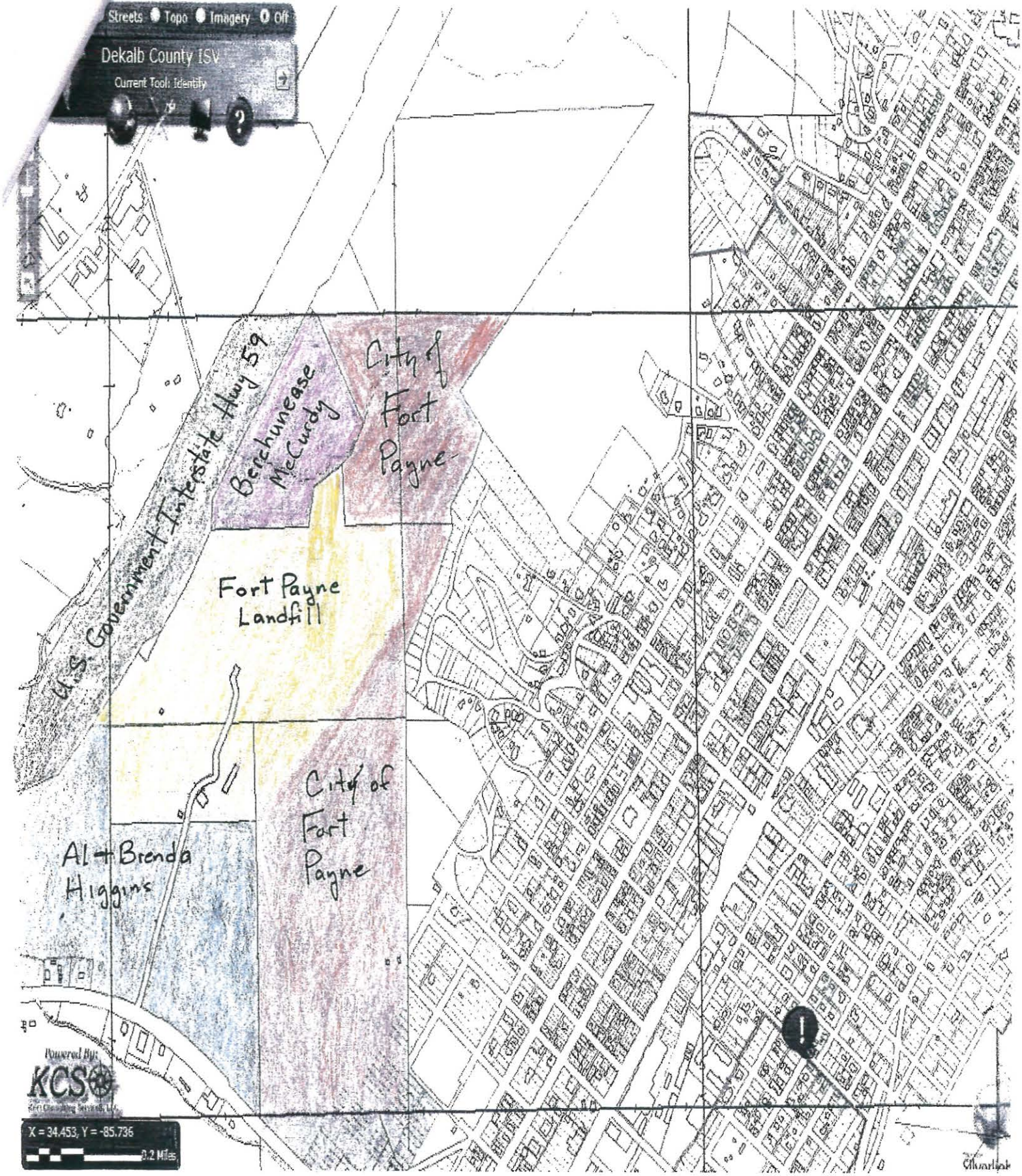
200 Tons/Day _____ Cubic Yards/Day

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

SAME AS CURRENT PERMIT

SIGNATURE (Responsible official of permit applicant): _____ TITLE: SOLID WASTE COORDINATOR

PATRICK DUNNÉ DATE: 7-20-22
(please print or type name)


Streets
Topo
Imagery
Off
Dekalb County ISV
Current Tool: Identify
U.S. Government Interstate Hwy 59
Berchunease McCurdy
City of Fort Payne
Fort Payne Landfill
Al + Brenda Higgins
City of Fort Payne
Powered By:
KCS
X = 34.453, Y = -85.736
2.2 Miles

DEKALB COUNTY

Property Appraisal and Tax Payments

Current Date: 7/20/2022 **Tax Year:** 2022

Get Help

⚠ **Values and Taxes are estimates and are subject to change. Click here for the current amount due.**

Parcel Info

PIN	25990
PARCEL	23-03-07-3-001-006.000
ACCOUNT NUMBER	118675
OWNER	HIGGINS, BRENDA DEWYER & AL
MAILING ADDRESS	P O BOX 680083, FORT PAYNE, AL 35968
PROPERTY ADDRESS	0
LEGAL DESCRIPTION	44 AC S7 T7 R9 FT PAYNE A PARCEL BEING THE S1/2 OF NW-SW & THAT PT OF SW-SW LYING N OF HWY 35 LESS RD ROW CAPTAIN D'S
EXEMPT CODE	
TAX DISTRICT	FORT PAYNE



Tax Information

TAXES ARE DUE ON 10/1/2022

YEAR	TAX DUE	PAID	BALANCE
2022	$ 89.90	$ 0.00	$ 89.90

LAST PAYMENT DATE **N/A**
PAID BY

Property Values

Total Acres	44.00
Use Value	$18,964
Land Value	$92,400
Improvement Value	$0
Total Appraised Value	$92,400
Total Taxable Value	$18,964
Assessment Value	$1,900

Subdivision Information

Code	
Name	
Lot	
Block	
Type / Book / Page	N/A / 746 / 213
S/T/R	07-7 -9

Detail Information

TYPE	REF	DESCRIPTION	LAND USE	TC	HS	PN	APPRAISED VALUE
LAND	51	44.000 Acres	8330-TIMBER (POOR C3)	3	N	N	$92,400

Building Components

Photos

**No Photos Found **

Sketches

** No Building Sketches Found **

Tax History

YEAR	OWNER(S)	TOTAL TAX	PAID (Y/N)	APPRAISED	ASSESSED
2022	HIGGINS, BRENDA DEWYER & AL	$ 89.90	N	$ 18964	$ 1900
2021	HIGGINS, BRENDA DEWYER & AL	$ 82.80	Y 10/13/2021	$ 18436	$ 1840
2020	HIGGINS, BRENDA DEWYER & AL	$ 79.20	Y 10/20/2020	$ 17688	$ 1760
2019	HIGGINS, BRENDA DEWYER & AL	$ 79.20	Y 12/12/2019	$ 17688	$ 1760

DEKALB COUNTY

Property Appraisal and Tax Payments

Current Date: 7/20/2022 **Tax Year:** 2022 Get Help

⚠ **Values and Taxes are estimates and are subject to change. Click here for the current amount due.**

Parcel Info

PIN	25983
PARCEL	23-03-07-2-001-002.000
ACCOUNT NUMBER	25983
OWNER	MCCURDY, WILLIAM E & BERCHUNEASE
MAILING ADDRESS	1302 POSS MCCURDY, FORT PAYNE, AL 35968
PROPERTY ADDRESS	0
LEGAL DESCRIPTION	CONT 25AC FT PAYNE S7 T7 R9 A PAR IN N1/2 NW1/4 DESC AS BEG ON N SEC LINE & SE ROW I-59 TH E ALONG SEC LINE 125' TH SE 800' TH SW'LY 250' TH CONT SW 410' TH S'LY 270' TO S LINE OF N1/2 NW1/4 TH W 785' TO SE ROWI-59 TH N;LY 355' TH NE 1260' TO POB
EXEMPT CODE	
TAX DISTRICT	FORT PAYNE



Tax Information

TAXES ARE DUE ON 10/1/2022

YEAR	TAX DUE	PAID	BALANCE
2022	$ 124.20	$ 0.00	$ 124.20

LAST PAYMENT DATE **N/A**
PAID BY

Property Values

Total Acres	25.00
Use Value	$0
Land Value	$27,500
Improvement Value	$0
Total Appraised Value	$27,500
Total Taxable Value	$27,500
Assessment Value	$2,760

Subdivision Information

Code	
Name	
Lot	
Block	
Type / Book / Page	00 / 303 / 44
S/T/R	07-7 -9

Detail Information

TYPE	REF	DESCRIPTION	LAND USE	TC	HS	PN	APPRAISED VALUE
LAND	1	25.000 Acres	8300-FORESTRY ACTV & RELATED SERVIC	3	N	N	$27,500

Building Components

Photos

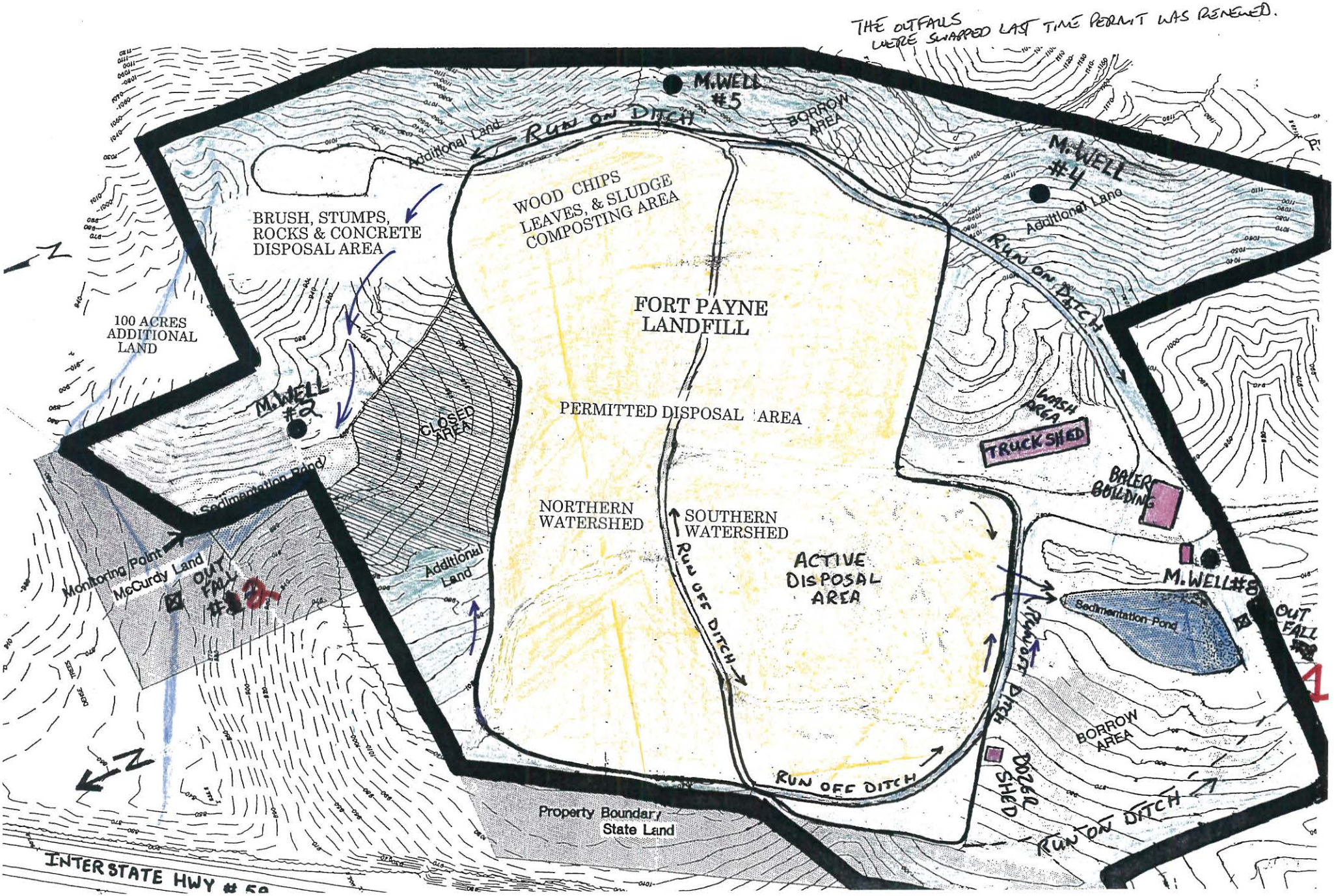
**No Photos Found **

Sketches

** No Building Sketches Found **

Tax History

YEAR	OWNER(S)	TOTAL TAX	PAID (Y/N)	APPRAISED	ASSESSED
2022	MCCURDY, WILLIAM E & BERCHUNEASE	$ 124.20	N	$ 27500	$ 2760
2021	MCCURDY, WILLIAM E & BERCHUNEASE	$ 79.20	Y 12/20/2021	$ 17500	$ 1760
2020	MCCURDY, WILLIAM E & BERCHUNEASE	$ 79.20	Y 12/29/2020	$ 17500	$ 1760
2019	MCCURDY, WILLIAM E & BERCHUNEASE	$ 79.20	Y 12/20/2019	$ 17500	$ 1760


THE OUTFALLS WERE SWAPPED LAST TIME PERMIT WAS RENEWED.
M.WELL #5
RUN ON DITCH
BORROW AREA
Additional Land
M.WELL #4
Additional Land
RUN ON DITCH
WOOD CHIPS LEAVES, & SLUDGE COMPOSTING AREA
BRUSH, STUMPS, ROCKS & CONCRETE DISPOSAL AREA
100 ACRES ADDITIONAL LAND
FORT PAYNE LANDFILL
M.WELL #2
CLOSED AREA
PERMITTED DISPOSAL AREA
WASH AREA
TRUCK SHED
BALER BUILDING
Sedimentation Pond
NORTHERN WATERSHED
SOUTHERN WATERSHED
ACTIVE DISPOSAL AREA
Monitoring Point
McCurdy Land
OUT FALL #2
Additional Land
RUN OFF DITCH
M.WELL #8
Sedimentation Pond
OUT FALL #1
RUN OFF DITCH
BORROW AREA
DOZER SHED
RUN ON DITCH
Property Boundary
State Land
INTERSTATE HWY # 59

CITY OF FORT PAYNE
SANITATION DEPARTMENT

Fort Payne Landfill
Explosive Gas Monitoring Field Report

Date of Monitoring: January 6, 2021 (For year 2020)
Person Monitoring: Patrick Dunne

Monitoring Equipment: Scott D-11 Vapotester calibrated on Methane (calibrated in August, 2011, by a factory representative).

Comments: NO active placement of material has been performed within hundreds of feet of either building in many years. Our landfill has also not received any putrescent waste since October of 1997. This landfill (with one exception, our clean-out drain) has not detected any methane since 1998.

Test Site	% of LEL	Test Site	% of LEL
1	0%	10	0%
2	0%	11	0%
3	0%	12	0%
4	0%	13	0%
5	0%	14	0%
6	0%	15	0%
7	0%	16	0%
8	0%	17	0%
9	0%	18	0%

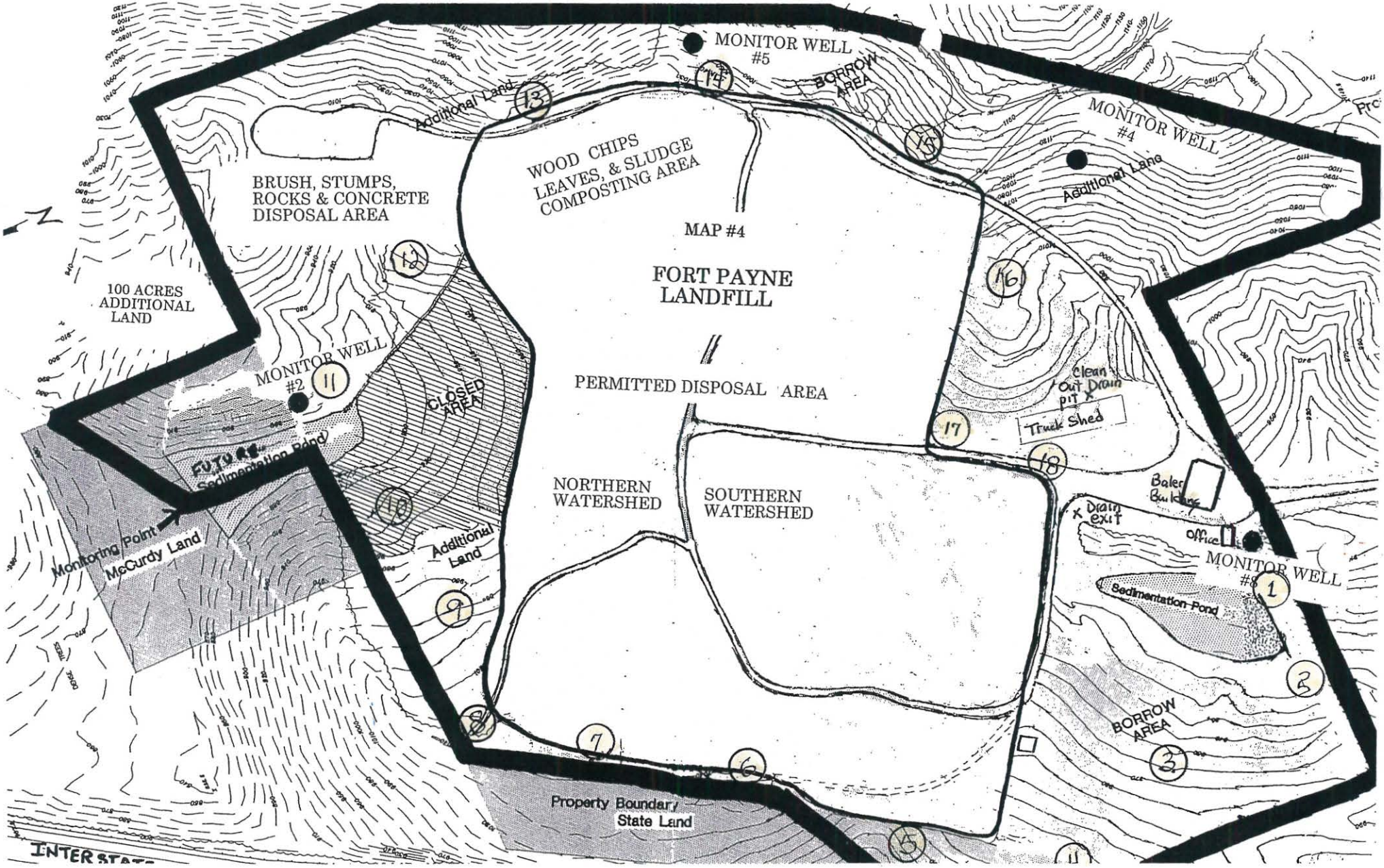
Other Test Sites	% of LEL
Office Building	0%
Dispatch Office	0%
Truck Shed	0%
Truck Shed Drain Culvert	0%
Baler Building	0%
Clean-out Drain	If any, usually here. 0% reading here as well.

Clean out drain is monitored and washing debris from cleaning out truck troughs into the clean-out pit is discontinued or greatly reduced in July and August until cooler weather to help with LEL levels below ground level in the culvert.

Patrick Dunne, Solid Waste Coordinator

Date: 1-6-21

GAS MONITORING LOCATIONS TESTED



Best Management Practices Plan for the Fort Payne Landfill - to include Spill Prevention Control and Countermeasures Plan (SPCC)

Prepared By:

Patrick Dunne
Solid Waste Coordinator
City of Fort Payne

Revised:
February 2022

Table of Contents

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- **Introduction**
- **Inspection and Corrective Action—General Landfill Area**
- *Composting sludge procedure removed – no longer active*
- **Fuel Tank/Fueling Area**
- **Truck Shed (Washing Area), Baler Building, Maintenance Shop, and Bulldozer Shed - includes SPCC Guidelines and Protocols**
- **On-Site Waste Containers and Unacceptable Waste Extracted from the Landfill**
- **Employee Training, Record Keeping, and Implementation**

Introduction

National Pollution Discharge Elimination Systems (NPDES) General Permit number ALG16-0106, authorizes the City of Fort Payne to discharge storm water from the surface of the Fort Payne Landfill to all waters of the state not designated outstanding national resource water. The NPDES specifically requires the implementation of an ADEM approved Best Management Practices (BMP) that establishes operating procedures to manage pollutant levels in storm water runoff, and provide adequate monitoring and reporting practices to detect the presence of certain pollutants directly or indirectly associated with landfill operations. The BMP identifies the pollution sources, characterizes chemical constituent in storm water runoff, and provides an effective management plan to control, within specified limits, and the impact of contaminated storm water runoff on surface waters.

Federal Regulations (40 CFR 112) applies to facilities that store petroleum and its derivatives. Facilities having a single storage tank with a storage capacity in excess of 1,320 gallons are required to prepare and implement a Spill Prevention Control and Countermeasures Plan (SPCC) that complies with the regulation. A separate SPCC Plan would identify petroleum based pollution sources, containment areas, and would provide an effective prevention plan to prevent petroleum products from entering the environment. The only petroleum containing storage device in use at the landfill is one 500 gallon diesel fuel tank which is affixed to a moveable truck which stays parked in the landfill and which is used to refill diesel tanks on the landfill's bulldozers, compactors, loaders, and scraper pan. Hence, due to the small size of this tank the above Federal Regulations do not currently apply to our landfill.

Although not technically required to develop a separate SPCC Plan for the landfill, it is the intention of this BMP Plan to incorporate, within the technical information and requirements, a separate SPCC Plan for our own benefit. This allows us to properly prepare for any such event that may occur and prepare accordingly.

Potential Sources of Pollution

The Fort Payne Landfill has two different out-falls. From a topographical divide, approximately the center of the designated landfill footprint, surface water drains both northward and southward. Ridges to the east and west prevent any surface water runoff in those directions. Storm water for testing purposes is extracted from both the north and south out-falls at the property boundaries.

The Fort Payne Landfill accepts non-hazardous industrial and construction/demolition (C/D) wastes as defined in and pursuant to the Solid Wastes Disposal Act, Code of Ala. 1975, Section 22-271, et. seq., as amended, and attendant

regulations promulgated thereunder by the Alabama Department of Environmental Management (ADEM). The landfill currently operates under the Solid Waste Disposal Facility Permit granted us by ADEM (landfill "25-02") August 12, 2012. (New permit applied for on February 2, 2017). Said permit grants us permission to accept "non-hazardous industrial waste and construction/demolition waste including, but not limited to, white goods, clothing, yard waste, untreated wood waste, roofing shingles, tires, dried paint, dried sludge, mattresses, paper, appliances, uncontaminated metal, asbestos, petroleum contaminated waste, foundry sand, and similar type waste materials which in their degradation do not produce any environmentally harmful residues or leachates. Uncontaminated concrete, logs, stumps, soil, brick, rock, and old or weathered waste asphalt paving are excluded from the A.D.E.M.'s current definition of solid waste when such materials are not disposed of in the landfill itself. Hence, these materials are accepted at the landfill and disposed of in a separate area just off the northern border of the defined landfill footprint.

As mentioned earlier, the Fort Payne Landfill has one 500 gallon (skid) tank mounted atop a Chevrolet 1.5 ton truck which provides diesel fuel for the equipment in the landfill. There are no other active petroleum fuel tanks on site at the facility. At times in the past, it was common practice to utilize a 250 gallon tank to store used motor oil brought to the landfill by residents intended for recycling. We no longer keep any oil to be recycled on site. We have moved that recycling operation to the City's recycling center, where we currently have a drum sitting on a formed concrete pad where residents can bring their used oil for recycling purposes. If we perform maintenance on any of our trucks we collect that oil and take it to be disposed of at the recycling center. However, presently, most of our trucks are scheduled to have these types of maintenance performed at our City Shop.

Several buildings are located on site, including a large truck storage shed with a truck wash area located in the rear, which is drained into an ADEM-approved storm water pond, a bulldozer shed, and a baler building with an attached maintenance shed. The baling/recycling building bales cardboard, office paper, newspaper, mixed paper, clear and colored plastic, steel and aluminum cans, and miscellaneous recyclables. Fuel conditioner, hydraulic oil, truck wash detergent, multi-grade lubricants, antifreeze, and similar items are stored on site for equipment maintenance. This facility meets all Alabama Health Department regulations and is totally enclosed and is connected to the Fort Payne sewer system.

A municipal sewage sludge composting area is located in a section of the landfill not currently utilized for waste disposal but which is protected by an ADEM-approved installed clay liner.

Chemical Characteristics of Landfill Storm Water

Laboratory analyses of storm water runoff samples are taken at both outfall discharge points shown on the attached map of the landfill. The monitoring is conducted twice per year, usually in the spring and fall and monitored for contaminants above the

prescribed limits. The constituents which are tested and the average levels of contamination detected in past monitoring are presented in the table below. Except for higher than acceptable levels of suspended solids, no other parameters have ever been detected above the allowable limits.

City of Fort Payne Landfill
Storm Water Runoff Outfall Sample Values

	Outfall 001-1 (North)	Outfall 001-2 (South)	Comments
Constituent			
BOD,mg/L	5 avg.	8 avg.	Stable
PH,S.U.	7.7 avg.	7.5 avg.	Stable
Total Solids Suspended, mg/L	70 avg.	145 avg.	Relatively wide variation
Cadmium mg/L (AS CD)	<0.003	<0.003	Always BDL
Chromium, mg/L (ASCR)	<0.01	<0.01	Always BDL
Copper, mg/L (AS CU)	0.007	0.011	Stable
Oil and Grease, mg/L	<5.0	<5.0	Always BDL
Rainfall (inches)	as measured	as measured	8.5 in maximum
Solids Dissolved, mg/L	150 avg.	200 avg.	Relatively wide variation
COD, mg/L	50 avg.	80 avg.	Stable
Turbidity-up & down NTU	measured only when disturbing new soil	measured only when disturbing new soil	If measures needed, performed semi-annually in accordance to ADEM regs.
Turbidity Downstream	measured only when disturbing new soil	measured only when disturbing new soil	Downstream should not exceed upstream by more than 50 NTU's
Turbidity Upstream	measured only when disturbing new soil	measured only when disturbing new soil	If measures needed, performed semi-annually in accordance to ADEM regs.
Solids Settleable	measured only when disturbing new soil	measured only when disturbing new soil	If measures needed, performed semi-annually in accordance to

			ADEM regs.

Sampling Protocol and Noncompliance Notification

Monitoring is to be performed during storm events defined as 0.1 inch or greater rainfall and at least 72 hours from the previously measurable (> 0.1 inch) storm event. A grab sample shall be taken during the first thirty minutes of the discharge (or as soon thereafter as practicable). There shall be no discharge of a visible oil sheen, floating solids, or visible foam in other than tract amounts.

All constituents are to be measured once each six months during January through June and again during July through December using a "grab" sample except Chemical Oxygen Demand, which may be measured annually. Reports are to be submitted on or before July 28th and January 28th following the relevant monitoring period. Turbidity is to be checked semi-annually and downstream turbidity must be less than 50 NTUs greater than upstream turbidity. Minimum and or maximum allowable units specified in the permit for parameters are as follows:

Parameter	Minimum Allowable	Maximum Allowable
pH	**N/A**	**N/A**
Oil & Grease	**N/A**	**15**
Suspended Solids	**N/A**	**50**

A discharge in violation of the limitations of the permit must be reported to ADEM submitted in a written report to ADEM using a copy of the Noncompliance Notification Form and shall include:

1. A description of the discharge and cause of noncompliance;
2. The period of noncompliance, including exact dates and times or, if not already corrected, the anticipated time of the noncompliance;
3. A description of the steps taken and/or being taken to reduce or eliminate the non-complying discharge and to prevent its recurrence.

Any discharges of a more serious nature, must be reported orally to ADEM within 24 hours after the discharge is discovered. Specifically, this would include:

1. Anything which threatens human health or welfare, fish or aquatic life, or water quality standards
2. Does not comply with an applicable toxic pollutant effluent standard
3. Contains a quantity of a hazardous substance which has been determined may be harmful to public health or welfare, etc.

In addition to the oral report, a written report as provided in the paragraph above shall also be submitted no later than five days after discovery of the discharge.

Written notification will be provided to ADEM in each of the following circumstances:

1. Should an event be predicted to occur which may result in a discharge which would exceed the permit requirements
2. Should activities cease which would end the need for discharge monitoring,
3. Should any change occur in the mailing address, telephone number, or person responsible for monitoring and reporting. -Updated January of 2017 with formal letter to A.D.E.M. Current

person responsible, Patrick Dunne, Solid Waste Coordinator, 256-845-0758.

Best Management Practices

Introduction:

The Landfill accepts only non-putrescible items. The items that are received do not possess leachate creating or associated properties. The working face is kept small and is covered weekly with 6 inches of clean compacted dirt. All storm water from this area is diverted to the facility's storm water settling pond. Out-fall 1 is located just beyond (south of) the storm water settling pond. Out-fall 2 is located at the intersection of a run-off drainage ditch and a small creek just off the north border of the landfill.

Inspections and Corrective Action for the General Landfill Area

A minimum of two inspections per week during the hours of facility operation will be performed on any structures that function to prevent storm water pollution. The inspection will include but not be limited to the baler building, the truck shed, and the dozer shed. The inspection will monitor for spillage which might occur in the unloading or loading of any materials which might cause storm water contamination. The inspection will monitor the proper storage of all such materials to ensure that such materials do not come in contact with storm water. A diagram is attached to this plan indicating areas to be monitored during the inspection.

The bi-weekly inspection shall also include an examination of the ditches designed to prevent "run-on" water from entering the landfill disposal areas and the "run-off" ditches designed to channel storm water which falls onto the landfill facility into the landfill storm water retention pond. Such ditches are to be kept graded and unobstructed at all times. The ditches are to be kept free of any litter which might be washed away from the landfill facility or into the landfill storm water retention pond. The storm water pond itself should be inspected for floating litter, erosion along its banks, and to ensure that the overflow structure is non-obstructed, clean, and flowing freely.

Regular clean-up shall be made of litter scattered about the landfill. A litter fence shall be installed and maintained, when necessary, to capture blowing paper and plastic around the tipping face. The entrance road, property boundaries, and working site shall be monitored to ensure that the area is free of windblown litter. Inspection and site cleanup shall be performed by community service workers and departmental employees to assure site cleanliness. Continual efforts will be made for improvement of the site each year.

The bi-weekly inspection shall also include an examination of all landfill vegetation which serves to protect from erosion and run-off of silt into the landfill storm water retention pond. Measures shall be implemented to re-seed any areas of erosion as

soon as weather and conditions permit. When seeding is impractical or the affected area cannot be reached with equipment, bales of straw will be placed as obstructions to erosion run off and straw will be spread along the erosion itself to prevent further damage until seeding and corrective action may be taken. First-time seeding should be performed as soon as conditions permit for temporary vegetative cover on areas of the landfill which have been temporarily finished and set aside for future covering with additional lifts of waste. Similarly, any finished areas of the landfill which will not be reused or disturbed should be covered with compost materials then sowed with permanent vegetative cover as quickly as possible. Hay should be used to control erosion until the new grass is well rooted. Fall planting shall be a combination of native grasses such as perennial fescue and annual winter wheat or rye. Spring planting shall be perennial fescue. Whenever, possible, the stand of Bermuda grass already growing on the landfill facility will be encouraged to spread over newly seeded areas. Regular bush-hogging will be performed on all seeded areas of the landfill to discourage the spread of invasive weeds and to encourage the spread of the planted landfill cover.

Once per year, in the fall after the first frost, the Street Department should use their side-cutting bush-hog to clean the ditches and road margins of tall sprouts and weeds.

Once every two years or so, or as needed, a track hoe should be utilized to clean out the mud in the reachable edge of the storm water pond. The mud should be placed in the landfill and allowed to drain dry, then utilized for cover dirt.

Fuel Tank/Fueling Area

The 500 gallon fuel tank is placed on a skid and maintained in the landfill as close as possible to the daily operation of the large compactors and bulldozer which it serves. The area will be protected from accidental bumping from vehicle traffic and monitored daily for any signs of leaks or spills. Significant spills will be excavated and aerated and the contaminated soil will be placed in a 40yd roll-off container and sent to Sand Valley Landfill, where they are authorized to accept such petroleum based waste material. A log shall be maintained showing the date and time of such spill and the clean up measures taken to correct the contamination. To date, no such spill has occurred in the landfill.

Truck Shed (Washing Area), Baler Building, Maintenance Shop, and Bulldozer Shed -SPCC guidelines and protocols for these areas

The wash out area located behind the truck shed will be inspected daily. Truck wash protocol dictates that drivers will clean their trucks out in the landfill after finishing their daily routes. Any waste material left in the trucks will be placed in 100 gallon cans before and after washing out truck beds to avoid littering the wash-out area. A buried concrete culvert drainage ditch will be maintained to carry wash water from the area directly under the building out to the storm water retention pond. Only bio-degradable soap will be used to clean the inside or outside of the vehicles. An inspection will be performed upon the finish of washing and there should be no visible discharge of debris.

Also, if any unexpected sheen, visible oil leakage, visible foam (to exceed trace amounts) or floating solids are detected upon completion of wash, it will be immediately reported and disposed of by moving said contaminants into the 100 gallon cans we have on site and that particular can or cans will be disposed of at BFI, where they are equipped and permitted to accept such wastes. We will keep an updated log of any incident, with all proper information, at this time no such incident has occurred.

Petroleum lubricants, antifreeze, truck wash detergent, and similar items used on site will be stored, locked either in the baler building or in the landfill maintenance truck. Oil-dri, oil socks and diapers are in the building in the event of overflow on the primary containment system.

Routine equipment maintenance and repairs will be performed in the maintenance bay of the maintenance shop attached to the baler building. The bay sits on an eight inch concrete slab and all walls are enclosed.

Used oil from routine equipment maintenance for our heavy equipment used in landfill operations will be collected and recycled and the area used to perform these services will be kept clean at all times. This area is what we refer to as our "Dozer shed" and it is located within our landfill footprint. No lubricants or other materials are to be stored in this building or anywhere else on site.

If accidental spills occur at any location on site, puddles shall be absorbed with "Oil-Dri", sand, saw dust, or equivalent material. Contaminated absorbents shall be stored away from possible contact with storm water and taken to BFI to be properly disposed of in a lined municipal solid waste landfill cell as soon as possible. All used oil will be recycled via the 300 gallon used oil tank at the vehicle maintenance shop or at our recycling facility.

On-site Waste Containers and Unacceptable Waste Extracted from the Landfill

Eight yard dumpsters and roll-off containers are stationed outside the baler building for the convenience of customers and to keep putrescent and other unacceptable materials out of the landfill. These containers shall be inspected daily and maintained in a clean condition free of any potential contaminants.

All public waste entering the landfill will be first inspected by the dispatcher at the inspection point at the corner of the baler building. The waste will be inspected a second time by the landfill compactor operator at the tipping face of the landfill. Any household waste or other material observed will be extracted by the customer and disposed of properly in the containers outside the baler building set aside for this purpose. Any improper materials entering the landfill in sanitation department roll off containers will be extracted by landfill personnel or community service workers and properly disposed of in the containers provided. An additional extraction fee and disposal fee will be charged back to the customer and records kept of such infractions for future reference.

Employee Training, Record Keeping, and Implementation

As integral part of city safety training exercises, all employees will be instructed in the proper manner in which to respond to accidental spills of fluids and the importance of proper maintenance of the entire landfill site. Safety and waste identification training will be part of continuing training for all employees.

All records required by this plan will be kept on file at the landfill office along with random inspection sheets of incoming loads for a period not less than three years.

The Best Management Practices Plan for the Fort Payne Landfill was last updated on this the 15th day of February, 2022.

_____

Patrick Dunne,
Acting Solid Waste Coordinator
City of Fort Payne

Dear Mr. Dunne:

On July 26, 2022, the Department received your application for permit renewal for the Fort Payne Landfill. In order to conduct a more comprehensive review of the permit renewal application, a list should be submitted detailing the names and dates of any documents relevant to the current permit renewal. Examples of relevant documents include:

1. Any current variances (both the requests for those variances and ADEM's approval response letters). - none
2. A copy of the original local approval and any subsequent local approvals relevant to current operations. 1992 original
3. Any siting requests and approvals relevant to current operations. - siting w/ Fish & wildlife - endangered species
4. The hydrogeological evaluation relevant to current operations.
5. Stormwater runoff calculations used to size sediment ponds relevant to current operations.
6. The most recent operations plan as well as any additional modifications made since the last operations plan was written, including current waste screening procedures.
7. The most recent gas monitoring plan as well as any modifications made since the last gas monitoring plan was written.
8. The most recent closure plan as well as any modifications made since the last closure plan was written.
9. The most recent groundwater monitoring plan as well as any modifications made since the last groundwater monitoring plan. The plan should follow the outline provided in the Alabama Groundwater Monitoring Reporting Guidance for Solid Waste Facilities provided on the ADEM website: http://adem.alabama.gov/programs/land/landforms/ALGWMonitoringReportGuidanceMarch2011.pdf).
10. The cell certification and subsequent approval letter from ADEM for the current cell waste is being disposed in.
11. The most recent permit drawings relevant to site operations. See about City - printing
12. Boundary plat and legal property description prepared, signed, and sealed by a land surveyor of the permitted facility boundary and permitted disposal area of the facility.

If you should have any questions, please contact Mr. Jonathan Crosby of the Solid Waste Engineering Section at (334) 270-5644.

Sincerely,

Jared Kelly, Chief
Solid Waste Engineering Section
Land Division

JDK/jc

Received
MAY 16 2023
Land Division

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

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

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

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

I NEVER RECEIVED THIS LETTER THROUGH MAIL. USED COPY FROM TEXT MESSAGE TO ADDRESS THESE BULLET POINTS. HOPEFULLY THIS SATISFACTORILY ADDRESSES CONCERNS OVER PERMIT RENEWAL.

In regards to variances:

We currently have no variances approved nor any requested for our landfill operations. This is routinely noted on our landfill inspections.

STATE OF ALABAMA
COUNTY OF DeKALB
CITY OF FORT PAYNE

RESOLUTION NO. 92-9:

EXPANDING LANDFILL SERVICE AREA

WHEREAS, the City of Fort Payne, a municpal corporation, owns and operates a solid waste landfill that is presently certified by the Alabama Department of Environmental Management (ADEM) as meeting current state and federal regulatory standards governing solid waste disposal; and,

WHEREAS, under new federal "Subtitle D" and ADEM regulations governing the operation of solid waste landfills, the City of Fort Payne must close the "active" area of its present landfill by October, 1, 1993; and,

WHEREAS, to relocate the landfill operation to a new site area prepared and to be operated in accordance with new state and federal guidelines will incur extraordinary costs that must be borne by those served; and,

WHEREAS, a practical and equitable effort to recover preparation and operating costs will result in a significant increase in landfill fees; and,

WHEREAS, the present landfill receives approximately 40 tons of solid waste per day, and any new operation would be most efficient and practical if it were to receive approximately 250 tons of solid waste per day; and,

WHEREAS, a legally advertised public hearing was held on April 7, 1992, in accordance with *Section 22-27-48, Code of Alabama, 1975*, to determine the wishes of the citizens of the City of Fort Payne as to the expansion of the service area feeding the City landfill in order to produce a greater volume of solid waste to make the operation more practical and efficient; and,

WHEREAS, the consensus of the citizens at the aforedescribed public meeting was that the Mayor and City Council as the governing body of the City of Fort Payne, Alabama, a municipal corporation, should proceed with every effort to so expand the service area of the City landfill under permit from ADEM;

BE IT THEREFORE RESOLVED by the Mayor and City Council that it wishes to expand the service area of the public municipal landfill to include all of DeKalb, Cherokee, Marshall and Jackson Counties in the State of Alabama; and,

BE IT FURTHER RESOLVED that an application be made to the Alabama Department of Environmental Management to allow the City of Fort Payne, Alabama, to expand its certified service area to include the aforementioned counties within the State of Alabama.

ADOPTED this 14th day of April, 1992.

Attest:

James C. McGee

James C. McGee, City Clerk

J. David Stout

J. David Stout, Mayor

SEAL
1889

STATEMENT OF CONSISTENCY

The Top of Alabama Regional Council of Governments, also known as Alabama Substate District 12, received a request for a statement of consistency from the City of Fort Payne on April 15, 1992. Local approval for this proposal was given by the City of City of Fort Payne on April 14, 1992.

The Top of Alabama Regional Council of Governments has evaluated the proposal using the provisions of the current regional solid waste management needs assessment in particular the available existing capacity within the regional and projected lifetime of such capacity. The regional council has identified that the proposed capacity in not in excess of the expected regional needs.

Based upon our evaluation of the proposal using the above criteria, the undersigned has determined that this proposal is consistent with the DeKalb County current regional solid waste management needs assessment.

Arthur Langford, Jr.

Signature of Authorized Official of
Top of Alabama Regional Council of Governments

April 17, 1992
Date

L Dawn Williams
Signature of Notary Public

4-17-92
Date

PUBLIC HEARING: LANDFILL SERVICE AREA EXPANSION

STATE OF ALABAMA
COUNTY OF DeKALB
CITY OF FORT PAYNE

FORT PAYNE HIGH SCHOOL LUNCHROOM

TUESDAY, APRIL 7, 1992, 6:00 P.M.

Pursuant to a legally advertised announcement, a public hearing was held at the lunchroom of the Fort Payne High School to receive citizen input as to a proposed expansion of the municipal solid waste landfill service area in order to increase its feasibility of operation under federal Subtitle D regulations.

The meeting was presided over by Mayor David Stout. Other officials also attending were Councilmembers Bill Ables, David Hawkins, Henry Johnson, Larry Sanders, City Solid Waste Coordinator John Walker, City Attorney Pat Tate, City Clerk Jim McGee and City Accountant Elaine Teague. There were approximately 40 interested citizens in attendance.

Mayor Stout opened the meeting, and made a brief statement that the sole purpose of the meeting was to determine public sentiment as to the possible expansion of the service area of the Fort Payne solid waste landfill so that it's operation could be made financially practical under expensive procedures required to come into compliance with new federal and state guidelines.

In effect, the City must close its solid waste landfill by October, 1993. The questions for potential alternatives are, (1) whether or not the City should continue its own operation by relocating and expanding on adjacent property using an approved method of site preparation and operation, (2) should it join with other municipalities to operate a larger public landfill, or (3) should it pay to use a private landfill source.

The mayor introduced David Harris of Roy Weston Engineering Consultants. Mr. Harris' firm has been engaged by the City to develop statistics and workable criteria to assist in making a long term decision. Mr. Harris in turn introduced Walt Gossett of Weston. Mr. Gossett went into further detail about the City's present landfill and about the possibilities of expansion. He discussed the cost factors and the effect they would have on local garbage rates. Presently, the City landfill takes in about 40 tons of waste per day. To be most economical, using Subtitle D requirements, the most practical level of operation would require that approximately 250 tons of waste per day be deposited in an expanded or alternative landfill.

Mayor Stout asked for comments and participation from those present. After comments, he requested a show of hands by those in opposition to an expansion of the municipal landfill service area. There was no opposition. Unanimously, the wishes of the citizens present were that the City try to maintain or participate in a public landfill versus a private operation and, if expansion would allow this, then it would be preferable to any privatization of landfill operations. It was felt by all present that there was much better control over a public landfill, plus, costs could be maintained on a much lower, fairer basis.

It was the opinion of those present that the mayor and council should first of all proceed in a cooperative effort with surrounding governments to build and operate a landfill of the size that would take all advantages of the economy of scale, but in the alternative, to pursue the operation of a landfill solely for the use of Fort Payne citizens and businesses if necessary.

With this apparent mandate, the mayor stated that the City would work further with Weston to plan for an expanded service area using additional landfill capacity, and if necessary, enlist participation by surrounding governments in proceeding towards a reasonable, consolidated public landfill project.

Upon brief final comments, the meeting was adjourned at approximately 7:15 p.m.

Attest:

James C. McGee, City Clerk

J. David Stout, Mayor

SEAL

WETLANDS DELINEATION AND ENDANGERED SPECIES STUDY AT THE PROPOSED FORT PAYNE SANITARY LANDFILL

Prepared for:

Carter Darnell and Grubbs Engineers, Inc.
Andalusia, AL

Prepared by:

Environmental Resource Analysts
601 County Road 57
Notasulga, Alabama 36866

Joseph Freda, Ph.D.
Project Director

12/7/94
Date

1.0 INTRODUCTION

Environmental Resource Analysts (ERA) was contracted by Carter Darnell and Grubbs Engineers, Inc. to conduct a wetlands delineation and endangered species study for the proposed Fort Payne sanitary landfill in DeKalb County, Alabama. The approximate location of the study area is illustrated in Figure 1. The objectives of the study were to locate and map potential Section 404 jurisdictional wetlands. In addition, we contacted the U.S. Fish and Wildlife Service regarding the potential impact on federally listed endangered and threatened species, or their critical habitat.

2.0 METHODS

The wetlands delineation study was conducted September 22, 1994 according to the 1987 Army Corp Engineers wetlands delineation manual (ACE 1987). The "on site", routine determination method for areas greater than 5 acres was employed. The objective was to identify and map potential jurisdictional wetlands. Jurisdictional wetlands exhibit 3 characteristics: 1) Hydric Soil, 2) Hydrophytic Vegetation, 3) Wetland Hydrology. Soil color was determined with the use of a Munsell soil color charts (Munsell Color 1990). A soil survey for Dekalb County had not been published at the time of the survey. Plants were identified by ERA personnel according to Radford et al. (1968) and Brown and Kirkman (1990). The depth of the water table was determined by digging a standard soil pit.

The regional office of the U.S. Fish and Wildlife in Daphne, AL was contacted for their determination of the potential impact on threatened or endangered species (or their critical habitat).

3.0 RESULTS

No potential jurisdictional wetlands were observed on the study area. Two small intermittent tributaries flowed through the northeast and southwest corners of the study site. Both tributaries were approximately 3 to 5 feet across and displayed no evidence of flooding. The adjacent hillsides were very steep and well drained, and supported a deciduous forest including oaks, hickories and maples. No vegetation was growing from the creek bottom or banks. These tributaries were not classified as potential jurisdictional wetlands because of the lack of wetland vegetation. In addition, the soil adjacent to the creek was brightly colored and did not exhibit hydric characteristics.

The U.S. Fish and Wildlife Service determined that this project will have no impacts on endangered or threatened species (Attachment A).

4.0 LITERATURE CITED

ACE. 1987. Corps of Engineers wetlands delineation manual. Dept. Army, U.S. Army Corps of Engineers, Washington, DC, 20314-1000.

Brown, C.L. and L.K. Kirkman. 1990. Trees of Georgia and Adjacent States. Timber Press, Portland OR. 292 pp.

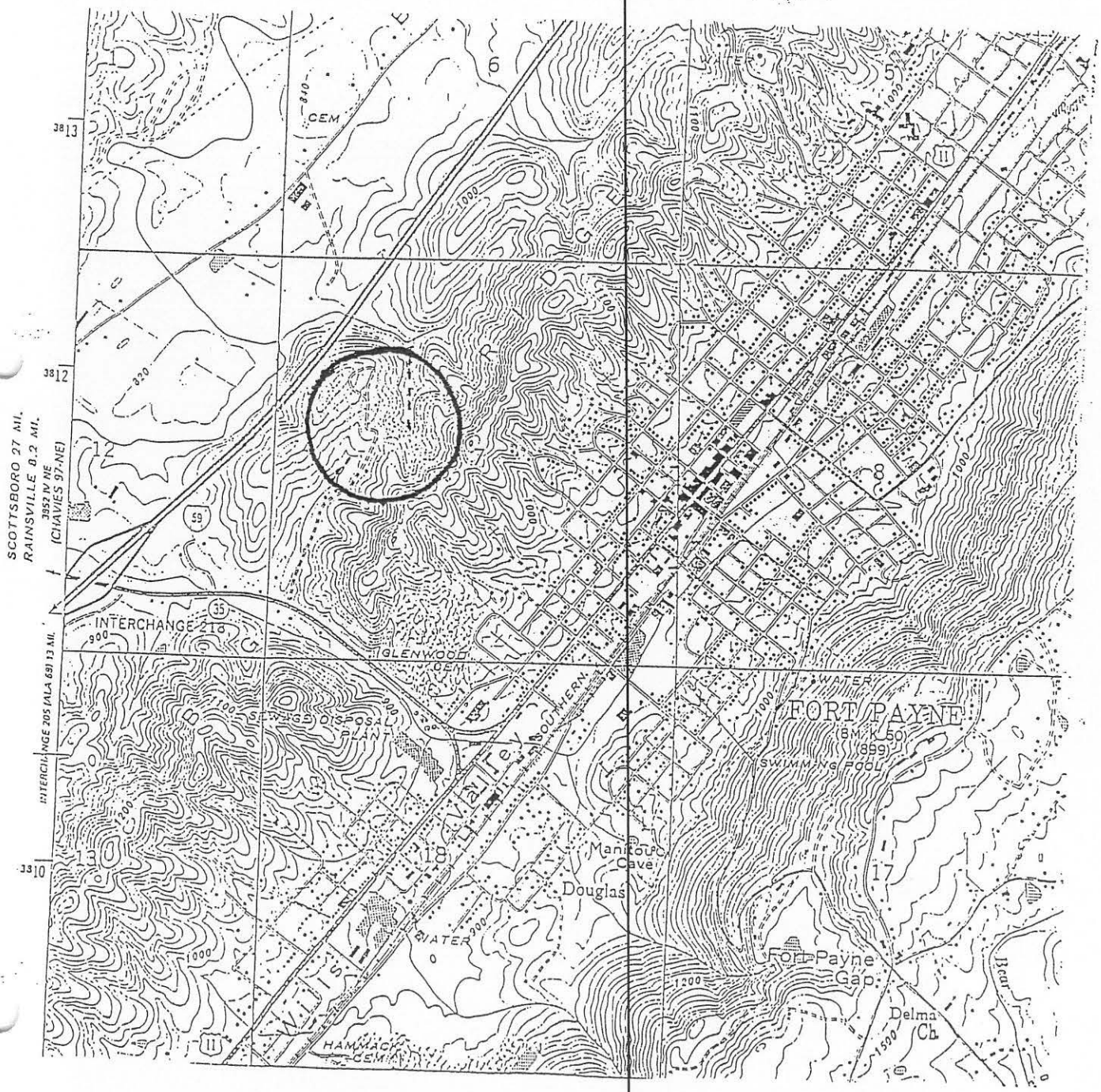
Munsell Color. 1990. Munsell Soil Color Charts. Kollmorgen Corp. Baltimore, MD.

Radford, A.E., H.E. Ahles, and C. R. Bell. 1968. Manual of Vascular Flora of the Carolinas. The University of North Carolina Press. Chapel Hill, NC. 1183 pp.

Figure 1. The approximate location of the study site within the state of Alabama.



Figure 2. U.S. Geologic survey map (Fort Payne Quadrangle) of the study site. Dashed line indicates intermittant tributaries.



Attachment A. Letter of "no impact" from U.S. Fish and Wildlife Service.

United States Department of the Interior

FISH AND WILDLIFE SERVICE
P.O. Drawer 1190
Daphne, Alabama 36526

September 9 1994

Mr. Joseph Freda
Environmental Resource Analysts
601 County Road 57
Notasulga, AL 36866

In Reply Refer To:
Log No. C4-3-94-369

Dear Mr. Freda:

This responds to your letter of August 4, 1994 concerning a proposed landfill site in Fort Payne, Alabama. We have reviewed the information you enclosed and have the following comments in accordance with the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. et seq.) and the Endangered Species Act (87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.).

A. Fish and Wildlife Coordination Act

We do not expect the proposed action to result in significant adverse impacts to nonendangered fish and wildlife resources.

B. Endangered Species Act

Our records indicate no endangered, threatened or proposed species, or their critical habitat occurring in the project area. Therefore, no further endangered species consultation will be required for this project, as currently described. If the construction/completion of this project is delayed for more than a year, we recommend you re-establish contact with the Daphne Field Office.

If you need further information regarding our concerns, please contact our office (Phone: 205/441-5181).

Sincerely yours,

Larry E. Goldman
Field Supervisor

DEPARTMENT OF THE ARMY
MOBILE DISTRICT, CORPS OF ENGINEERS
P. O. BOX 2288
MOBILE, ALABAMA 36628-0001

February 10, 1995

REPLY TO
ATTENTION OF:

Regulatory Branch
Operations Division

SUBJECT: Nationwide Permit Authorization - Jurisdictional Number ALJ94-04677-K

Carter, Darnell and Grubbs Engineers, Inc.
Attention: Ms. Wendy Hartung
Post Office Box 278
Andalusia, Alabama 36420

Dear Ms. Hartung:

Reference is made to your request for a wetlands determination at an existing transfer station site in Fort Payne. Specifically the property is located within Section 16, Township 11 South, Range 5 East, Etowah County, Alabama.

This letter verifies that your proposed sediment pond is already authorized by Nationwide Permit 26 in accordance with 33 CFR Part 330 of our regulations. A headwater drain of less than one acre in size runs through the proposed pond site. A copy of the Nationwide Permit is enclosed with the appropriate sections marked for your reference. Further authorization from this office is not required provided the scope of work is in accordance with your submitted plans and the Nationwide Permit conditions.

The statements contained herein do not convey any property rights, or any exclusive privileges, and do not authorize any injury to property or obviate the requirements to obtain other local, State, or Federal assent required by law.

Please be advised that this jurisdictional determination reflects current policy and regulations. If after a 5-year period, this jurisdictional determination has not been specifically revalidated by the U.S. Army Corps of Engineers, it shall automatically expire.

If the scope of work or project location changes, you are urged to contact this office for a verification of this determination.

If you have any questions or require further information concerning this matter, please contact Ms. Cindy J. House-Pearson of the Jurisdiction and Enforcement Section at (334) 694-3873.

Sincerely,

Ronald A. Krizman
Chief, Regulatory Branch
Operations Division

Enclosure

LANCE R. LEFLEUR
DIRECTOR

KAY IVEY
GOVERNOR

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

Permit cover letter on wall

January 12, 2022

MR. PATRICK DUNNE
SOLID WASTE COORDINATOR
CITY OF FORT PAYNE ALABAMA
1004 DEWYER AVE
FORT PAYNE, AL 35967

RE: **Fort Payne Landfill**
1004 Dewyer Ave
Fort Payne, AL 35967
De Kalb County, 049

Dear Mr. Dunne:

Based on your request (as evidenced by the submittal of a Notice of Intent), coverage under **General NPDES Permit Number ALG160106** is granted. The effective date of reissuance coverage is February 01, 2022.

Coverage under this permit does not authorize the discharge of any pollutant or wastewater that is not specifically identified in the permit and by the Notice of Intent which resulted in the granting of coverage. Those discharges identified in the NOI are:

Outfall ID	Receiving Water	Notes
0011	Little Wills Creek	This outfall's discharge requires monitoring per the general permit requirements.
0012	Big Wills Creek	This outfall's discharge requires monitoring per the general permit requirements.
0032	Little Wills Creek	This outfall's discharge requires monitoring per the general permit requirements.
0042	Little Wills Creek	This outfall's discharge requires monitoring per the general permit requirements.

You are responsible for compliance with all provisions of the permit including but not limited to, the performance of any monitoring, the submittal of any reports, and the preparation and implementation of any plans required by the permit.

Discharge Monitoring Reports (DMRs) must be submitted electronically via the Alabama Environmental Permitting and Compliance System (AEPACS) in accordance with Permit Condition I. C. To participate in this program, the Permittee Participation Package and registration forms may be downloaded online at adem.alabama.gov/aepacs. ADEM will not provide paper DMR forms due to the electronic reporting requirements.

ADEM
Alabama Department of Environmental Management

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM GENERAL PERMIT

DISCHARGE AUTHORIZED: DISCHARGES OF STORM WATER (**NOT** CONTAINING LEACHATE) FROM ACTIVE AND INACTIVE LANDFILLS, TRANSFER STATIONS, AND LAND DISTURBANCE ACTIVITIES ASSOCIATED WITH OPENING AND CLOSING CELLS AT LANDFILLS; DISCHARGES OF VEHICLE AND EQUIPMENT EXTERIOR WASH WATER; AND DISCHARGES OF STORM WATER FROM FUELING, PETROLEUM STORAGE AND HANDLING, EQUIPMENT STORAGE, AND MAINTENANCE AREAS

AREA OF COVERAGE: THE STATE OF ALABAMA

PERMIT NUMBER: ALG160106

RECEIVING WATERS: ALL WATERS OF THE STATE NOT DESIGNATED OUTSTANDING NATIONAL RESOURCE WATERS OR OUTSTANDING ALABAMA WATERS

In accordance with and subject to the provisions of Federal Water Pollution Control Act, as amended, 33 U.S.C. §§1251-1388 (the "FWPCA"), the Alabama Water Pollution Control Act, as amended, ***Code of Alabama 1975,*** *§§22-22-1 to 22-22-14 (the "AWPCA"), the Alabama Environmental Management Act, as amended,* ***Code of Alabama 1975****, §§22-22A-1 to 22-22A-17, and rules and regulations adopted thereunder, and subject further to the terms and conditions set forth in this permit, the dischargers covered by this permit are hereby authorized to discharge into the above receiving waters.*

ISSUANCE DATE: November 10, 2021

EFFECTIVE DATE: February 1, 2022

EXPIRATION DATE: January 31, 2027

Jeffery W. Kitchen

Alabama Department of Environmental Management

SEDIMENTATION PONDS
Fort Payne Sanitary Landfill
Design Summary
June 9, 1994

Two sedimentation ponds are proposed to be constructed to control stormwater exiting the Fort Payne Sanitary Landfill. The locations of the two ponds are shown on Sheet 1 of the engineering drawings. In order to construct the sedimentation ponds, the City of Fort Payne intends to purchase additional land beyond the permitted landfill property boundary.

Rule 335-13-4-.17(1) of the ADEM Administrative Code requires that on-site drainage control structures be designed, constructed and maintained to collect and control at a minimum, the water volume resulting from a 25-year, 24-hour storm event. The design capacity of each sedimentation pond was calculated using the procedures published by the soil conservation service in the Technical Release 55 (TR 55) "Urban Hydrology for Small Watersheds". The computer data sheets and figures used to calculate the required storage volume for each pond have been included.

Peak Outflow Discharge: TR 55 requires a known peak outflow discharge from each pond. Since there are no existing outfall structures (i.e. concrete channels, drainage pipes, etc.), a desirable peak discharge of 20 cfs was chosen as a design parameter for each pond. This discharge will be controlled by an outlet control structure as shown on the sedimentation pond cross sections.

Hydrogeologic Soil Group: The TR 55 Program requires the classification of on-site soils into one of four hydrogeologic soil groups:

Group A- low run-off potential and high infiltration rate

Group B- moderate infiltration rates when thoroughly wetted and consists chiefly of moderately well to well drained soils.

Group C- low infiltration rate when thoroughly wetted and consists chiefly of soils with a layer that impedes downward movement of water and soils with moderately fine texture.

Group D- high runoff potential and a very low infiltration

The surface soils at the landfill consist primarily of silty sandy clay soils with relatively low infiltration rates, therefore the Group C classification was chosen.

CALCULATIONS
Sedimentation Pond #1

RUNOFF CURVE NUMBER COMPUTATION Version 2.00

Project : Fort Payne Sed. Pond User: WEH Date: 06-01-94
County : Dekalb State: Al Checked: DCW Date: 6/8/94
Subtitle:
Subarea : area 1

COVER DESCRIPTION	Hydrologic Soil Group A	B	C	D
	Acres (CN)			
OTHER AGRICULTURAL LANDS				
Meadow -cont. grass (non grazed) ----	-	-	48(71)	-
Total Area (by Hydrologic Soil Group)			48	

SUBAREA: area 1 TOTAL DRAINAGE AREA: 48 Acres WEIGHTED CURVE NUMBER: 71*

* - Generated for use by GRAPHIC method

TIME OF CONCENTRATION AND TRAVEL TIME Version 2.00

Project : Fort Payne Sed. Pond User: WEH Date: 06-01-94
County : Dekalb State: Al Checked: DCW Date: 6/8/94
Subtitle:

Flow Type	2 year rain	Length (ft)	Slope (ft/ft)	Surface code	n	Area (sq/ft)	Wp (ft)	Velocity (ft/sec)	Time (hr)
Sheet	3.7	25	.25	J					0.016
Shallow Concent'd		500	.025	U					0.054
Open Channel		1500	.025		.15	20	10.5		0.173
								Time of Concentration =	0.24*

--- Sheet Flow Surface Codes ---

A Smooth Surface
B Fallow (No Res.)
C Cultivated < 20 % Res.
D Cultivated > 20 % Res.
E Grass-Range, Short
F Grass, Dense
G Grass, Burmuda
H Woods, Light
I Woods, Dense
J Range, Natural

--- Shallow Concentrated --- Surface Codes ---

P Paved
U Unpaved

* - Generated for use by GRAPHIC method

GRAPHICAL PEAK DISCHARGE METHOD Version 2.00

Project : Fort Payne Sed. Pond User: WEH Date: 06-01-94
County : Dekalb State: Al Checked: DCW Date: 6/8/94
Subtitle:

Data: Drainage Area : 48 * Acres
Runoff Curve Number : 71 *
Time of Concentration: 0.24 * Hours
Rainfall Type : II
Pond and Swamp Area : NONE

Storm Number	1	2	3	4	5
Frequency (yrs)	5	10	25	50	100
24-Hr Rainfall (in)	4.7	5.5	6.5	7.0	7.5
Ia/P Ratio	0.17	0.15	0.13	0.12	0.11
Runoff (in)	1.89	2.50	3.31	3.72	4.15
Unit Peak Discharge (cfs/acre/in)	1.103	1.123	1.141	1.149	1.155
Pond and Swamp Factor 0.0% Ponds Used	1.00	1.00	1.00	1.00	1.00
Peak Discharge (cfs)	100	135	181	205	230

* - Value(s) provided from TR-55 system routines

STORAGE VOLUME FOR DETENTION BASINS Version 2.00

Project : Fort Payne Sed. Pond
County : Dekalb State: Al
Subtitle:

User: WEH Date: 06-01-94
Checked: DCW Date: 6/8/94

Drainage Area: 48 Acres
Rainfall-Type: II
Runoff: 1.9 inches
Peak Inflow: 100.1528 cfs
Peak Outflow: 20 cfs
Detention Basin Storage Volume: 0.86 inches or 3.4 acre feet

Rainfall Frequency: 5 years

STORAGE VOLUME FOR DETENTION BASINS Version 2.00

Project : Fort Payne Sed. Pond
County : Dekalb State: Al
Subtitle:

User: WEH Date: 06-01-94
Checked: DCW Date: 6/9/94

Drainage Area: 48 Acres
Rainfall-Type: II
Runoff: 2.5 inches
Peak Inflow: 134.8333 cfs
Peak Outflow: 20 cfs
Detention Basin Storage Volume: 1.26 inches or 5.0 acre feet

Rainfall Frequency: 10 years

STORAGE VOLUME FOR DETENTION BASINS Version 2.00

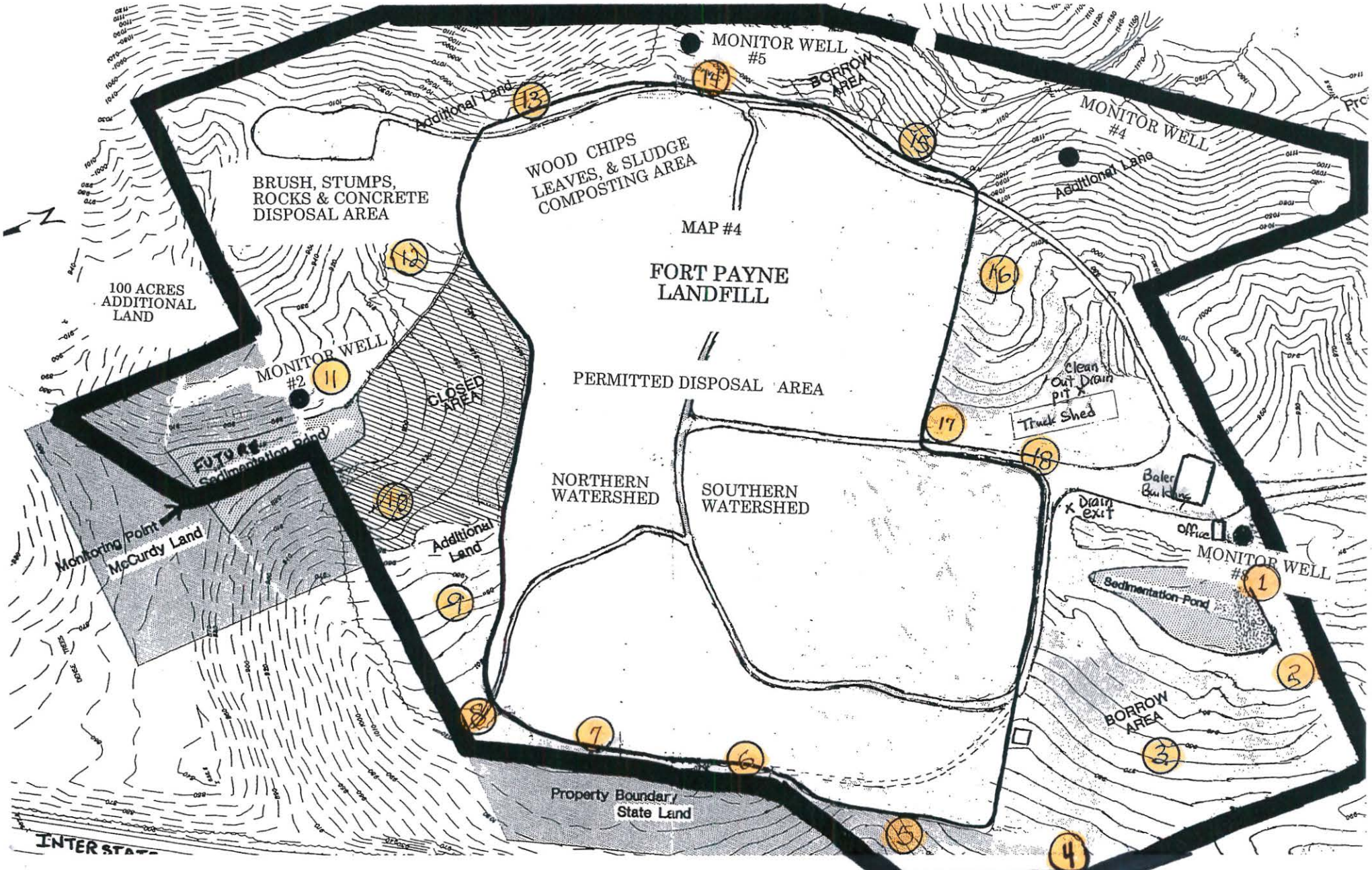
Project : Fort Payne Sed. Pond
County : Dekalb State: Al
Subtitle:

User: WEH Date: 06-01-94
Checked: DCW Date: 6/8/94

Drainage Area: 48 Acres
Rainfall-Type: II
Runoff: 3.3 inches
Peak Inflow: 181.1675 cfs
Peak Outflow: 20 cfs
Detention Basin Storage Volume: 1.80 inches or 7.2 acre feet

Rainfall Frequency: 25 years

EXPLOSIVE GAS MONITORING FIELD REPORTING - TEST SITES 1-18



CITY OF FORT PAYNE
SANITATION DEPARTMENT

Fort Payne Landfill
Explosive Gas Monitoring Field Report

Date of Monitoring: Tuesday, Jan. 17th, 2023 (For year 2022)
Person Monitoring: Patrick Dunne

Monitoring Equipment: Scott D-11 Vapotester calibrated on Methane (calibrated in August, 2011, by a factory representative).

Comments: NO active placement of material has been performed within hundreds of feet of either building in many years. Our landfill has also not received any putrescent waste since October of 1997. This landfill (with one exception, our clean-out drain) has not detected any methane since 1998.

Test Site	% of LEL	Test Site	% of LEL
1	0%	10	0%
2	0%	11	0%
3	0%	12	0%
4	0%	13	0%
5	0%	14	0%
6	0%	15	0%
7	0%	16	0%
8	0%	17	0%
9	0%	18	0%

Other Test Sites	% of LEL
Office Building	0%
Dispatch Office	0%
Truck Shed	0%
Truck Shed Drain Culvert	0%
Baler Building	0%
Clean-out Drain	If any, usually here. 0% reading here as well.

Clean out drain is monitored and washing debris from cleaning out truck troughs into the clean-out pit is discontinued or greatly reduced in July and August until cooler weather to help with LEL levels below ground level in the culvert.

Patrick Dunne, Solid Waste Coordinator

Date: 1-17-23

SECTION 8
POST-CLOSURE PLAN

8.1 POST-CLOSURE CARE PERIOD

The Landfill Permittee must maintain the landfill property and continue monitoring requirements throughout the post-closure care period. The post-closure maintenance and monitoring period shall continue for thirty (30) years, or for a period of time that has otherwise been determined by ADEM.

8.2 CHANGE IN LENGTH OF POST-CLOSURE CARE PERIOD

The length of the post-closure care period may be decreased by the ADEM if the landfill supervisor demonstrates that a reduced period is sufficient to protect human health and the environment and the demonstration is approved by the Department.

The length of the post-closure care period may also be increased if ADEM determines that the lengthened period is necessary to protect human health and the environment.

8.3 FACILITY MAINTENANCE

The Landfill Permittee shall maintain the landfill property for the post-closure care period as determined by ADEM. The Permittee shall inspect the facility on a monthly basis and after major storm events to identify problems with vector control, erosion, cracks, ponding settlement and other such deficiencies.

Eroded areas shall be filled with suitable soil cover, compacted graded and revegetated in accordance with the Vegetative Plans located in Section 6 and Section 7 of this Manual. Areas which allow surface water ponding due to settlement shall also be filled, graded and vegetated. Extensive surface cracks must be identified and corrected to prevent the infiltration of surface water.

8.4 FINAL COVER MAINTENANCE

Throughout the post-closure care period, the final cover system will require attention and maintenance. After the landfill is closed, the Landfill Permittee shall make monthly inspections of the facility to detect problems, such as erosion and settlement, that could reduce the effectiveness of the final cover.

The Landfill Permittee should mow the entire landfill at least once a year to reduce the growth of woody plants. The volunteer growth of any trees should be prevented on the final cover. An inspection immediately following mowing could detect the beginning of erosion or the settlement of the cover. It is imperative that erosion problems be identified and corrected to prevent washout of waste materials and increased infiltration. Any eroded areas must be filled, compacted, and regrassed. Periodically lime and fertilizer will have to be added to the cover in order to maintain an adequate vegetative cover.

Due to decomposition of waste, and compaction of the waste by overburden, the landfill surface will be subject to settlement and the potential for rainwater ponding. Inspections should detect settled areas. These areas must be filled , compacted, and regrassed to prevent ponding and encourage runoff, while maintaining a minimum grade of five (5) percent.

The Permittee shall inspect all surface water control structures including sediment pond outlets, berms, ditches, and terraces to insure the integrity of the surface water control system remains intact. Any damage due to settlement, erosion or caused by maintenance equipment shall be promptly repaired.

8.5 GROUNDWATER MONITORING DURING POST-CLOSURE

The Landfill Permittee must continue detection monitoring at all groundwater monitoring wells on a semi-annual basis. The requirements for groundwater monitoring and record-keeping apply throughout the post-closure care period. The Landfill Permittee should refer to Section 3 of this manual for specific groundwater requirements. All groundwater monitoring wells must be maintained and any wells that are damaged or destroyed by equipment, etc. should be replaced in accordance with ADEM's specifications.

8.6 LANDFILL GAS MONITORING DURING POST-CLOSURE

All explosive gas monitoring wells and vents must be maintained throughout post-closure. Any explosive gas wells and vents damaged or destroyed by equipment, etc. must be immediately replaced in accordance with the details shown on the Design Plans. Landfill gasses that could potentially migrate off-site must continue to be monitored on a quarterly basis, throughout the post-closure care period, and results placed in the Operating Record. Specific monitoring requirements are outlined in Section 3 of this manual.

8.7 STORMWATER MONITORING DURING POST-CLOSURE

Stormwater monitoring shall occur in accordance with a current NPDES Permit for a period of time specified by ADEMS's WaterDivision.

8.8 POST-CLOSURE CERTIFICATION

Following the completion of the post-closure care period of this facility, the Permittee will submit to the Department a certification, signed by an independent registered professional engineer verifying that the post-closure care has been completed in accordance with the post-closure plan. A copy of the certification will also be placed in the Operating Record.

8.9 DEED NOTATION

Within 90 days following the permit expiration, revocation, or when the final closure requirements have been achieved, the Permittee shall record a notation onto the land deed containing the landfill property to notify any potential purchaser of that property that:

1) The land has been used as a solid waste disposal facility landfill unit.

2) The use of the land is restricted due to post-closure requirements.

3) The locations and dimensions of the landfill un t with respect to permanently surveyed benchmarks and section corners shall be on a plat prepared and sealed by a land surveyor.

4) Contain a note, prominently displayed, which states the name of the Permittee, type of landfill unit, and the beginning and closure dates of disposal activity.

5) Certification by an Engineer or Land Surveyor that all closure requirements have been completed as determined necessary by the Department.

8.10 POST-CLOSURE LAND USE

Post-closure use of the property must never be allowed to disturb the integrity of the final cover or any component of the monitoring systems. Maintenance or post-closure use with equipment shall only be performed during dry periods to prevent damage to the final cover system.

If the Landfill Owner or Permittee, upon final closure of the facility, has future post-closure plans to utilize any portion of the landfill property, ADEM will be notified.

The Permittee or Owner, or any subsequent owner of the land upon which a landfill unit is located must request approval from the Department if they wish to remove waste, waste residues, the liner, or any contaminated soils. The owner may also ask permission to remove the notation from the recording instrument if all the waste and contaminated soils are removed from the property and no unpermitted discharges to waters have occurred.

8.11 POST-CLOSURE CARE CONTACTS

Any questions or comments during the Post-Closure Care Period of this facility may be addressed by the following:

The City of Fort Payne
100 Gault Avenue South
Fort Payne, Alabama 35967
(205) 845-1524

Alabama Department of Environmental Management
P.O. Box 301463
Montgomery, Alabama 36130-1463
(205) 271-7700

MID-SOUTH TESTING, INC.

March 10, 2020

Mr. Mark Schimmer
Alabama Department of Environmental Management
Solid Waste Branch
Land Division
1400 Coliseum Boulevard
Montgomery, Alabama 36110-2059

RE: Fort Payne Landfill
Fort Payne, Dekalb County, Alabama
Permit No. 25-02

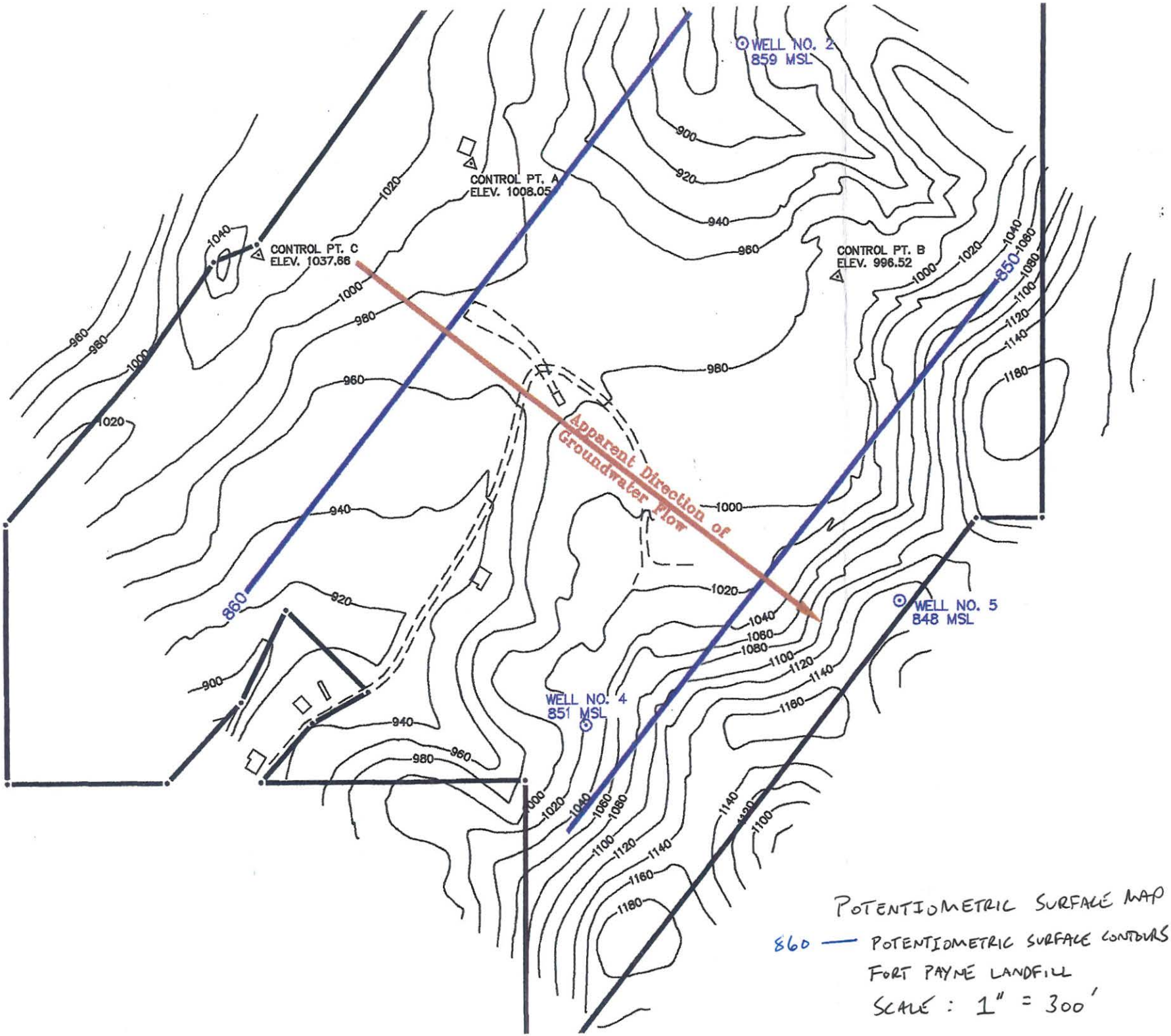
Dear Mr. Schimmer:

Mid-South Testing, Inc. (MST) has been retained by City of Fort Payne to respond to your request in a letter dated February 20, 2020. The Alabama Department of Environmental Management (ADEM) letter requested the owner/operator of the landfill to respond to the following:

- *Section 2.2 of the report indicates that monitoring well MW-8 fluctuates in designation between an up gradient and down gradient well. However, Solid Waste Disposal Permit No. 25-02 identifies MW-8 as a down gradient well. In addition, during times that MW-8 is used as an up gradient well, there would only be one down gradient well (MW-2). ADEM Admin. Code r.335-13-4-.14(1)(b)1 requires that groundwater shall be evaluated with a minimum of one hydraulically up gradient and two hydraulically down gradient wells. Monitoring well MW-8 should be monitored as a down gradient well during future sampling events. The designation of MW-8 can be re-evaluated during the permit renewal/modification process.*

MST will designate MW-8 as a down gradient well, as stipulated in Solid Waste Disposal Permit No. 25-02, in all future Statistical Analysis of Groundwater Monitoring Data Reports.

Decatur
2220 Beltline Road, SW
Decatur, AL 35601
256-351-7900
256-350-9507 Fax



POTENTIOMETRIC SURFACE MAP

860 — POTENTIOMETRIC SURFACE CONTOURS

FORT PAYNE LANDFILL

SCALE : 1" = 300'

General

Based on the topographic and hydrogeologic conditions, and since one updip monitoring well (MW3) and one downdip monitoring well (MW2) had already been installed at the landfill, two additional downgradient monitoring wells were proposed for the Fort Payne Sanitary and Inert Landfills as required by ADEM Administrative Code, Rule 335-13-4-.14.

However, Monitoring Well MW3 was none producing and it was suspected that the screen was clogged with clay materials. Therefore, a decision was made to grout up the old monitoring well (MW3), offset, drill a new borehole, and install a new upgradient monitoring well (MW6). The proposed locations of the two additional downgradient monitoring wells, and the replacement well for MW3, were outside of the sanitary and inert landfill boundaries, and on property owned by the City of Fort Payne.

Substantially the entire property identified within the sanitary and inert landfill boundaries has been used, is presently being used, or will be used in the future for the disposal of sanitary or inert wastes, preventing monitoring well placement within the landfill boundaries. Therefore, no monitoring wells or exploration borings were proposed within the landfill boundaries to establish the uppermost saturated zones. Instead, Carter, Darnell & Grubbs Engineers, Inc. evaluated the hydrogeologic conditions including the monitoring wells (MW2 & MW3) previously installed, the old residential well, the elevations of the intermittent streams, and the dip angles and composition of the geologic units exposed in and around the landfill boundaries. Also evaluated was the accessibility to the proposed monitoring well locations by drill rigs, water trucks, and equipment trailers. Based on this information, the additional groundwater monitoring wells were proposed to verify subsurface conditions on-site.

Previous Installation of Monitoring Wells

There were three monitoring wells (MW1, MW2, & MW3) installed at the Fort Payne Landfill in August of 1981. However, Monitoring Well MW1 was destroyed several years ago during landfilling operations. After Monitoring Well MW1 was destroyed, an old private well was used as a monitoring well by the Fort Payne Sanitary Landfill. Monitoring Well MW3 and the old private well was plugged and abandoned in September, 1993.

Monitoring Well MW2: Utilizing the old Driller's Log, Monitoring Well MW2 was installed in a borehole 62 feet deep with 20 feet of 4-inch PVC screen (slot size unknown), and 44 feet of 4-inch PVC riser. It is unknown if a sand pack was placed around the screen, and it is very unlikely that a bentonite seal was placed in the borehole annulus above the screen. The open space between the well riser and the borehole wall was not grouted in Monitoring Well MW3; therefore, the open space between the well riser and the borehole wall was probably not grouted in Monitoring Well MW2. Utilizing the Drillers Log for Monitoring Well MW2 there was "fill dirt and topsoil" from the surface to a depth of 18.0 feet; "tan yellow clay" to a depth of 23.5 feet; "tan yellow clay with pieces of limestone" to a depth of 37.0 feet; and "solid limestone" to a depth of 62.0 feet.

Monitoring Well MW2 is considered a downdip well because it is installed topographically downdip from the landfill area, and also geologically downdip (east) of the northward trending wooded hollow. Therefore, since the lithologic unit that the screen is set in apparently outcrops in the bottom of the wooded hollow, MW2 can possibly intercept any leachate contaminants that might be carried into the wooded hollow by surface runoff from the sanitary landfill area.

Installation of New Monitoring Wells

Two new downgradient monitoring wells (MW4 & MW5) have been installed at the Fort Payne Sanitary Landfill. A new upgradient monitoring well (MW6) was to be installed to replace the old Monitoring Well MW3, but Borehole MW6 was plugged and abandoned after drilling to a depth of 250 feet without striking a saturated zone.

Monitoring Well MW4: Monitoring Well MW4 was installed approximately 290 feet south of the southern boundary of the sanitary landfill, and approximately 250 feet southeast of the southeastern boundary of the section designated as "Future Inert". This location was selected to maximize the interception of groundwater that flows geologically downdip from the active inert landfill. Monitoring Well MW4 could not be placed further north, nearer to the southern boundary of the sanitary landfill, because of the excavation of clayey soil and weathered shale from the hillside to use as cover material for the sanitary landfill. MW4 could not be placed much further northwest, nearer to the inert lanfill, because of the inaccessibility for drill rigs, water trucks, and associated equipment.

The elevation of the land surface at Monitoring Well MW4 is 1,033 feet above mean sea level (MSL). The drilling of Borehole MW4 was conducted during very dry weather, and the first saturated zone encountered during the drilling of this borehole was at 248 feet below the surface. The groundwater was encountered at the base of the shale which comprises the Sequatchie Formation, and was lying in the upper 3 to 5 feet of Chickamauga Limestone. The upper 3 to 5 feet of the Chickamauga in this vicinity is weathered and porous. Underlying the weathered zone, the Chickamauga in this area is very tight with little or no porosity apparent.

The depth of Monitoring Well MW4 is due to the surface elevation of the well being approximately 55 feet above the surface elevation of the landfill, and the dip of the underlying rocks to the southeast. During the drilling of the borehole for MW4, tan weathered shale and reddish-brown clay with thin interbeds of siltstone, and medium gray limestone were found from the surface to a depth of 23 feet. Medium gray shale with some thin interbeds (<1 ft. thick) of siltstone and limestone (mudstone to pelloidal packstone) were primarily found from a depth of 23 feet to a depth of 248 feet. Some beds of hematite were encountered between depths of 65 feet and 145 feet. Some of the thin siltstone and limestone beds were fossiliferous (primarily Brachiopods). Chickamauga Limestone was encountered at a depth of 248 feet. The Chickamauga consisted of medium gray mudstone to tight pelloidal packstone. The upper ten feet of the limestone was drilled into to be certain that the top of the Chickamauga had been encountered. The total depth of Borehole MW4 is 258 feet.

Monitoring Well MW4 was installed in an 8.5-inch diameter borehole. The monitoring well was constructed of 20 feet of threaded Schedule 80 4-inch PVC screen with 0.010 slots, and 240 feet of threaded Schedule 80 4-inch PVC riser (no glues or sealants used). A PVC plug was put on the bottom of the screen, and the screen was set at the bottom of the borehole. A coarse (#2) filter sand was placed around the screen to 10 feet above the screen. A bentonite chip seal, 5 feet thick, was placed on top of the filter sand. Sur-grout bentonite slurry was placed between the riser and the borehole wall from the top of the bentonite chip seal to the surface. An 8-inch steel protective casing was placed (in concrete) over the well riser from 2.5 feet below the surface to 2.5 feet above the surface. A concrete pad was constructed at the surface around the base of the protective covering. Four steel bumper posts were installed in the concrete pad around the protective casing to provide futher protection for the monitoring well.

Due to the depth of the well and the difficulty in bailing groundwater from MW4 until the Ph, temperature, and specific conductivity stabilized, a stainless steel 3-inch diameter 0.5 hp Grundfos pump was installed in the well for purging and to take groundwater samples. The pipe from the pump to the surface is constructed of Schedule 80 1-inch threaded PVC with threaded PVC couplings (no glue or sealants). A 12 AWG Type TW submersible pump electrical cable runs inside the well riser from the surface to the pump. The pump pipe and the electrical cable is set through a well seal at the top of the riser. The pump is set at a depth of 240 feet below the surface, and the pump produces 7.5 gallons of water per minute after initial drawdown.

Monitoring Well MW5: Monitoring Well MW5 was installed approximately 330 feet southeast of the southeastern boundary of the active sanitary landfill area. This location was selected to maximize the interception of groundwater that flows geologically downdip from the central part of the active sanitary landfill. Monitoring Well MW5 could not be placed further northwest, nearer to the southeastern boundary of the sanitary landfill, because of the excavation of clayey soil and weathered shale from the flanks of the ridge to use as cover material for the sanitary landfill. The monitoring well site is accessible by a road up the east flank of the ridge from the City's chert pit, and then northeast along the top of the ridge.

The elevation of the land surface at Monitoring Well MW5 is 1,147 feet above MSL. The drilling of Borehole MW5 was conducted during very dry weather, and the first saturated zone was encountered at 459 feet below the surface at this site. The groundwater was encountered at the base of the shale which comprises the Sequatchie Formation, and was lying in the upper 3 to 5 feet of Chickamauga Limestone. The upper 3 to 5 feet of the Chickamauga in this vicinity is weathered and porous. Underlying the weathered zone, the Chickamauga in this area is very tight with little or no porosity apparent.

The depth of Monitoring Well MW5 is due to the surface elevation of the well being approximately 165 feet above the surface elevation of the landfill, and the dip of the underlying rocks to the southeast. During the drilling of the borehole for MW5, massive reddish-brown to tan shale and siltstone with interbeds of rose colored chert were found from the surface to a depth of 17 feet. Black, carbonaceous shale with some thin interbeds of siltstone were primarily found from a depth of 17 feet to a depth of 75 feet. Medium gray colored shale

with thin to massive (2 inches to 2 feet thick) interbeds of siltstone and limestone (tight mudstone and pelloidal packstone) were encountered from a depth of 75 feet to 459 feet. Some beds of hematite were encountered between depths of 235 feet and 300 feet. Some of the thin siltstone and limestone beds were fossiliferous. Chickamauga Limestone was encountered at a depth of 459 feet. The Chickamauga consisted of a medium gray mudstone to tight pelloidal packstone. The upper eleven feet of the limestone was drilled into to be certain that the top of the Chickamauma had been encountered. The total depth of the borehole is 470 feet below the surface; however, the lower 4 feet of the borehole is filled with cuttings that were not extracted during the drilling operation.

Monitoring Well MW5 was installed in an 8.5-inch diameter borehole. The monitoring well was constructed of 20 feet of threaded Schedule 80 4-inch PVC screen with 0.010 slots, and 449 feet of threaded Schedule 80 4-inch PVC riser (no glues or sealants used). A PVC plug was put on the bottom of the screen, and the bottom of the screen was set 4 feet above the bottom of the borehole (borehole cuttings were in the bottom 4 feet). A coarse (#2) filter sand was placed around the screen to 10 feet above the screen. A bentonite chip seal, 5 feet thick, was placed on top of the filter sand. Sur-grout bentonite slurry was placed between the riser and the borehole wall from the top of the bentonite chip seal to the surface. An 8-inch steel protective casing was placed (in concrete) over the well riser from 2 feet below the surface to 3 feet above the surface. A concrete pad was constructed at the surface around the base of the protective covering. Four steel bumper posts were installed in the concrete pad around the protective casing to provide futher protection to the monitoring well.

Due to the depth of the well and the difficulty in bailing groundwater from MW5 until the Ph, temperature, and specific conductivity stabilized, a stainless steel 3-inch diameter 0.75 hp Grundfos pump was installed in the well for purging and to take groundwater samples. The pipe from the pump to the surface is constructed of Schedule 80 1-inch threaded PVC with threaded PVC couplings (no glue or sealants). A 12 AWG Type TW submersible pump electrical cable runs inside the well riser from the surface to the pump. The pump pipe and the electrical cable is set through a well seal at the top of the riser. The pump is set at a depth of 380 feet below the surface, and the pump produces 2.5 gallons of water per minute after initial drawdown.

Closing and Abandonment of Old Wells and Borehole MW6

Monitoring Well MW3: Monitoring Well MW3, installed in August, 1981, was an upgradient well but was none producing. It was originally suspected that the screen was clogged with clay materials. However, because of the steepness of the outcrops along the western flank of the ridge (just to the west of the property line) and the close proximity of the vertical outcrop (adjacent to I-59) creating a lack of surface recharge area, it was later discovered that this well only produced groundwater during wet weather.

Instead of setting up over the old Borehole MW3 and re-drilling the old borehole, a decision was made to plug and abandon the old monitoring well (MW3), offset, drill a new borehole, and install a new upgradient monitoring well. The steel protective casing, the PVC

riser, and the PVC screen were pulled from the old MW3 well; there was no grout in the annulus. The borehole was dry when the riser and screen were pulled. The old borehole remained open after the riser and screen were pulled. The borehole was pressure sealed and abandoned by pumping it full of bentonite/portland cement grout.

Borehole MW6: To eliminate confusion for the contractors during the bidding, the new upgradient well to be installed (offset 10 feet from the old MW3 well which was sealed and abandoned) was to be numbered MW6. During the drilling of Borehole MW6 a dark red, clayey to very clayey sand was encountered from the surface to a depth of 34 feet. The very clayey sand (to approximately 50% clay content) consisted of very fine to very coarse, angular quartz grains, with some mica content, and was semi-consolidated to consolidated (depending on clay content). Inclusions of weathered siltstone and "dirty" sandstone were encountered at a depth of 10 feet below the surface. Inclusions of weathered limestone and dolomite were encountered at a depth of 25 feet below the surface.

The top of the Chickamauga Limestone was encountered at 34 feet below the surface; no groundwater was found on top of the Chickamauga in this area. The upper Chickamauga (below the weathered zone) was very tight and relatively impermeable. A decision was made to drill into the Chickamauga Limestone to determine if a porous zone existed within the Chickmauga. The MW6 borehole was drilled to a depth of 250 feet below the surface; 216 feet into the Chickamauga Limestone. The Chickamauga Limestone consisted of a very tight, relatively impermeable, compressed and well cemented, medium gray colored mudstone to pelloidal packstone from a depth of 34 feet to a depth of 250 feet. No apparent porosity or solution features were encountered during the drilling of 216 feet into the Chickamauga. Some small fractures were apparent, but were filled with calcite cement. No saturated zones of groundwater were encountered; MW6 was a dry hole. Mr. Dale Case, geologist with ADEM, was contacted and the situation was explained to Mr. Case. Even if groundwater had been found at a depth of 250 feet (or greater), the groundwater would have been approximately 215 feet below the zone of saturation that the other monitoring wells were set in; therefore, the well would have been of no use as an updip well for the purpose of background water checks. Under instruction from Mr. Case, the dry hole (MW6) was plugged and abandoned; pressure grouted full of bentonite/portland cement grout. A complete boring log for Borehole MW6 is included in this report.

By utilizing the information obtained from the drilling of Borehole MW6, it is our conclusion that the old upgradient well (MW3) only had groundwater in it during the rainy seasons. During dry weather, the old well was either dry or had some seepage water in it that came from water being retained in the pore spaces at the base of the very clayey sand overlying the unweathered Chickamauga.

The absence of groundwater in dry weather in the area updip from the landfill is due to the close proximity of the landfill to the vertical outcrop (adjacent to I-59) of the underlying very dense and apparently non-porous Chickamauga Limestone, the lack of surface recharge area for the very clayey sand that overlies the Chickamauga, the steep gradient of the surface, and the dip angles of the underlying units. The majority of the rainwater that falls on the very small surface area updip of the landfill runs off as surface drainage, with very minor percolation into the very clayey sand that overlies the apparently impermeable Chickamauga Limestone. Also, in

some updip areas there are just a few feet of very clayey sand at the surface; underlying the very clayey sand in these areas is shale of the Sequatchie Formation which is impermeable except where fractures exist. Even where fractures exist, numerous fractures are filled with calcite cements and have no porosity. Therefore, an upgradient monitoring well was not installed at the Fort Payne Sanitary and Inert Landfills.

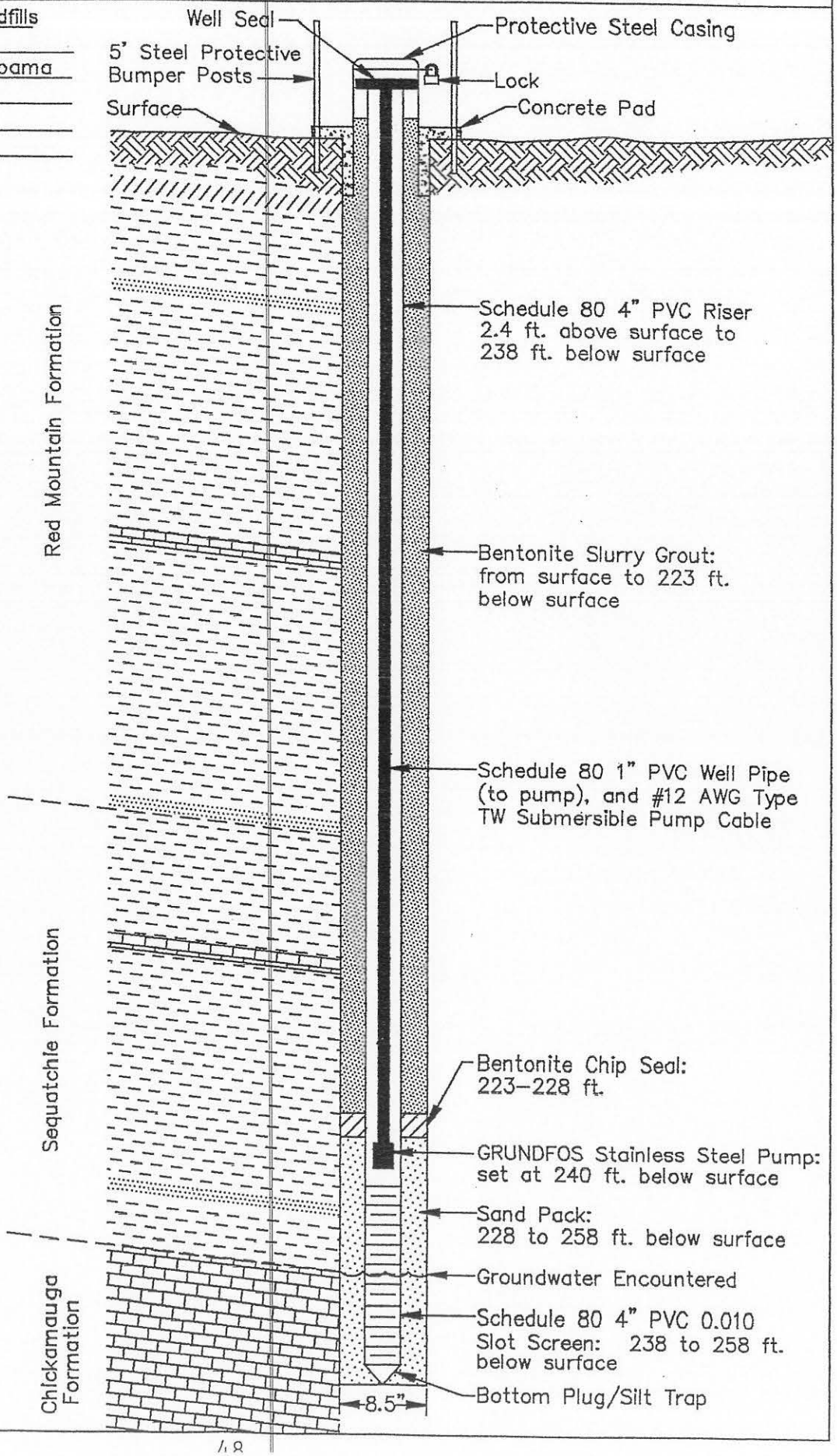
The old private well that was previously used as a monitoring well by the Fort Payne Sanitary Landfill was plugged and abandoned also. The old private well was located in one of the areas designated for future inert use. The pump and piping had previously been pulled, and only an open borehole existed. The open borehole was sealed and abandoned; pressure grouted full of bentonite/cement grout.

ADEM Administrative Code Rule 335-13-4-.14 requires that groundwater monitoring wells be installed in accordance with ASTM Subcomittee D18.21 standards. These standards are documented in ASTM Standard D 5092-90 entitled "Standard Practice for Design and Installation of Groundwater Monitoring Wells in Aquifers". Upon approval of the Groundwater Monitoring Plan by ADEM on September 14, 1993, the monitoring wells were installed in accordance with the above standards. Monitoring Wells MW4 and MW5 were constructed as shown on the following well completion forms.

Well Completion Form

CARTER, DARNELL AND GRUBBS
ENGINEERS, INC.
ANDALUSIA, ALABAMA

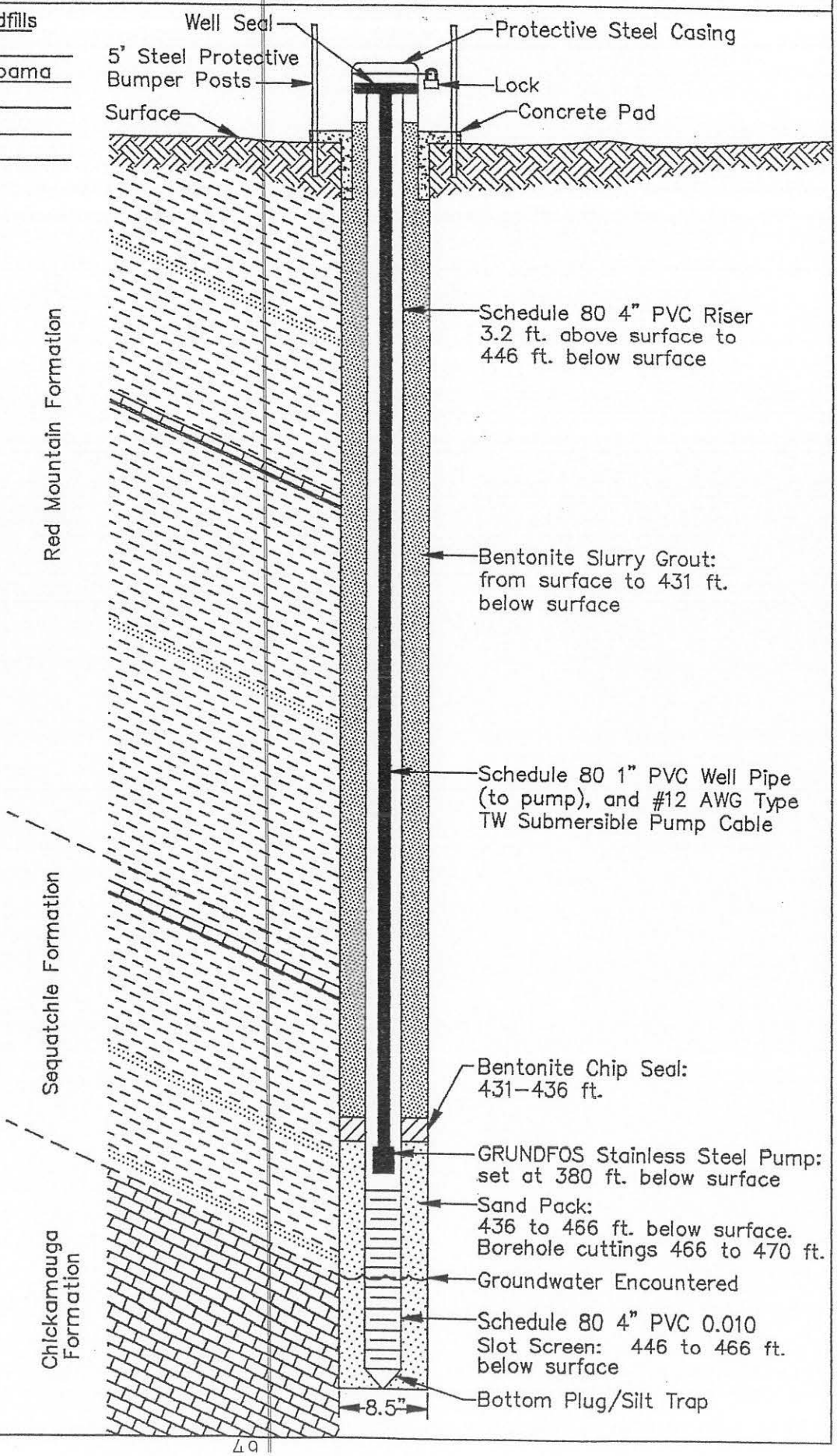
ject Name: Sanitary & Inert Landfills
roject Number: 25-02R
roject Location: Ft. Payne, Alabama
lient: City of Ft. Payne
ell Designation: MW4
ate: 9-24-93



Well Completion Form

CARTER, DARNELL AND GRUBBS
ENGINEERS, INC.
ANDALUSIA, ALABAMA

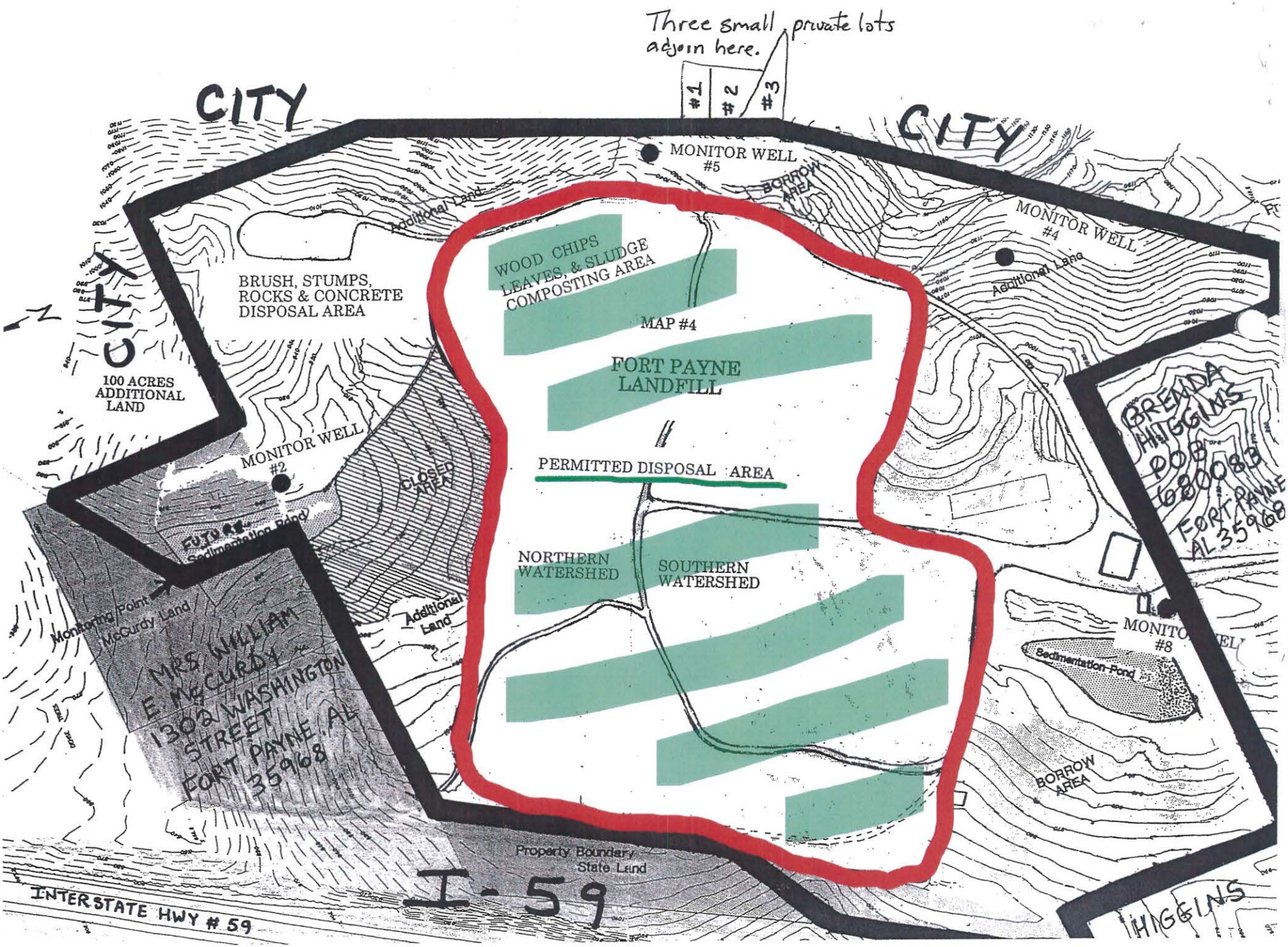
Project Name: Sanitary & Inert Landfills
Project Number: 25-02R
Project Location: Ft. Payne, Alabama
Client: City of Ft. Payne
Well Designation: MW5
Date: 9-30-93



In relation to cell certification:

The City of Fort Payne Landfill is essentially one big cell. We do not expand horizontally, only vertically. We have not unearthed or utilized any virgin land outside of the red-lined perimeter in the picture provided of our work site for burial purposes of authorized waste streams.

Essentially, our permit is our cell certification and we stay within the permitted area for disposal.


Three small private lots adjoin here.
#1
#2
#3
CITY
CITY
CITY
MONITOR WELL #5
BORROW AREA
Additional Land
MONITOR WELL #4
Additional Land
WOOD CHIPS LEAVES, & SLUDGE COMPOSTING AREA
BRUSH, STUMPS, ROCKS & CONCRETE DISPOSAL AREA
MAP #4
FORT PAYNE LANDFILL
100 ACRES ADDITIONAL LAND
MONITOR WELL #2
PERMITTED DISPOSAL AREA
CLOSED AREA
Sedimentation Pond
NORTHERN WATERSHED
SOUTHERN WATERSHED
Additional Land
Monitoring Point
McCurdy Land
MRS. WILLIAM E. McCURDY
1302 WASHINGTON STREET
FORT PAYNE, AL
35968
MONITOR #8
Sedimentation Pond
BORROW AREA
BRENDA HIGGINS
POB 680083
FORT PAYNE
AL 35968
Property Boundary
State Land
I-59
INTERSTATE HWY # 59
HIGGINS

Description for
Fort Payne Landfill
in
Section 7, Township 7 South, Range 9 East
Fort Payne, DeKalb County, Alabama

Beginning at the northeast corner of the SE¼ of the NW¼ of Section 7, Township 7 South, Range 9 East of the Huntsville Meridian, Fort Payne, DeKalb County, Alabama run S 02°35'20" E with the east boundary line of the SE¼ of the NW¼ of said Section 7 for 1,320.00 feet to the southeast corner thereof; thence run S 87°35'40" W with the south boundary line of the SE¼ of the NW¼ for 172.00 feet; thence leaving said boundary line run S 35°46'41" W for 1,662.32 feet to a point on the south boundary line of the NE¼ of the SW¼ of said Section 7; thence run S 87°35'40" W with said south boundary line for 126.00 feet to the southwest corner thereof; thence run N 02°35'20" W with the west boundary line of the NE¼ of the SW¼ for 646.65 feet; thence leaving said boundary line run S 87°35'40" W for 1,329.80 feet to a point on the west boundary line of the NW¼ of the SW¼ of said Section 7; thence run N 02°35'20" W with the west boundary line of the NW¼ of the SW¼ and the SW¼ of the NW¼ for 865.40 feet to a point on a fence line marking the southerly right-of-way line of I-59; thence run N 43°52'55" E with said fence line for 528.57 feet to an existing right-of-way marker (station 82 + 00); thence run N 65°12'10" E with said fence line for 300.00 feet; thence run N 31°38'40" E with said fence line for 760.25 feet; thence run N 01°53'00" E for 5.15 feet to a point on the north boundary line of the SW¼ of the NW¼ of said Section 7; thence run N 87°35'40" E with the north boundary line of the SW¼ of the NW¼ and the SE¼ of the NW¼ for 383.40 feet; thence leaving said north boundary line run N 02°35'20" W for 600.00 feet; thence run N 87°35'40" E for 640.00 feet; thence run S 02°35'20" E for 600.00 feet to a point on the north boundary line of the SE¼ of the NW¼; thence run N 87°35'40" E with said north boundary line for 547.00 feet to the point of beginning.

Said property is lying in the NE¼ of the NW¼ and the SE¼ of the NW¼ and the SW¼ of the NW¼ and the NW¼ of the SW¼ and the NE¼ of the SW¼ all in Section 7, Township 7 South, Range 9 East of the Huntsville Meridian, Fort Payne, DeKalb County, Alabama and contains 113.05 acres, more or less, including properties being acquired.

The above description was prepared from a field survey by CROFT LAND SURVEYING a plat of which is dated April 3, 1995; is attached hereto, made a part hereof, and reference is hereby made to that plat for additional data concerning the survey.

CROFT LAND SURVEYING

Johnny Croft
Ala. Reg. No. 11840

Tract 1

Commencing at the southeast corner of the NE¼ of the NW¼ of Section 7, Township 7 South, Range 9 East of the Huntsville Meridian, Fort Payne, DeKalb County, Alabama run S 87°35'40" W with the south boundary line of the NE¼ of the NW¼ of said Section 7 for 547.00 feet for a point of beginning.

Thence continue S 87°35'40" W with said south boundary line for 320.00 feet; thence leaving said boundary line run N 05°00'00" E for 66.00 feet; thence run N 11°00'00" E for 201.96 feet; thence run N 60°30'00" E for 295.85 feet; thence run S 02°35'20" E for 396.65 feet to the point of beginning.

Said property is lying in the NE¼ of the NW¼ of Section 7, Township 7 South, Range 9 East of the Huntsville Meridian, Fort Payne, DeKalb County, Alabama and contains 2.18 acres, more or less.

The above description was prepared from a field survey by CROFT LAND SURVEYING a plat of which is dated April 3, 1995; is attached hereto, made a part hereof, and reference is hereby made to that plat for additional data concerning the survey.

CROFT LAND SURVEYING

Johnny Croft

Johnny Croft
Ala. Reg. No. 11840

Tract 2

Commencing at the southwest corner of the NE¼ of the NW¼ of Section 7, Township 7 South, Range 9 East of the Huntsville Meridian, Fort Payne, DeKalb County, Alabama run N 87°35'40" E with the south boundary line of the NE¼ of the NW¼ of said Section 7 for 142.80 feet for a point of beginning.

Thence continue N 87°35'40" E with said south boundary line for 320.00 feet; thence leaving said south boundary line run N 05°00'00" E for 66.00 feet; thence run N 11°00'00" E for 201.96 feet; thence run N 60°30'00" E for 295.85 feet; thence run N 02°35'20" W for 203.35 feet; thence run S 87°35'40" W for 640.00 feet; thence run S 02°35'20" E for 600.00 feet to the point of beginning.

Said property is lying in the NE¼ of the NW¼ of Section 7, Township 7 South, Range 9 East of the Huntsville Meridian, Fort Payne, DeKalb County, Alabama and contains 6.64 acres, more or less.

The above description was prepared from a field survey by CROFT LAND SURVEYING a plat of which is date April 3, 1995; is attached hereto, made a part hereof, and reference is hereby made to that plat for additional data concerning the survey.

CROFT LAND SURVEYING

Johnny Croft

Johnny Croft
Ala. Reg. No. 11840

Tract 2a

Commencing at the southwest corner of the SW¼ of the NW¼ of Section 7, Township 7 South, Range 9 East of the Huntsville Meridian, Fort Payne, DeKalb County, Alabama run N 02°35'20" W with the west boundary line of the SW¼ of the NW¼ of said Section 7 for 205.40 feet to a fence marking the southerly right-of-way line of I-59; thence run N 43°52'55" E with said fence line for 393.62 feet for a point of beginning.

Thence continue N 43°52'55" E for 134.95 feet to an existing right-of-way marker (station 82 + 00); thence run N 65°12'10" E with said fence line for 134.79 feet; thence leaving said fence line run S 32°38'00" W for 267.63 feet to an existing iron in a spring; thence leaving said spring run in a northwesterly direction for 101.23 feet to the point of beginning.

Said property is lying in the SW¼ of the NW¼ of Section 7, Township 7 South, Range 9 East of the Huntsville Meridian, Fort Payne, DeKalb County, Alabama and contains 0.38 acres, more or less.

The above description was prepared from a field survey by CROFT LAND SURVEYING a plat of which is dated April 3, 1995; is attached hereto, made a part hereof, and reference is hereby made to that plat for additional data concerning the survey.

CROFT LAND SURVEYING

Johnny Croft

Johnny Croft
Ala. Reg. No. 11840

Tract 3

Beginning at the southwest corner of the SW¼ of the NW¼ of Section 7, Township 7 South, Range 9 East of the Huntsville Meridian, Fort Payne, DeKalb County, Alabama run N 02°35'20" W with the west boundary line of the SW¼ of the NW¼ of said Section 7 for 205.40 feet to a point on a fence marking the southerly right-of-way line of I-59; thence run N 43°52'55" E with said fence line for 393.62 feet; thence leaving said fence line run in a southeasterly direction for 101.23 feet to an existing iron in a spring; thence run S 38°46'05" W for 535.25 feet to the point of beginning.

Said property is lying in the SW¼ of the NW¼ of Section 7, Township 7 South, Range 9 East of the Huntsville Meridian, Fort Payne, DeKalb County, Alabama and contains 1.29 acres, more or less.

The above description was prepared from a field survey by CROFT LAND SURVEYING a plat of which is dated April 3, 1995; is attached hereto, made a part hereof, and reference is hereby made to that plat for additional data concerning the survey.

CROFT LAND SURVEYING

Johnny Croft
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SECTION 1
INTRODUCTION

1.1 PURPOSE

The Operations Manual for the Fort Payne Landfill has been prepared primarily as a guideline for use by landfill personnel in the daily operations and maintenance of the facility throughout its active life, closure and post-closure care period. It also contains specifications for materials and procedures to be used to close each portion of the landfill facility. Additionally, this manual contains data which pertains specifically to the regulatory requirements for obtaining a permit to operate a Solid Waste Landfill.

This Operations Manual is accompanied by Design Plans which provide a detailed presentation of the engineering design of the facility. These Plans will be referenced throughout this manual.

The Landfill Supervisor should become familiar with the contents of this Operations Manual and the Design Plans, and both should be maintained in the Operator's Office at the landfill for review by ADEM personnel during periodic site inspections.

1.2 GENERAL FACILITY INFORMATION

It is the intent of the City of Fort Payne to renew and modify the Solid Waste Disposal Facility Permit Number 25-02R for the Fort Payne Landfill to vertically expand the active portion of the municipal solid waste (MSW) disposal area, and to utilize 17 acres of the remaining landfill property for industrial and construction/demolition (C/D) disposal.

The City of Fort Payne is the permittee and the waste stream to be accepted at the facility shall consist of non-hazardous, non-infectious putrescible and non-putrescible wastes including, but not limited to, municipal solid waste, industrial waste, special waste, construction and demolition debris, tires, appliances, trees, limbs, stumps, dried sludge, paper, and similar type material. A copy of the existing solid waste disposal permit is provided in Appendix A of this manual.

As part of the renewal process, the City also requests to modify the current service area to include all of DeKalb, Cherokee, Marshall and Jackson Counties in the State of Alabama. Documentation

verifying host-government approval of the service area change is included in Appendix B of this manual.

The Fort Payne Landfill property is located in the NE 1/4 of the NW 1/4 and the SE 1/4 of the NW 1/4 and the SW 1/4 of the NW 1/4 and the NW 1/4 of the SW 1/4 and the NE 1/4 of the SW 1/4 all in Section 7 South, Range 9 East of the Huntsville Meridian in Fort Payne, DeKalb County, Alabama. The facility is accessed east of Interstate 59 and north of Alabama Hwy 35. A vicinity map of the landfill's location is provided in the Design Drawings included with this manual.

The permitted landfill property consists of 102.56 acres more or less. Approximately thirty four (34) acres have been landfilled on this property throughout the active life of this facility. The City has closed a 3.7 acres sanitary disposal area, 5.0 acres is currently receiving construction/demolition debris, WE QUIT TAKING MSW WASTE, IT GOES TO THE COUNTY NOW AND a Vertical Expansion Approval granted by the Solid Waste Branch of ADEM's Land Division. is in effect for future useage.

* WE NO LONGER ACCEPT MUNICIPAL SOLID WASTE AND HAVE NOT SINCE OCTOBER OF 1998.

As part of the permit renewal process for this facility, the City of Fort Payne intends to use the existing 5 acre C/D disposal area, and 12 acres of additional permitted land on the south side of the property for disposal of industrial and C/D waste. The remaining landfill property includes buffer zones, surface drainage structures, wood chipping and recycling areas, a baling facility, and unusable property.

1.3 APPLICABLE REGULATIONS

The permitting of existing sanitary landfills in the State of Alabama is primarily affected by the current solid waste disposal regulations stated in the ADEM Administrative Code Division 13. Rule 335-13-4 of these regulations, which establishes criteria for the construction, operation and closure of solid waste disposal facilities, has been included in Appendix C of this manual.

ADEM's solid waste regulations recognize the difference between industrial landfills and municipal solid waste landfills in regards to construction, operation and closure of the facilities. Differences in the regulatory criteria to operate and close the industrial landfill verses the vertically expanded municipal solid waste disposal area has been recognized and addressed in Section 5 and Section 6 of this manual.

1.4 BOUNDARY DESCRIPTION

A boundary plat and legal descriptions of the property containing the Fort Payne Landfill is included in Appendix D of this Operations Manual. Tracts 1, 2, 2a and 3 which are shown and described are not part of the original permitted property but are being acquired by the City for additional soil cover and construction of Sedimentation Pond #1. Solid waste disposal will not occur in Tract 1, 2, 2a and 3 since they are not part of the property permitted for solid waste disposal.

1.5 SITING STANDARDS

Rule 335-13-4-.01 of the ADEM Administrative Code Division 13 Regulations outlines the siting standards which must be addressed in order to prevent adverse affects on human health and the environment when locating a landfill. The siting standards which are applicable to the renewal of the Fort Payne Landfill disposal permit and the documentation to support these standards are as follows:

Siting Standard	Documentation
1. The Landfill shall be located outside the 100-year floodplain	Appendix E
2. The Landfill shall not cause or contribute to the taking of any endangered or threatened species of plants, fish or wildlife	Appendix E
3. The Landfill shall not cause unpermitted discharges into the State Waters as required by the National Pollutant Discharge Elimination System (NPDES)	Appendix F
4. The Landfill shall not be located in a wetland	Appendix E
5. The bottom elevation of the Landfill cells shall be located a minimum of 5 feet above the seasonal high groundwater table	Engineering Drawings
6. The Landfill shall not be located in an archaeologically sensitive area as determined by the Alabama Historical Commission	Appendix E
7. The Landfill shall not be located in zones of active faults, seismic impact zones, unstable areas sinkholes and karst terrain	Groundwater Monitoring Report (under Separate Cover)
8. The landfill shall not be located within 10,000 feet of a public	

Edward F. Poolos
Director

Jeffery W. Kitchens
Deputy Director

Kay Ivey
Governor

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

October 24, 2025

Mr. Patrick Dunne
Fort Payne Landfill
100 Alabama Avenue NW
Fort Payne, Alabama 35967

RE: Permit Renewal
Fort Payne Landfill
Permit No. 25-02

Dear Mr. Dunne:

On July 20, 2022, the Department received an application to renew the Solid Waste Disposal Facility permit for Fort Payne Landfill (Permit No. 25-02). Based on a review of the information submitted, the permit renewal application was determined to be incomplete, and additional information was requested. Subsequently, the Department has worked with Fort Payne Landfill on the remaining deficiencies noted in the application. Between August 29, 2022, and the date of this letter, multiple attempts have been made by the Department to request additional information to complete the permit application in order to continue processing the permit renewal.

If Fort Payne Landfill wishes to renew the Solid Waste Disposal Facility permit, the following documents should be provided to the Department within 30 days of receipt of this letter.

- Updated Closure and Post Closure Plan prepared by a Professional Engineer.
- Updated groundwater monitoring plan prepared by a Professional Geologist or a person with equivalent qualifications that include any modifications made since the last groundwater monitoring plan. The plan should follow the outline provided in the Alabama Groundwater Monitoring Reporting Guidance for Solid Waste Facilities provided on the ADEM website, ADEM Admin. Code r. 335-13-4-.27, and the US EPA Unified Guidance.
- The most recent set of engineering drawings prepared by a Professional Engineer.
- Boundary plat and legal property description prepared, signed, and sealed by a Professional Land Surveyor of the permitted facility boundary and permitted disposal area of the facility.

Failure to provide said documents may result in termination of the permit renewal application process. In the event that the currently expired permit is not renewed, the facility must cease accepting waste and initiate closure.

If you should have any questions, please contact Mr. Jonathan Crosby of the Solid Waste Engineering Section at (334) 200-5644.

Sincerely,

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

JDK/jc

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

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

Coastal Office
1615 South Broad Street
Mobile, AL 36605
(251) 450-3400
(251) 479-2593 (FAX)

THREE NOTCH GROUP Environment & Infrastructure

January 8, 2026

Ms. Melissa Adornato
Solid Waste Branch
Land Division
Alabama Department of Environmental Management
1400 Coliseum Boulevard
Montgomery, Alabama 36110-2400

RE: Fort Payne Landfill Permit Renewal Update
Solid Waste Permit No. 25-02

Dear Ms. Adornato,

This letter is provided as a written status update regarding the Fort Payne Landfill permit renewal **(**Permit No. 25-02**)** and to document prior discussions with the Alabama Department of Environmental Management (ADEM) related to the permit renewal process.

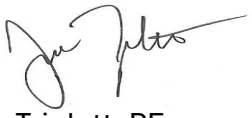
Following ADEM's October 24, 2025, request for additional information and subsequent discussions with Jonathan Crosby of ADEM, the City of Fort Payne has contracted with Three Notch Group, Inc. (Three Notch) to assist with preparing the information necessary to address ADEM's request. This effort is intended to address ADEM's outstanding requests and support completion of the permit renewal review.

During discussions with ADEM, it was confirmed that the most recent design drawings and the boundary plan and legal property description previously submitted are acceptable and do not require revision. ADEM also indicated that new Groundwater Monitoring and Operations Plans will need to be prepared to reflect current regulatory requirements.

Three Notch Group is currently compiling the requested documentation and anticipates submitting the updated Operations Plan and Groundwater Monitoring Plan to ADEM by February 9, 2026**.**

Please contact me at (256) 229-3842 or via email at john.triplett@3notch.com if you have any questions or require additional information.

Sincerely,
Three Notch Group



John Triplett, PE
Project Manager

THREE NOTCH GROUP
Environment & Infrastructure

FORT PAYNE LANDFILL

OPERATIONS MANUAL

UPDATED FOR PERMIT RENEWAL



Fort Payne Landfill
DeKalb County, Alabama
Permit No. 25-02

DATE
February 2026

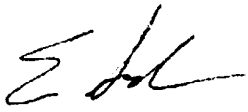
PREPARED BY
Three Notch Group, Inc.
11 West Court Square
Andalusia, AL 36420

OPERATIONS MANUAL

FORT PAYNE LANDFILL
DEKALB COUNTY, ALABAMA

UPDATED FOR PERMIT RENEWAL

February 2026



Eric Sanderson, P.E. #23790
Environmental Practice Lead

CONSULTING ENGINEER

THREE NOTCH GROUP
Environment & Infrastructure

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1 INTRODUCTION

1.1 PURPOSE AND SCOPE

In recognition of the need to provide for proper disposal of waste generated within the permitted service area, the City of Fort Payne (City) is currently operating the Fort Payne Landfill (Facility) for the disposal of non-hazardous industrial waste and construction/demolition (C/D) wastes. The purpose of this manual is to provide guidelines for proper operation and maintaining the existing Facility. The procedures set forth herein comprise a structured plan for the orderly use of the facility while protecting the environment. This Operations Plan is intended to ensure compliance with applicable ADEM solid waste regulations and permit requirements. The Facility is managed by the City and is operated by trained personnel using the equipment necessary to conduct daily operations.

The Landfill is managed by the City and is experienced in landfill operations and has equipment and trained personnel available for this purpose.

Where appropriate, descriptions of landfill features have been provided to give a clear understanding of the operational objectives. Personnel responsible for operating and maintaining the Facility should be thoroughly familiar with this Operations Manual and all applicable supporting documents. This manual should be used in conjunction with the Facility permit, design plans, monitoring programs, and any future revisions to these materials:

- Fort Payne Landfill Plans prepared by Carter, Darnel, and Grubbs Engineers, Inc., dated May 1996 (referred to herein as Engineering Plans).
- Alabama Department of Environmental Management Solid Waste Disposal Facility permit for Fort Payne Landfill, including all permit conditions.
- All Local, State and Federal rules and regulations governing solid waste disposal.

The Operating Record is compiled by the Landfill Manager throughout the life of the Facility and includes documentation of daily activities, inspections, monitoring, and other applicable information. The Landfill Manager should maintain all volumes of the Operations Manual, Engineering Plans, and the Facility permit documents in the Landfill Office and be available for review by ADEM personnel during periodic site inspections.

1.2 FACILITY HISTORY

Historically, the Fort Payne Landfill operated a solid waste baler housed within a 6,500-square-foot enclosed metal building. Waste streams were managed to keep municipal solid waste separate from dry commercial waste, preventing the formation of mixed waste bales. The facility produced uniform bales for efficient handling and placement at the landfill working face. During periods when baling was not feasible, or when unsuitable waste was received, materials were disposed of directly in the designated landfill area.

The landfill previously operated a permitted municipal solid waste (MSW) vertical expansion area. The area served as a balefill, where baled MSW from the onsite baler was transported to the working face using roll-off containers. Bales were placed side by side, tightly compacted, and stacked up to four high on each lift to maintain a stable and efficient working face. Bulky and special wastes that could not be baled were disposed of separately in a designated landfill area. The working face was maintained in a compact configuration to allow proper equipment operation and minimize the active disposal area.

The facility no longer receives baled waste, and all current baling activities are limited to recyclables only. Receipt of MSW was discontinued in October 1998, and there are no active or permitted MSW vertical expansion areas at the site. The landfill is presently permitted solely for the disposal of industrial and C/D wastes.

1.3 General Facility Information

The site is located in Section 7, Township 7 South, Range 9 East in DeKalb County, Alabama. It is east of Interstate 59 and north of Alabama Hwy 35.

The service area of the Facility is limited to the permitted service area as defined by the Facility's ADEM-issued solid waste disposal facility permit. It is not required that all acceptable waste generated or collected in the service area be accepted for disposal at the Facility. Defining the service area only serves to limit the area the Landfill may serve. The City reserves the sole right to specify what waste from within the defined service area will be accepted at the site.

The Facility is permitted to dispose of two hundred (200) tons per day of waste. The site contains approximately 104 acres. The waste disposal area consists of approximately 44 acres.

1.4 Waste Stream

- Non-hazardous industrial waste and construction/demolition wastes including but not limited to white goods, clothing, yard wastes, untreated wood waste, roofing shingles, tires, dried paint, dried sludge, mattresses, paper, appliances, uncontaminated metal, asbestos, petroleum contaminated soil or waste, and foundry sand.

- All industrial waste streams, special wastes (asbestos, petroleum-impacted soils, sludges), and any non-standard or unique waste streams require prior written approval from ADEM before acceptance.

1.5 Boundary Description

A boundary survey of the facility was performed by Croft Land Surveying in April 1995. Tracts 1, 2, 2a, and 3 are not part of the original permitted property for solid waste disposal. Therefore, solid waste disposal will not occur within these tracts.

The following legal description defines the facility boundary for the Fort Payne Landfill as depicted on the approved permit drawings and associated plans:

Beginning at the northeast corner of the SE¼of the NW¼ of Section 7, Township 7 South, Range 9 East of the Huntsville Meridian, Fort Payne, DeKalb County, Alabama run S 02°35'20" E with the east boundary line of the SE¼, of the NW¼ of said Section 7 for 1,320.00 feet to the southeast corner thereof; thence run S 87°35'40" W with the south boundary line of the SE¼ of the NW¼ for 172.00 feet; thence leaving said boundary line run S 35°46'41" W for i662.32 feet to a point on the south boundary line of the NE¼ of the SW¼ of said Section 7; thence run S 87°35'40" W with said south boundary line for 126.00 feet to the southwest comer thereof; thence run N 02°35'20" W with the west boundary line of the NE¼ of the SW¼ for 646.65 feet; thence leaving said boundary line run S 87°35'40" W for 1,329.80 feet to a point on the west boundary line of the NW¼ of the SW¼ of said Section 7; thence run N 02°35'20" W with the west boundary line of the NW¼ of the SW¼ and the SW¼ of the NW¼ for 865.40 feet to a point on a fence line marking the southerly right-of-way line of I-59; thence run N 43°52'55" E with said fence line for 528.57 feet to an existing right-of-way marker (station 82 + 00); thence run N 65°12'10" E with said fence line for 300.00 feet; thence run N 31°38'40" E with said fence line for 760.25 feet; thence run N 01 °53'00" E for 5.15 feet to a point on the north boundary line of the SW¼ of the NW¼ of said Section 7; thence run N 87°35'40" E with the north boundary line of the SW¼ of the NW¼ and the SE¼ of the NW¼ for 383.40 feet; thence leaving said north boundary line run N 02°35'20" W for 600.00 feet; thence run N 87°35'40" E for 640.00 feet; thence run S 02°35'20" E for 600.00 feet to a point on the north boundary line of the SE¼ of the NW¼; thence run N 87°35'40" E with said north boundary line for 547.00 feet to the point of beginning.

Said property is lying in the NE¼ of the NW¼ and the SE¼ of the NW¼ and the SW¼ of the NW¼ and the NW¼ of the SW¼ and the NE¼ of the SW¼ all in Section 7, Township 7 South, Range 9 East of the Huntsville Meridian, Fort Payne, DeKalb County, Alabama and contains 113.05 acres, more or less, including properties being acquired.

Tract 1

Commencing at the southeast comer of the NE¼ of the NW¼ of Section 7, Township 7 South, Range 9 East of the Huntsville Meridian, Fort Payne, DeKalb County, Alabama run S 87°35'40" W with the south boundary line of the NE¼ of the NW¼ of said Section 7 for 547.00 feet for a point of beginning.

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Tract 2

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Tract 2a

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Thence continue N 43°52'55" E for 134.95 feet to an existing right-of-way marker (station 82 + 00); thence run N 65°12'10" E with said fence line for 134.79 feet; thence leaving said fence line run S 32°38'00" W for 267.63 feet to an existing iron in a spring; thence leaving said spring run in a northwesterly direction for 101.23 feet to the point of beginning.

Said property is lying in the SW¼ of the NW¼ of Section 7, Township 7 South, Range 9 East of the Huntsville Meridian, Fort Payne, DeKalb County, Alabama and contains 0.38 acres, more or less.

Tract 3

Beginning at the southwest comer of the SW¼ of the NW¼ of Section 7, Township 7 South, Range 9 East of the Huntsville Meridian, Fort Payne, DeKalb County, Alabama run N 02°35'20" W with the west boundary line of the SW¼ of the NW¼ of said Section 7 for 205.40 feet to a point on a fence marking the southerly right-of-way line of I-59; thence run N 43°52'55" E with said fence line for 393.62 feet; thence leaving said fence line run in a southeasterly direction for 101.23 feet to an existing iron in a spring; thence run S 38°46'05" W for 535.25 feet to the point of beginning.

Said property is lying in the SW¼ of the NW¼ of Section 7, Township 7 South, Range 9 East of the Huntsville Meridian, Fort Payne, DeKalb County, Alabama and contains 1.29 acres, more or

less.

1.6 CONTACT PERSONS

CITY OF FORT PAYNE:
Patrick Dunne
Solid Waste Coordinator
100 Alabama Ave NW
Fort Payne, AL 35967
Phone: (256) 845-8897
pdunne@fortpayne.org

THREE NOTCH GROUP, INC.
Eric Sanderson, P.E.
P.O. Box 2155
Auburn, AL 36831
Phone: (334) 466-9431
eric.sanderson@3notch.com

2 SITE EVALUATION

Siting standards addressed in this section are presented as demonstrations that the facility complies with regulatory standards in accordance with ADEM Admin. Code r. 335-13-4-.01.

2.1 WETLANDS

There are no wetlands on the Facility. Approval of the development of this Facility has been granted by the U.S. Army Corps of Engineers (Corps). The written jurisdictional wetlands determination from the Corps can be found in **Appendix 2.1**.

2.2 ENDANGERED OR THREATENED SPECIES OR HABITAT

The site has been inspected by the U.S. Fish and Wildlife Service to determine that development of the landfill will not have an adverse effect on endangered or threatened species or habitat. Written confirmation from the U.S. Fish and Wildlife Service concurring with the development of the Facility, has been obtained and can be found in **Appendix 2.2**.

2.3 ARCHAEOLOGICAL OR HISTORICAL SIGNIFICANCE

The site has been surveyed to determine that no historically or archaeologically sensitive areas are present. The Alabama Historical Commission (AHC) has reviewed the findings and concluded that development of the Facility will have no adverse effect on cultural resources. The archaeological study can be found in **Appendix 2.3**.

2.4 UNSTABLE AREAS

The site is not located in a zone of active faults, seismic impact zones, sinkholes or karst terrain.

A site-specific hydrogeological evaluation has been conducted by Carter, Darnell and Grubbs Engineers, Inc. on the existing Facility footprint, which can be found in **Appendix 2.4**. This investigation concluded that the site is hydrogeologically acceptable for the development of a Landfill. A vertical separation of at least five (5') feet has been maintained between the seasonal high groundwater table and waste.

2.5 FLOODPLAINS

The Facility is located in flood zone "X", an area outside the one hundred year flood boundary with minimal flood hazard.

2.6 AIRPORTS

The Facility will not dispose of putrescible waste that may attract birds and therefore, will not be operated in such a manner so as to pose a bird hazard to air traffic.

3 LANDFILL DESIGN

3.1 DESIGN DOCUMENTS

Standards for the construction, operation, maintenance, closure and post-closure of the Facility are set forth herein and in the permit drawings and permit documents included as attachments to the permit application. The permit documents are designed to address the permitting requirements of Division 13 Regulations. These documents are the approved design basis for the Facility.

3.2 WATER QUALITY PROTECTION

The water quality protection standards outlined in ADEM Admin. Code r. 335-13-4-.01 prohibit the discharge of pollutants (including fill material), or any other unpermitted discharge to the waters of the State as defined by the Alabama Water Pollution Control Act, Code of Alabama and the United States Environmental Protection Agency Clean Water Act, as amended. Protective measures have been incorporated into the design and operation of the Facility including groundwater monitoring wells and stormwater run-on and run-off controls as shown in the Engineering Plans.

3.3 SURFACE DRAINAGE

Stormwater control at the facility is necessary to prevent erosion and sedimentation. Details of the surface water drainage plan and discharge areas are shown in the Engineering Plans.

3.3.1 Run-On Control

The permittee will maintain a run-on control systems using berms and diversion ditches designed to prevent flow onto the active or closed portions of the Facility during the peak discharge from a 25-year, 24-hour storm event.

Stormwater control at the Facility is imperative to minimize infiltration, ponding, sedimentation, and erosion problems associated with stormwater drainage. The permittee will maintain a run-on control system using berms and diversion ditches to prevent flow onto the active or closed portions of the landfill during the peak discharge from a 25-year, 24-hour storm event, as required by ADEM Admin. Code r. 335-13-4-.17(1).

Perimeter drainage ditches shall be constructed in the locations shown on the Engineering Plans to intercept stormwater run-on before it is able to pass over the closed and active landfill disposal areas. The ditches will carry the stormwater to the sedimentation ponds as shown on the plans prior to the stormwater being discharged off-site. Rip-rap check structures and erosion control matting will be used in the drainage ditches on an as-needed basis to minimize erosion. Silt fences will be installed in areas of the landfill which are susceptible to erosion and sedimentation.

3.3.2 Run-Off Control

The permittee will maintain a run-off control system to collect and control at least the water volume resulting from a 25-year, 24-hour storm event. Run-off from the landfill will be conveyed through the landfill's NPDES Stormwater Permit discharge point(s). Temporary sediment control features such as hay bales and sediment fences will be used as necessary to control sediment transport and minimize erosion.

The topography of the Fort Payne Landfill is such that on-site precipitation will drain into one of two sedimentation ponds which are shown on the Engineering Plans. Construction of berms and permanent drainage ditches will control the run-off as it drains into the sedimentation ponds. These ponds are designed to retain stormwater to allow sediment in the water to settle before being discharged from the site.

Sedimentation Pond Calculations can be found in **Appendix 3.1**.

3.4 NPDES STORMWATER PERMIT

The Federal Water Pollution Control Act, also known as the Clean Water Act, requires permits under the NPDES for stormwater discharges associated with industrial activity. On November 16, 1990, the Environmental Protection Agency issued regulations establishing permit application requirements for these discharges. The regulations are primarily contained in Section 122.26 of 40 CFR.

The implementation of best management practices (BMPs) during construction and operation of the Facility is required under NPDES guidelines. Such practices include maintaining vegetation over areas undisturbed by landfilling operations, and installing hay bales, rip-rap, erosion control matting, and sediment (silt) fences in areas prone to erosion and sedimentation. A Best Management Practices Plan for handling stormwater is contained in **Section 7** herein.

The Facility is currently operating under NPDES Permit No. ALG160106 and will comply with all stormwater regulations and permitting requirements applicable to the Facility.

3.5 GROUNDWATER MONITORING WELLS

Groundwater monitoring wells will be located no more than one hundred fifty (150) meters from the waste disposal limits at locations that will yield representative samples of the uppermost aquifer beneath the site. Wells that are currently installed are shown on the Engineering/Permit Plans.

3.6 EXPLOSIVE GAS MONITORING

The generation of explosive gases, especially methane (CH_4) can occur when organic wastes at the landfill decompose. Landfill gas migration can result in vegetation damage (i.e. landfill cover vegetation) and can even result in explosions if concentrations exceed the Lower Explosive

Limit (LEL) of 5% by volume. Permanent explosive gas monitoring points shall be identified at the facility for monitoring explosive gas levels during the active life, closure, and post-closure care period as required by ADEM and shall be located at the site as follows:

3.6.1 Explosive Gas Monitoring Points

Permanent explosive gas monitoring points will be identified by metal signs and will be spaced along the landfill property boundary as shown. The monitoring points shall be installed no more than 300 feet apart, and no more than 100 feet apart in areas where a dwelling is within 1000 feet of the landfill property boundary. In addition to the monitoring points, other monitoring locations shall include on-site structures, culverts, drop inlets, and other locations that are conducive to gas accumulation.

3.6.2 Explosive Gas Monitoring Procedures

Monitoring will be conducted at the facility on an annual basis, or as otherwise specified by ADEM, in each permanent explosive gas monitoring station. A standard portable gas detection instrument for monitoring landfill gas will be used in accordance with the manufacturer's recommendations to detect the methane gas concentrations in each monitoring station at the facility.

3.6.3 Explosive Gas Reporting Plan

The levels of gas detected in each monitoring point and any other monitoring stations shall be expressed in percent methane by volume and percent of LEL on the Explosive Gas Monitoring Report. Copies of the monitoring report shall be submitted to ADEM and placed in the Operating Record of the facility within 30 days of the monitoring event.

3.6.4 Interpretation of Data

The LEL of methane is 5% by volume. Explosive gas levels should not exceed the lower explosive limit at the facility boundary and should not exceed 25 percent of the lower explosive limit in facility structures.

If the explosive gas levels at the facility exceed the respective limits, the Landfill Operator shall immediately take necessary steps to ensure the protection of human health and property, and shall immediately notify ADEM of the exceeded limits.

3.6.5 Remediation Plan

Should explosive gas levels exceed the LEL at any monitoring station along the property boundary or exceed twenty five percent of the LEL around or inside any facility structure, the interval of testing shall be increased to monthly. Should concentrations continue above the established limits, then testing should be increased to weekly or daily to detect dangerous levels of combustible gas. Within 7 days of detection, the Landfill Operator shall place in the Operating Record the explosive gas levels detected and the

immediate steps taken to protect human health and property.

Within 20 days of detection, the Landfill Operator shall submit to ADEM for approval a remedial plan for the explosive gas releases. This plan shall describe the nature and extent of the problem and the proposed remedy. The plan shall be implemented upon approval by ADEM within 60 days of detection. Within this 60 day period, a copy of the plan shall be placed in the Operating Record and ADEM shall be notified of the plan's implementation.

4 OPERATIONAL PLAN

4.1 PURPOSE

These general operational standards for the Facility have been prepared primarily as a guideline for daily operational and maintenance procedures to be performed by Facility personnel. All operational procedures of the Facility will be directed toward protection of human health and the environment. The procedures set forth herein are designed with this purpose in mind. Should any condition occur during the life of this Facility which would pose a threat to human health or the environment, immediate action will be taken to correct that condition. Environmental monitoring and treatment structures will be located throughout the site. Facility operations will be conducted in a manner that will not compromise the integrity of these structures.

4.2 SITE ACCESS AND SECURITY

4.2.1 Entrance and Monitoring

All waste coming to the Facility will enter via an entrance road off Alabama Hwy 35. An office facility and associated support structures, including the baler building are located near the landfill.

Only persons authorized by the landfill manager will be permitted access to the site. No access will be allowed except when a landfill attendant is on duty.

4.2.2 Access Barriers

The Facility is secured through a combination of natural barriers (such as terrain and vegetation) and constructed fencing installed at strategic locations. These barriers are intended to limit unauthorized entry and direct traffic to designated access points. Facility gates are secured when the site is closed. Facility personnel ensure that all access points are locked at the end of each operating day to prevent unauthorized access during non-operational hours.

4.2.3 Signage

All mandatory signage is posted and maintained in accordance with regulatory requirements. A sign will be posted at the landfill entrance that includes the name of the Permittee, name of the Landfill, the days and hours of operation, waste restrictions, safety notices, disposal fees, emergency contact information, and directional signage to guide customers to the appropriate disposal area.

4.3 WASTE MANAGEMENT

4.3.1 Origin of Waste

The origin of waste for the Facility is limited to the permitted service area as defined by the

Facility's ADEM-issued solid waste facility disposal permit.

4.3.2 Acceptable Waste

Wastes accepted at the Facility shall be strictly controlled so as to allow only waste stipulated on the permit or waste approved by the Department. Waste that is acceptable for disposal at the Facility is non-hazardous industrial waste and construction and demolition (C/D) wastes including but not limited to white goods, clothing, yard wastes, untreated wood waste, roofing shingles, tires, dried paint, dried sludge, mattresses, paper, appliances, uncontaminated metal, asbestos, petroleum contaminated soil or waste, and foundry sand that meets ADEM acceptance criteria.

4.3.3 Hazardous and Restricted Waste Detection Plan

Hazardous waste, liquid waste, municipal solid waste (MSW), untreated medical waste, radioactive materials, and any other waste types not specifically authorized by the facility permit or ADEM approval will not be accepted for disposal at the facility. In addition, bulk or non-containerized liquid waste, and containers capable of holding liquids are not acceptable at this landfill.

The following plan shall be implemented by the Landfill Operator to detect and prevent the disposal of hazardous and restricted wastes at the landfill facility:

1. Landfill personnel must inspect all suspicious waste loads and conduct random inspections of waste during the day. All waste load inspections shall be supervised by trained personnel and shall be performed in a designated area of the facility. The results of each inspection will be recorded on a Waste Load Inspection Form and filed at the landfill office.

2. Upon discovering restricted wastes, the Landfill Operator must immediately notify the generator and/or transporter that the material is restricted from disposal in a C/D and industrial landfill facility and must contact ADEM for the appropriate action to be taken.

3. The Landfill Operator shall notify ADEM's Waste Programs Branch and the transporter of the waste, if any hazardous or restricted waste is discovered.

4. The Landfill Operator shall notify ADEM prior to allowing the disposal of any questionable waste stream in the Industrial-C/D disposal area.

5. If there are questions regarding any incoming waste stream, the facility personnel have been instructed to notify ADEM's Solid Waste Branch at (334) 271-7988 prior to allowing the disposal of the waste at the landfill.

6. The Landfill Operator shall be certified as a manager of landfill operations (MOLO) and all personnel shall receive training to detect hazardous or restricted waste.

7. The Landfill Operator shall identify and keep records of all industrial users of the landfill, producers of special wastes, and transporters of the wastes. The records shall include disposal permits issued by the landfill supervisor to various generators and transporters to ensure that restricted waste is not entering the facility. The approval of landfill users will be divided into three different types of permits.

    a. **Type 1:** Approval will be required from all commercial landfill users that generate and transport their own waste from the point of generation to the landfill. Type 1 users must provide the following:

        i. Written certification that the waste generated and transported does not contain a regulated hazardous or infectious waste.

        ii. If the permittee is a generator of medical waste, a written certification must be provided by the transporter upon each individual delivery to the landfill that states that the previously infectious waste has been rendered non-infectious.

        iii. If the waste generated by the permittee is defined "Industrial" by current ADEM regulations, an annual approval for disposal is required from ADEM, along with written certification and supporting analysis, that the waste stream does not contain a regulated hazardous waste, infectious waste, liquid waste, or polychlorinated biphenyls (PCB) waste.

    b. **Type 2:** Approval will be required from all commercial haulers/transporters or companies who do not generate the waste being transported to the landfill. Type 2 users must provide the following:

        i. A current list of all customers whose waste will be transported to the Fort Payne Landfill for disposal.

        ii. Written certifications from each customer stating that the waste being transported does not contain regulated hazardous wastes, PCB waste, or potentially infectious waste.

        iii. The certification must be made by the person rendering the waste non-infectious and submitted to the gate operator by the transporter.

        iv. If the transporter's customers generate industrial waste, clearance from ADEM will be required prior to disposal.

    c. **Type 3:** Approval will be required from all municipalities, government agencies, and military facilities. Type 3 users must provide the following information:

        i. Written certification that the waste generated and transported does not contain a regulated hazardous or infectious waste.

ii. Written certification that previously infectious or potentially infectious waste has been rendered non-infectious. Certification must be made by the person rendering the waste non-infectious and submitted to the gate operator by the transporter.

iii. If the waste generated by the permittee contains waste defined "Industrial" by current ADEM regulations, an annual approval for disposal would be required from ADEM, along with written certification and supporting analysis, that the waste does not contain a regulated hazardous waste, infectious waste, liquid waste, or PCB waste.

4.3.4 Waste Monitoring and Inspection

Waste accepted at the Facility will be only waste specified by the permit or waste that is otherwise approved by the Department for disposal at the Facility. Any unapproved waste coming to the site for disposal will be refused.

Waste screening occurs at the scale house upon arrival where incoming waste can be isolated and inspected prior to accepting it for disposal. The scale house operator will be trained to conduct visual inspections to identify unacceptable or potentially regulated waste and will observe waste as it is unloaded to identify inappropriate materials.

Random inspection of incoming loads will be performed, and a record will be kept of all inspections as part of the Facility's compliance program. Random load inspections are conducted at least once every two days, or more frequently as needed to ensure compliance. A random load inspection form will be used to document inspections. Any incoming load that may have containerized, "red bag", or liquid waste will be considered a suspicious load and will immediately be isolated and inspected. The hauler will be required to identify the waste source and/or to provide documentation from the Department verifying the waste is approved for disposal at the Facility. The scale house operator will document the incident and notify management as needed.

Facility personnel will receive training in methods to detect unacceptable waste loads. Such loads would include those which may contain waste in drums or other containers not normally used for disposal, loads with DOT or other descriptive labels, loads which may contain medical waste, loads which may contain liquids, and loads which may contain soils or bags contaminated with PCB's or other hazardous material. Any unidentified waste suspected of containing hazardous materials will be handled and stored as hazardous waste until proven otherwise.

Prior to disposing of waste at the Facility, haulers who regularly collect waste for disposal at the Landfill will be identified. Incoming waste from a hauler not identified, will be inspected and the hauler will be asked to identify the source of the waste before it is accepted for disposal.

Landfill personnel will be instructed in waste inspection, handling, and safety procedures. Unacceptable waste will be refused. Only waste collected within the designated service area of the facility will be accepted. The Department will be immediately notified of any waste found to contain hazardous waste, untreated medical waste, PCB's or other regulated waste and a record of the action will be placed in the operating record.

4.3.5 Recording of Waste Accepted

Each load of waste accepted for disposal will be recorded to show the type of waste, the source, the volume, the date and time the waste was received, a contact person (current name, address, and telephone number of the transporter or collector), the identity of the hauler (name of firm, driver, vehicle I.D., etc.), inspection findings, and any actions taken (e.g., acceptance, rejection, isolation). Waste volumes will be measured by the ton.

4.4 SITE INFRASTRUCTURE

4.4.1 Open Burning

Open burning of solid waste shall not occur at the Facility unless it is approved by ADEM as follows:

1. Clearing debris at the Facility such as trees and stumps may be burned if prior approval is received from ADEM and the Alabama Forestry Commission.

2. Emergency clean-up debris resulting from catastrophic incidents may be burned at the landfill if prior approval is received from ADEM and other appropriate agencies.

3. If approved, open burning shall not occur over previously filled areas or within 200 feet of the existing disposal operations unless otherwise specified by ADEM.

4. If approved, open burning shall not cause a public nuisance or pose a threat to public health.

5. A written request shall be submitted to ADEM by the person or agency requesting permission to burn solid waste. The request shall be made by submitting the following information to ADEM in writing:

    a. The type of waste to be burned.

    b. The reason for the request.

    c. The specific area of the landfill to be utilized.

    d. Projected days and hours of operation.

    e. Projected starting/completion dates of the project.

The Facility may utilize an air curtain burner for clean vegetative waste generated onsite, operated according to manufacturer specifications and ADEM requirements. Only clean vegetative debris may be processed, and ash must be managed and disposed of per permit conditions.

4.4.2 Buffer Zones

An area, at least one hundred (100') feet in width, around the perimeter of the site, is designated as the perimeter buffer zone. ADEM may approve a reduced buffer width where site-specific conditions warrant such reduction. No waste will be disposed of within the buffer zones. Roads, drainage structures, personnel facilities, equipment facilities, and other landfill appurtenances may be located within the perimeter buffer zone. The buffer areas will be cleared as needed to construct improvements. Landscaping or berms may be placed within the buffer to provide a visual barrier between the waste disposal unit and adjacent land.

Vegetation will be maintained throughout the buffer zone. Hay bales and/or silt fences will be used as needed to prevent off-site siltation from clearing, excavating or stockpiling activities. Any buffer areas disturbed will be revegetated to prevent erosion.

4.5 LANDFILL MANAGEMENT

4.5.1 Landfill Personnel

All landfill operations will be supervised by the landfill manager and an adequate number of trained personnel will be provided to ensure continued and smooth operation of the site. Personnel who will be at the site on a daily basis will have access to facilities that provide shelter, communications, lavatory, and toilets which will be kept clean and in good operating order. Personnel shall be on duty at the landfill during all operating hours, and the operation and management of the facility shall be under the direct supervision and control of an individual qualified in operating and supervising the landfill by training, education, or experience including, but not limited to the following items:

- Knowledge of the emergency procedures of the local governing body and the local emergency management agency.
- Knowledge of managing and operating the landfill.
- Knowledge of hazardous waste identification.
- Basic knowledge of the usage of facility equipment.
- Personnel shall receive instruction on matters related to daily operations, worker safety, health and hygiene at the facility on a periodic basis. The supervisor shall ensure that all personnel are trained to identify wastes which are prohibited at the facility.

Landfill management will provide adequate training for all Facility personnel so that they may properly and safely perform their job in accordance with the procedures described herein. All supporting personnel receive training in waste screening, safety procedures, emergency response, and operational protocols. Training ensures that personnel can identify prohibited waste, follow safety guidelines, and support daily landfill operations. Records of training received by landfill employees will be placed in the operating record. Documentation includes certificates, attendance logs, and curriculum details for each training session.

4.5.2 Personnel Facilities

An office facility will be provided for landfill employees. The office will be located on-site and will include safe drinking water, sanitary handwashing and toilet facilities. Copies of Facility permit documents and other pertinent operating records will be kept at the office. The building will be appropriately located and properly vented to eliminate the possibility of landfill gas accumulation.

4.5.3 Equipment and Maintenance

Equipment used to operate the Facility will depend on the volume of waste received and will vary throughout the life of the site. In order to efficiently utilize the space available at the Facility, the necessary compaction and earth moving equipment will be on-site and in good working order. Waste will be compacted using a landfill compactor, then graded with a dozer. Additionally, the supervisor must have access to backup equipment for use during periods of repair and maintenance.

Equipment washing will be performed at the Facility's designated wash rack. The wash rack will be used to remove mud, debris, and residues from landfill equipment to maintain performance and safety. Wash water drains through a PVC pipe system connected to the wash rack. The system will be designed to direct wash water away from operational areas while preventing uncontrolled discharge into stormwater pathways in accordance with permit requirements.

4.5.4 Communications

A telephone will be located in the office. Emergency numbers will be posted where they are readily available from the telephone. Two-way radios may be used on-site to facilitate communications between the office and operators.

4.5.5 Hours of Operation

The hours of facility operation will be set by landfill management. Operating hours apply to public access, waste acceptance, and routine landfill operations. Authorized landfill personnel may be on duty for additional periods to prepare the facility for receipt of waste and to properly close the site after the daily operations.

Standard hours the facility will receive waste is currently:

5:30 am to 1:30 pm	Monday through Friday
Closed	Saturday and Sunday

The days and hours for disposal of waste may be adjusted by landfill management to meet the needs of haulers, to respond to emergencies, or to address special conditions. A landfill attendant will be on duty during all hours of operation. The standard hours and days the facility is open to the public will be posted at the landfill entrance. The Department will be advised of any changes in operating hours.

4.5.6 Accident Prevention and Safety

All Facility employees will be instructed in proper operating and emergency procedures. An adequate inventory of first aid supplies will be maintained at the Facility. The landfill manager will be capable of administering basic first aid. Emergency phone numbers will be readily available in the office.

Personnel working at the Facility should be made aware that gas emitted from a landfill is potentially explosive and can asphyxiate a person. Gas dispersed into the atmosphere generally poses little threat. However, safety precautions are needed when working around enclosed areas such as pipes, inlets, structures, etc. Workers should not enter an enclosed space without checking for methane gas and/or wearing a safety harness and having another person standing by to pull them to safety. Self-contained breathing apparatus is advisable when working in conditions where concentrations of gas may be found smoking, sparks or flames should be avoided.

When performing equipment maintenance onsite, appropriate measures will be taken to prevent the loss of fluids, oil, grease, gasoline, etc., that could contaminate soils, groundwater or stormwater run-off. Such measures will include the placement of Visqueen or other impermeable material to contain fluids; the use of absorptive materials to collect spills; the construction of berms to prevent rainwater from running onto the maintenance area; or similar measures. Any potentially contaminated material, or soils contaminated by fluids generated during maintenance activities, will be properly disposed of.

4.6 UNLOADING AND TRAFFIC CONTROL

4.6.1 Public Drop-Off/Convenience Area

A designated public drop-off (convenience) area is provided onsite for residents and small generators. This area allows the public to dispose of approved materials without entering the active landfill working face. The public drop-off area is located in a designated section near the facility entrance, allowing safe and efficient access for residential users while keeping them separated from heavy equipment, commercial vehicles, and active landfill operations.

The public drop-off area consists of roll-off containers assigned for mattresses, C/D debris, and scrap metal. Only materials appropriate for the designated

roll-off containers are accepted. No industrial, hazardous, liquid, or prohibited wastes are accepted in the public drop-off area. Prohibited wastes are controlled through signage, facility rules, and active monitoring by staff. If unacceptable materials are discovered, they are isolated and managed in accordance with the facility's prohibited waste procedures. Landfill personnel provide guidance to the public regarding acceptable materials and direct customers to appropriate resources for disposal of prohibited items as needed.

The drop-off area is routinely monitored by Facility personnel. While the area may not be continuously staffed, employees regularly observe activity, assist customers as needed, and ensure that materials are placed in the proper containers. Monitoring helps prevent improper disposal and maintains orderly and safe site operations.

4.6.2 Working Face

The active working face of the landfill will be confined to as small an area as possible and coordinated with spreading and compacting operations. Industrial and C/D wastes will be placed together in a single working area. The systematic placement of refuse will reduce work, minimize scattering of refuse, and expedite unloading of collection vehicles.

Waste will be unloaded dry at the working face. Public customers, residents, and contractors, unload at the bottom of the working face, while roll-off containers are unloaded at the top. All roll-offs are city-owned and handled by city employees.

The active working face will be managed using a dozer and backhoe to spread, shape, and maintain the waste. Slopes are maintained and stabilized using a packer and other landfill equipment.

Waste which requires special handling may be directed to an alternate disposal area, away from the primary working face. This would include waste which requires immediate covering such as materials which could easily become airborne, bulk waste, or loads which contain quantities of recyclable materials which can be salvaged.

Special handling needs will be determined as the waste is accepted for disposal and landfill personnel will direct haul vehicles to the proper disposal area.

4.7 ADVERSE WEATHER OPERATIONS

Adverse weather conditions could hinder operations at the Facility. An all-weather access road shall be provided to the working face of the landfill to permit vehicular access. The access road shall be wide enough for collection vehicles to easily pass each other. A designated location will be provided for adverse weather disposal.

During periods of heavy rainfall or sustained wet weather, exposed soil surfaces, haul routes, and operational areas may become slick or unstable, creating hazardous driving and working conditions. Facility personnel will utilize drainage controls, crushed stone, or other stabilizing materials on unpaved roads to maintain all-weather access and divert water away from critical

operational areas. If rainfall washes out or degrades aggregate surfaces, repairs will be made promptly to restore safe travel conditions unsafe due to rain, wind, or lightning, landfill operations may be temporarily suspended in whole or in part.

Landfill operations may be halted, reduced, or adjusted during severe weather events when conditions create safety and/or equipment hazards. Weather related operational changes will be documented in the operating record, including the event, affected operations, reason for stoppage, and timing of shutdown and restart. Operations may resume once conditions are deemed safe by the Landfill Manager. Upon resumption of landfill activities, landfill personnel will inspect the disposal area and stormwater system for litter, ponded water, slope issues, or damage. If weekly cover is delayed by severe weather, operators must cover the previous day's waste before disposing of new waste.

4.8 COVER AND COMPACTION

4.8.1 Weekly Cover

Subsurface investigation of the site indicated that on-site soils are suitable for cover material.

All waste will be covered at the conclusion of each week's operation, Friday. The significant function of cover material is to control disease vectors, litter, fire, and moisture in the waste. On-site soil will be used for cover material. Any use of alternative material for cover will be approved by the Department prior to use.

Soil cover will be placed over all exposed waste, spread, and compacted to a minimum depth of six (6”) inches. Additional cover material will be placed over waste in the event there are any odor, vector, litter, fire, or erosion problems.

The cover material will be graded to prevent ponding or erosion. Grading of cover should be compatible with the general drainage design of the area and should direct water flow away from the working face.

4.8.2 Alternate Weekly Cover

Alternative cover (AC) materials may be used only when approved by ADEM through the Facility permit or an approved variance. AC use shall comply with all applicable permit conditions, variance requirements, and manufacturer specifications. No AC materials shall be utilized unless approval is granted by ADEM. The following materials may be used as AC's:

<u>Hydro-Mulch</u>

Prior to applying the hydro-mulch material, compaction will be monitored closely to achieve a smooth, highly compacted surface. Bulky, irregularly shaped, or relatively incompatible waste material will be placed in the bottom lifts of the daily working cell so that waste materials that may be tightly compacted will cover the irregular materials. In addition, odoriferous wastes that may attract vermin will also be placed in the bottom of the waste lifts. The result of these

efforts will be a smooth, uniform surface to accept the hydro-mulch material.

The hydro-mulch material will be non-toxic, biodegradable, and harmless to plants and wildlife. The hydro-mulch material will be mixed and applied in strict accordance to the manufacturer's instructions.

Special consideration will be given to applying the material in varying weather conditions so that the material will not be applied in the event of a rainfall event. In addition, weather conditions will be monitored so that in-place hydro-mulch will have adequate cure time.

Application of the hydro-mulch material will be completed on the entire working face of the landfill at the end of the workday. The material will be applied to a thickness prescribed by the manufacturer so that vectors, fire, odors, vermin, blowing litter, and scavenging will be controlled. The material will be applied with proper equipment as required by the manufacturer.

50/50 Green Waste & Soil Mixture

The proposed mixture shall be achieved using shredded green waste with on-site soil with the mixture consisting of at least 50% daily soil material by volume. The alternate cover may be pre-mixed by incorporating a "windrow" method consisting of mixing the proposed soil and green waste at the working face, with the mixture containing at least 50% soil by volume. This mixing will be achieved using a dozer prior to placement on the working face. The material mixing will be completed by placing a windrow of shredded green waste adjacent to a windrow of soil cover material and making multiple passes through the material with the dozer. After achieving a blend of at least 50% soil by volume the alternate cover will be used to cover the working face following each daily lift.

Posi-Shell

Posi-Shell, a mixture of clay binders, reinforcing fibers, and polymers may be used as AC. The material shall be applied to the active working face in accordance with the manufacturer's specifications.

Portable Tarps/Reusable Synthetic Covers

Portable tarps or reusable synthetic daily cover systems may be utilized as AC. Tarps shall be deployed over the active working face at the end of the operating day in a manner that provides continuous coverage of exposed waste and prevents displacement due to wind or weather.

Tarps shall be installed, secured, removed, and maintained in accordance with manufacturer's specifications and ADEM approval. Damaged or ineffective tarps shall be repaired or replaced as necessary to ensure performance objectives are met.

Non-Hazardous Contaminated Soil

Non-hazardous contaminated soil may be utilized as AC, provided the material is documented to demonstrate that it does not meet hazardous waste criteria. Such material shall be stockpiled separately, clearly identified, and compacted using appropriate equipment to achieve adequate density and structural integrity.

Commercially Available Emulsion Coating

Commercially available emulsion coating products may be utilized as AC. The coating shall be applied across the entire working face using spray, rolling, or other approved application methods in accordance with manufacturer's specifications.

Enviro Cover

Enviro Cover systems, consisting of non-reusable geosynthetic film applied with specialized equipment may be used as AC. The film shall be placed to create a continuous barrier separating waste from the surrounding environment in accordance with manufacturer's recommendations.

4.8.3 Intermediate Cover

The function of intermediate cover is generally the same as weekly cover but includes the possible service as a road base and provides stabilization of an area for a longer period of time. On-site soils will be used for intermediate cover and will be applied in the same manner as weekly soil cover to a minimum compacted depth of one (1') foot.

Areas that have not actively received waste for ninety (90) days will be covered with intermediate cover within thirty (30) days. The cover will be graded to prevent erosion or ponding of surface water and prepared for the establishment of a vegetative cover. It is not necessary to place topsoil over intermediate cover; however, the area should be fertilized, mulched, and seeded to establish a vegetative cover sufficient to prevent erosion.

Periodic grading and compacting may be necessary to repair cracks or depressions that develop because of moisture loss and settlement of the fill. Periodic inspection and maintenance, at least twice a year, of the intermediate cover will be performed in order to assure proper functioning of the cover.

4.8.4 Final Cover System

The final cover of Facility will consist of an infiltration layer and an erosion layer. The infiltration layer will consist of soil cover which has a permeability no greater than 1 X 10^{-5} cm/ sec. The low permeability of the soil cover will reduce the infiltration of stormwater into the waste, provide slope stability, and provide an adequate base for the erosion layer. The soil cover will consist of eighteen (18") inches of soil, compacted in six (6") inch lifts. The erosion layer will consist of six (6") inches of compacted topsoil or enriched soil capable of supporting vegetation.

Permanent vegetation will be planted over the entire landfill. The vegetation selected will not have roots capable of penetrating the infiltration layer, will have ample density to minimize soil erosion, and will be sufficiently self-supportive to survive and function with little or no maintenance.

Maximum final grades on the landfill will be twenty-five (25%) percent and minimum grades will be five (5%) percent. Details of the final cover design and final and fill grades are shown on the Engineering Plans.

4.8.5 Vegetation Plan

Upon completion of the final cover system, the erosion layer shall be fully vegetated by preparing the topsoil, then seeding and mulching. The ground should be cultivated to a loose depth of two inches in such a manner as to break up all lumps and clods. All boulders, stumps, large roots or other particles should be removed to provide a smooth, uniform seed bed.

Samples should be taken of the topsoil and analyzed to determine the correct proportions of fertilizer and agricultural lime to be added to the soil. As an alternative to sampling, two tons of agricultural limestone and 1500 pounds of grade 8-8-8 fertilizer should be applied per acre to the site.

A seed mixture must then be sown over the prepared ground using mechanical seeders. The seed mix to be used shall be as specified below for the appropriate period of the year.

<u>December through February</u>

Kentucky 31 or Alta Fescue	15 lbs. per acre
Pensacola Bahia grass	25 lbs. per acre
Reseeding Crimson Clover	30 lbs. per acre
Bermudagrass (Unhulled)	25 lbs. per acre
Annual Ryegrass	20 lbs. per acre

<u>March through August</u>

Pensacola Bahia grass	20 lbs. per acre
Bermudagrass (Hulled)	25 lbs. per acre
Kobe Lespedeza	40 lbs. per acre

<u>September through November</u>

Kentucky 31 or Alta Fescue	15 lbs. per acre
Pensacola Bahia grass	25 lbs. per acre
Reseeding Crimson Clover	30 lbs. per acre
Bermudagrass (Unhulled)	30 lbs. per acre

Within 48 hours following seeding, the seeded areas shall be mulched with hay or straw mulch material and crimped. A roller-type crimper shall be used to embed the mulch to a minimum depth of two (2) inches into the prepared ground.

A second application of fertilizer shall be applied as a top dressing of ammonium nitrate to provide at least 67 pounds of nitrogen per acre (200 pounds of 33.5% ammonium nitrate, for example). This second application should be made after the grass has shown growth that is normally about 40 days. The vegetative cover shall be established within 30 days after completion of the final grading of each cell. Landfill personnel shall water and maintain the vegetative cover such that germination of grass can be reasonably anticipated.

4.8.6 Fill and Compaction Plans

The sequence of filling is shown in the permit drawings. Clearing will be performed on those areas designated to be excavated or areas used to stockpile cover material. Natural vegetation that does not interfere with construction activities will be left undisturbed. Excavation of cells will conform to the sequence of operations as set forth in the permit documents.

A landfill attendant will direct unloading of waste at the working face in a manner intended to achieve the most advantageous mixture of materials practical in order to obtain optimum compaction of waste. Loads containing lumber, large limbs or other bulk waste that is not highly compactable, may be placed to one side of the working face. This waste can later be thoroughly crushed and incorporated into the working face. This mixture of waste materials allows for better compaction and filling of voids.

The waste will be mixed and spread over the working face in layers approximately two (2) feet deep and compacted on a daily basis. Additional waste or cover material may then be placed over the compacted waste. The slope of the working face will not be so steep as to inhibit proper compaction of the waste. In general, it will not exceed 4 to 1 (25%) or as approved by the Department to match ADEM regulations.

4.9 SPECIAL WASTE DISPOSAL

4.9.1 Asbestos

Asbestos to be disposed at the Facility shall arrive at the Facility in properly labeled leak-tight containers as required by ADEM. The material inside the containers shall be in a form that will not easily become airborne. The containers shall be placed intact in a specially prepared area in an excavation at the bottom of the operating face and covered with a minimum of 12 inches of earth at the end of each working day. Prior to applying the daily cover, special precautions will be taken not to rupture the containers, such as avoiding the use of machinery over the uncovered containers. If the waste is placed in a separately designated area other than the operating face, the Landfill Operator shall identify the location of the specially prepared area on the landfill map and shall maintain asbestos disposal records at the landfill office to prevent future excavating into the waste.

4.9.2 Petroleum Contaminated Waste

ADEM Admin. Code r. 335-13-4.26(3) states the specific requirements for disposal of petroleum contaminated waste in a landfill. The following paragraphs provide a summary of the requirements specified in that Rule that pertains to disposal of petroleum contaminated waste in a landfill.

The generator of the waste must provide written certification to ADEM that the waste is nonhazardous before petroleum contaminated waste is disposed at the landfill. The Landfill Operator must obtain from the generator ADEM's written certification and any analysis pertaining to the certification that the petroleum contaminated waste is non-hazardous. The Landfill Operator is not required to obtain ADEM's approval prior to disposal.

To accomplish written certification, the generator may use his/her knowledge of the processes producing the waste to certify the waste is non-hazardous. ADEM may require the generator to provide additional information or analysis to support the certification. When the source of the petroleum contaminated waste is leaded gasoline, used automotive crank case oil, or if the generator has reason to believe the source contains Toxicity Characteristic Leaching Procedure (TCLP) metals, the written certification must include a laboratory analysis for metals.

Small quantities of petroleum contaminated waste may be disposed of without approval if the waste contains less than 25 gallons of petroleum and the total material (soil, rags, sorbent etc.) volume is less than 5 cubic yards per occurrence.

Petroleum contaminated waste which has been approved for disposal shall be solidified to a bladeable consistency and certified to contain no free liquids as defined by Method 9095 (Paint Filter Liquid Test), then taken to the active landfill cell, and placed at the normal face to be disposed of in accordance with the procedures outlined in **Section 4.6** of this manual.

4.9.3 Foundry Sand

Foundry Sand shall be acceptable for disposal in the Industrial-C/D cells, and the generator of the waste must obtain written certification from ADEM prior to disposal. The Landfill Operator shall obtain from the generator ADEM's written certification and any analyses pertaining to the certification that the foundry sand is non-hazardous. The Landfill Operator is not required to obtain ADEM's approval prior to disposal.

To accomplish certification, the generator must submit a Solid/Hazardous Waste Determination Form and a TCLP analysis to ADEM. The foundry sand must exhibit less than 50 percent of each of the TC levels for metals as defined by EPA's TCLP. The foundry sand must be certified on a quarterly basis or whenever the process changes which would significantly alter the test results, whichever is more frequent.

Foundry sands which have been approved for disposal shall be solidified to a bladeable consistency and certified to contain no free liquids as defined by Method 9095 (Paint Filter

Liquid Test), and then taken to the active cell, and placed at the normal face to be disposed of in accordance with the procedures outlined in **Section 4.6** of this manual

4.10 SEPARATION OF RECYCLABLES

The City has taken an active role in assisting and encouraging commercial and residential recycling. Recyclables are both generated onsite (from landfill operations and public drop-off) and received from the off-site City-owned recycling center.

A baler, located in an enclosed building, will be used to bale recyclables processed onsite. All baled materials will be stored under roof, except for baled cardboard and offsite recyclables, which will be managed to minimize exposure. Runoff from these areas will be controlled by the building structure and site grading.

The following recyclable waste streams are currently being handled at different locations within the landfill: white goods and mixed metal waste, automobile and truck tires, corrugated and other paper products, wood waste below 6 inches in diameter, cardboard, plastics # 1 (PET) and #2 (HDPE), and other inert materials.

4.10.1 White Goods and Mixed Metal Waste

White goods containing refrigerants will be stockpiled and transported off-site for proper refrigerant removal and recycling/disposal. White goods will be staged in a designated area onsite, typically placed in a trailer or roll-off container, and will be removed when the trailer or roll-off is full or as needed to maintain orderly storage and compliance. Site grading and operational practices will be used to prevent contact with stormwater and to direct runoff away from storage areas.

Scrap metal will be managed similarly to white goods. Scrap metal will be placed in a roll-off container for stockpiling and removal. When full, the container will be transported to a recycling center or scrap metal processor for proper recycling or recovery.

4.10.2 Automobile and Truck Tires

Tires are accepted for disposal in small quantities. Collected tires will be placed in a roll-off container onsite and transported to DeKalb County for proper disposal. In infrequent cases, small quantities may be disposed of in accordance with applicable regulatory guidelines. Tires will be removed regularly to prevent excessive stockpiling and to comply with regulatory requirements. Tires will be stored in designated areas away from ignition sources, and stockpiles are managed at minimal levels to reduce fire risk. The facility maintains fire extinguishers onsite and follows best practices for fire prevention in tire storage areas.

ADEM Admin Code r. 335-13-4.21 of the ADEM Administrative Code states that landfills will be prohibited from disposing of whole tires, with the exception of whole tires received in a de minimis portion in a load of solid waste beginning after December 31, 2027.

ADEM defines de minimis as a small amount of material or number of items, as applicable, commingled and incidentally disposed of with other solid waste. Prior to landfill disposal, whole tires must be shredded or cut into at least thirds or smaller pieces. The Facility will comply with these revised scrap tire management requirements upon their effective date.

4.10.3 Wood Waste

The Facility accepts wood waste as part of normal operations. Wood waste includes untreated lumber, pallets, brush, and clean woody debris generated from construction, demolition, maintenance, or community drop-off activities. Only noncontaminated wood wastes will be accepted.

Wood waste may be chipped or ground onsite to reduce volume, facilitate handling, and support beneficial reuse activities. Processing is conducted in designated areas using approved equipment in accordance with operational and safety procedures. Wood waste is staged in the designated wood waste management area. This area is used for temporary stockpiling, chipping, grinding, or preparation for additional processing. The staging area is maintained to allow safe equipment access, adequate fire breaks, and operational efficiency.

Processed wood waste will be reused onsite when feasible. Current practices include blending wood chips with biosolids and soil to support the composting program and other approved beneficial use applications. Additional reuse options may be evaluated and incorporated as appropriate based on operational needs.

4.10.4 Other Inert Materials

Inert materials such as concrete, brick, and asphalt are accepted and placed in designated areas at the Facility. Inert materials are currently stockpiled onsite. Small concrete pieces will be reused as road base material throughout the Facility. Dust will be controlled using a water truck as needed. Runoff will be managed through site grading and operational practices to minimize environmental impact and maintain compliance.

4.10.5 Electronic Waste

Electronic waste (e-waste) is not accepted for disposal at the Facility. All electronic items delivered to the Facility will be handled separately from normal waste streams to ensure proper recycling and compliance with applicable regulations.

Any e-waste received at the Facility will be placed directly into the designated roll-off container assigned for e-waste management. This container will be maintained to prevent breakage, scattering, or contamination of electronic components while onsite. Once the container reaches an appropriate load level, the contents will be transported to the City's recycling center for proper processing.

E-waste will be removed from the site by a designated recycling contractor, who transports and transfers the materials to the approved electronic recycling facility. Facility personnel will not perform disassembly or processing of electronic components onsite.

4.11 Environmental and Safety Measures

4.11.1 Fire Protection

The Landfill Operator shall implement fire control measures in the active disposal areas. These measures shall include but are not limited to the following:

1. Access to a vehicle equipped with a water tank of sufficient capacity to extinguish small fires that could occur at the working face.

2. The telephone number of the City's Fire Department posted in the Operator's Office.

3. Designated smoking areas away from the disposal area and maintained to minimize ignition risks.

4.11.2 Salvaging/Scavenging

Scavenging shall not be permitted with the Facility. To minimize a potential for scavenging, the landfill supervisor shall control traffic in and out of the active disposal areas, and shall lock the entrance gate on the main access road during all closed hours.

Salvaging of recyclable materials shall be conducted in designated areas on the Facility property away from the working faces of the landfill.

4.11.3 Odor Control

Due to the nature of waste accepted, it is not anticipated that odor will be significant problem at the Facility. However, in the event odor problems should occur, the landfill operator should determine the source and take appropriate action to correct the problem.

Odors occurring from waste loads or decomposition of waste will be controlled by placement of additional soil cover. Odors emanating from cracks or other sources will need further investigation.

4.11.4 Dust Control

If necessary, dust raised by traffic will be controlled by wetting roads with water or other acceptable means. Dust generated from stockpiled soils or excavation activities should be minimized by planting temporary vegetation.

As filling above natural ground, maintaining a small working face and prompt placement of cover/vegetation will help to control dust.

4.11.5 Vector Control

Vectors will be controlled by placement of cover and through proper operating practices. In the event a vector problem should occur, it will be the responsibility of the landfill operator to take appropriate corrective measures to eliminate the problem.

Appropriate measures, such as placement of additional cover or use of a professional exterminator, to control vectors. Areas where stagnate water accumulates will be regraded to encourage runoff.

4.11.6 Litter Control

Blowing litter will be kept to a minimum by maintaining a small working face and properly compacting and covering the waste. Litter will be picked up regularly in normal housekeeping activities.

Certain loads of waste are more susceptible to becoming airborne than others. Such loads will be promptly covered with soil or other waste to minimize conditions that generate excessive litter.

In the event that litter problems should occur, appropriate litter barriers will be maintained around the working face or perimeter of the Landfill. Litter barriers may be constructed by using rows of natural materials, such as limbs or brush, or with temporary fencing or screening. As filling progresses above natural ground, it may be necessary to install relatively permanent fencing in some areas to control litter.

The site, and roadway near the entrance to the site, will be policed regularly to pick up litter and maintain a clean appearance.

4.12 EMERGENCY AND SPECIAL WASTE HANDLING

4.12.1 Spill Prevention Control and Countermeasures

Fire prevention measures are implemented throughout the Facility to minimize fire risk and ensure rapid response capability. Preventative practices include maintaining clear fire breaks around stockpiles, controlling vegetation in operational areas, enforcing restrictions on open burning, and maintaining proper spacing of combustible materials. Facility personnel are trained in fire prevention awareness and reporting procedures. Portable fire extinguishers are available at designated locations throughout the site, including equipment parking areas, operational buildings, fuel storage areas, and mobile equipment. Extinguishers are inspected routinely to ensure proper charge and accessibility.

Spill response materials are maintained onsite to respond to fuel, oil, or chemical releases. Materials include absorbent pads, granulated absorbents, containment booms, and spill kits located near fueling areas and equipment storage locations. Staff are trained in basic spill containment and reporting procedures. Oils, fuels, and chemicals will be stored in a designated

storage area. The facility will maintain minimal quantities onsite, and materials will be stored in accordance with safety and environmental requirements. Secondary containment will be used where necessary, and storage practices comply with the Spill Prevention, Control, and Countermeasure (SPCC) Plan and applicable regulations.

Equipment fueling will be conducted onsite using a mobile fuel truck equipped with a 500-gallon tank mounted on wheels. The fuel truck will deliver fuel directly to landfill equipment in designated fueling locations to minimize equipment downtime and support daily operations.

Fueling will be performed in designated areas that allow safe access for equipment and the mobile fuel truck. These locations will be selected to minimize the risk of spills, avoid high traffic areas, and allow adequate containment if needed. All fueling activities will be conducted in accordance with the Facility's SPCC Plan. Spill kits are maintained onsite, and staff are trained in spill response procedures. Fueling operations will be monitored to prevent overfilling, and any spills will be immediately contained and managed per SPCC requirements. In the event of a spill, it will be the priority of landfill equipment personnel to be available to take expeditious action to protect human health and the environment.

Should a fuel spill occur, no material contaminated by the fuel will be disposed of at the Facility until proper approval is received. Absorptive material will be used to collect unusable fuel, or it will be pumped to a transport vehicle and taken to a permitted facility for disposal. Contaminated soil and other materials will be excavated and will be taken to a facility permitted to handle the waste. After all contamination has been removed, the containment area will be reconstructed in accordance with the Engineering Plans and measures will be implemented to prevent recurrence.

A written report will be made of any spill which occurs. The report will include a description of the spill, the cleanup procedures used, identification of the disposal site(s) used for contaminated material, an account of action taken to rebuild the containment area, plans for preventing a recurrence, and any other information pertinent to the event. The written report will be placed in the operating record.

4.12.2 Special Waste Handling

Vehicles which contain waste which requires special handling will be identified as they are received at the Facility and accepted for disposal. For the purposes of this discussion, special waste will include recyclables, bulk waste or waste that could easily become airborne.

Tires, white goods, metals and other materials that may be separated from the waste stream to be recycled will be directed to an area set aside to store such materials until they can be recovered. Bulk waste may be directed to be placed in an area near the working face until it can be incorporated into the active disposal area.

Material that could easily be blown by the wind and become airborne, will be directed to an area where it can be promptly covered with soil or other waste. Such materials could be

containerized for transport. The waste may be removed from the containers for disposal and the containers reused if such removal poses no hazard to landfill personnel or operations.

4.12.3 Emergency Response

Landfill attendants will be instructed in procedures to follow in the event of an emergency. A list of emergency telephone numbers will be kept current and placed where it is easily accessible in the office.

To the extent possible, the Facility will respond to community needs in the event of a natural disaster such as a tornado or hurricane, which requires rapid disposal of large volumes of material. The hours of operation may be extended, as appropriate, to respond to a disaster. The landfill attendants will direct waste disposal operations in as orderly a manner as practical. Permission may be given by the Department to burn clean-up debris resulting from a catastrophic event. However, no burning of debris at the Facility will be permitted without prior approval of the Department and other appropriate agencies. The location of burn activities should be consistent with those outlined herein.

4.12.4 Leachate Management

Due to the characteristics of waste disposed of at this facility, no leachate collection system is planned. A minimum five (5') foot vertical separation between waste and groundwater will be maintained.

4.13 RECORD KEEPING AND REPORTING

4.13.1 Operating Record

A permanent operating record of the Facility will be maintained. It will contain data pertinent to siting, permitting, operating, closure and post-closure of the Facility. The purpose of the record is to demonstrate compliance with regulations and to perpetuate a historical account of Facility operations. It will be retained at the Facility. The operating record will be available for inspection by the Department at all reasonable times.

Regulations require the Department be notified when documents are placed in the record. The permit application, and all supporting documentation included as attachments to the application, will be placed in the permanent operating record. Submittal of the permit application to the Department will serve as notification that these documents have been placed in the operating record.

This section summarizes the documents and records that will be placed in the permanent operating record of the Facility. Specific details of the reporting requirements are discussed in appropriate sections herein. The Department will be notified of any amendment, attachment or addition placed in the operating record in accordance with applicable regulatory requirements.

4.13.2 Solid Waste Reports

4.13.2.1 Waste Volume Reports

Daily records will be kept of all waste accepted at the Facility for disposal in accordance with the applicable sections herein. The landfill manager will be responsible for compiling and submitting a quarterly volume report to the Department. Currently, a report is due on the 15th day of the month following quarters ending in March, June, September, and December. Volumes will be expressed in tons and calculated on the actual number of days in the reporting period.

4.13.2.2 Waste Load Inspection Reports

A record will be kept of waste load inspections conducted at the Facility. If regulated hazardous waste or PCB waste is discovered, the Department will be notified, and a record of the inspection will be placed in the operating record. Details of the reporting requirements are discussed in herein.

4.13.2.3 Industrial Waste Certification

Copies of current written certification of approval from the Department to allow disposal of a specific industrial waste at Facility will be placed in the operating record and kept in the Landfill office.

4.13.3 Environmental Monitoring Records

4.13.3.1 Groundwater Monitoring Reports

Groundwater monitoring will be conducted at the Facility semiannually. Groundwater monitoring results will be placed in the operating record and the Department will be notified. Additional requirements of groundwater monitoring records are discussed in **Section 5** herein.

4.13.3.2 Explosive Gas Monitoring Reports

Explosive gas monitoring will be conducted at the Facility a minimum of once each year. Gas monitoring results will be placed in the operating record and the Department will be notified. Additional requirements of gas monitoring records are discussed in **Section 6** herein.

4.13.3.3 Construction Documentation

Construction of the Facility will be in accordance with the permit documents included as attachments to the permit application. Subsequent to construction of the landfill unit, the Department will be requested to inspect the facility and to grant approval for beginning operations. A copy of written approval from the Department will be placed in the operating record.

4.13.4 Other Records

Other documents pertinent to the facility's operations will also be placed in the record. Such items will include the Operations Manual, Engineering Plans, Solid Waste Disposal Facility Permit, NPDES Permit, Best Management Practice Plan, and documentation and correspondence pertaining to facility permitting, operation, maintenance, closure, etc.

Additional items may include personnel training records, copies of variances approved by the Department, waivers, special operating conditions, etc.

5 GROUNDWATER MONITORING PLAN

The Groundwater Monitoring Plan is located in Appendix 5.1.

6 EXPLOSIVE GAS MONITORING PLAN

The Explosive Gas Monitoring Plan is located in Appendix 6.1.

7 BEST MANAGEMENT PRACTICES PLAN

The Best Practices Management Plan is located in Appendix 7.1.

8 CLOSURE & POST-CLOSURE PLAN

8.1 CLOSURE PLAN

8.1.1 Closure Sequence

Placement of final cover, construction of drainage structures, and establishing a vegetative cover will be accomplished as each phase reaches final grade. The sequence of operation is shown on the Engineering Plans and will be followed during closure activities.

8.1.2 Final Closure

Upon completion of filling operations, all areas not properly closed will be constructed to final closure requirements as described herein and shown on the Engineering Plans. Any future use of the Facilty should be submitted to the Department for approval. Final closure will also be initiated if no more waste will be received or if waste will not be received for a period longer than one (1) year. A notice of intent to close the facility will be placed in the operating record and the Department will be notified. Closure activities will commence within thirty (30) days. Final grading will be completed within ninety (90) days of final receipt of waste. Within ninety (90) days of completion of final grading, final cover will be placed on the landfill unit. Appropriate species of grass or wildflower seeds, fertilizer and/or mulch will be planted in the erosion layer. The planting will be watered and maintained as necessary to establish a permanent vegetative cover.

A sign will be posted at the closed landfill clearly stating that the site is closed and giving the location of the nearest permitted disposal facility. If waste is illegally dumped at the site after closure, it will be removed and taken to an approved facility for disposal. Litter will also be removed and disposed of properly.

The proposed ultimate use of the Facility is for the site to remain as a "green area". Post-closure use of the property will not disturb the integrity or function of the final cover, drainage system, monitoring system or other component of the containment system.

8.1.3 Closure Records

Upon completion of closure construction, the Facility will request approval from the Department certifying the Landfill has been closed in accordance with regulations. Upon closure approval from the Department, the permittee of the Facility will place a notation on the land deed, plat, or other legal instrument that will become part of any future transfer of the property. The notation will be prominently displayed, and the instrument will contain the following information:

a) The land has been used for a solid waste disposal facility.

b) Future activities on the property may not disturb the integrity or the function of the containment or monitoring systems.

c) The location and dimensions of the disposal facility, with respect to permanently surveyed benchmarks, as prepared and sealed by a Professional Land Surveyor registered in the state of Alabama.

d) The name of the Permittee or operating agency, the type of disposal facility, and the beginning and closure dates of disposal activities.

e) Certification by a Professional Engineer, registered in the state of Alabama, that all closure requirements have been completed as determined necessary by the Department.

Within ninety (90) days of closure approval from the Department, the permittee or owner will record the legal instrument containing the above information in the office of Judge of Probate, DeKalb County, Alabama. A certified copy of the recorded instrument will be placed in the operating record and submitted to the Department within one hundred twenty (120) days.

8.2 POST-CLOSURE CARE PLAN

8.2.1 General Scope of Work and Maintenance Procedure

Closure of a Facility does not mean that maintenance of the site is no longer necessary. After a landfill is closed, waste that has been buried continues to decompose. This causes several processes to occur that make the site somewhat unstable for an indefinite period. Therefore, a closed landfill needs to be inspected and maintained on a regular basis to ensure that these conditions do not impair the function of the containment system. Maintenance of the closed landfill is a long-term responsibility of the Permittee.

The general requirements of a closed landfill, the associated problems, and procedures to be used to inspect and maintain the closed landfill are discussed herein. Descriptions of construction and the purpose and function of features have been provided to give a clear understanding of maintenance objectives. Personnel responsible for inspecting and maintaining the Facility should be thoroughly familiar with these guidelines. The Department will be notified of the name, address and telephone number of the contact person responsible for post-closure care of the Facility.

8.2.1.1 Landfill Cap

The landfill will be covered with a cap. The site will also be graded so that rainwater will run off the disposal unit and no water will stand on the surface. A vegetative cover will be established over the cap to prevent erosion and further absorb some of the rainwater. The purpose of the cap is to seal the filled area and reduce the amount of water seeping into the waste. It is important that this cap be repaired and maintained so that it continues to keep water out of the waste and ensures long-term integrity of the containment system.

Minor surface cracks and trapped pockets of water can be corrected by placing soil on the area, grading the area to provide positive drainage, compacting the soil and reseeding the area. More severe problems will need further action.

8.2.1.2 Settlement

Many different types of waste are disposed of in a landfill. As each waste decomposes, the original volume of that waste is reduced. Some waste decomposes very rapidly and undergoes a large reduction in volume. Other waste decomposes more slowly, and the volume reduction is considerably less.

As this decomposition occurs, settlement of the filled area becomes evident. Some portions of the site may settle fairly rapidly, while other areas appear relatively stable. This results in uneven (differential) settlement of the landfill surface that may cause water to pond, cracks in the surface, and may disrupt proper drainage of the site.

The entire filled area can also settle at a more uniform rate. This is referred to as subsidence and may result in the same problems as differential settlement. The majority of settlement in a landfill usually occurs in the first five (5) years after closure. If settlement is noticeable on a closed landfill, corrective action needs to be taken if any of the following conditions are occurring:

a) Water is standing over a filled area.

b) Stormwater is not draining in accordance with the final drainage and grading plans for the site.

c) The landfill cap is damaged.

8.2.1.3 Landfill Gases

All explosive gas monitoring wells and vents must be maintained throughout post-closure. Any explosive gas wells and vents damaged or destroyed by equipment, mowing operations or other site activities, must be immediately replaced in accordance with the details shown on the Engineering Plans. Care should be taken to see that these structures are not damaged during mowing or maintenance operations. Bumping into these structures with equipment can cause damage below the surface that cannot be seen. Grass control around these structures may be done by hand prior to mowing so they can be easily seen and avoided by the mowers to prevent inadvertent damage.

8.2.1.4 Safety Practices

Personnel working on a landfill should be made aware that gas emitted from a landfill is potentially explosive and can asphyxiate a person. Gas dispersed into the atmosphere generally poses little threat. However, safety precautions are needed when working around enclosed areas such as structures, inlets, pipes, etc. Workers should not enter an enclosed space without checking for methane gas and/or wearing a safety harness and having another person standing by to pull them to safety. Self-contained breathing apparatus is adviseable when working in conditions where concentrations of gas may be found. Smoking, sparks, or flames should be avoided.

8.2.1.5 Drainage and Erosion Control

Stormwater running across the landfill surface can cause erosion. The stormwater runoff is controlled by the final grading and drainage plan of the site. Stormwater runoff from the Facility flows to terraces, pipes, ditches and sedimentation ponds that are a part of the overall drainage system. This system has been designed to control stormwater runoff and deter erosion.

Sedimentation ponds are designed to trap sediment in the bottom of the pond. This helps prevent siltation from washing off-site. The ponds have outfall structures that control the rate at which water is released. Silt that collects in the bottom of the ponds is normal and indicates that the ponds are functioning properly. However, the silt needs to be removed when it accumulates to within eighteen (18") inches of the lower openings of the inlet. Silt that is relatively dry may be placed on areas of the landfill where it is unlikely to wash away. It should be spread evenly over the surface in thin layers that will not harm vegetation, or the area should be revegetated as needed. Any debris found in the sediment should be removed prior to placing it on the Landfill.

In addition to drainage structures to direct the flow of water, the Landfill is also planted with grass or other vegetation. This vegetation is an integral part of controlling erosion. The vegetative cover should be mowed on a regular basis to maintain it and to prevent the establishment of deep rooted weeds which could penetrate the landfill cover.

The mowing and fertilizing schedule may vary from year to year and should remain flexible to accommodate weather conditions. However, the following factors should be considered:

a) Fertilizer needs;

b) Mowing prior to inspection and/or monitoring;

c) Regermination; and

d) Prevention of grass fires.

All of these elements of the site's drainage and erosion control system must be maintained in order to work properly. Minor problems such as bald spots in the vegetative cover or minor scouring of ditches or ponds can be corrected by routine maintenance. More severe problems may require further action to restore proper drainage and prevent erosion impacts.

8.2.1.6 Access Control

The security gate at the Facility entrance shall remain locked except during post-closure inspections by the Landfill Operator or ADEM. When the Facility is closed, barriers to control vehicular access to the Facility will be in place. The barriers may consist of fencing, or they may be natural barriers, such as dense vegetation. The perimeter of the site will be inspected to assure that the site is secure from access by unauthorized vehicles. Any gap found in a perimeter barrier will be repaired promptly to maintain site security.

8.2.1.7 Stormwater Monitoring

Landfill sites are required to monitor stormwater leaving the site. Samples of the stormwater must be collected and analyzed according to the schedule and conditions stated on the NPDES permit. Analysis must be done by a laboratory certified to perform these services.

8.2.1.8 Miscellaneous

Weeds growing along fence rows, monitoring or venting structures, drainage structures, etc., may cause no specific problems at the site. However, this condition can hinder visual inspection of the facility and make monitoring and venting structures more prone to damage. Herbicides may be used to kill weeds if the work is performed by a person certified to use such material, following manufacturer's recommended procedures.

The site will also be inspected for the presence of animal burrows which could damage the Landfill cover and for conditions which could attract disease vectors.

8.2.2 General Inspection and Monitoring Procedures and Schedule

All areas of the Landfill will be inspected according to the schedule and procedures set forth herein. A written report of the site inspection, deficiencies found, and maintenance activities will be completed and kept with the facility operating records. The Department will be notified that the report has been placed in the record.

8.2.2.1 Landfill Inspection

The entire property should be walked in order to properly inspect the Facility and identify issues that need to be addressed. It may also serve as a written report of Facility inspection and maintenance. Inspection can best be conducted shortly after mowing the site so that deficiencies are readily visible. The maintenance required should be performed subsequent to the inspection to ensure timely correction of observed issues.

8.2.2.2 Inspection Schedule

For the first year after closure, a thorough inspection of the landfill will be performed monthly. In the event no unforeseeable problems are indicated after closure of the facility, the following schedule for inspecting and maintaining the facility will be followed. Additional inspections will also be conducted after major storm events to identify and developing issues and ensure proper functioning of post-closure systems.

YEAR AFTER CLOSURE	INSPECTION/ MAINTENANCE SCHEDULE
1	Monthly
2	Quarterly
3	Quarterly
4	Semi-Annual
5	Semi-Annual
6	Annually
7	Annually
8	Two Year Interval
10	Two Year Interval
12	Three Year Interval
15	Five Year Interval
20	Five Year Interval
25	Five Year Interval
30	Final Inspection

Subsequent to final inspection, an independent engineer, registered in the State of Alabama, will certify that post-closure care has been conducted in accordance with this plan. Certification will be placed in the operating record and the Department will be notified.

8.2.2.3 Environmental Monitoring

Environmental monitoring should be performed by personnel qualified to monitor and report on conditions at the Facility. The Landfill Permittee should refer to **Section 3** of this manual for specific environmental monitoring requirements. All monitoring will be performed in accordance with regulatory requirements. If after closure, a reduction in monitoring parameters or frequencies is indicated, a specific request for such reduction will be submitted to the Department for approval.

Reports to regulatory authorities must be properly signed and submitted in a format or on a form approved for such reports. The permittee is responsible for seeing that all monitoring and reporting is completed within specified time frames. Environmental monitoring reports will be placed, and the operating record and the Department will be notified.

SITE EVALUATION DOCUMENTS

APPENDIX 2.1 U.S. ARMY CORPS OF ENGINEERS CONCURRENCE

DEPARTMENT OF THE ARMY
MOBILE DISTRICT, CORPS OF ENGINEERS
P. O. BOX 2288
MOBILE, ALABAMA 36628-0001

February 10, 1995

REPLY TO
ATTENTION OF:

Regulatory Branch
Operations Division

SUBJECT: Nationwide Permit Authorization - Jurisdictional Number ALJ94-04677-K

Carter, Darnell and Grubbs Engineers, Inc.
Attention: Ms. Wendy Hartung
Post Office Box 278
Andalusia, Alabama 36420

Dear Ms. Hartung:

Reference is made to your request for a wetlands determination at an existing transfer station site in Fort Payne. Specifically the property is located within Section 16, Township 11 South, Range 5 East, Etowah County, Alabama.

This letter verifies that your proposed sediment pond is already authorized by Nationwide Permit 26 in accordance with 33 CFR Part 330 of our regulations. A headwater drain of less than one acre in size runs through the proposed pond site. A copy of the Nationwide Permit is enclosed with the appropriate sections marked for your reference. Further authorization from this office is not required provided the scope of work is in accordance with your submitted plans and the Nationwide Permit conditions.

The statements contained herein do not convey any property rights, or any exclusive privileges, and do not authorize any injury to property or obviate the requirements to obtain other local, State, or Federal assent required by law.

Please be advised that this jurisdictional determination reflects current policy and regulations. If after a 5-year period, this jurisdictional determination has not been specifically revalidated by the U.S. Army Corps of Engineers, it shall automatically expire.

If the scope of work or project location changes, you are urged to contact this office for a verification of this determination.

If you have any questions or require further information concerning this matter, please contact Ms. Cindy J. House-Pearson of the Jurisdiction and Enforcement Section at (334) 694-3873.

Sincerely,

Ronald A. Krizman
Chief, Regulatory Branch
Operations Division

Enclosure

LANCE R. LEFLEUR
DIRECTOR

KAY IVEY
GOVERNOR

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

Permit cover letter on wall

January 12, 2022

MR. PATRICK DUNNE
SOLID WASTE COORDINATOR
CITY OF FORT PAYNE ALABAMA
1004 DEWYER AVE
FORT PAYNE, AL 35967

RE: **Fort Payne Landfill**
1004 Dewyer Ave
Fort Payne, AL 35967
De Kalb County, 049

Dear Mr. Dunne:

Based on your request (as evidenced by the submittal of a Notice of Intent), coverage under **General NPDES Permit Number ALG160106** is granted. The effective date of reissuance coverage is February 01, 2022.

Coverage under this permit does not authorize the discharge of any pollutant or wastewater that is not specifically identified in the permit and by the Notice of Intent which resulted in the granting of coverage. Those discharges identified in the NOI are:

Outfall ID	Receiving Water	Notes
0011	Little Wills Creek	This outfall's discharge requires monitoring per the general permit requirements.
0012	Big Wills Creek	This outfall's discharge requires monitoring per the general permit requirements.
0032	Little Wills Creek	This outfall's discharge requires monitoring per the general permit requirements.
0042	Little Wills Creek	This outfall's discharge requires monitoring per the general permit requirements.

You are responsible for compliance with all provisions of the permit including but not limited to, the performance of any monitoring, the submittal of any reports, and the preparation and implementation of any plans required by the permit.

Discharge Monitoring Reports (DMRs) must be submitted electronically via the Alabama Environmental Permitting and Compliance System (AEPACS) in accordance with Permit Condition I. C. To participate in this program, the Permittee Participation Package and registration forms may be downloaded online at adem.alabama.gov/aepacs. ADEM will not provide paper DMR forms due to the electronic reporting requirements.

ADEM
Alabama Department of Environmental Management

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM GENERAL PERMIT

DISCHARGE AUTHORIZED: DISCHARGES OF STORM WATER (**NOT** CONTAINING LEACHATE) FROM ACTIVE AND INACTIVE LANDFILLS, TRANSFER STATIONS, AND LAND DISTURBANCE ACTIVITIES ASSOCIATED WITH OPENING AND CLOSING CELLS AT LANDFILLS; DISCHARGES OF VEHICLE AND EQUIPMENT EXTERIOR WASH WATER; AND DISCHARGES OF STORM WATER FROM FUELING, PETROLEUM STORAGE AND HANDLING, EQUIPMENT STORAGE, AND MAINTENANCE AREAS

AREA OF COVERAGE: THE STATE OF ALABAMA

PERMIT NUMBER: ALG160106

RECEIVING WATERS: ALL WATERS OF THE STATE NOT DESIGNATED OUTSTANDING NATIONAL RESOURCE WATERS OR OUTSTANDING ALABAMA WATERS

In accordance with and subject to the provisions of Federal Water Pollution Control Act, as amended, 33 U.S.C. §§1251-1388 (the "FWPCA"), the Alabama Water Pollution Control Act, as amended, ***Code of Alabama 1975,*** *§§22-22-1 to 22-22-14 (the "AWPCA"), the Alabama Environmental Management Act, as amended,* ***Code of Alabama 1975,*** *§§22-22A-1 to 22-22A-17, and rules and regulations adopted thereunder, and subject further to the terms and conditions set forth in this permit, the dischargers covered by this permit are hereby authorized to discharge into the above receiving waters.*

ISSUANCE DATE: November 10, 2021

EFFECTIVE DATE: February 1, 2022

EXPIRATION DATE: January 31, 2027

Jeffery W. Kitchen

Alabama Department of Environmental Management

APPENDIX 2.2 U.S. FISH AND WILDLIFE SERVICES CONCURRENCE

WETLANDS DELINEATION AND ENDANGERED SPECIES STUDY AT THE PROPOSED FORT PAYNE SANITARY LANDFILL

Prepared for:

Carter Darnell and Grubbs Engineers, Inc.
Andalusia, AL

Prepared by:

Environmental Resource Analysts
601 County Road 57
Notasulga, Alabama 36866

Joseph Freda, Ph.D.
Project Director

12/7/94
Date

1.0 INTRODUCTION

Environmental Resource Analysts (ERA) was contracted by Carter Darnell and Grubbs Engineers, Inc. to conduct a wetlands delineation and endangered species study for the proposed Fort Payne sanitary landfill in DeKalb County, Alabama. The approximate location of the study area is illustrated in Figure 1. The objectives of the study were to locate and map potential Section 404 jurisdictional wetlands. In addition, we contacted the U.S. Fish and Wildlife Service regarding the potential impact on federally listed endangered and threatened species, or their critical habitat.

2.0 METHODS

The wetlands delineation study was conducted September 22, 1994 according to the 1987 Army Corp Engineers wetlands delineation manual (ACE 1987). The "on site", routine determination method for areas greater than 5 acres was employed. The objective was to identify and map potential jurisdictional wetlands. Jurisdictional wetlands exhibit 3 characteristics: 1) Hydric Soil, 2) Hydrophytic Vegetation, 3) Wetland Hydrology. Soil color was determined with the use of a Munsell soil color charts (Munsell Color 1990). A soil survey for Dekalb County had not been published at the time of the survey. Plants were identified by ERA personnel according to Radford et al. (1968) and Brown and Kirkman (1990). The depth of the water table was determined by digging a standard soil pit.

The regional office of the U.S. Fish and Wildlife in Daphne, AL was contacted for their determination of the potential impact on threatened or endangered species (or their critical habitat).

3.0 RESULTS

No potential jurisdictional wetlands were observed on the study area. Two small intermittent tributaries flowed through the northeast and southwest corners of the study site. Both tributaries were approximately 3 to 5 feet across and displayed no evidence of flooding. The adjacent hillsides were very steep and well drained, and supported a deciduous forest including oaks, hickories and maples. No vegetation was growing from the creek bottom or banks. These tributaries were not classified as potential jurisdictional wetlands because of the lack of wetland vegetation. In addition, the soil adjacent to the creek was brightly colored and did not exhibit hydric characteristics.

The U.S. Fish and Wildlife Service determined that this project will have no impacts on endangered or threatened species (Attachment A).

4.0 LITERATURE CITED

ACE. 1987. Corps of Engineers wetlands delineation manual. Dept. Army, U.S. Army Corps of Engineers, Washington, DC, 20314-1000.

Brown, C.L. and L.K. Kirkman. 1990. Trees of Georgia and Adjacent States. Timber Press, Portland OR. 292 pp.

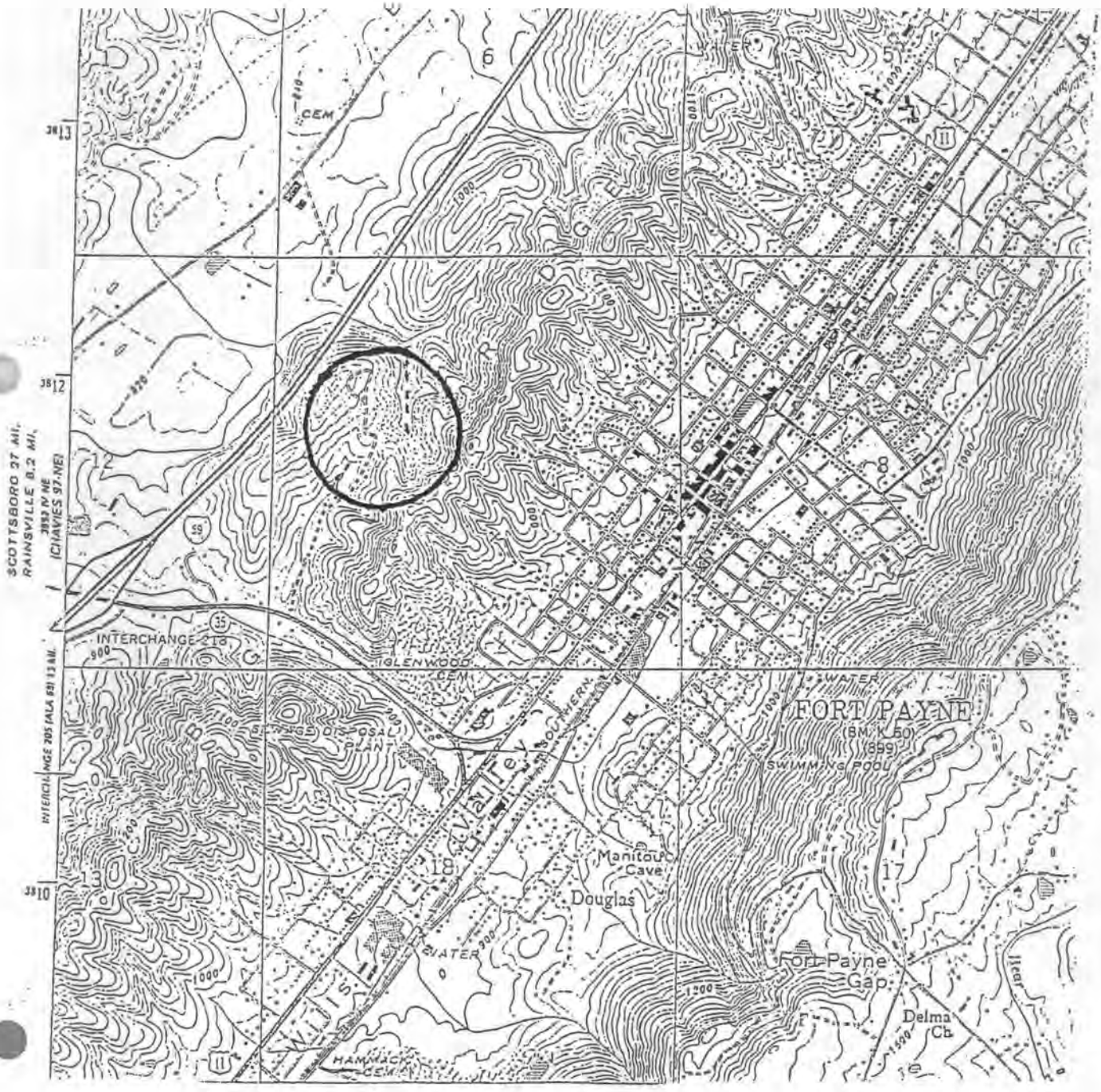
Munsell Color. 1990. Munsell Soil Color Charts. Kollmorgen Corp. Baltimore, MD.

Radford, A.E., H.E. Ahles, and C. R. Bell. 1968. Manual of Vascular Flora of the Carolinas. The University of North Carolina Press. Chapel Hill, NC. 1183 pp.

Figure 1. The approximate location of the study site within the state of Alabama.



Figure 2. U.S. Geologic survey map (Fort Payne Quadrangle) of the study site. Dashed line indicates intermittant tributaries.



Attachment A. Letter of "no impact" from U.S. Fish and Wildlife Service.

United States Department of the Interior

FISH AND WILDLIFE SERVICE
P.O. Drawer 1190
Daphne, Alabama 36526

September 9 1994

Mr. Joseph Freda
Environmental Resource Analysts
601 County Road 57
Notasulga, AL 36866

In Reply Refer To:
Log No. C4-3-94-369

Dear Mr. Freda:

This responds to your letter of August 4, 1994 concerning a proposed landfill site in Fort Payne, Alabama. We have reviewed the information you enclosed and have the following comments in accordance with the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. et seq.) and the Endangered Species Act (87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.).

A. Fish and Wildlife Coordination Act

We do not expect the proposed action to result in significant adverse impacts to nonendangered fish and wildlife resources.

B. Endangered Species Act

Our records indicate no endangered, threatened or proposed species, or their critical habitat occurring in the project area. Therefore, no further endangered species consultation will be required for this project, as currently described. If the construction/completion of this project is delayed for more than a year, we recommend you re-establish contact with the Daphne Field Office..

If you need further information regarding our concerns, please contact our office (Phone: 205/441-5181).

Sincerely yours,

Larry E. Goldman
Field Supervisor

APPENDIX 2.3 ALABAMA HISTORICAL COMMISSION CONCURRENCE

ARCHAEOLOGICAL SURVEY OF THE PROPOSED FORT PAYNE LANDFILL DE KALB COUNTY, ALABAMA

Jefferson M. Thomson

Performed for:

Carter, Darnell and Grubbs Engineers, Inc.
1840 U.S. Highway 29 North
Andalusia, Alabama 36420

Performed by:

Panamerican Consultants, Inc.
924 26th Avenue East
Tuscaloosa, Alabama 35404

Tim S. Mistovich
Principal Investigator

August 9, 1994

INTRODUCTION

In early August, 1994, Carter, Darnell and Grubbs Engineers of Andalusia, Alabama contracted Panamerican Consultants, Inc. (PCI) to conduct an archaeological survey and cultural resources inventory of lands to be impacted by the proposed expansion of the Fort Payne Landfill. This expansion included the addition of borrow pits and an impoundment pond. The parcel of land to be impacted is located in De Kalb County, Alabama, approximately one-half mile northwest of the town of Fort Payne. The total area to be impacted is roughly 60 acres contained within Section 7, Township 7 South, Range 9 East. The project area is located on the Fort Payne, Alabama 7.5" USGS topographic quadrangle map (Figure 1). On August 5, 1994, PCI archaeologists conducted a physical examination of the proposed permit area.

The primary goal of this investigation was to determine the effects of the proposed construction on archaeological resources listed on, or potentially eligible for, the National Register of Historic Places (NRHP) pursuant to the criteria set forth in 36 CFR 60.4.

The major objectives of this study were to identify archaeological properties within the proposed impact area, to collect sufficient data for the State Historic Preservation Office (SHPO) to evaluate the need for further investigation of all archaeological properties so identified, and to determine the potential National Register eligibility of these sites.

BACKGROUND

Prior to the fieldwork portion of this survey, a background literature search was conducted. This involved inquiries to the Alabama State Site Files (ASSF) and the NRHP. One site was found to be located in the same vicinity and within Section 7, but not in the current survey. This site was 1Dk5, the old Fort Payne Stockade, recorded by Tim Mistovich in 1984. The historic/prehistoric site relates to Indian Removal in the 1830's.

FIELD METHODS

The field survey techniques employed in this investigation involved pedestrian reconnaissance augmented by shovel testing. Portions of the survey area which were very steep, severely impacted, or in standing water, were not shovel tested. The greatest portion of the survey area was previously modified by borrowing operations and timber removal. Most of the area was bare of vegetation, and the majority of the survey area was located on steep terrain. Sheet erosion and scouring had removed all topsoils.

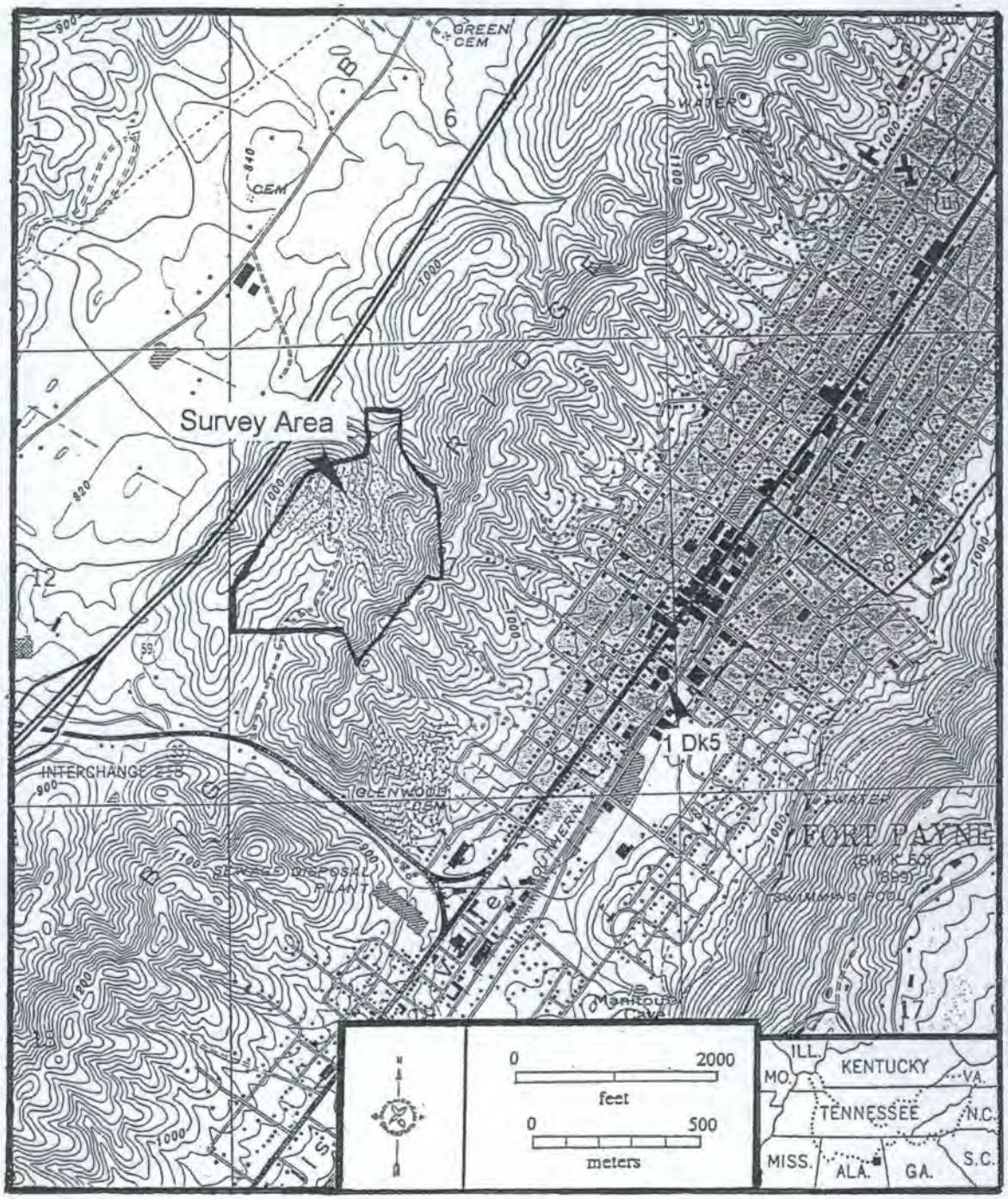


Figure 1. Fort Payne Landfill Survey Area and Site 1Dk5 (Fort Payne, AL 1946 USGS 7.5' Quadrangle, Photorevised 1983).

Ground visibility was good to excellent, and various rocky rubble was present on the surface throughout the area. One single shovel test was excavated. This was done atop a narrow ridge on the western side of the current landfill. A .25 inch (6mm) mesh was used to detect artifacts from the shovel test.

ENVIRONMENTAL SETTING

The study area is situated in the Valley and Ridge physiographic province of Alabama. The upland environment is composed of ancient coal and shale bearing deposits. The soils of the area are the remnant of those formations. The soil association is Clarksville-Fullerton-Litz. Clays, weathered cherts, sandstones and limestones were among the residual materials encountered.

The proposed permit area is located approximately one-half mile northwest of Fort Payne, Alabama, on Big Ridge in the Lookout Mountain Region of North Alabama. This area is within the Upper Coosa River Drainage Basin. No homeplaces were in the immediate vicinity, although the city Cemetery lay due east and across a ridge from the Landfill. The nearest creek is an unnamed tributary of Big Wills Creek some 900 feet (275 meters) to the north of the survey tract. Along the ridgetops surrounding the area are moderate to dense forests with large oaks, hickorys and other deciduous species. Near the western boundary line with the McCurdy property one white oak over one (1) meter in diameter was noted. At the time of the survey, the area was found to be freshly rained upon, and the bare ground surfaces showed compositions of clay soils mixed with coal, chert and sandstone. The general land surface was composed of steep-sided narrow ridgetops, separated by deep narrow valleys.

FINDINGS

The area surveyed has been previously impacted by the clearing of timber and possible coal mining, as well as subsequent borrowing of soils. The one portion of the survey area which contained a good stand of timber was in a low setting, a natural depression for surface water runoff. The narrow active floodplain in this location was scoured by erosion. Only one shovel test was excavated during the survey. Soil conditions, disturbances and slope ruled out nearly the whole area from this form of investigation. Soils from the test showed deep disturbance, with loose sandy clay loam over a more compact clay loam. Both soils were reddish-brown in color. No cultural sites were located during the fieldwork for this proposed Landfill.

RECOMMENDATIONS

This survey produced no artifacts or other signs of cultural sites or properties within the proposed permit area. The proposed addition of the Fort Payne Landfill and impoundment pond is considered not to be an impact to any significant cultural sites. No further archaeological work is recommended for the proposed Fort Payne Landfill area.

Jefferson M. Thomson
Archaeological Assistant

Tim S. Mistovich
Principal Investigator

APPENDIX 2.4 HYDROGEOLOGICAL EVALUATION

Stapled in

CARTER, DARNELL AND GRUBBS ENGINEERS

HYDROGEOLOGIC EVALUATION
FORT PAYNE SANITARY LANDFILL
PERMIT NO. 25-02R

Prepared for:

CITY OF FORT PAYNE, ALABAMA

NOV 1996
RECEIVED
ADEM
GROUNDWATER
BRANCH

Prepared by:

CARTER, DARNELL AND GRUBBS ENGINEERS
1840 U.S. HIGHWAY 29 NORTH
ANDALUSIA, ALABAMA 36420

NOVEMBER, 1996

CERTIFICATION PAGE

"I certify under penalty of law that I am a geologist experienced in geologic and hydrogeologic site evaluations. The hydrogeologic site evaluation, supervision of air line installation, and submitting of the Hydrogeologic Evaluation Report was performed by a geologist experienced in geology and hydrogeology. The information submitted herein, to the best of my knowledge and belief, is true, accurate, and complete. I am aware that there are significant penalties for submitting false information."

Don A. McKee

Don A. McKee, PG
Registered Professional Geologist

Nov. 12, 1996
Date



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INTRODUCTION

The objectives of this report are to respond to ADEM's letters dated July 23 and July 30, 1996, and the meeting with ADEM personnel on September 12, 1996. It was decided at the September 12, 1996, meeting that: 1) "air lines" would be installed in Monitoring Wells MW4 and MW5 so that water level measurements could be taken in the wells; 2) water level measurements would be taken in the monitoring wells on a monthly basis to determine the direction of groundwater flow; 3) a fracture analysis would be conducted at the site to determine if fractures influenced the groundwater flow patterns; 4) pumping tests would be conducted to determine the rate of groundwater flow in the surficial aquifer; and 5) determine if, and at what rate, siltation was occurring in the monitoring wells.

This report is a supplement to the Groundwater Monitoring Report submitted to ADEM on February 18, 1994, and should allow ADEM to complete its review of the vertical expansion application.

GENERAL

Facility Information

The Fort Payne Sanitary Landfill is located in the South 1/2 of the Northwest 1/4, and the North 1/2 of the Southwest 1/4 of Section 7, Township 7 South, Range 9 East in Fort Payne, DeKalb County, Alabama. The landfill property was originally acquired by the City on September 24, 1956, from J.L. Eberhart and wife, Josephine Eberhart. The land reportedly has been utilized for landfilling purposes since that date.

The City of Fort Payne was granted a permit from the Alabama Department of Environmental Management (ADEM) to operate the Fort Payne Sanitary Landfill on April 30, 1987. Wastes approved for disposal were household garbage and rubbish, and commercial solid waste generated within the bounds of the municipal city limits. The permit required that the City sample three groundwater monitoring wells using approved EPA procedures for designated parameters each March and September for the life of the permit.

Site Geology

The Fort Payne Sanitary Landfill is located in a valley between two moderately sloping ridges. The southeastern part of the sanitary landfill lies adjacent to the lower part of the western slope of Big Ridge. The two ridges trend north 40 degrees east (approximately). Elevations within the property boundary of the sanitary/inert landfill range from 880 feet above mean sea level (MSL) to 1182 feet above MSL. The lower elevations of the sanitary and inert landfill areas lie in Ordovician aged shales and siltstones of the Sequatchie Formation, and are near the downdip contact with the underlying Chickamauga Limestone. The upper elevations of the sanitary and inert landfill areas overlie the shales and siltstones of the Sequatchie Formation and consist of interbedded sequences of thin-bedded shale, siltstone, hematite, and minor sandstone and limestone of the Red Mountain Formation.

The majority of the Ordovician to Silurian aged sedimentary units in which the sanitary and inert landfill areas lie consist of shale. In those areas that have been undisturbed, weathering of the shale has formed greenish-gray to moderately-red silty, clayey residual sediments at the surface. Underlying the clayey sediments, the shale is very weathered and fissile to a depth of a few feet. The thickness of the clayey sediments and the weathered shale vary across the landfill property. Below the weathered zone, the shale is very competent. The unweathered shales that are exposed at the landfill site vary in color, and may be tan, green, red, gray, or black. Some of the shale layers are calcareous and fossiliferous, some of the shale layers are carbonaceous, and other shale layers are silty. The shales have regular to uneven bedding, have been folded and fractured, and dip to the southeast at angles between 6 and 19 degrees. The majority of the dip angles appear to be between 11 and 12 degrees. The unweathered shale is relatively impermeable except where bedding planes and vertical fractures occur.

Interbedded within the shale at the landfill site are very competent beds of tan to red, fossiliferous to non-fossiliferous, siltstone and silty sandstones. The siltstones and sandstones are permeable to relatively impermeable. The siltstones and sandstones that are impermeable have a higher clay content, or have experienced porosity occlusion by secondary cementation. The beds of siltstone and sandstone range in thickness from approximately 4 inches to 3 feet. The dip angles of the siltstones and sandstones are the same as the shale.

Also interbedded within the shale are layers of gray, fossiliferous, silty limestone; and fossiliferous hematite. The limestone and hematite beds are not as numerous as the siltstone and sandstone beds, and range in thickness from approximately 2 or 3 inches to 1 foot. Some of the the thin limestone beds are permeable, while other thin limestone beds are well cemented and relatively impermeable. The shale, siltstones, and sandstones that are non-calcareous cemented, are not susceptible to solution activity. However, the thin limestone beds are susceptible to solution activity.

Underlying the Ordovician and Silurian aged shale (primarily) in which the sanitary and inert landfill areas were constructed are medium- to dark-gray, partly argillaceous, locally fossiliferous, locally cherty, dense limestone; dolomitic limestone; and dolomite of the Chickamauga Formation. The limestone and dolomite of the Chickamauga outcrops to the northwest of the inert landfill area and adjacent to Interstate 59. Individual limestone and dolomite beds within the Chickamauga vary from very thin (< 1 inch) and laminated to thick bedded (> 3 feet). The dip angles of the limestone and dolomite beds vary between 6 degrees and 24 degrees to the southeast. No solution activity was apparent in the dense limestones and dolomites in the outcrop along side of the interstate highway, or in the cuttings from the boreholes (MW4, MW5, & MW6) drilled within the landfill boundary. The dense limestone and dolomite at the base of the outcrop, and cuttings from the three borings, appear to be composed of mudstones and pelloidal packstones, and are relatively impermeable. However, cuttings from Borings No. MW4 & MW5 show that the upper 3 to 5 feet of the Chickamauga underlying the landfill is weathered and porous. Underlying the weathered porous zone, the limestones and dolomites of the Chickamauga are virtually impermeable.

The limestone and dolomite of the Chickamauga has not been encountered at the base of the sanitary or C/D landfill during landfill operations. However, according to the old drilling logs (which was vague in descriptions), a very weathered limestone (Sequatchie or Chickamauga ?) and clay was encountered at a depth of 23 feet (elevation 879 MSL) during the drilling to install Monitoring Well MW2. Weathered limestone (Chickamauga or Sequatchie ?) was also encountered just below the surface (elevation approximately 910 MSL) during the drilling to install Monitoring Well MW3. By utilizing the elevations of the limestone encountered in the borings, and the dip angles of the limestone, it appears that several 10's of feet of relatively impermeable shale separate the base of the landfill and the underlying limestone of the Chickamauga. Also, 216 feet of virtually impermeable dense limestone and dolomite of the Chickamauga was drilled through in Boring MW6. Very minor to no porosity was apparent in the cuttings brought up during the drilling operations.

Major Aquifers

The Fort Payne Sanitary Landfill does not lie within the recharge area of any major aquifer. The lithologic units that comprise the Pottsville and Tuscumbia-Fort Payne Aquifers have been eroded away in this area, leaving the Chattanooga Shale, and shales and siltstones of the Red Mountain Formation as the uppermost lithologic units. Also, approximately 650 to 750 feet of dense, partly argillaceous, apparently impermeable limestone and dolomite of the Chickamauga Limestone Formation separate the relatively impermeable shales of the Sequatchie Formation (in which the base of the landfill sits) and the underlying Longview Limestone in the upper part of the Knox-Shady aquifer.

Surface Water Hydrology

Since the Fort Payne Sanitary Landfill is located in a valley between two ridges, surface runoff at the site is multi-directional. The majority of the surface runoff from the sanitary landfill area flows into the wooded hollow located at the northern side of the landfill property. The intermittent stream in the northern wooded hollow flows north then west and empties into Big Wills Creek. The majority of the surface runoff from the inert landfill area flows into the wooded hollow located on the south-western side of the landfill property. The intermittent stream in the south-western wooded hollow flows south then west and also empties into Big Wills Creek. Big Wills Creek flows to the southwest through Big Wills Valley.

Monitoring Wells

Monitoring Well MW2: Utilizing the old Driller's Log, Monitoring Well MW2 was installed in August of 1981 in a borehole 62 feet deep with 20 feet of 4-inch PVC screen (slot size unknown), and 44 feet of 4-inch PVC riser. Utilizing the Drillers Log for Monitoring Well MW2 there was "fill dirt and topsoil" from the surface to a depth of 18.0 feet; "tan yellow clay" to a depth of 23.5 feet; "tan yellow clay with pieces of limestone" to a depth of 37.0 feet; and "solid limestone" to a depth of 62.0 feet. The elevation of the land surface at Monitoring Well MW2 is 902 feet above mean sea level (MSL).

Monitoring Well MW2 is considered a downgradient well because it is installed geologically downdip (east) of the northward trending wooded hollow. Therefore, since the lithologic unit that the screen is set in apparently outcrops in the bottom of the wooded hollow, MW2 can possibly intercept any contaminants that might be carried into the wooded hollow by surface runoff from the sanitary landfill area.

Monitoring Well MW3: Monitoring Well MW3, installed in August, 1981, was an upgradient well but was none-producing. It was originally suspected that the screen was clogged with clay materials. However, because of the steepness of the outcrops along the western flank of the ridge (just west of the property line) and the close proximity of the vertical outcrop (adjacent to I-59) creating a lack of surface recharge area, this well only produced groundwater during wet weather. During dry weather, the old well was either dry or had some seepage water in it that came from water being retained in the pore spaces at the base of the clayey residual sediments overlying the unweathered Chickamauga.

Instead of re-drilling the old borehole, a decision was made to plug and abandon the old monitoring well (MW3), offset, drill a new borehole, and install a new upgradient monitoring well. The steel protective casing, the PVC riser, and the PVC screen were pulled from the old MW3 well. There was no grout in the annulus. The borehole was dry when the riser and screen were pulled. The old borehole remained open after the riser and screen were pulled. The borehole was pressure sealed and abandoned by pumping it full of bentonite/portland cement grout.

Borehole MW6: To eliminate confusion, the new upgradient well to be installed (offset 10 feet from the old MW3 well which was sealed and abandoned) was to be numbered MW6. During the drilling of Borehole MW6 a dark red, clayey to very clayey residual sediment was encountered from the surface to a depth of 34 feet. The residual sediment consisted of clay (approximately 50% content), and very fine to very coarse, angular quartz sand grains. This sediment had some mica content, and was semi-consolidated to consolidated depending on clay content. Inclusions of weathered siltstone and "dirty" sandstone were encountered at a depth of 10 feet below the surface. Inclusions of weathered limestone and dolomite were encountered at a depth of 25 feet below the surface.

The top of the Chickamauga Limestone was encountered at 34 feet below the surface, and no groundwater was found on top of the Chickamauga in this area. The upper Chickamauga (below the weathered zone) was very tight and relatively impermeable. A decision was made to drill into the Chickamauga Limestone to determine if a porous zone existed within the Chickmauga. The MW6 borehole was drilled to a depth of 250 feet below the surface, which was 216 feet into the Chickamauga Limestone. The Chickamauga Limestone consisted of a very tight, relatively impermeable, compressed and well cemented, medium gray colored mudstone to pelloidal packstone from a depth of 34 feet to a depth of 250 feet. No apparent porosity or solution features were encountered during the drilling of 216 feet into the Chickamauga. Some small fractures were apparent, but were filled with calcite cement. No saturated zones of groundwater were encountered. Therefore, MW6 was a dry hole. Even if groundwater had been found at a depth of 250 feet (or greater), the groundwater would have been approximately 215 feet below the zone of saturation that the other monitoring wells were set in. Therefore, the well would have been of no use as an upgradient well for the purpose of background water checks. Under instructi from Mr. Dale Case, ADEM, the dry hole (MW6) was plugged and abandoned. MW6 was pressure grouted full of bentonite/portland cement grout.

Private Well: The old private well that was previously used as a monitoring well by the Fort Payne Sanitary Landfill was plugged and abandoned also. The old private well was located in one of the areas designated for future inert use. The pump and piping had previously been pulled, and only an open borehole existed. The open borehole was sealed and abandoned by pressure grouting it full of bentonite/cement grout.

Monitoring Well MW4: The elevation of the land surface at Monitoring Well MW4 is 1,033 feet above mean sea level (MSL). The drilling of Borehole MW4 was conducted during very dry weather, and the first saturated zone encountered during the drilling of this borehole was at 248 feet below the surface. The groundwater was

encountered at the base of the shale which comprises the Sequatchie Formation, and was lying in the upper 3 to 5 feet of Chickamauga Limestone. The upper 3 to 5 feet of the Chickamauga in this vicinity is weathered and porous. Underlying the weathered zone, the Chickamauga in this area is very tight with little or no apparent porosity.

The depth of Monitoring Well MW4 is due to the surface elevation of the well being approximately 55 feet above the surface elevation of the landfill, and the dip of the underlying rocks to the southeast. During the drilling of the borehole for MW4, tan weathered shale and reddish-brown clay with thin interbeds of siltstone, and medium gray limestone were found from the surface to a depth of 23 feet. Medium gray shale with some thin interbeds (<1 ft. thick) of siltstone, sandstone, and limestone (mudstone to pelloidal packstone) were primarily found from a depth of 23 feet to a depth of 248 feet. Some beds of hematite were encountered between depths of 65 feet and 145 feet. Some of the thin siltstone and limestone beds were fossiliferous (primarily Brachiopods). Chickamauga Limestone was encountered at a depth of 248 feet. The Chickamauga consisted of medium gray mudstone to tight pelloidal packstone. The upper ten feet of the limestone was drilled into to be certain that the top of the Chickamauga had been encountered. The total depth of Borehole MW4 is 258 feet.

Due to the depth of the well and the difficulty in bailing groundwater from MW4 until the Ph, temperature, and specific conductivity stabilized, a stainless steel 3-inch diameter 0.5 hp Grundfos pump was installed in the well for purging and to take groundwater samples. The pipe from the pump to the surface is constructed of Schedule 80 1-inch threaded PVC with threaded PVC couplings (no glue or sealants). A 12 AWG Type TW submersible pump electrical cable runs inside the well riser from the surface to the pump. The pump pipe and the electrical cable is set through a well seal at the top of the riser. The pump is set at a depth of 240 feet below the surface, and the pump produces 7.5 gallons of water per minute after initial drawdown.

Monitoring Well MW5: The elevation of the land surface at Monitoring Well MW5 is 1,147 feet above MSL. The drilling of Borehole MW5 was conducted during very dry weather, and the first saturated zone was encountered at 459 feet below the surface at this site. The groundwater was encountered at the base of the shale which comprises the Sequatchie Formation, and was lying in the upper 3 to 5 feet of Chickamauga Limestone. The upper 3 to 5 feet of the Chickamauga in this vicinity is weathered and porous. Underlying the weathered zone, the Chickamauga in this area is very tight with little or no apparent porosity.

The depth of Monitoring Well MW5 is due to the surface elevation of the well being approximately 165 feet above the surface elevation of the landfill, and the dip of the underlying rocks to the southeast. During the drilling of the borehole for MW5, massive reddish-brown to tan shale and siltstone with interbeds of rose colored chert were found from the surface to a depth of 17 feet. Black, carbonaceous shale with some thin interbeds of siltstone were primarily found from a depth of 17 feet to a depth of 75 feet. Medium gray colored shale with thin to massive (2 inches to 2 feet thick) interbeds of siltstone, silty sandstone, and limestone (tight mudstone and pelloidal packstone) were encountered from a depth of 75 feet to 459

feet. Some beds of hematite were encountered between depths of 235 feet and 300 feet. Some of the thin siltstone and limestone beds were fossiliferous. Chickamauga Limestone was encountered at a depth of 459 feet. The Chickamauga consisted of a medium gray mudstone to tight pelloidal packstone. The upper eleven feet of the limestone was drilled into to be certain that the top of the Chickamauma had been encountered. The total depth of the borehole is 470 feet below the surface; however, the lower 4 feet of the borehole is filled with cuttings that were not extracted during the drilling operation.

Due to the depth of the well and the difficulty in bailing groundwater from MW5 until the Ph, temperature, and specific conductivity stabilized, a stainless steel 3-inch diameter 0.75 hp Grundfos pump was installed in the well for purging and to take groundwater samples. The pipe from the pump to the surface is constructed of Schedule 80 1-inch threaded PVC with threaded PVC couplings (no glue or sealants). A 12 AWG Type TW submersible pump electrical cable runs inside the well riser from the surface to the pump. The pump pipe and the electrical cable is set through a well seal at the top of the riser. The pump is set at a depth of 380 feet below the surface, and the pump produces 2.5 gallons of water per minute after initial drawdown.

Upgradient Monitoring Well: The absence of groundwater in dry weather in the area updip from the landfill is due to the close proximity of the landfill to the outcrop of the relatively impermeable mudstones and pelloidal packstones of the Chickamauga Limestone Formation, the lack of surface recharge area for the clayey residual sediments that overlie the Chickamauga and Sequatchie in the updip area, and the steep gradient of the surface recharge area. The majority of the rainwater that falls on the very small surface area updip of the landfill runs off as surface drainage, with very minor percolation into the subsurface. The surface runoff is due to exposures of bare rock in some places, and minor amounts (thickness of a few feet) of clayey residual sediments in other places. Also, underlying the clayey residual sediments in the updip areas is beds of shale of the Sequatchie Formation which is impermeable except where fractures exist. Where fractures do exist, many of the fractures are filled with calcite cements and have no apparent porosity. Therefore, due to the absence of shallow groundwater in the updip areas, an upgradient monitoring well was not installed in the updip area of the Fort Payne Sanitary Landfill.

HYDROGEOLOGIC EVALUATION

Water Level Measurements

Water level measurements were taken in Monitoring Wells MW4 and MW5 before the stainless steel 3-inch diameter Grundfos pumps; schedule 80 1-inch diameter PVC pipes, and 12 AWG Type TW submersible pump electrical cables were installed (for purging and taking groundwater samples). However, it has been impossible to get a water probe down the wells (for water level measurements) since the pumps were installed.

To allow water level data to be obtained from Monitoring Wells MW4 and MW5, "air lines" were installed in the wells on September 30, 1996. These air lines were installed through the well seal and consist of 3/4-inch diameter threaded PVC pipe with threaded PVC couplings (no glue or sealants). Since the pump in Well MW4 is set at 240 feet below the surface, then 238.5 feet of air line was installed in this well. Since the pump in Well MW5 is set at 380 feet below the surface, then 378.5 feet of air line was installed in this well. These air lines will allow a water probe to be lowered into the wells for water level measurements. Water level measurements will be taken on a monthly basis for a period of 1 year. After a year has expired, groundwater levels will be measured each time the groundwater is sampled. open ended or S creened? only a year?

Permeability of Surficial Aquifer

Pumping and recovery tests were performed on Monitoring Wells MW4 and MW5 to determine the in-situ hydraulic conductivity of the surficial aquifer. The initial hydraulic head was recorded at the start of each test. Each well was pumped until a substantial amount or water was withdrawn from the wells. The pumps were turned off and the water was allowed to stabilize to the original hydraulic head. As the wells recovered, the change in the elevation of the water level was recorded with time. The data is recorded as feet below the top of the casing.

	Well MW4	Well MW5
Initial static level (before pumping)	134.8	250.9
pump off	175.0	287.7
30 seconds	170.8	285.9
1 minute	166.6	284.2
2 minutes	159.9	282.4
3 minutes	153.2	280.3
4 minutes	148.0	278.3
5 minutes	144.6	276.3
10 minutes	139.6	269.6
15 minutes	138.9	263.4
20 minutes	138.6	258.9
25 minutes	138.5	255.6
30 minutes	138.4	253.9
35 minutes	-----	252.9
40 minutes	-----	252.0

The Hvorslev Method was used for the calculation of hydraulic conductivity. The field data from the recovery tests was plotted on semi-logarithmic paper for a determination of T_o (the time required for the hydraulic head to recover within 37% of the initial hydraulic head).

$K = r^2 \ln(L/R)/2LT$

Where K = Hydraulic conductivity
r = Radius of well casing
L = Length of screen in aquifer
R = Radius of well bore

Well MW4

$K = (.1667)^2 \ln (5.0 \text{ ft.}/0.354 \text{ ft.})/2(5.0 \text{ ft.})(3.70 \text{ min.})$
$K = .001990$ ft./min.
$K = 2.86$ ft./day

Well MW5

$K = (.1667)^2 \ln (5.0 \text{ ft.}/0.354 \text{ ft.})/2(5.0 \text{ ft.})(14.0 \text{ min.})$
$K = .0005257$ ft./min.
$K = 0.76$ ft./day

Note: only that portion of the screens which were installed within the surficial aquifer were used in the above calculations (a portion of the screens are above and below the porous saturated zone).

The hydraulic conductivity of the surficial aquifer varies from well to well primarily due to changes in the porosity and permeability in the saturated zone, and changes in the percentage of clay and silt content (or lack of) laterally in the saturated zone. The total thickness of the surficial aquifer underlying the landfill site is approximately 5 feet. To determine the transmissivity of the surficial aquifer in the vicinity of each monitoring well, an average thickness of 5 feet for the surficial aquifer was used. The transmissivity of the surficial aquifer is determined by the formula $T = Kb$.

Where K = Hydraulic conductivity
b = Aquifer thickness

Well MW4

$T = (2.86 \text{ ft./day})(5 \text{ ft. X } 1 \text{ ft.}) = 14.30 \text{ ft.}^3/\text{day}$
or approximately 107 gallons per day per horizontal foot for the 5 feet thick surficial aquifer.

Well MW5

$T = (0.76 \text{ ft./day})(5 \text{ ft. X } 1 \text{ ft.}) = 3.80 \text{ ft.}^3/\text{day}$
or approximately 28 gallons per day per horizontal foot for the 5 feet thick surficial aquifer.

Fracture Analyses

One of the purposes of this evaluation was to determine the strike orientations and dip angles of the fractures that are present in the rock layers that underlie the landfill site. Numerous fractures were observed in the bare rock layers that are exposed at the landfill site. The locations and strike orientations of the fractures are illustrated on Figure 1. However, data could not be obtained on any fractures that may be covered by residual sediments, inert wastes, or sanitary wastes.

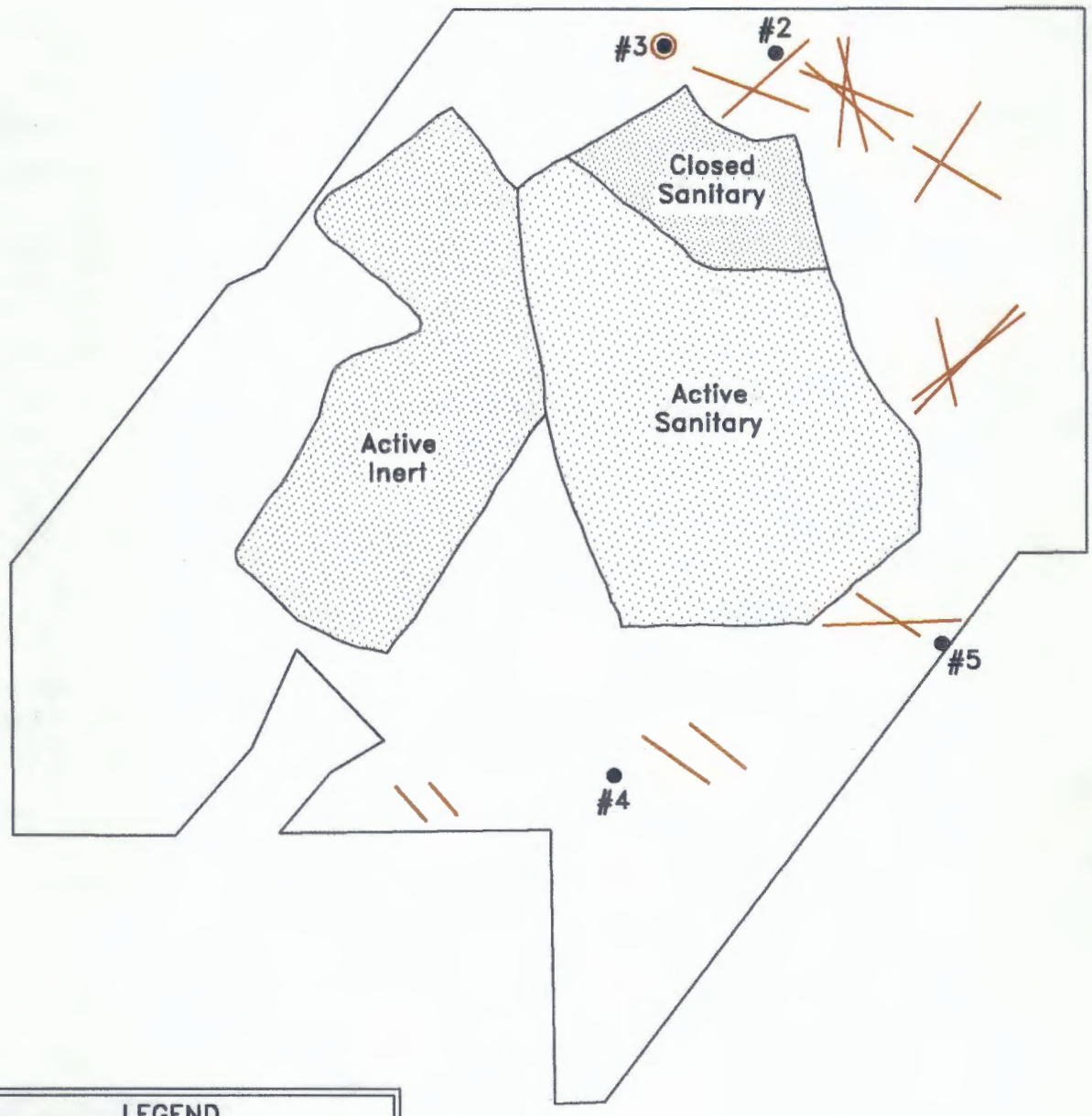
Most of the fractures that were observed at the landfill site were found to be in the shales and siltstones of the Sequatchie and Red Mountain Formations. The dips of the fractures ranged from 70 to 90 degrees. It is unknown the vertical extent of the fractures in the shales and siltstones. In most places the lateral extent of the fractures could not be determined because of cover material. Most of the fractures are cross-cut by other fractures. Some of the fractures have calcite deposits in them, and some fractures have iron deposits in them. This is evidence that some of the fractures present at the landfill site are, or have been in the past, conduits for the migration of water. The extent of the conduits, vertically or laterally, are unknown.

During the drilling program to install monitoring wells at the landfill site, a borehole was drilled 216 feet into the Chickamauga Limestone. The Chickamauga Limestone consisted of a very tight, relatively impermeable, compressed and well cemented mudstone to pelloidal packstone. No apparent porosity or solution features were encountered during the drilling into the Chickamauga. No large fractures were encountered. Some small fractures were apparent, but were filled with calcite cement.

The large outcrop of Chickamauga Limestone that lies adjacent to the Interstate I-59 highway was examined for fractures. A few vertical fractures were observed in the Chickamauga, but are not as numerous as the fractures in the Sequatchie shales. The fractures in the Chickamauga outcrop were not vertically extensive (did not cut through the entire outcrop section); they ranged from 30 to 50 feet in vertical length, and terminated within the tight Chickamauga limestones and dolomites. It rained the day before the fracture analyses was conducted, yet no seepage water was observed coming out of the fractures in the Chickamauga outcrop.

Siltation

During the installation of the air lines in Monitoring Wells MW4 and MW5, a probe was lowered to the bottom of the wells to determine if clays and/or silts were collecting in the lower part of the wells. It was determined that 4 feet of siltation had occurred in Well MW4, and 12 feet of siltation had occurred in Well MW5. The 4 feet of siltation in MW4 has reduced the interior depth of the well from 258 feet to 254 feet, and has reduced the amount of usable screen length from 20 feet to 16 feet. The 12 feet of siltation in MW5 has reduced the interior depth of the well from 466 feet to 454 feet, and has reduced the amount of usable screen length from 20 feet to 8 feet.



LEGEND

Fracture

#3 ● Monitoring Wells

○ Plugged and Abandoned

Approximate Scale in Feet

0 400 800

Fort Payne Landfill
Fort Payne, Alabama

CARTER, DARNELL, & GRUBBS
ENGINEERS, INC.
ANDALUSIA, ALABAMA

Figure 1
Locations and Orientations
of Fractures

If siltation continues in the wells, the screens will eventually become full of silt and the flow of water into the wells will be inhibited. Silt is currently collecting in Well MW4 at the rate of 1.33 feet per year; silt is currently collecting in Well MW5 at the rate of 4.0 feet per year. If the current rate of siltation continues, it will take 12.0 more years before the screens of Well MW4 are choked off; however, it will only be 2 more years before the screens of Well MW5 are choked off.

If, or when, the wells become ineffective due to the siltation process, the pumps and lines will have to be pulled, and the wells purged of the silt. An "air-pump" can be utilized to stir up the silt in the bottom of the wells, then a vacuum created to remove the silt from the wells. This process is used to "clean out" public water supply test wells that are pumping very turbid water.

Site Shallow Groundwater

Monitoring Well MW2 was installed at a depth of 62 feet and the screen was set in "solid limestone" (from old Driller's Log). The screen in this well was supposedly set in a water saturated zone in the upper part of the Chickamauga Limestone. Since there are no core samples from this boring, it is unknown how porous the upper part of the Chickamauga Limestone is in this area. However, a 3 to 5 feet thick zone of weathered and porous limestone was found at the top of the Chickamauga in Boreholes No. MW4, MW5, and MW6. This well is reported to produce approximately 1/2 gallon of water per minute during wet weather; and is reported to have never gone dry, but the recharge is very slow during dry weather. This well had 19 feet of standing water in the well riser when measured on 10/2/93.

Borehole MW4 was drilled during very dry weather in the latter part of September, 1993. During the drilling of Borehole MW4, the only groundwater found underlying the landfill property was in the 3 to 5 feet thick weathered zone located at the top of the Chickamauga Limestone. The thin siltstone, sandstone, and limestone layers interbedded within the Sequatchie shale, that apparently produced water in the old Monitoring Well MW1 and the old private well, were dry. The saturated zone in the upper 3 to 5 feet of weathered Chickamauga in the vicinity of MW4 appears to have good recharge capability since MW4 produces 7.5 gallons of water a minute after initial drawdown; the weathered and saturated zone also apparently has good storage capacity. Monitoring Well MW4 had 77 feet of standing water in the well riser when measured on 10/2/93 in very dry weather.

Borehole MW5 was also drilled during very dry weather in the latter part of September, 1993. The first saturated zone (that would underlie the landfill) was encountered at 459 feet below the surface at this site. The groundwater was encountered at the base of the shale which comprises the Sequatchie Formation, and was lying in the upper 3 to 5 feet of Chickamauga Limestone which was weathered and porous. As was the case in the vicinity of MW4, the thin siltstone, silty sandstone, and limestone layers interbedded within the Sequatchie shale (in the vicinity of MW5) that apparently produced water in the old Monitoring Well MW1 and the old private well, were dry. The saturated zone in the upper 3 to 5 feet of weathered Chickamauga in the vicinity of MW5 also appears to have good recharge capability and storage capacity. Monitoring Well MW5 produces 2.5 gallons of water a minute after initial drawdown, and is probably

capable of producing more than 2.5 gallons per minute; however, the lifting capacity of the Grundfos pump is limited because of the depth. Monitoring Well MW5 had 171 feet of standing water in the well riser when measured on 10/02/93 in very dry weather.

During dry weather, the groundwater in Monitoring Wells MW4 and MW5 comes from the porous zone in the upper 5 feet of the Chickamauga Limestone. The Chickamauga Limestone under the landfill site dips to the southeast at angles of 6 to 24 degrees. The elevation (above MSL) of the potentiometric surface taken on 10/02/93 in Monitoring Well MW2 was 859 feet above mean sea level (MSL), 851 feet above MSL in Well MW4, and 848 feet above MSL in Well MW5. These potentiometric surface elevations show the apparent direction of the groundwater flow to the southeast (Figure 2). Therefore, during dry weather, it would appear that Monitoring Wells MW2, MW4 and MW5 are downgradient wells. A potentiometric surface map (Figure 2) has been constructed that shows the potentiometric surface contours and the direction of groundwater flow during dry weather.

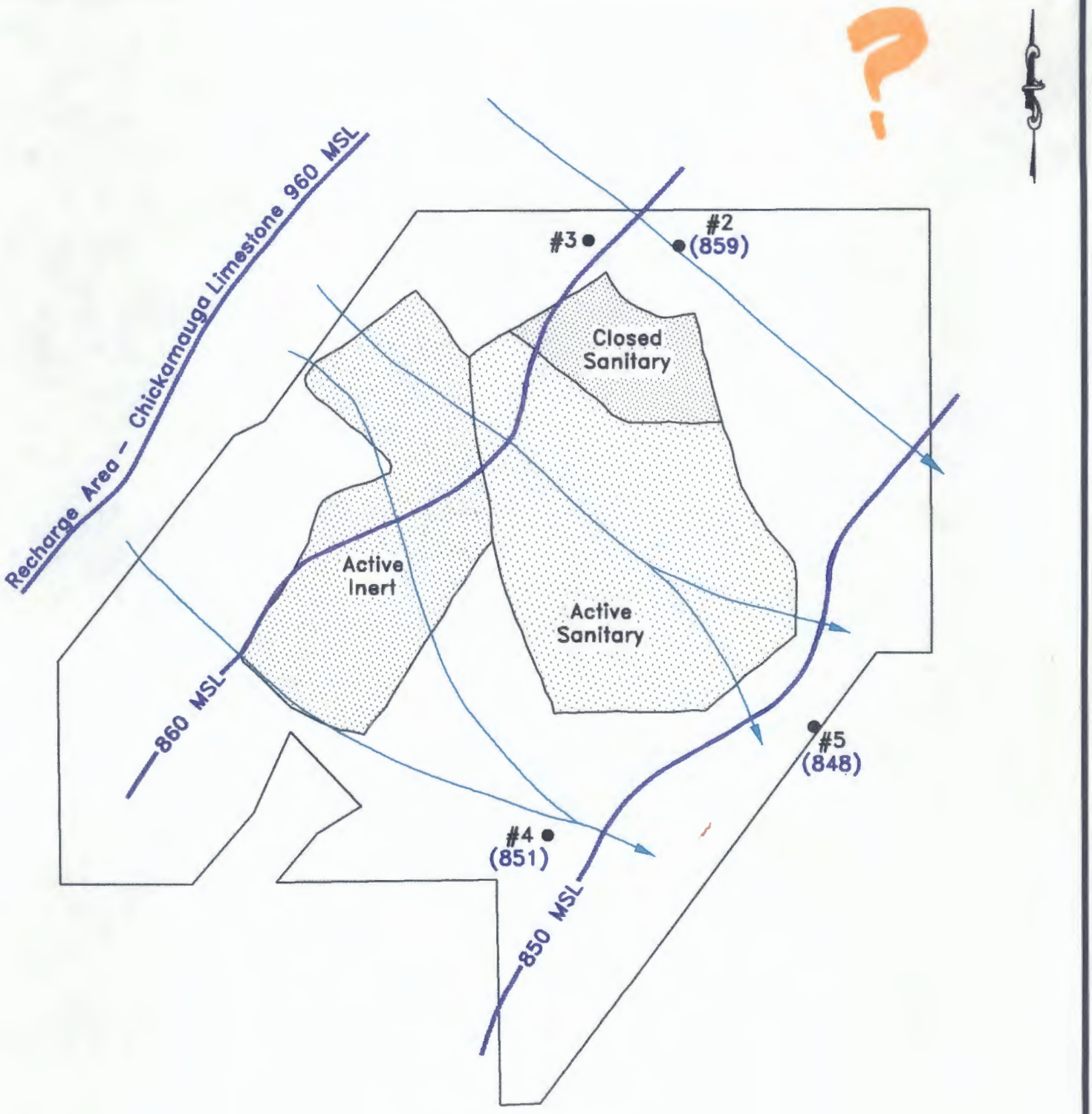
However, the elevations (above MSL) of the potentiometric surface in Monitoring Wells MW4 and MW5 are higher during wet weather than the elevation (above MSL) of the potentiometric surface in Monitoring Well MW2. The elevation (above MSL) of the potentiometric surface taken on 10/01/96 in Monitoring Well MW2 was 867.7 feet above MSL, 900.9 feet above MSL in Well MW4, and 899.1 feet above MSL in Well MW5.

When was "wet weather"

Two conclusions can be drawn from the potentiometric surface data taken during wet weather. The first conclusion is that the groundwater is flowing from the vicinity of monitoring wells MW4 and MW5 towards monitoring well MW2. There are several thin, porous beds of sandstone, siltstone, and limestone at the landfill site that are interbedded in the Sequatchie Shale that overlies the Chickamauga limestone. Since these sandstone and limestone beds are usually less than 2 feet thick, they do not have much storage capacity and go dry during dry weather. However, they become water-saturated during rainy weather. Fractures in the Sequatchie Shale in the vicinity of Wells MW4 and MW5 could allow the water in the sandstone and limestone beds to migrate downward to the porous zone at the top of the Chickamauga Limestone; this would create a "mounding effect" and raise the potentiometric surface in the vicinity of Wells MW4 and MW5. Groundwater would then flow from the vicinity of monitoring wells MW4 and MW5 towards monitoring well MW2. Therefore, during wet weather, Monitoring Wells MW4 and MW5 may become upgradient wells.

Also, during rainy weather, water would lie on top of the Chickamauga Limestone in the outcrop area and flow downdip. The streambeds located in the hollows (northeast and southwest of the landfilling areas) are lower in elevation than the potentiometric surface of the groundwater during wet weather; therefore, the streambeds become outlets for the groundwater to flow towards. Monitoring Well MW2 would be located on the eastern side of the northeastern outlet. A potentiometric surface map (Figure 3) has been constructed to illustrate this scenario, and give one explanation for the potentiometric surface contours and direction of groundwater flow during wet weather.

The second conclusion drawn from the potentiometric surface data taken during wet weather is that the groundwater under the landfill site is still flowing southeast, as it does during dry weather. The



LEGEND

850 — Potentiometric Surface Contours

Apparent Direction of Groundwater Flow

Approximate Scale in Feet

0 400 800

Fort Payne Landfill
Fort Payne, Alabama

CARTER, DARNELL, & GRUBBS
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Figure 2
Dry Weather Potentiometric
Surface Map



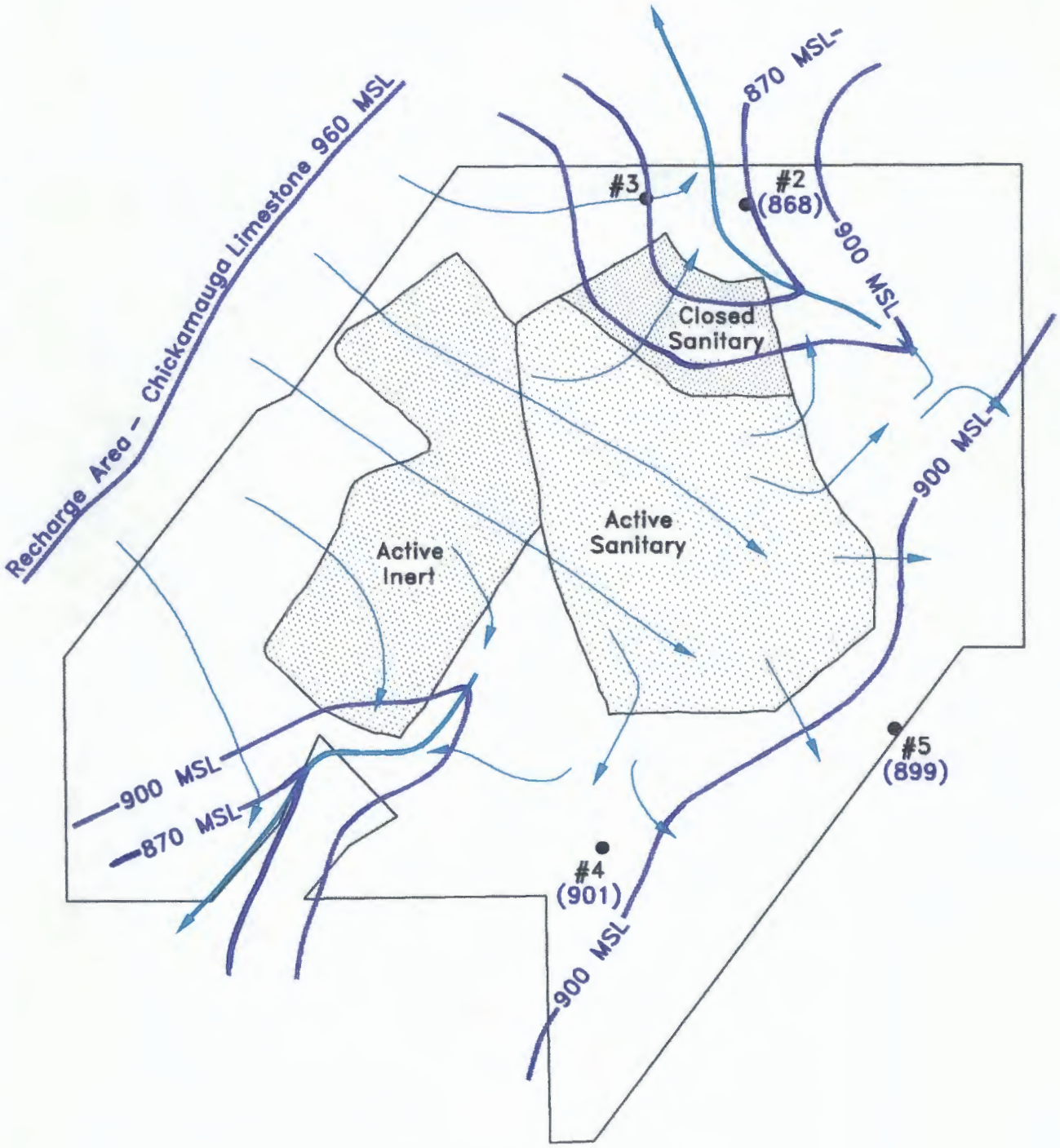
Fort Payne Landfill Fort Payne, Alabama	CARTER, DARNELL, & GRUBBS ENGINEERS, INC. ANDALUSIA, ALABAMA	Figure 3 Wet Weather Potentiometric Surface Map

elevation (above MSL) of the potentiometric surface taken on 10/01/96 shows the water level is higher in Well MW4 (900.9 feet above MSL) than it is in Well MW5 (899.1 feet above MSL). Therefore, MW4 is upgradient of MW5. As mentioned above, during rainy weather the water would lie on top of the Chickamauga Limestone in the outcrop area and flow downdip. The elevation of the Chickamauga outcrop is approximately 960 feet above MSL. Groundwater would be flowing from an elevation of 960 feet above MSL towards Well MW5 (potentiometric surface elevation of 899.1). Also, as mentioned above, the streambeds located in the northeast and southwest hollows are lower in elevation than the potentiometric surface of the groundwater during wet weather, allowing the streambeds to become surface outlets for the groundwater. During wet weather, groundwater would flow downdip from the outcrop towards the southeast, and also towards the northeast and southwest hollows. A potentiometric surface map (Figure 4) has been constructed to illustrate this second scenario, and give a different explanation for the potentiometric surface contours and direction of groundwater flow during wet weather.

Water levels were taken again on 11/04/96, and the results were very similar to those levels obtained on 10/01/96. It was clear weather when the water levels were taken on 11/04/96, but it had rained three days before the water levels were obtained. The elevation (above MSL) of the potentiometric surface taken on 11/04/96 in Monitoring Well MW2 was 867.4 feet above MSL, 899.6 feet above MSL in Well MW4, and 898.1 feet above MSL in Well MW5 as shown in the table below.

Potentiometric Surface Elevations

Date Taken	MW2	MW4	MW5	Comments
10/02/93	859	851	848	very dry
10/01/96	868.7	900.9	899.1	raining
11/04/96	867.4	899.6	898.1	rained 3 days earlier



LEGEND	
870	Potentiometric Surface Contours
	Apparent Direction of Groundwater Flow
	Wet Weather Stream

Approximate Scale in Feet

0 400 800

Fort Payne Landfill Fort Payne, Alabama	CARTER, DARNELL, & GRUBBS ENGINEERS, INC. ANDALUSIA, ALABAMA	Figure 4 Wet Weather Potentiometric Surface Map

CONCLUSIONS

The hydraulic conductivity of the surficial aquifer underlying the landfill site is 2.86 ft./day in the vicinity of Well MW4, and 0.76 ft./day in the vicinity of Well MW5. The trasmissivity of the surficial aquifer is 14.30 ft.^{2}/day in the vicinity of Well MW4, and 3.80 ft.^{2}/day in the vicinity of MW5.

Most of the fractures observed at the landfill site (Figure 1) were found to be in the shales and siltstones of the Sequatchie and Red Mountain Formations. The dips of the fractures ranged from 70 to 90 degrees. Most of the fractures are cross-cut by other fractures. Some of the fractures have calcite deposits in them, and some fractures have iron deposits in them. This is evidence that some of the fractures present at the landfill site are, or have been in the past, conduits for the migration of water. Due to cover material at the site, the extent of the conduits, vertically or laterally, are unknown.

It was determined that 4 feet of siltation has occurred in Well MW4, and 12 feet of siltation has occurred in Well MW5. The 4 feet of siltation in MW4 has reduced the interior depth of the well from 258 feet to 254 feet, and has reduced the amount of usable screen length from 20 feet to 16 feet. The 12 feet of siltation in MW5 has reduced the interior depth of the well from 466 feet to 454 feet, and has reduced the amount of usable screen length from 20 feet to 8 feet.

The elevation (above MSL) of the potentiometric surface taken on 10/02/93 in Monitoring Well MW2 was 859 feet above mean sea level (MSL), 851 feet above MSL in Well MW4, and 848 feet above MSL in Well MW5. These potentiometric surface elevations show the apparent direction of the groundwater flow to the southeast (Figure 2). Therefore, during dry weather, it would appear that Monitoring Wells MW2, MW4 and MW5 are downgradient wells.

The first conclusion drawn from the potentiometric surface data taken during wet weather is that the groundwater is flowing from the vicinity of monitoring wells MW4 and MW5 towards monitoring well MW2. There are several thin, porous beds of sandstone, siltstone, and limestone at the landfill site that are interbedded in the Sequatchie Shale that overlies the Chickamauga limestone. Since these sandstone and limestone beds are usually less than 2 feet thick, they do not have much storage capacity and go dry during dry weather. However, they become water-saturated during rainy weather. Fractures in the Sequatchie Shale in the vicinity of Wells MW4 and MW5 could allow the water in the sandstone and limestone beds to migrate downward to the porous zone at the top of the Chickamauga Limestone. This would create a "mounding effect" and raise the potentiometric surface in the vicinity of Wells MW4 and MW5. Groundwater would then flow from the vicinity of monitoring wells MW4 and MW5 towards monitoring well MW2. Therefore, during wet weather, Monitoring Wells MW4 and MW5 may become upgradient wells.

Also, during rainy weather, water would lie on top of the Chickamauga Limestone in the outcrop area and flow downdip. The streambeds located in the hollows (northeast and southwest of the landfilling areas) are lower in elevation than the potentiometric surface of the groundwater during wet weather. Therefore, the streambeds become outlets for the groundwater to flow towards. A

potentiometric surface map (Figure 3) has been constructed to illustrate this scenario, and give one explanation for the potentiometric surface contours and direction of groundwater flow during wet weather.

The second conclusion drawn from the potentiometric surface data taken during wet weather is that the groundwater under the landfill site is still flowing southeast, as it does during dry weather. The elevation (above MSL) of the potentiometric surface taken on 10/01/96 shows the water level is higher in Well MW4 than it is in Well MW5. Therefore, MW4 is upgradient of MW5. During rainy weather the water would lie on top of the Chickamauga Limestone in the outcrop area and flow downdip. Groundwater would be flowing from an elevation of 960 feet above MSL towards Well MW5 (potentiometric surface elevation of 899.1). The streambeds located in the northeast and southwest hollows are lower in elevation than the potentiometric surface of the groundwater during wet weather, allowing the streambeds to become surface outlets for the groundwater. During wet weather, groundwater would flow downdip from the outcrop towards the southeast, and also towards the northeast and southwest hollows. A potentiometric surface map (Figure 4) has been constructed to illustrate this second scenario, and give a different explanation for the potentiometric surface contours and direction of groundwater flow during wet weather.

QUALIFICATIONS OF PERSONS PERFORMING WORK:

Don A. McKee, Project Geologist:

Bachelor of Science degree in Geology
Master of Science degree in Geology

Registered Professional Geologist:
Georgia Registration No. 963
Florida Registration No. 1708
Alabama Registration No. 30
Tennessee Registration No. TN4091

Two years experience teaching geology labs at University of Alabama; 2 years experience in petroleum exploration research and lignite exploration; 7.0 years experience in groundwater and soil contamination investigations/remediation.

Attended numerous short courses on contaminated site investigations/remediation, analysis and design of aquifer testing, designing waste recovery systems, designing contaminant capture systems, applications of fundamental concepts in hydrogeology, groundwater protection & management of public drinking water supplies (WHPP), risk assessment and modeling, and developments in landfill remediation; hazardous materials/waste manager training; certified hazmat technician.

CARTER, DARNELL AND GRUBBS ENGINEERS, INC.
CONSULTING ENGINEERS LAND SURVEYORS

P.O. BOX 278
ANDALUSIA, ALABAMA 36420

1840 U.S. HIGHWAY 29 NORTH
(205) 222-9431

Alabama Department of Environmental Management
1751 Cong. W.L. Dickinson Drive
Montgomery, Alabama 36130
Atten: Dale Case

Re: Monitoring Wells
Ft. Payne Landfill

Dear Mr. Case;

As you are aware of, our company is working with the City of Fort Payne concerning their sanitary landfill and possible vertical expansion. Since one of the major concerns at the present site is the lack of sufficient groundwater data, we have proposed that three additional monitoring wells be installed around the perimeter of the landfill. Monitoring Wells No. 1 and 2 (located in the northern part of the landfill on adjacent sides of a ravine that has a small stream flowing through it) are down-slope from the inactive and the active sanitary landfill areas, but are inadequate to provide the groundwater data needed from the active and inactive sanitary landfill areas, and the inert landfill area.

Since you are preparing a geologic/hydrogeologic review of the present landfill site, please see if you agree with where we proposed to install the three additional monitoring wells, and make any changes

you deem necessary. The proposed locations of the additional monitoring wells are shown on the enclosed topo map of the landfill.

The proposed location of Monitoring Well No. 3 is on the southeast side of the active sanitary landfill area (see topo map). This well would be up-slope from the active landfill area, but would be a down-gradient well since the underlying rock beds are dipping to the southeast. Even though the shales at the base of the landfill are impermeable (for the most part), there are numerous fractures, joints, and seams filled with argillaceous materials that could possibly provide pathways for the migration of some of the surface water that percolates downward through the cover material and waste in the active landfill area. Since this location would be on a very steep hillside, a bulldozier would have to cut an access road to the location, and level an area for the drill rig to work on; approximately 100 feet (or greater) of well depth would be saved locating the well on the side of the hill instead of on top of the hill.

The proposed location of Monitoring Well No. 4 is south of the inert landfill area (see topo map); the location of this well would be down-slope from the inert landfill area, and on the east side of the ravine and small stream. This location for a monitoring well was picked because: 1) a portion of the rainwater that falls on the inactive and active sanitary landfill areas flows across and through the inert landfill area, and the location is down-slope from those areas; 2) it is on the downdip side of the rock beds (dipping southeast) underlying the stream; 3) it would provide easy access and a level area for well installation; 4) and the City of Fort Payne ownes this piece of property between the two houses.

Monitoring Well No. 5 would be an upgradient well that would be used to provide background water quality data. The proposed location of Monitor Well No. 5 is on the northwest side of the inactive

landfill area (see topo map). This well would be up-slope from the inactive landfill area; and since the shale beds of the Sequatchie Formation and the underlying limestone and dolomite beds of the Chickamauga Limestone are dipping to the southeast, the well would also be on the updip side of the rock beds underlying the landfill area. There would be good access to this location for well installation, and the site is fairly level.

Due to the relative impermeability of the shales at the base of the landfill, and the very low permeability (to impermeability) of the underlying dense mudstones, it was felt that the installation of three additional monitoring wells (along with the two already installed) would be sufficient for groundwater quality control at the landfill site. I hope this additional information will be of use to you in your geologic/hydrogeologic review of Fort Paynes landfill. If we can be of further assistance to you, please let us know. Thank you.

Sincerely,

Don A. McKee

Project Geologist

CARTER, DARNELL, & GRUBBS

ENGINEERS, INC.

ADEM

ALABAMA
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

Leigh Pegues, Director

1751 Cong. W. L. Dickinson Drive
Montgomery, AL
36130
(205) 271-7700
FAX 271-7950
270-5612

Field Offices:

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

P.O. Box 953
Decatur, AL
35602
(205) 353-1713
FAX 340-9359

2204 Perimeter Road
Mobile, AL
36615
(205) 450-3400
FAX 479-2593

Guy Hunt
Governor

January 11, 1993

RECEIVED ADEM JAN 1993 LAND DIVISION

MEMORANDUM

TO: Russell Kelly, Chief
Solid Waste Branch RAK

FROM: Dale Case, Hydrogeologist DSC
Hydrogeology Unit

RE: Hydrogeologic Site Evaluation, Fort Payne Sanitary Landfill, Dekalb County, Permit #25-02R

SUMMARY:

A hydrogeological evaluation was conducted of the Fort Payne Sanitary Landfill on December, 18, 1992. The evaluation was requested by Russell Kelly, Solid Waste Branch, ADEM, to evaluate the landfill for a permit renewal. John Walker Solid Waste Coordinator with Dekalb County, assisted in the evaluation. Surface geology was evaluated by examination of outcrops at the landfill site. Water levels were recorded in three monitoring wells and a water usage survey was conducted.

This evaluation is one component of the overall permitting process, over which the Land Division of ADEM has primary authority. The recommendations and conclusions presented in this report are not offered as a sole determination of the suitability of the site for permitting.

LOCATION:

The landfill is located in the northwest quarter of Section 7, Township 7 South, Range 9 East of the Fort payne, Alabama 7.5 minute quadrangle topographic map. The landfill can be accessed from U.S. highway 35.

SURFACE WATERS AND TOPOGRAPHY:

The landfill site is drained to the west-northwest by an unnamed tributary of Big Wills Creek. The unnamed tributary confluences with Big Wills Creek approximately 0.25 miles to the west of the landfill site.

Topography in the area is characterized by long linear anticlinal ridges and valleys and broad synclinal plateaus. The landfill is located on Big Ridge adjacent to Big Wills Valley. Surface elevations range from approximately 840 feet in the valley to approximately 1200 feet above mean sea level (msl) on the ridges. The landfill site has total relief of 180 feet and elevations range from 1160 feet to 880 feet above msl.

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SOILS AND GEOLOGY:

The soils in the landfill area consists of the Litz silt loam and Tellico loam both are of the steep phase. Both soils are derived from the Red Mountain formation and are considered immature soils according to Swenson et al, 1958. The Litz series is developed from shales and the Tellico series is developed from shales and Ferruginous sandstones. Both soils are described by Swenson et al, 1958 as excessively drained indicating thin soils, steep slopes and low permeabilities.

The landfill is located regionally within the Big Wills valley physiographic district of the Cumberland Plateau physiographic section of Alabama. Big Wills valley has been incised into the plateau and is a long narrow anticlinal valley that trends northeast-southwest. The valley is flanked by steep ridges and rock units dip to the southeast and northwest on the southeast and northwest flanks respectively.

Rock outcrops within Big Wills Valley range from Ordovician to Pennsylvanian in age from the valley floor to the ridge tops. The landfill site is located on Big Ridge which is underlain by the Red Mountain formation. The Red Mountain Formation is Silurian in age and according to Bossong, 1989, ranges from 200 feet in the northeast to over 700 feet in thickness to the southwest. At the landfill site the Red Mountain formation is estimated at approximately 400 feet in thickness. The Red Mountain formation according to Bossong, 1989, consists of Shale and ferruginous (iron rich) sandstones.

The Red Mountain formation is overlain by the Devonian Frog Mountain Sandstone and the Chattanogga Shale and is underlain by the Sequatchie formation. The regional structure is characterized by long linear anticlinal valleys and broad synclinal plateaus. Faults and folds disrupt the continuity of rock units in the area.

At the landfill strikes range from north 60 degrees east to north 80 degrees east. Dip measurements range from 9 degrees to 13 degrees southeast. Depth to bedrock varies across the site. Outcrops were observed and the following descriptions were recorded at the site:

STATION #1 location on figure 2

Grey to green silty shale, fissile with 1 inch beds of silty sand. Vertical fractures were observed with a strike north 15 degrees east to north 20 degrees east.

STATION #2 location on figure 2

Sand red to dark brown, medium to coarse grained with iron staining throughout. Sand appears to have high porosity and water is seeping through outcrop face.

STATION #3 location on figure 2

Sand red to dark brown, medium to coarse grained iron staining throughout and very friable.

Based on observations at the site the landfill can be characterized as alternating shales and ferruginous sandstones that have been folded, fractured, trend northeast-southwest and dip to the southeast.

HYDROGEOLOGY:

The major aquifers in the region are the Pottsville, Tuscumbia-Fort Payne and Knox-Shady aquifers. The aquifers are Pennsylvanian, Mississippian and Ordovician in age respectively. All three of these aquifers crop in the region; however, according to Bossong, 1989, due to faulting and folding the aquifers are not continuous from one area to another. Recharge for the aquifers is through the individual aquifers outcrop area.

The landfill site is not within the outcrop area of any aquifers in the region. The Tuscumbia-Fort Payne aquifer is stratigraphically above the site and the Knox-Shady aquifer is stratigraphically below the site. Separating the site and the aquifers are shales that are are tight and relatively impermeable.

Three monitoring wells have been installed at the site. One up gradient and two down gradient. During operations the up gradient well was destroyed and the landfill began using an old residential supply well adjacent to the site for monitoring purposes. The exact location and status of the well is not known and may be within the disposal area of the landfill. The well should be located and properly abandoned.

The monitoring wells that are in place do not have elevations on the well head. Elevations should be surveyed and referenced to mean sea level (msl).

Based on water levels and estimated elevations the recorded potentiometric surface at the landfill ranges from 869 feet to 899 feet above msl. Well depths range from 849 feet to 866 feet above msl; however, the screened intervals are not known.

Depth to groundwater at the site reanges from 30 feet to 42 feet below ground suface. Based on topography and the potentiometric surface at the landfill groundwater probably discharges to the surface down slope from the landfill through seeps and springs. No seeps or springs were observed due to limited access.

The landfill is not within an aquifer that is commonly used for potable water; however, due to fractures in the dense and impermeable shales underlying the landfill site infiltration of precipitation occurs at the landfill. Based on water levels recorded at the site groundwater flow is to the northeast and is probably following the dip and plunge of the anticline and topography.

The landfill operator has proposed that three additional monitoring wells be installed at the landfill. The proposal would place monitoring wells to the northwest, southwest and southeast of the disposal area. Based on observations and well data collected additional monitoring wells are needed and the placement of the additional wells will provide needed data at the landfill site. The following conditions should be met when installing the wells:

1. All monitoring wells should be drilled to a depth sufficient to be screened between 849 feet and 866 feet above msl.

2. The numbering system should be changed to avoid confusion in historical data and numbering should begin with MW #4 and continue to MW #6.

3. All monitoring wells should be surveyed to give an exact location and have a measure point referenced to msl.

4. All monitoring wells should have protective covers, locks and numbers clearly marked.

A review of groundwater quality data submitted by the operator indicates that heavy metals are above Maximum Contaminant Levels (MCL) during most of the reporting periods for the landfill. The quality of the data is suspect due to periods where the concentrations do not change over time. (see table 1) Many of the samples indicate that they were cloudy or light brown in color which could indicate turbidity. (see figure #3)

The landfill operator has had the wells resampled and a different laboratory run analysis on the samples The results indicate that the samples are clean with no contamination. It is recommended that during the next sample event the Alabama Department of Environmental Management, Field operations participate in the sampling and split samples with the landfill operator for analysis.

Inorganic metals should be sampled for total and disolved. Sampling should employ methods which mimimize turbidity. If a release of contaminants is documented further investigation and corrective action will be needed.

A water well survey was conducted and all residences appear to have access to a public water supply system. No private water wells were observed.

CONCLUSIONS:

1. The landfill site is located on Big Ridge which is underlain by the Red Mountain formation. The Red Mountain Formation is Silurian in age and ranges from 200 feet in the northeast to over 700 feet in thickness to the southwest.

2. The regional structure is characterized by long linear anticlinal valleys and broad synclinal plateaus. Faults and folds disrupt the continuity of rock units in the area.

3. Based on observations at the site the landfill can be characterized as alternating shales and ferruginous sandstones that have been folded, fractured, trend northeast-southwest and dip to the southeast.

4. The landfill site is not within the outcrop area of any aquifers in the region. The Tuscumbia-Fort Payne aquifer is stratigraphically above the site and the Knox-Shady aquifer is stratigraphically below the site. Separating the site and the aquifers are shales that are are tight and relatively impermeable.

5. During operations the up gradient well was destroyed and the landfill began using an old residential supply well adjacent to the site for monitoring purposes. The exact location and status of the destroyed well is not known and may be within the disposal area of the landfill. The well should be located and properly abandoned.

6. The monitoring wells that are in place do not have elevations on the well head. Elevations should be surveyed and referenced to mean sea level (msl).

7. Depth to groundwater at the site reanges from 30 feet to 42 feet below ground suface. Based on water levels recorded at the site groundwater flow is to the northeast and is probably following the dip and plunge of the anticline and topography.

8. The landfill operator has proposed that three additional monitoring wells be installed at the landfill. Based on observations and well data collected additional monitoring wells are needed and the placement of the additional wells will provide needed data at the landfill site. The following conditions should be met when installing the wells:

a. All monitoring wells should be drilled to a depth sufficient to be screened between 849 feet and 866 feet above msl.

b. The numbering system should be changed to avoid confusion in historical data and numbering should begin with MW #4 and continue to MW #6.

c. All monitoring wells should be surveyed to give an exact location and have a measure point referenced to msl.

d. All monitoring wells should have protective covers, locks and numbers clearly marked.

9. A review of groundwater quality submitted by the operator indicates that heavy metals are above Maximum Contaminant Levels (MCL) listed in the State Drinking Water Standards during most of the reporting periods for the landfill. The quality of the data is suspect. It is recommended that during the next sample event the Alabama Department of Environmental Management, Field operations participate in the sampling and slit samples with the landfill operator for analysis. Inorganic metals should be sampled for total and disolved. Sampling should employ methods which mimimize turbidity.

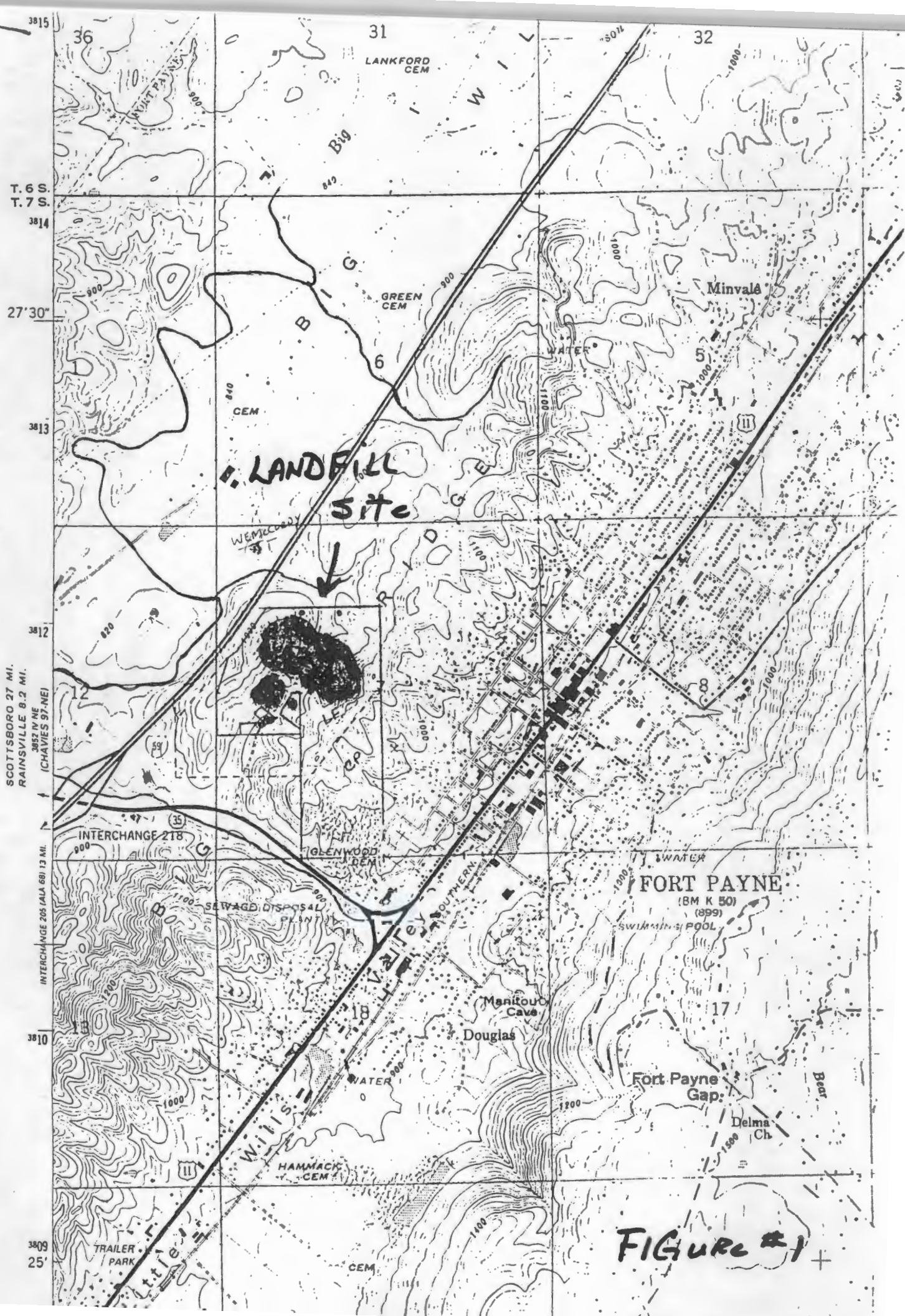
REFERENCES CITED:

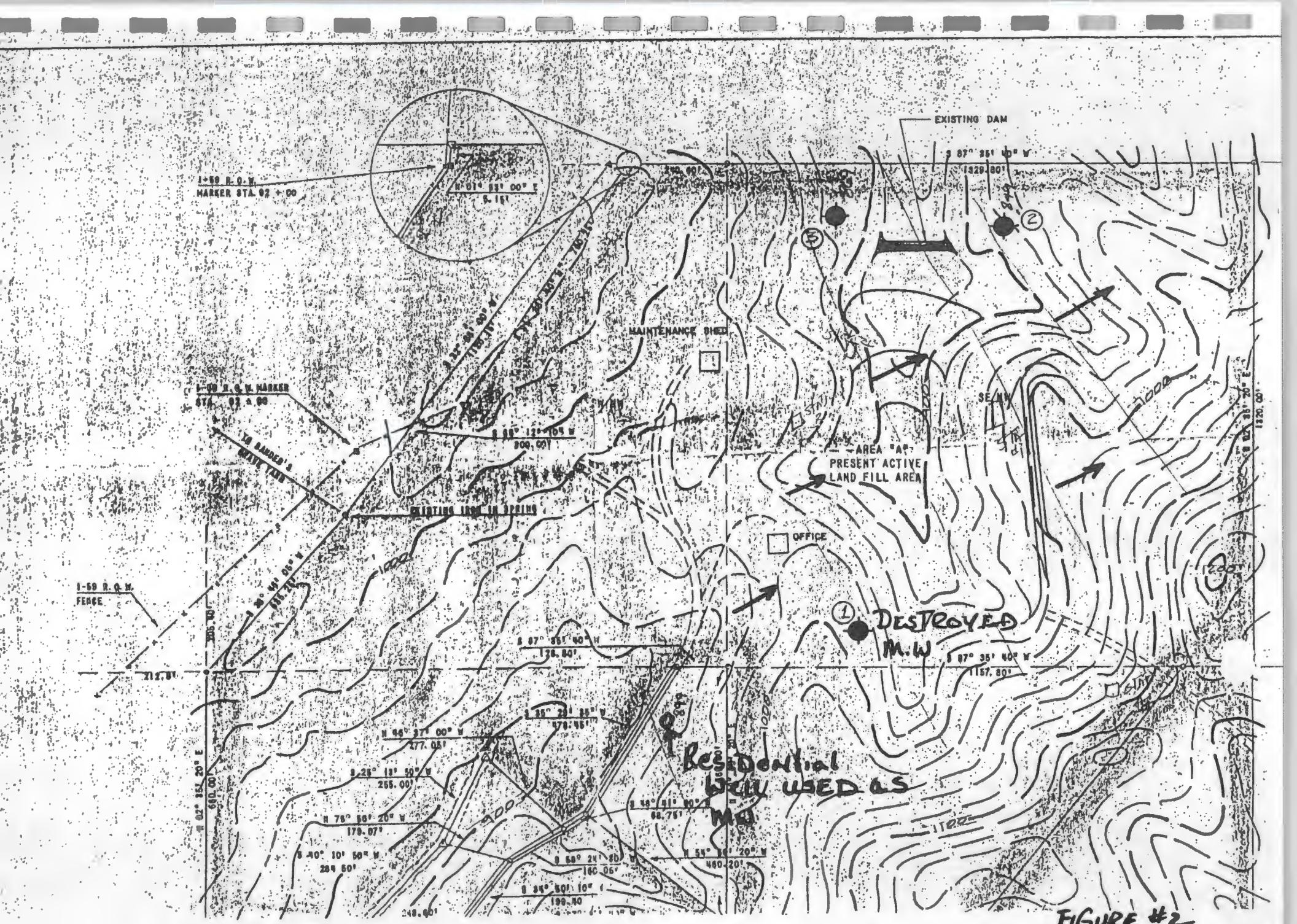
Bossong C.R., 1989, Geohydrology and Susceptibility of Major Aquifers to Surface Contamination in Alabama; Area 2, U.S. Geological Survey, Water Resources investigations Report 88-4177.

Neathery T.L. et al, 1969, Mineral Resources Map of Dekalb County, Alabama; Alabama Geological Survey, Map 85.

Swenson G.A., 1958, Soil Survey of Dekalb County, Alabama; U.S. Department of Agriculture, Series 1951 No. 3.

cc: Gerald Hardy
Andy Baker


LANDFILL Site
FIGURE #1
FORT PAYNE
Minvale
Douglas
Manitou Cave
Fort Payne Gap
Delma Ch
LANKFORD CEM
GREEN CEM
GLENWOOD CEM
HAMMACK CEM
TRAILER PARK
SEWAGE DISPOSAL PLANT
INTERCHANGE 218
SCOTTSBORO 27 MI.
RAINSVILLE 8.2 MI.
INTERCHANGE 205 (ALA 68) 13 MI.
T. 6 S.
T. 7 S.
Big Wills Creek
Wills Valley
SOUTHERN RY


EXISTING DAM
I-59 R.O.W. MARKER STA. 92 + 00
MAINTENANCE SHED
I-59 R.O.W. MARKER STA. 93 + 00
TO BARGES & WATER TANK
EXISTING IRON OX SPRING
AREA "A" PRESENT ACTIVE LAND FILL AREA
OFFICE
I-59 R.O.W. FENCE
DESTROYED M.W
Residential well used as M.W
FIGURE #2

FORT PAYNE SANITARY LANDFILL HISTORICAL MONITORING WELL DATA

DATE	BARIUM MCL=1.0	CADMIUM MCL=.01	LEAD MCL.015	MERCURY MCL=.002	CHROMIUM MCL=.05
9/87					
MW#1	5.0	.02	.05	.001	BDL
MW#2	3.0	.02	.02	.001	BDL
MW#3	1.0	.02	.18	.001	BDL
3/88					
MW#1	4.0	.02	.02	.001	.01
MW#2	9.0	.02	.02	.009	.03
MW#3	BDL	.02	.02	.006	.03
9/88					
MW#1	2.0	.02	BDL	.004	.01
MW#2	2.0	.02	BDL	.006	.03
MW#3	8.0	.02	BDL	.008	.03
3/89					
MW#1	3.0	.02	BDL	.002	.01
MW#2	3.0	.02	.01	.005	.01
MW#3	5.0	.02	.07	.005	.02
9/89					
MW#1	2.5	.02	BDL	.002	.01
MW#2	4.0	.02	.01	.005	.01
MW#3	12.0	.02	.07	.005	.02
3/90					
MW#1	2.5	.02	.04	.002	.01
MW#2	4.0	.02	.02	.005	.01
MW#3	10.0	.02	.045	.005	.02
9/90					
MW#1	2.5	.003	.04	.002	.01
MW#2	4.0	.002	.02	.005	.01
MW#3	10.0	.001	.03	.005	.02
3/91					
MW#1	2.0	.003	.02	.002	.01
MW#2	4.0	.002	.02	.005	.01
MW#3	10.0	.001	.03	.005	.02
9/91					
MW#1	2.0	.003	.02	.002	.01
MW#2	4.0	.002	.02	.005	.01
MW#3	10.0	.02	.BDL	.008	.02
3/92					
MW#1	2.0	.003	.02	.002	.01
MW#2	4.0	.001	.02	.001	.01
MW#3	BDL	BDL	BDL	BDL	BDL

TABLE #1

ADEM

ALABAMA
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

Leigh Pegues, Director

1751 Cong. W. L. Dickinson Drive
Montgomery, AL
36130
(205) 271-7700
FAX 271-7950
270-5612

Field Offices:

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

P.O. Box 953
Decatur, AL
35602
(205) 353-1713
FAX 340-9359

2204 Perimeter Road
Mobile, AL
36615
(205) 450-3400
FAX 479-2593

Guy Hunt
Governor

March 23, 1993

Honorable David Stout, Mayor
City of Fort Payne
200 Gault Avenue South
Fort Payne, AL 35967

Dear Mayor Stout:

RE: Vertical Expansion
Fort Payne Sanitary Landfill
Permit No. 25-02R

The Department had reviewed the groundwater monitoring data from split samples taken at the Fort Payne Sanitary Landfill. A copy of the ADEM results is included for your records. The data suggests that there has been no impact on the groundwater by the landfill, thus, vertical expansion is an option. Before vertical expansion can be granted, however, the Department requests (1) a plat outlining the permitted boundaries of the landfill, the active footprint eligible for vertical expansion, any closed area(s), and other areas which should not be considered for vertical expansion; (2) a plat showing estimated final closure elevations for the vertically expanded area(s); (3) an estimate of how long the City plans to remain in this facility under vertical expansion; and (4) that the active footprint be visibly and permanently marked at the landfill.

Additionally, before vertical expansion can be granted, the City must update the groundwater monitoring well system, which shall include installing new wells such that there is at least one true upgradient well and at least two hydraulically downgradient wells. A plan for placement and installation must be submitted to the Department for approval, and once approved, installation of these wells must be completed before October 8, 1993.

Once vertical expansion is approved, the City will need to submit to the Engineering Services Branch of the Land Division any information needed to process the renewal of the permit. This includes, but is not limited to, operational narrative, closure plan, engineering drawings, and updated gas monitoring plan, etc.

Should you have any questions concerning this matter, please contact Mr. Andy Baker of the Solid Waste Branch at (205) 271-7973.

Sincerely,

Russell A. Kelly, Chief
Solid Waste Branch
Land Division

RAK/tab(2812)

Enclosure
c: John Walker
Gerald Hardy
Bill Wood
Dale Case

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THE MUNICIPALITY OF
FORT PAYNE, ALABAMA
200 GAULT AVENUE SOUTH, FORT PAYNE, ALABAMA 35967
TELEPHONE: 205-845-1524 FAX: 205-845-2987

October 5, 1993

Russell A. Kelly
Chief, Solid Waste Branch
Land Division, A.D.E.M.

RE: Installation of new monitoring wells at the Fort Payne Landfill.

Dear Mr. Kelly,

In compliance with permission granted in your September 14th letter to Mayor Stout, new monitoring wells have now been installed at the landfill in accordance with the City's approved groundwater monitoring plan. Three wells were drilled. The upgradient well was drilled 250 feet through solid limestone. No water was present in the well. Therefore, under instruction from Dale Case at ADEM, the well was abandoned and properly closed. The two downgradient wells were 256 feet deep and 470 feet deep respectively and contain sufficient water.

The 256' well was developed and has been sampled as has the existing 62 foot downgradient well. The samples were delivered to Mid-South Testing. The test results should be available Thursday, October 7th. Development of the deepest well has been slow due to its depth. This well will be sampled and tested as soon as the development is finished. All sampling will be for the Appendix 1 constituents from the Subtitle D regulations with the intent of performing three additional sampling events at monthly intervals to establish background water quality.

The engineering firm of Carter, Darnell, and Grubbs prepared the groundwater monitoring plan and supervised the well installation. That firm has been asked to immediately submit to your attention a brief summary of the installation information so that ADEM may go ahead and grant the City permission to vertically expand under Subtitle D. The complete volume of geological logs and other information pertaining to the installations and compliance with the groundwater monitoring plan will be forwarded to ADEM as soon as possible thereafter.

Sincerely,

John T. Walker, Jr.
Solid Waste Coordinator
City of Fort Payne

FAX TO DON McKEE
FROM JOHN WALKER
1 PAGE

CARTER, DARNELL AND GRUBBS ENGINEERS, INC.
CIVIL AND ENVIRONMENTAL ENGINEERS LAND SURVEYORS

P.O. BOX 278
ANDALUSIA, ALABAMA 36420

1840 U.S. HIGHWAY 29 NORTH
(334) 222-9431

September 1, 1995

Mr. John Narramore
Solid Waste Branch-Land Division
ADEM
P.O. Box 301463
Montgomery, Alabama 36130-1463

RE: **Request for Extension of Vertical Expansion**
Fort Payne Landfill -Permit No. 25-02R
Project Number E941024.02

Dear Mr. Hardy:

As you are aware, the Fort Payne Landfill Solid Waste Permit Application is presently under review by the Department. The Fort Payne Landfill has also been approved for vertical expansion until October 8, 1995 on a designated solid waste footprint.

Groundwater Monitoring reports, which have been submitted to the Department by MidSouth Testing, indicate that no groundwater contamination has occurred at this site. Therefore, on behalf of the City of Fort Payne, our firm request an extension of vertical expansion of the Fort Payne Landfill until October 8, 1997.

Please let us know if you need any other information regarding this request. Your assistance is appreciated.

Sincerely,

CARTER, DARNELL & GRUBBS
ENGINEERS, INC.

Wendy Hartung
Project Engineer

c: John Walker
Gerald Hardy

RECEIVED OCT 1 2 1995

ADEM

ALABAMA
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

James W. Warr
Acting Director
XXXXXXXXXXXX
XXXXXXXXXXXX

(334) 271-7700

1751 Cong. W. L. Dickinson Drive
Montgomery, AL
36109-2608

Mailing Address:
PO Box 301463
Montgomery, AL
36130-1463

FAX: (334)
Admin: 271-7950
Air: 279-3044
Land: 279-3050
Water: 279-3051
Sp Proj: 213-4399
Field Ops: 272-8131
Backup: 270-5612

Field Offices:

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

400 Well St, NE
P.O. Box 953
Decatur, AL
35602-0953
(205) 353-1713
FAX: 340-9359

2204 Perimeter Rd
Mobile, AL
36615-1131
(334) 450-3400
FAX: 479-2593

Fob James, Jr.
Governor

October 6, 1995

CERTIFIED MAIL Z 363 303 208
RETURN RECEIPT REQUESTED

The Honorable J. David Stout, Mayor
City of Fort Payne
200 Gault Avenue South
Fort Payne, AL 35967

Dear Mayor Stout:

RE: **Notice of Violation**
Fort Payne Sanitary Landfill
Permit No. 25-02R

The Department has evaluated the request to operate under vertical expansion after October 8, 1995. Rule 335-13-5-.08 allows operating over the approved active footprint until October 8, 1997 provided there is no significant groundwater impact. A file review revealed the following violation:

RULE	VIOLATION/COMMENT
335-13-4-.27(11)	The owner or operator must establish background groundwater quality in a hydraulically upgradient or background well(s) for each of the monitoring parameters or constituents required in the particular groundwater monitoring program that applies to the LF unit, as determined under paragraphs (19) or (22) of this Rule. Background groundwater quality may be established at wells that are not located hydraulically upgradient from the LF unit if it meets the requirements of subparagraph (6)(a) of this Rule. **This information was not submitted to the Department.**
335-13-4-.27(13)	The owner or operator must specify in writing to the Department and place in the operating record one of the following statistical methods to be used in evaluating groundwater monitoring data for each hazardous constituent. The statistical test chosen shall be conducted separately for each hazardous constituent in each well. **This information was not submitted to the Department.**

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335-13-4-.27(18) The owner or operator must determine whether or not there is a statistically significant increase (SSI) over background values for each parameter or constituent required in the particular groundwater monitoring program that applies to the LF unit as determined under paragraphs (19) or (22) of this Rule. If an SSI over background groundwater quality is detected owner/operator must notify the Department within 14 days of this event.

This information was not submitted to the Department.

Due to the lack of information and above referenced violations, the Department is unable at this time to approve future operation via vertical expansion. In addition, the violations noted must be addressed in writing to the Department within 30 days of receipt of this letter. Once the Department is provided with the certification based on statistical analysis a decision can be made concerning operation via vertical expansion. Should the statistical analysis indicate significant groundwater impact, it will be necessary to manage your solid waste at an alternate solid waste disposal center.

Should you have any questions concerning this matter, please contact Mr. Andy Baker of the Solid Waste Branch at (334) 271-7973.

Sincerely,

John A. Poole, Jr., Chief
Land Division

JAP/tab(7009)

c: Wendy Hartung
John Walker

CARTER, DARNELL AND GRUBBS ENGINEERS, INC.
CIVIL AND ENVIRONMENTAL ENGINEERS LAND SURVEYORS

P.O. BOX 278
ANDALUSIA, ALABAMA 36420

1840 U.S. HIGHWAY 29 NORTH
(334) 222-9431

November 3, 1995

Mr. John Poole, Jr., Chief
Land Division
Alabama Department of Environmental Management
P.O. Box 301463
Montgomery, Alabama 36103-1463

RE: **Notice of Violation**
Fort Payne Sanitary Landfill
Permit No. 25-02R

Dear Mr. Poole:

This letter of response to ADEM's Notice of Violation (NOV), dated October 6, 1995, is submitted to the Department on behalf of the City of Fort Payne. The NOV was issued by the Department during its evaluation of a request to vertically expand the Fort Payne Landfill past October 8, 1995.

The following paragraphs summarize the important events which precede this issuance of the NOV. This information may be useful for the Department in its evaluation of the NOV responses which follow the Summary of Events below.

Summary of Events

The current groundwater monitoring system at the Fort Payne Landfill was updated in 1993 to meet the Land Division's requirements to vertically expand the active footprint of the landfill past April 8, 1994.

On July 2, 1993 a Groundwater Monitoring Plan to update the existing well system was submitted to the Department for review. The plan consisted of a four well monitoring system which would replace the existing three well system. The plan proposed the replacement of the old "clogged" upgradient well (MW#3) on the west side of the site with a new well (MW#6), the installation of two new downgradient wells (MW#4 and MW#5), the maintenance of an existing downgradient well (MW#2), and the abandonment of an old private well which was use for monitoring downgradient water quality at the site. The Groundwater Monitoring Plan was approved by ADEM on September 14, 1993.

The two new downgradient wells (MW#4 and MW#5) were installed first and then the old upgradient well (MW#3) was abandoned. The boring for MW#6 was drilled to a depth of 250 feet, and no water was encountered. Mr. Don McKee, a geologist with Carter, Darnell and Grubbs, concluded that the lack of water in the boring was due to the close proximity of the upgradient side of landfill property to the outcrop of a dense, non-porous limestone. Mr. Dale Case of ADEM's Groundwater Branch was informed of conditions encountered while drilling the new upgradient well. Mr. Case requested that the dry borehole be plugged and abandoned. Therefore, no upgradient well could be installed.

A Groundwater Monitoring Report was submitted to ADEM on February 18, 1994 following the installation and abandonment of monitoring wells at the site. This report provided pertinent information regarding the installation and abandonment of the monitoring wells at the site: drilling procedures, boring logs, well locations and construction diagrams, geographic cross sections and analytical results of four (4) consecutive sampling events performed on MW#2, MW#4, and MW#5.

The Groundwater Monitoring Report and a Vertical Expansion Application for the Fort Payne Landfill were reviewed by the Department and Vertical Expansion was granted on April 8, 1995.

In addition to groundwater monitoring requirements of vertical expansion, the City of Fort Payne is in the process of renewing the Solid Waste Disposal permit for this facility. ADEM received a Permit Renewal Application for the Fort Payne Landfill in May 1995, which proposes a groundwater monitoring sampling and analysis plan for the facility. The plan addresses detection monitoring without having a means of establishing background water quality, or making an SSI determination. In summary, the City proposes to continue performing detection monitoring on MW#2, MW#4 and MW#5 unless the Department recommends any further actions. The City of Fort Payne is currently anticipating a review of the Permit Application from ADEM.

Response to Notice of Violation

The following paragraphs identify the violated rules under the ADEM Administrative Code as stated in the Notice of Violation and a response to rule violation.

RULE 335-13-4-.27(14):
The owner or operator must establish background water quality in a hydraulically upgradient or background well(s) for each of the monitoring parameters or constituents required in the particular groundwater monitoring program that applies to the LF unit, as determined under paragraphs (19) or (22) of this Rule. Background groundwater quality may be established at wells that are not located hydraulically upgradient from the LF unit if it meets the requirements of subparagraph (6)(a) of this Rule.

Background water quality cannot be established from a hydraulically upgradient well at this site. Due to the hydrogeologic conditions at the site, the Fort Payne Landfill has been operating under vertical expansion with an approved monitoring system that does not include an upgradient well. Subparagraph (6)(a) of Rule 335-13-4-.27 of the ADEM Administrative Code allows the establishment of background water quality from wells that are not hydraulically upgradient of the waste management area as long as the wells represent the quality of background groundwater that has not been affected by leakage from the landfill. The Fort Payne Landfill was an active site prior to the establishment of the monitoring well system at the site. Therefore, the groundwater analytical results from this landfill cannot be used to determine whether or not the water quality in the wells has been affected by the landfill.

We are requesting that the Department review the facility information summarized in this letter and determine if the groundwater monitoring procedures in Section 3.2 of the proposed Operations Manual are acceptable. We will be happy to submit additional copies of the Groundwater Monitoring Plan, the Groundwater Monitoring Report, the Operations Manual, or any other documents upon request by the Department.

RULE 335-13-4-.27(16)
The owner or operator must specify in writing to the Department and place in the operating record one of the following statistical methods to be used in evaluating groundwater monitoring data for each hazardous constituent. The statistical test chosen shall be conducted separately for each hazardous constituent in each well.

The determination of an SSI without establishing background water quality is not possible. We are requesting that the Department recommend how the City of Fort Payne should comply with this Rule.

RULE 335-13-4-.27(18)
The owner or operator must determine whether or not there is a statistically significant increase (SSI) over background valued for each parameter or constituent required in the particular groundwater monitoring program which applies to the LF unit as determined under paragraphs (19) or (22) of this Rule. If an SSI over background groundwater quality is detected the owner or operator must notify the Department within 14 days of this event.

The determination of an SSI without establishing background water quality is not possible. We are requesting that the Department recommend how the City of Fort Payne should comply with this Rule.

Please let us know if we be of further assistance in this matter.

Sincerely,

CARTER, DARNELL & GRUBBS
ENGINEERS, INC.

Mark Pugh, P.E.
Project Manager

c: John Walker, City of Fort Payne
Russell Kelly, ADEM

ADEM
ALABAMA
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

Fob James, Jr.
Governor

James W. Warr
Acting Director

(334) 271-7700

1751 Cong. W. L.
Dickinson Drive
Montgomery, AL
36109-2608

Mailing Address:
PO Box 301463
Montgomery, AL
36130-1463

FAX: (334)
Admin: 271-7950
Air: 279-3044
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Field Offices:

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

400 Well St, N.E.
P.O. Box 953
Decatur, AL
35602-0953
(205) 353-1713
FAX: 340-9359

2204 Perimeter Rd
Mobile, AL
36615-1131
(334) 450-3400
FAX: 479-2593

January 5, 1996

RECEIVED JAN 0 8 1996

Mr. John Walker
City of Fort Payne
200 Gault Avenue South
Fort Payne, AL 35967

Re: Review of Application Information
Proposed Modification and Renewal
Solid Waste Disposal Permit
Fort Payne Landfill/25-02R

Dear Mr. Walker:

On May 23, 1995, the Department received the Carter, Darnell and Grubbs Engineers, Inc. submittal of a completed Solid Waste Application form, an Operations Manual, and design drawings for the proposed modification and renewal of the Solid Waste Disposal Facility Permit for the Fort Payne Landfill. We have completed a review of this application information. The comments, questions, additional requirements, etc. on the information are provided below.

Upon our receipt of the application information, we submitted a request to ADEM's Groundwater Branch for its review. We have not received a response to this request, but we will forward any comments or additional requirements that the Groundwater Branch may have as soon as we receive them.

The following are the comments, questions, additional requirements, etc. which we identified during the review of the application information:

1. The application proposes to increase the size of the facility and the disposal area, by the addition of four small tracts totalling 10.49 acres and the expansion of the existing 5 acre construction/demolition (C/D) area with the inclusion of an additional 12 acres for the disposal of industrial and C/D wastes. However, there is no information in the submitted documents or the file showing that the City has gone through the local government approval process for these additional tracts. Would any portion(s) of an added tract(s) be used for disposal? If so, then the City must meet the requirements of Alabama Act 89-824 (copy enclosed) before the respective area(s) could be included in the facility.

2. Section 3.1.2 of the Operations Manual states that gas monitoring would be conducted annually. Monitoring should be quarterly, in accordance with 335-13-4-.16(6)(b).

3. A discussion of the previous and current monitoring systems is presented in Appendix G of the Operations Manual. The conclusion presented was that a satisfactory upgradient well could not be installed, and that the 3 existing downgradient wells would be satisfactory for monitoring the MSW and the industrial-C/D areas. Except for the fact that the water level measurements were made during dry weather (Sep 93), the explanations in the discussion appear reasonable. On the other hand, the water level measurements for the December 1994 and May 1995 sampling events indicate that the levels were significantly higher than those discussed, that MW5 had the highest levels and that MW4 and MW5 may be upgradient wells, with the direction of flow toward the northwest, rather that southeast. Also, as reported in the Groundwater Branch's (Dale Case) evaluation of January 11, 1993, the water levels over the site were significantly higher and the flow was to the NE. These apparent discrepancies or differences should be explained, and a revision to the monitoring system should be proposed if necessary. Also, in the discussion of MW2, it is stated that "... the open space between the well riser and the borehole wall was probably not grouted ...". Does this mean that MW2 may have not been constructed properly, and may not be satisfactory as a monitoring well?

4. Sheet 7 of the design drawings shows that the City proposes to excavate in expanding the industrial-C/D waste area. It appears that the proposed elevations may be less than 5 feet above bedrock. It should be explained how it would be assured that, in accordance with 335-13-4-.01(4)(a), the bottom elevation of the area/waste would remain a minimum of five feet above bedrock.

Although the Groundwater Branch has not completed its review of this most recent application information, and additional information should be provided to answer the questions or satisfy the requirements mentioned above, we have enclosed a tentative draft permit for your review and consideration. Please review the draft carefully, noting the requirements which may or may not agree with the City's application, and submit any comments, recommendations, corrections, etc. which you may note or wish to make.

Please submit any comments you may have on the enclosed draft permit, and the additional information mentioned above, as soon as practicable. As we mentioned initially, we will forward any additional comments or requirements which we may have following the Groundwater Branch's review of the application information.

If you have any questions about this letter, the review of the application information, or other matter regarding the repermitting of the landfill, please contact Bill Wood at 334-271-7767.

Sincerely,

Wm. Gerald Hardy, Chief
Engineering Services Branch
Land Division

WGH/BW:SWTECH#2170

Enclosures

c/e: Ms. Wendy Hartung
Carter, Darnell and Grubbs, Inc.
P.O. Box 278
Andalusia, AL 36420

c: Mr. Russell Kelly, Chief
Solid Waste Branch
Land Division

Mr. Ron Hicks
Groundwater Branch
Water Division

File: DeKalb Co/Prop Mod & Renewal/Ft. Payne LF/25-02R

ADEM

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DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

Fob James, Jr.
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James W. Warr
Director

(334) 271-7700

1751 Cong. W. L.
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36109-2608

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FAX: 340-9359

2204 Perimeter Rd
Mobile, AL
36615-1131
(334) 450-3400
FAX: 479-2593

April 26, 1996

CERTIFIED MAIL P 121 692 776
RETURN RECEIPT REQUESTED

The Honorable David Stout, Mayor
City of Fort Payne
200 Gault Avenue South
Fort Payne, AL 35967

Dear Mayor Stout:

RE: **Notice of Violation**
Fort Payne Sanitary Landfill
Permit No. 25-02

On March 19, 1996, Mr. Andy Baker of the Alabama Department of Environmental Management, Solid Waste Branch, inspected the above-referenced facility to determine compliance with Division 13 of the Alabama Department of Environmental Management Administrative Code, Solid Waste Program. Mr. John Walker was on the landfill and accompanied Mr. Baker on the inspection. During this inspection, the following violations were found:

RULE	VIOLATION/COMMENT
335-13-4-.21(2)	The operation and use of the disposal facility shall be as stipulated on the permit. **As can be seen from the violations listed below, the landfill is not operating in accordance with its permit.**
335-13-4-.17(2)	Drainage. Owners or operators of all facilities must design, construct, and maintain: A run-off control system from the active and/or closed portion of the landfill to collect and control at least the water volume resulting from a 24 hour, 25 year storm. **The landfill needs to install ponds to catch all water leaving the site to ensure that leachate, sediment and/or other pollutants do not leave the site.**

335-13-4-.21(4) The landfill unit shall be operated in such a manner that there will be no water pollution or unauthorized discharge.

Without proper sedimentation ponds, water containing leachate, sediment and waste can leave the site. The landfill should take steps to prevent this.

335-13-4-.21(7) Measuring or weighing devices shall be required for all municipal solid waste and industrial landfill units accepting solid waste not generated by the permittee. All solid waste shall be properly measured or weighed prior to disposal unless otherwise approved by the Department.

The landfill was required to have measuring or weighing devices in place by October 8, 1995. The scale are not in place. Without the scales, there is no way to get an accurate count for waste coming into the landfill. The City must submit accurate volume reports to the Department.

335-13-4-.22(1)(a) All waste shall be covered as follows:

A minimum of six inches of compacted earth or other alternative cover material that includes but is not limited to foams, geosynthetic or waste products, and is approved by the Department shall be added at the conclusion of each day's operation or as otherwise approved by the Department to control disease vectors, fires, odors, blowing litter, and scavenging.

Waste had not been covered properly the day of the inspection. All waste must be covered daily.

335-13-4-.22(3) All waste shall be thoroughly compacted with adequate landfill equipment before the daily cover is applied. A completed daily cell shall not exceed eight feet in vertical thickness measured perpendicular to the slope of the preceding cell.

Waste was not being compacted adequately. The landfill was attempting to compact but the equipment does not appear adequate to achieve the proper compaction.

335-13-4-.22(5) Litter shall be controlled along the access roads, over the landfill unit, and adjoining property.

There was much litter blown over the landfill and the road leading into the landfill. While litter policing is being done once a week, it appears that this is not enough to keep up with the litter. Additional policing is necessary.

335-13-4-.22(8) Adequate personnel shall be provided to insure continued and smooth operation of the facility. The facility personnel and supervisor must be trained in MSWLF techniques.

It appears that there is not enough personnel to make sure that the waste is covered and compacted, and that litter is properly policed.

335-13-4-.22(10) Adequate equipment shall be provided to insure continued operation and suitable stand-by equipment shall be available within 24 hours in case of prolonged breakdown of primary equipment.

One of the reasons given for not having proper cover or compaction was lack of adequate equipment, and that the equipment on the landfill is down on a regular basis. Back-up equipment must be available for down time, and the landfill should obtain equipment adequate to compact and cover the waste on a regular basis as well as to do the other work which needs to be done on the site.

335-13-4-.22(12) Measures shall be taken to prevent the breeding on accumulation of disease vectors. If determined necessary by the Department or the State Health Department, additional disease vector control measures shall be conducted.

Not having cover applied daily, the landfill is not taking the necessary steps to prevent the breeding or accumulation of disease vectors.

335-13-4-.22(7) The site shall be operated in accordance with approved plans and permits.

As can be seen by the violations listed above, the landfill is not operating in accordance with its permit.

When the City submitted its permit renewal request in 1992, it was given the ability to continue operations under the provisions of the expired permit and the regulations. This letter shows that this type of operation is not continuing. In addition to the violations listed above, the City should make sure that the areas where waste will not be placed for some time get additional cover and be vegetated to prevent erosion and water infiltration. The City should take all steps necessary to get the new permit as soon as possible. Mr. Bill Wood of the Land Division Engineering Services Branch should be contacted for permitting questions.

During the inspection, however, Mr. Baker did note several areas where the landfill was doing a good job. One was the separate area for dumping shingles. This is a good idea to fill up some depressions and to keep the shingles away from general public dumping areas. Also, the tire recycling area is a good idea to prevent the tires from being disposed, preventing future problems with the tires. Additionally, the composting area looked good, and is a great way to prevent the disposal of the wood debris and water treatment sludge.

Please remember that the City is currently operating under a vertical expansion approval. The Department will not allow vertical expansion to continue after October 8, 1997. After that date all municipal solid waste must be placed in lined landfills. Since the City does not plan continue to operate with liners, as there is no room for expansion, plans need to be made as to where the waste will go after the landfill no longer accepts municipal solid waste.

No later than 30 days from the receipt of this letter a written report showing the steps that have been taken to abate the violations noted above must be submitted to this Department. Failure to comply with this requirement may result in further enforcement action being taken including Administrative Orders which may include substantial civil penalties being imposed.

Should you have any questions concerning this matter, please contact Mr. Andy Baker at (334) 271-7973.

Sincerely,

John A. Poole, Jr., Chief
Land Division

JAP/tab(#634)

c: John Walker, City of Fort Payne
Billy McDow, Dekalb County Health Department

ADEM

ALABAMA
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

ames W. Warr
Director

334) 271-7700

1751 Cong. W. L.
Dickinson Drive
Montgomery, AL
6109-2608

ailing Address:
O Box 301463
Montgomery, AL
36130-1463

X: (334)
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ield Offices:

10 Vulcan Road
Birmingham, AL
209-4702
5) 942-6168
AX: 941-1603

Well St, N.E.
O. Box 953
Decatur, AL
02-0953
5) 353-1713
AX: 340-9359

4 Perimeter Rd
bile, AL
5615-1131
) 450-3400
: 479-2593

Fob James, Jr.
Governor

May 16, 1996

MAY 1996
Received
Land Division

MEMORANDUM

TO Gerald Hardy, Chief
Engineering Services Branch

FROM Allen Phelps, Hydrogeologist
Hydrogeology Unit

RE: Ft. Payne Landfill Permit Renewal Review
Dekalb County, Alabama
Permit No. 25-02

SUMMARY

The Hydrogeology Unit has completed a review of the Ft. Payne Landfill permit application renewal and hydrogeology reports as requested by Bill Wood. A site visit was conducted on May 7, 1996 by the writer and Fred Mason ADEM Groundwater Chief, with Don Mckee of Carter, Darnell and Grubbs also present.

Attached is a copy of the check list for permit renewal at the above referenced facility. The following items should be considered in the permit renewal.

COMMENTS

1. Well measurements on monitoring wells MW-2, MW-4, and MW-5 should be obtained to include surveyed top of casing, depth to water measurements, and total depth of the three groundwater monitoring wells. After these measurements are obtained a groundwater flow map should be constructed. The depth to water measurements and total well depths should be conducted during every sampling period.

2. Laboratory data submitted to ADEM June 20, 1995 after being contoured yields a groundwater flow direction to the northwest (Figure 1). The consultant states that the groundwater flow direction is to the southeast (Figure 2). This discrepancy agrees with Bill Wood's item #3 in a memo dated January 5, 1996 to John Walker, City of Ft. Payne, Al. Groundwater flow direction can be properly determined with the completion of comment #1 in this memo at which time proposed

modifications, if necessary, will be suggested to the groundwater monitoring system.

The following observations were made during the site visit on May 7, 1996:

FIELD OBSERVATIONS

1. A leachate seepage was observed in the drainage next to monitoring well number MW-2.

2. Further investigation of the drainage area around MW-2 indicated groundwater discharge in this area was creating a perennial stream which flows into Big Wills Creek on the northwest side of I-59. Trash was observed in the stream bed north of I-59. Mrs. McCurdy, the property owner, indicated that periodic cleanups of the stream bed were conducted by the city.

3. A sedimentation pond was being constructed on the drainage feature located south of the landfill. Observation of the construction area indicated groundwater seepage to the surface drainage feature.

4. Discussion with Al and Brenda Higgins whose residence is located southwest of the landfill and north of Hwy. 35 indicated a spring exists next to their home. This spring was indicated to be affected by seasonal change. An old well of unknown depth was on their property, never went dry, had a 40 foot depth to water, and has been abandoned.

5. Observations of groundwater seepage on strike with the geological formations is consistent with other sites investigated in this area.

cc: Bill Wood

SOLID WASTE SUBTITLE D LANDFILL PERMIT APPLICATION HYDROGEOLOGY CHECKLIST

LANDFILL NAME: FT. PAYNE LANDFILL. APPLICANT NAME: FT. PAYNE LANDFILL PERMIT # 25-02

COUNTY: DEKALB DATE: MAY 1, 1996 ADEM GEOLOGIST: PHELPS
DATE: _____
DATE: _____
DATE: _____

REGULATION CITATION	REQUIREMENT OR NEEDED ITEM	LOCATION IN APPLICATION	ADEM COMMENT
335-13-4-.01	Siting Standards:		See below:
.01(1)	Flood Prone Area Map	USGS flood map 206D	The landfill is not located in a flood prone area .
.01(3) (b)	Wetlands Determination	USGS Topo map Ft. Payne quad and site visit	No wetlands were observed on the USGS map or upon visual site inspection.
.01(3)(e)	Beaches or Dunes present	USGS Topo map	Not required, area is not in the Alabama coastal zone.
.01(4)(a)	Depth to Bedrock Determined	Boring log Hydro Sect. 5	The Chickamauga Formation is encountered in MW-4 at 248 feet and at 459 feet in MW-5.
.01(4)(a)	Liner 5 feet above seasonal high water table	Operations manual p.2-3	Applicant states that the five foot separation has been met. However, this cannot be confirmed with the current information on file.
.01(4)(a)	Liner 5 feet above bedrock	Hydro Fig. 5	Unlined cell with thirty feet or more of separation.
335-13-4-.01(6)	Geologic Hazards Evaluated:		See below:
.01(6)(d)	Seismic Impact Zones identified	Seismic Analysis and design...Fig.1.1 Seismic impact zones	The landfill is in a 0.20 g seismic impact zone. A seismic impact study was not included in the application.

REGULATION CITATION	REQUIREMENT OR NEEDED ITEM	LOCATION IN APPLICATION	ADEM COMMENT
.01(6)(c)	Active Faults identified	Hydro p.8	No active faults are on the site
.01(6)(c)	Holocene Faults within 200 ft.	Hydro p.8	No faults within 200 feet of property.
.01(6)(e)	Unstable Areas Identified	Hydro p.8	No known sinkholes or active sinkholes in area.
.01(6)(e)	Site soil settling evaluated		Not evaluated.
.01(6)(e)	Geologic/geomorphologic features evaluated	Hydro Sect. 3.2	Structural geology adequately described.
.01(6)(e)	Human made features evaluated	Site visit	No human made features such as mine shafts were observed upon site.
.01(6)	Sink holes surveyed	Site visit	No sinkholes on site.
.01(6)	Karst Terrain Evaluated	USGS Map	Landfill is not in a Karst area.
00335-13-4-.11	Site Geology Evaluated	Hydro Sect 3.2	Site geology adequately defined.
335-13-4-.11	Site Hydrogeology Evaluated	Hydro p.14-15	Groundwater flows toward the southeast according to the applicant.
335-13-4-.12	Plans Required:		See below:
.12(4)	Hydrogeological units detailed	Hydro p14-15	Adequately detailed.
.12(6)	Hydrogeological cross sections	Hydro Fig. 5	Adequately detailed.
.12(6)	Topographic maps, initial and final at 5 foot contours or less	Hydro Fig. 9	Detailed at ten foot intervals.
.12(7)	Surface drainage patterns, control structures included.	Hydro Fig. 6-7	Drainage is multi-directional, since the landfill is located in a valley between two ridges. The majority of the runoff from the sanitary landfill is into the wooded hollow at the north end of the property. The majority of the runoff from the Inert landfill is into the wooded hollow at the south end of the property. The stream in the northern wooded area flows north then west and empties into Big Wills Creek.

REGULATION CITATION	REQUIREMENT OR NEEDED ITEM	LOCATION IN APPLICATION	ADEM COMMENT
335-13-4.12(14)	Point of Compliance Identified	Hydro p.19	Yes, MW-2, MW-4, and MW-5 are the three down gradient monitoring wells being used according to the applicant. Verification of this is needed by more water level measurements It is very doubtful that MW-2 was installed to ASTM standards as applicant states "It is unknown if a sand pack was placed around the screen and it is very unlikely that a bentonite seal was placed."
.12(14)(c)	Groundwater quantity evaluated		Not evaluated.
.12(14)(c)	Groundwater quality evaluated	Lab reports	In MW-2, MW-4, and MW-5, for the first four sampling events on a monthly basis beginning in 10/93, no exceedances were noted.
.12(14)(c)	Ground water flow direction identified	Hydro Fig. 9	Applicant states the groundwater flow direction is southeast. This flow direction is in dispute. Additional groundwater level measurements are needed in all monitoring wells.
.12(14)(d)	Ground water users surveyed		No.
.12(14)(d)	Ground water users withdrawal rate identified		No.
.12(14)(e)	Alternative drinking water supplies evaluated		No.
.12(14)(f)	Other sources of contamination identified	Site visit.	None identified upon site visit.
.12(14)(f)	Area ground water is expected to be used for drinking supply		No
335-13-4-.12(16)	Ground Water Monitoring Plan submitted	Operations Appendix G	Yes, submitted on May 23, 1995.

REGULATION CITATION	REQUIREMENT OR NEEDED ITEM	LOCATION IN APPLICATION	ADEM COMMENT
.13 Site Hydrogeology	ADEM Site evaluation conducted		Yes, a site visit was conducted by Dale Case on December 18, 1992 Also a site visit was conducted on May 7, 1996 by Fred Mason and Allen Phelps.
335-13-4-.13(1)	Applicants Hydrogeological evaluation conducted		The Hydrogeological report was submitted February 23, 1994
.13(2)(a)	Number of exploration borings (Minimum of 3 required)	Hydro p.19-25	Six monitor wells have been drilled with only MW-2, MW-4, and MW-5 in service today. According to applicant MW-2 is not installed correctly.
.13(2)(a)	Borings sampled and logged	Hydro p. 3	Six borings were completed in 1990.
.13(2)(a)	Borings completed as piezometers	Hydro p.8&9	No.
.13(2)(a)	First saturated zone established	Hydro p.29	Yes, in the upper three to five feet of weathered Chickamauga Limestone.
.13(2)(a)	Uppermost aquifer established	Hydro p.15	The Knox -Shady Aquifer is the uppermost aquifer.
.13(2)(a)	Underlying aquifers identified	Hydro p.15	No.
.13(2)(a)	Aquifer interconnection evaluated	Hydro p.15	No.
.13(2)(a)	Piezometer measuring points surveyed to mean sea level	Lab reports	Monitor wells have been surveyed.
.13(2)(a)	Water table elevations established	Lab reports	According to lab reports as per figure 1.
.13(2)(a)	Ground water flow direction estimated	Hydro Fig. 9	According to applicant groundwater flow is southeast. This needs to be verified.
.13(2)(a)	Ground water flow rate evaluated		No type of flow rate testing has been completed.
.13(2)(a)	Method of estimating ground water flow rate		NA
.13(2)(a)	Resumes and references of firm preparing Hydro Rep.	Hydro p.99	Yes

REGULATION CITATION	REQUIREMENT OR NEEDED ITEM	LOCATION IN APPLICATION	ADEM COMMENT
335-13-4-.14(1)	Depth to ground water established		No.
.14(1)	Ground water seasonal variations evaluated		Not evaluated.
.14(1)	Direction of ground water flow established	Fig. 9	Applicant states that groundwater flow direction is southeast.
.14(2)	Site soil permeability		No permeability work has been done.
.14(2)	Pump testing conducted		No.
.14(2)	Slug testing conducted		No.
335-13-4-.14(3)(b)	Ground water monitoring plan approved by ADEM	Hydro Sect. 4-3	Site has two properly installed downgradient monitor wells, MW-4 and MW-5.
.14(3)	Monitoring wells installed		See above.
.14(3)(a)	Upgradient well designated (minimum of 1)		Site has three wells with gradient being undetermined until further depth to water measurements are completed.
.14(3)(b)	Upgradient well unaffected by facility		None of the wells have been affected by the facility.
.14(3)(a)	Downgradient wells designated	Hydro Sect. 4-3	Yes, the site has two wells (MW-4 and MW-5). Further depth to water measurements must be accomplished to determine if, in fact, these wells are downgradient.
.14(3)(c)	Monitoring wells installed in advance of facility opening		No
.14(3)(c)	Background ground water quality established using procedures in 335-13-4-.27		No.
.14(3)(d)	Additional monitoring wells above minimum required	Hydro Sect. 4-3	They are at the minimum requirement.
.14(3)(d)	Monitoring wells constructed as described in 335-13-4-.27	Hydro p.48-49	Yes, with a typical diagram shown. MW-2 may not be constructed to standards.

REGULATION CITATION	REQUIREMENT OR NEEDED ITEM	LOCATION IN APPLICATION	ADEM COMMENT
.14(4)	Ground water monitoring plan prepared in accord with 335-13-4-.27		Yes, but plan has not been fully implemented.
335-13-4-.27	Groundwater Monitoring & Corrective Action	As above	No corrective action plan is included.
.27-(4)	Groundwater monitoring shall be continued throughout the active life and Post closure		No mention as to how long the landfill will be monitored is included.
.27 (6)(a)	MW system represents quality of background quality		Undetermined.
.27-(6)(b)	MW system represents quality of GW passing point of compliance		Undetermined.
.27-(8)	MW constructed in accordance with ASTM D 18.21	Hydro Sect. 6	MW-4 and MW-5 are constructed to standards. MW-2 may not be constructed to standards.
.27-(9)(a)	MW system shall be determined by characterization of:		See below:
.27-(9)(b) 1	Aquifer thickness, GW flow rate GW flow direction....		Undetermined.
.27-(9)(a) 2	Geologic units overlaying, in & under uppermost aquifer	Hydro Sect 3.3	Adequately defined.
.27-(10)	Approved GW sampling & analysis procedure		
.27-(13)	GW elevation must be measured prior to purging		Groundwater elevations have not been measured prior to purging.
.27 (14)	Establish background GW quality		Statistics not used.
.27-(15)	# of samples collected to establish GW quality		Statistics not used.
.27-(16)	Statistical method used		Statistics not used.
.27-(18)	If SSI is detected must notify ADEM within 14 days		Statistics not used.

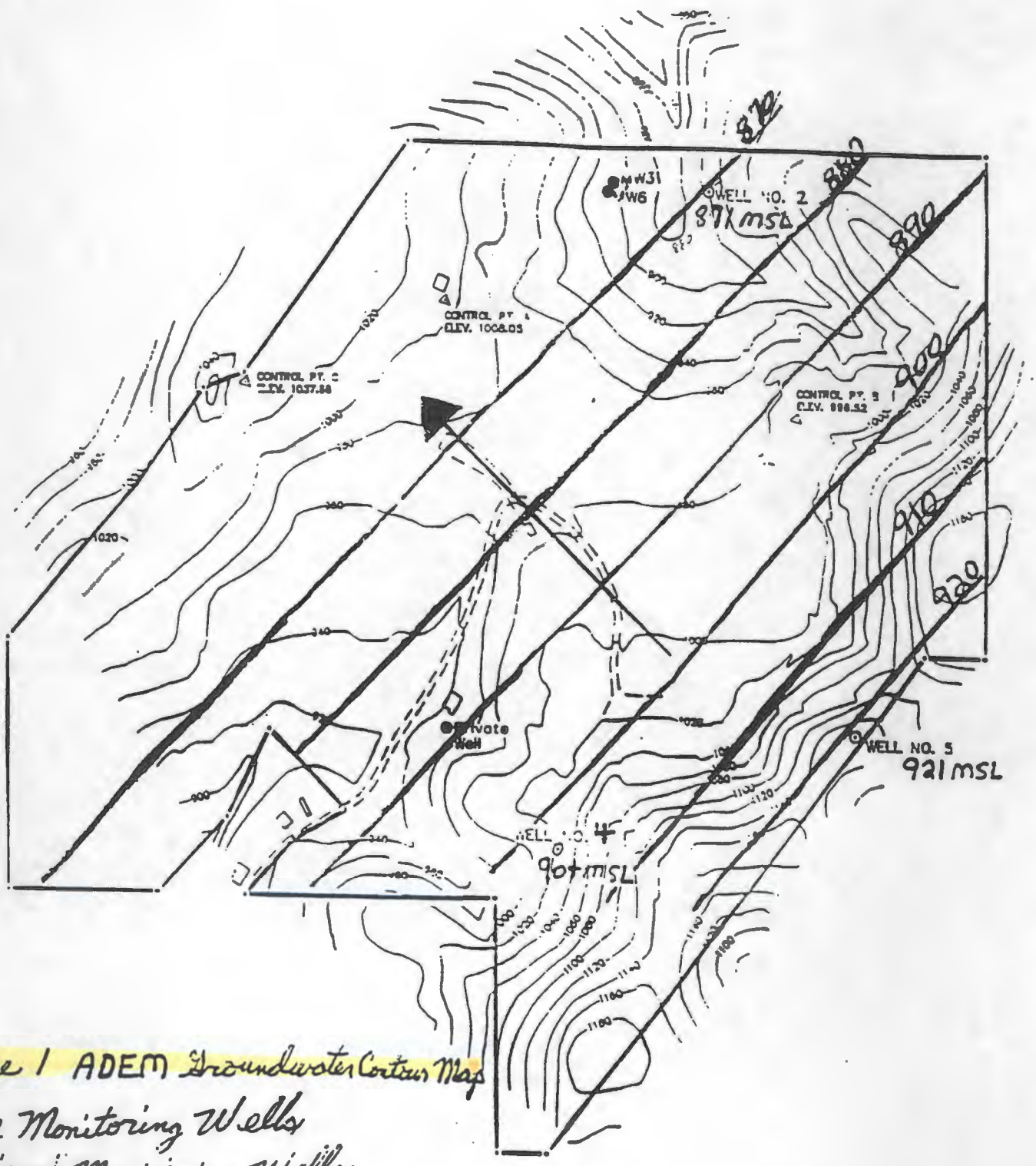

Figure 1 ADEM Groundwater Contour Map

⊙ Active Monitoring Wells

● Abandoned Monitoring Wells

→ Groundwater Flow Direction



Figure 2
Potentiometric Surface Map
860 —— Potentiometric Surface Cont
Fort Payne Landfill
Scale: 1"=300'

CARTER, DARNELL AND GRUBBS ENGINEERS, INC.
CIVIL AND ENVIRONMENTAL ENGINEERS • LAND SURVEYORS • GEOLOGISTS

1840 U.S. HIGHWAY 29 NORTH
P.O. BOX 278
ANDALUSIA, ALABAMA 36420
334 - 222 - 9431
FAX 334 - 222 - 4018

BRANCH OFFICE
ALBERTVILLE, ALABAMA
205 - 891 - 3458

May 28, 1996

Mr. Wm. Gerald Hardy, Chief
Engineering Services Branch
Land Division
ADEM
P.O. Box 301463
Montgomery, Alabama 36130-1463

RE: Revised Application Information and
Review of Draft Solid Waste Disposal Permit
Fort Payne Landfill -Draft Permit No. 25-02R
Project Number E941024.02

Dear Mr. Hardy:

Please accept this letter as a response to ADEM's review of the Permit Application and as a review of the Draft Solid Waste Disposal Facility Permit for the Fort Payne Landfill. The Department's comments regarding its review of the Permit Application are included with each response below and comments regarding the Draft Permit are included at the end of this letter.

Comment 1. The application proposes to increase the size of the facility and disposal area, by the addition of four small tracts totalling 10.49 acres...

The City does not intend to increase the size of the original permitted boundary by the addition of the four tracts. The City proposes to acquire Tract 1 and Tract 2 along the northern property line to construct Sedimentation Pond #1 because there is not enough existing permitted property to construct the pond. In addition, the City intends to acquire Tracts 2A and 3 along the western boundary of the landfill property to provide additional soil cover as well as to provide a "City owned buffer" between the existing permitted property and Interstate 59.

Enclosed is a copy of a boundary plat which shows the permitted boundary and the four additional tracts. Descriptions of the parcels and the original permitted boundary are also attached. A copy of this boundary plat and the descriptions should be included in Appendix D of the Operations Manuals previously submitted to the Department.

Since dispose of any solid waste will not occur on these four tracts, the City requests that ADEM not include them as part of the permitted landfill boundary. The enclosed Permit Plans have been revised to more clearly identify the locations of the four tracts in respect to the existing permitted boundary of the site.

...and the expansion of the existing 5 acre construction/demolition (C/D) area with the inclusion of an additional 12 acres for the disposal of industrial and C/D wastes.

The 12 acres are located in an area which has already been permitted by ADEM. No previous plans or permit requirements exist which limit the City to using the 5 acres currently being used for C/D waste disposal.

However, there is no information the submitted documents of the file showing that the City has gone through the local government approval process for these additional (four tracts totaling 10.49 acres) *tracts. Would any portion(s) of an added tract(s) be used for disposal?*

The City does not wish to increase the existing permitted boundary to include more property for solid waste disposal. The four tracts of land would be utilized by the City as borrow areas to provide additional soil cover for the landfill and for the construction of Sedimentation Pond #1.

If so, then the City must meet the requirements of Alabama Act 89-824 (copy enclosed) before the respective area(s) could be included in the facility.

The requirements of Alabama Act 89-824 will not apply if the Department concurs that the additional property will not be utilized for waste disposal.

Comment 2. Section 3.1.2 of the Operations Manual states that gas monitoring would be conducted annually. Monitoring should be quarterly in accordance with 335-13-4-.16(6)(b).

Section 3.1.2. on page 3-1 of the Operations Manual has been revised to state that gas monitoring shall be performed on an quarterly basis. Enclosed are revised copies of that page to be inserted in the Operations Manual.

Comment 3. A discussion of the previous and current monitoring systems is presented in Appendix G of the Operations Manual. The conclusion presented was that a satisfactory upgradient well could not be installed, and that the 3 existing downgradient wells would be satisfactory for monitoring the MSW and the industrial-C/D areas. Except of the fact that water levels were made during dry weather (Sept 93), the explanation in the discussion appear reasonable.

An ideal time to install groundwater monitoring wells is during the dry season. A well which contains water during the dry season provides assurance that the well will have an adequate

amount of water to perform groundwater monitoring year round. If wells were installed during the wet season at the Fort Payne Landfill, an "upgradient well" could contain some surface water seepage but would have no water to monitor during the dry season. This well would then have to be characterized only as a "wet weather" well and would most likely be unsuitable as an upgradient or background well.

Monitoring Well #3, the old upgradient well, was abandoned in October 1993 because it was not producing any water. It was originally suspected that the screen was clogged with clay materials. Later, however, a discovery was made that well would only produce water during wet weather because the steepness of the Chickamauga Limestone (first zone of saturation below the landfill) and the close proximity of the landfill to the formation's outcrop limited the recharge area for an upgradient monitoring well.

In addition, attempt was made by the City to install a new upgradient well (Borehole MW6 in the Groundwater Monitoring Report). The top of the Chickamauaga Limestone was encountered 34 feet below the surface and no groundwater was found on top of the Chickamauga in this area. A decision was made to determine if a porous zone existed within the Chickamauga; therefore MW6 was drilled 216 feet into the formation (250 feet below the land surface). No water was encountered. And even if groundwater had been encountered, it would have been from a different zone than the zone monitored downgradient from the site.
Mr. Dale Case from ADEM's Groundwater Branch was contacted, and under his instruction, the dry hole (MW6) was plugged and abandoned. A complete discussion of the preceding events is provided in Section 4 of the Groundwater Monitoring Report.

On the other hand, the water level measurements for the December 1994 and May 1995 sampling events indicate that the levels were significantly higher than those discussed, that MW5 had the highest levels, and that MW4 and MW5 may be upgradient wells with the direction of flow toward the northwest rather than southeast.

Since the well system was updated in October 1993, water levels have only been measured in MW2. Due depth of the well MW4 and MW5(258 feet and 470 feet respectively), permanent pumps had to be installed to purge the wells during groundwater sampling events. Water levels have not been taken in MW4 or MW5 since the pumps were installed in 1993 because the electrical tape from a water level indicator cannot pass through the piping and electrical cables which comprise the pump system.

When the water levels are converted to feet MSL, the water levels recorded from MW2 have always been higher than the October 1993 water levels recorded in MW4 and MW5 (See table below).

MW2
Ground surface elevation- 896 ft-MSL

Date	Depth to Water / MSL elevation
Oct 93	37 feet / **859 feet MSL**
March 94	29 feet / **867 feet MSL**
Dec 94	24 feet / **872 feet MSL**
June 95	21 feet / **875 feet MSL**

MW4
Ground surface elevation - 1,033 ft-MSL

Date	Depth to Water / MSL elevation
Oct 93	181 feet / **852 feet MSL**

MW5
Ground surface elevation - 1,147 ft-MSL

Date	Depth to Water / MSL elevation
Oct 93	299 feet / **848 feet MSL**

Based on this information, the direction of groundwater flow cannot be to the northwest (See the Groundwater Monitoring Report dated February 1994 for additional information).

Also, as reported in the Groundwater Branch's evaluation by Dale Case of January 11, 1993, the water levels over the site were significantly higher and the flow was to the NE. The apparent discrepancies or differences should be explained, and a revision to the monitoring system should be proposed if necessary.

The water levels that Dale Case measured from the old monitoring system which had wells monitoring different saturated zones. To obtain correct potentiometric surface data, all of the wells had to have been installed in the same zone. Now, the new well system, which is comprise of MW2, MW4 and MW5, monitors the same zone. In addition, the formations in the area are dipping to the southeast as shown in the 1994 Groundwater Monitoring Report, therefore the groundwater that lies on top of the Chickamauga Formation is flowing downdip to the southeast as well.

Also in the discussion of MW2, it is stated that "... the open space between the well riser and the borehole wall was probably not grouted". Does this mean that MW2 may have not been constructed properly, and may not be satisfactory as a monitoring well?

If the open space between the well riser and the borehole wall was not grouted then the well was not constructed in accordance with ADEM's present standards. When a well is constructed in this manner, it can be susceptible to contamination from the surface.

The location of MW2 is downgradient from landfill because it is installed geographically downdip from a disposal area and its screen is set in a unit that out crops in the bottom in a wooded hollow where leachate contaminants could flow from the landfill. The topographic location of the ground surface where the well riser is located (see Figure) is most likely not susceptible to contamination from surface water flowing over the landfilled areas. This Mr. Wm.

information is also located in the 1994 Groundwater Monitoring Report.

Comment 4. Sheet 7 of the design drawings shows that the City proposes to excavate in the industrial -C/D waste area. It appears that the proposed elevations may be less than 5 feet above bedrock. It shoud be explained how it would be assured then, in accordance with 335-13-4-.01(4)(a), the bottom elevation of the area/waste would remain a minimum of five feet above bedrock.

Sedimentation Pond #2 located at the toe of the industrial -C/D waste disposal area has already been excavated by the City and no underlying bedrock was encountered. The pond has been constructed entirely in a clayey sand residuum which also is present in the proposed industrial C/D disposal area. Since the elevation of the disposal area does not occur below the bottom elevation of the pond and the depth of the clayey sand residuum appears to extend to a depth of 35 feet along the northwestern ridge the proposed excavation grades should keep the landfill a minimum of five feet above the underlying bedrock.

If bedrock is encountered the City will backfill the area in order to maintain a 5 foot separation between the bottom of the landfill and the top of the bedrock.

Comments Regarding the Draft Permit.

The Draft Permit which was sent to the City for review and comment contains blanks in Section IV Groundwater Monitoring Requirements as well as some discrepancies regarding the property boundaries which must be addressed. At the time that we received the letter and Draft Permit, we were awaiting a response from the Solid Waste Branch regarding a request for vertical expansion until October 8, 1997. The same issues regarding the configuration of the monitoring well system at the site, background water quality, and the appropriate method for performing an analysis of the groundwater at the site are also being considered by ADEM for the vertical expansion of this site as well.

We have contacted ADEM to expressed our concerns and have determined that a meeting should be held between the representative for the City of Fort Payne and ADEM. We are request that a meeting be held at the Department which includes the following ADEM personnel: Mr. John Poole, Mr. Gerald Hardy, Mr. Russell Kelly, Mr. Fred Mason, Mr. Bill Wood, Mr. Andy Baker and Mr. Alan Phelps. In preparation for such a meeting, Mr. Don McKee, a geologist with our firm is assisting Mr. Alan Phelps of ADEMs Groundwater Branch, to familiarize Mr. Phelps with geologic history of the site.

We will be contacting you in the near future. Thanks for your assistance.

Sincerely,

CARTER, DARNELL & GRUBBS
ENGINEERS, INC.

Mark Pugh, P.E.
Project Manager

Enclosures

C: Hon. David Stout, Mayor
Mr. John Walker, City of Fort Payne
Mr. Russell Kelly, ADEM
Mr. Fred Mason, ADEM

ADEM

ALABAMA
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

James W. Warr
Director

(334) 271-7700

1751 Cong. W. L. Dickinson Drive
Montgomery, AL
36109-2608

Mailing Address:
P.O. Box 301463
Montgomery, AL
36130-1463

FAX: (334)
Admin: 271-7950
Air: 279-3044
Land: 279-3050
Water: 279-3051
Spec Proj: 213-4399
Field Ops: 272-8131
Clean up: 270-5612

Field Offices:

1400 Vulcan Road
Birmingham, AL
35209-4702
(205) 942-6168
FAX: 941-1603

110 Well St, N.E.
P.O. Box 953
Decatur, AL
35602-0953
(205) 353-1713
FAX: 340-9359

2204 Perimeter Rd
Mobile, AL
36615-1131
(334) 450-3400
FAX: 479-2593

Fob James, Jr.
Governor

JUL 1996
Received
Land Division

July 16, 1996

MEMORANDUM

TO: Gerald Hardy, Chief
Engineering Services Branch

FROM: Allen Phelps, Hydrogeologist
Hydrogeology Unit

RE: Ft. Payne Landfill Permit Renewal Review Additional Information
Dekalb County, Alabama
Permit No. 25-02

This memorandum is in response to the groundwater related comments submitted by Carter Darnell and Grubbs to ADEM on May 30, 1996.

COMMENT 3.

Paragraph 1. The observation presented was that a satisfactory upgradient well could not be installed and that the three existing downgradient wells would be satisfactory for monitoring the entire area.

ADEM position continues to be that monitoring well groundwater elevations must be established during each monitoring event to properly evaluate hydraulic gradient and position of each monitoring well. The establishment of hydraulic gradient for monitoring wells based on geologic structure is not acceptable. Also the establishment of an upgradient or background well should continue to be investigated in order to establish background groundwater quality for monitoring and statistical analysis comparison.

Paragraph 2. Monitoring wells numbered MW-4 and MW-5 may be upgradient wells if the direction of flow toward the northwest rather than the southeast.

ADEM received a letter on May 16, 1996, from Mid-South Testing, Inc. stating that a mistake had been made in the depth to water values for MW-4 and MW-5 which have permanently installed pumps.

Only one set of depth to water measurements has been used in MW-4 and MW-5 since the installation of pumps in 1993. ADEM Administrative Code Regulation 335-13-4-.27(13) states "Groundwater elevations (MSL) must be measured in each well immediately prior to purging, each time groundwater is sampled. The owner or operator must determine the rate and direction of groundwater flow each time groundwater is sampled..."

Paragraph 4. In the discussion of MW-2 it is stated that "...the open space between the well riser and the borehole wall was probably not grouted." Does this mean that MW-2 may have not been constructed properly, and may not be satisfactory as a monitoring well?

ADEM feels that if MW-2 was constructed improperly that it should be replaced with a properly installed monitoring well in the same location. After the new monitoring well has been installed properly, abandonment procedures should be initiated on the old MW-2 monitoring well (See attached guideline).

RECOMMENDATIONS

1. MW-2 should be replaced with a properly constructed monitoring well in the same location.

2. As requested in a memorandum dated May 16, 1996, from Allen Phelps to Gerald Hardy comment 1 a survey of top of casing, depth to water measurements, and total well depths of replaced MW-2, MW-4, and MW-5 should be obtained. After these measurements are obtained a groundwater flow map should be constructed. The depth to water measurements and total well depths should be conducted during every sampling event.

cc: Bill Wood

(b) The monitoring wells, piezometers, and other measurement, sampling, and analytical devices must be operated and maintained so that they perform to design specifications throughout the life of the monitoring program.

(c) Abandoned wells and bore holes shall be abandoned in accordance with the following procedures in order to prevent contamination of groundwater resources. A plan of abandonment must be submitted and approved by the Department prior to implementing abandonment of any well.

1. A well shall be measured for depth prior to sealing to ensure that it is free from any obstructions that may interfere with sealing operations.

2. Where feasible, wells shall be completely filled with neat cement. If the well cannot be completely filled, the sealing materials for the top 20 feet must be neat cement and no material that could impart taste, odor, or toxic components to water may be used in the sealing process.

3. Liner pipe shall be removed from each well in order to ensure placement of an effective seal. If the liner pipe cannot be readily removed, it shall be perforated to ensure that proper sealing is obtained.

4. Concrete, cement grout, or neat cement shall be used as primary sealing materials and shall be placed from the bottom upwards using methods that will avoid segregation or dilution of material.

5. Complete, accurate records of the abandonment procedure shall be kept for each well abandoned. The record of abandonment shall include, at a minimum, the depth of each layer of all sealing and backfilling materials, the quantity of sealing materials used, measurements of static water levels and depths, and any changes made in the well during the sealing. A copy of these records shall be submitted to the Department and a copy placed in the operating record.

(9) The number, spacing, and depths of monitoring systems shall be:

(a) Determined based upon site-specific technical information that must include thorough characterization of:

ADEM
ALABAMA
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

Fob James, Jr.
Governor

mes W. Warr
irector

(334) 271-7700

751 Cong. W. L.
Dickinson Drive
ontgomery, AL
5109-2608

Mailing Address:
O Box 301463
ontgomery, AL
36130-1463

AX: (334)
Admin: 271-7950
Air: 279-3044
nd: 279-3050
ater: 279-3051
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ckup: 270-5612

Field Offices:

0 Vulcan Road
Birmingham, AL
35209-4702
05) 942-6168
AX: 941-1603

0 Well St, N.E.
O. Box 953
Decatur, AL
35602-0953
05) 353-1713
AX: 340-9359

04 Perimeter Rd
obile, AL
36615-1131
334) 450-3400
X: 479-2593

July 23, 1996

RECEIVED JUL 25 1996

Mr. John Walker
City of Fort Payne
200 Gault Avenue South
Fort Payne, AL 35967

Re: Review of Revised Application Information
Proposed Modification and Renewal
Solid Waste Disposal Permit
Fort Payne Landfill/25-02R

Dear Mr. Walker:

On May 30, 1996, the Department received the Carter, Darnell and Grubbs Engineers, Inc. submittal of revised application information, including a set of design drawings for the proposed modification and renewal of the Solid Waste Disposal Facility Permit for the Fort Payne Landfill. We have completed a review of this revised information, and the comments and additional requirements on the information are provided below.

In a letter of January 5, 1996, we mentioned that ADEM had not conpleted a review of the application information which had been submitted by Carter, Darnell and Grubbs. The Groundwater Branch subsequently conducted its review, and a copy of Mr. Phelps' memo of May 16, 1996, is enclosed for your review and consideration. We also submitted a copy of the revised application information which we received on May 30, 1996, to the Groundwater Branch for its review. A copy of Mr. Phelps' memo of July 16, 1996, on the review is enclosed also.

The following are the comments and additional requirements that were identified during this review of the revised application information:

1. The first item of the May 1996 Carter, Darnell and Grubbs letter responds to our January 5, 1996, comment regarding an increase in the size of the facility by the addition of four small tracts totaling 10.49 acres. Since the City will not dispose of wastes in these tracts and they will not be included in the permitted boundaries, we concur with the response provided by Carter, Darnell and Grubbs. The City should, however, provide a statement that would be included in or attached to each deed or property description which would explain that the property adjoins the landfill, would explain the applicable activities associated with the

landfill (i.e., the distance from the boundary of the disposal of waste, the monitoring activities which would be conducted, the construction and maintenance of the sedimentation pond and other control structures that have or would be constructed, the drainages of surface water from the landfill, etc.), and which would state that the City, as the owner of these adjoining properties, approves of the activities.

2. A legal description of the two disposal areas, the MSW area (including the closed area) and the industrial-C/D area, should be submitted.

3. In Comment 1 of the Carter, Darnell and Grubbs letter it is stated that a legal description of the original boundary was attached. The descriptions of the four adjoining parcels were attached, but this description of the boundary was not included.

4. For the industrial-C/D area it is not clear how offsite or upslope surface water would be prevented from flowing into the disposal area, particularly at the beginning or in the early periods of disposal (Re: 335-13-4-.17). That is, as depicted on Sheet 7 of the drawings, the expansion area would be downslope or lower in elevation than the area to the northwest of the disposal area, and no control structures or other provisions are depicted. The provisions for this drainage should be explained, depicted, etc. (Note: The direction arrow on Sheet 7 appears to point west rather than north.)

5. In Comment 1 of Mr. Phelps' memo of May 16, he states that water level measurements and other data should be obtained on the three monitoring wells. The water level data should be recorded monthly or more frequently for at least a year and submitted along with a map depicting the groundwater flow direction(s). Also, as applicable or on a continuing basis, the groundwater levels must be measured each time the groundwater is sampled, as explained in the comments on Paragraph 2 in Mr. Phelps' memo of July 16. Although these actions will be ongoing or will take time to accomplish, we do not expect to delay the permitting process in the meantime.

6. As Mr. Phelps states in his memo of July 16, the hydraulic gradient should not be established based on geologic structure but by the measurement of groundwater elevations. Also, the City should continue to try to establish a satisfactory upgradient or background well since ADEM does not, at least at this point, accept the explanation that such a well cannot be established.

7. In our January 5, 1996, letter we questioned if MW2 had been constructed properly since the discussion in Appendix G of the May 1995 Operations Manual had stated that this well was probably not constructed in accordance with ASTM standards. As Mr. Phelps states in his July 16 memo, in response to Paragraph 4, this well should be replaced and then properly abandoned if it will not function satisfactorily as a monitoring well.

A revision to Division 13 of the Department's Administrative Codes will become effective July 26, 1996. Although this revision to the regulations is not expected to result in any significant technical changes to the tentative draft permit submitted to you on January 5, 1996, we are in the process of revising the permit and will forward a copy to you as soon as we complete the revision.

As soon as practicable, please respond to the comments above and/or submit the additional or revised application information.

If you have any questions about this letter, the review of the application information, or other matters regarding the repermitting of the landfill, please contact Bill Wood at 334-271-7767.

Sincerely,

Wm. Gerald Hardy, Chief
Engineering Services Branch
Land Division

WGH/BW/mal:SWTECH#2354

Enclosures

c/e: Mr. Mark Pugh
Carter, Darnell and Grubbs, Inc.
P.O. Box 278
Andalusia, AL 36420

c: Mr. Russell Kelly, Chief
Solid Waste Branch
Land Division

Mr. Allen Phelps
Groundwater Branch
Water Division

File: DeKalb Co/Prop Mod & Renewal/Ft. Payne LF/25-02R

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ALABAMA
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

Fob James, Jr.
Governor

James W. Warr
Director

(334) 271-7700

1751 Cong. W. L.
Dickinson Drive
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Mailing Address:
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Mobile, AL
36615-1131
(334) 450-3400
FAX: 479-2593

July 30, 1996

RECEIVED JUL 30 1996

Mr. John Walker
City of Fort Payne
200 Gault Avenue South
Fort Payne, AL 35967

Re: Revised Draft Permit
Proposed Modification and Renewal
Solid Waste Disposal Permit
Fort Payne Landfill/25-02R

Dear Mr. Walker:

In our July 23, 1996 letter, we mentioned that revised Division 13 (Solid Waste Program) regulations were to become effective on July 26, 1996, and that we were in the process of revising the tentative draft permit for the Fort Payne Landfill. A copy of the revised tentative draft permit is enclosed for your review and comment.

Although most of the changes to the revised draft permit concern the references to the new or revised paragraphs or subparagraphs of the regulations, a few changes have occurred as a result of the changes or additions to the application. Some of these changes are:

1. Page 1: An abbreviated description of the facility which would delete the four small tracts, Tracts 1, 2, 2a, and 3, from the permitted boundary. Note, however, that the legal descriptions on Pages 37 and 38 have not, as yet, been revised or included. When the legal descriptions which we requested in Items 2 and 3 of our July 23 letter are received, we plan to revise these two pages of the draft permit.

2. Page 17: The inclusion of the statement that municipal (sanitary) waste cannot be disposed after October 8, 1997, in order to emphasize that the disposal of sanitary/MSW waste (vertical expansion) is extended only until this date.

3. Pages 24 and 28 (Table IV.1.): Note that these pages may be revised following the resolution of the groundwater or monitoring system items mentioned in our July 23 letter.

4. Pages 29 and 30: The deletion of the additional parameters from Tables IV.2. and IV.3.

As soon as practicable, please review the enclosed tentative draft permit and provide any comments you may have. Also, please expedite your response to our letter of July 23, in order that the permitting process can proceed.

If you have any questions about this letter, the enclosed draft permit, our letter of July 23, or any other matter regarding the repermitting of the landfill, please contact Bill Wood at 334-271-7767.

Sincerely,

Wm. Gerald Hardy, Chief
Engineering Services Branch
Land Division

WGH/BW/mal:SWTECH#2368

Enclosure

c/e: Mr. Mark Rugh
Carter, Darnell and Grubbs, Inc.
P.O. Box 278
Andalusia, AL 36420

c: Mr. Russell Kelly, Chief
Solid Waste Branch
Land Division

Mr. Allen Phelps
Groundwater Branch
Water Division

File: DeKalb Co/Prop Mod & Renewal/Ft. Payne LF/25-02R

LANDFILL DESIGN DOCUMENTS

APPENDIX 3.1 SEDIMENTATION POND CALCULATIONS

SEDIMENTATION PONDS
Fort Payne Sanitary Landfill
Design Summary
June 9, 1994

Two sedimentation ponds are proposed to be constructed to control stormwater exiting the Fort Payne Sanitary Landfill. The locations of the two ponds are shown on Sheet 1 of the engineering drawings. In order to construct the sedimentation ponds, the City of Fort Payne intends to purchase additional land beyond the permitted landfill property boundary.

Rule 335-13-4-.17(1) of the ADEM Administrative Code requires that on-site drainage control structures be designed, constructed and maintained to collect and control at a minimum, the water volume resulting from a 25-year, 24-hour storm event. The design capacity of each sedimentation pond was calculated using the procedures published by the soil conservation service in the Technical Release 55 (TR 55) "Urban Hydrology for Small Watersheds". The computer data sheets and figures used to calculate the required storage volume for each pond have been included.

Peak Outflow Discharge: TR 55 requires a known peak outflow discharge from each pond. Since there are no existing outfall structures (i.e. concrete channels, drainage pipes, etc.), a desirable peak discharge of 20 cfs was chosen as a design parameter for each pond. This discharge will be controlled by an outlet control structure as shown on the sedimentation pond cross sections.

Hydrogeologic Soil Group: The TR 55 Program requires the classification of on-site soils into one of four hydrogeologic soil groups:

Group A- low run-off potential and high infiltration rate

Group B- moderate infiltration rates when thoroughly wetted and consists chiefly of moderately well to well drained soils.

Group C- low infiltration rate when thoroughly wetted and consists chiefly of soils with a layer that impedes downward movement of water and soils with moderately fine texture.

Group D- high runoff potential and a very low infiltration

The surface soils at the landfill consist primarily of silty sandy clay soils with relatively low infiltration rates, therefore the Group C classification was chosen.

CALCULATIONS
Sedimentation Pond #1

RUNOFF CURVE NUMBER COMPUTATION Version 2.00

Project : Fort Payne Sed. Pond User: WEH Date: 06-01-94
County : Dekalb State: Al Checked: DCW Date: 6/8/94
Subtitle:
Subarea : area 1

COVER DESCRIPTION	Hydrologic Soil Group A	B	C	D
	Acres (CN)			
OTHER AGRICULTURAL LANDS				
Meadow -cont. grass (non grazed) ----	-	-	48(71)	-
Total Area (by Hydrologic Soil Group)			48	

SUBAREA: area 1 TOTAL DRAINAGE AREA: 48 Acres WEIGHTED CURVE NUMBER: 71*

* - Generated for use by GRAPHIC method

TIME OF CONCENTRATION AND TRAVEL TIME Version 2.00

Project : Fort Payne Sed. Pond User: WEH Date: 06-01-94
County : Dekalb State: Al Checked: DCW Date: 6/8/94
Subtitle:

Flow Type	2 year rain	Length (ft)	Slope (ft/ft)	Surface code	n	Area (sq/ft)	Wp (ft)	Velocity (ft/sec)	Time (hr)
Sheet	3.7	25	.25	J					0.016
Shallow Concent'd		500	.025	U					0.054
Open Channel		1500	.025		.15	20	10.5		0.173
						Time of Concentration =			0.24*

--- Sheet Flow Surface Codes ---

A Smooth Surface
B Fallow (No Res.)
C Cultivated < 20 % Res.
D Cultivated > 20 % Res.
E Grass-Range, Short
F Grass, Dense
G Grass, Burmuda
H Woods, Light
I Woods, Dense
J Range, Natural

--- Shallow Concentrated Surface Codes ---

P Paved
U Unpaved

* - Generated for use by GRAPHIC method

GRAPHICAL PEAK DISCHARGE METHOD Version 2.00

Project : Fort Payne Sed. Pond User: WEH Date: 06-01-94
County : Dekalb State: Al Checked: DCW Date: 6/8/94
Subtitle:

Data: Drainage Area : 48 * Acres
Runoff Curve Number : 71 *
Time of Concentration: 0.24 * Hours
Rainfall Type : II
Pond and Swamp Area : NONE

Storm Number	1	2	3	4	5
Frequency (yrs)	5	10	25	50	100
24-Hr Rainfall (in)	4.7	5.5	6.5	7.0	7.5
Ia/P Ratio	0.17	0.15	0.13	0.12	0.11
Runoff (in)	1.89	2.50	3.31	3.72	4.15
Unit Peak Discharge (cfs/acre/in)	1.103	1.123	1.141	1.149	1.155
Pond and Swamp Factor 0.0% Ponds Used	1.00	1.00	1.00	1.00	1.00
Peak Discharge (cfs)	100	135	181	205	230

* - Value(s) provided from TR-55 system routines

STORAGE VOLUME FOR DETENTION BASINS Version 2.00

Project : Fort Payne Sed. Pond User: WEH Date: 06-01-94
County : Dekalb State: Al Checked: DCW Date: 6/8/94
Subtitle:

Drainage Area: 48 Acres Rainfall Frequency: 5 years
Rainfall-Type: II
Runoff: 1.9 inches
Peak Inflow: 100.1528 cfs
Peak Outflow: 20 cfs
Detention Basin Storage Volume: 0.86 inches or 3.4 acre feet

STORAGE VOLUME FOR DETENTION BASINS Version 2.00

Project : Fort Payne Sed. Pond User: WEH Date: 06-01-94
County : Dekalb State: Al Checked: DCW Date: 6/9/94
Subtitle:

Drainage Area: 48 Acres Rainfall Frequency: 10 years
Rainfall-Type: II
Runoff: 2.5 inches
Peak Inflow: 134.8333 cfs
Peak Outflow: 20 cfs
Detention Basin Storage Volume: 1.26 inches or 5.0 acre feet

STORAGE VOLUME FOR DETENTION BASINS Version 2.00

Project : Fort Payne Sed. Pond User: WEH Date: 06-01-94
County : Dekalb State: Al Checked: DCW Date: 6/8/94
Subtitle:

Drainage Area: 48 Acres Rainfall Frequency: 25 years
Rainfall-Type: II
Runoff: 3.3 inches
Peak Inflow: 181.1675 cfs
Peak Outflow: 20 cfs
Detention Basin Storage Volume: 1.80 inches or 7.2 acre feet

CALCULATIONS
Sedimentation Pond #2

RUNOFF CURVE NUMBER COMPUTATION Version 2.00

Project : Fort Payne Sed. Pond User: WEH Date: 06-01-94
County : Dekalb State: Al Checked: DCW Date: 6/9/94
Subtitle:
Subarea : area 2

COVER DESCRIPTION	Hydrologic Soil Group A	B	C	D
		Acres (CN)		
OTHER AGRICULTURAL LANDS				
Meadow -cont. grass (non grazed) ----	-	-	45(71)	-
Total Area (by Hydrologic Soil Group)			45	
			====	

SUBAREA: area 2 TOTAL DRAINAGE AREA: 45 Acres WEIGHTED CURVE NUMBER: 71*

* - Generated for use by GRAPHIC method

TIME OF CONCENTRATION AND TRAVEL TIME Version 2.00

Project : Fort Payne Sed. Pond User: WEH Date: 06-01-94
County : Dekalb State: Al Checked: DCW Date: 6/8/94
Subtitle:

Flow Type	2 year rain	Length (ft)	Slope (ft/ft)	Surface code	n	Area (sq/ft)	Wp (ft)	Velocity (ft/sec)	Time (hr)
Sheet	3.7	25	.25	J					0.016
Shallow Concent'd		500	.025	U					0.054
Open Channel		1500	.025		.15	20	10.5		0.173
							Time of Concentration =		0.24*

--- Sheet Flow Surface Codes ---

A Smooth Surface
B Fallow (No Res.)
C Cultivated < 20 % Res.
D Cultivated > 20 % Res.
E Grass-Range, Short
F Grass, Dense
G Grass, Burmuda
H Woods, Light
I Woods, Dense
J Range, Natural

--- Shallow Concentrated Surface Codes ---

P Paved
U Unpaved

* - Generated for use by GRAPHIC method

GRAPHICAL PEAK DISCHARGE METHOD Version 2.00

Project : Fort Payne Sed. Pond User: WEH Date: 06-01-94
County : Dekalb State: Al Checked: DCW Date: 6/9/94
Subtitle:

Data: Drainage Area : 45 * Acres
Runoff Curve Number : 71 *
Time of Concentration: 0.24 * Hours
Rainfall Type : II
Pond and Swamp Area : NONE

Storm Number	1	2	3	4	5
Frequency (yrs)	5	10	25	50	100
24-Hr Rainfall (in)	4.7	5.5	6.5	7.0	7.5
Ia/P Ratio	0.17	0.15	0.13	0.12	0.11
Runoff (in)	1.89	2.50	3.31	3.72	4.15
Unit Peak Discharge (cfs/acre/in)	1.103	1.123	1.141	1.149	1.155
Pond and Swamp Factor 0.0% Ponds Used	1.00	1.00	1.00	1.00	1.00
Peak Discharge (cfs)	94	126	170	192	216

* - Value(s) provided from TR-55 system routines

STORAGE VOLUME FOR DETENTION BASINS Version 2.00

Project : Fort Payne Sed. Pond User: WEH Date: 06-01-94
County : Dekalb State: Al Checked: DCW Date: 6/8/94
Subtitle:

Drainage Area: 45 Acres Rainfall Frequency: 5 years
Rainfall-Type: II
Runoff: 1.9 inches
Peak Inflow: 93.89326 cfs
Peak Outflow: 20 cfs
Detention Basin Storage Volume: 0.84 inches or 3.2 acre feet

STORAGE VOLUME FOR DETENTION BASINS Version 2.00

Project : Fort Payne Sed. Pond User: WEH Date: 06-01-94
County : Dekalb State: Al Checked: DCW Date: 6/8/94
Subtitle:

Drainage Area: 45 Acres Rainfall Frequency: 10 years
Rainfall-Type: II
Runoff: 2.5 inches
Peak Inflow: 126.4062 cfs
Peak Outflow: 20 cfs
Detention Basin Storage Volume: 1.23 inches or 4.6 acre feet

STORAGE VOLUME FOR DETENTION BASINS Version 2.00

Project : Fort Payne Sed. Pond User: WEH Date: 06-01-94
County : Dekalb State: Al Checked: DCW Date: 6/8/94
Subtitle:

Drainage Area: 45 Acres Rainfall Frequency: 25 years
Rainfall-Type: II
Runoff: 3.3 inches
Peak Inflow: 169.8445 cfs
Peak Outflow: 20 cfs
Detention Basin Storage Volume: 1.77 inches or 6.6 acre feet

FIGURES

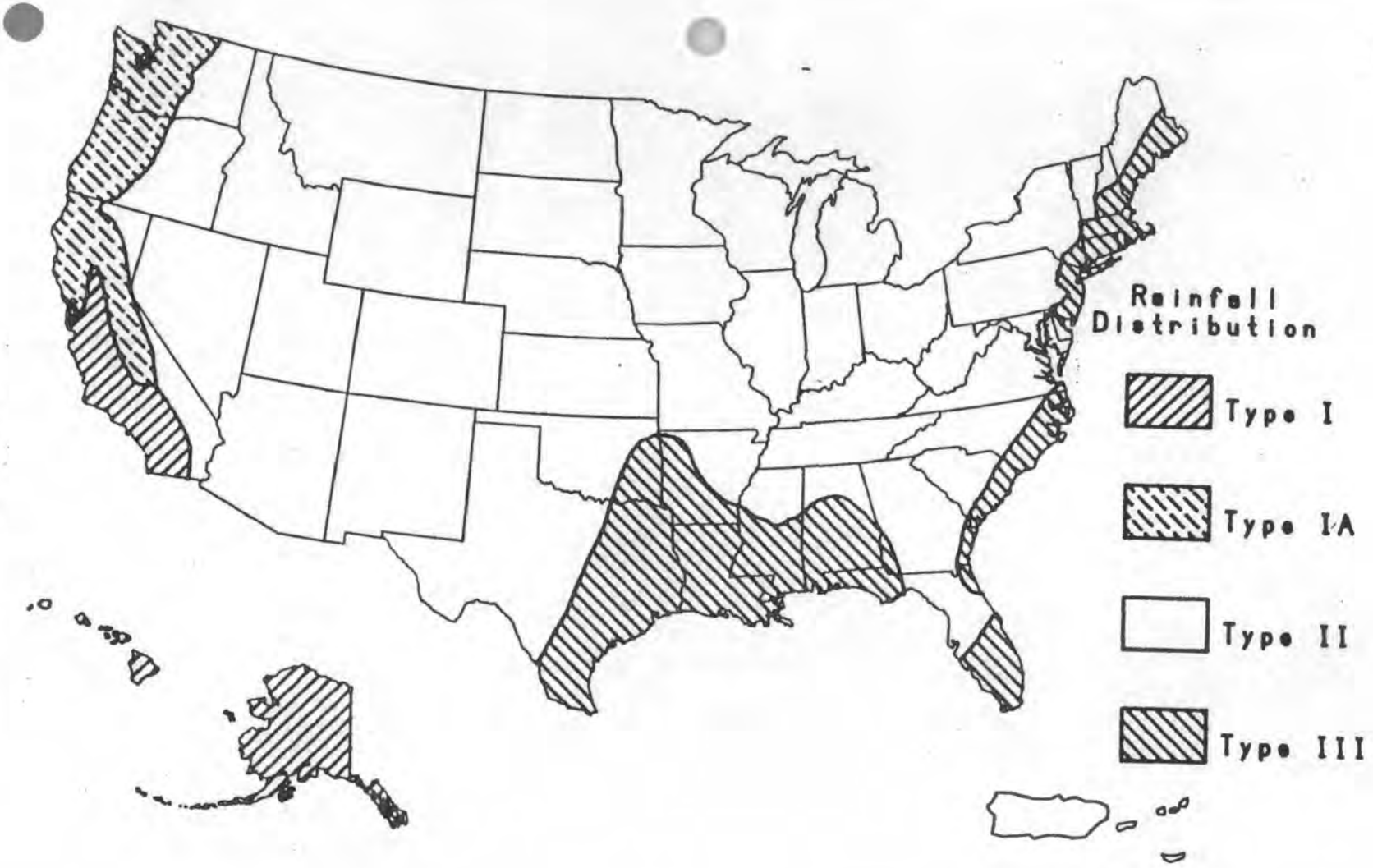

Figure B-2.—Approximate geographic boundaries for SCS rainfall distributions.

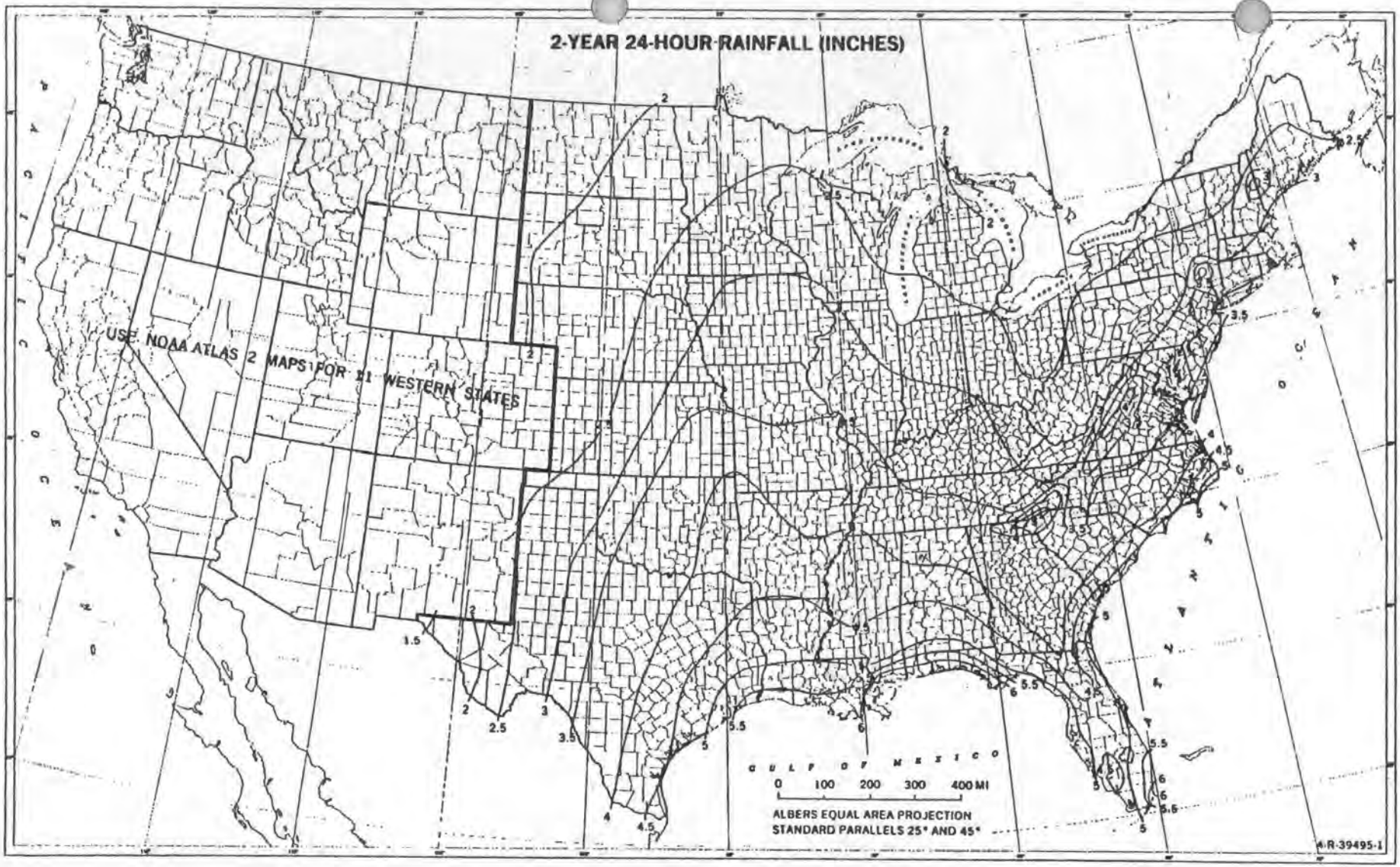

Figure B-3.—Two-year, 24-hour rainfall.

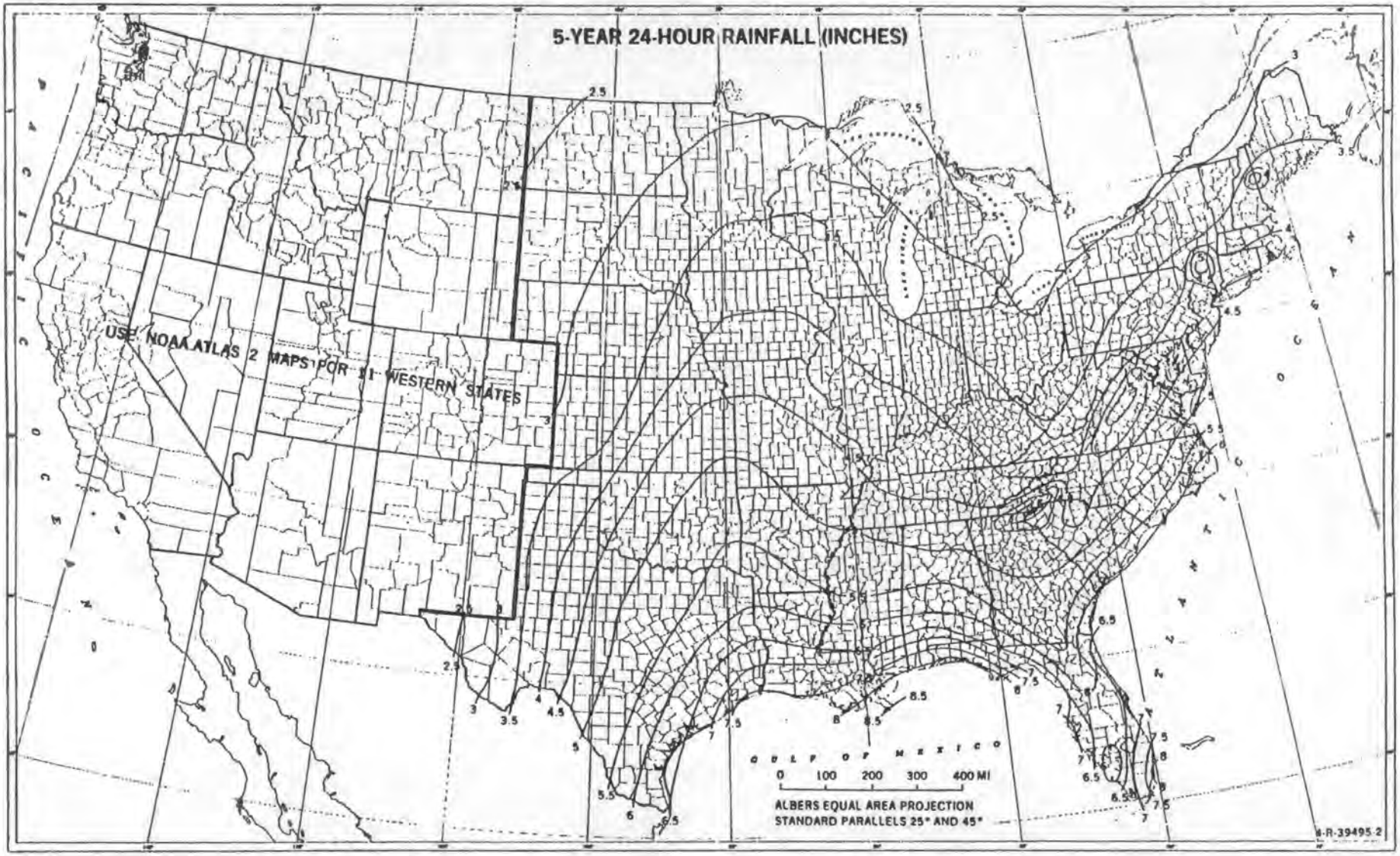

Figure B-4.—Five-year, 24-hour rainfall.

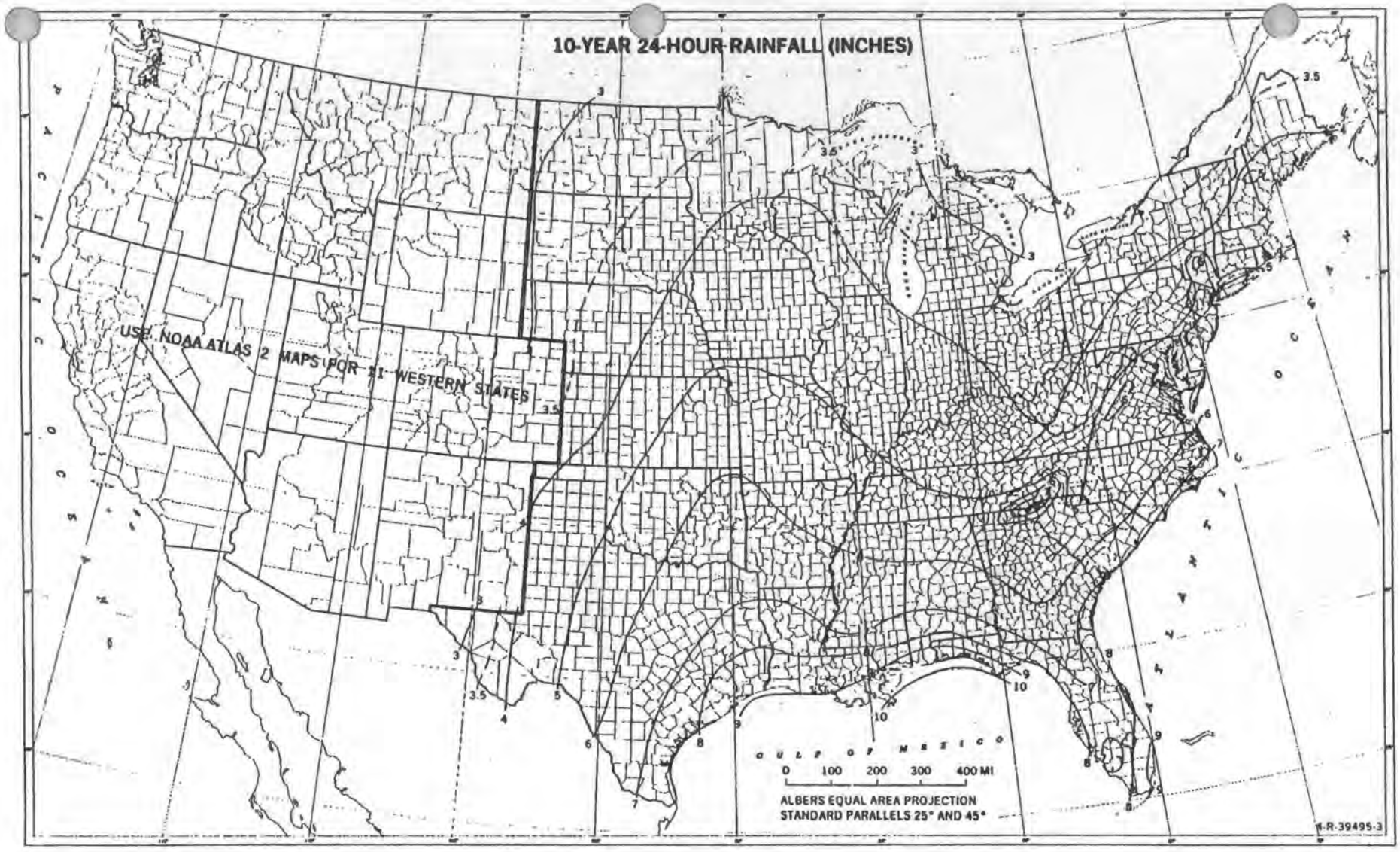

Figure B-5.—Ten-year, 24-hour rainfall.

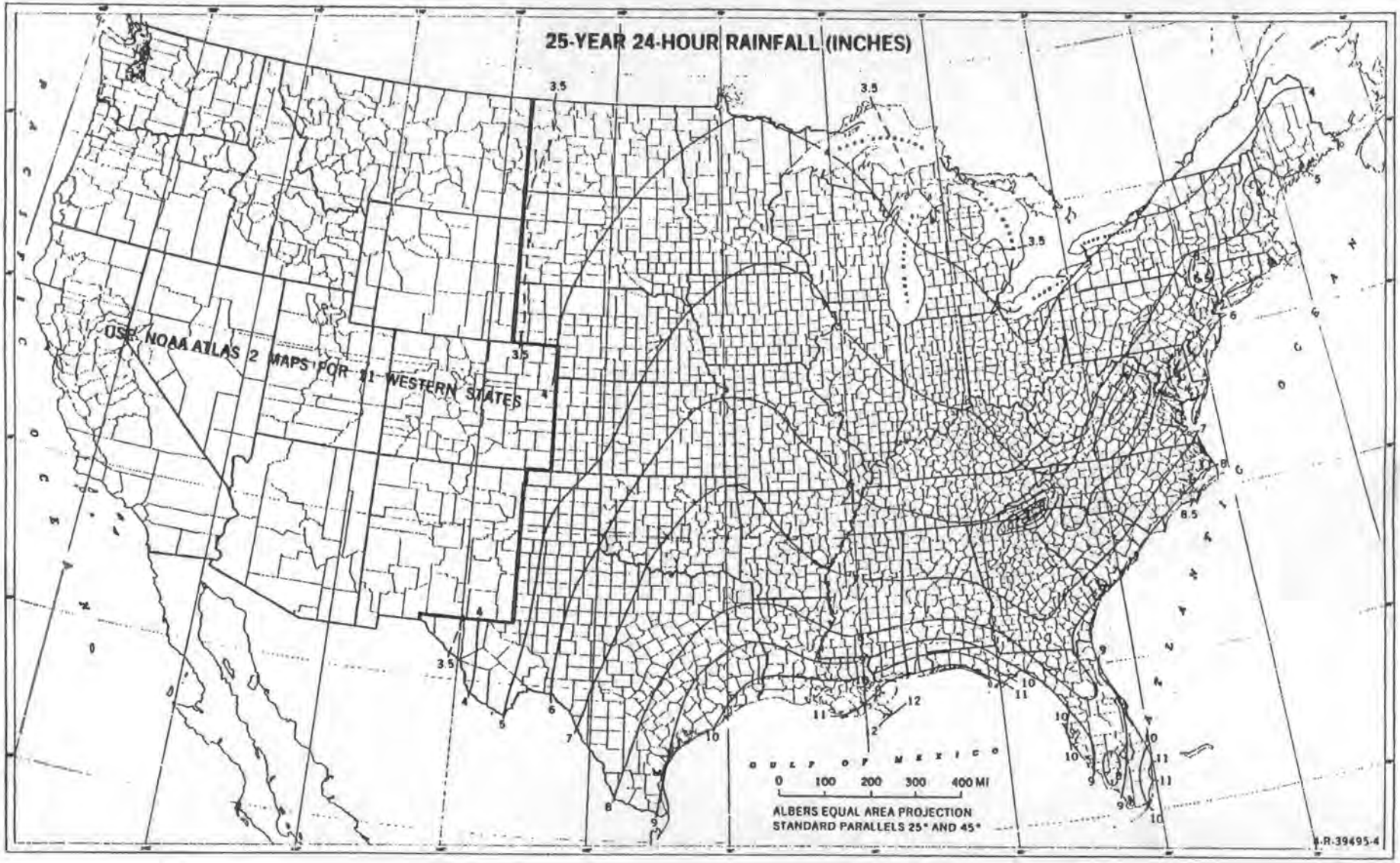

Figure B-6.—Twenty-five-year, 24-hour rainfall.

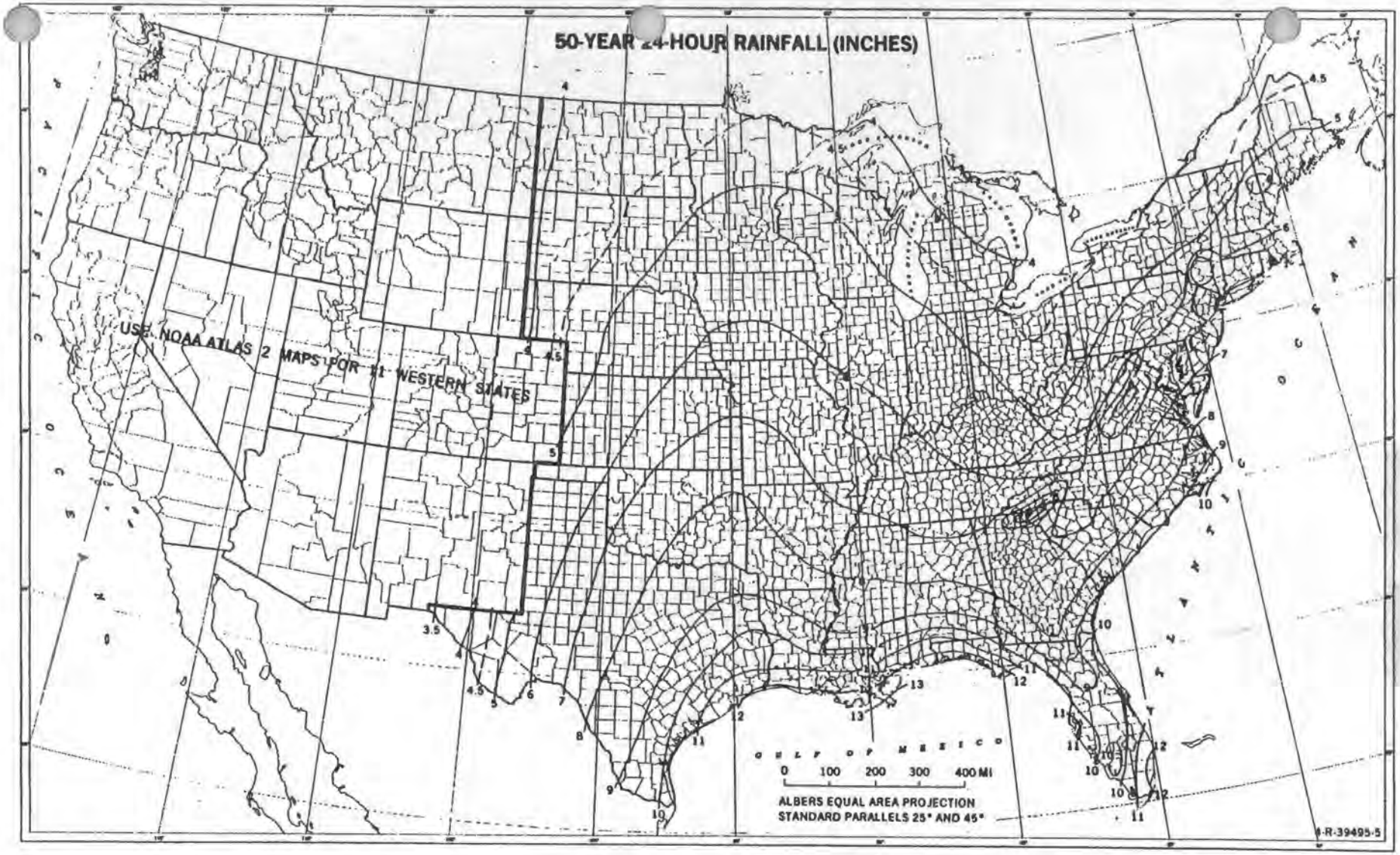

Figure B-7.—Fifty-year, 24-hour rainfall.

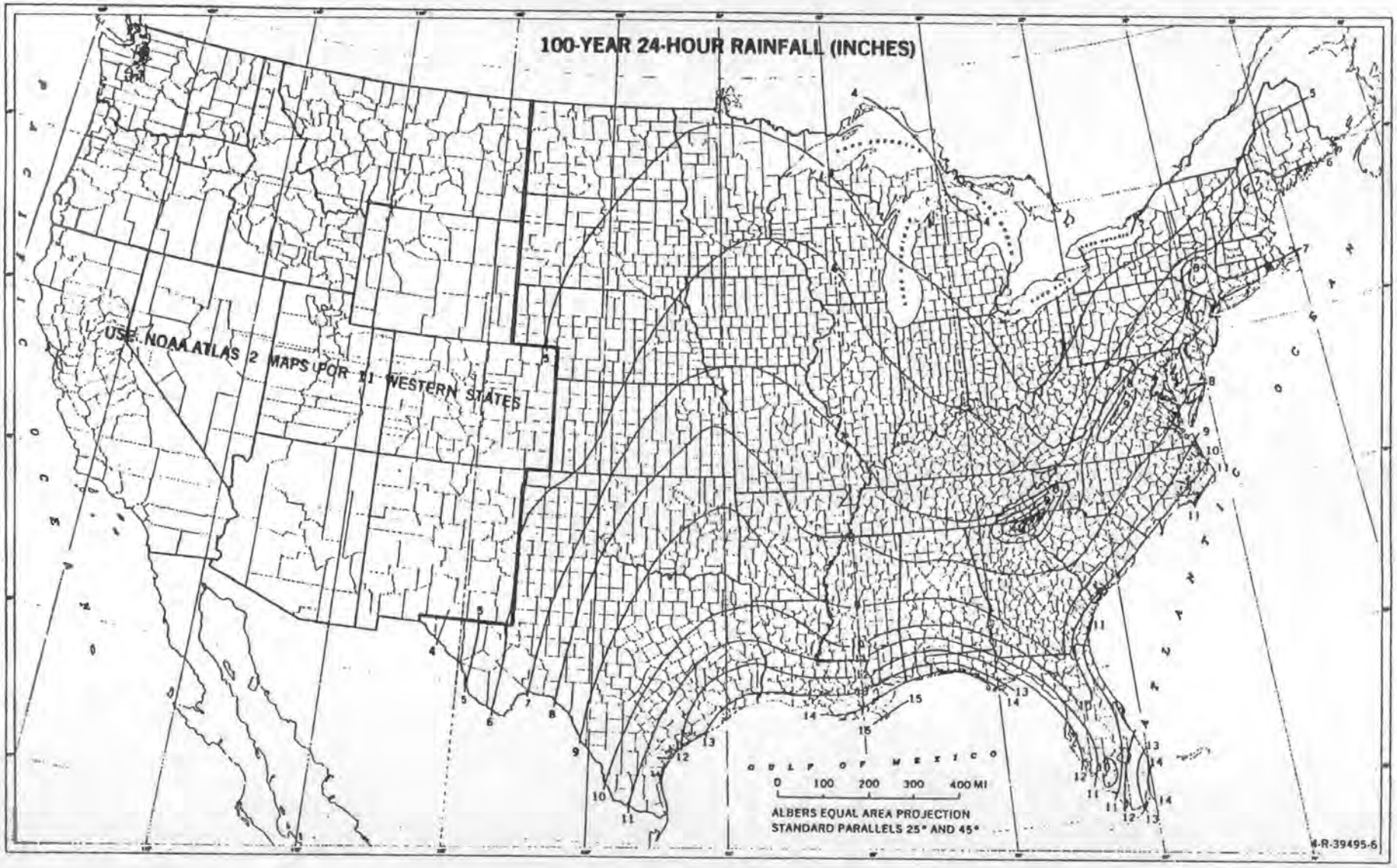

Figure B-8.—One-hundred-year, 24-hour rainfall.

MONITORING AND MANAGEMENT PLAN DOCUMENTS

APPENDIX 5.1

GROUNDWATER MONITORING PLAN

Fort Payne Landfill
Fort Payne, Dekalb County, Alabama



Revised Sampling and Analysis Plan

February 2026

Three Notch Group.
11 West Court Square
Andalusia, AL 36420

CERTIFICATION PAGE

"I certify under penalty of law that I am a registered professional engineer experienced in hydrogeologic investigations and remediation. The groundwater monitoring system and procedures described herein have been designed and constructed to meet the requirements of ADEM Admin Code r 335-13-4-.27. The data evaluation procedures including statistical analysis methods contained herein are deemed appropriate under the requirements of ADEM Admin Code r. 335-13-4-.27(2)(l) for groundwater monitoring of the Fort Payne Landfill facility. The information submitted herein to the best of my knowledge and belief, is true accurate, and complete. I am aware that there are significant penalties for submitting false information."

James Alan Barck, PE
State of Alabama Registration No. 32719

2-9-26
Date



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Appendix A Borehole and Well Completion Logs
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1.0 INTRODUCTION

The following revised Groundwater Sampling and Analysis Plan (GWSAP) details the sampling procedures designed to collect representative samples from the groundwater aquifer beneath the Fort Payne Landfill (Landfill) facility and the analytical procedures and QA/QC controls needed to produce reliable data. This revised GWSAP supersedes previous versions of the plan and has been incorporated into the Operations Manual for the Landfill. The provisions outlined in the GWSAP are consistent with the groundwater monitoring requirements found under ADEM Administrative Code 335-13-4-.27 and the EPA Unified Guidance for Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities (EPA, 2009). This GWSAP includes the following elements:

- Monitoring Well Construction
- Sample collection
- Field analytical procedures
- Sample preservation and shipping
- Chain-of-custody control
- Quality Assurance Project Plan
    - Field
    - Laboratory

The groundwater monitoring activities discussed in this GWSAP are to be conducted throughout the active life and post-closure period of the Landfill.

2.0 SITE BACKGROUND

The Fort Payne Landfill site is located at 1004 Dewyer Avenue SW to the southwest of Fort Payne, Dekalb County, Alabama. The property is situated within Section 7 of Township 7 South, Range 9 East (Figure 1). The geographic coordinates are approximately 34° 26’ 25” N, 85° 44’ 18” W.

3.0 HYDROGEOLOGIC SETTING

The Fort Payne Landfill site is located on Big Ridge adjacent to Big Wills Valley. Topography of the area is characterized by long linear anticlinal ridges and broad synclinal valleys. Surface elevations range from approximately 840 feet above mean sea level (msl) in the valley to approximately 1200 feet above msl on the ridges. Elevations at the landfill site range from 880 feet to 1160 feet above msl.

Based on geologic information published by the Geological Survey of Alabama (Bossong C.R., 1989), the site is located in the Big Wills Valley physiographic district of the Cumberland Plateau physiographic section of Alabama. The landfill site is located on Big Ridge which is underlain by the Red Mountain formation. The Red Mountain formation consists of shale and iron rich sandstones. The Red Mountain is overlain by the Devonian Frog Mountain Sandstone and the Chattanooga Shale and is underlain by the Sequatchie formation.

3.1 Interconnection of Aquifers

Based upon information obtained from the Geological Survey of Alabama publication *Geohydrology and Susceptibility of Major Aquifers to Contamination in Alabama, Area 2* (Bossong C.R., 1989), the major aquifers in the region are the Pottsville, Tuscumbia- Fort Payne, and Knox- Shady aquifers. The landfill site is not within the outcrop area of any of these aquifers. The Tuscumbia-Fort Payne aquifer is stratigraphically above the site and the Knox- Shady aquifer is stratigraphically below the site. Separating the site and the aquifers are shales that are tight and relatively impermeable.

3.2 Seasonal Groundwater

During hydrogeologic investigation activities conducted at the Landfill in 1996, saturated conditions indicative of the saturated zone were encountered at elevation depths ranging from approximately 859 mean sea level (MSL) to 900.9 MSL. Following the installation of the wells, groundwater level measurements were taken on October 1993, October 1996, and November 1996 to establish the seasonal high-water level within the aquifer. Over the three year period the

groundwater levels were observed to fluctuate over a range of 9.7 to 51.1 feet with the seasonal high interpreted to correspond to the potentiometric levels observed on October 01, 1996.

Figure 3 illustrates the interpreted potentiometric surface of the uppermost aquifer based on water level readings collected on November 4, 1996. As shown in Figure 3 the general direction of groundwater movement beneath the Landfill facility is to the southeast with an average gradient of 0.0003.

4.0 MONITORING WELL NETWORK

Monitoring wells have been constructed in accordance with the standards and procedures detailed in the Alabama Environmental Investigation and Remediation Guidance (AEIRG). The current monitoring network at the Landfill consists of four monitoring wells (MW-2, MW-4, MW-5, & MW-8) located as shown in Figure 2. Borehole logs showing construction details for MW-4 and MW-5 monitoring wells are included in Appendix A.

4.1 Soil Boring Procedures

From 1981 to 1993, a network of groundwater monitoring wells was installed at the Landfill facility as part of a hydrogeologic investigation of the site. The locations for the monitoring wells were selected to provide a distribution of data points both upgradient and down gradient of the landfill.

The soil borings for the monitoring wells were installed using environmental drilling techniques and completed in accordance with regulatory requirement. During the drilling activities representative samples of the encountered geologic units were collected and described in the field by the site geologist with respect to physical characteristics, recovered interval and evidence of groundwater.

4.2 Monitoring Well Construction

Monitoring Well MW-2 was installed by others in August 1981, in a borehole 62 feet deep with 20 feet of 4-inch PVC screen (slot size unknown), and 44 feet of 4-inch PVC riser. It is unknown

if a sand pack was placed around the screen, and it is very unlikely that a bentonite seal was placed in the borehole annulus above the screen. The open space between the well riser and the borehole wall was probably not grouted in Monitoring Well MW2. Utilizing the Drillers Log for Monitoring Well MW2 there was "fill dirt and topsoil" from the surface to a depth of 18.0 feet; "tan yellow clay" to a depth of 23.5 feet; "tan yellow clay with pieces of limestone" to a depth of 37.0 feet; and "solid limestone" to a depth of 62.0 feet.

Monitoring Well MW-4 was installed in September 1993, in an 8.5-inch diameter borehole. The monitoring well was constructed of 20 feet of threaded Schedule 80 4-inch PVC screen with 0.010 slots, and 240 feet of threaded Schedule 80 4-inch PVC riser (no glues or sealants used). A PVC plug was put on the bottom of the screen, and the screen was set at the bottom of the borehole. A coarse (#2) filter sand was placed around the screen to 10 feet above the screen. A bentonite chip seal, 5 feet thick, was placed on top of the filter sand. Sur-grout bentonite slurry was placed between the riser and the borehole wall from the top of the bentonite chip seal to the surface. An 8-inch steel protective casing was placed (in concrete) over the well riser from 2.5 feet below the surface to 2.5 feet above the surface. A concrete pad was constructed at the surface around the base of the protective overing. Four steel bumper posts were installed in the concrete pad around the protective casing to provide further protection for the monitoring well.

Due to the depth of the well and the difficulty in bailing groundwater from MW4 until the Ph, temperature, and specific conductivity stabilized, a stainless steel 3-inch diameter 0.5 hp Grundfos pump was installed in the well for purging and to take groundwater samples. The pipe from the pump to the surface is constructed of Schedule 80 1-inch threaded PVC with threaded PVC couplings (no glue or sealants). A 12 AWG Type TW submersible pump electrical cable runs inside the well riser from the surface to the pump. The pump pipe and the electrical cable is set through a well seal at the top of the riser. The pump is set at a depth of 240 feet below the surface, and the pump produces 7.5 gallons of water per minute after initial drawdown.

Monitoring Well MW-5 was installed in September 1993, in an 8.5-inch diameter borehole. The monitoring well was constructed of 20 feet of threaded Schedule 80 4-inch PVC screen with

0.010 slots, and 449 feet of threaded Schedule 80 4-inch PVC riser (no glues or sealants used). A PVC plug was put on the bottom of the screen, and the bottom of the screen was set 4 feet above the bottom of the borehole (borehole cuttings were in the bottom 4 feet). A coarse (#2) filter sand was placed around the screen to 10 feet above the screen. A bentonite chip seal, 5 feet thick, was placed on top of the filter sand. Sur-grout bentonite slurry was placed between the riser and the borehole wall from the top of the bentonite chip seal to the surface. An 8-inch steel protective casing was placed (in concrete) over the well riser from 2 feet below the surface to 3 feet above the surface. A concrete pad was constructed at the surface around the base of the protective covering. Four steel bumper posts were installed in the concrete pad around the protective casing to provide further protection to the monitoring well.

Due to the depth of the well and the difficulty in bailing groundwater from MW5 until the Ph, temperature, and specific conductivity stabilized, a stainless steel 3-inch diameter 0.75 hp Grundfos pump was installed in the well for purging and to take groundwater samples. The pipe from the pump to the surface is constructed of Schedule 80 1-inch threaded PVC with threaded PVC couplings (no glue or sealants). A 12 AWG Type TW submersible pump electrical cable runs inside the well riser from the surface to the pump. The pump pipe and the electrical cable is set through a well seal at the top of the riser. The pump is set at a depth of 380 feet below the surface, and the pump produces 2.5 gallons of water per minute after initial drawdown.

There is no available Monitoring Well construction details for MW-8. The only details currently known are the total well depth of 84 feet below ground surface and the well elevation of 937.18 mean sea level (MSL).

4.3 Aquifer Testing

To determine the hydraulic conductivity of the alluvial aquifer beneath the Fort Payne Landfill facility aquifer testing was conducted using the installed monitoring wells. On September 30, 1996, pump and recovery testing was conducted at monitoring wells MW-4 and MW-5 to collect data for use in calculating the average hydraulic conductivity of the saturated zone. The initial hydraulic head was recorded at the start of each test. Each well was pumped until a

substantial amount of water was withdrawn from the wells. Pumps were turned off and the water was allowed to stabilize to the original hydraulic head. As the wells recovered, the change in the elevation of the water level was recorded with time.

The data recorded at each well during the pump and recovery tests and the Hvorslev Method was used for calculation of hydraulic conductivity. The calculated K values ranged from 0.76 ft/day to 2.86 ft/day. Using the transmissivity of the surficial aquifer ranged from 3.80 ft^3/day to 14.30 ft^3/day.

5.0 GROUNDWATER SAMPLING PROCEDURES

Groundwater sample collection procedures are in accordance with the ADEM Alabama Environmental Investigation and Remediation Guidance (AEIRG) Rev. 4.0 February 2017. Monitoring wells MW-4 and MW-5 at the Landfill are supposed to be equipped with dedicated submersible centrifugal pumps. The dedicated centrifugal pumps installed in each of the facility monitoring wells are designed to be durable and low maintenance. MW-2 and MW-8 will be low flow purged with an electrical submersible pump. Any sampling equipment or procedural changes occurring during the sampling event will be documented on field sampling log and subsequently in the operating records for the facility.

5.1 Sampling Frequency

Groundwater sampling activities at the Landfill facility will be conducted on a semi-annual basis with groundwater samples being collected during the months of April and September of each year. Should re-sampling be required, groundwater samples will be collected within 30 days of receiving the analytical results from the semi-annual detection monitoring event. Resampling will be conducted following the same procedures required for semi-annual sample collection.

5.2 Field Instrument Calibration

Normal laboratory procedures are to be followed in measuring field parameters; that is, all field instruments are to be properly calibrated in the field before being used. Prior to initial use and as necessary throughout each sampling event, the field instruments will be properly calibrated

according to the specifications and procedures specified by the manufacturer of the equipment being used. Calibration of the instruments will be performed at a minimum frequency of once per day prior to beginning each day's sampling activities. The calibration standards used will be appropriate for the range of values expected or historically observed for the groundwater beneath the facility. The date and time of all meter calibrations are to be recorded in the field sampling log.

5.3 Equipment Decontamination

Any equipment that will come into contact with the groundwater samples will be thoroughly decontaminated prior to initial use and between sampling locations. The decontamination procedures will consist of a wash using a solution of distilled water and Alconox soap followed by a rinse with distilled water. The flow-thru cell and multi-probe sonde will be disassembled after each use and the individual components decontaminated separately. During decontamination care will be taken not to damage the membranes on the pH, DO, and redox probes.

5.4 Static Water Level Measurements

Based on the previously conducted hydro-geological evaluation of the Landfill facility it is evident that seasonal water level fluctuations of greater than several feet can occur in the shallow aquifer beneath the facility. To allow for an accurate interpretation of the groundwater flow within the shallow aquifer during each sampling event, a complete set of static water level measurements will be obtained from all of the site monitoring wells during a single 24-hour period.

A portable electronic water-level probe will be used to measure the depth to groundwater below the top of the well casing. Groundwater levels will be measured to at least the nearest 0.01 foot and recorded on the field sampling forms. The top of casing elevation relative to mean sea level has been established by a professional survey. Based on the top of casing elevation and the measured water level, a groundwater elevation at each monitoring well can be calculated to allow

for an interpretation of the direction and magnitude of the hydraulic gradient within the upper saturated zone beneath the Landfill at the time of sampling.

5.5 Pre-Sample Purging

To ensure that samples collected from the wells are representative of the water in the formation, each of the monitoring wells will be properly purged prior to sampling. This will be accomplished through the removal of groundwater from the well until the field measurements for pH, specific conductance, and turbidity have stabilized. Prior to collection of groundwater samples, each well will be purged using low-flow sampling techniques. During the well purging activities, physical and chemical properties of the groundwater will be monitored using a flow-thru cell equipped with a multi-probe sonde connected to a properly calibrated field instrument.

Under low flow rate conditions, the field parameters should stabilize after the removal of at least one well volume of groundwater. The final purge volumes will be dependent upon the stabilization of the field parameters measured during purging. Field parameters will be considered stabilized when three successive measurements of pH and specific conductivity vary by no more than 10 percent and the turbidity of the groundwater is less than 10 NTUs, if achievable. The purge data will be included in the field notes for the sampling event. An example of a groundwater field sampling log form can be found in Appendix C.

All monitoring wells will be sampled using a submersible pump. The pump is not to be turned off until all required samples have been collected. Dedicated sampling tubes will be used at each well. This tube will be rinsed with distilled water and attached to the pump discharge nozzle on the wellhead. The sampling tubing will then be attached to the bottom port on the flow-tru cell to ensure that the cell remains filled with water throughout the purging and sampling activities.

The pumping rate will be adjusted to produce a consistent flow of water and to minimize the amount of drawdown in the well. The target maximum drawdown with the well should be less than 0.1 m (0.33 ft). The pumping rate will be measured periodically and recorded in the field sampling field log.

5.6 Field Parameter Measurements

Six field parameters - temperature, pH, dissolved oxygen (DO), oxidation/reduction potential (redox), specific conductivity (SpC), and turbidity will be continuously monitored during the purging and sampling of each well using a flow-thru cell and multi-probe sonde. Periodic values for these parameters will be recorded in the field sample log for each well.

5.7 Sample Collection

Samples must be collected so that no foreign material is introduced into the sample and no material of interest escapes from the sample prior to analysis. Groundwater sampling procedures will conform to the protocols of EPA SW-846 - Test Methods for Evaluating Solid Waste, Physical/Chemical Methods. Table 2 outlines the analytical parameters to be used for the groundwater monitoring program at the Landfill.

In the field, groundwater will be collected directly into the appropriate containers and preserved as specified in accordance with SW-846 protocols (see Table 2 and Table 3). Standard laboratory practice is to provide the sampling kits with the containers pre-preserved as appropriate for the required analytical procedures. Maximum holding times are listed in Appendix G, Table 1 of the AEIRG (ADEM, February 2017).

5.8 Sample Labeling

Prior to sample collection a permanent adhesive label will be affixed to each sample container. The label will be completed with the site name, well number, time and date of sample collection laboratory analysis, preservation method, and the initials of the individual collecting the sample. Sample containers may be prelabeled prior to mobilizing to the field.

5.9 Sample Preservation and Handling

All samples are to be collected, preserved, and handled in accordance with EPA's SW-846. The analysis of the collected groundwater samples will be performed by an off-site third-party laboratory services provider. Prior to each sampling event the site project manager will contact the analytical laboratory and provide notification of the anticipated schedule for sample collection

as well as the number of samples to be collected, the required analyses to be performed, and the required turn-around time for sample results. The analytical laboratory will provide sampling kits consisting of the necessary sample containers with the appropriate preservatives required for the analytical methods to be performed along with shipping containers. In addition to the well samples, the sampling kits will include containers for the collection of a field blank, a trip blank, and a field duplicate as discussed in the QA/QC section.

5.10 Chain of Custody Documentation

Upon receipt of the kits, field personnel should complete an inventory of the contents to confirm that the containers are adequate for the number of wells and specified analytes and contain the proper preservative. Sample containers may be pre-labeled prior to being transported to the site. The individual sample containers are not to be opened until used in the field. Up until the time of use, sample kits are to be stored in a secure location that is under the direct control of the site project manager.

All collected samples are to remain in the custody of the site project manager until they are delivered to the laboratory or are transferred to the custody of a common carrier for shipment to the laboratory. In cases where samples leave the direct control of the site project manager, such as shipment to a laboratory by a common carrier (FedEx, UPS, etc.), a custody seal will be placed on the shipping container or on the individual sample bottles to ensure that the samples have not been opened or otherwise disturbed during transportation.

To establish and maintain the documentation necessary to trace sample possession from the time of collection, a chain of custody record will be completed and will accompany the samples. The chain of custody documentation will contain the following information:

- Unique sample identifier
- Date and time of sample collection
- Sample type (soil, groundwater, air, etc.)
- Number of containers per sample

- Parameters requested for analysis
- The signature of the site project manager responsible for collecting the samples
- The name, signature and affiliation of each person who had direct control of the samples

It will not be necessary to obtain the signature of common carrier personnel if the custody seal on the shipping container remains intact. An example of a chain of custody form is included in Appendix D.

5.11 Field Quality Assurance/ Quality Control Procedures

To verify that the sample collection and handling process has not affected the quality or integrity of the samples, a minimum of one field blank, one field duplicate and one trip blank will be collected during each sampling event. The results of the analysis of the blanks will not be used to correct the groundwater data. If contaminants are found in the blanks, an attempt to identify the source of contamination will be initiated and corrective action, including re-sampling if necessary, will be evaluated.

5.11.1 Field Blank

For the purposes of the groundwater monitoring program at the Landfill facility a field blank will consist of a set of sample containers filled at the monitoring well site using deionized water. The field blank will be submitted for laboratory analysis of the constituents being analyzed under the current monitoring program. The frequency of field blank collection and submittal will be a minimum of one per sampling event.

The field blank will be used to evaluate potential sample contamination by airborne site contaminants (dust, exhaust, fuel vapors) not associated with the groundwater samples collected. Site waste disposal activities and wind direction will determine where the field blank samples will be collected.

5.11.2 Field Duplicate

For the purposes of the groundwater monitoring program at the Landfill, a field duplicate will be a second set of sample containers taken from a single well at the same time as the standard sample from that location. In collecting the field duplicate, the sample containers for both the standard

sample and the duplicate will be filled sequentially. The field duplicate will be labeled in such a manner that it is submitted blind to the laboratory for analysis without any indications of the well from which it was collected. A minimum of one field duplicate will be collected per sampling event.

5.11.3 Trip Blank

Trip blanks are used to determine if samples were contaminated during handling, storage and/or transportation to the analytical laboratory. The trip blank provides a control measure for sample handling variability that may result in a positive bias of contaminant concentrations. A trip blank will be prepared and provided by the analytical laboratory prior to each sampling event and will be stored with the sampling containers and groundwater samples throughout the sampling event. The trip blank will be shipped with the other samples and submitted for analysis. Trip blanks will not be opened after preparation or prior to reaching the analytical laboratory. If samples are to be shipped, a trip blank will be required for each shipment but not for each shipping container/cooler.

5.11.4 Sample Packing and Shipment

Once all of the samples are collected and prepared and the chain-of-custody forms are completed, the samples will be prepared for shipment to the analytical laboratory. Insulated sample shipping containers will be used to provide adequate protection for the samples and to maintain the samples at a constant temperature at or below 4°C. Each shipping container will be supplied by the analytical laboratory with a temperature blank to ensure that the samples have been maintained at the proper temperature.

Each shipping container will be equipped with an inner waterproof liner into which the samples will be placed along with a sufficient volume of ice to cool and maintain the temperature of the sample while in transit to the analytical laboratory. The inner liner will be secured in such a manner as to prevent fluids from leaking from the shipping container while in transit to the laboratory. The completed chain-of-custody forms will be placed inside the shipping container and the container will be sealed with shipping tape and secured with a custody seal. The containers will be shipped by express service to the contract laboratory for analysis.

5.11.5 Field Data Validation Procedure

After completing a sampling program, the field data package (field logs, calibration records, chain of custody forms, etc.) will be reviewed for completeness and accuracy. Some of the items considered in the Field Data Package Validation Procedure include but are not limited to the following:

- A completeness review of field data contained on water sampling logs;
- A verification that sample blanks were properly prepared, identified, and analyzed;
- A check on field analyses for equipment calibration and condition; and
- A review of chain of custody forms for proper completion, signatures of field personnel and the laboratory sample custodian, and dates.

6.0 LABORATORY ANALYTICAL PROCEDURES

All analytical procedures will comply with EPA SW-846 EPA *Test Methods for Evaluating Solid Waste - Physical/Chemical Methods*, as updated and other EPA-approved methods. The monitoring program constituents, along with recommended test methods and PQLs, are listed in Table 2 and Table 3. Alternate methods may be used if they have the same or lower PQL. Methods with higher PQLs will be considered if the concentration of the parameter is such that an alternate test method with a higher PQL will provide the same result.

6.1 Limits of Quantitation (LOQs)

Laboratory-specific LOQs will be used as the reporting limits (RLs) for quantified detections of required monitoring constituents. Laboratory LOQs should be reported with the sample results.

6.2 Limits of Detection (LODs)

Laboratory-specific LODs will be used as the RLs for estimated detections of required monitoring constituents. Constituents detected at concentrations above the LOD but below the LOQ will be reported as estimated with a qualifying "J" flag on the laboratory certificates of analysis. Laboratory LODs should be reported with the sample results.

6.3 Method Blanks

Laboratory method blanks are used during the analytical process to detect any laboratory-introduced contamination that may occur during analysis. A minimum of one method blank will be analyzed by the laboratory per sample batch.

6.4 Matrix Spike and Matrix Spike Duplicate Samples

A matrix spike/matrix spike duplicate sample will be run with every sample batch. The relative percent difference between the spike and the spike duplicate sample should be less than 20 percent. Higher values may indicate matrix interference. Changes in detection limits due to matrix problems or interferences that may affect detection limits for individual samples will be noted in the final analytical report.

7.0 GROUNDWATER DATA EVALUATION

Evaluation of the groundwater data will be completed as discussed in the following subsections. These criteria represent a conservative approach to groundwater analysis and incorporate appropriate statistical and other evaluation methodologies. A detailed discussion of the statistical approach is provided in the facility Statistical Analysis Plan included as Appendix B.

7.1 Establishing Background

As required under ADEM Admin. Code r. 335-13-4-.27(2)(j), the background concentrations of each of the analytical constituents will be established by the collection of a minimum of four (4) independent samples from each of the facility's monitoring wells. Throughout the groundwater monitoring program, a review will be conducted periodically to determine if background concentrations should be updated. The EPA's Unified Guidance recommends this review be conducted at a frequency of 2 to 3 years.

If background wells are added to the monitoring network, a series of four independent samples will be collected from the new well(s) for the required analytical constituents. The analytical data from these samples will be evaluated using the statistical analysis of variance discussed in the facility Statistical Analysis Plan (Appendix B).

7.2 Detection Monitoring Analytical Requirements

Upon initiation of the groundwater monitoring program detail in the GWSAP, representative samples will be collected from each of the groundwater monitoring wells at the Landfill facility on a semi-annual basis and submitted for laboratory analysis of the constituents listed in Appendix I to ADEM Admin. Code r. 335-13-4. The list of Appendix I Constituents is included in Table 2.

With the approval of the Department, constituents may be deleted from the detection monitoring program if it can be shown that the removed constituents are not reasonably expected to be contained in or derived from the waste contained in the unit.

Groundwater pH and Specific Conductance are also included under Appendix I, however these parameters will be determined by measurements made in the field at the time of groundwater sample collection using a properly calibrated meter.

7.3 Statistical Evaluation of Groundwater Analytical Results

As required under ADEM Admin. Code r. 335-13-4-.27 the analytical results of each of the Appendix I List constituents (found in Table 2) will be compared to the established background concentration for that constituent using one or more of the approved statistical methods details in the Unified Guidance for Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities (EPA, 2009). The statistical method(s) used for the evaluation will be appropriate for the distribution of the data. A more detailed discussion of the statistical methods and procedures is provided in the facility Statistical Analysis Plan included in Appendix B.

In accordance with ADEM Admin. Code r. 335-15-4-.27(2)(l) the selected statistical test to be used to evaluate the groundwater monitoring data at the Landfill facility will be a prediction interval or tolerance interval method as allowed under ADEM Admin. Code r. 335-13-4-.27(2)(l)3, unless this test is determined to be inappropriate for the background data set. It may be necessary to employ more than one statistical method to evaluate the data. The appropriate

statistical method will be performed on each individual constituent in each monitoring well following each semi-annual sampling event.

If one or more alternative statistical tests are used, an adequate number of independent samples for the statistical method will be collected within the compliance period such that the level of significance for individual well comparison will be no less than 0.01 and no less than 0.05 for multiple comparisons for any statistical test.

7.4 Verification Resampling

If it should be determined that a statistically significant increase (SSI) above background is indicated for one or more of the required analytical constituents, resampling of the groundwater from the affected well for that particular constituent may be performed within a period not to exceed 30 days. If the results of the resample do not indicate an SSI then a second resample may be collected within a period of 30 days. If the results of the second resample also do not indicate an SSI then the initial result will be considered a false positive and detection monitoring will continue. If the results of either of the resamples indicate an SSI the initial result will be considered valid and will be reported as an SSI above background.

7.5 Alternative Source Demonstration (ASD)

It may be demonstrated at any time that a source other than the landfill has caused contamination that has resulted in the identification of an SSI above background for an Appendix I list (found in Table 2) or Appendix II list constituent. In addition to an upgradient source, other potential sources including fugitive emissions, cross contamination at the analytical laboratory, an error in sampling, carry over during analysis, statistical evaluation, or natural variation in groundwater quality may be evaluated. A report documenting this demonstration must be certified by a qualified geologist or engineer and be placed in the operating record. If a successful demonstration is made and documented, detection monitoring may continue. If a successful demonstration is not made, an assessment monitoring program must be initiated.

7.6 Assessment Monitoring Analytical Requirements

If it should be determined after resampling, that one or more of the constituents listed under Appendix I (Table 2) are present at a concentration that represents a statistically significant increase above background, an alternate source demonstration will be completed. If no alternate source for the statistically elevated constituent is identified, then Assessment Monitoring will be initiated in accordance with the requirements under ADEM Admin Code r.335-13-4-.27(4). Under Assessment Monitoring, analysis for the constituents listed in Appendix II to ADEM Admin Code r.335-13-4 will be required in addition to the Appendix I list constituents (Table 2). The list of Appendix II Constituents is included in Table 3.

Appendix II list sampling will be completed for the downgradient monitoring well exhibiting a statistically significant increase above background for two consecutive monitoring events. If any Appendix II list parameter is detected, that parameter will be added to the monitoring program for that specific well. Subsequent assessment monitoring will consist of the Appendix I list and the detected Appendix II list parameter, if any are detected.

For each of the constituents listed in Appendix II, a groundwater protection standard (GWPS) will be established. The GWPS will be the greater of either the published maximum contaminant level (MCL) for that constituent or the background level of that constituent as determined from the statistical evaluation procedures discussed in the facility Statistical Analysis Plan (Appendix B).

If the concentrations of all Appendix II constituents are shown to be at or below background values, using the statistical procedures detailed in Appendix B for two consecutive sampling events, the landfill may return to detection monitoring following proper notification to ADEM.

7.7 Comparison to Groundwater Protection Standards

Following the establishment of GWPS under the Assessment Monitoring Program, detected constituents will be statistically compared to the approved GWPS using one of the methods discussed in the Statistical Analysis Plan (Appendix B).

If the concentrations of any Appendix II constituents are found to be above background values, but all concentrations are below the GWPS, assessment monitoring will continue. If one or more Appendix II constituents are detected at statistically significant levels (SSL) above the GWPS, a notification must be provided to ADEM within 14 days of this finding. An alternative source demonstration (ASD) may be performed to determine if the SSI is the result of a source other than the landfill. If a successful ASD is made, assessment monitoring must continue. The landfill may return to detection monitoring once the Appendix II constituent concentrations are determined to be below background for two consecutive monitoring periods. If a successful ASD cannot be made, an assessment of corrective measures (ACM) must be initiated.

7.8 Corrective Action

If it should be determined that any of the constituents listed under Appendix II exceed their respective GWPS then it will be necessary to initiate an Assessment of Corrective Measures (ACM) as required under ADEM Admin Code r.335-13-4-.27(5)(a) and to implement a corrective action program as required under ADEM Admin Code r.335-13-4-.27(5)(e). During corrective action, groundwater monitoring will continue to be conducted according to the procedures and schedule discussed above.

8.0 REPORTING

A semi-annual report will also be prepared following each semi-annual sampling event as required under ADEM Admin Code r. 335-13-4-.27. The semi-annual reports will be submitted for ADEM review within 90 days of the March and September sampling events.

Each semi-annual report will follow the format and include the content defined in the ADEM Alabama Groundwater Monitoring Reporting Guidance for Solid Waste Facilities (March, 2011). The semi-annual report will include at a minimum:

- A discussion of the current status of the groundwater monitoring program at the Landfill.
- A discussion of any circumstances that occurred during the current period that required changes or deviations from the established groundwater monitoring program.

- A determination of the groundwater flow direction and gradient beneath the Landfill.
- A discussion of the current groundwater monitoring results.
- Recommendations for changes or additional actions to be taken during future monitoring activities.
- A tabulation of current and historical groundwater monitoring data.
- Copies of the laboratory analytical reports for the current period.
- Copies of the field sampling logs for the current period.

In accordance with the requirements of ADEM Admin. Code 335-13-4-.27(4)(g), the Landfill will submit a notification to ADEM within 14 days of the initial detection of any of the constituents found in Appendix II to ADEM Admin. Code r. 335-13-4. A copy of the notification will also be placed in the operating record for the Landfill Facility.

9.0 REFERENCES

ADEM Alabama Groundwater Monitoring Reporting Guidance For Solid Waste Facilities (March, 2011)

ADEM, 2017, Alabama Environmental Investigation and Remediation Guidance (AEIRG), 112p.

EPA, 2009, Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities Unified Guidance, EPA 530-R-09-007, 888p.

TABLES

TABLE 1
MONITORING WELL CONSTRUCTION DETAILS

Well No.	Depth to Groundwater (ft-btc)	Screened Interval[2] (ft-bgl)	Total Depth[1] (ft-btc)	Top of Casing Elev. (ft-msl)
MW-2	31	42 - 62	62	903.62
MW-4	148	234 - 254	254	1035.30
MW-5	263	434 - 454	454	1150.38
MW-8	49	Unknown	84	888.38

1) Measured from top of casing (btc)
2) Measured from ground surface during well installation (bgl)

TABLE 2
335-13-4-APPENDIX I CONSTITUENTS FOR DETECTION MONITORING[1]

	Common Name[2]	CAS Number[3]
	pH[4]	N/A
	Specific Conductance[4]	N/A
	Inorganic Constituents	
1.	Antimony	Total
2.	Arsenic	Total
3.	Barium	Total
4.	Beryllium	Total
5.	Cadmium	Total
6.	Chromium	Total
7.	Cobalt	Total
8.	Copper	Total
9.	Lead	Total
10.	Mercury	Total
11.	Nickel	Total
12.	Selenium	Total
13.	Silver	Total
14.	Thallium	Total
15.	Vanadium	Total
16.	Zinc	Total
	Organic Constituents	
17.	Acetone	67-64-1
18.	Acrylonitrile	107-13-1
19.	Benzene	71-43-2
20.	Bromochloromethane	74-97-5
21.	Bromodichloromethane	75-27-4
22.	Bromoform; Tribromomethane	75-25-2
23.	Carbon disulfide	75-15-0
24.	Carbon tetrachloride	56-23-5
25.	Chlorobenzene	108-90-7
26.	Chloroethane; Ethyl chloride	75-00-3
27.	Chloroform; Trichloromethane	67-66-3
28.	Dibromochloromethane; Chlorodibromomethane	124-48-1
29.	1,2-Dibromo-3-chloropropane (DBCP)	96-12-8
30.	1,2-Dibromoethane; Ethylene dibromide; EDB	106-93-4
31.	o-Dichlorobenzene; 1,2-Dichlorobenzene	95-50-1
32.	p-Dichlorobenzene; 1,4-Dichlorobenzene	106-46-7
33.	trans-1,4-Dichloro-2-butene	110-57-6
34.	1,1-Dichloroethane; Ethylidene chloride	75-34-3
35.	1,2-Dichloroethane; Ethylene dichloride	107-06-2
36.	1,1-Dichloroethylene; 1,1-dichloroethene; Vinylidene chloride	75-35-4
37.	cis-1,2-Dichloroethylene; cis-1,2Dichloroethene	156-59-2
38.	trans-1,2-Dichloroethylene; trans-1,2-Dichloroethene	156-60-5

TABLE 2 (cont)
335-13-4-APPENDIX I CONSTITUENTS FOR DETECTION MONITORING[1]

	Common Name[2]	CAS Number[3]
39.	1,2-Dichloropropane; Propylene dichloride	78-87-5
40.	cis-1,3-Dichloropropene	10061-01-5
41.	trans-1,3-Dichloropropene	10061-02-6
42.	Ethylbenzene	100-41-4
43.	2-Hexanone; Methyl butyl ketone	591-78-6
44.	Methyl bromide; Bromomethane	74-83-9
45.	Methyl chloride; Chloromethane	74-87-3
46.	Methylene bromide; Dibromomethane	74-95-3
47.	Methylene chloride; Dichloromethane	75-09-2
48.	Methyl ethyl ketone; MEK; 2-Butanone	78-93-3
49.	Methyl iodide; Iodomethane	74-88-4
50.	4-Methyl-2-pentanone; Methyl isobutyl ketone	108-10-1
51.	Styrene	100-42-5
52.	1,1,1,2-Tetrachloroethane	630-20-6
53.	1,1,2,2-Tetrachloroethane	79-34-5
54.	Tetrachloroethylene; Tetrachloroethene; Perchloroethylene	127-18-4
55.	Toluene	108-88-3
56.	l,l,l-Trichloroethane; Methylchloroform	71-55-6
57.	1,1,2-Trichloroethane	79-00-5
58.	Trichloroethylene; Trichloroethene	79-01-6
59.	Trichlorofluoromethane; CFC-11	75-69-4
60.	1,2,3-Trichloropropane	96-18-4
61.	Vinyl acetate	108-05-4
62.	Vinyl chloride	75-01-4
63.	Xylenes	1330-20-7

Notes

[1] This list contains 47 volatile organics for which possible analytical procedure provided in EPA Report SW-846, "Test Methods for Evaluating Solid Waste," Third Edition, November 1986, as revised December 1987, includes Method 8260; and 15 metals for which SW-846 provides either Method 6010 or a method from the 7000 series of methods.

[2] Common names are those widely used in government regulations, scientific publications, and commerce; synonyms exist for many chemicals.

[3] Chemical Abstracts Service registry number. Where "Total" is entered, all species in the groundwater that contain this element are included.

[4] State specific requirements.

TABLE 3

335-13-4-APPENDIX II LIST OF HAZARDOUS INORGANIC AND ORGANIC CONSTITUENTS[1]

Common Name[2]	CAS Number[3]	Chemical Abstracts Service Index Name[4]	Suggested Methods[5]	PQL (□g/L)[6]
Acenaphthene	83-32-9	Acenaphthylene, 1,2-dihydro-	8100 8270	200 10
Acenaphthylene	208-96-8	Acenaphthylene	8100 8270	200 10
Acetone	67-64-1	2-Propanone	8260	100
Acetonitrile; Methyl cyanide	75-05-8	Acetonitrile	8015	100
Acetophenone	98-86-2	Ethanone, 1-phenyl-	8270	10
2-Acetylaminofluorene; 2-AAF	53-96-3	Acetamide, N-9H-fluoren-2-yl-	8270	20
Acrolein	107-02-8	2-Propenal	8030 8260	5 100
Acrylonitrile	107-13-1	2-Propenenitrile	8030 8260	5 200
Aldrin	309-00-2	1,4,5,8,-Dimethanonaphthalene 1,2, 3,4,10,10-hexachloro-1,4,4a,5,8, 8a-hexahydro-(1a,4a, 4aß,5a, 8a,8aß)-	8080 8270	0.05 10
Allyl chloride	107-05-1	1-Propene, 3-chloro-	8010 8260	5 10
4-Aminobiphenyl	92-67-1	[1,1'-Biphenyl]-4-amine	8270	20
Anthracene	120-12-7	Anthracene	8100 8270	200 10
Antimony	(Total)	Antimony	6010 7040 7041	300 2000 30
Arsenic	(Total)	Arsenic	6010 7060 7061	500 10 20
Barium	(Total)	Barium	6010 7080	20 1000
Benzene	71-43-2	Benzene	8020 8021 8260	2 0.1 5
Benzo[a]anthracene; Benzanthracene	56-55-3	Benz[a]anthracene	8100 8270	200 10
Benzo[b]fluoranthene	205-99-2	Benz[e]acephenanthrylene	8100 8270	200 10
Benzo[k]fluoranthene	207-08-9	Benzo[k]fluoranthene	8100 8270	200 10
Benzo[ghi]perylene	191-24-2	Benzo[ghi]perylene	8100 8270	200 10
Benzo[a]pyrene	50-32-8	Benzo[a]pyrene	8100 8270	200 10
Benzyl alcohol	100-51-6	Benzenemethanol	8270	20
Beryllium	(Total)	Beryllium	6010 7090 7091	3 50 2
alpha-BHC	319-84-6	Cyclohexane, 1,2,3,4,5,6-hexachloro- (1a,2a,3ß,4a,5ß,6ß)-	8080 8270	0.05 10
beta-BHC	319-85-7	Cyclohexane, 1,2,3,4,5,6-hexachloro- (1a,2ß,3a,4ß,5a,6ß)-	8080 8270	0.05 20
delta-BHC	319-86-8	Cyclohexane, 1,2,3,4,5,6- hexachloro-	8080	0.1

TABLE 3

335-13-4-APPENDIX II LIST OF HAZARDOUS INORGANIC AND ORGANIC CONSTITUENTS[1]

Common Name[2]	CAS Number[3]	Chemical Abstracts Service Index Name[4]	Suggested Methods[5]	PQL (□g/L)[6]
		(1a,2a,3a,4ß,5a,6ß)-	8270	20
gamma-BHC; Lindane	58-89-9	Cyclohexane, 1,2,3,4,5,6-hexachloro- (1a,2a,3ß,4a,5a,6ß)-	8080 8270	0.05 20
Bis(2-chloroethoxy)methane	111-91-1	Ethane, 1,1[1]-[methylenebis(oxy)] bis[2-chloro-	8110 8270	5 10
Bis(2-chloroethyl) ether;	111-44-4	Ethane, 1,1[1]-oxybis[2-chloro-	8110	3
Dichloroethyl ether			8270	10
Bis(2-chloro-1-methylethyl) ether 2,21-Dichlorodisophropyl ether; DCIP. See note 7	108-60-1	Propane, 2,2[1]-oxybis[1-chloro-	8110 8270	10 10
Bis(2-ethylhexyl) phthalate	117-81-7	1,2-Benzenedicarboxylic acid, bis(2-ethylhexyl) ester	8060	20
Bromochloromethane; Chlorobromomethane	74-97-5	Methane, bromochloro-	8021 8260	0.1 5
Bromodichloromethane; Dibromochloromethane	75-27-4	Methane, bromodichloro-	8010 8021 8260	1 0.2 5
Bromoform; Tribromomethane	75-25-2	Methane, tribromo-	8010 8021 8260	2 15 5
4-Bromophenyl phenyl ether	101-55-3	Benzene, 1-bromo-4-phenoxy-	8110 8270	25 10
Butyl benzyl phthalate; Benzyl butyl phthalate	85-68-7	1,2-Benzenedicarboxylic acid, butyl phenylmethyl ester	8060 8270	5 10
Cadmium	(Total)	Cadmium	6010 7130 7131	40 50 1
Carbon disulfide	75-15-0	Carbon disulfide	8260	100
Carbon tetrachloride	56-23-5	Methane, tetrachloro-	8010 8021 8260	1 0.1 10
Chlordane	See note 8	4,7-Methano-1H-indene, 1,2,4,5, 6,7,8,8- octachloro- 2,3,3a,4,7,7a-hexahydro-	8080 8270	0.1 50
p-Chloroaniline	106-47-8	Benzenamine, 4-chloro-	8270	20
Chlorobenzene	108-90-7	Benzene, chloro-	8010 8020 8021 8260	2 2 0.1 5
Chlorobenzilate	510-15-6	Benzeneacetic acid, 4-chloro-a- (4-chlorophenyl)-a-hydroxy-ethyl ester	8270	10
p-Chloro-m-cresol; 4-Chloro-3-methylphenol	59-50-7	Phenol, 4-chloro-3-methyl-	8040 8270	5 20
Chloroethane; Ethyl chloride	75-00-3	Ethane, chloro-	8010 8021 8260	5 1 10
Chloroform; Trichloromethane	67-66-3	Methane, trichloro-	8010 8021 8260	0.5 0.2 5

TABLE 3

335-13-4-APPENDIX II LIST OF HAZARDOUS INORGANIC AND ORGANIC CONSTITUENTS[1]

Common Name[2]	CAS Number[3]	Chemical Abstracts Service Index Name[4]	Suggested Methods[5]	PQL (□g/L)[6]
2-Chloronaphthalene	91-58-7	Naphthalene, 2-chloro-	8120 8270	10 10
2-Chlorophenol	95-57-8	Phenol, 2-chloro-	8040 8270	5 10
4-Chlorophenyl phenyl ether	7005-72-3	Benzene, 1-chloro-4-phenoxy-	8110 8270	40 10
Chloroprene	126-99-8	1,3-Butadiene, 2-chloro-	8010 8260	50 20
Chromium	(Total)	Chromium	6010 7190 7191	70 500 10
Chrysene	218-01-9	Chrysene	8100 8270	200 10
Cobalt	(Total)	Cobalt	6010 7200 7201	70 500 10
Copper	(Total)	Copper	6010 7210 7211	60 200 10
m-Cresol; 3-methylphenol	108-39-4	Phenol, 3-methyl-	8270	10
o-Cresol; 2-methylphenol	95-48-7	Phenol, 2-methyl-	8270	10
p-Cresol; 4-methylphenol	106-44-5	Phenol, 4-methyl-	8270	10
Cyanide	57-12-5	Cyanide	8270	10
2,4-D; 2,4-Dichlorophenoxyacetic acid	94-75-7	Acetic acid, (2,4-dichlorophenoxy)-	8150	10
4,4[1]-DDD	72-54-8	Benzene, 1,1[1]-(2,2-dichloro ethylidene) bis[4-chloro-	8080 8270	0.1 10
4,4[1]-DDE	72-55-9	Benzene, 1,1[1]-(dichloroethyen ylidene)bis[4-chloro-	8080 8270	0.05 10
4,4[1]-DDT	50-29-3	Benzene, 1,1[1]-(2,2,2-trichloro ethylidene)bis[4-chloro-	8080 8270	0.1 10
Diallate	2303-16-4	Carbamothioic acid, bis(1- methyl ethyl)-,S-(2,3-dichloro-2- propenyl) ester	8270	10
Dibenz[a,h]anthracene	53-70-3	Dibenz[a,h]anthracene	8100 8270	200 10
Dibenzofuran	132-64-9	Dibenzofuran	8270	10
Dibromochloromethane; Chlorodibromomethane	124-48-1	Methane, dibromochloro-	8010 8021 8260	1 0.3 5
1,2-Dibromo-3-chloropropane; DBCP	96-12-8	Propane, 1,2-dibrome-3-chloro-	8011 8021 8260	0.1 30 25
1,2-Dibromoethane; Ethylene dribromide; EDB	106-93-4	Ethane, 1,2-dibromo-	8011 8021 8260	0.1 10 5
Di-n-butyl phthalate	84-74-2	1,2-Benzenedicarboxylic acid, dibutyl ester	8060 8270	5 10

TABLE 3

335-13-4-APPENDIX II LIST OF HAZARDOUS INORGANIC AND ORGANIC CONSTITUENTS[1]

Common Name[2]	CAS Number[3]	Chemical Abstracts Service Index Name[4]	Suggested Methods[5]	PQL (□g/L)[6]
o-Dichlorobenzene; 1,2-Dichlorobenzene	95-50-1	Benzene, 1,2-dichloro-	8010 8020 8021 8120 8260 8270	2 5 0.5 10 5 10
m-Dichlorobenzene; 1,3-Dichlorobenzene	541-73-1	Benzene, 1,3-Dichloro-	8010 8020 8021 8120 8260 8270	5 5 0.2 10 5 10
p-Dichlorobenzene; 1,4-Dichlorobenzene	106-46-7	Benzene, 1,4-dichloro-	8010 8020 8021 8120 8260 8270	2 5 0.1 15 5 10
3,3[1]-Dichlorobenzidine	91-94-1	[1,1[1]-Biphenyl]-4,4[1]-diamine, 3,3[1]-dichloro-	8270	20
trans-l,4-Dichloro-2-butene	110-57-6	2-Butene, 1,4-dichloro-, (E)-	8260	100
Dichlorodifloromethane; CFC- 12	75-71-8	Methane, dichlorodifluoro-	8021 8260	0.5 5
1,1-Dichloroethane; Ethyldidene chloride	75-34-3	Ethane, 1,1-dichloro-	8010 8021 8260	1 0.5 5
1,2-Dichloroethane; Ethylene dichloride	107-06-2	Ethane, 1,1-dichloro-	8010 8021 8260	0.5 0.3 5
1,1-Dichloroethylene; 1,1-Dichloroethene; Vinylidene chloride	75-35-4	Ethene, 1,1-dichloro-	8010 8021 8260	1 0.5 5
cis-1,2-Dichloroethylene; cis-	156-59-2	Ethene, 1,2-dichloro-,(Z)-	8021	0.2
1,2- Dichloroethene			8260	5
trans-1,2-Dichloroethylene trans-1,2- Dichloroethene	156-60-5	Ethene, 1,2-dichloro-,(E)-	8010 8021 8260	1 0.5 5
2,4-Dichlorophenol	120-83-2	Phenol, 2,4-dichloro-	8040 8270	5 10
2,6-Dichlorophenol	87-65-0	Phenol, 2,6-dichloro-	8270	10
1,2-Dichloropropane; Propylene dichloride	78-87-5	Propane, 1,2-dichloro-	8010 8021 8260	0.5 0.05 5
1,3-Dichloropropane; Trimethylene dichloride	142-28-9	Propane, 1,3-dichloro-	8021 8260	0.3 5
2,2-Dichloropropane; Isopropylidene chloride	594-20-7	Propane, 2,2-dichloro-	8021 8260	0.5 15
1,1-Dich1oropropene	563-58-6	1-Propene, 1,1-dichloro-	8021 8260	0.2 5
cis-1,3-Dichloropropene	10061-01-5	1-Propene, 1,3-dichloro-, (Z)-	8010 8260	20 10

TABLE 3

335-13-4-APPENDIX II LIST OF HAZARDOUS INORGANIC AND ORGANIC CONSTITUENTS[1]

Common Name[2]	CAS Number[3]	Chemical Abstracts Service Index Name[4]	Suggested Methods[5]	PQL (□g/L)[6]
trans-1,3-Dichloropropene	10061-02-6	1-Propene, 1,3-dichloro-, (E)-	8010 8260	5 10
Dieldrin	60-57-1	2,7:3,6-Dimethanonaphth[2,3- b] oxirene,3,4,5,6,9,9-hexa, chloro-1a, 2,2a,3,6,6a,7,7a- octahydro-, (1aa, 2ß,2aa,3ß, 6ß,6aa,7ß,7aa)-	8080 8270	0.05 10
Diethyl phthalate	84-66-2	1,2-Benzenedicarboxylic acid, diethyl ester	8060 8270	5 10
0,0-Diethyl 0-2-pyrazinyl; phosphorothioate Thionazin	297-97-2	Phosphorothioic acid, 0,0-diethyl 0-pyrazinyl ester	8141 8270	5 20
Dimethoate	60-51-5	Phosphorodithioic acid, 0,0-dimethyl S-[2-(methylamino)-2- oxoethyl] ester	8141 8270	3 20
p-(Dimethylamino)azobenzene	60-11-7	Benzenamine, N,N-dimethyl-4-(phenylazo)-	8270	10
7,12-Dimethylbenz[a]anthracene	57-97-6	Benz[a]anthracene, 7,12- dimethyl-	8270	10
3,3[1]-Dimethylbenzidine	119-93-7	[1,1[1]-Biphenyl]-4,4[1]-diamine, 3,3[1]-dimethyl-	8270	10
2,4-Dimethylphenol; m- Xylenol	105-67-9	Phenol, 2,4-dimethyl-	8040 8270	5 10
Dimethyl phthalate	131-11-3	1,2-Benzenedicarboxylic acid, dimethyl ester	8060 8270	5 10
m-Dinitrobenzene	99-65-0	Benzene, 1,3-dinitro-	8270	20
4,6-Dinitro-o-cresol 4,6-Dinitro- 2-methylphenol	534-52-1	Phenol, 2-methyl-4,6-dinitro-	8040 8270	150 50
2,4-Dinitrophenol	51-28-5	Phenol, 2,4-dinitro-	8040 8270	150 50
2,4-Dinitrotoluene	121-14-2	Benzene, 1-methyl-2,4-dinitro-	8090 8270	0.2 10
2,6-Dinitrotoluene	606-20-2	Benzene, 2-methyl-1,3-dinitro-	8090 8270	0.1 10
Dinoseb; DNBP; 2-sec-Butyl- 4,6-dinitrophenol	88-85-7	Phenol, 2-(1-methylpropyl)-4,6- dinitro-	8150 8270	1 20
Di-n-octyl phthalate	117-84-0	1,2-Benzenedicarboxylic acid, dioctyl ester	8060 8270	30 10
Diphenylamine	122-39-4	Benzenamine, N-phenyl-	8270	10
Disulfoton	298-04-4	Phosphorodithioic acid, 0,0- diethyl S-[2-(ethylthio)ethyl] ester	8140 8141 8270	2 0.5 10
Endosulfan I	959-98-8	6,9-Methano-2,4,3- benzodioxathi epin,6,7,8,9,10,10- hexachloro- 1, 5,5a, 6,9,9a-hexahydro-,3-oxide,	8080 8270	0.1 20
Endosulfan II	33213-65-9	6,9-Methano-2,4,3- benzodioxathi	8080	0.05
		epin, 6,7,8,9,10,10-hexachloro-1,5,5a,6,9,9a-hexahydro-,3-oxide,(3a, 5aa, 6ß,9ß,9aa)-	8270	20

TABLE 3

335-13-4-APPENDIX II LIST OF HAZARDOUS INORGANIC AND ORGANIC CONSTITUENTS[1]

Common Name[2]	CAS Number[3]	Chemical Abstracts Service Index Name[4]	Suggested Methods[5]	PQL (□g/L)[6]
Endosulfan sulfate	1031-07-8	6,9-Methano-2,4,3- benzodioxathi epin,6,7,8,9,10,10-hexachloro- 1,5,5a, 6,9,9a-hexahydro-3-3- dioxide.	8080 8270	0.5 10
Endrin	72-20-8	2,7:3,6-Dimethanonaphth[2,3-b] oxirene, 3,4,5,6,9,9-hexachloro- 1a,2,2a,3,6,6a,7,7a-octahydro-, (1aa,2ß,2aß,3a,6a,6aß,7ß,7aa)-	8080 8270	0.1 20
Endrin aldehyde	7421-93-4	1,2,4-Methenocyclopenta cd]penta [lene-5-carboxaldehyde, 2,2a,3,3,4, 7-hexachlorodeca hydro-, (1a,2ß, 2aß, 4ß,4aß,5ß, 6aß,6bß,7R*)-	8080 8270	0.2 10
Ethylbenzene	100-41-4	Benzene, ethyl-	8020 8221 8260	2 0.05 5
Ethyl methacrylate	97-63-2	2-Propenoic acid, 2-methyl-, ethyl ester	8015 8260 8270	5 10 10
Ethyl methanesulfonate	62-50-0	Methanesulfonic acid, ethyl ester	8270	20
Famphur	52-85-7	Phosphorothioic acid, 0-[4-[(dimethylamino)sulfonyl]phenyl] 0,0-dimethyl ester	8270	20
Fluoranthene	206-44-0	Fluoranthene	8100 8270	200 10
Fluorene	86-73-7	9H-Fluorene	8100 8270	200 10
Heptachlor	76-44-8	4,7-Methano-1H-indene, 1,4,5,6,7,8, 8-heptachloro-3a,4,7,7a- tetrahydro-	8080 8270	0.05 10
Heptachlor epoxide	1024-57-3	2,5-Methano-2H-indeno[1,2- b]oxirene, 2,3,4,5,6,7,7- heptachloro-1a, 1b,5,5a,6,6a- hexahydro-,(1aa,1bß, 2a,5a, 5aß,6ß,6aa)	8080 8270	1 10
Hexachlorobenzene	118-74-1	Benzene, hexachloro-	8120 8270	0.5 10
Hexachlorobutadiene	87-68-3	1,3-Butadiene, 1,1,2,3,4,4- hexachloro-	8021 8120 8260 8270	0.5 5 10 10
Hexachlorocyclopentadiene	77-47-4	1,3-Cyclopentadiene, 1,2,3,4,5,5- hexachloro-	8120 8270	5 10
Hexachloroethane	67-72-1	Ethane, hexachloro-	8120 8260 8270	0.5 10 10
Hexachloropropene	1888-71-7	1-Propene, 1,1,2,3,3,3- hexachloro-	8270	10

TABLE 3

335-13-4-APPENDIX II LIST OF HAZARDOUS INORGANIC AND ORGANIC CONSTITUENTS[1]

Common Name[2]	CAS Number[3]	Chemical Abstracts Service Index Name[4]	Suggested Methods[5]	PQL (□g/L)[6]
2-Hexanone; Methyl butyl ketone	591-78-6	2-Hexanone	8260	50
Indeno(1,2,3-cd)pyrene	193-39-5	Indeno(1,2,3-cd)pyrene	8100 8270	200 10
Isobutyl alcohol	78-83-1	1-Propanol, 2-methyl-	8015 8240	50 100
Isodrin	465-73-6	1,4,5,8-Dimethanonaphthalene,1,2,3,4,10,10- hexachloro-1,4,4a,5,8,8a hexahydro- (1a,4a,4aß,5ß,8ß,8aß)-	8270 8260	20 10
Isophorone	78-59-1	2-Cyclohexen-1-one, 3,5,5-trimethyl-	8090 8270	60 10
Isosafrole	120-58-1	1,3-Benzodioxole, 5-(1- propenyl)-	8270	10
Kepone	143-50-0	1,3,4-Metheno-2H-cyclobuta[cd] pentalen-2- one,1,1a,3,3a,4,5,5,5a, 5b,6-decachlorooctahydro-	8270	20
Lead	(Total)	Lead	6010 7420 7421	400 1000 10
Mercury	(Total)	Mercury	7470	2
Methacrylonitrile	126-98-7	2-Propenenitrile, 2-methyl-	8015 8260	5 100
Methapyrilene	91-80-5	1,2-ethanediamine,N.N.-dimethyl-N[1]-2-pyridinyl-N1/2- thienyl-methyl)-	8270	100
Methoxychlor	72-43-5	Benzene,1,1[1]-(1,2,2,trichloroethylidene) bis[4- methoxy-	8080 8270	2 10
Methyl bromide; Bromomethane	74-83-9	Methane, bromo-	8010 8021	20 10
Methyl chloride; Chloromethane	74-87-3	Methane, chloro-	8010 8021	1 0.3
3-Methylcholanthrene	56-49-5	Benz[j]aceanthrylene, 1,2-dihydro-3- methyl-	8270	10
Methyl ethyl ketone; MEK; 2-Butanone	78-93-3	2-Butanone	8015 8260	10 100
Methyl iodide; iodomethane	74-88-4	Methane,iodo-	8010 8260	40 10
Methyl methacrylate	80-62-6	2-Propenoic acid, 2-methyl-, methyl ester	8015 8260	2 30
Methyl methanesulfonate	66-27-3	Methanesulfonic acid, methyl ester	8270	10
2-Methylnaphthalene	91-57-6	Naphthalene, 2-methyl-	8270	10
Methyl parathion;Parathion methyl	298-00-0	Phosphorothioic acid, 0,0- dimethyl 0-(4-nitrophenyl) ester	8140 8141 8270	0.5 1 10
4-Methyl-2-pentanone; Methyl isobutyl ketone	108-10-1	2-Pentanone, 4-methyl-	8015 8260	5 100

TABLE 3

335-13-4-APPENDIX II LIST OF HAZARDOUS INORGANIC AND ORGANIC CONSTITUENTS[1]

Common Name[2]	CAS Number[3]	Chemical Abstracts Service Index Name[4]	Suggested Methods[5]	PQL (□g/L)[6]
Methylene bromide; Dibromomethane	74-95-3	Methane, dibromo-	8010 8021 8260	15 20 10
Methylene chloride; Dichloromethane	75-09-2	Methane, dichloro-	8010 8021 8260	5 0.2 10
Naphthalene	91-20-3	Naphthalene	8021 8100 8260 8270	0.5 200 5 10
1,4-Naphthoquinone	130-15-4	1,4-Naphthalenedione	8270	10
1-Naphthylamine	134-32-7	1-Naphthalenamine	8270	10
2-Naphthylamine	91-59-8	2-Naphthalenamine	8270	10
Nickel	(Total)	Nickel	6010 7520	150 400
o-Nitroaniline; 2-Nitroaniline	88-74-4	Benzenamine, 2-nitro-	8270	50
m-Nitroaniline; 3-Nitroaniline	99-09-2	Benzenamine, 3-nitro-	8270	50
p-Nitroaniline; 4-Nitroaniline	100-01-6	Benzenamine, 4-nitro	8270	20
Nitrobenzene	98-95-3	Benzene, nitro-	8090 8270	40 10
o-Nitrophenol; 2-Nitrophenol	88-75-5	Phenol, 2-nitro-	8040 8270	5 10
p-Nitrophenol; 4-Nitrophenol	100-02-7	Phenol, 4-nitro-	8040 8270	10 50
N-Nitrosodi-n-butylamine	924-16-3	1-Butananmine, N-butyl-N-nitroso-	8270	10
N-Nitrosodiethylamine	55-18-5	Ethanamine, N-ethyl-N-nitroso-	8270	20
N-Nitrosodimethylamine	62-75-9	Methanamine, N-methyl-N- nitroso-	8070	2
N-Nitrosodiphenylamine	86-30-6	Benzenamine, N-nitroso-N-phenyl-	8070	5
N-Nitrosodipropylamine; N- Nitroso- N-dipropylamine; Di-n-propylnitrosamine	621-64-7	1-Propanamine, N-nitroso-N- propyl-	8070	10
N-Nitrosomethylethalamine	10595-95-6	Ethanamine, N-methyl-N- nitroso-	8270	10
N-Nitrosopiperidine	100-75-4	Piperidine, 1-nitorso-	8270	20
N-Nitrosopyrrolidine	930-55-2	Pyrrolidine, 1-nitoso-	8270	40
5-Nitro-o-toluidine	99-55-8	Benezenamine, 2-methyl-5- nitro-	8270	10
Parathion	56-38-2	Phosphorothioic acid, 0,0-diethyl 0-(4-nitrophenyl) ester	8141 8270	0.5 10
Pentachlorobenzene	608-93-5	Benzene, pentachloro-	8270	10
Pentachloronitrobenzene	82-68-8	Benzene, pentachloronitro-	8270	20
Pentachlorophenol	87-86-5	Phenol, pentachloro-	8040 8270	5 50
Phenacetin	62-44-2	Acetamide, N-(4-ethoxyphenl)	8270	20
Phenanthrene	85-01-8	Phenanthrene	8100 8270	200 10
Phenol	108-95-2	Phenol	8040	1
p-Phenylenediamine	106-50-3	1,4-Benzenadiamine	8270	10

TABLE 3

335-13-4-APPENDIX II LIST OF HAZARDOUS INORGANIC AND ORGANIC CONSTITUENTS[1]

Common Name[2]	CAS Number[3]	Chemical Abstracts Service Index Name[4]	Suggested Methods[5]	PQL (□g/L)[6]
Phorate	298-02-2	Phosphorodithioic acid, 0,0- diethyl-S-[(ethylthio)methyl] ester	8140 8141 8270	2 0.5 10
Polychlorinated biphenyls; PCBs;Aroclors	See Note 9	1,1'-Biphenyl, chloro derivatives	8080 8270	50 200
Pronamide	23950-58-5	Benzamide, 3,5-dichloro-N-(1,1-dimethyl-2-propynyl)-	8270	10
Propionitrile; Ethyl cyanide	107-12-0	Propanenitrile	8015 8260	60 150
Pyrene	129-00-0	Pyrene	8100 8270	200 10
Safrole	94-59-1	1,3-Benzodioxole, 5-(2- propenyl)-	8270	10
Selenium	(Total)	Selenium	6010 7740 7741	750 20 20
Silver	(Total)	Silver	6010 7760 7761	70 100 10
Silvex; 2,4,5-TP	93-72-1	Propanoic acid, 2-(2,4,5-trichlorophenoxy)-	8150	2
Styrene	100-42-5	Benzene, ethenyl-	8020 8021 8260	1 0.1 10
Sulfide	18496-25-8	Sulfide	9030	4000
2,4,5-T; 2,4,5-Trichlorophenoxyacetic acid	93-76-5	Acetic acid, (2,4,5- trichlorophenoxy)-	8150	2
1,2,4,5-Tetrachlorobenzene	95-94-3	Benzene, 1,2,4,5-tetrachloro-	8270	10
1,1,1,2-Tetrachloroethane	630-20-6	Ethane, 1,1,1,2-tetrachloro-	8010 8021 8260	5 0.05 5
1,1,2,2-Tetrachloroethane	79-34-5	Ethane, 1,1,2,2-tetrachloro-	8010 8021 8260	0.5 0.1 5
Tetrachloroethylene; Tetrachloroethene;	127-18-4	Ethene, tetrachloro-	8010	0.5
Perchloroethylene			8021 8260	0.5 5
2,3,4,6-Tetrachlorophenol	58-90-2	Phenol, 2,3,4,6-tetrachloro-	8270	10
Thallium	(Total)	Thallium	6010 7840 7841	400 1000 10
Tin	(Total)	Tin	6010	40
Toluene	108-88-3	Benzene, methyl-	8020 8021 8260	2 0.1 5
o-Toluidine	95-53-4	Benzenamine, 2-methyl-	8270	10
Toxaphene	See Note 10	Toxaphene	8080	2
1,2,4-Trichlorobenzene	120-82-1	Benzene, 1,2,4-trichloro-	8021 8120 8260 8270	0.3 0.5 10 10

TABLE 3

335-13-4-APPENDIX II LIST OF HAZARDOUS INORGANIC AND ORGANIC CONSTITUENTS[1]

Common Name[2]	CAS Number[3]	Chemical Abstracts Service Index Name[4]	Suggested Methods[5]	PQL (□g/L)[6]
1,1,1-Trichloroethane; Methylchloroform	71-55-6	Ethane, 1,1,1-trichloro-	8010 8021 8260	0.3 0.3 5
1,1,2-Trichloroethane	79-00-5	Ethane, 1,1,2-trichloro-	8010 8260	0.2 5
Trichloroethylene; Trichloroethene	79-01-6	Ethane, trichloro-	8010 8021 8260	1 0.2 5
Trichlorofluoromethane; CFC- 11	75-69-4	Methane, trichlorofluoro-	8010 8021 8260	10 0.3 5
2,4,5-Trichlorophenol	95-95-4	Phenol, 2,4,5-trichloro-	8270	10
2,4,6-Trichlorophenol	88-06-2	Phenol, 2,4,6-trichloro-	8040 8270	5 10
1,2,3-Trichloropropane	96-18-4	Propane, 1,2,3-trichloro-	8010 8021 8260	10 5 15
O,O,0-Triethyl phosphorothioate	126-68-1	Phosphorothioic acid, 0,0,0- triethylester	8270	10
sym-Trinitrobenzene	99-35-4	Benzene, 1,3,5-trinitro-	8270	10
Vanadium	(Total)	Vanadium	6010 7910 7911	80 2000 40
Vinyl acetate	108-05-4	Acetic acid, ethenyl ester	8260	50
Vinyl chloride; Chloroethene	75-01-4	Ethene, chloro-	8010 8021 8260	2 0.4 10
Xylene (total)	See Note 11	Benzene, dimethyl-	8020 8021 8260	5 0.2 5
Zinc	(Total)	Zinc	6010 7950 7951	20 50 0.5

Notes

[1] The regulatory requirements pertain only to the list of substances; the right hand columns (Methods and PQL) are given for informational purposes only. See also footnotes 5 and 6.

[2] Common names are those widely used in government regulations, scientific publications, and commerce; synonyms exist for many chemicals.

[3] Chemical Abstracts Service registry number. Where "Total" is entered, all species in the groundwater that contain this element are included.

[4] CAS index are those used in the 9th Collective Index.

[5] Suggested Methods refer to analytical procedure numbers used in EPA Report SW-846 "Test Methods for Evaluating Solid Waste", third edition, November 1986, as revised, December 1987. Analytical details can be found in SW-846 and in documentation on file at the agency. CAUTION: The methods listed are representative SW-846 procedures and may not always be the most suitable method(s) for monitoring an analyte under the regulations.

[6] Practical Quantitation Limits (PQLs) are the lowest concentrations of analytes in groundwaters that can be reliably determined within specified limits of precision and accuracy by the indicated methods under routine laboratory operating conditions. The PQLs listed are generally stated to one significant figure. PQLs are based on 5 mL samples for volatile organics and 1 L samples for semivolatile organics. CAUTION: The PQL values in many cases are based only on a general estimate for the method and not on a determination for individual compounds; PQLs are not a part of the regulation.

[7] This substance is often called Bis(2-chloroisopropyl) ether, the name Chemical Abstracts Service applies to its noncommercial isomer, Propane, 2,2"-oxybis[2-chloro- (CAS RN 39638-32-9).

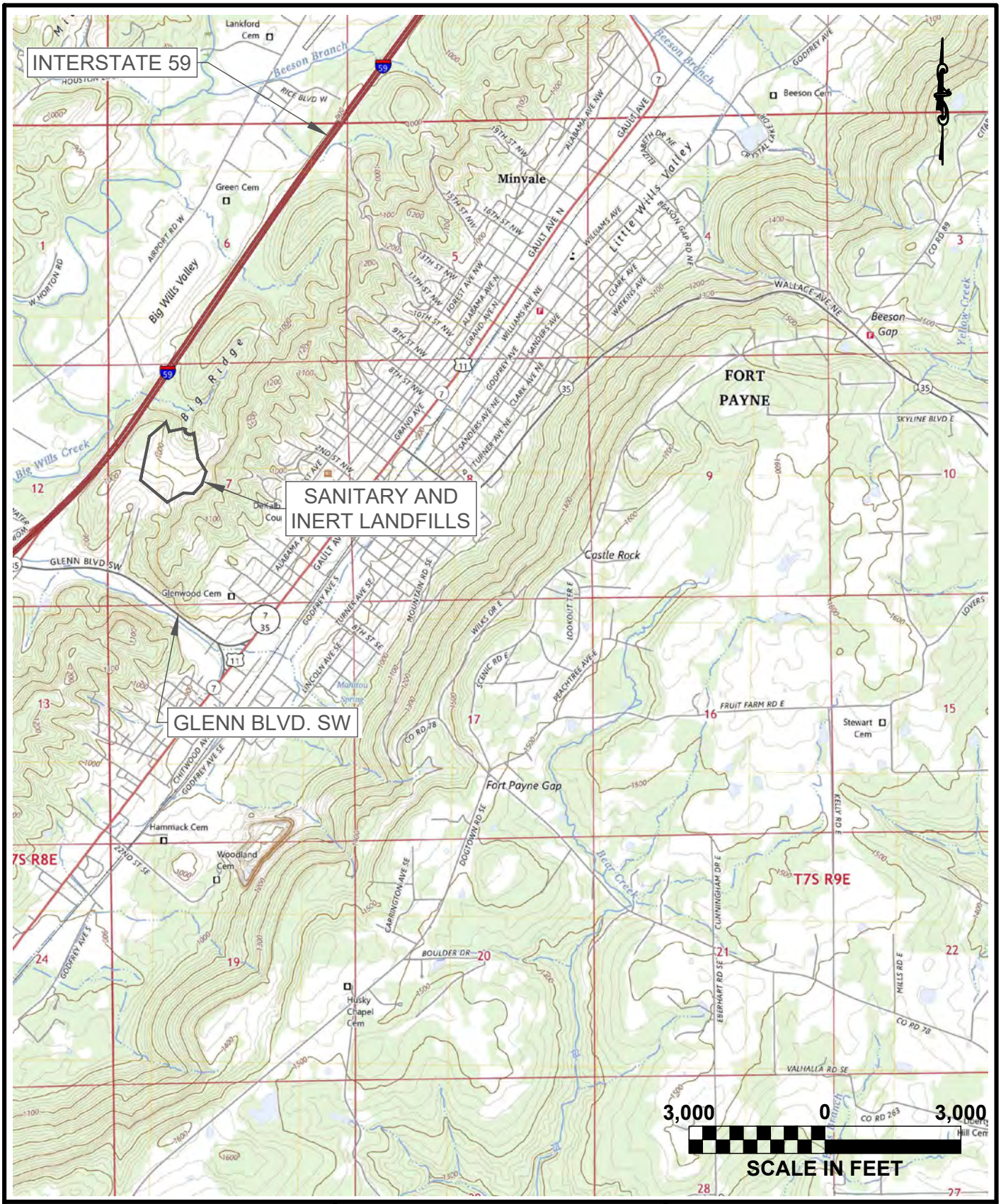
[8] Chlordane: This entry includes alpha-chlordane (CAS RN 5103-71-9), beta-chlordane (CAS RN 5103-74-2), gamma-chlordane (CAS RN 5566-34-7), and constituents of chlordane (CAS RN 57-74-9 and CAS RN 12789-03-6). PQL shown is for technical chlordane. PQLs of specific isomers are about 20 μg/L by method 8270.

[9] Polychlorinated biphenyls (CAS RN 1336-36-3); this category contains congener chemicals, including constituents of Aroclor 1016 (CAS RN 12674-11-2), Aroclor 1221 (CAS RN 11104-28-2), Aroclor 1232 (CAS RN 11141-16-5), Aroclor 1242 (CAS RN 53469-21-9), Aroclor 1248 (CAS RN 12672-29-6), Aroclor 1254 (CAS RN 11097-69-1), and Aroclor 1260 (CAS RN 11096-82-5). The PQL shown is an average value for PCB congeners.

[10] Toxaphene: This entry includes congener chemicals contained in technical toxaphene (CAS RN 8001-35-2), i.e., chlorinated camphene.

[11] Xylene (total): This entry includes o-xylene (CAS RN 96-47-6), m-xylene (CAS RN 108-38-3), p-xylene (CAS RN 106-42-3), and unspecified xylenes (dimethylbenzenes) (CAS RN 1330-20-7). PQLs for method 8021 are 0.2 for o-xylene and 0.1 for m- or p-xylene. The PQL for m-xylene is 2.0 μg/L by method 8020 or 8260.

FIGURES



THREE NOTCH GROUP

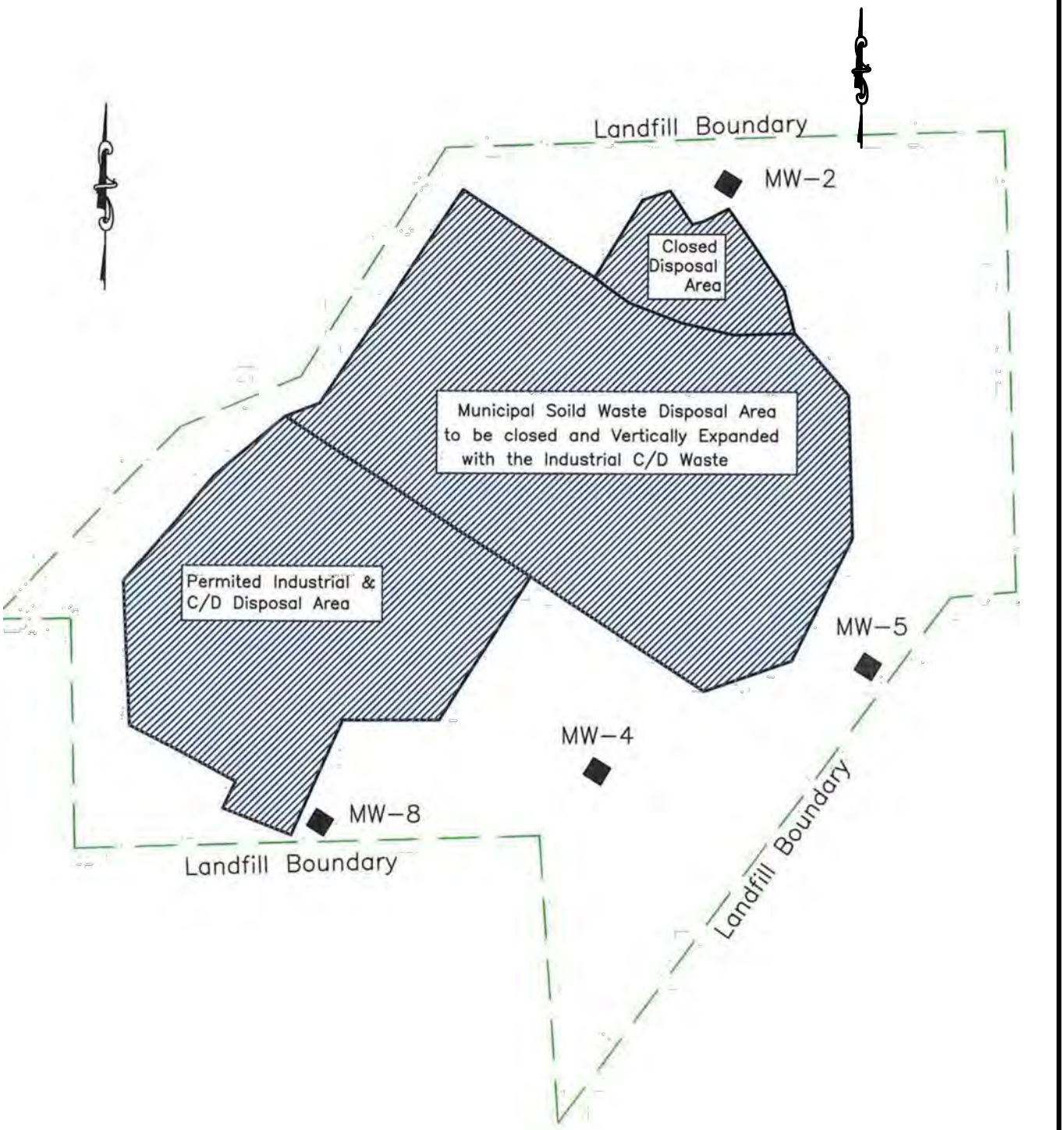
FORT PAYNE LANDFILL

FORT PAYNE, DEKALB COUNTY, AL
PERMIT NO. 25-02

SITE LOCATION MAP

Drawn By:	Scale:	Date:
DW	1" = 3,000'	02/06/2026

Project No: R019625002 | 01



THREE NOTCH GROUP

FORT PAYNE LANDFILL

FORT PAYNE, DEKALB COUNTY, AL
PERMIT NO. 25-02

SITE MAP WITH WELL LOCATIONS

Drawn By:	Scale:	Date:
DW	N.T.S.	02/06/2026

Project No: R019625002

02



Potentiometric Surface Map

860 Potentiometric Surface Contours

Fort Payne Landfill

Scale: 1"=300'

APPENDIX A
BOREHOLE AND WELL COMPLETION LOGS

Boring Log

CARTER, DARNELL AND GRUBBS ENGINEERS, INC.
ANDALUSIA, ALABAMA

Job Number 25–02R	Date Started 9–23–94	Date Ended 9–24–94	Client City of Ft. Payne	Sheet 1 of 4

Project Sanitary and Inert Landfills	Depth Drilled into Rock 235 Feet
Location Ft. Payne, Alabama	Total Depth of Hole 258 Feet
Hole Number MW4	Log Prepared By Don McKee
Name of Drilling Contractor Miller Drilling Co.	Ground Elevation 1,033.2 ft. MSL
Direction of Hole ☒ Vertical ☐ Inclined____degrees from Vertical	Elevation of Potentiometric Head 852.2 ft. MSL
Thickness of Overburden 23 Feet	Diameter of Borehole 8.5 Inches

PID (ppm)	Depth in Feet	Lyth Sym	Classification of Materials (Description)	Remarks
	0		Tan, weathered Shale and reddish–brown Clay (interbedded); with thin interbeds of tan to reddish–brown "dirty" Siltstone and medium gray colored Limestone.	(Sh/CL) Red Mountain Formation
	5			
	10		Becoming tannish–brown in color.	
	15			
	20			
	25		Shale; brown and medium gray colored, thin interbeds of "dirty" Siltstone, some thin (<1 ft.) interbeds of Limestone (Mudstone to Pelloidal Packstone).	(Sh) Red Mountain Formation
	30			
			Primarily medium gray in color.	
	35			
	40			
	45			
	50			
	55			
	60			

Boring Log

CARTER, DARNELL AND GRUBBS ENGINEERS, INC.
ANDALUSIA, ALABAMA

Hole Number MW4 | Client City of Ft. Payne | Sheet 2 of 4

PID (ppm)	Depth in Feet	Lyth Sym	Classification of Materials (Description)	Remarks
	60		Shale; medium gray, thin interbeds of "dirty" Siltstone, some thin interbeds of Limestone (Mudstone to Pelloidal Packstone), Fossiliferous beds (Brachiopods).	(Sh) Red Mountain Formation
	65		Interbeds (<1 ft. thick) of Red Hematite.	
	70			
	75			
	80			
	85			
	90			
	95			
	100		Minor amounts of Hematite, Calcite cementation in Siltstone fractures.	
	105		No Hematite.	
	110			
	115		Interbedded medium gray Shale, "dirty" Siltstone, and Pelloidal Packstone.	
	120			
	125			
	130		Fossiliferous beds and interbedded Hematite.	
	135			

Boring Log

CARTER, DARNELL AND GRUBBS ENGINEERS, INC.
ANDALUSIA, ALABAMA

Hole Number MW4 | Client City of Ft. Payne | Sheet 3 of 4

PID (ppm)	Depth in Feet	Lyth Sym	Classification of Materials (Description)	Remarks
	135		Shale; medium gray, thin interbeds of "dirty" Siltstone, and Fossiliferous (Brachiopods) Pelloidal Limestone. Interbedded Hematite.	(Sh) Red Mountain Formation
	140		Abundant Calcite cementation in pores and small fractures of Pelloidal Packstone.	
	145		No Hematite.	Sequatchie Formation
	150			
	155			
	160			
	165			
	170			
	175			
	180			
	185			
	190		Slightly Fossiliferous.	
	195		Some red colored Siltstone.	
	200		Primarily medium gray colored Shale.	
	205			
	210			

Boring Log

CARTER, DARNELL AND GRUBBS ENGINEERS, INC.
ANDALUSIA, ALABAMA

Hole Number MW4 | Client City of Ft. Payne | Sheet 4 of 4

PID (ppm)	Depth in Feet	Lyth Sym	Classification of Materials (Description)	Remarks
	210		Shale; medium gray colored.	(Sh) Sequatchie Formation
	215		Some interbedded red colored Shale.	
	220		Interbeds of Pelloidal Packstone.	
	225			
	230			
	235			
	240			
	245			
	250		Limestone; medium gray colored, Pelloidal Packstone, top 3 to 5 ft. of unit weathered and porous. Underlying the porous zone, the Limestone is very tight (non-porous).	(LS) Chickamauga Formation
	255			
	260		T.D.	
	265			
	270			
	275			
	280			
	285			

Boring Log

CARTER, DARNELL AND GRUBBS ENGINEERS, INC.
ANDALUSIA, ALABAMA

Job Number 25-02R	Date Started 9-27-94	Date Ended 9-28-94	Client City of Ft. Payne	Sheet 1 of 7

Project Sanitary and Inert Landfills	Depth Drilled into Rock 470 Feet
Location Ft. Payne, Alabama	Total Depth of Hole 470 Feet
Hole Number MW5	Log Prepared By Don McKee
Name of Drilling Contractor Miller Drilling Co.	Ground Elevation 1,147.48 ft.
Direction of Hole ☒ Vertical ☐ Inclined ____ degrees from Vertical	Elevation of Ground Water 848.48
Thickness of Overburden 0	Diameter of Borehole 8.5 Inches

PID (ppm)	Depth in Feet	Lyth Sym	Classification of Materials (Description)	Remarks
	0		Interbedded Siltstone, Shale and Chert: Siltstone is massive (2 to 3 ft. thick) and brown to tan in color; Shale is reddish-brown to tan in color; Chert is rose to light gray in color.	(SLst/Sh) Red Mountain Formation
	15		Primarily black Shale, Carbonaceous; with some interbeds of Siltstone.	(Sh/SLst)

Boring Log

CARTER, DARNELL AND GRUBBS ENGINEERS, INC.
ANDALUSIA, ALABAMA

Hole Number MW5 | Client City of Ft. Payne | Sheet 2 of 7

PID (ppm)	Depth in Feet	Lyth Sym	Classification of Materials (Description)	Remarks
	60		Black carbonaceous Shale with some interbeds of Siltstone.	(Sh/SLTst)
	65		Black to dark gray Shale with interbeds of medium gray Packstone (with thin seams of Pyrite), and black to dark gray Siltstone.	(Sh/SLTst/LS)
	70			
	75		Medium gray Shale with thin to thick interbeds of medium gray Packstone (Ls) and Siltstone.	
	80			
	85			
	90			
	95			
	100			
	105			
	110			
	115			
	120			
	125			Groundwater in layers of porous Limeston and Siltstone between depths of 125' to 135'
	130			
	135			

Boring Log

CARTER, DARNELL AND GRUBBS ENGINEERS, INC.
ANDALUSIA, ALABAMA

Hole Number	MW5	Client	City of Ft. Payne	Sheet	3 of 7

PID (ppm)	Depth in Feet	Lyth Sym	Classification of Materials (Description)	Remarks
	135		Medium gray colored Shale with thin to thick (<1" to 3") interbeds of medium gray Limestone (Packstone) and Siltstone.	(Sh/SLTst/LS)
	140			
	145			
	150			
	155			
	160			
	165			
	170			
	175			
	180			
	185			
	190			
	195			
	200			
	205			
	210			

Boring Log

CARTER, DARNELL AND GRUBBS ENGINEERS, INC.
ANDALUSIA, ALABAMA

Hole Number MW5 | Client City of Ft. Payne | Sheet 4 of 7

PID (ppm)	Depth in Feet	Lyth Sym	Classification of Materials (Description)	Remarks
	210		Medium gray colored Shale with thin to thick (<1' to 3') interbeds of medium gray Limestone (Packstone) and Siltstone; some fossils (Brachiopods).	(Sh/SLTst/LS)
	215			
	220		Some inclusions of brown Chert.	
	225			
	230			
	235		Minor, thin (<1') beds of Hematite.	
	240			
	245			
	250		Calcite cement in fractures of Siltstone and Limestone	
	255			
	260			
	265			
	270			
	275			
	280		Medium gray Shale; with thin interbeds (<1') of medium gray Limestone (Packstone), thin (<1') reddish-brown Siltstone, and red Hematite beds; fossiliferous (Brachiopods)	
	285			

Boring Log

CARTER, DARNELL AND GRUBBS ENGINEERS, INC.
ANDALUSIA, ALABAMA

Hole Number MW5 | Client City of Ft. Payne | Sheet 5 of 7

PID (ppm)	Depth in Feet	Lyth Sym	Classification of Materials (Description)	Remarks
	285		Medium gray Shale; with thin interbeds of medium gray Limestone (Packstone), thin (<1") beds of reddish-brown siltstone, and red Hematite beds; Fossiliferous (Brachiopods). Abundant Calcite cementation in pores and fractures of Limestone and Siltstone.	(Sh/SLTst/LS)
	290			
	295			
	300		No Hematite.	
				Sequatchie Formation
	305			
	310			
	315			
	320			
	325			
	330			
	335			
	340			
	345			
	350			
	355			

Boring Log

CARTER, DARNELL AND GRUBBS ENGINEERS, INC.
ANDALUSIA, ALABAMA

Hole Number MW5 | Client City of Ft. Payne | Sheet 6 of 7

PID (ppm)	Depth in Feet	Lyth Sym	Classification of Materials (Description)	Remarks
	360		Primarily medium gray colored Shale.	(Sh)
	365			
	370			
	375			
	380			
	385			
	390			
	395			
	400			
	405			
	410			
	415			
	420			
	425			
	430			

Boring Log

CARTER, DARNELL AND GRUBBS ENGINEERS, INC.
ANDALUSIA, ALABAMA

Hole Number MW5 | Client City of Ft. Payne | Sheet 7 of 7

PID (ppm)	Depth in Feet	Lyth Sym	Classification of Materials (Description)	Remarks
	435		Primarily medium gray colored Shale	(Sh) Sequatchie Formation
	440			
	445			
	450			
	455			
			Layer of tan Siltstone	(SLTst)
	460		Limestone; medium gray colored, Pelloidal Packstone, Fossiliferous (Brachiopods), upper 3 to 5 ft. weathered and porous. Underlying porous zone – the Limestone is very tight (non-porous).	(LS) Chickamauga Formation
	465			
	470		T.D.	
	475			
	480			
	485			
	490			
	495			
	500			
	505			
	510			

Boring Log

CARTER, DARNELL AND GRUBBS ENGINEERS, INC.
ANDALUSIA, ALABAMA

Job Number 25-02R	Date Started 9-21-93	Date Ended 9-22-93	Client City of Ft. Payne	Sheet 1 of 4

Project Sanitary and Inert Landfills	Depth Drilled into Rock 216 Feet
Location Ft. Payne, Alabama	Total Depth of Hole 250 Feet
Hole Number MW6	Log Prepared By Don McKee
Name of Drilling Contractor Miller Drilling Co.	Ground Elevation Approx. 912 ft. MSL
Direction of Hole ☒ Vertical ☐ Inclined____degrees from Vertical	Elevation of Ground Water N/A – Dry Hole
Thickness of Overburden 34 Feet	Diameter of Borehole 8.5 Inches

PID (ppm)	Depth in Feet	Lyth Sym	Classification of Materials (Description)	Remarks
	0		Clayey to very clayey sand; dark red in color, very fine to very coarse angular quartz grains, some mica content, consolidated.	(SC) Sequatchie Formation
	5			
	10		Inclusions of weathered siltstone and "dirty" Sandstone (graywacke).	
	15			
	20			
	25		Medium red in color; same as above with inclusions of weathered Limestone and Dolomite.	
	30			Gradational Boundary
	35		Limestone; with interbedded layers of Dolomitic Limestone and Dolomite, medium gray in color, very tight (minor to no porosity) Pelloidal Packstone and Mudstone, thin (laminated to 3" thick), with interbedded thin Shale partings.	(LS) Chickamauga Formation
	40			
	45			
	50			
	55			
	60			

Boring Log

CARTER, DARNELL AND GRUBBS ENGINEERS, INC.
ANDALUSIA, ALABAMA

Hole Number MW6 | Client City of Ft. Payne | Sheet 2 of 4

PID (ppm)	Depth in Feet	Lyth Sym	Classification of Materials (Description)	Remarks
	60		Limestone: with interbedded layers of Dolomitic Limestone and Dolomite, medium gray in color, very tight (minor to no porosity) Pelloidal Packstone and Mudstone, thin (laminated to 3" thick), with interbedded thin Shale partings.	(LS)
	65			
	70			
	75			
	80			
	85			
	90		Some Brachiopod and Bryzoan fossils.	
	95			
	100		Fossiliferous (Brachiopods and Bryzoans), small fractures filled with Calcite cement.	
	105			
	110			
	115			
	120			
	125			
	130			
	135			

Boring Log

CARTER, DARNELL AND GRUBBS ENGINEERS, INC.
ANDALUSIA, ALABAMA

Hole Number	MW6	Client	City of Ft. Payne	Sheet	3 of 4

PID (ppm)	Depth in Feet	Lyth Sym	Classification of Materials (Description)	Remarks
	135		Limestone; with interbedded layers of Dolomitic Limestone and Dolomite, medium gray in color, very tight (minor to no porosity) pelloidal Packstone and Mudstone, thin (laminated to 3" thick), with interbedded thin Shale partings. Fossiliferous (Brachiopods and Bryzoans), small fractures filled with Calcite cement.	(LS)
	140			
	145			
	150			
	155			
	160			
	165			
	170			
	175			
	180			
	185			
	190			
	195		Becoming less Fossiliferous.	
	200			
	205			
	210			

Boring Log

CARTER, DARNELL AND GRUBBS ENGINEERS, INC.
ANDALUSIA, ALABAMA

Hole Number MW6 | Client City of Ft. Payne | Sheet 4 of 4

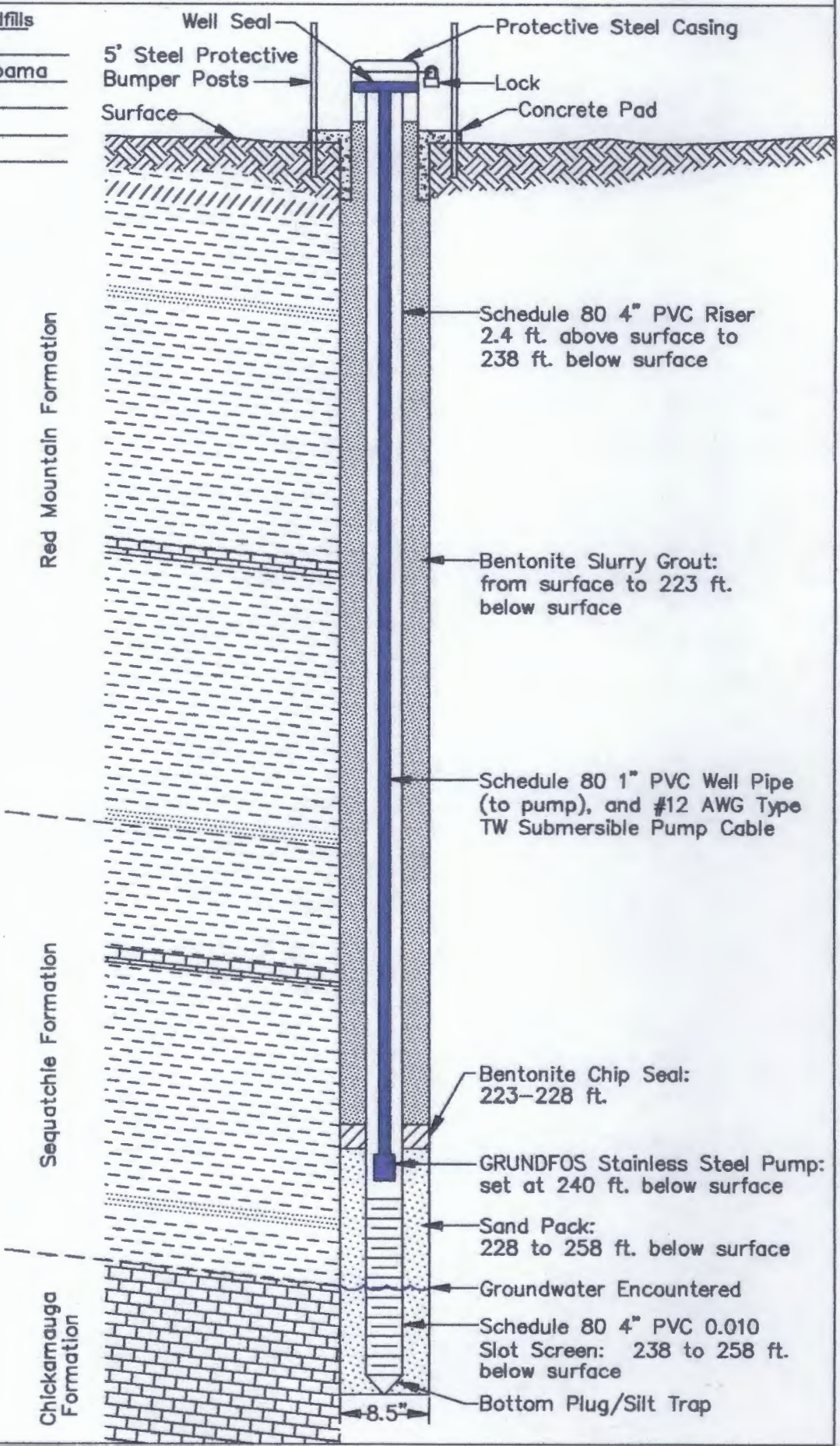
PID (ppm)	Depth in Feet	Lyth Sym	Classification of Materials (Description)	Remarks
	210		Limestone; with interbedded layers of Dolomitic Limestone and Dolomite, medium gray in color, very tight (minor to no porosity) pelloidal Packstone and Mudstone, thin (laminated to 3" thick), with interbedded thin Shale partings. Becoming less Fossiliferous.	(LS)
	215			
	220			
	225			
	230			
	235			
	240			
	245			
	250		T.D.	
	255			
	260			
	265			
	270			
	275			
	280			

SECTION VI
WELL CONSTRUCTION

Well Completion Form

CARTER, DARNELL AND GRUBBS
ENGINEERS, INC.
ANDALUSIA, ALABAMA

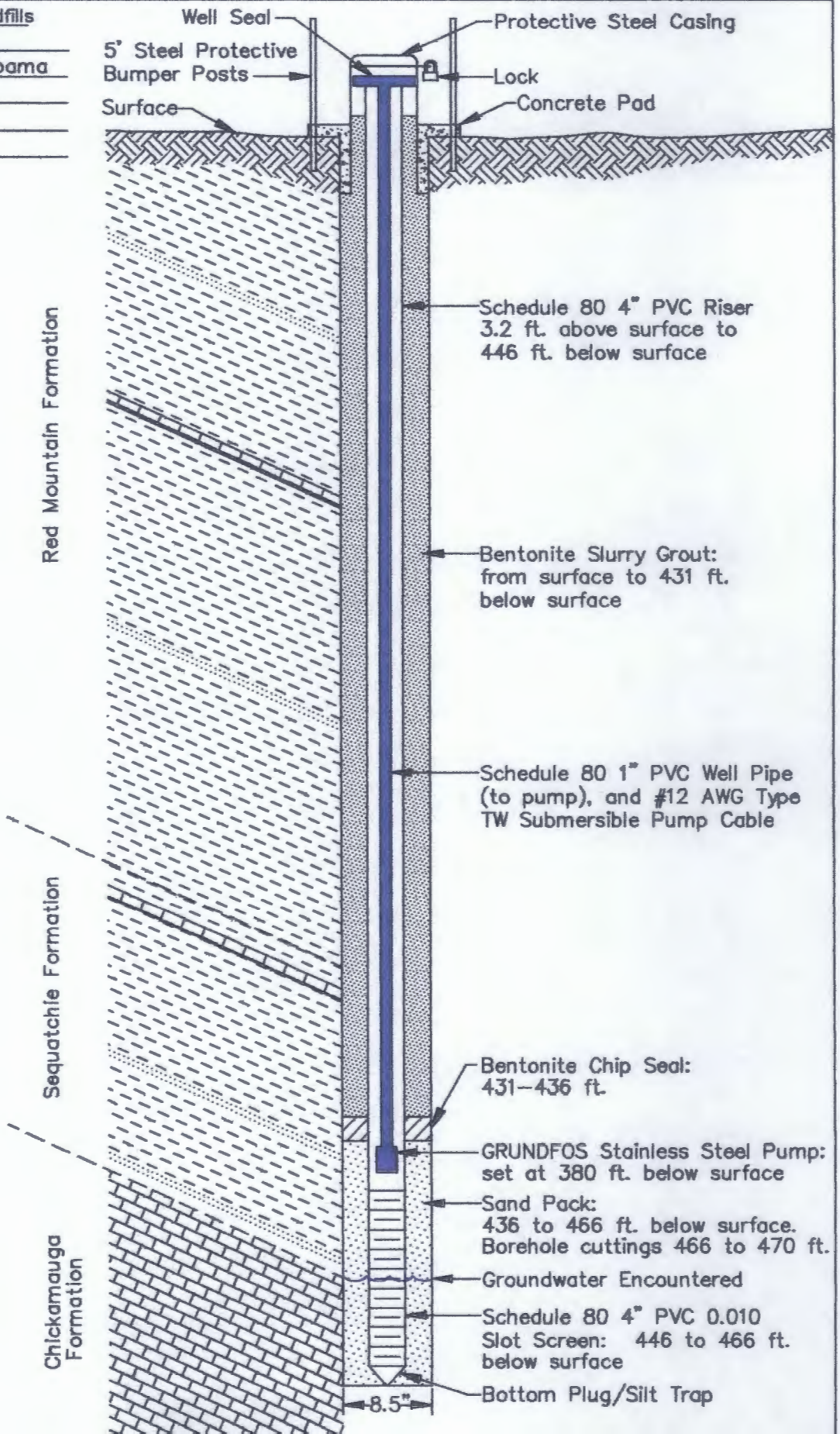
Project Name: Sanitary & Inert Landfills
Project Number: 25-02R
Project Location: Ft. Payne, Alabama
Client: City of Ft. Payne
Well Designation: MW4
Date: 9-24-93



Well Completion Form

CARTER, DARNELL AND GRUBBS ENGINEERS, INC.
ANDALUSIA, ALABAMA

Project Name: Sanitary & Inert Landfills
Project Number: 25-02R
Project Location: Ft. Payne, Alabama
Client: City of Ft. Payne
Well Designation: MW5
Date: 9-30-93



APPENDIX B

STATISITCAL ANALYSIS PLAN



1.0 INTRODUCTION

The following Statistical Analysis Plan (SAP) describes the site-specific statistical analysis approach that will be used to evaluate groundwater at the Fort Payne Landfill Facility (Landfill) pursuant to ADEM Admin. Code r. 335-13-4-.27 under detection and assessment monitoring programs.

A compliance groundwater monitoring well system was installed pursuant to requirements of ADEM Admin. Code r. 335-13-4-.27(2). A background well network is installed upgradient of the Landfill. Downgradient monitoring wells were installed along the downgradient waste boundary pursuant to ADEM Admin. Code r. 335-13-4-.27(2)(a). The compliance monitoring well network is as follows:

- **Upgradient Wells**: MW-2 and MW-8
- **Downgradient Wells**: MW-4, MW-5,

Groundwater sampling at the Landfill using the current monitoring well system began in Oct 1997. Samples were collected from the compliance monitoring wells and analyzed for Appendix I and II parameters pursuant to ADEM Admin. Code 335-13-4-.27(2).

This SAP has been developed based upon the characteristics of the groundwater quality data collected since groundwater monitoring was implemented in 1997 following the requirements in ADEM Admin. Code 335-13-4-.27, and the United States Environmental Protection Agency (USEPA) Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities Unified Guidance (March 2009).

The plan describes:

1. Background data collection, management, and updates.
2. Statistical concepts applicable to detection and assessment Monitoring programs.
3. Site-specific statistical analysis methods for Detection Monitoring; and
4. Statistical approach for Assessment Monitoring and Corrective Action.

As part of ongoing site activities, installation of additional wells may be necessary to characterize site conditions or supplement the compliance monitoring well network. The disposition of these additional wells will be described in the site groundwater monitoring plan. Procedures for statistically evaluating additional wells are described in this SAP.

Any change to the statistical analysis plan (e.g. statistical analysis method, background period, background data set, well network, screening method, etc.) will only be implemented upon receipt of approval from the Alabama Department of Environmental Management (Department).

2.0 BACKGROUND

This section describes the establishment, screening, update, and management of the background data sets used for detection, assessment and corrective action phases of groundwater monitoring. Included are descriptions of the tests that are used to determine whether the potential background data represent site-specific conditions and the procedures used to update (expand or truncate) the background data set. Also described are procedures that will be used to update the data set with more current monitoring data or as new background monitoring wells are installed. Changes or updates to background limits will be made in accordance with USEPA Unified Guidance (March 2009).

2.1 Background Screening

Background is determined based on site-specific conditions such upgradient wells, wells not in the groundwater flow path of the unit, or wells determined to not be affected by the disposal unit. Once background wells are selected based on site-specific conditions, the data are screened as follows:

2.1.1 Outlier Testing

An outlier is defined as an observation that is unlikely to have come from the same distribution

as the rest of the data. A statistical outlier test, such as the 1989 EPA Outlier Test, Dixon's Test or Rosner's Test as discussed in the USEPA Guidance, will be performed on the monitoring well data when time series plots or box and whiskers plots indicate the presence of extreme observations relative to other observations. The outlier test will serve as a data quality check to help identify errors from data entry and other sources.

Statistical outliers in the background data will be deselected unless it can be proven that the data point is not an anomalous value and does represent naturally occurring variation. This is conservative from a regulatory perspective in that it ensures that the background limits are not artificially elevated. When outliers are identified, they are flagged in the data set and the values excluded from background limit calculations. Re-testing for outliers will be performed when background updates are proposed.

2.1.2 Testing and Adjusting for Seasonal Effects

Testing and adjusting data for seasonal factors ensures that seasonal effects will not affect the test results. When seasonal effects are suspected, the Kruskal-Wallis seasonality test will be used to determine whether the seasonal effects are statistically significant when there is sufficient data to test for seasonality. When seasonal effects are confirmed, the data will be de-seasonalized prior to calculating a statistical limit. Data are de-seasonalized by subtracting the seasonal mean and adding back the grand mean to each observation. Background data will be re-tested when there are at least four new values available, and a background update is proposed.

2.1.3 Temporal Trend Testing

The Sen's Slope/Mann-Kendall statistical analysis will be performed on all well/constituent pairs to evaluate concentrations over time. The Sen's Slope Estimator will be used to estimate the rate of change (increasing, no change, or decreasing) for each constituent at each well. The Mann Kendall statistic will be used to determine whether each of those trends is statistically significant. The Sen's Slope/Mann Kendall analysis requires at least five observations.

When a significant trend is present, older historical values may be deselected from the background data prior to computing background limits in cases where groundwater is presumed not to be impacted by the unit. The resulting limits will reflect more current conditions and will not be influenced by older, historical conditions that are no longer relevant. If upgradient concentration levels are changing over time (i.e. trending upward or downward), the prospective background data set may need to be truncated, removing older data to ensure that the resulting limits continue to represent current natural conditions.

For instance, when background concentration levels are increasing over time due to upgradient water quality changes, if the background data sets are not adjusted, the established PLs could result in increased false positive or false negative risk. In some cases, including older historical data in the background data set may result in overly sensitive limits and an increased chance of false positive readings. In other cases, using all background data when there are temporal changes in background levels may artificially elevate limits. This scenario may occur even when there is a decreasing trend in background concentration levels. An elevated limit under these circumstances is a direct result of an inflated standard deviation that is used in the computation of the parametric limit, which in turn will increase the risk of false negative test outcomes.

Well /constituent pairs that have increasing or decreasing concentration levels over time will be evaluated to determine if earlier data are no longer representative of present-day groundwater quality. In those cases, earlier data may be deselected prior to construction of limits to reduce variation as well as to provide limits that are conservative from a regulatory perspective that will detect future changes in groundwater quality.

Background limits also need to allow for random variation in groundwater concentration levels that are naturally present at a site. The availability of multiple background wells can give an indication of the natural variability in groundwater constituent levels across a site.

2.1.4 Sample Size

While a parametric prediction limit may be constructed with as little as four samples per well, the EPA Unified Guidance recommends that a minimum of at least 8 independent background observations be collected for constructing statistical limits. The reliability of the statistical results is greatly enhanced by increasing the sample size to eight or more. An increased sample size tends to more accurately characterize the variation and typically reduce the probability of erroneous conclusions. Furthermore, if a nonparametric prediction limit is required, the confidence level associated with the test will be dependent on the number of background data available as well as the number of comparisons to the statistical limit.

2.1.5 Non-Detect Data

When data contain <15% non-detects in background, simple substitution of one-half the reporting limit is utilized in the statistical analysis. The reporting limit (RL) utilized for non-detects is the practical quantification limit (PQL) used by the laboratory.

When data contain between 15-50% non-detects, the Kaplan-Meier non-detect adjustment is applied to the background data. This technique adjusts the mean and standard deviation of the historical concentrations to account for concentrations below the reporting limit. Trace (or estimated) values which are reported above the method detection limit (MDL) and below the PQL/RL are used in the statistical analysis as reported by the laboratory. These values are flagged with “J” to distinguish between estimated values and values reported above the PQL.

If detection limits change over a period of analysis, then a statistically significant trend could be the result of increasing or decreasing laboratory precision and not an actual change in water quality. Under those circumstances, an appropriate substitution of the detection limit will be considered, such as the median or most recent detection limit.

2.2 Updating Interwell Background

The following describes the process that will be used to update interwell background data sets. Background updates as described below will be performed every 2 years (ADEM, 2011).

Interwell statistical methods are constructed by pooling upgradient well data from 2 or more upgradient wells. For the Detection Monitoring program, background-derived Prediction Limits will be updated during each semi-annual event by incorporating the most recent sampling results from the existing background well network into the background data set. New background data will be screened for any new outliers as described above.

For the Assessment and Corrective Action program, background-derived tolerance limits are used to construct background limits using pooled upgradient well data for comparison against established standards. The tolerance limits will be updated every 2 years after screening as described above.

Once background has been established, the background well network may be updated by (1) adding wells to the background well network, or (2) removing wells and data from the background well network. The following describes the additional statistical screening steps that will be taken to update the background after a site-specific determination is made that the wells meet the hydraulic and geochemical requirements of a background location.

2.2.1 Adding to the Background Well Network

The background data set may be updated or adjusted by incorporating new wells into the network or installing new background monitoring wells. When new wells are installed, the following process will be used to statistically evaluate the results and incorporate them into the background data set upon receipt of ADEM approval.

Prior to incorporating new upgradient well data for construction of statistical limits, Tukey's, Dixon's or Rosner's outlier test and visual screening are used to evaluate data. Any confirmed

outliers are flagged as such in the database and deselected prior to construction of interwell prediction limits. Any flagged data are displayed in a lighter font and as a disconnected symbol on the time series reports, as well as in a lighter font on the accompanying data pages. A summary of Tukey's test results and flagged values will be provided with the report.

Upgradient well data will be further tested for trends as described earlier. When no statistically significant trends are identified, all new well data will be incorporated into the background. Any records with trending data will be evaluated on a case-by-case basis, and records may require deselection if historical data are no longer representative of present-day groundwater quality conditions. Interwell prediction limits using all upgradient well data are re-calculated as a result of this screening.

2.2.2 Removing Wells and Data from Background

As additional background data are collected, or site conditions change, a recommendation may be made to remove a well from the background network for any number of reasons (e.g. removal, change in groundwater flow conditions, change in chemistry, vandalism, etc.). If an upgradient well will no longer be part of the background network, the historical data from that well will no longer be included in the construction of interwell limits (which pool upgradient well data) without Department approval.

When wells are proposed for removal from the network, a site-specific statistical and geochemical evaluation will be made to identify the population(s) of data that may not represent background conditions. A proposal will be submitted to the Department for approval identifying the recommended use or disuse of historical data from the well(s) proposed for removal. The proposal will include statistical data screening and will explain the rationale for the proposed use of the data.

In the case where an upgradient well is no longer sampled (i.e. due to well damage, etc.), but historical data are still representative of upgradient water quality, an evaluation will be conducted as described below to determine whether data are still representative of

background and should continue to be included in the background data set. When a demonstration shows that groundwater quality from a well is still representative of naturally occurring groundwater quality upgradient of the facility, this data will be used in construction of statistical limits with ADEM approval. In cases where data from upgradient wells removed from the network do not represent upgradient groundwater quality, a proposal will be made for ADEM approval whereby interwell prediction limits will be re-calculated using data from only those upgradient wells in the network. When preparing a background data evaluation for Department approval, the statistical portion of the evaluation will be accomplished by:

(i) Using the ANOVA to determine whether significant variation exists among upgradient wells which would prevent the well's data from being included in construction of interwell prediction limits;
(ii) Visual screening using Time Series and Box Plots to determine whether measurements are similar to neighboring upgradient wells;
(iii) Screening the background data set for outliers as described above; and
(iv) Performing trend tests to identify statistically significant increasing or decreasing trends which may require adjustment of the record to eliminate trending data and reduce variation.

2.3 Updating Intrawell Background

Intrawell statistical methods may be used at well locations that have not been impacted by a release from the unit being monitored. When using intrawell methods, once the background limits are established, data will not be evaluated again for updating until a minimum of 4 new samples are available, or every 2 years4. Data will be screened for outliers and trends as described above.

When updating an intra-well background, data are tested for suitability of updating by consolidating new sampling observations with the screened background data. Before updating the data for intrawell testing, it is necessary to verify that the most recent

observations represent an unimpacted state as compared with the existing background. Data are first screened for outliers and, when confirmed, flagged as such in the database and deselected prior to constructing statistical limits. This step results in statistical limits that are conservative from a regulatory perspective.

The Mann-Whitney (Wilcoxon Rank Sum) two-sample test is then used to compare the median of the first group of background observations to the median of the more recent 4 or more observations. If the most recent data group is not found to be statistically different than the older data, the background data set may be updated, and the prediction limits will be reconstructed to include the more recent background samples. When statistical differences are identified by the Mann Whitney test, statistical limits may not be eligible for updating. When more samples are available, data will be tested again for suitability of updating background data sets. In the event it is determined that the historical data are no longer representative of present-day groundwater quality in the absence of suspected impacts, only the more recent 8 or more measurements will be used to update the prediction limits.

3.0 STATISTICAL APPROACH FOR DETECTION MONITORING

The following sections describe the concepts related to developing a site-specific SAP for detection monitoring. The statistical evaluation includes screening upgradient well data to characterize groundwater upgradient of the facility and determine whether intrawell or interwell methods are recommended as the most appropriate statistical method for each Appendix I constituent.

3.1 Statistical Method

When data from multiple upgradient wells are available, a determination will be made as to whether the upgradient well data appear to come from the same population or whether there is evidence of spatial variation upgradient of the facility. Data for each constituent are plotted using box and whisker plots to assist in making this determination, providing visual representation of concentrations within and across wells. Analysis of Variance (ANOVA) may be used initially to statistically evaluate whether significant spatial variation exists at each unit.

Interwell prediction limits (PLs) pool upgradient well data to construct statistical limits which are used to evaluate data at downgradient wells. These tests are appropriate when the ANOVA determines that no significant spatial variation exists among the background wells.

In the event the ANOVA determines:

1. evidence of significant spatial variation upgradient of the facility, or
2. that there are insufficient upgradient well data, or
3. that interwell methods will not adequately address the question of a change in groundwater quality at any of the downgradient wells,

the USEPA Unified Guidance recommends switching from interwell methods to intrawell methods when it can be reasonably demonstrated that no impact from the Landfill is present for well/constituent pairs in detection monitoring.

Intrawell PLs, which compare the most recent sample from a given well to statistical limits constructed from historical measurements at the same well, are extremely useful for rapidly detecting changes over time at a given location. Intrawell methods remove the influence of on-site spatial variation in well-to-well concentration levels. Site monitoring data are evaluated for the appropriateness of intrawell methods, including screening of background data from within each well for trends, seasonality when sufficient data are available, and outliers.

3.2 Prediction Limits

The use of PL tests is restricted to Appendix I parameters recently sampled at groundwater monitoring wells to represent current conditions. Background stability will be tested using temporal and seasonal trend tests, utilizing de-seasonalizing adjustments when seasonal trends are present. Moreover, statistical conditions including background sample size requirements as specified in USEPA guidance and regulations will be verified prior to the use of each statistical approach.

3.3 Criteria for Using the Interwell Statistical Methodology

There are a number of conditions that need to be met before an interwell statistical analysis can be considered appropriate for a specific site.

The conditions as described in this section include:

1. Ensuring that the aquifer underlying the site is continuous and that all monitoring wells are screened in the same level;
2. Ensuring that limits will be adequately sensitive in detecting a facility release;
3. Ensuring that limits reflect current background conditions; and
4. Ensuring that confounding factors will not confuse the results.

3.3.1 Aquifer Designation and Monitoring Wells

Where the uppermost aquifer underlying a site is discontinuous, where downgradient monitoring wells are screened in differing levels, or where the upgradient monitoring well network is limited, EPA recommends performing intrawell analyses, to avoid confusing an impact caused by a release from the facility with a difference between wells caused by heterogeneous hydrogeology.

The statistical approach for constituents of concern will be based on interwell or intrawell PLs, and in some cases a combination of both methods, as a result of evaluation of spatial variation at the site. Box and whisker plots may be provided to demonstrate concentration levels within each well and across wells. When significant differences exist in concentration levels, particularly between upgradient wells, this indicates spatial variation in the groundwater quality. Spatial variation and/or limited upgradient well data would tend to create statistical limits that are:

1. not conservative from a regulatory perspective; or
2. not representative of background water quality.

3.4 Criteria for Using an Intrawell Statistical Methodology

The following is a description of the criteria that a site must meet to use an intrawell statistical methodology if it is determined that interwell methods are not appropriate.

3.4.1 Screening of Prospective Historical Background Data

Prior to using an intrawell analysis, it will be necessary to demonstrate that there have been no potential prior impacts at downgradient wells on the prospective historical background data as a result of the current practices at the Site. In addition to an independent investigation for prior impacts, prospective background data for intrawell tests will be screened for trends, seasonality and outliers as described above. If intrawell analyses are not feasible due to elevated concentrations in downgradient wells relative to concentrations upgradient of the facility, as determined during the screening process, interwell analyses will initially be utilized until further evidence supports the use of intrawell testing.

3.4.2 Stable Naturally Occurring Concentrations

The background data screening procedure described here is designed to check for stable background conditions, and account for existing groundwater quality from past or present activities in the area. While having pre-waste data is ideal for characterization of groundwater quality prior to waste placement, this facility does not have pre-waste data.

The Sen's Slope/Mann-Kendall test for increasing or decreasing temporal trends will be used to test prospective background data when time series plots indicate the possibility of either increasing or decreasing trends over time. In the case where significant trends are found, unrepresentative values will be deselected only when it is clear that the trend is not the result of contamination. Assuming no alternative source, if similar trends and/or concentration levels are noted upgradient of the unit for the same parameters, it will be assumed that concentration levels represent natural variation in groundwater, and thus,
earlier data will be removed so that compliance limits reflect current groundwater conditions upgradient of the unit.

3.5 Site-Wide False Positive Rates (SWFPR) and Statistical Power

The USEPA Unified Guidance recommends an annual site-wide false positive rate of 10%, which is distributed equally among the total number of sampling events. A site-wide false positive rate of 5% is targeted for each semi-annual sampling event. USEPA also requires demonstration that the statistical methodology selected for a facility will provide adequate statistical power, as discussed in Section 3.7 to detect a release, should one occur.

3.6 Determination of Future Compliance Observations Falling Within Background Limits

Intrawell or interwell upper PL are constructed with a test-specific alpha based on the overall site-wide false positive rate (SWFPR) of 5% for each sampling event. Any compliance observation that exceeds the background prediction limit will be followed with one or two independent resamples, depending on the resample plan, to determine whether the initial exceedance is verified.

The following pretests are used to ensure that the statistical test criteria are met:

1. Data Distribution. The distribution of the data will be tested using either the Shapiro-Wilk test (for background sample sizes of 50 or less) or the Shapiro-Francia test (for background sample sizes greater than 50). Non-normally distributed data will be transformed using the ladder of powers to normalize the data prior to construction of background limits. When background data cannot be normalized, nonparametric PL will be calculated.
2. Handling Non-Detects. Simple substitution per USEPA Guidance will be used when non-detects comprise less than or equal to 15% of the individual well data. Simple substitution refers to the practice of substituting one-half the reporting or detection limit for non-detects. When the proportion of non-detects (NDs) in background falls between 16 and 50%, a non-detect adjustment such as the Kaplan-Meier or Regression on Order Statistics (ROS) method for adjustment of the mean and standard deviation will be used prior to constructing a parametric prediction limit. When the proportion of non-

detects exceeds 50%, or when the data cannot be normalized, a nonparametric prediction limit will be used.

3.7 Statistical Power

The USEPA Unified Guidance also requires that facilities achieve adequate statistical power to detect a release, even if only at one facility well and involving a single constituent. More specifically, EPA recommends power of approximately 55% when concentration levels are 3 standard deviations above the background mean, or approximately 80% power at 4 standard deviations above the background mean.

The performance of a given testing strategy is displayed in Power Curves which are based on the particular statistical method chosen combined with the resampling plan, the false positive rate associated with the statistical test, as well as the number of background samples available and the size and configuration of the monitoring network.

4.0 STATISTICAL APPROACH FOR ASSESSMENT MONITORING & CORRECTIVE ACTION

The following describes the general statistical procedures that will be used if a facility enters Assessment or Corrective Action monitoring because of SSIs in the Detection monitoring program. Site-specific and event-specific SAPs may be developed at that time according to permit or regulatory requirements.

4.1 Assessment Monitoring

Assessment Monitoring may be initiated when there is a confirmed SSI over background in one or more wells for any of the Appendix I parameters. Wells are sampled for Appendix II parameters semiannually concurrent with Appendix I constituents.

When in assessment monitoring, Appendix II constituent concentrations are compared to Groundwater Protection Standards (GWPS), or other applicable standards, using Confidence Intervals. Upgradient well data are screened for outliers and trends as described above and

tolerance limits are used to develop background limits. Tolerance limits should only be used when there is minimal interwell spatial variability within the background data. Checks of the background well data for spatial variability should be conducted using box plots or ANOVA. GWPS may be based on background limits when background concentrations are higher than the established Maximum Contaminant Levels (MCLs).

Parametric confidence intervals around the population mean will be constructed at the 99% confidence level when data follow a normal distribution, and around the geometric mean (or population median) when data follow a transformed-normal distribution.

Non-parametric confidence intervals will be constructed when data do not pass a normality test and cannot be normalized via a transformation. The confidence level associated with the non-parametric tests is dependent on the number of values used to construct the interval. Confidence intervals require a minimum of four samples; however, a minimum of eight samples are recommended. When non-parametric confidence intervals are constructed, a maximum of eight of the most recent samples will be used in the comparison. When a well/constituent pair does not have the minimum sample requirement, the well/constituent pair will continue to be reported and tracked using time series plots and/or trend tests until such time that enough data are available.

In Assessment Monitoring, when the Lower Confidence Limit (LCL), or the entire interval, exceeds the GWPS as discussed in the USEPA Unified Guidance (2009), the result is recorded as an SSI.

4.2 Corrective Action

If groundwater corrective action is triggered, semi-annual sampling of the assessment monitoring wells will continue, and Confidence Intervals will monitor the progress of remediation efforts. Confidence Intervals are compared to GWPS, and the entire interval must fall below a specified limit (i.e. the Upper Confidence Limit [UCL] must be below the limit) to demonstrate compliance. A site-specific monitoring program will be developed based on the

final corrective action plan and points-of-compliance.

5.0 SITE-SPECIFIC STATISTICAL ANALYSIS METHODS

A site-specific statistical analysis approach was developed after applying the screening criteria described previously. The following is a detailed description of the statistical analysis methodology that will be used for groundwater quality analysis at the Landfill when monitored constituents are present in any of the downgradient wells. Background sampling began in 1997. The monitoring well network is described above.

For the statistical analysis of analytical results obtained from the existing monitoring well network,

1. the number of samples collected will be consistent with the appropriate statistical procedures as recommended by the USEPA Unified Guidance;
2. the statistical method will comply with the EPA-recommended performance standards; and
3. determination of whether there is a statistically significant increase (SSI) over background values in the future will be completed per the above-mentioned regulations.

5.1 Detection Monitoring Program

Groundwater quality data will be evaluated through use of interwell prediction limits, combined with a 1-of-2 resampling strategy. If a statistical exceedance is found, the resample strategy allows for collection of one independent resample to determine whether the initial exceedance is verified.

When the initial finding is not verified by resampling, the resampled value will replace the initial finding. When the resample confirms the initial finding, the exceedance will be reported. If a resample is not collected, the initial exceedance will be considered a confirmed exceedance. The Sen’s Slope/Mann Kendall trend test will be used, in addition to PL, to

statistically evaluate concentration levels over time and determine whether concentrations are increasing, decreasing, or stabilizing.

The chance of false positive results increases with increasing numbers of statistical tests. The total number of statistical tests for a facility is the number of parameters tested multiplied by the number of monitoring wells. To reduce the overall number of statistical tests performed at each semi-annual sampling event, thereby lowering the chance of a false exceedance while maintaining a high degree of statistical confidence that a release will be detected, the Landfill will:

1. Monitor constituents in wells with detections (i.e. excluding well/constituent pairs with 100% non-detects); and
2. Incorporate a 1-of-2 retesting strategy The following statistical methods will be used:

5.1.1 Parametric Prediction Limits

These limits will be computed per USEPA Unified Guidance when data can be normalized, possibly via transformation. The test alpha will be calculated based on the following configuration:

Annual SWFPR = 0.10

1-of-2 resampling plan with a minimum of 26 background samples for interwell tests

w= 25 (number of compliance wells) c= 7 constituents

5.1.2 Nonparametric Prediction Limits

The highest background value will be used to set the upper nonparametric prediction limit. The associated confidence level takes into account the prospect of additional future compliance values (retests) when there is an initial exceedance. The achieved confidence level is determined based on the background sample size, the number of monitoring wells in the network, and the number of proposed retests, using tables provided in the USEPA Unified Guidance.

5.1.3 Retesting Strategy

When the prediction limit analyses indicate initial exceedances, discrete verification resamples from the indicating well(s) will be collected within 90 days and prior to the next regularly scheduled sampling event. If the initial exceedance is verified, a confirmed SSI will be reported. For the test to be valid, the resample needs to be statistically independent which requires that sufficient time elapse between the initial sample and resample. A minimum time interval between samples will be established to ensure that separate volumes of groundwater are being sampled.

5.1.4 Background Data Set

Interwell tests, which compare downgradient well data to statistical limits constructed from all pooled upgradient well data after careful screening, are appropriate when average concentrations are similar across upgradient wells. Intrawell tests, which compare compliance data from a single well to screened historical data within the same well, are appropriate when upgradient wells exhibit spatial variation; when statistical limits constructed from upgradient wells would not be conservative from a regulatory perspective; and when downgradient water quality is unimpacted compared to upgradient water quality for the same parameter. Because upgradient well data represent natural groundwater quality upgradient of the facility, intrawell prediction limits are also constructed on these wells. A minimum of 8 background samples are required for both interwell and intrawell tests.

The background data set will be managed, screened and updated as described previously after receipt of Department approval.

5.2 Assessment Monitoring Program

Assessment monitoring will be performed following the procedures described in Section 4.0. When assessment monitoring is initiated, Appendix II constituents are sampled semi-annually, and concentrations in downgradient wells are statistically compared as described below to GWPS. Following the Unified Guidance, the Maximum Contaminant Level (MCL) is used as the GWPS. When reported concentrations in upgradient wells are higher than the

established MCLs, background limits may be developed as described below from an interwell tolerance limit using the pool of all approved upgradient well data (see Chapter 7 of the Unified Guidance). Tolerance limits should only be used when there is minimal interwell spatial variability within the background data. Checks of the background well data for spatial variability should be conducted using box plots or ANOVA.

Parametric tolerance limits, which are used when pooled upgradient well data follow a normal or transformed-normal distribution, may be constructed on upgradient well or wells with the highest average concentrations with Department approval. This step serves to reduce the effect of spatial variation on the standard deviation in the parametric case when calculating a GWPS. Non-parametric tolerance limits will be constructed when data do not follow a normal or transformed-normal distribution or when a parametric tolerance limit is not approved.

Appendix II background data are screened for outliers and extreme trending patterns that would lead to artificially elevated statistical limits. Confidence Intervals are then constructed using a maximum of 8 of the most recent assessment measurements from a given downgradient well for comparison to the GWPS to determine compliance. Additionally, the Sen's Slope/Mann Kendall trend test will be used to evaluate the most recent measurements to determine whether concentration levels are statistically significantly increasing, decreasing, or stabilizing.

Parametric tolerance limits (i.e. UTLs) are calculated when data follow a normal or transformed-normal distribution using pooled upgradient well data as described above for Appendix II parameters with a target of 95% confidence and 95% coverage. When data sets contain greater than 50% non-detects or do not follow a normal or transformed-normal distribution, the confidence and coverage levels for nonparametric tolerance limits are dependent upon the number of background samples. The UTLs are then used as background levels for establishing the GWPS under case 2 below.

As described in ADEM Admin. Code r. 335-13-4-.27(4)(h) the GWPS is:

1. The maximum contaminant level (MCL) established under 40 CFR § 141
2. Background levels for constituents where the background level is higher than the MCL.

In assessment monitoring, when the Lower Confidence Limit (LCL), or the entire confidence interval, exceeds the GWPS as discussed in the USEPA Unified Guidance (2009), the result is recorded as a statistically significant level (SSL).

With Department approval, the background limits will be updated and compared to the specified limits for Appendix II constituents every two years to determine whether the established limit or background will be used as the GWPS in the confidence interval comparisons, as discussed above.

5.3 Corrective Action Monitoring Program

When implemented, groundwater corrective action will include a remedy monitoring program. If the site requires corrective action, the Confidence Interval Method comparison to the Groundwater Protection Standard (CI-GWPS) using the Upper Confidence Limit (UCL) will be used to evaluate the data. When the UCL is below the respective groundwater protections standard the concentration is considered below the GWPS and cleanup standards will be attained. Application of the CI-GWPS method will be in accordance with the guidelines found in Chapter 21 of the USEPA Unified Guidance (March 2009).

6.0 REFERENCES

ADEM, 2011, Alabama Groundwater Monitoring Reporting Guidance For Solid Waste Facilities (March 2011)

U.S. EPA, April 1989. Interim Final Guidance, Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities. Office of Solid Waste Management Division, U.S. Environmental Protection Agency, Washington, D. C.

U.S. EPA, June 1992. Addendum to Interim Final Guidance, Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities. Office of Solid Waste Management Division, U.S. Environmental Protection Agency, Washington, D. C.

U.S. EPA, March 2009. Unified Guidance, Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities. Office of Solid Waste Management Division, U.S. Environmental Protection Agency, Washington, D. C.

APPENDIX C

EXAMPLE FIELD SAMPLING LOG FORM



GROUNDWATER SAMPLING LOG

SITE NAME: **Fort Payne Landfill**	SITE LOCATION: **Fort Payne, Dekalb County, Alabama**

WELL NO:	SAMPLE METHOD:	DATE:

PURGING DATA

WELL DIAMETER (inches):	TUBING DIAMETER (inches):	WELL DEPTH (feet):	STATIC WATER LEVEL DEPTH (feet):
PURGING INITIATED AT:		PURGING ENDED AT:	TOTAL VOLUME PURGED (gallons):

TIME	PUMPING RATE (gpm)	DEPTH TO WATER (feet)	TEMP. (^{O}C)	DISSOLVED OXYGEN (circle mg/L or % saturation)	COND. (µmhos/cm or µS/cm)	pH (standard units)	ORP (Mv)	TURBIDITY (NTUs)	COLOR (describe)	ODOR (describe)

SAMPLING DATA

SAMPLE DATE:	SAMPLE COLLECTION TIME:
SAMPLED BY (PRINT):	SAMPLER(S) SIGNATURES:
REMARKS:	

Groundwater Level Measurements

Well/ Piezometer Number.	Casing Elevation ft-amsl	Total Depth ft - btc	Bottom Elevation ft-amsl	Water Level Date:

QA/QC Samples	Date	Time
Field Blank	_____	_____
Rinsate Blank	_____	_____
Duplicate ( )	_____	_____

Well Volume Calculation: (Total Depth – Static Water Level) x 0.163 (gallons per foot in 2" well) = 1 Well Volume
Divide: 1 Well Volume by purge rate to get amount of time needed to purge 1 well volume

APPENDIX D

EXAMPLE CHAIN OF CUSTODY FORM



Chain of Custody Record

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other:

Client Contact	**Project Manager:**	**Site Contact:**	**Date:**	COC No:
Site :	**Tel/Fax:**	**Lab Contact:**	**Carrier:**	_____ of _____ COCs
Address:	**Analysis Turnaround Time**			Sampler:
City/State/Zip:	☐ CALENDAR DAYS ☐ WORKING DAYS			**For Lab Use Only:**
Phone	TAT if different from Below _____			Walk-in Client:
Fax:	☐ 2 weeks			Lab Sampling:
Project Name:	☐ 1 week			
Site:	☐ 2 days			Job / SDG No.:
P O #	☐ 1 day			

Sample Identification	**Sample Date**	**Sample Time**	**Sample Type (C=Comp, G=Grab)**	**Matrix**	**# of Cont.**	**Filtered Sample (Y / N)**	**Perform MS / MSD (Y / N)**																Sample Specific Notes:

Preservation Used: 1= Ice, 2= HCl; 3= H_2SO_4; 4=HNO_3; 5=NaOH; 6= Other _____

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

☐ Return to Client ☐ Disposal by Lab ☐ Archive for _____ Months

Special Instructions/QC Requirements & Comments:

Custody Seals Intact: ☐ Yes ☐ No | Custody Seal No.: | Cooler Temp. (°C): Obs'd:_____ Corr'd:_____ Therm ID No.:_____

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

APPENDIX 6.1

EXPOSIVE GAS MONITORING PLAN

CITY OF FORT PAYNE
SANITATION DEPARTMENT

Fort Payne Landfill
Explosive Gas Monitoring Field Report

Date of Monitoring: Jan. 8, 2024 (For year 2023)
Person Monitoring: Patrick Dunne

Monitoring Equipment: Scott D-11 Vapotester calibrated on Methane (calibrated in August, 2011, by a factory representative).

Comments: NO active placement of material has been performed within hundreds of feet of either building in many years. Our landfill has also not received any putrescent waste since October of 1997. This landfill (with one exception, our clean-out drain) has not detected any methane since 1998.

Test Site	% of LEL	Test Site	% of LEL
1	0%	10	0%
2	0%	11	0%
3	0%	12	0%
4	0%	13	0%
5	0%	14	0%
6	0%	15	0%
7	0%	16	0%
8	0%	17	0%
9	0%	18	0%

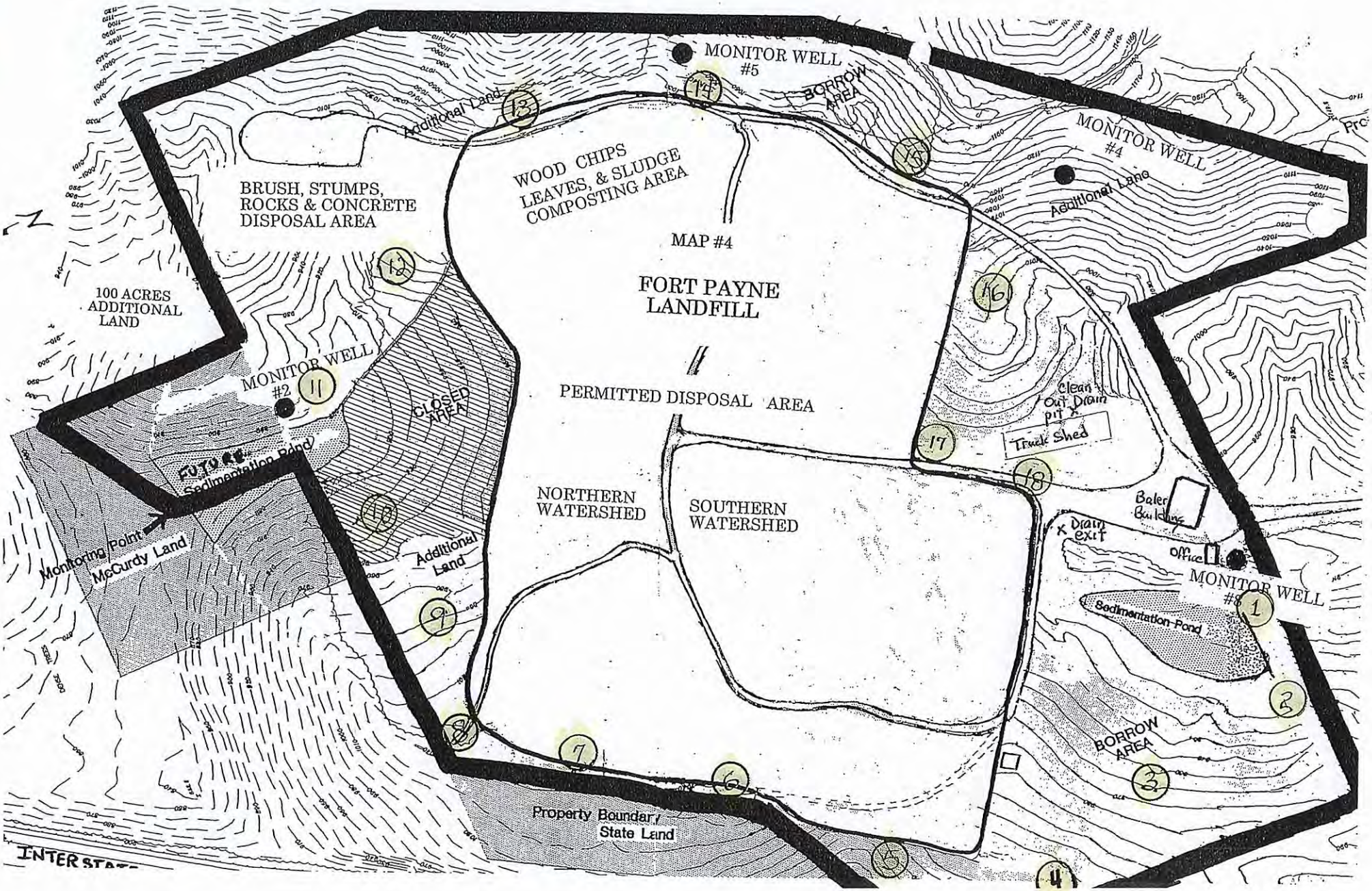
Other Test Sites	% of LEL
Office Building	0%
Dispatch Office	0%
Truck Shed	0%
Truck Shed Drain Culvert	0%
Baler Building	0%
Clean-out Drain	If any, usually here. 0% reading here as well.

Clean out drain is monitored and washing debris from cleaning out truck troughs into the clean-out pit is discontinued or greatly reduced in July and August until cooler weather to help with LEL levels below ground level in the culvert.

Patrick Dunne, Solid Waste Coordinator

Date: 1-9-2024

Gas Monitoring Points - highlighted in yellow



APPENDIX 7.1

BEST MANAGEMENT PRACTICES PLAN

Best Management Practices Plan for the Fort Payne Landfill - to include Spill Prevention Control and Countermeasures Plan (SPCC)

Prepared By:

Patrick Dunne
Solid Waste Coordinator
City of Fort Payne

Revised:
February 2022

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- **On-Site Waste Containers and Unacceptable Waste Extracted from the Landfill**
- **Employee Training, Record Keeping, and Implementation**

Introduction

National Pollution Discharge Elimination Systems (NPDES) General Permit number ALG16-0106, authorizes the City of Fort Payne to discharge storm water from the surface of the Fort Payne Landfill to all waters of the state not designated outstanding national resource water. The NPDES specifically requires the implementation of an ADEM approved Best Management Practices (BMP) that establishes operating procedures to manage pollutant levels in storm water runoff, and provide adequate monitoring and reporting practices to detect the presence of certain pollutants directly or indirectly associated with landfill operations. The BMP identifies the pollution sources, characterizes chemical constituent in storm water runoff, and provides an effective management plan to control, within specified limits, and the impact of contaminated storm water runoff on surface waters.

Federal Regulations (40 CFR 112) applies to facilities that store petroleum and its derivatives. Facilities having a single storage tank with a storage capacity in excess of 1,320 gallons are required to prepare and implement a Spill Prevention Control and Countermeasures Plan (SPCC) that complies with the regulation. A separate SPCC Plan would identify petroleum based pollution sources, containment areas, and would provide an effective prevention plan to prevent petroleum products from entering the environment. The only petroleum containing storage device in use at the landfill is one 500 gallon diesel fuel tank which is affixed to a moveable truck which stays parked in the landfill and which is used to refill diesel tanks on the landfill's bulldozers, compactors, loaders, and scraper pan. Hence, due to the small size of this tank the above Federal Regulations do not currently apply to our landfill.

Although not technically required to develop a separate SPCC Plan for the landfill, it is the intention of this BMP Plan to incorporate, within the technical information and requirements, a separate SPCC Plan for our own benefit. This allows us to properly prepare for any such event that may occur and prepare accordingly.

Potential Sources of Pollution

The Fort Payne Landfill has two different out-falls. From a topographical divide, approximately the center of the designated landfill footprint, surface water drains both northward and southward. Ridges to the east and west prevent any surface water runoff in those directions. Storm water for testing purposes is extracted from both the north and south out-falls at the property boundaries.

The Fort Payne Landfill accepts non-hazardous industrial and construction/demolition (C/D) wastes as defined in and pursuant to the Solid Wastes Disposal Act, Code of Ala. 1975, Section 22-271, et. seq., as amended, and attendant

regulations promulgated thereunder by the Alabama Department of Environmental Management (ADEM). The landfill currently operates under the Solid Waste Disposal Facility Permit granted us by ADEM (landfill "25-02") August 12, 2012. (New permit applied for on February 2, 2017). Said permit grants us permission to accept "non-hazardous industrial waste and construction/demolition waste including, but not limited to, white goods, clothing, yard waste, untreated wood waste, roofing shingles, tires, dried paint, dried sludge, mattresses, paper, appliances, uncontaminated metal, asbestos, petroleum contaminated waste, foundry sand, and similar type waste materials which in their degradation do not produce any environmentally harmful residues or leachates. Uncontaminated concrete, logs, stumps, soil, brick, rock, and old or weathered waste asphalt paving are excluded from the A.D.E.M.'s current definition of solid waste when such materials are not disposed of in the landfill itself. Hence, these materials are accepted at the landfill and disposed of in a separate area just off the northern border of the defined landfill footprint.

As mentioned earlier, the Fort Payne Landfill has one 500 gallon (skid) tank mounted atop a Chevrolet 1.5 ton truck which provides diesel fuel for the equipment in the landfill. There are no other active petroleum fuel tanks on site at the facility. At times in the past, it was common practice to utilize a 250 gallon tank to store used motor oil brought to the landfill by residents intended for recycling. We no longer keep any oil to be recycled on site. We have moved that recycling operation to the City's recycling center, where we currently have a drum sitting on a formed concrete pad where residents can bring their used oil for recycling purposes. If we perform maintenance on any of our trucks we collect that oil and take it to be disposed of at the recycling center. However, presently, most of our trucks are scheduled to have these types of maintenance performed at our City Shop.

Several buildings are located on site, including a large truck storage shed with a truck wash area located in the rear, which is drained into an ADEM-approved storm water pond, a bulldozer shed, and a baler building with an attached maintenance shed. The baling/recycling building bales cardboard, office paper, newspaper, mixed paper, clear and colored plastic, steel and aluminum cans, and miscellaneous recyclables. Fuel conditioner, hydraulic oil, truck wash detergent, multi-grade lubricants, antifreeze, and similar items are stored on site for equipment maintenance. This facility meets all Alabama Health Department regulations and is totally enclosed and is connected to the Fort Payne sewer system.

A municipal sewage sludge composting area is located in a section of the landfill not currently utilized for waste disposal but which is protected by an ADEM-approved installed clay liner.

Chemical Characteristics of Landfill Storm Water

Laboratory analyses of storm water runoff samples are taken at both outfall discharge points shown on the attached map of the landfill. The monitoring is conducted twice per year, usually in the spring and fall and monitored for contaminants above the

prescribed limits. The constituents which are tested and the average levels of contamination detected in past monitoring are presented in the table below. Except for higher than acceptable levels of suspended solids, no other parameters have ever been detected above the allowable limits.

City of Fort Payne Landfill
Storm Water Runoff Outfall Sample Values

	Outfall 001-1 (North)	Outfall 001-2 (South)	Comments
Constituent			
BOD,mg/L	5 avg.	8 avg.	Stable
PH,S.U.	7.7 avg.	7.5 avg.	Stable
Total Solids Suspended, mg/L	70 avg.	145 avg.	Relatively wide variation
Cadmium mg/L (AS CD)	<0.003	<0.003	Always BDL
Chromium, mg/L (ASCR)	<0.01	<0.01	Always BDL
Copper, mg/L (AS CU)	0.007	0.011	Stable
Oil and Grease, mg/L	<5.0	<5.0	Always BDL
Rainfall (inches)	as measured	as measured	8.5 in maximum
Solids Dissolved, mg/L	150 avg.	200 avg.	Relatively wide variation
COD, mg/L	50 avg.	80 avg.	Stable
Turbidity-up & down NTU	measured only when disturbing new soil	measured only when disturbing new soil	If measures needed, performed semi-annually in accordance to ADEM regs.
Turbidity Downstream	measured only when disturbing new soil	measured only when disturbing new soil	Downstream should not exceed upstream by more than 50 NTU's
Turbidity Upstream	measured only when disturbing new soil	measured only when disturbing new soil	If measures needed, performed semi-annually in accordance to ADEM regs.
Solids Settleable	measured only when disturbing new soil	measured only when disturbing new soil	If measures needed, performed semi-annually in accordance to

			ADEM regs.

Sampling Protocol and Noncompliance Notification

Monitoring is to be performed during storm events defined as 0.1 inch or greater rainfall and at least 72 hours from the previously measurable (> 0.1 inch) storm event. A grab sample shall be taken during the first thirty minutes of the discharge (or as soon thereafter as practicable). There shall be no discharge of a visible oil sheen, floating solids, or visible foam in other than tract amounts.

All constituents are to be measured once each six months during January through June and again during July through December using a "grab" sample except Chemical Oxygen Demand, which may be measured annually. Reports are to be submitted on or before July 28th and January 28th following the relevant monitoring period. Turbidity is to be checked semi-annually and downstream turbidity must be less than 50 NTUs greater than upstream turbidity. Minimum and or maximum allowable units specified in the permit for parameters are as follows:

Parameter	Minimum Allowable	Maximum Allowable
pH	**N/A**	**N/A**
Oil & Grease	**N/A**	**15**
Suspended Solids	**N/A**	**50**

A discharge in violation of the limitations of the permit must be reported to ADEM submitted in a written report to ADEM using a copy of the Noncompliance Notification Form and shall include:

1. A description of the discharge and cause of noncompliance;
2. The period of noncompliance, including exact dates and times or, if not already corrected, the anticipated time of the noncompliance;
3. A description of the steps taken and/or being taken to reduce or eliminate the non-complying discharge and to prevent its recurrence.

Any discharges of a more serious nature, must be reported orally to ADEM within 24 hours after the discharge is discovered. Specifically, this would include:

1. Anything which threatens human health or welfare, fish or aquatic life, or water quality standards
2. Does not comply with an applicable toxic pollutant effluent standard
3. Contains a quantity of a hazardous substance which has been determined may be harmful to public health or welfare, etc.

In addition to the oral report, a written report as provided in the paragraph above shall also be submitted no later than five days after discovery of the discharge.

Written notification will be provided to ADEM in each of the following circumstances:

1. Should an event be predicted to occur which may result in a discharge which would exceed the permit requirements
2. Should activities cease which would end the need for discharge monitoring,
3. Should any change occur in the mailing address, telephone number, or person responsible for monitoring and reporting. -Updated January of 2017 with formal letter to A.D.E.M. Current

person responsible, Patrick Dunne, Solid Waste Coordinator, 256-845-0758.

Best Management Practices

Introduction:

The Landfill accepts only non-putrescible items. The items that are received do not possess leachate creating or associated properties. The working face is kept small and is covered weekly with 6 inches of clean compacted dirt. All storm water from this area is diverted to the facility's storm water settling pond. Out-fall 1 is located just beyond (south of) the storm water settling pond. Out-fall 2 is located at the intersection of a run-off drainage ditch and a small creek just off the north border of the landfill.

Inspections and Corrective Action for the General Landfill Area

A minimum of two inspections per week during the hours of facility operation will be performed on any structures that function to prevent storm water pollution. The inspection will include but not be limited to the baler building, the truck shed, and the dozer shed. The inspection will monitor for spillage which might occur in the unloading or loading of any materials which might cause storm water contamination. The inspection will monitor the proper storage of all such materials to ensure that such materials do not come in contact with storm water. A diagram is attached to this plan indicating areas to be monitored during the inspection.

The bi-weekly inspection shall also include an examination of the ditches designed to prevent "run-on" water from entering the landfill disposal areas and the "run-off" ditches designed to channel storm water which falls onto the landfill facility into the landfill storm water retention pond. Such ditches are to be kept graded and unobstructed at all times. The ditches are to be kept free of any litter which might be washed away from the landfill facility or into the landfill storm water retention pond. The storm water pond itself should be inspected for floating litter, erosion along its banks, and to ensure that the overflow structure is non-obstructed, clean, and flowing freely.

Regular clean-up shall be made of litter scattered about the landfill. A litter fence shall be installed and maintained, when necessary, to capture blowing paper and plastic around the tipping face. The entrance road, property boundaries, and working site shall be monitored to ensure that the area is free of windblown litter. Inspection and site cleanup shall be performed by community service workers and departmental employees to assure site cleanliness. Continual efforts will be made for improvement of the site each year.

The bi-weekly inspection shall also include an examination of all landfill vegetation which serves to protect from erosion and run-off of silt into the landfill storm water retention pond. Measures shall be implemented to re-seed any areas of erosion as

soon as weather and conditions permit. When seeding is impractical or the affected area cannot be reached with equipment, bales of straw will be placed as obstructions to erosion run off and straw will be spread along the erosion itself to prevent further damage until seeding and corrective action may be taken. First-time seeding should be performed as soon as conditions permit for temporary vegetative cover on areas of the landfill which have been temporarily finished and set aside for future covering with additional lifts of waste. Similarly, any finished areas of the landfill which will not be reused or disturbed should be covered with compost materials then sowed with permanent vegetative cover as quickly as possible. Hay should be used to control erosion until the new grass is well rooted. Fall planting shall be a combination of native grasses such as perennial fescue and annual winter wheat or rye. Spring planting shall be perennial fescue. Whenever, possible, the stand of Bermuda grass already growing on the landfill facility will be encouraged to spread over newly seeded areas. Regular bush-hogging will be performed on all seeded areas of the landfill to discourage the spread of invasive weeds and to encourage the spread of the planted landfill cover.

Once per year, in the fall after the first frost, the Street Department should use their side-cutting bush-hog to clean the ditches and road margins of tall sprouts and weeds.

Once every two years or so, or as needed, a track hoe should be utilized to clean out the mud in the reachable edge of the storm water pond. The mud should be placed in the landfill and allowed to drain dry, then utilized for cover dirt.

Fuel Tank/Fueling Area

The 500 gallon fuel tank is placed on a skid and maintained in the landfill as close as possible to the daily operation of the large compactors and bulldozer which it serves. The area will be protected from accidental bumping from vehicle traffic and monitored daily for any signs of leaks or spills. Significant spills will be excavated and aerated and the contaminated soil will be placed in a 40yd roll-off container and sent to Sand Valley Landfill, where they are authorized to accept such petroleum based waste material. A log shall be maintained showing the date and time of such spill and the clean up measures taken to correct the contamination. To date, no such spill has occurred in the landfill.

Truck Shed (Washing Area), Baler Building, Maintenance Shop, and Bulldozer Shed -SPCC guidelines and protocols for these areas

The wash out area located behind the truck shed will be inspected daily. Truck wash protocol dictates that drivers will clean their trucks out in the landfill after finishing their daily routes. Any waste material left in the trucks will be placed in 100 gallon cans before and after washing out truck beds to avoid littering the wash-out area. A buried concrete culvert drainage ditch will be maintained to carry wash water from the area directly under the building out to the storm water retention pond. Only bio-degradable soap will be used to clean the inside or outside of the vehicles. An inspection will be performed upon the finish of washing and there should be no visible discharge of debris.

Also, if any unexpected sheen, visible oil leakage, visible foam (to exceed trace amounts) or floating solids are detected upon completion of wash, it will be immediately reported and disposed of by moving said contaminants into the 100 gallon cans we have on site and that particular can or cans will be disposed of at BFI, where they are equipped and permitted to accept such wastes. We will keep an updated log of any incident, with all proper information, at this time no such incident has occurred.

Petroleum lubricants, antifreeze, truck wash detergent, and similar items used on site will be stored, locked either in the baler building or in the landfill maintenance truck. Oil-dri, oil socks and diapers are in the building in the event of overflow on the primary containment system.

Routine equipment maintenance and repairs will be performed in the maintenance bay of the maintenance shop attached to the baler building. The bay sits on an eight inch concrete slab and all walls are enclosed.

Used oil from routine equipment maintenance for our heavy equipment used in landfill operations will be collected and recycled and the area used to perform these services will be kept clean at all times. This area is what we refer to as our "Dozer shed" and it is located within our landfill footprint. No lubricants or other materials are to be stored in this building or anywhere else on site.

If accidental spills occur at any location on site, puddles shall be absorbed with "Oil-Dri", sand, saw dust, or equivalent material. Contaminated absorbents shall be stored away from possible contact with storm water and taken to BFI to be properly disposed of in a lined municipal solid waste landfill cell as soon as possible. All used oil will be recycled via the 300 gallon used oil tank at the vehicle maintenance shop or at our recycling facility.

On-site Waste Containers and Unacceptable Waste Extracted from the Landfill

Eight yard dumpsters and roll-off containers are stationed outside the baler building for the convenience of customers and to keep putrescent and other unacceptable materials out of the landfill. These containers shall be inspected daily and maintained in a clean condition free of any potential contaminants.

All public waste entering the landfill will be first inspected by the dispatcher at the inspection point at the corner of the baler building. The waste will be inspected a second time by the landfill compactor operator at the tipping face of the landfill. Any household waste or other material observed will be extracted by the customer and disposed of properly in the containers outside the baler building set aside for this purpose. Any improper materials entering the landfill in sanitation department roll off containers will be extracted by landfill personnel or community service workers and properly disposed of in the containers provided. An additional extraction fee and disposal fee will be charged back to the customer and records kept of such infractions for future reference.

Employee Training, Record Keeping, and Implementation

As integral part of city safety training exercises, all employees will be instructed in the proper manner in which to respond to accidental spills of fluids and the importance of proper maintenance of the entire landfill site. Safety and waste identification training will be part of continuing training for all employees.

All records required by this plan will be kept on file at the landfill office along with random inspection sheets of incoming loads for a period not less than three years.

The Best Management Practices Plan for the Fort Payne Landfill was last updated on this the 15th day of February, 2022.

_____

Patrick Dunne,
Acting Solid Waste Coordinator
City of Fort Payne

APPENDIX A

LOCAL APPROVAL DOCUMENTS

STATE OF ALABAMA
COUNTY OF DeKALB
CITY OF FORT PAYNE

RESOLUTION NO. 92-9:

EXPANDING LANDFILL SERVICE AREA

WHEREAS, the City of Fort Payne, a municpal corporation, owns and operates a solid waste landfill that is presently certified by the Alabama Department of Environmental Management (ADEM) as meeting current state and federal regulatory standards governing solid waste disposal; and,

WHEREAS, under new federal "Subtitle D" and ADEM regulations governing the operation of solid waste landfills, the City of Fort Payne must close the "active" area of its present landfill by October, 1, 1993; and,

WHEREAS, to relocate the landfill operation to a new site area prepared and to be operated in accordance with new state and federal guidelines will incur extraordinary costs that must be borne by those served; and,

WHEREAS, a practical and equitable effort to recover preparation and operating costs will result in a significant increase in landfill fees; and,

WHEREAS, the present landfill receives approximately 40 tons of solid waste per day, and any new operation would be most efficient and practical if it were to receive approximately 250 tons of solid waste per day; and,

WHEREAS, a legally advertised public hearing was held on April 7, 1992, in accordance with *Section 22-27-48, Code of Alabama, 1975*, to determine the wishes of the citizens of the City of Fort Payne as to the expansion of the service area feeding the City landfill in order to produce a greater volume of solid waste to make the operation more practical and efficient; and,

WHEREAS, the consensus of the citizens at the aforedescribed public meeting was that the Mayor and City Council as the governing body of the City of Fort Payne, Alabama, a municipal corporation, should proceed with every effort to so expand the service area of the City landfill under permit from ADEM;

BE IT THEREFORE RESOLVED by the Mayor and City Council that it wishes to expand the service area of the public municipal landfill to include all of DeKalb, Cherokee, Marshall and Jackson Counties in the State of Alabama; and,

BE IT FURTHER RESOLVED that an application be made to the Alabama Department of Environmental Management to allow the City of Fort Payne, Alabama, to expand its certified service area to include the aforementioned counties within the State of Alabama.

ADOPTED this 14th day of April, 1992.

Attest:

James C. McGee

James C. McGee, City Clerk

J. David Stout

J. David Stout, Mayor

SEAL
1889

STATEMENT OF CONSISTENCY

The Top of Alabama Regional Council of Governments, also known as Alabama Substate District 12, received a request for a statement of consistency from the City of Fort Payne on April 15, 1992. Local approval for this proposal was given by the City of City of Fort Payne on April 14, 1992.

The Top of Alabama Regional Council of Governments has evaluated the proposal using the provisions of the current regional solid waste management needs assessment in particular the available existing capacity within the regional and projected lifetime of such capacity. The regional council has identified that the proposed capacity in not in excess of the expected regional needs.

Based upon our evaluation of the proposal using the above criteria, the undersigned has determined that this proposal is consistent with the DeKalb County current regional solid waste management needs assessment.

Arthur Langford, Jr.

Signature of Authorized Official of
Top of Alabama Regional Council of Governments

April 17, 1992
Date

Dawn Williams
Signature of Notary Public

4-17-92
Date

PUBLIC HEARING: LANDFILL SERVICE AREA EXPANSION

STATE OF ALABAMA
COUNTY OF DeKALB
CITY OF FORT PAYNE

FORT PAYNE HIGH SCHOOL LUNCHROOM

TUESDAY, APRIL 7, 1992, 6:00 P.M.

Pursuant to a legally advertised announcement, a public hearing was held at the lunchroom of the Fort Payne High School to receive citizen input as to a proposed expansion of the municipal solid waste landfill service area in order to increase its feasibility of operation under federal Subtitle D regulations.

The meeting was presided over by Mayor David Stout. Other officials also attending were Councilmembers Bill Ables, David Hawkins, Henry Johnson, Larry Sanders, City Solid Waste Coordinator John Walker, City Attorney Pat Tate, City Clerk Jim McGee and City Accountant Elaine Teague. There were approximately 40 interested citizens in attendance.

Mayor Stout opened the meeting, and made a brief statement that the sole purpose of the meeting was to determine public sentiment as to the possible expansion of the service area of the Fort Payne solid waste landfill so that it's operation could be made financially practical under expensive procedures required to come into compliance with new federal and state guidelines.

In effect, the City must close its solid waste landfill by October, 1993. The questions for potential alternatives are, (1) whether or not the City should continue its own operation by relocating and expanding on adjacent property using an approved method of site preparation and operation, (2) should it join with other municipalities to operate a larger public landfill, or (3) should it pay to use a private landfill source.

The mayor introduced David Harris of Roy Weston Engineering Consultants. Mr. Harris' firm has been engaged by the City to develop statistics and workable criteria to assist in making a long term decision. Mr. Harris in turn introduced Walt Gossett of Weston. Mr. Gossett went into further detail about the City's present landfill and about the possibilities of expansion. He discussed the cost factors and the effect they would have on local garbage rates. Presently, the City landfill takes in about 40 tons of waste per day. To be most economical, using Subtitle D requirements, the most practical level of operation would require that approximately 250 tons of waste per day be deposited in an expanded or alternative landfill.

Mayor Stout asked for comments and participation from those present. After comments, he requested a show of hands by those in opposition to an expansion of the municipal landfill service area. There was no opposition. Unanimously, the wishes of the citizens present were that the City try to maintain or participate in a public landfill versus a private operation and, if expansion would allow this, then it would be preferable to any privatization of landfill operations. It was felt by all present that there was much better control over a public landfill, plus, costs could be maintained on a much lower, fairer basis.

It was the opinion of those present that the mayor and council should first of all proceed in a cooperative effort with surrounding governments to build and operate a landfill of the size that would take all advantages of the economy of scale, but in the alternative, to pursue the operation of a landfill solely for the use of Fort Payne citizens and businesses if necessary.

With this apparent mandate, the mayor stated that the City would work further with Weston to plan for an expanded service area using additional landfill capacity, and if necessary, enlist participation by surrounding governments in proceeding towards a reasonable, consolidated public landfill project.

Upon brief final comments, the meeting was adjourned at approximately 7:15 p.m.

Attest:

James C. McGee, City Clerk

J. David Stout, Mayor



APPENDIX B

ADEM FORM 439

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

1. Facility type:

_____ **Municipal Solid Waste Landfill (MSWLF)**
X **Industrial Landfill (ILF)**
_____ **Construction and Demolition Landfill (C/DLF)**
_____ **CCR Landfill (CCRLF)**
_____ **CCR Surface Impoundment (CCRSI)**
_____ **Other (explain)**_____

2. Facility Name Fort Payne Landfill (25-02)

3. Applicant/Permittee:

Name: The City of Fort Payne

Address: 100 Alabama Ave NW
Fort Payne, AL 35967

Telephone: (256) 845 - 8897

If applicant/permittee is a Corporation, please list officers:

N/A

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

Township 7S **Range** 9E
Section 7 **County** DeKalb

5. Land Owner:

Name: The City of Fort Payne

Address: 100 Alabama Ave NW
Fort Payne, AL 35967

Telephone: (256) 845 - 8897

(Attach copy of agreement from landowner if applicable.)

6. Contact Person:

Name Patrick Dunne

Position or Affiliation Solid Waste Coordinator, City of Fort Payne

Address: 100 Alabama Ave NW
Fort Payne, AL 35967

Telephone: (256) 845 - 8897

7. Size of Facility: 104 **Acres**

Size of Disposal Area(s): 44 **Acres**

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

DeKalb, Marshall, Cherokee, and Jackson Counties in Alabama

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

200 **Tons/Day** _____ **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.):

Same as current permit

SIGNATURE (Responsible official of permit applicant):

_____ **TITLE:** _____

_____ **DATE:** _____

(please print or type name)

APPENDIX C

SOLID WASTE DISPOSAL FACILITY PERMIT

LANCE R. LEFLEUR
DIRECTOR

KAY IVEY
GOVERNOR

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

November 13, 2017

Mr. Patrick Dunne
City of Fort Payne
100 Alabama Avenue North
Fort Payne, Alabama 35967

RE: Fort Payne Landfill
Permit No. 25-02

Dear Mr. Dunne:

Enclosed is the solid waste facility permit for the Fort Payne Landfill (Permit No. 25-02). The effective date of the permit is November 13, 2017 and the permit will expire on November 12, 2022.

If you should have any questions, please contact Mr. Jonathan Crosby of the Solid Waste Engineering Section at (334) 270-5644.

Sincerely,

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

SSS/jc

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

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

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

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

FINAL DETERMINATION

Permit Renewal

City of Fort Payne
100 Alabama Avenue NW
Fort Payne, Alabama 35967

Fort Payne Landfill

November 13, 2017

The City of Fort Payne has submitted to the Alabama Department of Environmental Management (ADEM) an application to continue to operate an industrial waste landfill known as the Fort Payne Landfill (Permit No. 25-02). The waste stream for the Fort Payne Landfill would remain non-hazardous industrial waste and construction/demolition wastes including but not limited to white goods, clothing, yard wastes, untreated wood waste, roofing shingles, tires, dried paint, dried sludge, mattresses, paper, appliances, uncontaminated metal, asbestos, petroleum contaminated soil or waste, and foundry sand. The service area for the Fort Payne Landfill would remain the Dekalb, Cherokee, Marshall, and Jackson Counties in Alabama. The maximum average daily volume of waste disposed at the Fort Payne Landfill would remain 200 tons per day.

The Fort Payne Landfill is described as being located in Section 7, Township 7 South, Range 9 East in Dekalb County, Alabama. The Fort Payne Landfill consists of approximately 104 acres with approximately 44 acres approved for disposal.

A public comment period was announced by ADEM on September 21, 2017 and ended on October 26, 2017. The permit application and draft permit was available for inspection at the Alabama Department of Environmental Management and on the Alabama Department of Environmental Management Website. The Department received no comments during the comment period.

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

Technical Contact:

Mr. Jonathan Crosby
Solid Waste Engineering Section
Land Division

ADEM
Alabama Department of Environmental Management

SOLID WASTE DISPOSAL FACILITY PERMIT

PERMITTEE:	**City of Fort Payne**
FACILITY NAME:	**Fort Payne Landfill**
FACILITY LOCATION:	**Section 7, Township 7 South, Range 9 East in Dekalb County, Alabama. The total permitted facility area for the Fort Payne Landfill is approximately 104 acres with approximately 44 acres approved for disposal.**
PERMIT NUMBER:	**25-02**
PERMIT TYPE:	**Industrial Landfill**
WASTE APPROVED FOR DISPOSAL:	**Non-hazardous industrial waste and construction/demolition wastes including but not limited to white goods, clothing, yard wastes, untreated wood waste, roofing shingles, tires, dried paint, dried sludge, mattresses, paper, appliances, uncontaminated metal, asbestos, petroleum contaminated soil or waste, and foundry sand**
APPROVED WASTE VOLUME:	**Average Daily Volume of 200 tons per day**
APPROVED SERVICE AREA:	**Dekalb, Cherokee, Marshall, and Jackson Counties in Alabama**

In accordance with and subject to the provisions of the Solid Wastes & 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:	**November 13, 2017**
EFFECTIVE DATE:	**November 13, 2017**
EXPIRATION DATE:	**November 12, 2022**

Alabama Department of Environmental Management

ALABAMA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
SOLID WASTE PERMIT

Permittee:	City of Fort Payne 100 Alabama Avenue NW Fort Payne, Alabama 35967
Landfill Name:	Fort Payne Landfill
Landfill Location:	Section 7, Township 7 South, Range 9 East Dekalb County, Alabama
Permit Number:	25-02
Landfill Type:	Industrial

Pursuant to the Solid Wastes & Recyclable Materials Management Act, Code of Alabama 1975, Section 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 the City of Fort Payne, Alabama (hereinafter called the Permittee), to operate a solid waste disposal facility, known as the Fort Payne 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 335-13-14 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 in the permit application dated February 2, 2017 and as amended (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 **November 13, 2017** and shall remain in effect until **November 12, 2022** unless suspended or revoked.

Alabama Department of Environmental Management

11/13/17
Date Signed

SECTION I. STANDARD CONDITIONS

A. Effect of Permit

The Permittee is allowed to dispose of nonhazardous solid waste in accordance with the conditions of this permit and ADEM Admin. Code Div. 13. Issuance of this permit does not convey property rights of any sort or any exclusive privilege, nor does it authorize any injury to persons or property, any invasion of other private rights, or any infringement of state or local laws or regulations. Except for actions brought under Code of Alabama 1975, 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 Admin. Code Division 13, unless this permit specifically provides otherwise; where terms are not otherwise defined, the meaning associated with such terms shall be as defined by a standard dictionary reference or the generally accepted scientific or industrial meaning of the term.

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

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

E. Duties and Requirements

1. Duty to Comply

The Permittee must comply with all conditions of this permit except to the extent and for the duration such noncompliance is authorized by a variance granted by the Department. Any permit noncompliance, other than noncompliance authorized by a variance, constitutes a violation of Code of Alabama 1975, 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.,E.,2., and, through no fault of the Permittee, the Department has not made a final decision regarding the renewal application.

4. Need to Halt or Reduce Activity Not A Defense

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

5. Duty to Mitigate

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

6. Proper Operation and Maintenance

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

7. Duty to Provide Information

If requested, the Permittee shall furnish to 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 Chapter 335-13-4 or the methods as specified in the Application attached hereto and incorporated by reference. Laboratory methods must be those specified in Standard Methods for the Examination of Water and Wastewater (American Public Health Association, latest edition), Methods for Chemical Analysis of Water and Wastes (EPA-600/4-79-020), Test Methods for Evaluating Solid Waste, Physical/Chemical Methods (EPA Publication SW-846, latest edition), other appropriate EPA methods, or as specified in the Application. All field tests must be conducted using approved EPA test kits and procedures.

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

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

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

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

iii. The date(s) analyses were performed.

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

v. The analytical techniques or methods used.

vi. The results of such analyses.

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

10. Reporting Planned Changes

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

11. Transfer of Permit

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

12. Certification of Construction

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

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

13. Compliance Schedules

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

14. Other Noncompliance

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

15. Other Information

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

F. Design and Operation of Facility

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

G. Inspection Requirements

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

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

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

H. Recordkeeping and Reporting

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

   a. Documentation of inspection and maintenance activities.

   b. Daily Volume reports.

   c. Personnel training documents and records.

   d. Solid/Hazardous Waste Determination Forms for Industrial Wastes, and 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 the Department, including copies of all approvals of special operating conditions.

2. Quarterly Volume Report

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

3. Monitoring and Corrective Action Reports

   The Permittee shall submit reports on all monitoring and corrective activities conducted pursuant to the requirements of this permit, including, but not limited to, groundwater, surface water, explosive gas and leachate monitoring. The groundwater monitoring shall be conducted in March and September of each year, or as directed by the Department, and the reports shall be submitted at least semi-annually, or as directed by the Department. The reports should contain all monitoring results and conclusions from samples and measurements conducted during the sampling period. Explosive gas monitoring must be submitted once each year, and the reports should be submitted to the department 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 Division 13 must be furnished upon request, and made available at reasonable times for inspection by any officer, employee, or representative of the Department.

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

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

I. Documents to be Maintained by the Permittee

The Permittee shall maintain, at the Fort Payne Landfill, the following documents and amendments, revisions and modifications to these documents until an engineer certifies closure of the permitted landfill.

1. Operating record.

2. Closure Plan.

J. Mailing Location

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

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

Physical Address.
Chief, Solid Waste Branch, Land Division
Alabama Department of Environmental Management
1400 Coliseum Blvd.
Montgomery, Alabama 36110-2059

K. Signatory Requirement

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

1. If an individual, by the applicant.

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

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

L. Confidential Information

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

M. State Laws and Regulations

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

SECTION II. GENERAL OPERATING CONDITIONS

A. Operation of Facility

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

B. Open Burning

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

C. Prevention of Unauthorized Disposal

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

D. Unauthorized Discharge

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

E. Industrial Waste Disposal

The Permittee shall dispose of industrial waste as required by ADEM Admin. Code 335-13-4-.21(1)(c), and as specified in the Application.

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.

G. Certified Operator

The Permittee shall be required to have an operator certified by the Department on-site during hours of operation, in accordance with the requirements of ADEM Admin. Code 335-13-12.

SECTION III. SPECIFIC REQUIREMENTS FOR INDUSTRIAL WASTE LANDFILLS

A. Waste Identification and Management

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

2. The total permitted facility area for the Fort Payne Landfill is approximately 104 acres with approximately 44 acres approved for disposal.

3. The maximum average daily volume of waste disposed at the facility shall not exceed 200 tons per day, except as provided under Rule 335-13-5-.06(2)(a)5. The average daily volume shall be computed as specified by Rule 335-13-5-.06(2)(a)5.(i).

B. Waste Streams

The Permittee may accept for disposal non-hazardous industrial waste and construction/demolition wastes including but not limited to white goods, clothing, yard wastes, untreated wood waste, roofing shingles, tires, dried paint, dried sludge, mattresses, paper, appliances, uncontaminated metal, asbestos, petroleum contaminated soil or waste, and foundry sand.

C. Service Area:

The Permittee is allowed to accept waste for disposal from Dekalb, Cherokee, Marshall and Jackson Counties in Alabama.

D. Waste Placement, Compaction, and Cover

All waste shall be confined to an area as small as possible and placed onto an appropriate slope not to exceed 4 to 1 (25%). 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 weekly cover. A minimum of six inches of compacted earth or other alternative cover material approved by the Department shall be added at the conclusion of each week's operation. These are minimum requirements for waste placement, compaction and cover unless a variance is granted in Section VIII.

E. Liner Requirements

The Permittee shall not be required to install a composite liner system at this time. The base of the waste shall be a minimum of five (5) feet above the temporal fluctuation of the groundwater table.

F. Security

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

G. All Weather Access Roads

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

H. Adverse Weather Disposal

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

I. Personnel

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

J. Environmental Monitoring and Treatment Structures

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

K. Vector Control

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

L. Bulk or NonContainerized Liquid Waste

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

M. Empty Containers

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

N. Other Requirements

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

O. Other Permits

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

P. Scavenging and Salvaging Operations

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

Q. Signs

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

R. Litter Control

The Permittee shall control litter.

S. Fire Control

The Permittee shall provide fire control measures.

SECTION IV. GROUNDWATER MONITORING REQUIREMENTS

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

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

2. The Permittee shall maintain groundwater monitoring wells MW-4 and MW-5 as the background groundwater monitoring wells for the entire facility.

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

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

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

   b. Well development method(s);

c. A complete analysis of well construction materials;

d. A schedule of implementation for construction; and

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

B. Groundwater Monitoring Requirements

1. The Permittee shall determine the groundwater surface elevation at each monitoring well and piezometer identified in Table IV.1. each time the well or piezometer is sampled and at least semi-annually throughout the active life and post-closure care period.

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

3. Prior to the initial receipt of waste at the facility, the Permittee shall sample, and analyze for the parameters listed in Appendix I of Rule 335-13-4-.27, and/or any other parameters specified by the Department in Table IV. 2., all monitoring wells identified in Section IV.,A.,2. to establish background water quality and/or as directed by Rule 335-13-4-.27(2)(j) and 335-13-4-.27(2)(a)(1). The records and results of this sampling and analysis activity shall be submitted to the Department, within sixty (60) days of the date of sampling.

4. The Permittee shall sample, and analyze all monitoring wells identified in Table IV.1 for the parameters listed in Appendix I of Rule 335-13-4-.27(3), and/or any other parameters specified by the Department in Table IV.3, on a semi-annual basis throughout the active life of the facility and the post-closure care period in accordance with Rule 335-13-4-.27(3). Sampling shall be conducted during March and September of each year, beginning with the effective date of this permit.

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

C. Sampling and Analysis Procedures

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

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

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

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

D. Recordkeeping and Reporting Requirements

1. Recording of Results

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

2. Recordkeeping

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

E. Permit Modification

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

TABLE IV.1.
GROUNDWATER MONITORING WELLS

Monitoring Well Number	Top of Casing (feet msl)	Part Monitoring
UPGRADIENT/BACKGROUND MONITORING WELL		
MW-4	851	Entire Landfill
MW-5	848	Entire Landfill
DOWNGRADIENT MONITORING WELLS		
MW-2	859	Entire Landfill
MW-8	920	Entire Landfill

TABLE IV.2.
BACKGROUND GROUNDWATER MONITORING

NOTE: The parameters in this Table are those listed in Appendix I of Chapter 335-13-4.

NOTE: The Permittee shall conduct a minimum of four independent sampling events as the initial sampling event, and analyze for the parameters listed above, in order to establish background water quality. Following the four independent events, the Permittee can submit a request, with justification, for the deletion of or change in these parameters.

TABLE IV.3.
SEMI-ANNUAL GROUNDWATER MONITORING PARAMETERS

NOTE: The parameters to be monitored for in this Table are those listed in Appendix I of Chapter 335-13-4 , and/or any other waste stream specific parameters.

SECTION V. GAS MONITORING REQUIREMENTS

The permittee shall monitor for explosive gases in accordance with ADEM Admin. Code Division 13 Rule 335-13-4-.16.

SECTION VI. LEACHATE AND SURFACE WATER MANAGEMENT REQUIREMENTS

The Permittee shall, upon recognition of leachate, notify the Department within 14 days. At this time the Permittee shall inform the Department of measures which will be taken to address leachate problems

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

SECTION VII. CLOSURE AND POST-CLOSURE REQUIREMENTS

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

A. Final Cover

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

B. Vegetative Cover

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

C. Notice of Intent

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

D. Completion of Closure Activities

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

E. Certification of Closure

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

F. Post-Closure Care Period

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

G. Post-Closure Maintenance

The Permittee shall provide post closure maintenance of the facility to include regularly scheduled inspections. This shall include maintenance of the cover, vegetation, monitoring devices and pollution control equipment and correction of other deficiencies that may be observed by ADEM. Monitoring requirements shall continue throughout the post closure period as determined by the Department unless all waste is removed and no unpermitted discharge to waters of the State 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 the Department a certification, signed by an engineer, verifying the post-closure has been completed according to the Post-Closure Plan.

J. Notice in Deed to Property

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

K. Recording Instrument

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

L. Removal of Waste

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

SECTION VIII. VARIANCES

There are no approved variances for the Fort Payne Landfill.

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

APPENDIX D

NPDES PERMIT

LANCE R. LEFLEUR
DIRECTOR

KAY IVEY
GOVERNOR

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

January 12, 2022

MR. PATRICK DUNNE
SOLID WASTE COORDINATOR
CITY OF FORT PAYNE ALABAMA
1004 DEWYER AVE
FORT PAYNE, AL 35967

RE: **Fort Payne Landfill**
1004 Dewyer Ave
Fort Payne, AL 35967
De Kalb County, 049

Dear Mr. Dunne:

Based on your request (as evidenced by the submittal of a Notice of Intent), coverage under **General NPDES Permit Number ALG160106** is granted. The effective date of reissuance coverage is February 01, 2022.

Coverage under this permit does not authorize the discharge of any pollutant or wastewater that is not specifically identified in the permit and by the Notice of Intent which resulted in the granting of coverage. Those discharges identified in the NOI are:

Outfall ID	Receiving Water	Notes
0011	Little Wills Creek	This outfall's discharge requires monitoring per the general permit requirements.
0012	Big Wills Creek	This outfall's discharge requires monitoring per the general permit requirements.
0032	Little Wills Creek	This outfall's discharge requires monitoring per the general permit requirements.
0042	Little Wills Creek	This outfall's discharge requires monitoring per the general permit requirements.

You are responsible for compliance with all provisions of the permit including but not limited to, the performance of any monitoring, the submittal of any reports, and the preparation and implementation of any plans required by the permit.

Discharge Monitoring Reports (DMRs) must be submitted electronically via the Alabama Environmental Permitting and Compliance System (AEPACS) in accordance with Permit Condition I. C. To participate in this program, the Permittee Participation Package and registration forms may be downloaded online at adem.alabama.gov/aepacs. ADEM will not provide paper DMR forms due to the electronic reporting requirements.

An annual certification DMR is now required to be submitted electronically for the above 0032 outfall instead of a separate statement. Please be aware this DMR is now for an entire calendar year (January – December) and shall not be submitted on or before December 31st of the calendar year being certified, but must be received by January 28th of the following year.

If you discharge to an impaired waterway, additional Best Management Practices (BMPs) will be required. The Alabama Department of Environmental Management encourages you to exercise pollution prevention practices and alternatives at your facility. Pollution prevention will assist you in complying with effluent limitations and permit regulations.

A copy of the General NPDES Permit under which coverage of your discharges has been granted is enclosed. If you have any questions concerning this permit, please contact Brad Stearns either by email at bls@adem.alabama.gov or by phone at (334) 271-7814.

Sincerely,

Jeffery W. Kitchens

Jeffery W. Kitchens, Chief
Water Division

Enclosure: Permit

File: NOI/ 4856

Alabama Department of Environmental Management

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM GENERAL PERMIT

DISCHARGE AUTHORIZED: DISCHARGES OF STORM WATER (**NOT** CONTAINING LEACHATE) FROM ACTIVE AND INACTIVE LANDFILLS, TRANSFER STATIONS, AND LAND DISTURBANCE ACTIVITIES ASSOCIATED WITH OPENING AND CLOSING CELLS AT LANDFILLS; DISCHARGES OF VEHICLE AND EQUIPMENT EXTERIOR WASH WATER; AND DISCHARGES OF STORM WATER FROM FUELING, PETROLEUM STORAGE AND HANDLING, EQUIPMENT STORAGE, AND MAINTENANCE AREAS

AREA OF COVERAGE: THE STATE OF ALABAMA

PERMIT NUMBER: ALG160106

RECEIVING WATERS: ALL WATERS OF THE STATE NOT DESIGNATED OUTSTANDING NATIONAL RESOURCE WATERS OR OUTSTANDING ALABAMA WATERS

In accordance with and subject to the provisions of Federal Water Pollution Control Act, as amended, 33 U.S.C. §§1251-1388 (the "FWPCA"), the Alabama Water Pollution Control Act, as amended, ***Code of Alabama 1975,*** *§§22-22-1 to 22-22-14 (the "AWPCA"), the Alabama Environmental Management Act, as amended,* ***Code of Alabama 1975****, §§22-22A-1 to 22-22A-17, and rules and regulations adopted thereunder, and subject further to the terms and conditions set forth in this permit, the dischargers covered by this permit are hereby authorized to discharge into the above receiving waters.*

ISSUANCE DATE: November 10, 2021

EFFECTIVE DATE: February 1, 2022

EXPIRATION DATE: January 31, 2027

Jeffery W. Kitchen

Alabama Department of Environmental Management

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PART I: DISCHARGE LIMITATIONS, CONDITIONS, AND REQUIREMENTS

A. DISCHARGE LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning on the effective date of this permit and lasting through the expiration date of this permit, the permittee is authorized to discharge from the following point source(s) outfall(s), described more fully in the permittee's Notice of Intent (NOI):

DSN001: Discharges of storm water (NOT containing leachate) from active or inactive landfills, transfer stations, and land disturbance activities associated with opening and closing cells at landfills.

Such discharge shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTIC	UNITS	DISCHARGE LIMITATIONS		MONITORING REQUIREMENTS [1 2 3]	
		Daily Minimum	Daily Maximum	Measurement Frequency	Sample Type
Rainfall	inches	–	Monitor	1/6 months	[4]
pH	s.u.	Monitor	Monitor	1/6 months	Grab
Biochemical Oxygen Demand, 5-day	mg/l	–	Monitor	1/6 months	Grab
Chemical Oxygen Demand	mg/l	–	Monitor	1/year	Grab
Cadmium, Total	mg/l	–	Monitor	1/6 months	Grab
Chromium, Total	mg/l	–	Monitor	1/6 months	Grab
Copper, Total	mg/l	–	Monitor	1/6 months	Grab
Oil and Grease	mg/l	–	15	1/6 months	Grab
Settleable Solids [5 7]	mg/l	–	Monitor	1/6 months [7]	Grab
Total Dissolved Solids	mg/l	–	Monitor	1/6 months	Grab
Total Suspended Solids	mg/l	–	Monitor	1/6 months	Grab
Downstream Turbidity [5 6 7]	NTU	–	[6]	1/6 months [7]	Grab
Upstream Turbidity [5 6 7]	NTU	–	Monitor	1/6 months [7]	Grab

THERE SHALL BE NO DISCHARGE OF DEBRIS. THE DISCHARGE SHALL HAVE NO SHEEN, AND THERE SHALL BE NO DISCHARGE OF VISIBLE OIL, FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS

Notes:

1 Samples collected to comply with the monitoring requirements specified above shall be collected at the following location: At the nearest accessible location just prior to discharge and after final treatment.

2 Semiannual monitoring shall be performed during the first complete January – June, or July – December period following authorization under this permit and during each subsequent six (6) month period. The annual parameter may be taken during the first or second six months of the monitoring period, but must be taken if there is a full six month period or more remaining in the monitoring period. The annual parameter result is reported on the semiannual form that is applicable to the date the annual parameter sample was taken. For the six months period that the facility did not sample the annual parameter, the facility must code the annual parameter on the semiannual electronic report as *9 or on the semiannual hardcopy report as "NODI=9" (monitoring is conditional not required this period). Quarterly monitoring shall be performed during the first complete January – March, April-June, July-September, or October – December period following authorization under this permit and during each subsequent three (3) month period. Monitoring reports shall be submitted semiannually so that they arrive at the Department no later than the 28th day of the month following the six (6) month monitoring period (no later than January 28 and July 28).

3 A storm event is defined as 0.1 inch or greater rainfall and at least 72 hours from the previously measureable (greater than 0.1 inch rainfall) storm event. Monitoring shall be performed during the first thirty minutes of discharge (or as soon thereafter as practicable).

4 See Part IV.A. of the permit.

5 To be monitored only when land disturbance activities (associated with opening and closing cells at landfills) are occurring. These land disturbance activities may include digging for cover material within the permitted landfill area, but not outside of that permitted area. If no such land disturbance activities are occurring, then the landfill must code the discharge monitoring report (DMR) for that period as "NODI=9" (monitoring is conditional not required this period).

6 Downstream turbidity shall not exceed 50 NTUs above the upstream turbidity.

7 If the permittee discharges to impaired waters as identified by an EPA-approved or EPA established TMDL and/or on the State of Alabama's 303(d) list, then settleable solids, downstream turbidity, and upstream turbidity must be monitored quarterly instead of semi-annually. ADEM reserves the right to require the permittee to obtain an individual permit for any of the reasons listed in Part II. F. 5. a. (1) through (9) of the permit.

A. DISCHARGE LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning on the effective date of this permit and lasting through the expiration date of this permit, the permittee is authorized to discharge from the following point source(s) outfall(s), described more fully in the permittee's NOI:

DSN002: Discharges of storm water from petroleum storage and fueling areas[7]

Such discharge shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTIC	UNITS	DISCHARGE LIMITATIONS		MONITORING REQUIREMENTS [1]	
		Daily Minimum	Daily Maximum	Measurement Frequency	Sample Type
Rainfall	inches	–	Monitor	1/quarter	[2]
pH	s.u.	Monitor	Monitor	1/quarter	Grab
Benzene [3]	µg/l	–	15.5	1/quarter	Grab
Ethylbenzene [4]	µg/l	–	1,244	1/quarter	Grab
Toluene [5]	µg/l	–	8,723	1/quarter	Grab
Xylene	µg/l	–	Monitor	1/quarter	Grab
Naphthalene [6]	µg/l	–	620	1/quarter	Grab
Oil and Grease	mg/l	–	15	1/quarter	Grab
MTBE (Methyl Tertiary Butyl Ether)	µg/l	–	Monitor	1/quarter	Grab

THERE SHALL BE NO DISCHARGE OF DEBRIS. THE DISCHARGE SHALL HAVE NO SHEEN, AND THERE SHALL BE NO DISCHARGE OF VISIBLE OIL, FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS

Notes:

[1] Samples collected to comply with the monitoring requirements specified above shall be collected at the following location: At the nearest accessible location just prior to discharge and after final treatment.

[2] See Part IV.A.

[3] The limit for benzene shall be 1.12 µg/l if the discharge is to a body of water which is designated as a public water supply or within a 24-hour travel time to a body of water designated as a PWS.

[4] The limit for ethylbenzene shall be 448 µg/l if the discharge is to a body of water which is designated as a public water supply or within a 24-hour travel time to a body of water designated as a PWS.

[5] The limit for toluene shall be 1,206 µg/l if the discharge is to a body of water which is designated as a public water supply or within a 24-hour travel time to a body of water designated as a PWS.

[6] To be monitored only at facilities which handle diesel fuel.

[7] If fueling operations are the only industrial activities occurring within the drainage area, then DSN003 applies for the discharge, unless the Department deems it necessary to require monitoring under DSN002 in addition to DSN003.

A. DISCHARGE LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning on the effective date of this permit and lasting through the expiration date of this permit, the permittee is authorized to discharge from the following point source(s) outfall(s), described more fully in the permittee's NOI:

DSN003: Discharges of uncontaminated storm water from fueling, petroleum storage and handling, equipment storage, and maintenance areas.

DISCHARGES UNDER DSN003 MAY NOT MIX WITH OTHER DISCHARGES UNLESS THOSE DISCHARGES ARE PERMITTED.

All discharges from DSN003 shall meet the following conditions:

1. The facility will have a valid Spill Prevention, Control, and Countermeasures (SPCC) plan, if required, pursuant to 40 CFR 112.
2. Best Management Practices (BMP) will be used to prevent pollution of storm water by spillage or leakage during petroleum handling and fueling operations and from equipment maintenance and storage areas. The BMP shall include at a minimum:
   a. Twice per week inspections of the area and removal of any leaked petroleum product;
   b. Immediate cleanup of spilled or leaked petroleum product during handling operations, including fueling; and
   c. All cleanup activities shall be conducted using dry sweep or other approaches that do not result in the creation of polluted wastewater or storm water runoff.
3. Records shall be maintained in the form of a log and shall contain the following information, at a minimum:
   a. Date and time of inspections;
   b. Any cleanup accomplished as a result of the inspection;
   c. Time the cleanup was initiated and the time it was completed;
   d. The signature of person making visual inspection and performing any cleanup; and
   e. Description of any spillage occurring during petroleum handling, which shall include the date and time of the spill, estimated volume of spill, name of the person observing the spill, date and time the spill was cleaned up, and name of the person cleaning up the spill.
4. Best Management Practices (BMP) are used in draining the diked area. BMP is defined as use of a portable oil skimmer or similar device or the use of absorbent material to remove oil and grease (as indicated by the presence of a sheen) immediately prior to draining.
5. Monitoring records for dike drainage shall be maintained in the form of a log and shall contain the following information, as a minimum:
   a. Date and time of discharge;
   b. Estimated volume of discharge;
   c. Initials of person making visual inspection and authorizing discharge.
6. The discharge shall have no sheen, and there shall be no discharge of visible oil, floating solids or visible foam in other than trace amounts.
7. The permittee shall submit an **Annual Certification DMR** by January 28th of each year (but no earlier than January 1st) that reports whether all discharges were in accordance with the conditions of this permit for the previous calendar year.

DMR Reporting Instructions

The Annual Certification DMR should be marked "0" (zero) if operations had not changed and all discharges were in accordance with the conditions of the permit. If conditions had changed or all discharges were not in accordance with the conditions of the permit, the DMR should be marked "1" and the facility should contact the department regarding any changes in conditions or discharge/permit noncompliance. Any noncompliance should also be reported in accordance with Part I.C.2.

A. DISCHARGE LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning on the effective date of this permit and lasting through the expiration date of this permit, the permittee is authorized to discharge from the following point source(s) outfall(s), described more fully in the permittee's NOI:

DSN004: Discharges from vehicle and equipment exterior washing operations that DO NOT use solvents and have NOT come in direct contact with solid waste at the landfill facility. [3]

Such discharge shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTIC	UNITS	DISCHARGE LIMITATIONS		MONITORING REQUIREMENTS [1]	
		Daily Minimum	Daily Maximum	Measurement Frequency	Sample Type
Flow	gal/day	–	Monitor	1/month	Instantaneous [2]
pH	s.u.	6.0	8.5	1/month	Grab
Oil and Grease	mg/l	–	15	1/month	Grab
Phosphorus, Total	mg/l	–	1.0	1/month	Grab
Total Suspended Solids	mg/l	–	50	1/month	Grab

THERE SHALL BE NO DISCHARGE OF DEBRIS. THE DISCHARGE SHALL HAVE NO SHEEN, AND THERE SHALL BE NO DISCHARGE OF VISIBLE OIL, FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS

Notes:

1 Samples collected to comply with the monitoring requirements specified above shall be collected at the following location: At the nearest accessible location just prior to discharge and after final treatment.

2 If flows are intermittent, the flow volume may be estimated.

3 This permit does not allow for the discharge of landfill wastewater as defined by 40 CFR Part 445.2(f).

A. Discharge Limitations and Monitoring Requirements

During the period beginning on the effective date of this permit and lasting through the expiration date of this permit, the permittee is authorized to discharge from the following point source(s) outfall(s), described more fully in the permittee's NOI:

Discharge Monitoring Requirements applicable to all storm water discharges.

Monitoring of one storm water outfall within a designed drainage area as representative of the remaining outfalls, may be allowed if the applicant submits certification that the discharges are essentially the same. If at a later date the discharges are determined to be dissimilar or if pollutant concentrations are such that water quality standards are contravened, then monitoring of all discharges may be required.

This permit does not allow for the discharge of landfill wastewater as defined by 40 CFR Part 445.2(f).

B. Discharge Monitoring and Record Keeping Requirements

1. Representative Sampling

Samples and measurements taken as required herein shall be representative of the volume and nature of the monitored discharge and shall be in accordance with the provisions of this permit.

2. Test Procedures

For the purpose of reporting and compliance, permittees shall use one of the following procedures:

a. For parameters with an EPA established Minimum Level (ML), report the measured value if the analytical result is at or above the ML and report "0" for values below the ML. Test procedures for the analysis of pollutants shall conform to 40 CFR Part 136 and guidelines published pursuant to §304(h) of the FWPCA, 33 U.S.C. §1314(h). If more than one method for analysis of a substance is approved for use, a method having a minimum level lower than the permit limit shall be used. If the minimum level of all methods is higher than the permit limit, the method having the lowest minimum level shall be used and a report of less than the minimum level shall be reported as zero and will constitute compliance, however, should EPA approve a method with a lower minimum level during the term of this permit the permittee shall use the newly approved method.

b. For pollutants parameters without an established ML, an interim ML may be utilized. The interim ML shall be calculated as 3.18 times the Method Detection Level (MDL) calculated pursuant to 40 CFR Part 136, Appendix B.

   Permittees may develop an effluent matrix-specific ML, where an effluent matrix prevents attainment of the established ML. However, a matrix specific ML shall be based upon proper laboratory method and technique. Matrix-specific MLs must be approved by the Department, and may be developed by the permittee during permit issuance, reissuance, modification, or during compliance schedule.

   In either case the measured value should be reported if the analytical result is at or above the ML and "0" reported for values below the ML.

c. For parameters without an EPA established ML, interim ML, or matrix-specific ML, a report of less than the detection limit shall constitute compliance if the detection limit of all analytical methods is higher than the permit limit. For the purpose of calculating a monthly average, "0" shall be used for values reported less than the detection limit.

   The Minimum Level utilized for procedures A and B above shall be reported on the permittee's DMR. When an EPA approved test procedure for analysis of a pollutant does not exist, the Director shall approve the procedure to be used.

3. Recording of Results

For each measurement or sample taken pursuant to the requirements of this permit, the permittee shall record the following information:

a. The facility name and location, point source number, date, time and exact place of sampling;

b. The name(s) of person(s) who obtained the samples or measurements;

c. The dates and times the analyses were performed;

d. The name(s) of the person(s) who performed the analyses;

e. The analytical techniques or methods used, including source of method and method number; and

f. The results of all required analyses.

4. Records Retention and Production

a. The permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by the permit, and records of all data used to complete the above reports or the NOI for this permit, for a period of at least three years from the date of the sample measurement, report or NOI. This period may be extended by request of the Director at any time. If litigation or other enforcement action, under the AWPCA and/or the FWPCA, is ongoing which involves any of the above records, the records shall be kept until the litigation is resolved. Upon the written request of the Director or his designee, the permittee shall provide the Director with a copy of any record required to be retained by this paragraph. Copies of these records shall not be submitted unless requested.

b. All records required to be kept for a period of three years shall be kept at the permitted facility or an alternate location approved by the Department in writing and shall be available for inspection. A complete copy of the permit, the Best Management Practices (BMP) Plan, most recent BMP inspection records, and, if applicable, a Spill Prevention, Control, and Countermeasures (SPCC) Plan shall be maintained at the facility. The past three years of DMRs, laboratory records, and historical BMP inspection and training records may be kept at an alternate Alabama location if approved by the Department.

5. Monitoring Equipment and Instrumentation

All equipment and instrumentation used to determine compliance with the requirements of this permit shall be installed, maintained, and calibrated in accordance with the manufacturer's instructions or, in the absence of manufacturer's instructions, in accordance with accepted practices. At a minimum, flow measurement devices shall be calibrated at least once every 12 months.

C. DISCHARGE REPORTING REQUIREMENTS

1. Reporting of Monitoring Requirements

a. This permit requires weekly, monthly, quarterly, semiannual, and annual self-monitoring. The permittee shall conduct the required monitoring in accordance with the following schedule:

MONITORING REQUIRED MONTHLY AND MORE FREQUENTLY THAN MONTHLY shall be conducted during the first full month following the effective date of initial coverage under this permit and every month thereafter.

QUARTERLY MONITORING shall be conducted at least once during each calendar quarter. Calendar quarters are the periods of January through March, April through June, July through September, and October through December. The permittee shall conduct the quarterly monitoring during the first full quarter following the effective date of initial coverage and each quarter thereafter.

SEMI-ANNUAL MONITORING shall be conducted at least once during the period of January through June and at least once during the period of July through December. The permittee shall conduct the semi-annual monitoring during the first complete six-month period following the effective date of initial coverage and each six-month period thereafter.

ANNUAL MONITORING shall be conducted at least once during the period of January through December. If six or more months are remaining in the first monitoring period after initial coverage the annual monitoring shall be conducted and then once each twelve month period thereafter.

b. The permittee shall submit discharge monitoring reports (DMRs) in accordance with the following schedule:

REPORTS OF MORE FREQUENTLY THAN MONTHLY, MONTHLY, QUARTERLY, AND SEMI-ANNUAL MONITORING shall be submitted on a semiannual basis. The semiannual reports shall be submitted so that they are received by the Department no later than the 28th day of July and the 28th day of January, unless otherwise directed by the Department. Each submittal shall report results of all testing performed during the six-month period preceding the reporting month. For example, the semiannual report due on January 28 should report the results of testing conducted during the months of July through December.

c. Except as allowed by Provision I.C.1.c.(1) or (2), the permittee shall submit all Discharge Monitoring Reports (DMRs) required by Provision I.C.1.b. by utilizing the Department's web-based system.

(1) If the permittee is unable to complete the electronic submittal of DMR data due to technical problems originating with the Department's web-based system (this could include entry/submittal issues with an entire set of DMRs or individual parameters), the permittee is not relieved of their obligation to submit DMR data to the Department by the date specified in Provision I.C.1.b., unless otherwise directed by the Department.

If the Department's web-based system is down on the 28th day of the month in which the DMR is due or is down for an extended period of time, as determined by the Department, when a DMR is required to be submitted, the permittee may submit the data in an alternate manner and format acceptable to the Department. Preapproved alternate acceptable methods include faxing, e-mailing, mailing, or hand-delivery of data such that they are received by the required reporting date. Within five calendar days of the Department's web-based system resuming operation, the permittee shall enter the data into the Department's web-based system, unless an alternate timeframe is approved by the Department.

(2) The permittee may submit a request to the Department for a temporary electronic reporting waiver for DMR submittals. The waiver request should include the permit number; permittee name; facility/site name; facility address; name, address, and contact information for the responsible official or duly authorized representative; a detailed statement regarding the basis for requesting such a waiver; and the duration for which the waiver is requested. Approved electronic reporting waivers are not transferrable.

Permittees with an approved electronic reporting waiver for DMRs may submit hard copy DMRs for the period that the approved electronic reporting waiver request is effective. The permittee shall submit the Department-approved DMR forms to the address listed in Provision I.C.1.e.

(3) If a permittee is allowed to submit a hard copy DMR, the DMR must be legible and bear an original signature. Photo and electronic copies of the signature are not acceptable and shall not satisfy the reporting requirements of this permit.

(4) If the permittee, using approved analytical methods as specified in Provision I.B.2, monitors any discharge from a point source for a limited substance identified in Provision I.A. of this permit more frequently than required by this permit, the results of such monitoring shall be included in the calculation and reporting of values on the DMR and the increased frequency shall be indicated on the DMR.

(5) In the event no discharge from a point source identified in Provision I.A. of this permit and described more fully in the permittee's NOI occurs during a monitoring period, the permittee shall report "No Discharge" for such period on the appropriate DMR.

d. All reports and forms required to be submitted by this permit, the AWPCA and the Department's Rules and Regulations, shall be electronically signed (or, if allowed by the Department, traditionally signed) by a "responsible official" of the permittee as defined in ADEM Administrative Code Rule 335-6-6-.09 or a "duly authorized representative" of such official as defined in ADEM Administrative Code Rule 335-6-6-.09 and shall bear the following certification:

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

e. Discharge Monitoring Reports required by this permit, the AWPCA, and the Department's Rules that are being submitted in hard copy shall be addressed to:

Alabama Department of Environmental Management
Permits and Services Division
Environmental Data Section
Post Office Box 301463
Montgomery, Alabama 36130-1463

Certified and Registered Mail containing Discharge Monitoring Reports shall be addressed to:

Alabama Department of Environmental Management
Permits and Services Division
Environmental Data Section
1400 Coliseum Boulevard
Montgomery, Alabama 36110-2400

f. All other correspondence and reports required to be submitted by this permit, the AWPCA, and the Department's Rules shall be addressed to:

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

Certified and Registered Mail shall be addressed to:

Alabama Department of Environmental Management
Water Division
1400 Coliseum Boulevard
Montgomery, Alabama 36110-2400

2. Noncompliance Notification

a. If for any reason, the permittee's discharge (1) does not comply with any daily minimum or maximum discharge limitation for an effluent characteristic specified in Provision I. A. of this permit which is denoted by an "(X)", (2) threatens human health or welfare, fish or aquatic life, or water quality standards, (3) does not comply with an applicable toxic pollutant effluent standard or prohibition established under Section 307(a) of the FWPCA, 33 U.S.C. Section 1317(a), (4) contains a quantity of a hazardous substance which has been determined may be harmful to public health or welfare under Section 311(b)(4) of the FWPCA, 33 U.S.C. Section 1321(b)(4), (5) exceeds any discharge limitation for an effluent characteristic as a result of an unanticipated bypass, upset, (6) is an unpermitted direct or indirect discharge of a pollutant to a water of the state (unpermitted discharges properly reported to the Department under any other requirement are not required to be reported under this provision), the permittee shall orally report the occurrence and circumstances of such discharge to the Director within 24-hours after the permittee becomes aware of the occurrence of such discharge. In addition to the oral report, the permittee shall submit to the Director electronically a report (or if acceptable to the Department a written report) as provided in Provision I. C. 2. c. no later than five (5) days after becoming aware of the occurrence of such discharge.

b. If for any reason, the permittee's discharge does not comply with any limitation of this permit, the permittee shall submit to the Director a report as provided in Provision I. C. 2. c. below, such report shall be submitted with the next Discharge Monitoring Report required to be submitted by Provision I. C. 1. of this permit after becoming aware of the occurrence of such noncompliance.

c. Any electronic report (or if acceptable to the Department a written report) required to be submitted to the Director by Provision I. C. 2 a. or b. shall be submitted using a copy of the Department’s Noncompliance Notification Form and shall include the following information:

(1) A description of the discharge and cause of noncompliance;

(2) The period of noncompliance, including exact dates and times or, if not corrected, the anticipated time the noncompliance is expected to continue; and

(3) A description of the steps taken and/or being taken to reduce or eliminate the noncomplying discharge and to prevent its recurrence.

D. OTHER REPORTING AND NOTIFICATION REQUIREMENTS

1. Anticipated Noncompliance

The permittee shall give the Director written advance notice of any planned changes or other circumstances regarding a facility, which may result in noncompliance with permit requirements. This information must be submitted electronically unless acceptable to the Department to submit otherwise.

2. Termination of Discharge

The permittee shall notify the Director, when any point source discharges authorized by this permit have permanently ceased, by submitting a permit termination request electronically through the Department's web-based system. This notification shall serve as sufficient cause for instituting procedures for termination of the permittee's authority to discharge under this General Permit.

3. Updating Information

a. The permittee shall inform the Director of any change in the permittee's mailing address or telephone number or in the permittee's designation of a facility contact or office having the authority and responsibility to prevent and abate violations of the AWPCA, the Department's Rules and the terms and conditions of this permit, in writing, no later than ten (10) days after such change. Upon request of the Director or his designee, the permittee shall furnish the Director with an update of any information provided in the NOI.

b. If the permittee becomes aware that it failed to submit any relevant facts in the NOI, or submitted incorrect information in the NOI; or in any report to the Director, it shall promptly submit such facts or information with a written explanation for the mistake and/or omission. This information must be submitted electronically unless acceptable to the Department to submit otherwise.

4. Duty to Provide Information

a. Any permittee shall furnish to the Director, within a reasonable time, any information which the Director or his designee may request to determine whether cause exists for suspending or revoking the permittee's authorization to discharge under this General Permit, in whole or in part, or to determine compliance with this permit or to determine if the permittee should be required to apply for an individual permit.

b. Any or all permittees shall furnish to the Director, within a reasonable time, any information which the Director or his designee may request to determine whether cause exists for modifying or terminating this permit.

5. New or Increased Discharges

If there is an increase in pollution potential of the discharges from the permittee's facility the permittee must notify the Director in writing. The Director may at his discretion determine under Part II.F. of this permit what action if any will be taken.

E. SCHEDULE OF COMPLIANCE

1. The permittee shall achieve compliance with the discharge limitations specified in Provision I. A. in accordance with the following schedule:

COMPLIANCE SHALL BE ACHIEVED ON THE EFFECTIVE DATE OF COVERAGE UNDER THIS PERMIT

2. If required, no later than 14 calendar days following a date identified in the above schedule of compliance, the permittee shall submit either a report of progress or, in the case of specific actions being required by identified dates, a written notice of compliance or noncompliance. In the latter case, the notice shall include the cause of noncompliance, any remedial actions taken, and the probability of meeting the next scheduled requirement. This information must be submitted electronically unless acceptable to the Department to submit otherwise.

PART II: OTHER REQUIREMENTS, RESPONSIBILITIES, AND DUTIES

A. REQUIREMENTS FOR COVERAGE UNDER THIS GENERAL PERMIT

1. Notice of Intent

Any person wishing to be permitted to discharge under this General Permit shall submit a Notice of Intent (NOI) to be covered by this General Permit at least 30 days prior to the date of desired coverage. No discharge authorized under this General Permit may commence until the discharger receives the Director's acknowledgement of the NOI and approval of the coverage of the discharge by this General Permit. The Director's acknowledgement shall include a copy of this General Permit.

The permittee must complete and submit all Departmental forms, including the NOI, utilizing the Department's web-based system unless the permittee submits in writing valid justification as to why the electronic submittal process cannot be utilized and the Department approves in writing utilization of hard copy submittals. For approved hard copy submissions, the Departmental forms are available on ADEM's webpage at http://adem.alabama.gov/DeptForms/default.cnt.

Any person discharging to a municipal storm sewer, sanitary sewer or combination sewer must notify the municipality by letter of the discharge.

2. Content of Notice of Intent

a. A description of the process generating the discharge for which coverage is desired. This description shall be in sufficient detail to allow the Director to determine that the discharge is included in the category permitted by this General Permit;

b. The latitude and longitude of the discharge points for each discharge and the name of the waterbody receiving each discharge for which coverage under this General Permit is desired; and

c. A contact person, address and phone number for the facility or activity to be covered under this General Permit;

(1) The NOI shall be electronically signed (or if acceptable to the Department traditionally signed) by a person meeting the requirements for signatories to permit application under ADEM Administrative Code Rule 335-6-6-.09 and the person signing the NOI shall make the certification required for submission of documents under ADEM Administrative Code Rule 335-6-6.09.

(2) Signatories to reports, discharge monitoring reports and any other submissions required by this General Permit shall be signed in accordance with the requirements of ADEM Administrative Code Rule 335-6-6.09.

B. OPERATIONAL AND MANAGEMENT REQUIREMENTS

1. Facilities Operation and Maintenance

The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of the permit. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls, including appropriate quality assurance procedures. This provision requires the operation of backup or auxiliary facilities only when necessary to achieve compliance with the conditions of the permit.

2. Best Management Practices

a. Dilution water shall not be added to achieve compliance with discharge limitations except when the Director or his designee has granted prior written authorization for dilution to meet water quality requirements.

b. The permittee shall prepare, implement, and maintain a Spill Prevention, Control and Countermeasures (SPCC) Plan in accordance with 40 CFR Part 112 if required thereby.

c. The permittee shall prepare and implement a Best Management Practices (BMP) Plan according to Part IV of this permit.

3. Spill Prevention, Control, and Management

The permittee shall provide spill prevention, control, and/or management sufficient to prevent any spills of pollutants from entering a water of the state or a publicly or privately owned treatment works. Any containment system used to implement this requirement shall be constructed of materials compatible with the substance(s) contained and which shall prevent the contamination of groundwater and such containment system shall be capable of retaining a volume equal to 110 percent of the capacity of the largest tank for which containment is provided.

C. OTHER RESPONSIBILITIES

1. Duty to Mitigate Adverse Impacts

The permittee shall promptly take all reasonable steps to mitigate and minimize or prevent any adverse impact on human health or the environment resulting from noncompliance with any discharge limitation of this permit, including such accelerated or additional monitoring of the discharge and/or the receiving waterbody as necessary to determine the nature and impact of the noncomplying discharge.

2. Right of Entry and Inspection

The permittee shall allow the Director, or an authorized representative, upon the presentation of proper identification to:

a. Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of the permit;

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

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

d. Sample or monitor at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the AWPCA, any substances or parameters at any location.

D. BYPASS AND UPSET

1. Bypass

a. Any bypass is prohibited except as provided in b. and c. below:

b. A bypass is not prohibited if:

(1) It does not cause any discharge limitation specified in Provision I. A. of this permit to be exceeded;

(2) It is necessary for essential maintenance of a treatment or control facility or system to assure efficient operation of such facility or system; or

(3) It is part of the storm water control system when the intention of the design, as approved by the Director, is to contain the first flush only.

c. A bypass is not prohibited and need not meet the discharge limitations specified in Provision I. A. of this permit if:

(1) It is unavoidable to prevent loss of life, personal injury, or severe property damage;

(2) There are no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime (this condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable

engineering judgement to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance); and

(3) The permittee submits a written request for authorization to bypass to the Director at least ten (10) days prior to the anticipated bypass (if possible), the permittee is granted such authorization, and the permittee complies with any conditions imposed by the Director to minimize any adverse impact on human health or the environment resulting from the bypass. This request must be submitted electronically unless acceptable to the Department to submit otherwise.

d. The permittee has the burden of establishing that each of the conditions of Provision II. D. 1. b. or c. have been met to qualify for an exception to the general prohibition against bypassing contained in a. and an exemption, where applicable, from the discharge limitations specified in Provision I. A. of this permit.

2. Upset

a. A discharge which results from an upset need not meet the discharge limitations specified in Provision I. A. of this permit if:

(1) No later than 24-hours after becoming aware of the occurrence of the upset, the permittee orally reports the occurrence and circumstances of the upset to the Director or his designee; and

(2) No later than five (5) days after becoming aware of the occurrence of the upset, the permittee furnishes the Director with evidence, including properly signed, contemporaneous operating logs, or other relevant evidence, demonstrating that (i) an upset occurred; (ii) the permittee can identify the specific cause(s) of the upset; (iii) the permittee's facility was being properly operated at the time of the upset; and (iv) the permittee promptly took all reasonable steps to minimize any adverse impact on human health or the environment resulting from the upset.

b. The permittee has the burden of establishing that each of the conditions of Provision II D. 2. a. of this permit have been met to qualify for an exemption from the discharge limitations specified in Provision I. A. of this permit.

E. DUTY TO COMPLY WITH PERMIT, RULES, AND STATUTES

1. Duty to Comply

a. The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the AWPCA and the FWPCA and is grounds for: enforcement action, termination, or suspension of authorization under this permit; denial of a permit reissuance NOI; a requirement that permittee submit an NOI for an individual NPDES permit.

b. The necessity to halt or reduce production or other activities in order to maintain compliance with the conditions of the permit shall not be a defense for a permittee in an enforcement action.

c. The discharge of a pollutant from a source not specifically identified in the NOI to be covered under this General Permit and not specifically included in the description of an outfall in this permit is not authorized and shall constitute noncompliance with this permit.

d. The permittee shall take all reasonable steps, including cessation of production or other activities, to minimize or prevent any violation of this permit or to minimize or prevent any adverse impact of any permit violation.

2. Removed Substances

Solids, sludges, filter backwash, or any other pollutant or other waste removed in the course of treatment or control of storm waters and/or process water shall be disposed of in a manner that complies with all applicable Department Rules.

3. Loss or Failure of Treatment Facilities

Upon the loss or failure of any treatment facility, including but not limited to the loss or failure of the primary source of power of the treatment facility, the permittee shall, where necessary to maintain compliance with the discharge limitations specified in Provision I. A. of this permit, or any other terms or conditions of this permit, cease, reduce, or otherwise control production and/or all discharges until treatment is restored.

4. Compliance with Statutes and Rules

a. This permit has been issued under ADEM Administrative Code, Chapter 335-6-6. All provisions of this chapter, that are applicable to this permit, are hereby made a part of this permit. A copy of this chapter may be obtained on the Department's website or for a small charge from the Office of General Counsel, Alabama Department of Environmental Management, 1400 Coliseum Boulevard, Montgomery, AL 36110.

b. This permit does not authorize the noncompliance with or violation of any Laws of the State of Alabama or the United States of America or any regulations or rules implementing such laws. FWPCA, 33 U.S.C. Section 1319, and Code of Alabama 1975, Section 22-22-14.

F. Permit Transfer, Modification, Suspension, Revocation, Reissuance, and Termination

1. Duty to Reapply or Notify of Intent to Cease Discharge

a. The permittee authorized to discharge under this General Permit, who wishes to continue to discharge upon the expiration of this permit, shall submit an NOI to request reissuance of coverage under the reissued General Permit. Such NOI shall be submitted at least 90 days prior to the expiration date of this General Permit. The permittee shall electronically submit the NOI utilizing the Department's web-based system, unless the permittee submits in writing valid justification as to why the electronic submittal process cannot be utilized, and the Department approves in writing the utilization of hard copy submittals.

b. Failure of the permittee to submit the appropriate NOI material for reauthorization under this permit at least 90 days prior to the permit's expiration will void the automatic continuation of the authorization to discharge under this permit as provided by ADEM Administrative Code Rule 335-6-6-.06. Should the permit not be reissued for any reason prior to its expiration date, permittees who failed to meet the 90-day submittal deadline will be illegally discharging without a permit after the expiration date of the permit.

2. Change in Discharge

a. The permittee shall give notice to the Director at least 90 days in advance of any facility expansion, production increase, process change, or other action that could result in:

(1) The discharge of additional pollutants;

(2) The increase in the quantity of any discharge such that existing permit limitations would be exceeded;

(3) Or that could result in an additional discharge point.

This requirement applies to pollutants that are or that are not subject to discharge limitations in this permit. No new or increased discharge may begin until the Director has reviewed the information and taken appropriate action to authorize the discharge under this General Permit, or until such time as an appropriate action has been taken to authorize the discharge under an individual permit.

b. The permittee shall notify the Director as soon as it is known or there is reason to believe:

(1) That any activity has occurred or will occur which would result in the discharge on a routine or frequent basis, of any toxic pollutant which is not limited in this permit, if that discharge will exceed the highest of the following notification levels:

(a) One hundred micrograms per liter;

(b) Two hundred micrograms per liter for acrolein and acrylonitrile; five hundred micrograms per liter for 2,4-dinitrophenol and for 2-methyl-4,6-dinitrophenol; and one milligram per liter for antimony;

(c) Five times the maximum concentration value reported for that pollutant in the permit NOI; or

(2) That any activity has occurred or will occur which would result in any discharge, on a non-routine or infrequent basis, of a toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following notification levels:

(a) Five hundred micrograms per liter;

(b) One milligram per liter for antimony;

(c) Ten times the maximum concentration value reported for that pollutant in the permit NOI.

3. Transfer of Permit or Change in Name

This permit may not be transferred or the name of the permittee changed without notice to the Director and subsequent modification or revocation and reissuance of the permit to identify the new permittee and to incorporate any other changes as may be required under the FWPCA or AWPCA.

a. In the case of a change in ownership or control of the permittee's premises only, a request for permit transfer must be submitted electronically through the Department's web-based system at least 30 days prior to the change.

b. In the case of a change in ownership or control of the permittee's premises accompanied by a change or proposed change in effluent characteristics, a complete NOI is required to be submitted to the Director electronically through the Department's web-based system at least 90 days prior to the change.

c. In the case of a change in Permittee Name or Facility Name only, a request for permit name change must be submitted electronically through the Department's web-based system at least 30 days prior to the change.

Whenever the Director is notified of a change in ownership or control, he may decide not to modify the existing permit and require the submission of a new permit NOI.

4. Permit Modification, Revocation and Reissuance (of Modified General or Individual), and Termination

a. During the term of this General Permit the Director may, for cause, and subject to the public notice procedure of ADEM Administrative Code, Rule 335-6-6-.21, modify or revoke and reissue this General Permit, or terminate it and require all those authorized under it to apply for individual NPDES permits. The causes for this action include but are not limited to the causes listed below:

(1) There are material and substantial alterations or additions to the facility or activity generating the discharges which occurred after permit issuance which justify the application of permit conditions that are different or absent in the existing permit;

(2) When the Director receives any information that was not available at the time of permit issuance and that would have justified the application of different permit conditions at the time of issuance;

(3) When the standards or regulations on which the permit was based have been changed by promulgation of amended standards or regulations or by judicial decision after the permit was issued;

(4) Upon the failure of the state to notify, as required by Section 402(b)(3) of the FWPCA, another state whose waters may be affected by a discharge;

(5) When the level of discharge of any pollutant which is not limited in the permit exceeds the level which can be achieved by the technology based treatment requirements appropriate to discharge under 40 CFR 125.3(c);

(6) To correct technical mistakes, such as errors in calculation, clerical errors or mistaken interpretations of law made in determining permit conditions;

(7) If the permit limitations are found not to be protective of water quality standards;

(8) To incorporate an applicable 307(a) FWPCA toxic effluent standard or prohibition;

(9) When required by the reopener conditions in this permit, and

(10)For any applicable cause set forth in ADEM Administrative Code Rule 335-6-6-.17.

b. Subject to the public notice procedures of ADEM Administrative Code Rule 335-6-6-.21, the Director may terminate this General Permit during its term for any of the causes for modification listed in Part II.F.4.a.

c. The Director may terminate authorization to discharge under this General Permit for cause. Cause shall include but not be limited to:

(1) Noncompliance with the permit;

(2) Noncompliance with Department Rules;

(3) A finding that this General Permit does not control the discharges sufficiently to protect water quality or comply with treatment based limits applicable to the discharge;

(4) The permittee's misrepresentation or failure to disclose fully all relevant facts in the permit NOI or during the permit issuance process or the permittee's misrepresentation of any relevant facts at any time;

(5) Materially false or inaccurate statements or information in the permit NOI or the permit;

(6) A change in any condition that requires either a temporary or permanent reduction or elimination of the permitted discharge;

(7) The permittee's discharge threatens human life or welfare;

(8) Permanent closure of the facility generating the wastewater permitted to be discharged by this permit or permanent cessation of wastewater discharge; and

(9) New or revised requirements of any applicable standard or limitation that is promulgated under Sections 301(b)(2)(C),(D),(E),and (F), and 307(a)(2) of the FWPCA that the Director determines cannot be complied with by the permittee.

d. If the permittee believes that any past or planned activity would be cause for modification or revocation and reissuance of this General Permit under ADEM Administrative Code Rule 335-6-6-.23 (7), or termination and issuance of an individual permit under ADEM Administrative Code Rule 335-6-6-.23 (9) the permittee must report such information to the Permit Issuing Authority. The submittal of a new NOI may be required of the permittee. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned change, anticipated noncompliance or application for an individual permit, does not stay any permit condition.

5. Issuance by the Director of an Individual NPDES Permit to a Person Eligible for Coverage or Covered by This General Permit.

a. The Director may require any person, otherwise eligible for coverage under this General Permit, to apply for an individual NPDES permit by notifying that person that an application is required. Notification shall consist of a written description of the reason(s) for the decision, appropriate permit application forms and directions, a statement informing the person that upon issuance of the individual permit coverage by this General permit shall automatically terminate. Reasons for this requirement may be:

(1) Noncompliance with the General Permit;

(2) Noncompliance with Department Rules;

(3) A change has occurred in the availability of demonstrated technology or practices for the control or abatement of pollutants applicable to the wastewater being discharged;

(4) Effluent guidelines are promulgated for a point source(s) covered by the General Permit;

(5) A water quality management plan applicable to the wastewater being discharged under this General Permit;

(6) Circumstances have changed since the time of the request to be covered so that the discharger is no longer appropriately controlled under this General Permit or either a temporary reduction or permanent reduction or elimination of the authorized discharge is necessary;

(7) Standards for sewage sludge use or disposal have been promulgated for the sludge use or disposal practice covered by this General Permit;

(8) The discharge(s) is a significant contributor of pollutants. In making this decision the Director may consider:

(a) the location of the discharges with respect to waters of the state,

(b) the size of the discharger, and

(c) the quantity and nature of the pollutants discharged to waters of the state.

(9) A determination that the water of the state receiving the discharge is not meeting applicable water quality standards.

6. Request for an Individual NPDES Permit by a Person Covered Under This General Permit.

a. Any person covered by this General Permit may apply for termination of coverage by applying for an individual NPDES permit.

b. A permit NOI submitted voluntarily or at the direction of the Director for the purpose of termination of coverage by this General Permit shall be processed in accordance with the rules found in ADEM Administrative Code 335-6-6 applicable to individual permits.

c. Any person may petition the Director for withdrawal of this General Permit authority from a discharger. The Director shall consider the information submitted by the petitioner and any other information he may be aware of and may obtain additional information from the discharger and through inspections by Department staff and shall decide if coverage should be withdrawn. The petitioner shall be informed of the Director's decision and shall be provided a summary of the information considered.

7. Request for Permit Action Does Not Stay Any Permit Requirement

The filing of a request by the permittee for any permit action such as termination, or application for individual permit or any other action, does not stay any permit term or condition.

G. COMPLIANCE WITH TOXIC POLLUTANT STANDARD OR PROHIBITION

If any applicable effluent standard or prohibition (including any schedule of compliance specified in such effluent standard or prohibition) is established under Section 307(a) of the FWPCA, 33 U.S.C. Section 1317(a), for a toxic pollutant discharged by the permittee and such standard or prohibition is more stringent than any discharge limitation on the pollutant specified in Provision I. A. of this permit, or controls a pollutant not limited in Provision I. A. of this permit, this permit shall be modified to conform to the toxic pollutant effluent standard or prohibition and the permittee shall be notified of such modification. If this permit has not been modified to conform to the toxic pollutant effluent standard or prohibition before the effective date of such standard or prohibition, the permittee shall attain compliance with the requirements of the standard or prohibition within the time period required by the standard or prohibition and shall continue to comply with the standard or prohibition until this permit is modified or reissued.

H. DISCHARGE OF WASTEWATER GENERATED BY OTHERS

The discharge of wastewater, generated by any process, facility, or by any other means not under the operational control of the permittee or not identified in the NOI for this permit or not identified specifically in the description of an outfall in this permit is not authorized by this permit.

PART III: OTHER PERMIT CONDITIONS

A. CIVIL AND CRIMINAL LIABILITY

1. Tampering

Any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained or performed under the permit shall, upon conviction, be subject to penalties as provided by the AWPCA.

2. False Statements

Any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or noncompliance shall, upon conviction, be subject to penalties as provided by the AWPCA.

3. Permit Enforcement

a. Any NPDES permit issued or reissued by the Department is a permit for the purpose of the AWPCA and the FWPCA and as such any terms, conditions, or limitations of the permit are enforceable under state and federal law and as described under Rule 335-6-6-.18.

b. Any person required to have a NPDES permit pursuant to ADEM Administrative Code Chapter 335-6-6 and who discharges pollutants without said permit, who violates the conditions of said permit, who discharges pollutants in a manner not authorized by the permit, or who violates applicable orders of the Department or any applicable rule or standard of the Department, is subject to any one or combination of the following enforcement actions under applicable state statutes.

(1) An administrative order requiring abatement, compliance, mitigation, cessation, clean-up, and/or penalties;

(2) An action for damages;

(3) An action for injunctive relief; or

(4) An action for penalties.

4. Relief from Liability

Except as provided in Provision II. D. 1. (Bypass) and Provision II. D. 2. (Upset), nothing in this permit shall be construed to relieve the permittee of civil or criminal liability under the AWPCA or FWPCA for noncompliance with any term or condition of this permit.

B. OIL AND HAZARDOUS SUBSTANCE LIABILITY

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities or penalties to which the permittee is or may be subject under Section 311 of the FWPCA, 33 U.S.C. Section 1321.

C. PROPERTY AND OTHER RIGHTS

This permit does not convey any property rights in either real or personal property, or any exclusive privileges, nor does it authorize any injury to persons or property or invasion of other private rights, or any infringement of federal, state, or local laws or regulations, nor does it authorize or approve the construction of any physical structures or facilities or the undertaking of any work in any waters of the state or of the United States.

D. AVAILABILITY OF REPORTS

Except for data determined to be confidential under Code of Alabama 1975, Section 22-22-9(c), all reports prepared in accordance with the terms of this permit shall be available for public inspection at the offices of the Department. Effluent data shall not be considered confidential.

E. COMPLIANCE WITH WATER QUALITY STANDARDS

1. The permittee may be required by the Director to apply for an individual permit, if the Director determines that discharge under this General Permit causes a violation of a water quality standard or stream use classification.

2. Compliance with permit terms and conditions notwithstanding, if the permittee's discharge(s) from point sources identified in Provision I. A. of this permit cause or contribute to a condition in contravention of state water quality standards, the Department may require the permittee to take abatement action or apply for an individual permit pursuant to the Department's Rules, or both.

3. If the Department determines, on the basis of a notice provided pursuant to this permit or any investigation, inspection or sampling, that a modification of this permit is necessary to assure maintenance of water quality standards or compliance with other provisions of the AWPCA or FWPCA, the Department may require such modification.

F. GROUNDWATER

Unless specifically authorized under this permit, this permit does not authorize the discharge of pollutants to groundwater. Should a threat of groundwater contamination occur, the Director may require groundwater monitoring to properly assess the degree of the problem and the Director may require that the permittee undertake measures to abate any such discharge and/or contamination.

G. DEFINITIONS

1. *Authorization* – means granted the privilege of discharging under the terms of this General Permit.

2. *Average monthly discharge limitation* - means the highest allowable average of "daily discharges" over a calendar month, calculated as the sum of all "daily discharges" measured during a calendar month divided by the number of "daily discharges" measured during that month (zero discharge days shall not be included in the number of "daily discharges" measured and a less than detectable test result shall be treated as a concentration of zero if the most sensitive EPA approved method was used).

3. *Average weekly discharge limitation* - means the highest allowable average of "daily discharges" over a calendar week, calculated as the sum of all "daily discharges" measured during a calendar week divided by the number of "daily discharges" measured during that week (zero discharge days shall not be included in the number of "daily discharges" measured and a less than detectable test result shall be treated as a concentration of zero if the most sensitive EPA approved method was used).

4. *AWPCA* - means the Alabama Water Pollution Control Act.

5. *Bypass* - means the intentional diversion of waste streams from any portion of a treatment facility.

6. *Daily discharge* - means the discharge of a pollutant measured during any consecutive 24 hour period in accordance with the sample type and analytical methodology specified by the discharge permit.

7. *Daily maximum* - means the highest value of any individual sample result obtained during a day.

8. *Daily minimum* - means the lowest value of any individual sample result obtained during a day.

9. *Day* - means any consecutive 24-hour period.

10. *Department* - means the Alabama Department of Environmental Management.

11. *Director* - means the Director of the Department.

12. *Discharge* - means "[t]he addition, introduction, leaking, spilling or emitting of any sewage, industrial waste, pollutant or other waste into waters of the state". Code of Alabama 1975, Section 22-22-1(b)(8).

13. *Discharge monitoring report (DMR)* - means the form approved by the Director to accomplish reporting requirements of an NPDES permit.

14. *EPA* - means the United States Environmental Protection Agency.

15. *FWPCA* - means the Federal Water Pollution Control Act.

16. *Landfill Wastewater*, as defined by 40 CFR Part 445.2 (f), means all wastewater associated with, or produced by, landfilling activities except for sanitary wastewater, non-contaminated storm water, contaminated ground water, and wastewater from recovery pumping wells. Landfill wastewater includes, but is not limited to, leachate, gas collection condensate, drained free liquids, laboratory derived wastewater, contaminated storm water and contact washwater from washing truck, equipment, and railcar exteriors and surface areas which have come in direct contact with solid waste at the landfill facility.

17. *Notice of Intent* – means forms and additional information that are required by ADEM Administrative Code Rule 335-6-6-.23 and applicable permit fees.

18. *Permit application* - means forms and additional information that is required by ADEM Administrative Code Rule 335-6-6-.08 and applicable permit fees.

19. *Point source* - means "any discernible, confined and discrete conveyance, including but not limited to any pipe, channel, ditch, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, or vessel or other floating craft, from which pollutants are or may be discharged." Section 502(14) of the FWPCA, 33 U.S.C. Section 1362(14).

20. *Pollutant* - includes for purposes of this permit, but is not limited to, those pollutants specified in Code of Alabama 1975, Section 22-22-1(b)(3) and those effluent characteristics specified in Provision I. A. of this permit.

21. *Qualified Credentialed Professiona*l or *QCP* means a professional engineer (PE), or a Certified Professional in Erosion and Sediment Control (CPESC) as determined by CPESC, Inc. Other registered or certified professionals such as registered landscape architect, registered land surveyor, registered geologist, registered forester, Registered Environmental Manager as determined by the National Registry of Environmental Professionals (NREP), or Certified Professional and Soil Scientist (CPSS) as determined by ARCPACS, and other Department accepted professional designations, certifications, and/or accredited university programs that can document requirements regarding proven training, relevant experience, and continuing education, that can enable recognized individuals to prepare CBMPP's to makes sound professional judgments regarding Alabama NPDES rules, the requirements of this chapter, planning, design, implementation, maintenance, and inspection of construction sites, receiving waters, BMPs, remediation/cleanup of accumulated offsite pollutants from the regulated site, and reclamation or effective stormwater quality remediation of construction associated land disturbances, that meet or exceed recognized technical standards and guidelines, effective industry standard practices, and the requirements of this chapter. The QCP shall be in good standing with the authority granting the registration or designation. The design and implementation of certain structural BMPs may involve the practice of engineering and require the certification of a professional engineer pursuant to Alabama law.

22. *Severe property damage* - means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

23. *Shock chlorination* – means the periodic use of chlorine in cooling water systems as a biocide.

24. *Upset* - means an exceptional incident in which there is an unintentional and temporary noncompliance with technology-based permit discharge limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.

25. *Waters* - means "[a]ll waters of any river, stream, watercourse, pond, lake, coastal, ground or surface water, wholly or partially within the state, natural or artificial. This does not include waters which are entirely confined and retained completely upon the property of a single individual, partnership or corporation unless such waters are used in interstate commerce." Code of Alabama 1975, Section 22-22-1(b)(2). Waters "include all navigable waters" as defined in Section 502(7) of the FWPCA, 22 U.S.C. Section 1362(7), which are within the State of Alabama.

26. *Week* - means the period beginning at twelve midnight Saturday and ending at twelve midnight the following Saturday.

H. 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.

PART IV: ADDITIONAL REQUIREMENTS, CONDITIONS, AND LIMITATIONS

A. STORM WATER MEASUREMENT AND SAMPLING

1. Storm Water Measurement

a. All storm water samples shall be collected from the discharge resulting from a storm event that is greater than 0.1 inches.

b. The storm water event must be monitored, including the date and rainfall (in inches) for the storm event(s) sampled. The duration between the storm event sampled and the end of the previous measurable (greater than 0.1 inch rainfall) storm event must be a minimum of 72 hours. This information must be recorded as part of the sampling procedure and records retained according to Part I.B.4.b. of this permit.

c. During the sampling storm event, rainfall must be reported and may be measured using a rain guage. This information must be recorded as part of the sampling procedure and records retained according to Part I.B.4.b. of this permit.

2. Storm Water Sampling

a. A grab sample, if required by this permit, shall be taken during the first thirty minutes of the discharge (or as soon thereafter as practicable); and a flow weighted composite sample, if required by this permit, shall be taken for the entire event or for the first three hours of the event.

b. All test procedures will be in accordance with Part I.B.2. of this permit.

B. BEST MANAGEMENT PRACTICES (BMP) PLAN

1. Plan Content for Landfill Activities

The permittee shall prepare (or as required have a QCP prepare) and implement a best management practices (BMP) plan which shall:

a. Provide control sufficient to prevent or control pollution of storm water by soil particles to the degree required to prevent violation of the turbidity water quality standard applicable to the waterbody receiving the discharge;

b. Prevent the spillage or loss of fluids, oil, grease, gasoline, etc. from vehicle and equipment maintenance and repair activities and thereby prevent the contamination of storm water from these substances;

c. Prevent or minimize the storm water contact with material stored on site;

d. Designate by position or name the person or persons responsible for the day to day implementation of the BMP;

e. Provide for at a minimum, two inspections a week, on days during which the facility is manned, of any structures that function to prevent storm water pollution or to remove pollutants from storm water and of the facility in general to ensure that the BMP is continually implemented and effective;

f. If spillage is a factor during loading and unloading of bulk material, provide for prevention of the mixing of spillage with discharged storm water;

g. Include a diagram of the facility showing the direction of the storm water flow, the discharge point(s), and the locations of any structures or other mechanisms intended to prevent pollution of storm water or to remove pollutants from storm water, the locations of any collection and handling systems. The site map should also identify the location, size, and contents of any tanks.

h. Prevent the pollution of storm water by animal wastes;

i. Bear the signature of the landfill manager or corporate official;

j. The permittee must implement measures to ensure permanent revegetation or cover of all disturbed areas. The permittee shall perform regular clean-up and proper disposal of floating or submerged trash and garbage resulting from activities authorized by this permit;

k. The permittee shall implement, as necessary, a system for the collection, storage, treatment, and disposal of sewage and other putrescible wastes;

l. Appropriate measures must be taken to prevent the deposition of airborne pollutants such as spray paint, herbicides, excessive road dust, etc. from entering any waterbody.

2. Plan Content for Construction Activities

a. A Qualified Credentialed Professional must prepare the BMP Plan that addresses the land disturbance activities. Permittee shall implement a BMP Plan describing structural and non-structural practices which will be implemented and maintained to prevent/minimize the discharge of all sources of pollution (i.e., sediment, trash, garbage, debris, oil & grease, chemicals, materials, etc.) to State waters in storm water runoff. The Plan must be designed to address the following goals: (1) to divert upslope water around the site; (2) to limit the exposure of disturbed areas to precipitation to the shortest amount of time possible; (3) to minimize the amount of surface area that is disturbed; and (4) to remove sediment, nutrients, and other pollutants from the storm water before it leaves the site.

b. The BMP Plan means implementation and continued maintenance of effective structural and non-structural practices and management strategies to prevent and minimize the introduction of pollutants to stormwater and to treat stormwater to remove pollutants prior to discharge. The Alabama Handbook for Erosion Control, Sediment Control, and Stormwater Management on Construction Sites and Urban Areas, Alabama Soil and Water Conservation Committee (ASWCC) March 2009 edition and current industry standards shall be used as necessary to maintain compliance.

c. Dilution water shall not be added to achieve compliance with discharge limitations except when the Director or his designee has granted prior written authorization for dilution to meet water quality requirements.

d. The permittee must implement measures to ensure permanent revegetation or cover of all disturbed areas. The permittee shall perform regular clean-up and proper disposal of floating or submerged trash and garbage resulting from activities authorized by this permit.

e. The permittee shall implement, as necessary, a system for the collection, storage, treatment, and disposal of sewage and other putrescible wastes.

f. All construction and worker debris (e.g., trash, garbage, etc.) must be immediately removed and disposed on in an approved manner. No rubbish, trash garbage, refuse, or other such materials shall be discharged into waters of the State of Alabama.

g. Appropriate measures must be taken to prevent the deposition of airborne pollutants such as spray paint, herbicides, excessive road dust, etc. from entering any waterbody.

h. All materials used as fill for construction purposes must be non-toxic, non-acid forming and free of solid waste or other debris unless approved by the Department.

i. Include a diagram of the facility showing the direction of the storm water flow, the discharge point(s), and the locations of any structures or other mechanisms intended to prevent pollution of storm water or to remove pollutants from storm water, the locations of any collection and handling systems. The site map should also identify the location, size, and contents of any tanks.

j. Bear the signature of the landfill manager or corporate official.

3. Compliance Schedule

The permittee shall have prepared and fully implemented the BMP upon the date coverage is granted.

4. Department Review

a. When requested by the Director or his designee, the permittee shall make the BMP available for Department review.

b. The Director or his designee may notify the permittee at any time that the BMP is deficient and require correction of the deficiency.

c. The permittee shall correct any BMP deficiency identified by the Director or his designee within 30 days of receipt of notification and shall certify to the Department that the correction has been made and implemented.

5. Administrative Procedures

a. A copy of the BMP shall be maintained at the landfill and shall be available for inspection by representatives of the Department.

b. A log of the twice per week inspections required above shall be maintained at the landfill and shall be available for inspection by representatives of the Department. The log shall contain records of all inspections performed and any corrective actions taken for the last three years and each entry shall be signed by the person performing the inspection.

c. The permittee shall provide training for any personnel required to implement the BMP and shall retain documentation of such training at the facility. This documentation shall be available for inspection by representatives of the Department. Training shall be performed prior to the date that implementation of the BMP is required.

d. BMP Plan Modification. The permittee shall amend the BMP plan whenever there is a change in the facility or change in operation of the facility which materially increases the potential for the ancillary activities to result in a discharge of significant amounts of pollutants.

C. DISCHARGE(S) TO IMPAIRED WATERS REQUIREMENTS

1. Requirements Applicable to a Facility Eligible for Coverage, or Covered, under this Permit with Discharge(s) to 303(d) Listed Waters

This permit does not authorize new sources or new dischargers of pollutants of concern to impaired waters unless consistent with an EPA-approved or EPA-established Total Maximum Daily Load (TMDL) and applicable State law. Impaired waters are those that do not meet applicable water quality standards and are identified by an EPA-approved or EPA-established TMDL and/or on the State of Alabama's 303(d) list. Pollutants of concern are those pollutants for which the water body is listed as impaired and which contribute to the listed impairment.

a. The facility eligible for coverage, or covered, under this permit must determine whether its discharge(s) contributes directly or indirectly to a waterbody that is included on the latest 303(d) list or otherwise designated by the Department as impaired or is included in an EPA-approved or EPA-established TMDL. If the facility has discharges meeting this criterion, it must comply with Part IV.C., if its discharge does not meet this criterion, Part IV.C. does not apply to the facility.

b. Facilities that discharge into a receiving water which is listed on the State of Alabama's 303(d) list of impaired waters, and with discharges that contain the pollutant(s) for which the waterbody is impaired, must by April 30th of the following year or within 6 months of such approval of the 303(d) list or applicable TMDL or establishment of TMDL by EPA (whichever is longer), document in its BMP plan how the BMPs will control the discharge of the pollutant(s) of concern, and must ensure that there will be no increase of the pollutants of concern. A monitoring plan to assess the effectiveness of the BMPs in achieving the allocations must also be included in the BMP plan.

c. If the facility discharges to a waterbody described above, it must also determine whether a total maximum daily load (TMDL) has been developed and approved or established by EPA for the listed waterbody. If a TMDL is approved or established during this permit cycle by USEPA for any waterbody into which the facility discharges, the facility must review the applicable TMDL to see if it includes requirements for control of storm water

discharges. By April 30th of the following year or within 6 months of such approval of the 303(d) list or applicable TMDL or establishment of TMDL by EPA (whichever is longer), the facility must notify the Department on how it will modify its BMP plan to include best management practices specifically targeted to achieve the allocations prescribed by the TMDL. Revised BMP plans must be submitted to the Department for review. The facility must include a monitoring component in the BMP plan to assess the effectiveness of the BMPs in achieving the allocations. If the facility cannot ensure its discharges will not cause or contribute to impairment, then the facility must apply for and obtain permit coverage under an individual permit.

2. Requirements Applicable to a Facility Eligible for Coverage, or Covered, under this Permit with Discharges into Waters with EPA-Approved or EPA-Established TMDLs

a. The facility must determine whether the EPA-approved or EPA-established TMDL is for a pollutant likely to be found in discharges from its facility.

b. The facility must determine whether the TMDL includes a pollutant allocation or other performance requirements specifically for discharges from its facility.

c. If, after the determinations above have been made and if it is determined that the facility must implement specific allocations provisions of the TMDL, then the facility must assess whether the allocations are being met through implementation of existing control measures or if additional control measures are necessary.

d. The facility must document all control measures currently being implemented or planned to be implemented, to include a schedule of implementation for all planned controls, and must document calculations or other evidence showing that the allocations will be met. Revised BMP plans must be submitted to the Department for review.

e. If a TMDL contains requirements for control of pollutants from the facility's discharges, then the BMP plan must include BMPs specifically targeted to achieve the allocations prescribed by the TMDL. A monitoring plan to assess the effectiveness of the BMPs in achieving the allocations must also be included in the BMP plan. Implementation of the monitoring plan in accordance with Part IV.C.2 will determine whether the controls are adequate to meet the TMDL allocations. If the facility cannot comply with the requirements of the TMDL, then the facility must apply for and obtain permit coverage under an individual permit.

f. If the evaluation shows that additional or modified controls are necessary, the facility must describe the type and schedule for the control additions/revisions in the BMP plan. The facility must also continue Paragraphs IV.C.2.d.-f. until two continuous monitoring cycles, as defined in the monitoring plan in accordance with Part IV.C.2., show that the TMDL allocations are being met or that water quality (WQ) standards are being met.

3. Requirements for New or Revised BMP Plans

New or revised BMP plans developed in accordance with Parts IV.C.1 and IV.C.2 above must be submitted to the Department for review by April 30th of the year following EPA approval of the 303(d) list or EPA establishment/approval of applicable TMDL or within 6 months of such approval of the 303(d) list or applicable TMDL or establishment of TMDL by EPA (whichever is longer).

NOTICE OF INTENT – GENERAL PERMIT NUMBER ALG160000

(ADEM Form 384 _____)

DISCHARGES ASSOCIATED WITH STORM WATER RUNOFF, NOT CONTAINING LEACHATE, FROM ACTIVE AND INACTIVE LANDFILLS AND FROM TRANSFER STATIONS INCLUDING STORM WATER RUNOFF FROM MAINTENANCE OPERATIONS AND EXPANSION CONSTRUCTION ACTIVITIES AT LANDFILLS, VEHICLE AND EQUIPMENT WASH WATER AND STORM WATER FROM PETROLEUM STORAGE AND HANDLING AND EQUIPMENT STORAGE AND MAINTENANCE AREAS.

FOR OFFICE USE ONLY

NPDES PERMIT NUMBER _____

FACILITY NUMBER _____

_____

Mail to: Alabama Department of Environmental Management
Industrial General Permit Section
Industrial/Municipal Branch
Water Division
Post Office Box 301463
Montgomery, Alabama 36130-1463

ANSWER ALL QUESTIONS IN THE APPLICABLE SECTIONS. PLEASE MARK THE **"NOT APPLICABLE"** BOX IF A SECTION IS NOT APPLICABLE. INCOMPLETE OR WRONG ANSWERS COULD RESULT IN MORE STRINGENT PERMIT REQUIREMENTS. IF SPACE IS INSUFFICIENT TO ADDRESS ANY ITEM BELOW PLEASE CONTINUE ANSWER ON AN ATTACHED SHEET OF PAPER.

FACILITY IDENTIFICATION INFORMATION

A. Name of Facility to be shown on Permit: Fort Payne Landfill

Name of permittee if different from above: Fort Payne Landfill

B. Mailing Address of Facility: – PO Box or Street Route 100 Alabama Ave NW

City, State and Zip Code Fort Payne, AL 35967

C. Location (STREET ADDRESS) of Facility: 1004 Dewyer Ave

City, County: Fort Payne, AL 35967 De Kalb

D. Provide the latitudinal and longitudinal coordinates of the facility location. (Front Gate):

Latitude 34.4366 N Longitude -85.7403 W

E. Facility Contact Person and Title: Patrick Dunne, Solid Waste Coordinator

Telephone Number: 256-845-8897

F. Standard Industrial Code (SIC) (Names and Codes): 4953 - Refuse Systems

G. Description of industrial activity and land use at the facility:
C/D w/ Industrial Landfill

H. Check the type of discharge at your facility and complete the applicable sections associated with the type checked:
[X] Storm water
[X] Storm water from petroleum handling operations
[X] Exterior vehicle and equipment wash water

I. Please indicate which, if any, of the discharges in H. are combined.
All 3 discharges are combined into two discharge points.

J. Has the facility ever been issued an NPDES Permit? Yes [X] No [ ]
Please provide the permit number and facility name at time of permitting.
Permit Number: ALG160106
Facility Name: Fort Payne Landfill

Has the facility been issued an **INDIVIDUAL** NPDES permit?
Yes [ ] No [X] NPDES Permit No. AL00_____

Do you intend to replace your Individual NPDES permit with this General NPDES Permit? Yes [ ] No [ ]

K. Has the facility been issued a State Indirect Discharge (SID) Permit?

Yes [ ] No [X] SID Permit No. IU _____

L. Is this Notice of Intent for (check one):

[ ] First time issuance of a **GENERAL** Permit

[x] Renewal of **GENERAL** Permit No. ALG ALG160106

[ ] Modification of **GENERAL** Permit No. ALG_____

M. Are any of the discharges that you intend to be covered by this permit going to the municipal storm sewer?
Yes [ ] No [X]

N. Name of surface water to which the municipal storm sewer discharges:_____

O. Have you notified the municipality by letter as required by 40 CFR 122.26(a)(4)? Yes [ ] No [ ]

P. Date facility started or will start operations: 10/01/1996

Q. What is the size of the site in acres? 160

R. Do you discharge to any waters of the State that are impaired (303(d) or TMDL)? Yes [ ] No [X]
(A list of the impaired waters can be found at http://www.adem.state.al.us/programs/water/303d.cnt for 303(d)listed waters and http://www.adem.state.al.us/programs/water/wquality/2011ApprovedTMDLs.zip for waters subject to a TMDL.)
If yes, do your discharges contain pollutants of concern listed for the impaired water(s)? Yes [ ] No [ ]
If yes, then enhanced BMPs are required. Also, an Individual NPDES Permit may be required, so please contact the Industrial/Municipal Branch of ADEM before proceeding.

DSN001– STORM WATER DISCHARGE INFORMATION

NOT APPLICABLE [ ]

A. List latitude and longitude (to seconds) of the point where each discharge exits your property and name of receiving stream:

0011 Latitude 34.4368 N Longitude -85.7412 W

Receiving Stream Little Wills Creek

0012 Latitude 34.4447 N Longitude -85.7347 W

Receiving Stream BIG WILLS CREEK

Latitude _____ N Longitude _____ W

Receiving Stream _____

Latitude _____ N Longitude _____ W

Receiving Stream _____

Latitude _____ N Longitude _____ W

Receiving Stream _____

Latitude _____ N Longitude _____ W

Receiving Stream _____

Latitude _____ N Longitude _____ W

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Latitude _____ N Longitude _____ W

Receiving Stream _____

Latitude _____ N Longitude _____ W

Receiving Stream _____

Latitude _____ N Longitude _____ W

Receiving Stream _____

Latitude _____ N Longitude _____ W

Receiving Stream _____

Latitude _____ N Longitude _____ W

Receiving Stream _____

Latitude _____ N Longitude _____ W

Receiving Stream _____

B. Has storm water runoff from the facility been analyzed for presence of any known pollutants? Yes [x] No [ ]
If yes, attach the most recent copy of the analysis.

C. Storm water runoff discharges to:
[x] Surface water
[ ] Seeps into the ground
[ ] Municipal storm sewer

D. This permit requires the development and implementation of a Best Management Practice (BMP) Plan. Does the facility have a BMP Plan? Yes [x] No [ ]

E. Does the facility have any of the following other control measures to prevent pollution?

1. Structural control measures (basins, etc.) Yes [x] No [ ]
2. Treatment of groundwater (retention, aeration) Yes [ ] No [x]
3. Other. If so, please describe. _____

F. Are there any known impacts on the receiving water as a result of this discharge?
Yes [ ] No [x] If yes, please explain:_____

G. Does the storm water contain any leachate? Yes [ ] No [x] If yes, the facility cannot be covered under this general permit. Please contact the Industrial Section of ADEM before proceeding.

H. Are any raw materials, finished products, waste products or chemicals exposed to storm water currently or in the last three years? Yes [ ] No [x]

If yes, please list: _____

I. Has the facility been closed for over three years? Yes [ ] No [x]

J. Was the closure approved by ADEM? Yes [ ] No [ ] If yes, include a copy of the ADEM approval letter.

K. An NPDES storm water permit is required until ADEM approves the closure.

L. Were there any past industrial activities on the site that would contribute to storm water contamination?

Yes [ ] No [x] If yes, please explain: _____

_____

DSN002 and DSN003 – STORM WATER FROM PETROLEUM BULK STORAGE AND FUELING AREAS

NOT APPLICABLE [ ]

A. List latitude and longitude (to seconds) of the point where each discharge exits your property and name of receiving stream:

0031 Latitude _____ N Longitude _____ W

Receiving Stream DEACTIVATED

0032 Latitude 34.4406 N Longitude -85.7375 W

Receiving Stream Little Wills Creek

Latitude _____ N Longitude _____ W

Receiving Stream _____

Latitude _____ N Longitude _____ W

Receiving Stream _____

Latitude _____ N Longitude _____ W

Receiving Stream _____

Latitude _____ N Longitude _____ W

Receiving Stream _____

Latitude _____ N Longitude _____ W

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Latitude _____ N Longitude _____ W

Receiving Stream _____

Latitude _____ N Longitude _____ W

Receiving Stream _____

Latitude _____ N Longitude _____ W

Receiving Stream _____

Latitude _____ N Longitude _____ W

Receiving Stream _____

Latitude _____ N Longitude _____ W

Receiving Stream _____

	Number	Size
B. List number and size of above ground storage tanks.	1	500

List number and size of underground storage tanks.

C. Has storm water runoff from the facility been analyzed for presence of any known pollutants? Yes [x] No [ ]
If yes, attach the most recent copy of analysis.

D. Storm water runoff discharges to:
- [x] Surface water
- [ ] Seeps into ground
- [ ] Municipal storm sewer

E. This permit requires the development and implementation of a Best Management Practices (BMP) plan. Does the facility have a BMP Plan? Yes [x] No [ ]

F. Does the facility have any of the following other control measures to prevent pollution?

1. Structural control measures (basins, etc.) Yes [x] No [ ]
2. Treatment of groundwater (retention, aeration) Yes [ ] No [x]
3. Other. If so, please describe. _____

G. Known impact on receiving water? Yes [ ] No [x] If yes, to what extent?

_____

H. Have any leaks, spills or other instances of storm water contamination occurred within the last 3 years? Yes [ ] No [x] If yes, what occurred and how did it happen?

_____

I. Are any above ground tanks that contain a possible pollutant double-walled? Yes [ ] No [X]

J. Are all above ground tanks that contain a possible pollutant double-walled? Yes [ ] No [ ]

K. Are any above ground tanks that contain a possible pollutant diked? Yes [ ] No [X]

L. Are all above ground tanks that contain a possible pollutant diked? Yes [ ] No [ ]

M. Can dikes contain 110% of the contents of the largest tank in the dike? Yes [ ] No [ ]

N. Are the walls and floors of the dikes relatively impermeable to the stored substance? Yes [ ] No [ ]

O. From which outfalls in A (this section) is uncontaminated storm water from secondary containment (for above ground storage tanks only) areas discharged? _____

P. Is treated or untreated water from tank bottoms or water draws discharged on site? Yes [ ] No [X]
If yes, this particular discharge cannot be covered under this permit. Please contact the Industrial Branch of ADEM before proceeding.

Q. Were there any past industrial activities on te site that would contribute to storm water contamination? Yes [X] No [ ]. If yes, explain. _____

R. Does the facility handle leaded fuels? Yes [ ] No [X]

S. Does the facility handle aviation fuel, jet fuel, or diesel fuel? Yes [ ] No [X]

T. Is hydrostatic testing of petroleum handling equipment done on site? Yes [ ] No [X] If yes, this particular discharge cannot be covered under this permit. Please contact the Industrial Section of ADEM before proceeding.

U. Are any trucks or equipment fueled at this facility? Yes [X] No [ ] Is your fueling area protected from storm water including flowing water? Yes [ ] No [X] If yes, please explain:
_____

V. Is storm water/wash down water from the fueling/loading area treated (oil/water separator, etc.) prior to discharge?Yes [ ] No [X]

W. Does the facility comply with 40 CFR Part 112? Yes [X] No [ ]
Last update of SPCC Plan, if applicable 03/05/2021

In accordance with 40 CFR Section 112.5 (b), applicable facilities must complete a review and evaluation of the SPCC Plan at least once every five years. If the provided date indicates the SPCC Plan is not valid, is the SPCC Plan currently being reviewed by a Professional Registered Engineer? Yes [ ] No [ ]

If an SPCC Plan date was not entered, is it because the facility's petroleum storage capacity is below the volume that would require an SPCC Plan? Yes [ ] No [ ]

X. Is storm water from fueling areas allowed to mix with storm water from other industrial activities? Yes [ ] No [X]

Y. Does any discharge or runoff from the facility reach a public water supply stream segment as defined by ADEM Administrative Code R. 335-6-11-.02? [ ] Yes [X] No

DSN004 – DISCHARGES ASSOCIATED WITH VEHICLE AND EQUIPMENT EXTERIOR WASHING OPERATIONS

NOT APPLICABLE [ ]

A. List latitude and longitude (to seconds) of the point where each discharge exits your property and name of receiving stream:

0041 Latitude _____ N Longitude _____ W

Receiving Stream DEACTIVATED

0042 Latitude 34.4406 N Longitude -85.7375 W

Receiving Stream Little Wills Creek

Latitude _____ N Longitude _____ W

Receiving Stream _____

Latitude _____ N Longitude _____ W

Receiving Stream _____

Latitude _____ N Longitude _____ W

Receiving Stream _____

Latitude _____ N Longitude _____ W

Receiving Stream _____

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Latitude _____ N Longitude _____ W

Receiving Stream _____

Latitude _____ N Longitude _____ W

Receiving Stream _____

Latitude _____ N Longitude _____ W

Receiving Stream _____

Latitude _____ N Longitude _____ W

Receiving Stream _____

B. Is this process water commingled with storm water prior to discharge? Yes [X] No [ ]

C. Has the process water been analyzed for presence of any known pollutants? Yes [X] No [ ]
Attach the most recent copy of analysis.

D. Give detailed description of wash water use, additives, location, ultimate disposal, etc.

Facility uses ordinary biodegradable truck soap with the actual cleaning process taking place outside of any landfill buildings. The wash from vehicle

E. Do you wash interior of tank rail cars or tank trailers? Yes [ ] No [X]
If yes, the facility cannot be covered under this General Permit. Please contact the Industrial Section of ADEM before proceeding.

F. How do you dispose of spent oil, hydraulic fluids and any other potential pollutants that you handle?

They are collected by an oil recycling company, Holston Recycling.

G. Does the facility handle diesel equipment or diesel fuel? Yes [X] No [ ]

H. Does your facility use organic or petroleum based solvents in its washing operations? Yes [ ] No [X]
If yes, Please contact the Industrial Section of ADEM before proceeding.

GENERAL INFORMATION

Have you included a check for the application fee? Yes [X] No [ ]

DO NOT SUBMIT APPLICATION AND PERMIT FEE SEPARATELY

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

SIGNATURES

Signature: eNOI Date Signed: 08/11/2021

Name and Official title (type or print): Patrick Dunne, Solid Waste Coordinator

NOTE: This Notice of Intent must be signed by the official representative of the facility who is: the owner, the sole proprietor of a sole proprietorship, a general partner for a partnership, or by a ranking elected official or other duly authorized representative for a unit of government or an executive officer of **at least the level of vice president** for a corporation, having overall responsibility for the operation of the facility. If the Notice of Intent is not signed, or is found to be incomplete, it will be returned.

Address: 1004 Dewyer Ave, Fort Payne, AL 35967

Phone Number: 256-845-8897

DISCHANGE MONITORING REPORTS (DMR) CONTACT – PLEASE COMPLETE

DMR Contact Name and Official title (type or print): Patrick Dunne, Solid Waste Coordinator

DMR Contact Address: 1004 Dewyer Ave, Fort Payne, AL 35967

DMR Contact Phone Number: 256-845-8897

PLEASE COMPLETE IF NOI IS PREPARED BY A CONSULTANT OR SOMEONE OTHER THAN AN EMPLOYEE OF THE FACILITY

Name of Individual (type or print): ,

Name of Firm:

Address:

Phone Number: --

Please attach or in the space below draw a map showing the location of the facility including major highways and/or landmarks.

From: pdunne@fortpayne.org <pdunne@fortpayne.org>
Sent: Tue, 11 Jan 2022 10:15:49 -0600
To: "Stearns, Brad" <BLS@adem.alabama.gov>
Subject: RE: Ft. Payne Landfill- ALG160106- Permit Renewal

Brad,

Please see clarification for both items below.

1. Yes, please put City of Fort Payne Alabama as the permittee on the permit. This was an oversight on my part.

2. As per the 500 gallon tank, we do keep said tank in the landfill. It is not diked nor is the tank double-walled, the tank sits on a Chevrolet C-70 flatbed and it moves to various locations based on where we are operating our one open-face. It is considered our fuel truck.

Please let me know if more details are required. Thank you.

Patrick Dunne,
Solid Waste Coordinator

From: Stearns, Brad <BLS@adem.alabama.gov>
Sent: Tuesday, January 11, 2022 9:17 AM
To: 'pdunne@fortpayne.org' <pdunne@fortpayne.org>
Subject: Ft. Payne Landfill- ALG160106- Permit Renewal

Good morning Patrick:

Per our conversation, please address the below items:

1. Should the Permittee be **City of Fort Payne Alabama** as on the previous permit version? The Secretary of State website did not list Fort Payne Landfill as the name.

2. It was also indicated that there was one 500 gallon AST with an SPCC Plan dated 3/5/2021. However, it was indicated that the tank was not double-walled and was not diked. Please provide specifics of the fuel tank.

Please let me know if I can help with this concerning this or any other matter.

Thank You

Brad Stearns, Senior Environmental Scientist
Industrial General Permit Section
Industrial/Municipal Branch/Water Division
Alabama Department of Environmental Management (ADEM)

Mailing Address: P.O. Box 301463
Montgomery, AL 36130-1463
Physical Address: 1400 Coliseum Boulevard
Montgomery, Alabama 36110
Phone: (334) 271-7814
E-mail Address: bls@adem.alabama.gov

NEW ADEM ELECTRONIC SYSTEM: Alabama Environmental Permitting and Compliance System (AEPACS)

AEPACS is an electronic system that allows facilities to apply for and maintain permits as well as submit other required applications, registrations, and certifications. In addition, the system allows facilities to submit required compliance reports or other information to the Department. For general information about AEPACS, go to: http://adem.alabama.gov/egov/AEPACS.cnt. For NPDES and SID program specific information about AEPACS, go to http://adem.alabama.gov/egov/AEPACSwater.cnt.

From: AEPACS <

THE OUTFALLS WERE SWAPPED LAST TIME PERMIT WAS RENEWED.

N

100 ACRES ADDITIONAL LAND

BRUSH, STUMPS, ROCKS & CONCRETE DISPOSAL AREA

M.WELL #2

Additional Land

RUN ON DITCH

M.WELL #5

BORROW AREA

WOOD CHIPS LEAVES, & SLUDGE COMPOSTING AREA

FORT PAYNE LANDFILL

PERMITTED DISPOSAL AREA

CLOSED AREA

Sedimentation Pond

Monitoring Point McCurdy Land

OUT FALL #3

NORTHERN WATERSHED

SOUTHERN WATERSHED

RUN OFF DITCH

ACTIVE DISPOSAL AREA

Additional Land

Property Boundary / State Land

INTERSTATE HWY # 59

M.WELL #4

Additional Land

RUN ON DITCH

WASH AREA

TRUCK SHED

BALER BUILDING

M.WELL #6

Sedimentation Pond

OUT FALL #4

RUN ON DITCH

BORROW AREA

DOZER SHED

RUN ON DITCH

APPENDIX E

RECORDKEEPING

DISPATCHER DAILY LOG SHEET (PHONE AND RADIO CALLS, SPILL INSPECTIONS AND CLEAN-UP, AND LANDFILL LOAD INSPECTION LOGS)

Dispatcher daily log sheet

PHONE and RADIO CALLS

WATER METER: RAINFALL:

	Address	Phone #	Notes:
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			

Spill Inspections and Cleän-up

	Tuesday	Friday
Landfill Grounds		
Mechanic Shop		
Baler Building		
Truck Shed		
Truck Wash Area		
Dozer Shed		
Comments:		

Forms-2017 Inspection

LANDFILL LOAD INSPECTION

	Company/Driver	Stump Pile Material	C & D Waste	FP or RV Sludge	NOTES
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					

Signed: _____

Date:

RANDOM LOAD INSPECTION FORM

RANDOM LOAD INSPECTION TEMPLATE

ADEM Admin. Code r. 335-13-4-.21(1)(b)

Facility Name & Permit Number _____ **Inspection Time & Date** _____

WASTE HAULER INFORMATION

Company Name	
Driver Name	
Vehicle Description/Container Type	

GENERATOR & WASTE INFORMATION

Waste Generator Name & Address	
Method of Shipment: ☐ Bulk ☐ Drum ☐ Bagged ☐ Other:	
Quantity Generated: Amount:_____ ☐ Tons ☐ Cubic Yards ☐ Other	
Per: ☐ Weekly ☐ Monthly ☐ Yearly ☐ Other	
Special Waste Approval Number, if applicable:	

WASTE CHARACTERISTICS

Waste Description (C/D, MSW, Ind.):
Typical Color(s):
Strong Odor: ☐ Yes ☐ No Describe:
Physical State: ☐ Solid ☐ Liquid ☐ Powder ☐ Semi-Solid or Sludge ☐ Other:
pH Range: ☐ ≤ 2 ☐ 2.1-12.4 ☐ ≥ 12.5 ☐ N/A (Solid) ☐ Actual:

Does the load contain unauthorized waste? ☐ Yes ☐ No _____

If yes, identify which waste: ☐ Free Liquids ☐ Hazardous Waste ☐ Medical Waste ☐ PCB Waste

If the load contains any of the waste listed above, the load is unacceptable for disposal and should be rejected. Indicate reasons for rejection below and attach any additional documentation:

_____

_____

_____

_____

**If load is rejected by the facility, please see the facility's plan for procedures for notifying the proper authorities per ADEM Admin. Code r. 335-13-4-.21(1)(b)5.*

Approval Decision: ☐ Approved ☐ Rejected

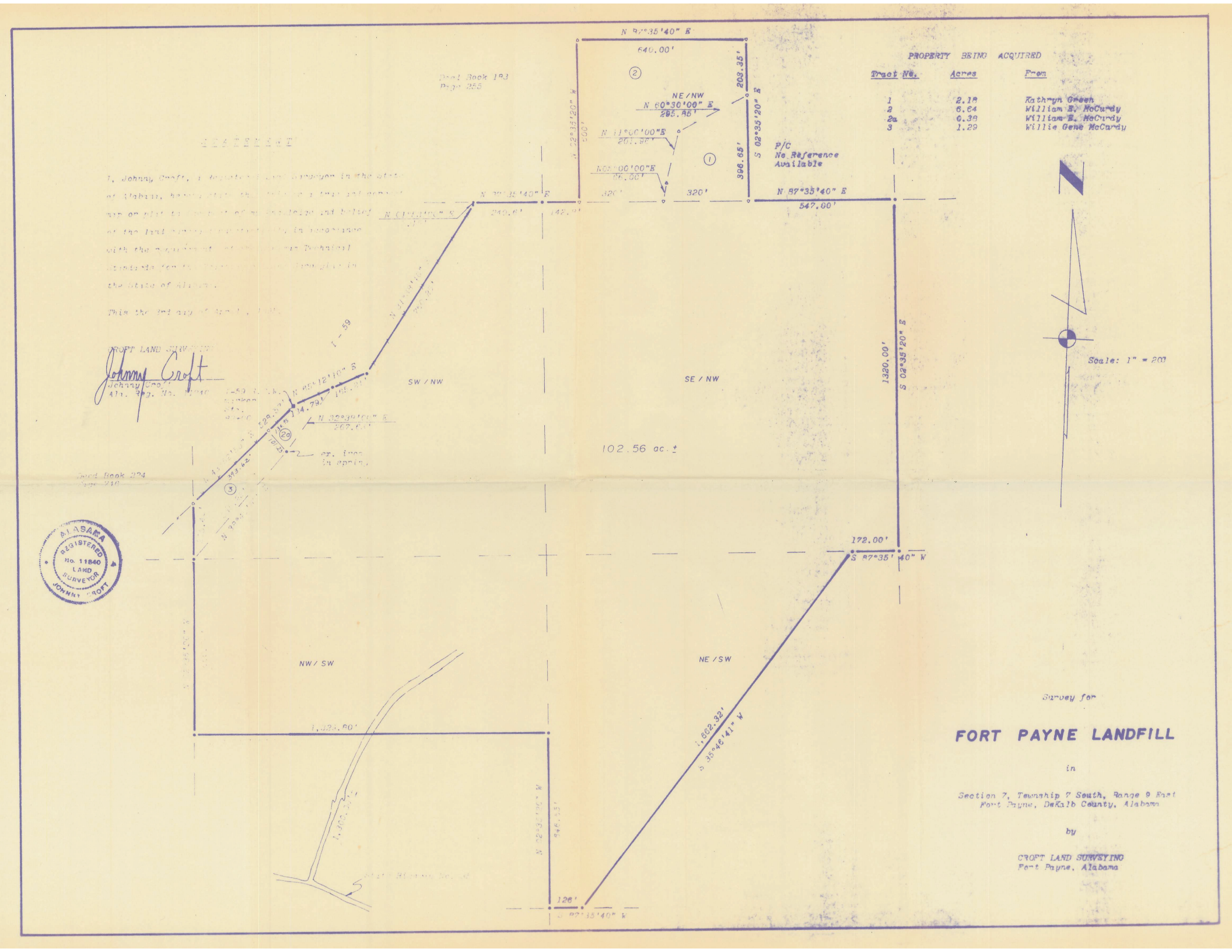
By signing this Inspection Form, I hereby certify that all information in this form and all attached documents contain true and accurate descriptions of the waste material.

_____

Inspector Signature **Date**

APPENDIX D

BOUNDARY PLAT AND LEGAL DESCRIPTIONS



STATEMENT

I, Johnny Croft, a Registered Land Surveyor in the state of Alabama, hereby state that this is a true and correct survey on plat to the best of my knowledge and belief of the land surveyed and platted, in accordance with the requirements of the Alabama Technical Standards for the Practice of Land Surveying in the State of Alabama.

This the 3rd day of April, 1985.

CROFT LAND SURVEYING

Johnny Croft

Johnny Croft
Ala. Reg. No. 11840

Description for
Fort Payne Landfill
in
Section 7, Township 7 South, Range 9 East
Fort Payne, DeKalb County, Alabama

Beginning at the northeast corner of the SE¼ of the NW¼ of Section 7, Township 7 South, Range 9 East of the Huntsville Meridian, Fort Payne, DeKalb County, Alabama run S 02°35'20" E with the east boundary line of the SE¼ of the NW¼ of said Section 7 for 1,320.00 feet to the southeast corner thereof; thence run S 87°35'40" W with the south boundary line of the SE¼ of the NW¼ for 172.00 feet; thence leaving said boundary line run S 35°46'41" W for 1,662.32 feet to a point on the south boundary line of the NE¼ of the SW¼ of said Section 7; thence run S 87°35'40" W with said south boundary line for 126.00 feet to the southwest corner thereof; thence run N 02°35'20" W with the west boundary line of the NE¼ of the SW¼ for 646.65 feet; thence leaving said boundary line run S 87°35'40" W for 1,329.80 feet to a point on the west boundary line of the NW¼ of the SW¼ of said Section 7; thence run N 02°35'20" W with the west boundary line of the NW¼ of the SW¼ and the SW¼ of the NW¼ for 865.40 feet to a point on a fence line marking the southerly right-of-way line of I-59; thence run N 43°52'55" E with said fence line for 528.57 feet to an existing right-of-way marker (station 82 + 00); thence run N 65°12'10" E with said fence line for 300.00 feet; thence run N 31°38'40" E with said fence line for 760.25 feet; thence run N 01°53'00" E for 5.15 feet to a point on the north boundary line of the SW¼ of the NW¼ of said Section 7; thence run N 87°35'40" E with the north boundary line of the SW¼ of the NW¼ and the SE¼ of the NW¼ for 383.40 feet; thence leaving said north boundary line run N 02°35'20" W for 600.00 feet; thence run N 87°35'40" E for 640.00 feet; thence run S 02°35'20" E for 600.00 feet to a point on the north boundary line of the SE¼ of the NW¼; thence run N 87°35'40" E with said north boundary line for 547.00 feet to the point of beginning.

Said property is lying in the NE¼ of the NW¼ and the SE¼ of the NW¼ and the SW¼ of the NW¼ and the NW¼ of the SW¼ and the NE¼ of the SW¼ all in Section 7, Township 7 South, Range 9 East of the Huntsville Meridian, Fort Payne, DeKalb County, Alabama and contains 113.05 acres, more or less, including properties being acquired.

The above description was prepared from a field survey by CROFT LAND SURVEYING a plat of which is dated April 3, 1995; is attached hereto, made a part hereof, and reference is hereby made to that plat for additional data concerning the survey.

CROFT LAND SURVEYING

Johnny Croft
Ala. Reg. No. 11840

Tract 1

Commencing at the southeast corner of the NE¼ of the NW¼ of Section 7, Township 7 South, Range 9 East of the Huntsville Meridian, Fort Payne, DeKalb County, Alabama run S 87°35'40" W with the south boundary line of the NE¼ of the NW¼ of said Section 7 for 547.00 feet for a point of beginning.

Thence continue S 87°35'40" W with said south boundary line for 320.00 feet; thence leaving said boundary line run N 05°00'00" E for 66.00 feet; thence run N 11°00'00" E for 201.96 feet; thence run N 60°30'00" E for 295.85 feet; thence run S 02°35'20" E for 396.65 feet to the point of beginning.

Said property is lying in the NE¼ of the NW¼ of Section 7, Township 7 South, Range 9 East of the Huntsville Meridian, Fort Payne, DeKalb County, Alabama and contains 2.18 acres, more or less.

The above description was prepared from a field survey by CROFT LAND SURVEYING a plat of which is dated April 3, 1995; is attached hereto, made a part hereof, and reference is hereby made to that plat for additional data concerning the survey.

CROFT LAND SURVEYING

Johnny Croft

Johnny Croft
Ala. Reg. No. 11840

Tract 2

Commencing at the southwest corner of the NE¼ of the NW¼ of Section 7, Township 7 South, Range 9 East of the Huntsville Meridian, Fort Payne, DeKalb County, Alabama run N 87°35'40" E with the south boundary line of the NE¼ of the NW¼ of said Section 7 for 142.80 feet for a point of beginning.

Thence continue N 87°35'40" E with said south boundary line for 320.00 feet; thence leaving said south boundary line run N 05°00'00" E for 66.00 feet; thence run N 11°00'00" E for 201.96 feet; thence run N 60°30'00" E for 295.85 feet; thence run N 02°35'20" W for 203.35 feet; thence run S 87°35'40" W for 640.00 feet; thence run S 02°35'20" E for 600.00 feet to the point of beginning.

Said property is lying in the NE¼ of the NW¼ of Section 7, Township 7 South, Range 9 East of the Huntsville Meridian, Fort Payne, DeKalb County, Alabama and contains 6.64 acres, more or less.

The above description was prepared from a field survey by CROFT LAND SURVEYING a plat of which is date April 3, 1995; is attached hereto, made a part hereof, and reference is hereby made to that plat for additional data concerning the survey.

CROFT LAND SURVEYING

Johnny Croft

Johnny Croft
Ala. Reg. No. 11840

Tract 2a

Commencing at the southwest corner of the SW¼ of the NW¼ of Section 7, Township 7 South, Range 9 East of the Huntsville Meridian, Fort Payne, DeKalb County, Alabama run N 02°35'20" W with the west boundary line of the SW¼ of the NW¼ of said Section 7 for 205.40 feet to a fence marking the southerly right-of-way line of I-59; thence run N 43°52'55" E with said fence line for 393.62 feet for a point of beginning.

Thence continue N 43°52'55" E for 134.95 feet to an existing right-of-way marker (station 82 + 00); thence run N 65°12'10" E with said fence line for 134.79 feet; thence leaving said fence line run S 32°38'00" W for 267.63 feet to an existing iron in a spring; thence leaving said spring run in a northwesterly direction for 101.23 feet to the point of beginning.

Said property is lying in the SW¼ of the NW¼ of Section 7, Township 7 South, Range 9 East of the Huntsville Meridian, Fort Payne, DeKalb County, Alabama and contains 0.38 acres, more or less.

The above description was prepared from a field survey by CROFT LAND SURVEYING a plat of which is dated April 3, 1995; is attached hereto, made a part hereof, and reference is hereby made to that plat for additional data concerning the survey.

CROFT LAND SURVEYING

Johnny Croft

Johnny Croft
Ala. Reg. No. 11840

Tract 3

Beginning at the southwest corner of the SW¼ of the NW¼ of Section 7, Township 7 South, Range 9 East of the Huntsville Meridian, Fort Payne, DeKalb County, Alabama run N 02°35'20" W with the west boundary line of the SW¼ of the NW¼ of said Section 7 for 205.40 feet to a point on a fence marking the southerly right-of-way line of I-59; thence run N 43°52'55" E with said fence line for 393.62 feet; thence leaving said fence line run in a southeasterly direction for 101.23 feet to an existing iron in a spring; thence run S 38°46'05" W for 535.25 feet to the point of beginning.

Said property is lying in the SW¼ of the NW¼ of Section 7, Township 7 South, Range 9 East of the Huntsville Meridian, Fort Payne, DeKalb County, Alabama and contains 1.29 acres, more or less.

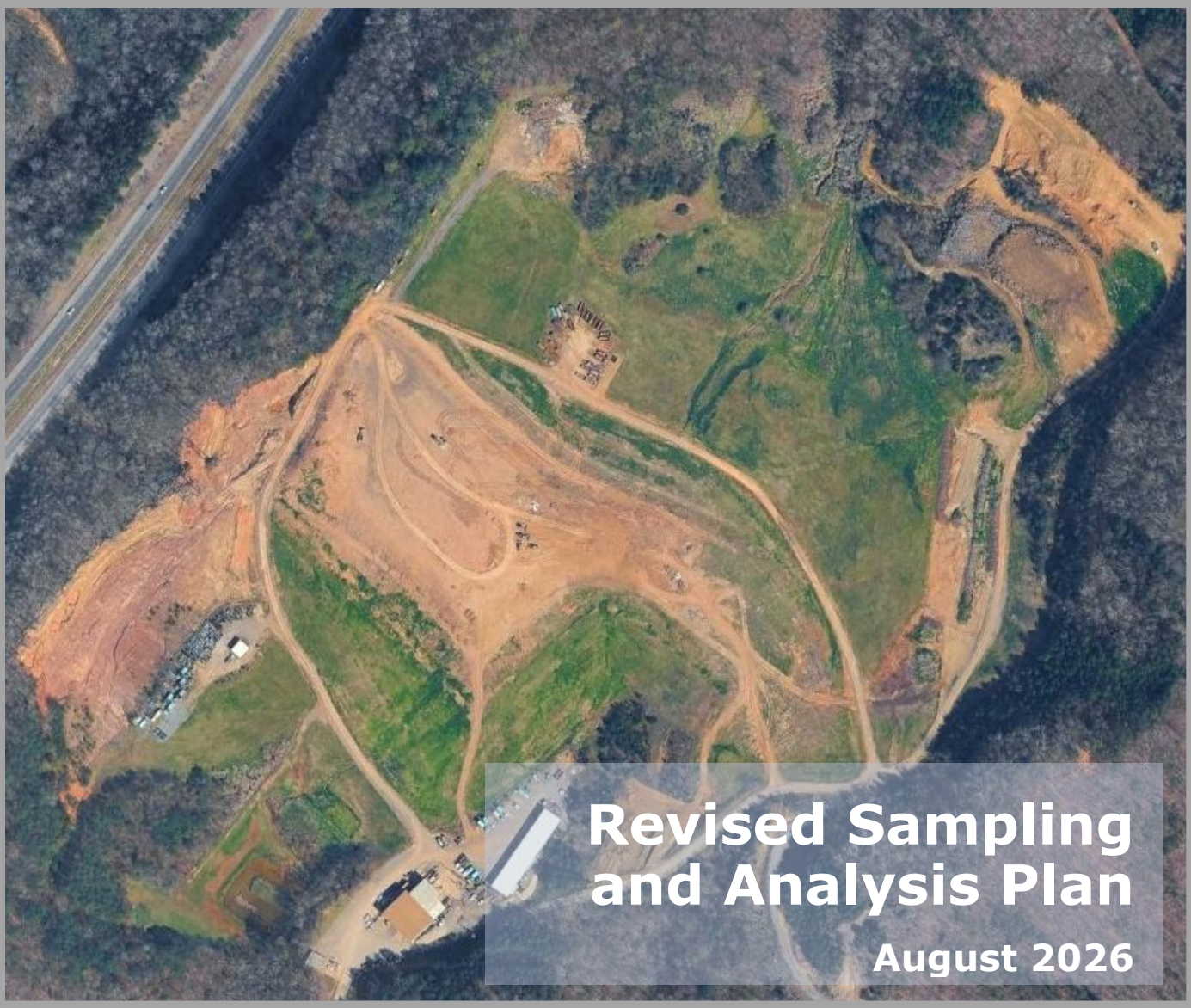
The above description was prepared from a field survey by CROFT LAND SURVEYING a plat of which is dated April 3, 1995; is attached hereto, made a part hereof, and reference is hereby made to that plat for additional data concerning the survey.

CROFT LAND SURVEYING

Johnny Croft

Johnny Croft
Ala. Reg. No. 11840

Fort Payne Landfill
Fort Payne, Dekalb County, Alabama



Revised Sampling and Analysis Plan

August 2026

THREE NOTCH GROUP

Three Notch Group.
11 West Court Square
Andalusia, AL 36420

CERTIFICATION PAGE

"I certify under penalty of law that I am a registered professional engineer experienced in hydrogeologic investigations and remediation. The groundwater monitoring system and procedures described herein have been designed and constructed to meet the requirements of ADEM Admin Code r 335-13-4-.27. The data evaluation procedures including statistical analysis methods contained herein are deemed appropriate under the requirements of ADEM Admin Code r. 335-13-4-.27(2)(l) for groundwater monitoring of the Fort Payne Landfill facility. The information submitted herein to the best of my knowledge and belief, is true accurate, and complete. I am aware that there are significant penalties for submitting false information."

James Alan Barck, PE
State of Alabama Registration No. 32719

8-17-26
Date

ALABAMA LICENSED JAB No. 32719 PROFESSIONAL 8-17-26 ENGINEER JAMES ALAN BARCK

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TABLES

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Table 2 ADEM 335-13-4 Appendix I Constituent List
Table 3 ADEM 335-13-4 Appendix II Constituent List

FIGURES

Figure 1 Site Location Map
Figure 2 Site Map with Well Locations
Figure 3 Site Geologic Map
Figure 4 Groundwater Elevation Map - 4 March, 2026

APPENDICES

Appendix A Borehole and Well Completion Logs
Appendix B Statistical Analysis Plan
Appendix C Example Field Sampling Log Form
Appendix D Example Chain of Custody Form

ERRATA SHEET

Sampling and Analysis Plan changes:
Section 2.0 Background - More information was added. page 1

Section 2.0 Background – Permit date updated. page 2

Section 4.0 Monitoring Well Network was updated and re-worded to account for monitoring well MW-2's planned abandonment/replacement. page 3

Added Section 4.2.1 Well Installation & Abandonment Procedures. page 6

Section 5.0 Groundwater Sampling Procedures - MW-2 changed to MW-2R. page 8

Section 5.1 Sampling Frequency – sampling schedule set for March and September. page 8

Section 5.4 Static Water Level Measurements – add clarification that potentiometric surface map will be generated from each sampling event with rate and direction of groundwater flow shown.

Section 5.5 Pre-Sample Purging – MW-2 changed to MW-2R. page 9

Section 7.1 number of background samples required, the proposed frequency, and procedures that will be used to demonstrate data independence and statistical validity. page 16

Section 7.3 Statistical Evaluation of Groundwater Analytical Results – fix typographical error. page 18

Section 7.3 3 Statistical Evaluation of Groundwater Analytical Results Included - All statistical tests will be accompanied by graphical representations of the data/tests performed. page 18

Section 7.4 Verification Resampling – resampling timeframe set to 30 days. page 18

Section 8.0 Reporting - sampling schedule set for March and September. page 20

Figure 3 Site Geologic Map - Created and Included
Figure 4 Groundwater Elevation Map 4 March, 2026 - Created and Included

Appendix B Statistical Analysis Plan changes:
Interwell analysis is the one method that Fort Payne is using and made changes throughout the statistical analysis plan to make that clear.

Section 1.0 Introduction – Upgrdient/Background Wells clarified as MW-4 and MW-5; Downgradient Wells clarified as MW-2 and MW-8. To be consistent with recent groundwater monitoring reports. page B-1

Section 2.1.1 statement on Dixon's and Rosner's usage included. page B-2

Section 5.1.1 Parametric Prediction Limits - clarified

Section 5.1.3 Retesting Strategy - resampling timeframe set to 30 days. page B-15

1.0 INTRODUCTION

The following revised Groundwater Sampling and Analysis Plan (GWSAP) details the sampling procedures designed to collect representative samples from the groundwater aquifer beneath the Fort Payne Landfill (Landfill) facility and the analytical procedures and QA/QC controls needed to produce reliable data. This revised GWSAP supersedes previous versions of the plan and has been incorporated into the Operations Manual for the Landfill. The provisions outlined in the GWSAP are consistent with the groundwater monitoring requirements found under ADEM Administrative Code 335-13-4-.27 and the EPA Unified Guidance for Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities (EPA, 2009). This GWSAP includes the following elements:

- Monitoring Well Construction
- Sample collection
- Field analytical procedures
- Sample preservation and shipping
- Chain-of-custody control
- Quality Assurance Project Plan
    - Field
    - Laboratory

The groundwater monitoring activities discussed in this GWSAP are to be conducted throughout the active life and post-closure period of the Landfill.

2.0 SITE BACKGROUND

The Fort Payne Landfill site is located at 1004 Dewyer Avenue SW to the southwest of Fort Payne, Dekalb County, Alabama. The property is situated within Section 7 of Township 7 South, Range 9 East (Figure 1). The geographic coordinates are approximately 34° 26’ 25” N, 85° 44’ 18” W. The landfill property was originally acquired by the City on September 24, 1956, from J.L. Eberhart and wife, Josephine Eberhart. The land reportedly has been utilized for landfilling purposes since that date.

The City of Fort Payne was initially granted a permit (Permit Number 25-02) from the Alabama Department of Environmental Management (ADEM) to operate the Fort Payne Sanitary Landfill on April 30, 1987. The current operational permit (Permit Number 25-02) was granted by ADEM on November 13, 2017 and expired November 12, 2022. As part of ADEM regulation requirements, semi-annual groundwater sampling and testing have been conducted for the monitoring wells located at the facility from 1996 until present. The landfill is comprised of 3 areas, a closed disposal area, a municipal solid waste disposal area that will be vertically expanded with the industrial C/D waste, and the permitted industrial & C/D disposal area as shown in Figure 2. Wastes approved for disposal were household garbage and rubbish, and commercial solid waste generated within the bounds of the municipal city limits.

3.0 HYDROGEOLOGIC SETTING

The Fort Payne Landfill site is located on Big Ridge adjacent to Big Wills Valley. Topography of the area is characterized by long linear anticlinal ridges and broad synclinal valleys. Surface elevations range from approximately 840 feet above mean sea level (msl) in the valley to approximately 1200 feet above msl on the ridges. Elevations at the landfill site range from 880 feet to 1160 feet above msl.

Based on geologic information published by the Geological Survey of Alabama (Bossong C.R., 1989), the site is located in the Big Wills Valley physiographic district of the Cumberland Plateau physiographic section of Alabama. The landfill site is located on Big Ridge which is underlain by the Red Mountain formation. The Red Mountain formation consists of shale and iron rich sandstones. The Red Mountain is overlain by the Devonian Frog Mountain Sandstone and the Chattanooga Shale and is underlain by the Sequatchie formation. Figure 3 is a geologic map of the site and surrounding area.

3.1 Interconnection of Aquifers

Based upon information obtained from the Geological Survey of Alabama publication *Geohydrology and Susceptibility of Major Aquifers to Contamination in Alabama, Area 2*

(Bossong C.R., 1989), the major aquifers in the region are the Pottsville, Tuscumbia- Fort Payne, and Knox- Shady aquifers. The landfill site is not within the outcrop area of any of these aquifers. The Tuscumbia-Fort Payne aquifer is stratigraphically above the site and the Knox- Shady aquifer is stratigraphically below the site. Separating the site and the aquifers are shales that are tight and relatively impermeable.

3.2 Seasonal Groundwater Fluctuation

During hydrogeologic investigation activities conducted at the Landfill in 1996, saturated conditions indicative of the saturated zone were encountered at elevation depths ranging from approximately 859 mean sea level (MSL) to 900.9 MSL. Following the installation of the wells, groundwater level measurements were taken on October 1993, October 1996, and November 1996 to establish the seasonal high-water level within the aquifer. Over the three year period the groundwater levels were observed to fluctuate over a range of 9.7 to 51.1 feet with the seasonal high interpreted to correspond to the potentiometric levels observed on October 01, 1996.

Figure 4 illustrates the interpreted potentiometric surface of the uppermost aquifer based on water level readings collected on November 4, 1996. As shown in Figure 4 the general direction of groundwater movement beneath the Landfill facility is to the southeast with an average gradient of 0.0003.

4.0 MONITORING WELL NETWORK

The current monitoring network at the Landfill consists of four monitoring wells (MW-2, MW-4, MW-5, & MW-8) located as shown in Figure 2. Monitoring wells MW-4, MW-5, and MW-8 have been constructed in accordance with the standards and procedures detailed in the Alabama Environmental Investigation and Remediation Guidance (AEIRG). MW-2 will need to be properly abandoned and replaced. Borehole logs showing construction details for MW-4 and MW-5 monitoring wells are included in Appendix A.

4.1 Soil Boring Procedures

From 1981 to 1993, a network of groundwater monitoring wells was installed at the Landfill

facility as part of a hydrogeologic investigation of the site. The locations for the monitoring wells were selected to provide a distribution of data points both upgradient and downgradient of the landfill.

The soil borings for the monitoring wells were installed using environmental drilling techniques and completed in accordance with regulatory requirement. During the drilling activities representative samples of the encountered geologic units were collected and described in the field by the site geologist with respect to physical characteristics, recovered interval and evidence of groundwater.

4.2 Monitoring Well Construction

Monitoring Well MW-2 was installed by others in August 1981, in a borehole 62 feet deep with 20 feet of 4-inch PVC screen (slot size unknown), and 44 feet of 4-inch PVC riser. It is unknown if a sand pack was placed around the screen, and it is very unlikely that a bentonite seal was placed in the borehole annulus above the screen. The open space between the well riser and the borehole wall was probably not grouted in Monitoring Well MW2. Utilizing the Drillers Log for Monitoring Well MW-2 there was "fill dirt and topsoil" from the surface to a depth of 18.0 feet; "tan yellow clay" to a depth of 23.5 feet; "tan yellow clay with pieces of limestone" to a depth of 37.0 feet; and "solid limestone" to a depth of 62.0 feet.

Monitoring Well MW-4 was installed in September 1993, in an 8.5-inch diameter borehole. The monitoring well was constructed of 20 feet of threaded Schedule 80 4-inch PVC screen with 0.010 slots, and 240 feet of threaded Schedule 80 4-inch PVC riser (no glues or sealants used). A PVC plug was put on the bottom of the screen, and the screen was set at the bottom of the borehole. A coarse (#2) filter sand was placed around the screen to 10 feet above the screen. A bentonite chip seal, 5 feet thick, was placed on top of the filter sand. Sur-grout bentonite slurry was placed between the riser and the borehole wall from the top of the bentonite chip seal to the surface. An 8-inch steel protective casing was placed (in concrete) over the well riser from 2.5 feet below the surface to 2.5 feet above the surface. A concrete pad was constructed at the surface around the base of the protective overing. Four steel bumper posts were installed in the concrete

pad around the protective casing to provide further protection for the monitoring well.
Due to the depth of the well and the difficulty in bailing groundwater from MW4 until the Ph, temperature, and specific conductivity stabilized, a stainless steel 3-inch diameter 0.5 hp Grundfos pump was installed in the well for purging and to take groundwater samples. The pipe from the pump to the surface is constructed of Schedule 80 1-inch threaded PVC with threaded PVC couplings (no glue or sealants). A 12 AWG Type TW submersible pump electrical cable runs inside the well riser from the surface to the pump. The pump pipe and the electrical cable is set through a well seal at the top of the riser. The pump is set at a depth of 240 feet below the surface, and the pump produces 7.5 gallons of water per minute after initial drawdown.

Monitoring Well MW-5 was installed in September 1993, in an 8.5-inch diameter borehole. The monitoring well was constructed of 20 feet of threaded Schedule 80 4-inch PVC screen with 0.010 slots, and 449 feet of threaded Schedule 80 4-inch PVC riser (no glues or sealants used). A PVC plug was put on the bottom of the screen, and the bottom of the screen was set 4 feet above the bottom of the borehole (borehole cuttings were in the bottom 4 feet). A coarse (#2) filter sand was placed around the screen to 10 feet above the screen. A bentonite chip seal, 5 feet thick, was placed on top of the filter sand. Sur-grout bentonite slurry was placed between the riser and the borehole wall from the top of the bentonite chip seal to the surface. An 8-inch steel protective casing was placed (in concrete) over the well riser from 2 feet below the surface to 3 feet above the surface. A concrete pad was constructed at the surface around the base of the protective covering. Four steel bumper posts were installed in the concrete pad around the protective casing to provide further protection to the monitoring well.

Due to the depth of the well and the difficulty in bailing groundwater from MW5 until the Ph, temperature, and specific conductivity stabilized, a stainless steel 3-inch diameter 0.75 hp Grundfos pump was installed in the well for purging and to take groundwater samples. The pipe from the pump to the surface is constructed of Schedule 80 1-inch threaded PVC with threaded PVC couplings (no glue or sealants). A 12 AWG Type TW submersible pump electrical cable runs inside the well riser from the surface to the pump. The pump pipe and the electrical cable is set through a well seal at the top of the riser. The pump is set at a depth of 380 feet below the

surface, and the pump produces 2.5 gallons of water per minute after initial drawdown.

There is no available Monitoring Well construction details for MW-8. The only details currently known are the total well depth of 84 feet below ground surface and the well elevation of 937.18 mean sea level (MSL).

4.2.1 Well Installation & Abandonment Procedures

Any changes to the current shallow monitoring well network at the Landfill shall be done at the direction of ADEM. Well installation and well abandonment activities are to be conducted by an Alabama licensed driller.

Prior to any monitoring well installation, a soil boring should be advanced using a hollow-stem auger or sonic drilling techniques. As the soil boring is advanced, soil core samples should be collected using either a 5-foot continuous core-barrel sampler advanced with the hollow-stem augers or a 10-foot continuous core-barrel advanced through any casing.

During soil boring advancement, representative samples should be collected from the recovered soil core. Representative portions of the soil from each sample interval should be retained for soil classification and description. Once depth to groundwater is determined the soil boring should be converted into a 2-inch monitoring wells. Any new installed monitoring wells added to the current monitoring well network should follow current site the nomenclature. If an existing monitoring well is abandoned and replaced, the nomenclature should indicate that the monitoring well was replaced i.e. MW-#R. The groundwater should be verified prior to well installation. The monitoring well should be drilled and installed so that the screen interval intersects with groundwater and allows for seasonal groundwater elevation fluctuations. Following the construction of previous site monitoring wells, the well should be constructed with 20 feet of 0.020-inch slotted PVC screen with an attached silt trap and 2-inch diameter schedule PVC riser casing to ground surface. The annular space of the boreholes should be filled with coarse grained 6/10 sand from the bottom of the borehole to approximately 0.5 feet above the screened interval. One foot of hydrated bentonite chips should be placed above the sand filter and the remainder of the annular space should be filled with cement grout to approximately 6 inches below the ground

surface. The monitoring well should be completed with a concrete pad and protective stickup vault. Following installation, the monitoring wells should be developed by surging and pumping using an electric submersible pump. A soil boring log and well construction record should be completed for each monitoring well installed.

Abandonment of any monitoring well should entail removing any protective vault and concrete pad from each well location. Using a casing puller attachment for a drill rig, the PVC casing and screen should be removed from each well. A tremie pipe should then lowered to the bottom of each well bore and a cement/bentonite grout mixture should be pumped into the well until the level reaches approximately one foot below surface grade. The tremie pipe should be removed, and the cement mixture should be allowed to settle in the boring. Additional cement should be added from the surface to maintain the level of approximately one foot below surface grade. Once the cement has stabilized, the remaining one foot of the open borehole should then be filled and finished to match the surrounding surface grade. All debris generated during the abandonment activities should be loaded and hauled off-site. A well abandonment record should be obtained for each monitoring well abandoned.

4.3 Aquifer Testing

To determine the hydraulic conductivity of the alluvial aquifer beneath the Fort Payne Landfill facility aquifer testing was conducted using the installed monitoring wells. On September 30, 1996, pump and recovery testing was conducted at monitoring wells MW-4 and MW-5 to collect data for use in calculating the average hydraulic conductivity of the saturated zone. The initial hydraulic head was recorded at the start of each test. Each well was pumped until a substantial amount of water was withdrawn from the wells. Pumps were turned off and the water was allowed to stabilize to the original hydraulic head. As the wells recovered, the change in the elevation of the water level was recorded with time.

The data recorded at each well during the pump and recovery tests and the Hvorslev Method was used for calculation of hydraulic conductivity. The calculated K values ranged from 0.76 ft/day to 2.86 ft/day. Using the transmissivity of the surficial aquifer ranged from 3.80 ft^3/day to 14.30

ft^3/day.

5.0 GROUNDWATER SAMPLING PROCEDURES

Groundwater sample collection procedures are in accordance with the ADEM Alabama Environmental Investigation and Remediation Guidance (AEIRG) Rev. 4.0 February 2017. Monitoring wells MW-4 and MW-5 at the Landfill are supposed to be equipped with dedicated submersible centrifugal pumps. The dedicated centrifugal pumps installed in each of the facility monitoring wells are designed to be durable and low maintenance. MW-2R and MW-8 will be low flow purged with an electrical submersible pump. Any sampling equipment or procedural changes occurring during the sampling event will be documented on field sampling log and subsequently in the operating records for the facility.

5.1 Sampling Frequency

Groundwater sampling activities at the Landfill facility will be conducted on a semi-annual basis with groundwater samples being collected during the months of March and September of each year. Should re-sampling be required, groundwater samples will be collected within 30 days of receiving the analytical results from the semi-annual detection monitoring event. Resampling will be conducted following the same procedures required for semi-annual sample collection.

5.2 Field Instrument Calibration

Normal laboratory procedures are to be followed in measuring field parameters; that is, all field instruments are to be properly calibrated in the field before being used. Prior to initial use and as necessary throughout each sampling event, the field instruments will be properly calibrated according to the specifications and procedures specified by the manufacturer of the equipment being used. Calibration of the instruments will be performed at a minimum frequency of once per day prior to beginning each day's sampling activities. The calibration standards used will be appropriate for the range of values expected or historically observed for the groundwater beneath the facility. The date and time of all meter calibrations are to be recorded in the field sampling log.

5.3 Equipment Decontamination

Any equipment that will come into contact with the groundwater samples will be thoroughly decontaminated prior to initial use and between sampling locations. The decontamination procedures will consist of a wash using a solution of distilled water and Alconox soap followed by a rinse with distilled water. The flow-thru cell and multi-probe sonde will be disassembled after each use and the individual components decontaminated separately. During decontamination care will be taken not to damage the membranes on the pH, DO, and redox probes.

5.4 Static Water Level Measurements

Based on the previously conducted hydrogeological evaluation of the Landfill facility it is evident that seasonal water level fluctuations of greater than several feet can occur in the shallow aquifer beneath the facility. To allow for an accurate interpretation of the groundwater flow within the shallow aquifer during each sampling event, a complete set of static water level measurements will be obtained from all of the site monitoring wells during a single 24-hour period.

A portable electronic water-level probe will be used to measure the depth to groundwater below the top of the well casing. Groundwater levels will be measured to the nearest 0.01 foot and recorded on the field sampling forms. The top of casing elevation relative to mean sea level has been established by a professional survey. Based on the top of casing elevation and the measured water level, a groundwater elevation at each monitoring well can be calculated to allow for an interpretation of the direction and magnitude of the hydraulic gradient within the upper saturated zone beneath the Landfill at the time of sampling. A potentiometric surface map will be generated from each sampling event with rate and direction of groundwater flow shown.

5.5 Pre-Sample Purging

To ensure that samples collected from the wells are representative of the water in the formation, each of the monitoring wells will be properly purged prior to sampling. This will be accomplished through the removal of groundwater from the well until the field measurements for pH, specific conductance, and turbidity have stabilized. Prior to collection of groundwater samples, MW-4

and MW-5 will be purged with their equipped dedicated submersible centrifugal pumps and MW-2R and MW-8 will be purged using low-flow sampling techniques. During the well purging activities, physical and chemical properties of the groundwater will be monitored using a flow-thru cell equipped with a multi-probe sonde connected to a properly calibrated field instrument.

Under low flow rate conditions, the field parameters should stabilize after the removal of at least one well volume of groundwater. The final purge volumes will be dependent upon the stabilization of the field parameters measured during purging. Field parameters will be considered stabilized when three successive measurements of pH and specific conductivity vary by no more than 10 percent and the turbidity of the groundwater is less than 10 NTUs, if achievable. The purge data will be included in the field notes for the sampling event. An example of a groundwater field sampling log form can be found in Appendix C.

All monitoring wells will be sampled using a submersible pump. The pump is not to be turned off until all required samples have been collected. Dedicated sampling tubes will be used at each well. This tube will be rinsed with distilled water and attached to the pump discharge nozzle on the wellhead. The sampling tubing will then be attached to the bottom port on the flow-tru cell to ensure that the cell remains filled with water throughout the purging and sampling activities.

The pumping rate will be adjusted to produce a consistent flow of water and to minimize the amount of drawdown in the well. The target maximum drawdown with the well should be less than 0.1 m (0.33 ft). The pumping rate will be measured periodically and recorded in the field sampling field log.

5.6 Field Parameter Measurements

Six field parameters - temperature, pH, dissolved oxygen (DO), oxidation/reduction potential (redox), specific conductivity (SpC), and turbidity will be continuously monitored during the purging and sampling of each well using a flow-thru cell and multi-probe sonde. Periodic values for these parameters will be recorded in the field sample log for each well.

5.7 Sample Collection

Samples must be collected so that no foreign material is introduced into the sample and no material of interest escapes from the sample prior to analysis. Groundwater sampling procedures will conform to the protocols of EPA SW-846 - Test Methods for Evaluating Solid Waste, Physical/Chemical Methods. Table 2 outlines the analytical parameters to be used for the groundwater monitoring program at the Landfill.

In the field, groundwater will be collected directly into the appropriate containers and preserved as specified in accordance with SW-846 protocols (see Table 2 and Table 3). Standard laboratory practice is to provide the sampling kits with the containers pre-preserved as appropriate for the required analytical procedures. Maximum holding times are listed in Appendix G, Table 1 of the AEIRG (ADEM, February 2017).

5.8 Sample Labeling

Prior to sample collection a permanent adhesive label will be affixed to each sample container. The label will be completed with the site name, well number, time and date of sample collection laboratory analysis, preservation method, and the initials of the individual collecting the sample. Sample containers may be prelabeled prior to mobilizing to the field.

5.9 Sample Preservation and Handling

All samples are to be collected, preserved, and handled in accordance with EPA's SW-846. The analysis of the collected groundwater samples will be performed by an off-site third-party laboratory services provider. Prior to each sampling event the site project manager will contact the analytical laboratory and provide notification of the anticipated schedule for sample collection as well as the number of samples to be collected, the required analyses to be performed, and the required turn-around time for sample results. The analytical laboratory will provide sampling kits consisting of the necessary sample containers with the appropriate preservatives required for the analytical methods to be performed along with shipping containers. In addition to the well samples, the sampling kits will include containers for the collection of a field blank, a trip blank, and a field duplicate as discussed in the QA/QC section.

5.10 Chain of Custody Documentation

Upon receipt of the kits, field personnel should complete an inventory of the contents to confirm that the containers are adequate for the number of wells and specified analytes and contain the proper preservative. Sample containers may be pre-labeled prior to being transported to the site. The individual sample containers are not to be opened until used in the field. Up until the time of use, sample kits are to be stored in a secure location that is under the direct control of the site project manager.

All collected samples are to remain in the custody of the site project manager until they are delivered to the laboratory or are transferred to the custody of a common carrier for shipment to the laboratory. In cases where samples leave the direct control of the site project manager, such as shipment to a laboratory by a common carrier (FedEx, UPS, etc.), a custody seal will be placed on the shipping container or on the individual sample bottles to ensure that the samples have not been opened or otherwise disturbed during transportation.

To establish and maintain the documentation necessary to trace sample possession from the time of collection, a chain of custody record will be completed and will accompany the samples. The chain of custody documentation will contain the following information:

- Unique sample identifier
- Date and time of sample collection
- Sample type (soil, groundwater, air, etc.)
- Number of containers per sample
- Parameters requested for analysis
- The signature of the site project manager responsible for collecting the samples
- The name, signature and affiliation of each person who had direct control of the samples

It will not be necessary to obtain the signature of common carrier personnel if the custody seal on the shipping container remains intact. An example of a chain of custody form is included in Appendix D.

5.11 Field Quality Assurance/ Quality Control Procedures

To verify that the sample collection and handling process has not affected the quality or integrity of the samples, a minimum of one field blank, one field duplicate and one trip blank will be collected during each sampling event. The results of the analysis of the blanks will not be used to correct the groundwater data. If contaminants are found in the blanks, an attempt to identify the source of contamination will be initiated and corrective action, including re-sampling if necessary, will be evaluated.

5.11.1 Field Blank

For the purposes of the groundwater monitoring program at the Landfill facility a field blank will consist of a set of sample containers filled at the monitoring well site using deionized water. The field blank will be submitted for laboratory analysis of the constituents being analyzed under the current monitoring program. The frequency of field blank collection and submittal will be a minimum of one per sampling event.

The field blank will be used to evaluate potential sample contamination by airborne site contaminants (dust, exhaust, fuel vapors) not associated with the groundwater samples collected. Site waste disposal activities and wind direction will determine where the field blank samples will be collected.

5.11.2 Field Duplicate

For the purposes of the groundwater monitoring program at the Landfill, a field duplicate will be a second set of sample containers taken from a single well at the same time as the standard sample from that location. In collecting the field duplicate, the sample containers for both the standard sample and the duplicate will be filled sequentially. The field duplicate will be labeled in such a manner that it is submitted blind to the laboratory for analysis without any indications of the well from which it was collected. A minimum of one field duplicate will be collected per sampling event.

5.11.3 Trip Blank

Trip blanks are used to determine if samples were contaminated during handling, storage and/or transportation to the analytical laboratory. The trip blank provides a control measure for sample handling variability that may result in a positive bias of contaminant concentrations. A trip blank will be prepared and provided by the analytical laboratory prior to each sampling event and will be stored with the sampling containers and groundwater samples throughout the sampling event. The trip blank will be shipped with the other samples and submitted for analysis. Trip blanks will not be opened after preparation or prior to reaching the analytical laboratory. If samples are to be shipped, a trip blank will be required for each shipment but not for each shipping container/cooler.

5.11.4 Sample Packing and Shipment

Once all of the samples are collected and prepared and the chain-of-custody forms are completed, the samples will be prepared for shipment to the analytical laboratory. Insulated sample shipping containers will be used to provide adequate protection for the samples and to maintain the samples at a constant temperature at or below 4°C. Each shipping container will be supplied by the analytical laboratory with a temperature blank to ensure that the samples have been maintained at the proper temperature.

Each shipping container will be equipped with an inner waterproof liner into which the samples will be placed along with a sufficient volume of ice to cool and maintain the temperature of the sample while in transit to the analytical laboratory. The inner liner will be secured in such a manner as to prevent fluids from leaking from the shipping container while in transit to the laboratory. The completed chain-of-custody forms will be placed inside the shipping container and the container will be sealed with shipping tape and secured with a custody seal. The containers will be shipped by express service to the contract laboratory for analysis.

5.11.5 Field Data Validation Procedure

After completing a sampling program, the field data package (field logs, calibration records, chain of custody forms, etc.) will be reviewed for completeness and accuracy. Some of the items

considered in the Field Data Package Validation Procedure include but are not limited to the following:

- A completeness review of field data contained on water sampling logs;
- A verification that sample blanks were properly prepared, identified, and analyzed;
- A check on field analyses for equipment calibration and condition; and
- A review of chain of custody forms for proper completion, signatures of field personnel and the laboratory sample custodian, and dates.

6.0 LABORATORY ANALYTICAL PROCEDURES

All analytical procedures will comply with EPA SW-846 EPA *Test Methods for Evaluating Solid Waste - Physical/Chemical Methods,* as updated and other EPA-approved methods. The monitoring program constituents, along with recommended test methods and PQLs, are listed in Table 2 and Table 3. Alternate methods may be used if they have the same or lower PQL. Methods with higher PQLs will be considered if the concentration of the parameter is such that an alternate test method with a higher PQL will provide the same result.

6.1 Limits of Quantitation (LOQs)

Laboratory-specific LOQs will be used as the reporting limits (RLs) for quantified detections of required monitoring constituents. Laboratory LOQs should be reported with the sample results.

6.2 Limits of Detection (LODs)

Laboratory-specific LODs will be used as the RLs for estimated detections of required monitoring constituents. Constituents detected at concentrations above the LOD but below the LOQ will be reported as estimated with a qualifying "J" flag on the laboratory certificates of analysis. Laboratory LODs should be reported with the sample results.

6.3 Method Blanks

Laboratory method blanks are used during the analytical process to detect any laboratory-introduced contamination that may occur during analysis. A minimum of one method blank will be analyzed by the laboratory per sample batch.

6.4 Matrix Spike and Matrix Spike Duplicate Samples

A matrix spike/matrix spike duplicate sample will be run with every sample batch. The relative percent difference between the spike and the spike duplicate sample should be less than 20 percent. Higher values may indicate matrix interference. Changes in detection limits due to matrix problems or interferences that may affect detection limits for individual samples will be noted in the final analytical report.

7.0 GROUNDWATER DATA EVALUATION

Evaluation of the groundwater data will be completed as discussed in the following subsections. These criteria represent a conservative approach to groundwater analysis and incorporate appropriate statistical and other evaluation methodologies. A detailed discussion of the statistical approach is provided in the facility Statistical Analysis Plan included as Appendix B.

7.1 Establishing Background

As required under ADEM Admin. Code r. 335-13-4-.27(2)(j), the background concentrations of each of the analytical constituents will be established by the collection of a minimum of four (4) independent samples from each of the facility's monitoring wells. Throughout the groundwater monitoring program, a review will be conducted periodically to determine if background concentrations should be updated. The EPA's Unified Guidance recommends this review be conducted at a frequency of 2 to 3 years.

If background wells are added to the monitoring network, a series of 8 independent samples will be collected from each new background well(s) for the required analytical constituents. The sampling frequency will be over a quarterly basis in order to collect the minimum number of samples to ensure the statistical independence of the sample. To determine statistical validity the

Unified Guidance recommends the use of t-tests or if the data is not normally distributed then a non-parametric variant.

7.2 Detection Monitoring Analytical Requirements

Upon initiation of the groundwater monitoring program detail in the GWSAP, representative samples will be collected from each of the groundwater monitoring wells at the Landfill facility on a semi-annual basis and submitted for laboratory analysis of the constituents listed in Appendix I to ADEM Admin. Code r. 335-13-4. The list of Appendix I Constituents is included in Table 2. With the approval of the Department, constituents may be deleted from the detection monitoring program if it can be shown that the removed constituents are not reasonably expected to be contained in or derived from the waste contained in the unit.

Groundwater pH and Specific Conductance are also included under Appendix I, however these parameters will be determined by measurements made in the field at the time of groundwater sample collection using a properly calibrated meter.

7.3 Statistical Evaluation of Groundwater Analytical Results

As required under ADEM Admin. Code r. 335-13-4-.27 the analytical results of each of the Appendix I List constituents (found in Table 2) will be compared to the established background concentration for that constituent using one or more of the approved statistical methods details in the Unified Guidance for Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities (EPA, 2009). The statistical method(s) used for the evaluation will be appropriate for the distribution of the data. A more detailed discussion of the statistical methods and procedures is provided in the facility Statistical Analysis Plan included in Appendix B.

In accordance with ADEM Admin. Code r. 335-15-4-.27(2)(l) the selected statistical test to be used to evaluate the groundwater monitoring data at the Landfill facility will be a prediction interval or tolerance interval method as allowed under ADEM Admin. Code r. 335-13-4-.27(2)(l)3, unless this test is determined to be inappropriate for the background data set. It may be necessary to employ more than one statistical method to evaluate the data. The appropriate

statistical method(s) will be performed on each individual constituent in each monitoring well following each semi-annual sampling event.

If one or more alternative statistical tests are used, then an adequate number of independent samples for the statistical method(s) will also be collected within the compliance period. The level of significance for individual well comparisons shall be no less than 0.01 and no less than 0.05 for multiple comparisons for any statistical test used.

All statistical tests will be accompanied by graphical representations of the data/tests performed.

7.4 Verification Resampling

If it should be determined that a statistically significant increase (SSI) above background is indicated for one or more of the required analytical constituents, resampling of the groundwater from the affected well for that particular constituent may be performed within a period not to exceed 30 days. If the results of the resample do not indicate an SSI then a second resample may be collected within a period of 30 days. If the results of the second resample also do not indicate an SSI then the initial result will be considered a false positive and detection monitoring will continue. If the results of either of the resamples indicate an SSI the initial result will be considered valid and will be reported as an SSI above background.

7.5 Alternative Source Demonstration (ASD)

It may be demonstrated at any time that a source other than the landfill has caused contamination that has resulted in the identification of an SSI above background for an Appendix I list (found in Table 2) or Appendix II list constituent. In addition to an upgradient source, other potential sources including fugitive emissions, cross contamination at the analytical laboratory, an error in sampling, carry over during analysis, statistical evaluation, or natural variation in groundwater quality may be evaluated. A report documenting this demonstration must be certified by a qualified geologist or engineer and be placed in the operating record. If a successful demonstration is made and documented, detection monitoring may continue. If a successful demonstration is not made, an assessment monitoring program must be initiated.

7.6 Assessment Monitoring Analytical Requirements

If it should be determined after resampling, that one or more of the constituents listed under Appendix I (Table 2) are present at a concentration that represents a statistically significant increase above background, an alternate source demonstration will be completed. If no alternate source for the statistically elevated constituent is identified, then Assessment Monitoring will be initiated in accordance with the requirements under ADEM Admin Code r.335-13-4-.27(4). Under Assessment Monitoring, analysis for the constituents listed in Appendix II to ADEM Admin Code r.335-13-4 will be required in addition to the Appendix I list constituents (Table 2). The list of Appendix II Constituents is included in Table 3.

Appendix II list sampling will be completed for the downgradient monitoring well exhibiting a statistically significant increase above background for two consecutive monitoring events. If any Appendix II list parameter is detected, that parameter will be added to the monitoring program for that specific well. Subsequent assessment monitoring will consist of the Appendix I list and the detected Appendix II list parameter, if any are detected.

For each of the constituents listed in Appendix II, a groundwater protection standard (GWPS) will be established. The GWPS will be the greater of either the published maximum contaminant level (MCL) for that constituent or the background level of that constituent as determined from the statistical evaluation procedures discussed in the facility Statistical Analysis Plan (Appendix B).

If the concentrations of all Appendix II constituents are shown to be at or below background values, using the statistical procedures detailed in Appendix B for two consecutive sampling events, the landfill may return to detection monitoring following proper notification to ADEM.

7.7 Comparison to Groundwater Protection Standards

Following the establishment of GWPS under the Assessment Monitoring Program, detected constituents will be statistically compared to the approved GWPS using one of the methods discussed in the Statistical Analysis Plan (Appendix B).

If the concentrations of any Appendix II constituents are found to be above background values, but all concentrations are below the GWPS, assessment monitoring will continue. If one or more Appendix II constituents are detected at statistically significant levels (SSL) above the GWPS, a notification must be provided to ADEM within 14 days of this finding. An alternative source demonstration (ASD) may be performed to determine if the SSI is the result of a source other than the landfill. If a successful ASD is made, assessment monitoring must continue. The landfill may return to detection monitoring once the Appendix II constituent concentrations are determined to be below background for two consecutive monitoring periods. If a successful ASD cannot be made, an assessment of corrective measures (ACM) must be initiated.

7.8 Corrective Action

If it should be determined that any of the constituents listed under Appendix II exceed their respective GWPS then it will be necessary to initiate an Assessment of Corrective Measures (ACM) as required under ADEM Admin Code r.335-13-4-.27(5)(a) and to implement a corrective action program as required under ADEM Admin Code r.335-13-4-.27(5)(e). During corrective action, groundwater monitoring will continue to be conducted according to the procedures and schedule discussed above.

8.0 REPORTING

A semi-annual report will also be prepared following each semi-annual sampling event as required under ADEM Admin Code r. 335-13-4-.27. The semi-annual reports will be submitted for ADEM review within 90 days of the March and September sampling events.

Each semi-annual report will follow the format and include the content defined in the ADEM Alabama Groundwater Monitoring Reporting Guidance for Solid Waste Facilities (March, 2011). The semi-annual report will include at a minimum:

- A discussion of the current status of the groundwater monitoring program at the Landfill.
- A discussion of any circumstances that occurred during the current period that required changes or deviations from the established groundwater monitoring program.

- A determination of the groundwater flow direction and gradient beneath the Landfill.
- A discussion of the current groundwater monitoring results.
- Recommendations for changes or additional actions to be taken during future monitoring activities.
- A tabulation of current and historical groundwater monitoring data.
- Copies of the laboratory analytical reports for the current period.
- Copies of the field sampling logs for the current period.

In accordance with the requirements of ADEM Admin. Code 335-13-4-.27(4)(g), the Landfill will submit a notification to ADEM within 14 days of the initial detection of any of the constituents found in Appendix II to ADEM Admin. Code r. 335-13-4. A copy of the notification will also be placed in the operating record for the Landfill Facility.

9.0 REFERENCES

ADEM Alabama Groundwater Monitoring Reporting Guidance For Solid Waste Facilities (March, 2011)

ADEM, 2017, Alabama Environmental Investigation and Remediation Guidance (AEIRG), 112p.

EPA, 2009, Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities Unified Guidance, EPA 530-R-09-007, 888p.

TABLES

TABLE 1
MONITORING WELL CONSTRUCTION DETAILS

Well No.	Depth to Groundwater (ft-btc)	Screened Interval[2] (ft-bgl)	Total Depth[1] (ft-btc)	Top of Casing Elev. (ft-msl)
MW-2	31	42 - 62	62	903.62
MW-4	148	234 - 254	254	1035.30
MW-5	263	434 - 454	454	1150.38
MW-8	49	Unknown	84	888.38

1) Measured from top of casing (btc)
2) Measured from ground surface during well installation (bgl)

TABLE 2
335-13-4-APPENDIX I CONSTITUENTS FOR DETECTION MONITORING[1]

	Common Name[2]	CAS Number[3]
	pH[4]	N/A
	Specific Conductance[4]	N/A
	Inorganic Constituents	
1.	Antimony	Total
2.	Arsenic	Total
3.	Barium	Total
4.	Beryllium	Total
5.	Cadmium	Total
6.	Chromium	Total
7.	Cobalt	Total
8.	Copper	Total
9.	Lead	Total
10.	Mercury	Total
11.	Nickel	Total
12.	Selenium	Total
13.	Silver	Total
14.	Thallium	Total
15.	Vanadium	Total
16.	Zinc	Total
	Organic Constituents	
17.	Acetone	67-64-1
18.	Acrylonitrile	107-13-1
19.	Benzene	71-43-2
20.	Bromochloromethane	74-97-5
21.	Bromodichloromethane	75-27-4
22.	Bromoform; Tribromomethane	75-25-2
23.	Carbon disulfide	75-15-0
24.	Carbon tetrachloride	56-23-5
25.	Chlorobenzene	108-90-7
26.	Chloroethane; Ethyl chloride	75-00-3
27.	Chloroform; Trichloromethane	67-66-3
28.	Dibromochloromethane; Chlorodibromomethane	124-48-1
29.	1,2-Dibromo-3-chloropropane (DBCP)	96-12-8
30.	1,2-Dibromoethane; Ethylene dibromide; EDB	106-93-4
31.	o-Dichlorobenzene; 1,2-Dichlorobenzene	95-50-1
32.	p-Dichlorobenzene; 1,4-Dichlorobenzene	106-46-7
33.	trans-1,4-Dichloro-2-butene	110-57-6
34.	1,1-Dichloroethane; Ethylidene chloride	75-34-3
35.	1,2-Dichloroethane; Ethylene dichloride	107-06-2
36.	1,1-Dichloroethylene; 1,1-dichloroethene; Vinylidene chloride	75-35-4
37.	cis-1,2-Dichloroethylene; cis-1,2Dichloroethene	156-59-2
38.	trans-1,2-Dichloroethylene; trans-1,2-Dichloroethene	156-60-5

TABLE 2 (cont)
335-13-4-APPENDIX I CONSTITUENTS FOR DETECTION MONITORING[1]

	Common Name[2]	CAS Number[3]
39.	1,2-Dichloropropane; Propylene dichloride	78-87-5
40.	cis-1,3-Dichloropropene	10061-01-5
41.	trans-1,3-Dichloropropene	10061-02-6
42.	Ethylbenzene	100-41-4
43.	2-Hexanone; Methyl butyl ketone	591-78-6
44.	Methyl bromide; Bromomethane	74-83-9
45.	Methyl chloride; Chloromethane	74-87-3
46.	Methylene bromide; Dibromomethane	74-95-3
47.	Methylene chloride; Dichloromethane	75-09-2
48.	Methyl ethyl ketone; MEK; 2-Butanone	78-93-3
49.	Methyl iodide; Iodomethane	74-88-4
50.	4-Methyl-2-pentanone; Methyl isobutyl ketone	108-10-1
51.	Styrene	100-42-5
52.	1,1,1,2-Tetrachloroethane	630-20-6
53.	1,1,2,2-Tetrachloroethane	79-34-5
54.	Tetrachloroethylene; Tetrachloroethene; Perchloroethylene	127-18-4
55.	Toluene	108-88-3
56.	l,l,l-Trichloroethane; Methylchloroform	71-55-6
57.	1,1,2-Trichloroethane	79-00-5
58.	Trichloroethylene; Trichloroethene	79-01-6
59.	Trichlorofluoromethane; CFC-11	75-69-4
60.	1,2,3-Trichloropropane	96-18-4
61.	Vinyl acetate	108-05-4
62.	Vinyl chloride	75-01-4
63.	Xylenes	1330-20-7

Notes

[1] This list contains 47 volatile organics for which possible analytical procedure provided in EPA Report SW-846, "Test Methods for Evaluating Solid Waste," Third Edition, November 1986, as revised December 1987, includes Method 8260; and 15 metals for which SW-846 provides either Method 6010 or a method from the 7000 series of methods.

[2] Common names are those widely used in government regulations, scientific publications, and commerce; synonyms exist for many chemicals.

[3] Chemical Abstracts Service registry number. Where "Total" is entered, all species in the groundwater that contain this element are included.

[4] State specific requirements.

TABLE 3

335-13-4-APPENDIX II LIST OF HAZARDOUS INORGANIC AND ORGANIC CONSTITUENTS[1]

Common Name[2]	CAS Number[3]	Chemical Abstracts Service Index Name[4]	Suggested Methods[5]	PQL (□g/L)[6]
Acenaphthene	83-32-9	Acenaphthylene, 1,2-dihydro-	8100 8270	200 10
Acenaphthylene	208-96-8	Acenaphthylene	8100 8270	200 10
Acetone	67-64-1	2-Propanone	8260	100
Acetonitrile; Methyl cyanide	75-05-8	Acetonitrile	8015	100
Acetophenone	98-86-2	Ethanone, 1-phenyl-	8270	10
2-Acetylaminofluorene; 2-AAF	53-96-3	Acetamide, N-9H-fluoren-2-yl-	8270	20
Acrolein	107-02-8	2-Propenal	8030 8260	5 100
Acrylonitrile	107-13-1	2-Propenenitrile	8030 8260	5 200
Aldrin	309-00-2	1,4,5,8,-Dimethanonaphthalene 1,2, 3,4,10,10-hexachloro-1,4,4a,5,8, 8a-hexahydro-(1a,4a, 4aß,5a, 8a,8aß)-	8080 8270	0.05 10
Allyl chloride	107-05-1	1-Propene, 3-chloro-	8010 8260	5 10
4-Aminobiphenyl	92-67-1	[1,1'-Biphenyl]-4-amine	8270	20
Anthracene	120-12-7	Anthracene	8100 8270	200 10
Antimony	(Total)	Antimony	6010 7040 7041	300 2000 30
Arsenic	(Total)	Arsenic	6010 7060 7061	500 10 20
Barium	(Total)	Barium	6010 7080	20 1000
Benzene	71-43-2	Benzene	8020 8021 8260	2 0.1 5
Benzo[a]anthracene; Benzanthracene	56-55-3	Benz[a]anthracene	8100 8270	200 10
Benzo[b]fluoranthene	205-99-2	Benz[e]acephenanthrylene	8100 8270	200 10
Benzo[k]fluoranthene	207-08-9	Benzo[k]fluoranthene	8100 8270	200 10
Benzo[ghi]perylene	191-24-2	Benzo[ghi]perylene	8100 8270	200 10
Benzo[a]pyrene	50-32-8	Benzo[a]pyrene	8100 8270	200 10
Benzyl alcohol	100-51-6	Benzenemethanol	8270	20
Beryllium	(Total)	Beryllium	6010 7090 7091	3 50 2
alpha-BHC	319-84-6	Cyclohexane, 1,2,3,4,5,6-hexachloro- (1a,2a,3ß,4a,5ß,6ß)-	8080 8270	0.05 10
beta-BHC	319-85-7	Cyclohexane, 1,2,3,4,5,6-hexachloro- (1a,2ß,3a,4ß,5a,6ß)-	8080 8270	0.05 20
delta-BHC	319-86-8	Cyclohexane, 1,2,3,4,5,6- hexachloro-	8080	0.1

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335-13-4-APPENDIX II LIST OF HAZARDOUS INORGANIC AND ORGANIC CONSTITUENTS[1]

Common Name[2]	CAS Number[3]	Chemical Abstracts Service Index Name[4]	Suggested Methods[5]	PQL (□g/L)[6]
		(1a,2a,3a,4ß,5a,6ß)-	8270	20
gamma-BHC; Lindane	58-89-9	Cyclohexane, 1,2,3,4,5,6-hexachloro- (1a,2a,3ß,4a,5a,6ß)-	8080 8270	0.05 20
Bis(2-chloroethoxy)methane	111-91-1	Ethane, 1,1[1]-[methylenebis(oxy)] bis[2-chloro-	8110 8270	5 10
Bis(2-chloroethyl) ether;	111-44-4	Ethane, 1,1[1]-oxybis[2-chloro-	8110	3
Dichloroethyl ether			8270	10
Bis(2-chloro-1-methylethyl) ether 2,21-Dichlorodisophropyl ether; DCIP. See note 7	108-60-1	Propane, 2,2[1]-oxybis[1-chloro-	8110 8270	10 10
Bis(2-ethylhexyl) phthalate	117-81-7	1,2-Benzenedicarboxylic acid, bis(2-ethylhexyl) ester	8060	20
Bromochloromethane; Chlorobromomethane	74-97-5	Methane, bromochloro-	8021 8260	0.1 5
Bromodichloromethane; Dibromochloromethane	75-27-4	Methane, bromodichloro-	8010 8021 8260	1 0.2 5
Bromoform; Tribromomethane	75-25-2	Methane, tribromo-	8010 8021 8260	2 15 5
4-Bromophenyl phenyl ether	101-55-3	Benzene, 1-bromo-4-phenoxy-	8110 8270	25 10
Butyl benzyl phthalate; Benzyl butyl phthalate	85-68-7	1,2-Benzenedicarboxylic acid, butyl phenylmethyl ester	8060 8270	5 10
Cadmium	(Total)	Cadmium	6010 7130 7131	40 50 1
Carbon disulfide	75-15-0	Carbon disulfide	8260	100
Carbon tetrachloride	56-23-5	Methane, tetrachloro-	8010 8021 8260	1 0.1 10
Chlordane	See note 8	4,7-Methano-1H-indene, 1,2,4,5, 6,7,8,8- octachloro- 2,3,3a,4,7,7a-hexahydro-	8080 8270	0.1 50
p-Chloroaniline	106-47-8	Benzenamine, 4-chloro-	8270	20
Chlorobenzene	108-90-7	Benzene, chloro-	8010 8020 8021 8260	2 2 0.1 5
Chlorobenzilate	510-15-6	Benzeneacetic acid, 4-chloro-a- (4-chlorophenyl)-a-hydroxy-ethyl ester	8270	10
p-Chloro-m-cresol; 4-Chloro-3-methylphenol	59-50-7	Phenol, 4-chloro-3-methyl-	8040 8270	5 20
Chloroethane; Ethyl chloride	75-00-3	Ethane, chloro-	8010 8021 8260	5 1 10
Chloroform; Trichloromethane	67-66-3	Methane, trichloro-	8010 8021 8260	0.5 0.2 5

TABLE 3

335-13-4-APPENDIX II LIST OF HAZARDOUS INORGANIC AND ORGANIC CONSTITUENTS[1]

Common Name[2]	CAS Number[3]	Chemical Abstracts Service Index Name[4]	Suggested Methods[5]	PQL (□g/L)[6]
2-Chloronaphthalene	91-58-7	Naphthalene, 2-chloro-	8120 8270	10 10
2-Chlorophenol	95-57-8	Phenol, 2-chloro-	8040 8270	5 10
4-Chlorophenyl phenyl ether	7005-72-3	Benzene, 1-chloro-4-phenoxy-	8110 8270	40 10
Chloroprene	126-99-8	1,3-Butadiene, 2-chloro-	8010 8260	50 20
Chromium	(Total)	Chromium	6010 7190 7191	70 500 10
Chrysene	218-01-9	Chrysene	8100 8270	200 10
Cobalt	(Total)	Cobalt	6010 7200 7201	70 500 10
Copper	(Total)	Copper	6010 7210 7211	60 200 10
m-Cresol; 3-methylphenol	108-39-4	Phenol, 3-methyl-	8270	10
o-Cresol; 2-methylphenol	95-48-7	Phenol, 2-methyl-	8270	10
p-Cresol; 4-methylphenol	106-44-5	Phenol, 4-methyl-	8270	10
Cyanide	57-12-5	Cyanide	8270	10
2,4-D; 2,4-Dichlorophenoxyacetic acid	94-75-7	Acetic acid, (2,4-dichlorophenoxy)-	8150	10
4,4[1]-DDD	72-54-8	Benzene, 1,1[1]-(2,2-dichloro ethylidene) bis[4-chloro-	8080 8270	0.1 10
4,4[1]-DDE	72-55-9	Benzene, 1,1[1]-(dichloroethyen ylidene)bis[4-chloro-	8080 8270	0.05 10
4,4[1]-DDT	50-29-3	Benzene, 1,1[1]-(2,2,2-trichloro ethylidene)bis[4-chloro-	8080 8270	0.1 10
Diallate	2303-16-4	Carbamothioic acid, bis(1- methyl ethyl)-,S-(2,3-dichloro-2- propenyl) ester	8270	10
Dibenz[a,h]anthracene	53-70-3	Dibenz[a,h]anthracene	8100 8270	200 10
Dibenzofuran	132-64-9	Dibenzofuran	8270	10
Dibromochloromethane; Chlorodibromomethane	124-48-1	Methane, dibromochloro-	8010 8021 8260	1 0.3 5
1,2-Dibromo-3-chloropropane; DBCP	96-12-8	Propane, 1,2-dibrome-3-chloro-	8011 8021 8260	0.1 30 25
1,2-Dibromoethane; Ethylene dribromide; EDB	106-93-4	Ethane, 1,2-dibromo-	8011 8021 8260	0.1 10 5
Di-n-butyl phthalate	84-74-2	1,2-Benzenedicarboxylic acid, dibutyl ester	8060 8270	5 10

TABLE 3

335-13-4-APPENDIX II LIST OF HAZARDOUS INORGANIC AND ORGANIC CONSTITUENTS[1]

Common Name[2]	CAS Number[3]	Chemical Abstracts Service Index Name[4]	Suggested Methods[5]	PQL (□g/L)[6]
o-Dichlorobenzene; 1,2-Dichlorobenzene	95-50-1	Benzene, 1,2-dichloro-	8010 8020 8021 8120 8260 8270	2 5 0.5 10 5 10
m-Dichlorobenzene; 1,3-Dichlorobenzene	541-73-1	Benzene, 1,3-Dichloro-	8010 8020 8021 8120 8260 8270	5 5 0.2 10 5 10
p-Dichlorobenzene; 1,4-Dichlorobenzene	106-46-7	Benzene, 1,4-dichloro-	8010 8020 8021 8120 8260 8270	2 5 0.1 15 5 10
3,3[1]-Dichlorobenzidine	91-94-1	[1,1[1]-Biphenyl]-4,4[1]-diamine, 3,3[1]-dichloro-	8270	20
trans-l,4-Dichloro-2-butene	110-57-6	2-Butene, 1,4-dichloro-, (E)-	8260	100
Dichlorodifloromethane; CFC- 12	75-71-8	Methane, dichlorodifluoro-	8021 8260	0.5 5
1,1-Dichloroethane; Ethyldidene chloride	75-34-3	Ethane, 1,1-dichloro-	8010 8021 8260	1 0.5 5
1,2-Dichloroethane; Ethylene dichloride	107-06-2	Ethane, 1,1-dichloro-	8010 8021 8260	0.5 0.3 5
1,1-Dichloroethylene; 1,1-Dichloroethene; Vinylidene chloride	75-35-4	Ethene, 1,1-dichloro-	8010 8021 8260	1 0.5 5
cis-1,2-Dichloroethylene; cis-	156-59-2	Ethene, 1,2-dichloro-,(Z)-	8021	0.2
1,2- Dichloroethene			8260	5
trans-1,2-Dichloroethylene trans-1,2- Dichloroethene	156-60-5	Ethene, 1,2-dichloro-,(E)-	8010 8021 8260	1 0.5 5
2,4-Dichlorophenol	120-83-2	Phenol, 2,4-dichloro-	8040 8270	5 10
2,6-Dichlorophenol	87-65-0	Phenol, 2,6-dichloro-	8270	10
1,2-Dichloropropane; Propylene dichloride	78-87-5	Propane, 1,2-dichloro-	8010 8021 8260	0.5 0.05 5
1,3-Dichloropropane; Trimethylene dichloride	142-28-9	Propane, 1,3-dichloro-	8021 8260	0.3 5
2,2-Dichloropropane; Isopropylidene chloride	594-20-7	Propane, 2,2-dichloro-	8021 8260	0.5 15
1,1-Dich1oropropene	563-58-6	1-Propene, 1,1-dichloro-	8021 8260	0.2 5
cis-1,3-Dichloropropene	10061-01-5	1-Propene, 1,3-dichloro-, (Z)-	8010 8260	20 10

TABLE 3

335-13-4-APPENDIX II LIST OF HAZARDOUS INORGANIC AND ORGANIC CONSTITUENTS[1]

Common Name[2]	CAS Number[3]	Chemical Abstracts Service Index Name[4]	Suggested Methods[5]	PQL (□g/L)[6]
trans-1,3-Dichloropropene	10061-02-6	1-Propene, 1,3-dichloro-, (E)-	8010 8260	5 10
Dieldrin	60-57-1	2,7:3,6-Dimethanonaphth[2,3- b] oxirene,3,4,5,6,9,9-hexa, chloro-1a, 2,2a,3,6,6a,7,7a- octahydro-, (1aa, 2ß,2aa,3ß, 6ß,6aa,7ß,7aa)-	8080 8270	0.05 10
Diethyl phthalate	84-66-2	1,2-Benzenedicarboxylic acid, diethyl ester	8060 8270	5 10
0,0-Diethyl 0-2-pyrazinyl; phosphorothioate Thionazin	297-97-2	Phosphorothioic acid, 0,0-diethyl 0-pyrazinyl ester	8141 8270	5 20
Dimethoate	60-51-5	Phosphorodithioic acid, 0,0-dimethyl S-[2-(methylamino)-2- oxoethyl] ester	8141 8270	3 20
p-(Dimethylamino)azobenzene	60-11-7	Benzenamine, N,N-dimethyl-4-(phenylazo)-	8270	10
7,12-Dimethylbenz[a]anthracene	57-97-6	Benz[a]anthracene, 7,12- dimethyl-	8270	10
3,3[1]-Dimethylbenzidine	119-93-7	[1,1[1]-Biphenyl]-4,4[1]-diamine, 3,3[1]-dimethyl-	8270	10
2,4-Dimethylphenol; m- Xylenol	105-67-9	Phenol, 2,4-dimethyl-	8040 8270	5 10
Dimethyl phthalate	131-11-3	1,2-Benzenedicarboxylic acid, dimethyl ester	8060 8270	5 10
m-Dinitrobenzene	99-65-0	Benzene, 1,3-dinitro-	8270	20
4,6-Dinitro-o-cresol 4,6-Dinitro- 2-methylphenol	534-52-1	Phenol, 2-methyl-4,6-dinitro-	8040 8270	150 50
2,4-Dinitrophenol	51-28-5	Phenol, 2,4-dinitro-	8040 8270	150 50
2,4-Dinitrotoluene	121-14-2	Benzene, 1-methyl-2,4-dinitro-	8090 8270	0.2 10
2,6-Dinitrotoluene	606-20-2	Benzene, 2-methyl-1,3-dinitro-	8090 8270	0.1 10
Dinoseb; DNBP; 2-sec-Butyl- 4,6-dinitrophenol	88-85-7	Phenol, 2-(1-methylpropyl)-4,6- dinitro-	8150 8270	1 20
Di-n-octyl phthalate	117-84-0	1,2-Benzenedicarboxylic acid, dioctyl ester	8060 8270	30 10
Diphenylamine	122-39-4	Benzenamine, N-phenyl-	8270	10
Disulfoton	298-04-4	Phosphorodithioic acid, 0,0- diethyl S-[2-(ethylthio)ethyl] ester	8140 8141 8270	2 0.5 10
Endosulfan I	959-98-8	6,9-Methano-2,4,3- benzodioxathi epin,6,7,8,9,10,10- hexachloro- 1, 5,5a, 6,9,9a-hexahydro-,3-oxide,	8080 8270	0.1 20
Endosulfan II	33213-65-9	6,9-Methano-2,4,3- benzodioxathi	8080	0.05
		epin, 6,7,8,9,10,10-hexachloro-1,5,5a,6,9,9a-hexahydro-,3-oxide,(3a, 5aa, 6ß,9ß,9aa)-	8270	20

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335-13-4-APPENDIX II LIST OF HAZARDOUS INORGANIC AND ORGANIC CONSTITUENTS[1]

Common Name[2]	CAS Number[3]	Chemical Abstracts Service Index Name[4]	Suggested Methods[5]	PQL (□g/L)[6]
Endosulfan sulfate	1031-07-8	6,9-Methano-2,4,3- benzodioxathi epin,6,7,8,9,10,10-hexachloro- 1,5,5a, 6,9,9a-hexahydro-3-3- dioxide.	8080 8270	0.5 10
Endrin	72-20-8	2,7:3,6-Dimethanonaphth[2,3-b] oxirene, 3,4,5,6,9,9-hexachloro- 1a,2,2a,3,6,6a,7,7a-octahydro-, (1aa,2ß,2aß,3a,6a,6aß,7ß,7aa)-	8080 8270	0.1 20
Endrin aldehyde	7421-93-4	1,2,4-Methenocyclopenta cd]penta [lene-5-carboxaldehyde, 2,2a,3,3,4, 7-hexachlorodeca hydro-, (1a,2ß, 2aß, 4ß,4aß,5ß, 6aß,6bß,7R*)-	8080 8270	0.2 10
Ethylbenzene	100-41-4	Benzene, ethyl-	8020 8221 8260	2 0.05 5
Ethyl methacrylate	97-63-2	2-Propenoic acid, 2-methyl-, ethyl ester	8015 8260 8270	5 10 10
Ethyl methanesulfonate	62-50-0	Methanesulfonic acid, ethyl ester	8270	20
Famphur	52-85-7	Phosphorothioic acid, 0-[4-[(dimethylamino)sulfonyl]phenyl] 0,0-dimethyl ester	8270	20
Fluoranthene	206-44-0	Fluoranthene	8100 8270	200 10
Fluorene	86-73-7	9H-Fluorene	8100 8270	200 10
Heptachlor	76-44-8	4,7-Methano-1H-indene, 1,4,5,6,7,8, 8-heptachloro-3a,4,7,7a- tetrahydro-	8080 8270	0.05 10
Heptachlor epoxide	1024-57-3	2,5-Methano-2H-indeno[1,2- b]oxirene, 2,3,4,5,6,7,7- heptachloro-1a, 1b,5,5a,6,6a- hexahydro-,(1aa,1bß, 2a,5a, 5aß,6ß,6aa)	8080 8270	1 10
Hexachlorobenzene	118-74-1	Benzene, hexachloro-	8120 8270	0.5 10
Hexachlorobutadiene	87-68-3	1,3-Butadiene, 1,1,2,3,4,4- hexachloro-	8021 8120 8260 8270	0.5 5 10 10
Hexachlorocyclopentadiene	77-47-4	1,3-Cyclopentadiene, 1,2,3,4,5,5- hexachloro-	8120 8270	5 10
Hexachloroethane	67-72-1	Ethane, hexachloro-	8120 8260 8270	0.5 10 10
Hexachloropropene	1888-71-7	1-Propene, 1,1,2,3,3,3- hexachloro-	8270	10

TABLE 3

335-13-4-APPENDIX II LIST OF HAZARDOUS INORGANIC AND ORGANIC CONSTITUENTS[1]

Common Name[2]	CAS Number[3]	Chemical Abstracts Service Index Name[4]	Suggested Methods[5]	PQL (□g/L)[6]
2-Hexanone; Methyl butyl ketone	591-78-6	2-Hexanone	8260	50
Indeno(1,2,3-cd)pyrene	193-39-5	Indeno(1,2,3-cd)pyrene	8100 8270	200 10
Isobutyl alcohol	78-83-1	1-Propanol, 2-methyl-	8015 8240	50 100
Isodrin	465-73-6	1,4,5,8-Dimethanonaphthalene,1,2,3,4,10,10- hexachloro-1,4,4a,5,8,8a hexahydro- (1a,4a,4aß,5ß,8ß,8aß)-	8270 8260	20 10
Isophorone	78-59-1	2-Cyclohexen-1-one, 3,5,5-trimethyl-	8090 8270	60 10
Isosafrole	120-58-1	1,3-Benzodioxole, 5-(1- propenyl)-	8270	10
Kepone	143-50-0	1,3,4-Metheno-2H-cyclobuta[cd] pentalen-2- one,1,1a,3,3a,4,5,5,5a, 5b,6-decachlorooctahydro-	8270	20
Lead	(Total)	Lead	6010 7420 7421	400 1000 10
Mercury	(Total)	Mercury	7470	2
Methacrylonitrile	126-98-7	2-Propenenitrile, 2-methyl-	8015 8260	5 100
Methapyrilene	91-80-5	1,2-ethanediamine,N.N.-dimethyl-N[1]-2-pyridinyl-N1/2- thienyl-methyl)-	8270	100
Methoxychlor	72-43-5	Benzene,1,1[1]-(1,2,2,trichloroethylidene) bis[4- methoxy-	8080 8270	2 10
Methyl bromide; Bromomethane	74-83-9	Methane, bromo-	8010 8021	20 10
Methyl chloride; Chloromethane	74-87-3	Methane, chloro-	8010 8021	1 0.3
3-Methylcholanthrene	56-49-5	Benz[j]aceanthrylene, 1,2-dihydro-3- methyl-	8270	10
Methyl ethyl ketone; MEK; 2-Butanone	78-93-3	2-Butanone	8015 8260	10 100
Methyl iodide; iodomethane	74-88-4	Methane,iodo-	8010 8260	40 10
Methyl methacrylate	80-62-6	2-Propenoic acid, 2-methyl-, methyl ester	8015 8260	2 30
Methyl methanesulfonate	66-27-3	Methanesulfonic acid, methyl ester	8270	10
2-Methylnaphthalene	91-57-6	Naphthalene, 2-methyl-	8270	10
Methyl parathion;Parathion methyl	298-00-0	Phosphorothioic acid, 0,0- dimethyl 0-(4-nitrophenyl) ester	8140 8141 8270	0.5 1 10
4-Methyl-2-pentanone; Methyl isobutyl ketone	108-10-1	2-Pentanone, 4-methyl-	8015 8260	5 100

TABLE 3

335-13-4-APPENDIX II LIST OF HAZARDOUS INORGANIC AND ORGANIC CONSTITUENTS[1]

Common Name[2]	CAS Number[3]	Chemical Abstracts Service Index Name[4]	Suggested Methods[5]	PQL (□g/L)[6]
Methylene bromide; Dibromomethane	74-95-3	Methane, dibromo-	8010 8021 8260	15 20 10
Methylene chloride; Dichloromethane	75-09-2	Methane, dichloro-	8010 8021 8260	5 0.2 10
Naphthalene	91-20-3	Naphthalene	8021 8100 8260 8270	0.5 200 5 10
1,4-Naphthoquinone	130-15-4	1,4-Naphthalenedione	8270	10
1-Naphthylamine	134-32-7	1-Naphthalenamine	8270	10
2-Naphthylamine	91-59-8	2-Naphthalenamine	8270	10
Nickel	(Total)	Nickel	6010 7520	150 400
o-Nitroaniline; 2-Nitroaniline	88-74-4	Benzenamine, 2-nitro-	8270	50
m-Nitroaniline; 3-Nitroaniline	99-09-2	Benzenamine, 3-nitro-	8270	50
p-Nitroaniline; 4-Nitroaniline	100-01-6	Benzenamine, 4-nitro	8270	20
Nitrobenzene	98-95-3	Benzene, nitro-	8090 8270	40 10
o-Nitrophenol; 2-Nitrophenol	88-75-5	Phenol, 2-nitro-	8040 8270	5 10
p-Nitrophenol; 4-Nitrophenol	100-02-7	Phenol, 4-nitro-	8040 8270	10 50
N-Nitrosodi-n-butylamine	924-16-3	1-Butananmine, N-butyl-N-nitroso-	8270	10
N-Nitrosodiethylamine	55-18-5	Ethanamine, N-ethyl-N-nitroso-	8270	20
N-Nitrosodimethylamine	62-75-9	Methanamine, N-methyl-N- nitroso-	8070	2
N-Nitrosodiphenylamine	86-30-6	Benzenamine, N-nitroso-N-phenyl-	8070	5
N-Nitrosodipropylamine; N- Nitroso- N-dipropylamine; Di-n-propylnitrosamine	621-64-7	1-Propanamine, N-nitroso-N- propyl-	8070	10
N-Nitrosomethylethalamine	10595-95-6	Ethanamine, N-methyl-N- nitroso-	8270	10
N-Nitrosopiperidine	100-75-4	Piperidine, 1-nitorso-	8270	20
N-Nitrosopyrrolidine	930-55-2	Pyrrolidine, 1-nitoso-	8270	40
5-Nitro-o-toluidine	99-55-8	Benezenamine, 2-methyl-5- nitro-	8270	10
Parathion	56-38-2	Phosphorothioic acid, 0,0-diethyl 0-(4-nitrophenyl) ester	8141 8270	0.5 10
Pentachlorobenzene	608-93-5	Benzene, pentachloro-	8270	10
Pentachloronitrobenzene	82-68-8	Benzene, pentachloronitro-	8270	20
Pentachlorophenol	87-86-5	Phenol, pentachloro-	8040 8270	5 50
Phenacetin	62-44-2	Acetamide, N-(4-ethoxyphenl)	8270	20
Phenanthrene	85-01-8	Phenanthrene	8100 8270	200 10
Phenol	108-95-2	Phenol	8040	1
p-Phenylenediamine	106-50-3	1,4-Benzenadiamine	8270	10

TABLE 3

335-13-4-APPENDIX II LIST OF HAZARDOUS INORGANIC AND ORGANIC CONSTITUENTS[1]

Common Name[2]	CAS Number[3]	Chemical Abstracts Service Index Name[4]	Suggested Methods[5]	PQL (□g/L)[6]
Phorate	298-02-2	Phosphorodithioic acid, 0,0- diethyl-S-[(ethylthio)methyl] ester	8140 8141 8270	2 0.5 10
Polychlorinated biphenyls; PCBs;Aroclors	See Note 9	1,1'-Biphenyl, chloro derivatives	8080 8270	50 200
Pronamide	23950-58-5	Benzamide, 3,5-dichloro-N-(1,1-dimethyl-2-propynyl)-	8270	10
Propionitrile; Ethyl cyanide	107-12-0	Propanenitrile	8015 8260	60 150
Pyrene	129-00-0	Pyrene	8100 8270	200 10
Safrole	94-59-1	1,3-Benzodioxole, 5-(2- propenyl)-	8270	10
Selenium	(Total)	Selenium	6010 7740 7741	750 20 20
Silver	(Total)	Silver	6010 7760 7761	70 100 10
Silvex; 2,4,5-TP	93-72-1	Propanoic acid, 2-(2,4,5-trichlorophenoxy)-	8150	2
Styrene	100-42-5	Benzene, ethenyl-	8020 8021 8260	1 0.1 10
Sulfide	18496-25-8	Sulfide	9030	4000
2,4,5-T; 2,4,5-Trichlorophenoxyacetic acid	93-76-5	Acetic acid, (2,4,5- trichlorophenoxy)-	8150	2
1,2,4,5-Tetrachlorobenzene	95-94-3	Benzene, 1,2,4,5-tetrachloro-	8270	10
1,1,1,2-Tetrachloroethane	630-20-6	Ethane, 1,1,1,2-tetrachloro-	8010 8021 8260	5 0.05 5
1,1,2,2-Tetrachloroethane	79-34-5	Ethane, 1,1,2,2-tetrachloro-	8010 8021 8260	0.5 0.1 5
Tetrachloroethylene; Tetrachloroethene;	127-18-4	Ethene, tetrachloro-	8010	0.5
Perchloroethylene			8021 8260	0.5 5
2,3,4,6-Tetrachlorophenol	58-90-2	Phenol, 2,3,4,6-tetrachloro-	8270	10
Thallium	(Total)	Thallium	6010 7840 7841	400 1000 10
Tin	(Total)	Tin	6010	40
Toluene	108-88-3	Benzene, methyl-	8020 8021 8260	2 0.1 5
o-Toluidine	95-53-4	Benzenamine, 2-methyl-	8270	10
Toxaphene	See Note 10	Toxaphene	8080	2
1,2,4-Trichlorobenzene	120-82-1	Benzene, 1,2,4-trichloro-	8021 8120 8260 8270	0.3 0.5 10 10

TABLE 3

335-13-4-APPENDIX II LIST OF HAZARDOUS INORGANIC AND ORGANIC CONSTITUENTS[1]

Common Name[2]	CAS Number[3]	Chemical Abstracts Service Index Name[4]	Suggested Methods[5]	PQL (□g/L)[6]
1,1,1-Trichloroethane; Methylchloroform	71-55-6	Ethane, 1,1,1-trichloro-	8010 8021 8260	0.3 0.3 5
1,1,2-Trichloroethane	79-00-5	Ethane, 1,1,2-trichloro-	8010 8260	0.2 5
Trichloroethylene; Trichloroethene	79-01-6	Ethane, trichloro-	8010 8021 8260	1 0.2 5
Trichlorofluoromethane; CFC- 11	75-69-4	Methane, trichlorofluoro-	8010 8021 8260	10 0.3 5
2,4,5-Trichlorophenol	95-95-4	Phenol, 2,4,5-trichloro-	8270	10
2,4,6-Trichlorophenol	88-06-2	Phenol, 2,4,6-trichloro-	8040 8270	5 10
1,2,3-Trichloropropane	96-18-4	Propane, 1,2,3-trichloro-	8010 8021 8260	10 5 15
O,O,0-Triethyl phosphorothioate	126-68-1	Phosphorothioic acid, 0,0,0- triethylester	8270	10
sym-Trinitrobenzene	99-35-4	Benzene, 1,3,5-trinitro-	8270	10
Vanadium	(Total)	Vanadium	6010 7910 7911	80 2000 40
Vinyl acetate	108-05-4	Acetic acid, ethenyl ester	8260	50
Vinyl chloride; Chloroethene	75-01-4	Ethene, chloro-	8010 8021 8260	2 0.4 10
Xylene (total)	See Note 11	Benzene, dimethyl-	8020 8021 8260	5 0.2 5
Zinc	(Total)	Zinc	6010 7950 7951	20 50 0.5

Notes

[1] The regulatory requirements pertain only to the list of substances; the right hand columns (Methods and PQL) are given for informational purposes only. See also footnotes 5 and 6.

[2] Common names are those widely used in government regulations, scientific publications, and commerce; synonyms exist for many chemicals.

[3] Chemical Abstracts Service registry number. Where "Total" is entered, all species in the groundwater that contain this element are included.

[4] CAS index are those used in the 9th Collective Index.

[5] Suggested Methods refer to analytical procedure numbers used in EPA Report SW-846 "Test Methods for Evaluating Solid Waste", third edition, November 1986, as revised, December 1987. Analytical details can be found in SW-846 and in documentation on file at the agency. CAUTION: The methods listed are representative SW-846 procedures and may not always be the most suitable method(s) for monitoring an analyte under the regulations.

[6] Practical Quantitation Limits (PQLs) are the lowest concentrations of analytes in groundwaters that can be reliably determined within specified limits of precision and accuracy by the indicated methods under routine laboratory operating conditions. The PQLs listed are generally stated to one significant figure. PQLs are based on 5 mL samples for volatile organics and 1 L samples for semivolatile organics. CAUTION: The PQL values in many cases are based only on a general estimate for the method and not on a determination for individual compounds; PQLs are not a part of the regulation.

[7] This substance is often called Bis(2-chloroisopropyl) ether, the name Chemical Abstracts Service applies to its noncommercial isomer, Propane, 2,2"-oxybis[2-chloro- (CAS RN 39638-32-9).

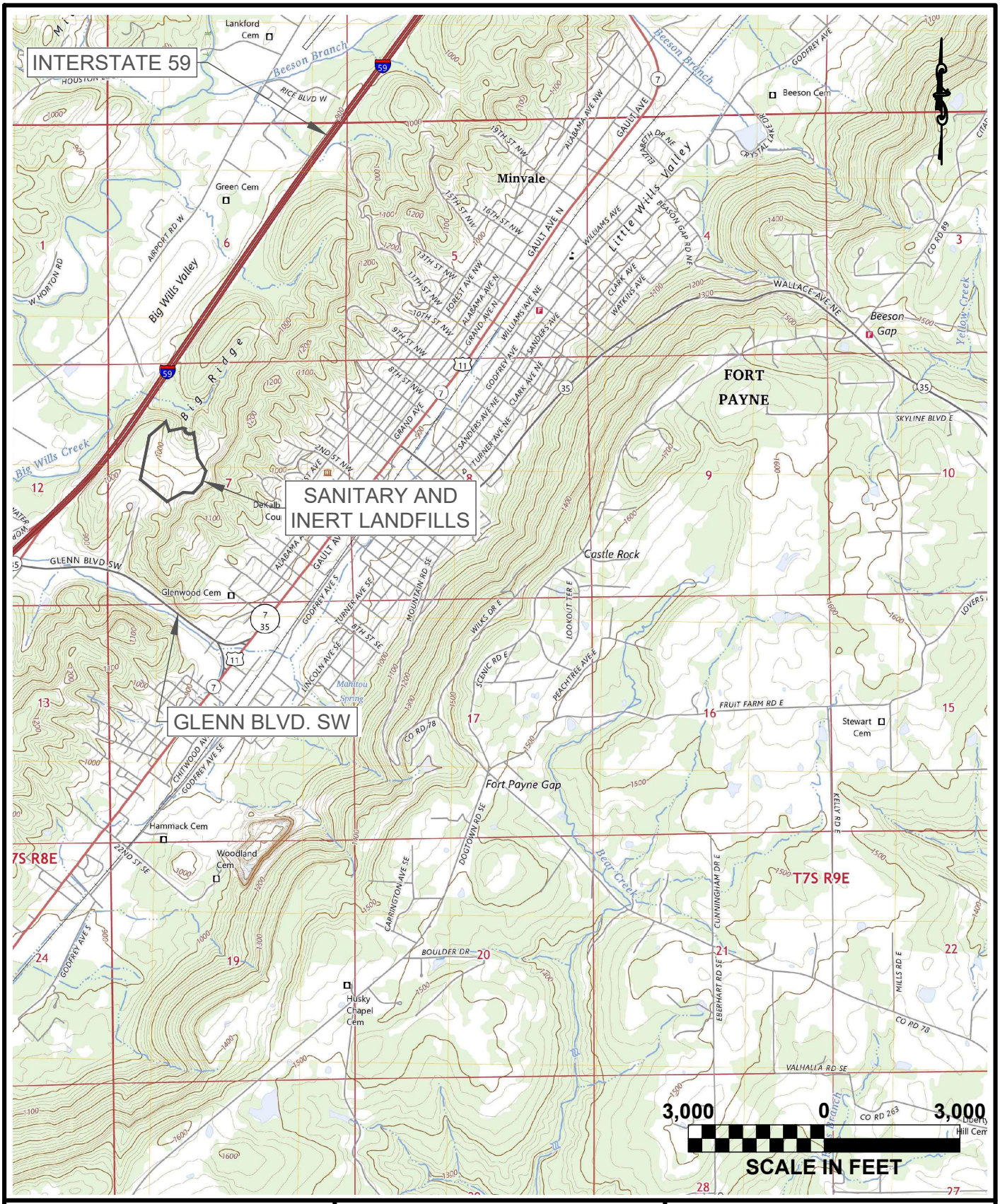
[8] Chlordane: This entry includes alpha-chlordane (CAS RN 5103-71-9), beta-chlordane (CAS RN 5103-74-2), gamma-chlordane (CAS RN 5566-34-7), and constituents of chlordane (CAS RN 57-74-9 and CAS RN 12789-03-6). PQL shown is for technical chlordane. PQLs of specific isomers are about 20 μg/L by method 8270.

[9] Polychlorinated biphenyls (CAS RN 1336-36-3); this category contains congener chemicals, including constituents of Aroclor 1016 (CAS RN 12674-11-2), Aroclor 1221 (CAS RN 11104-28-2), Aroclor 1232 (CAS RN 11141-16-5), Aroclor 1242 (CAS RN 53469-21-9), Aroclor 1248 (CAS RN 12672-29-6), Aroclor 1254 (CAS RN 11097-69-1), and Aroclor 1260 (CAS RN 11096-82-5). The PQL shown is an average value for PCB congeners.

[10] Toxaphene: This entry includes congener chemicals contained in technical toxaphene (CAS RN 8001-35-2), i.e., chlorinated camphene.

[11] Xylene (total): This entry includes o-xylene (CAS RN 96-47-6), m-xylene (CAS RN 108-38-3), p-xylene (CAS RN 106-42-3), and unspecified xylenes (dimethylbenzenes) (CAS RN 1330-20-7). PQLs for method 8021 are 0.2 for o-xylene and 0.1 for m- or p-xylene. The PQL for m-xylene is 2.0 μg/L by method 8020 or 8260.

FIGURES



THREE NOTCH GROUP

FORT PAYNE LANDFILL

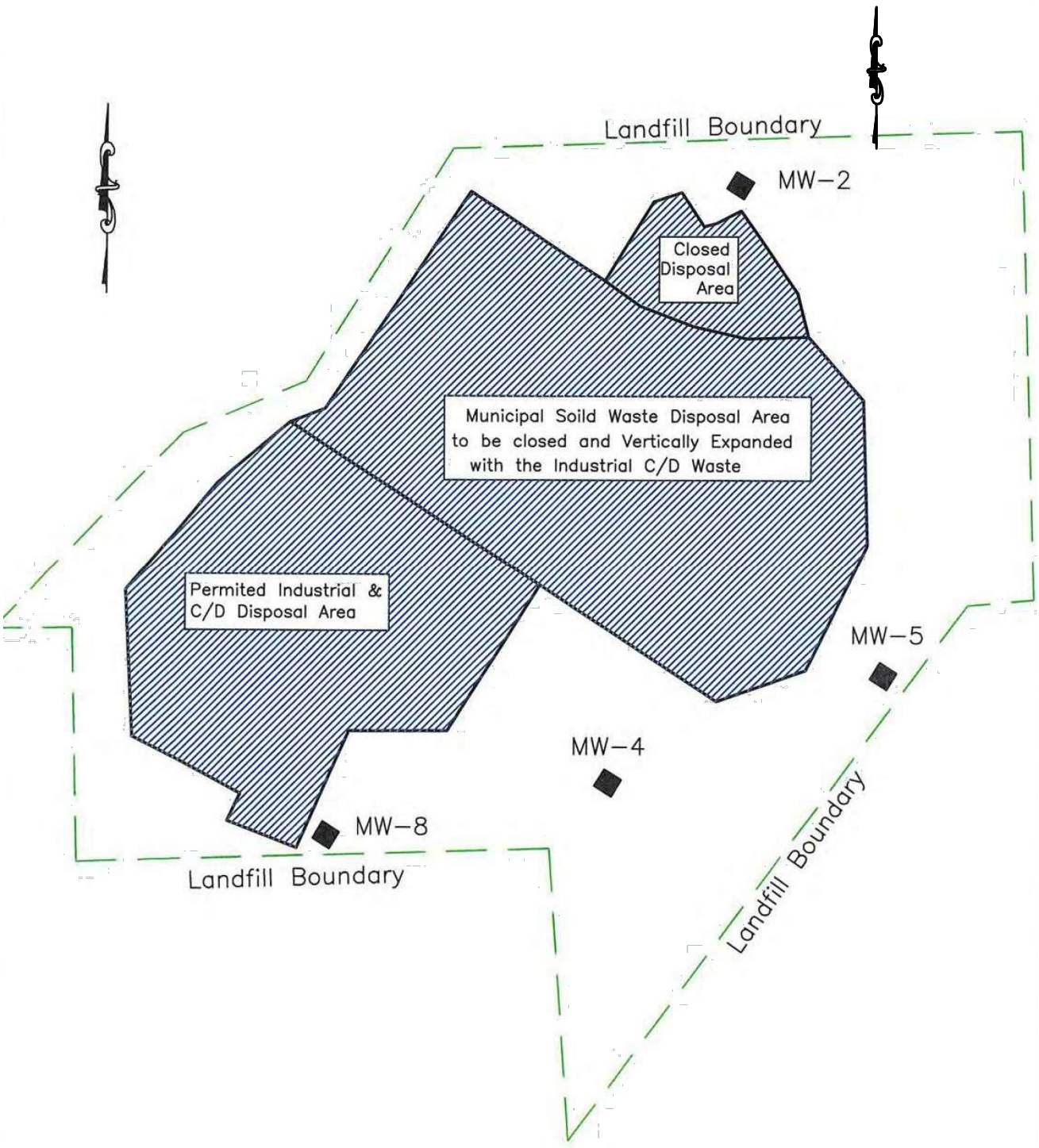
FORT PAYNE, DEKALB COUNTY, AL
PERMIT NO. 25-02

SITE LOCATION MAP

Drawn By:	Scale:	Date:
DW	1" = 3,000'	02/06/2026

Project No: R019625002

01



THREE NOTCH GROUP

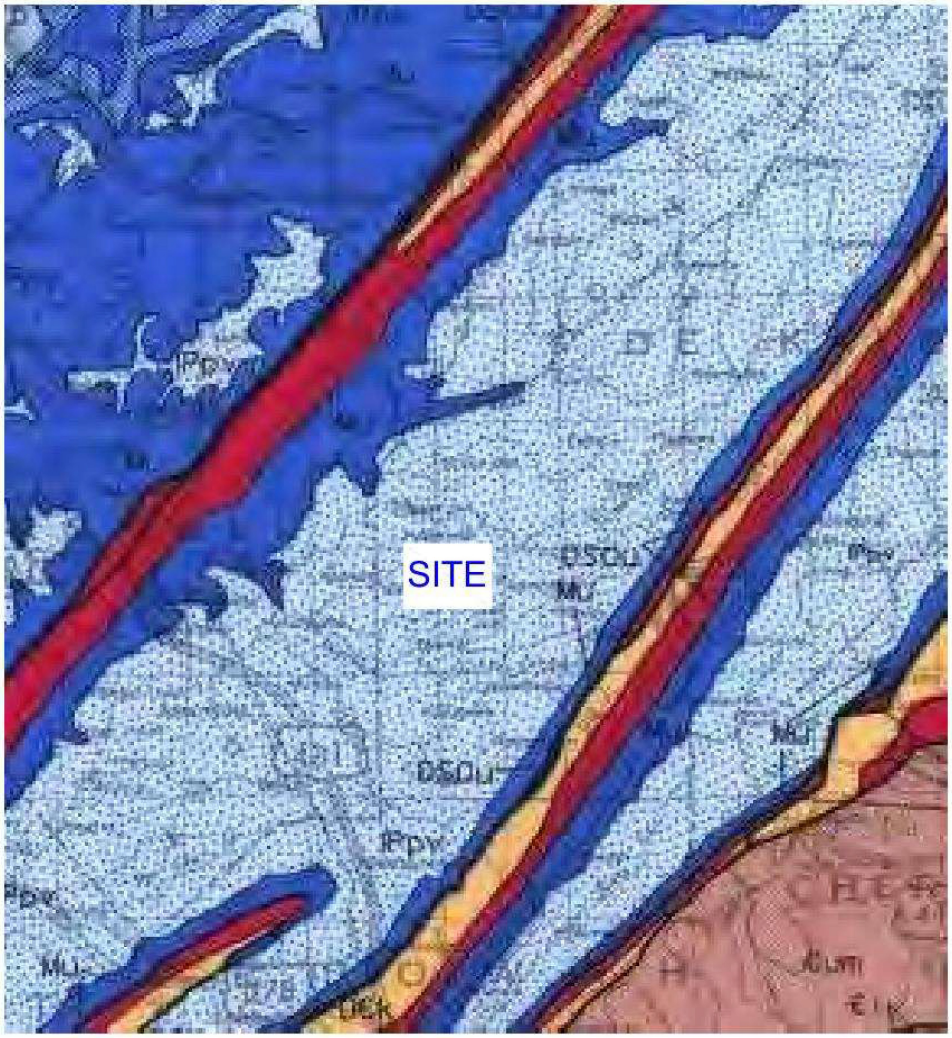
FORT PAYNE LANDFILL
FORT PAYNE, DEKALB COUNTY, AL
PERMIT NO. 25-02

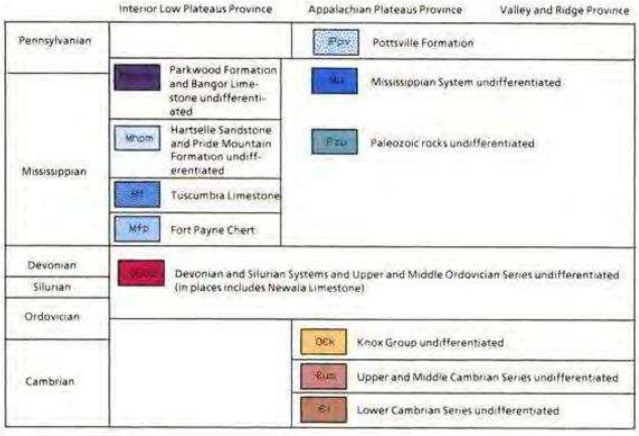
SITE MAP WITH WELL LOCATIONS

Drawn By:	Scale:	Date:
DW	N.T.S.	02/06/2026

Project No: R019625002

02





THREE NOTCH GROUP

FORT PAYNE LANDFILL

FORT PAYNE, DEKALB COUNTY, AL
PERMIT NO. 25-02

SITE GEOLOGIC MAP

Drawn By:	Scale:	Date:
SMR	N.T.S	8/18/2026

Project No: R019625002

03

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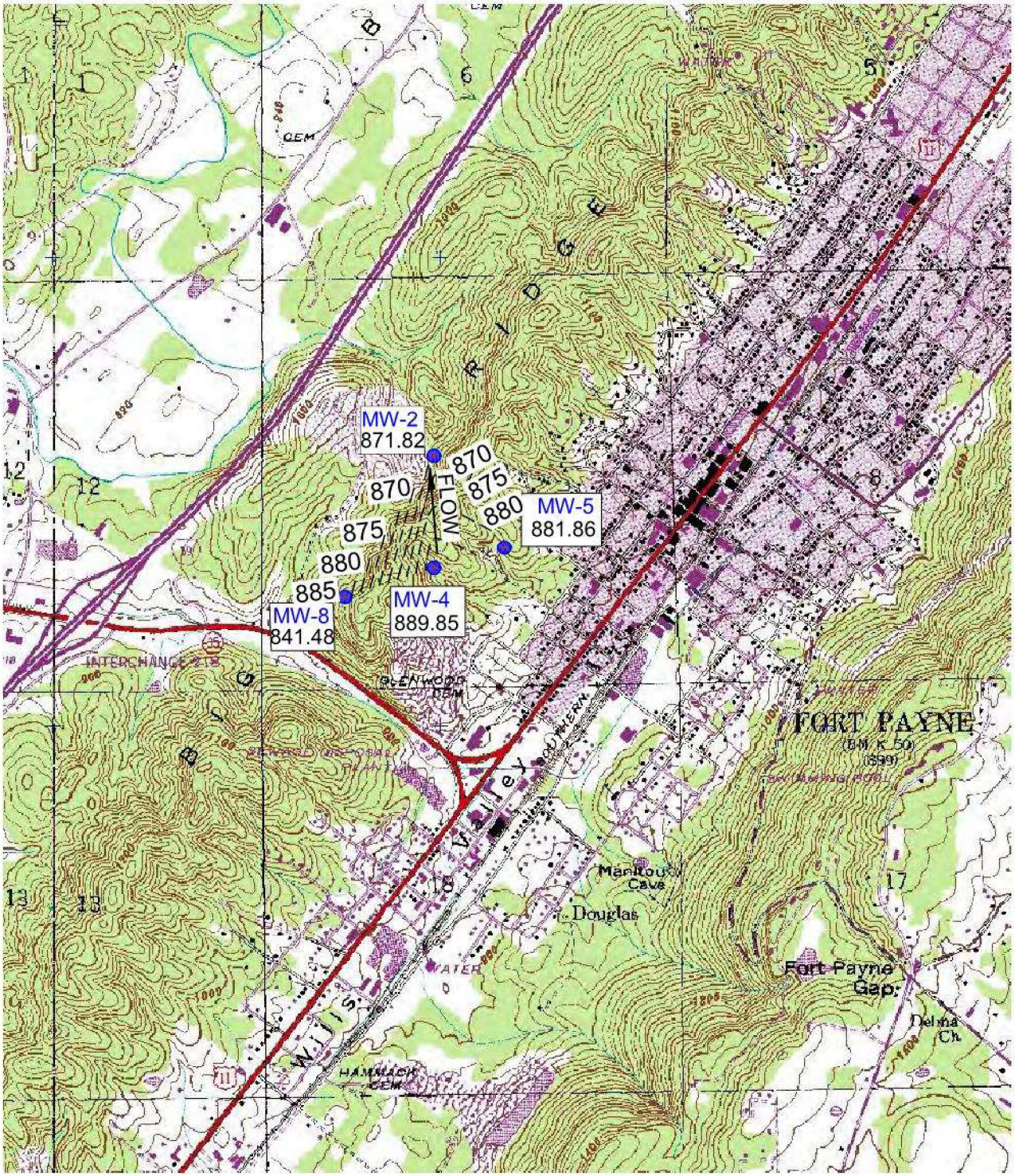

FORT PAYNE LANDFILL

FORT PAYNE, DEKALB COUNTY, AL
PERMIT NO. 25-02

GROUNDWATER ELEVATION MAP

4 MARCH 2026

THREE NOTCH GROUP

Drawn By:	Scale:	Date:
SMR	N.T.S	8/18/2026

Project No: R019625002

04

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APPENDIX A

BOREHOLE AND WELL COMPLETION LOGS



Boring Log

CARTER, DARNELL AND GRUBBS ENGINEERS, INC.
ANDALUSIA, ALABAMA

Job Number 25–02R	Date Started 9–23–94	Date Ended 9–24–94	Client City of Ft. Payne	Sheet 1 of 4

Project Sanitary and Inert Landfills	Depth Drilled into Rock 235 Feet
Location Ft. Payne, Alabama	Total Depth of Hole 258 Feet
Hole Number MW4	Log Prepared By Don McKee
Name of Drilling Contractor Miller Drilling Co.	Ground Elevation 1,033.2 ft. MSL
Direction of Hole ☒ Vertical ☐ Inclined____degrees from Vertical	Elevation of Potentiometric Head 852.2 ft. MSL
Thickness of Overburden 23 Feet	Diameter of Borehole 8.5 Inches

PID (ppm)	Depth in Feet	Lyth Sym	Classification of Materials (Description)	Remarks
	0		Tan, weathered Shale and reddish–brown Clay (interbedded); with thin interbeds of tan to reddish–brown "dirty" Siltstone and medium gray colored Limestone.	(Sh/CL) Red Mountain Formation
	5			
	10		Becoming tannish–brown in color.	
	15			
	20			
	25		Shale; brown and medium gray colored, thin interbeds of "dirty" Siltstone, some thin (<1 ft.) interbeds of Limestone (Mudstone to Pelloidal Packstone).	(Sh) Red Mountain Formation
	30			
			Primarily medium gray in color.	
	35			
	40			
	45			
	50			
	55			
	60			

Boring Log

CARTER, DARNELL AND GRUBBS ENGINEERS, INC.
ANDALUSIA, ALABAMA

Hole Number MW4 | Client City of Ft. Payne | Sheet 2 of 4

PID (ppm)	Depth in Feet	Lyth Sym	Classification of Materials (Description)	Remarks
	60		Shale; medium gray, thin interbeds of "dirty" Siltstone, some thin interbeds of Limestone (Mudstone to Pelloidal Packstone), Fossiliferous beds (Brachiopods).	(Sh) Red Mountain Formation
	65		Interbeds (<1 ft. thick) of Red Hematite.	
	70			
	75			
	80			
	85			
	90			
	95			
	100		Minor amounts of Hematite, Calcite cementation in Siltstone fractures.	
	105		No Hematite.	
	110			
	115		Interbedded medium gray Shale, "dirty" Siltstone, and Pelloidal Packstone.	
	120			
	125			
	130		Fossiliferous beds and interbedded Hematite.	
	135			

Boring Log

CARTER, DARNELL AND GRUBBS ENGINEERS, INC.
ANDALUSIA, ALABAMA

Hole Number MW4 | Client City of Ft. Payne | Sheet 3 of 4

PID (ppm)	Depth in Feet	Lyth Sym	Classification of Materials (Description)	Remarks
	135		Shale; medium gray, thin interbeds of "dirty" Siltstone, and Fossiliferous (Brachiopods) Pelloidal Limestone. Interbedded Hematite.	(Sh) Red Mountain Formation
	140		Abundant Calcite cementation in pores and small fractures of Pelloidal Packstone.	
	145		No Hematite.	Sequatchie Formation
	150			
	155			
	160			
	165			
	170			
	175			
	180			
	185			
	190		Slightly Fossiliferous.	
	195		Some red colored Siltstone.	
	200		Primarily medium gray colored Shale.	
	205			
	210			

Boring Log

CARTER, DARNELL AND GRUBBS ENGINEERS, INC.
ANDALUSIA, ALABAMA

Hole Number MW4 | Client City of Ft. Payne | Sheet 4 of 4

PID (ppm)	Depth in Feet	Lyth Sym	Classification of Materials (Description)	Remarks
	210		Shale; medium gray colored.	(Sh) Sequatchie Formation
	215		Some interbedded red colored Shale.	
	220		Interbeds of Pelloidal Packstone.	
	225			
	230			
	235			
	240			
	245			
	250		Limestone; medium gray colored, Pelloidal Packstone, top 3 to 5 ft. of unit weathered and porous. Underlying the porous zone, the Limestone is very tight (non-porous).	(LS) Chickamauga Formation
	255			
	260		T.D.	
	265			
	270			
	275			
	280			
	285			

Boring Log

CARTER, DARNELL AND GRUBBS ENGINEERS, INC.
ANDALUSIA, ALABAMA

Job Number 25-02R	Date Started 9-27-94	Date Ended 9-28-94	Client City of Ft. Payne	Sheet 1 of 7

Project Sanitary and Inert Landfills	Depth Drilled into Rock 470 Feet
Location Ft. Payne, Alabama	Total Depth of Hole 470 Feet
Hole Number MW5	Log Prepared By Don McKee
Name of Drilling Contractor Miller Drilling Co.	Ground Elevation 1,147.48 ft.
Direction of Hole ☒ Vertical ☐ Inclined ____ degrees from Vertical	Elevation of Ground Water 848.48
Thickness of Overburden 0	Diameter of Borehole 8.5 Inches

PID (ppm)	Depth in Feet	Lyth Sym	Classification of Materials (Description)	Remarks
	0		Interbedded Siltstone, Shale and Chert: Siltstone is massive (2 to 3 ft. thick) and brown to tan in color; Shale is reddish-brown to tan in color; Chert is rose to light gray in color.	(SLst/Sh) Red Mountain Formation
	15		Primarily black Shale, Carbonaceous; with some interbeds of Siltstone.	(Sh/SLst)

Boring Log

CARTER, DARNELL AND GRUBBS ENGINEERS, INC.
ANDALUSIA, ALABAMA

Hole Number MW5 | Client City of Ft. Payne | Sheet 2 of 7

PID (ppm)	Depth in Feet	Lyth Sym	Classification of Materials (Description)	Remarks
	60		Black carbonaceous Shale with some interbeds of Siltstone.	(Sh/SLTst)
	65		Black to dark gray Shale with interbeds of medium gray Packstone (with thin seams of Pyrite), and black to dark gray Siltstone.	(Sh/SLTst/LS)
	70			
	75		Medium gray Shale with thin to thick interbeds of medium gray Packstone (Ls) and Siltstone.	
	80			
	85			
	90			
	95			
	100			
	105			
	110			
	115			
	120			
	125			Groundwater in layers of porous Limeston and Siltstone between depths of 125' to 135'
	130			
	135			

Boring Log

CARTER, DARNELL AND GRUBBS ENGINEERS, INC.
ANDALUSIA, ALABAMA

Hole Number	MW5	Client	City of Ft. Payne	Sheet	3 of 7

PID (ppm)	Depth in Feet	Lyth Sym	Classification of Materials (Description)	Remarks
	135		Medium gray colored Shale with thin to thick (<1" to 3") interbeds of medium gray Limestone (Packstone) and Siltstone.	(Sh/SLTst/LS)
	140			
	145			
	150			
	155			
	160			
	165			
	170			
	175			
	180			
	185			
	190			
	195			
	200			
	205			
	210			

Boring Log

CARTER, DARNELL AND GRUBBS ENGINEERS, INC.
ANDALUSIA, ALABAMA

Hole Number MW5 | Client City of Ft. Payne | Sheet 4 of 7

PID (ppm)	Depth in Feet	Lyth Sym	Classification of Materials (Description)	Remarks
	210		Medium gray colored Shale with thin to thick (<1' to 3') interbeds of medium gray Limestone (Packstone) and Siltstone; some fossils (Brachiopods).	(Sh/SLTst/LS)
	215			
	220		Some inclusions of brown Chert.	
	225			
	230			
	235		Minor, thin (<1') beds of Hematite.	
	240			
	245			
	250		Calcite cement in fractures of Siltstone and Limestone	
	255			
	260			
	265			
	270			
	275			
	280		Medium gray Shale; with thin interbeds (<1') of medium gray Limestone (Packstone), thin (<1') reddish-brown Siltstone, and red Hematite beds; fossiliferous (Brachiopods)	
	285			

Boring Log

CARTER, DARNELL AND GRUBBS ENGINEERS, INC.
ANDALUSIA, ALABAMA

Hole Number MW5 | Client City of Ft. Payne | Sheet 5 of 7

PID (ppm)	Depth in Feet	Lyth Sym	Classification of Materials (Description)	Remarks
	285		Medium gray Shale; with thin interbeds of medium gray Limestone (Packstone), thin (<1") beds of reddish-brown siltstone, and red Hematite beds; Fossiliferous (Brachiopods). Abundant Calcite cementation in pores and fractures of Limestone and Siltstone.	(Sh/SLTst/LS)
	290			
	295			
	300		No Hematite.	
				Sequatchie Formation
	305			
	310			
	315			
	320			
	325			
	330			
	335			
	340			
	345			
	350			
	355			

Boring Log

CARTER, DARNELL AND GRUBBS ENGINEERS, INC.
ANDALUSIA, ALABAMA

Hole Number MW5 | Client City of Ft. Payne | Sheet 6 of 7

PID (ppm)	Depth in Feet	Lyth Sym	Classification of Materials (Description)	Remarks
	360		Primarily medium gray colored Shale.	(Sh)
	365			
	370			
	375			
	380			
	385			
	390			
	395			
	400			
	405			
	410			
	415			
	420			
	425			
	430			

Boring Log

CARTER, DARNELL AND GRUBBS ENGINEERS, INC.
ANDALUSIA, ALABAMA

Hole Number MW5 | Client City of Ft. Payne | Sheet 7 of 7

PID (ppm)	Depth in Feet	Lyth Sym	Classification of Materials (Description)	Remarks
	435		Primarily medium gray colored Shale	(Sh) Sequatchie Formation
	440			
	445			
	450			
	455			
			Layer of tan Siltstone	(SLTst)
	460		Limestone; medium gray colored, Pelloidal Packstone, Fossiliferous (Brachiopods), upper 3 to 5 ft. weathered and porous. Underlying porous zone – the Limestone is very tight (non-porous).	(LS) Chickamauga Formation
	465			
	470		T.D.	
	475			
	480			
	485			
	490			
	495			
	500			
	505			
	510			

Boring Log

CARTER, DARNELL AND GRUBBS ENGINEERS, INC.
ANDALUSIA, ALABAMA

Job Number 25-02R	Date Started 9-21-93	Date Ended 9-22-93	Client City of Ft. Payne	Sheet 1 of 4

Project Sanitary and Inert Landfills	Depth Drilled into Rock 216 Feet
Location Ft. Payne, Alabama	Total Depth of Hole 250 Feet
Hole Number MW6	Log Prepared By Don McKee
Name of Drilling Contractor Miller Drilling Co.	Ground Elevation Approx. 912 ft. MSL
Direction of Hole ☒ Vertical ☐ Inclined____degrees from Vertical	Elevation of Ground Water N/A – Dry Hole
Thickness of Overburden 34 Feet	Diameter of Borehole 8.5 Inches

PID (ppm)	Depth in Feet	Lyth Sym	Classification of Materials (Description)	Remarks
	0		Clayey to very clayey sand; dark red in color, very fine to very coarse angular quartz grains, some mica content, consolidated.	(SC) Sequatchie Formation
	5			
	10		Inclusions of weathered siltstone and "dirty" Sandstone (graywacke).	
	15			
	20			
	25		Medium red in color; same as above with inclusions of weathered Limestone and Dolomite.	
	30			Gradational Boundary
	35		Limestone; with interbedded layers of Dolomitic Limestone and Dolomite, medium gray in color, very tight (minor to no porosity) Pelloidal Packstone and Mudstone, thin (laminated to 3" thick), with interbedded thin Shale partings.	(LS) Chickamauga Formation
	40			
	45			
	50			
	55			
	60			

Boring Log

CARTER, DARNELL AND GRUBBS ENGINEERS, INC.
ANDALUSIA, ALABAMA

Hole Number MW6 | Client City of Ft. Payne | Sheet 2 of 4

PID (ppm)	Depth in Feet	Lyth Sym	Classification of Materials (Description)	Remarks
	60		Limestone: with interbedded layers of Dolomitic Limestone and Dolomite, medium gray in color, very tight (minor to no porosity) Pelloidal Packstone and Mudstone, thin (laminated to 3" thick), with interbedded thin Shale partings.	(LS)
	65			
	70			
	75			
	80			
	85			
	90		Some Brachiopod and Bryzoan fossils.	
	95			
	100		Fossiliferous (Brachiopods and Bryzoans), small fractures filled with Calcite cement.	
	105			
	110			
	115			
	120			
	125			
	130			
	135			

Boring Log

CARTER, DARNELL AND GRUBBS ENGINEERS, INC.
ANDALUSIA, ALABAMA

Hole Number MW6 | Client City of Ft. Payne | Sheet 3 of 4

PID (ppm)	Depth in Feet	Lyth Sym	Classification of Materials (Description)	Remarks
	135		Limestone; with interbedded layers of Dolomitic Limestone and Dolomite, medium gray in color, very tight (minor to no porosity) pelloidal Packstone and Mudstone, thin (laminated to 3" thick), with interbedded thin Shale partings. Fossiliferous (Brachiopods and Bryzoans), small fractures filled with Calcite cement.	(LS)
	140			
	145			
	150			
	155			
	160			
	165			
	170			
	175			
	180			
	185			
	190			
	195		Becoming less Fossiliferous.	
	200			
	205			
	210			

Boring Log

CARTER, DARNELL AND GRUBBS ENGINEERS, INC.
ANDALUSIA, ALABAMA

Hole Number MW6 | Client City of Ft. Payne | Sheet 4 of 4

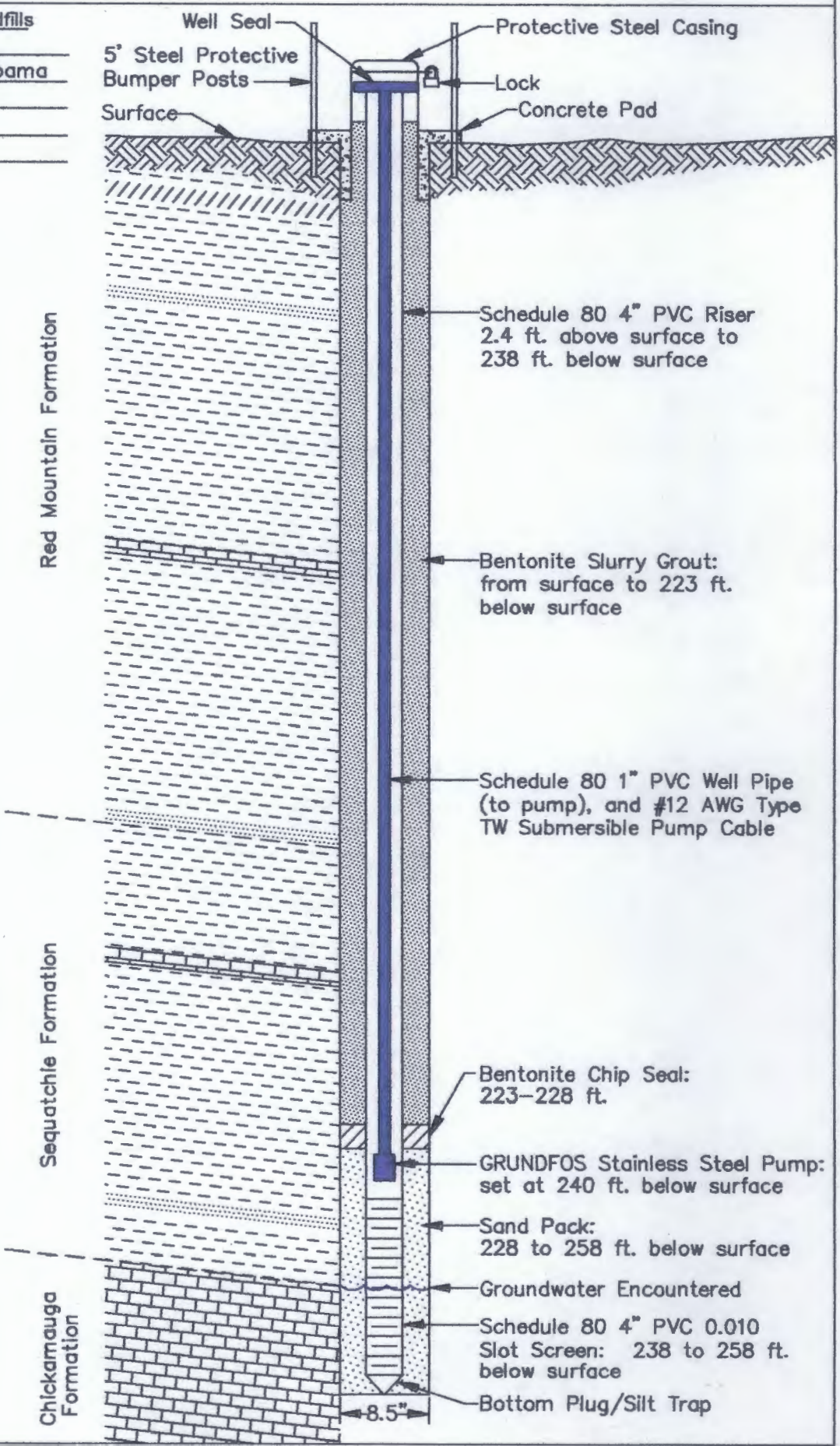
PID (ppm)	Depth in Feet	Lyth Sym	Classification of Materials (Description)	Remarks
	210		Limestone; with interbedded layers of Dolomitic Limestone and Dolomite, medium gray in color, very tight (minor to no porosity) pelloidal Packstone and Mudstone, thin (laminated to 3" thick), with interbedded thin Shale partings. Becoming less Fossiliferous.	(LS)
	215			
	220			
	225			
	230			
	235			
	240			
	245			
	250		T.D.	
	255			
	260			
	265			
	270			
	275			
	280			

SECTION VI
WELL CONSTRUCTION

Well Completion Form

CARTER, DARNELL AND GRUBBS
ENGINEERS, INC.
ANDALUSIA, ALABAMA

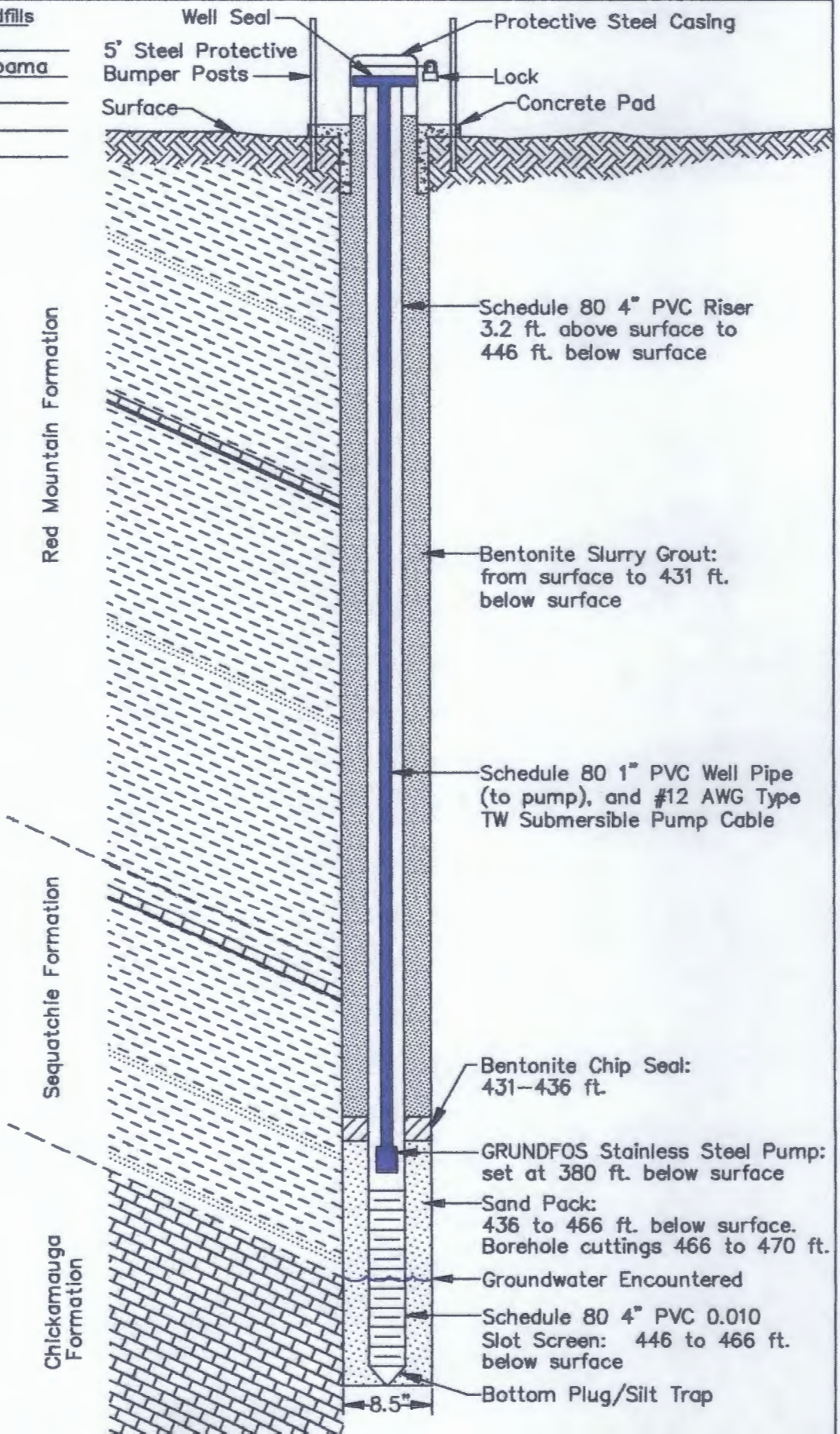
Project Name: Sanitary & Inert Landfills
Project Number: 25-02R
Project Location: Ft. Payne, Alabama
Client: City of Ft. Payne
Well Designation: MW4
Date: 9-24-93



Well Completion Form

CARTER, DARNELL AND GRUBBS ENGINEERS, INC.
ANDALUSIA, ALABAMA

Project Name: Sanitary & Inert Landfills
Project Number: 25-02R
Project Location: Ft. Payne, Alabama
Client: City of Ft. Payne
Well Designation: MW5
Date: 9-30-93



APPENDIX B

STATISITCAL ANALYSIS PLAN



1.0 INTRODUCTION

The following Statistical Analysis Plan (SAP) describes the site-specific statistical analysis approach that will be used to evaluate groundwater at the Fort Payne Landfill Facility (Landfill) pursuant to ADEM Admin. Code r. 335-13-4-.27 under detection and assessment monitoring programs.

A compliance groundwater monitoring well system was installed pursuant to requirements of ADEM Admin. Code r. 335-13-4-.27(2). A background well network is installed upgradient of the Landfill. Downgradient monitoring wells were installed along the downgradient waste boundary pursuant to ADEM Admin. Code r. 335-13-4-.27(2)(a). The compliance monitoring well network is as follows:

- **Upgradient/Background Wells**: MW-4 and MW-5
- **Downgradient Wells**: MW-2 and MW-8

Groundwater sampling at the Landfill using the current monitoring well system began in Oct 1997. Samples were collected from the compliance monitoring wells and analyzed for Appendix I and II parameters pursuant to ADEM Admin. Code 335-13-4-.27(2).

This SAP has been developed based upon the characteristics of the groundwater quality data collected since groundwater monitoring was implemented in 1997 following the requirements in ADEM Admin. Code 335-13-4-.27, and the United States Environmental Protection Agency (USEPA) Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities Unified Guidance (March 2009).

The plan describes:

1. Background data collection, management, and updates.
2. Statistical concepts applicable to detection and assessment Monitoring programs.
3. Site-specific statistical analysis methods for Detection Monitoring; and
4. Statistical approach for Assessment Monitoring and Corrective Action.

As part of ongoing site activities, installation of additional wells may be necessary to characterize site conditions or supplement the compliance monitoring well network. The disposition of these additional wells will be described in the site groundwater monitoring plan. Procedures for statistically evaluating additional wells are described in this SAP.

Any change to the statistical analysis plan (e.g. statistical analysis method, background period, background data set, well network, screening method, etc.) will only be implemented upon receipt of approval from the Alabama Department of Environmental Management (Department).

2.0 BACKGROUND

This section describes the establishment, screening, update, and management of the background data sets used for detection, assessment and corrective action phases of groundwater monitoring. Included are descriptions of the tests that are used to determine whether the potential background data represent site-specific conditions and the procedures used to update (expand or truncate) the background data set. Also described are procedures that will be used to update the data set with more current monitoring data or as new background monitoring wells are installed. Changes or updates to background limits will be made in accordance with USEPA Unified Guidance (March 2009).

2.1 Background Screening

Background is determined based on site-specific conditions such upgradient wells, wells not in the groundwater flow path of the unit, or wells determined to not be affected by the disposal unit. Once background wells are selected based on site-specific conditions, the data are screened as follows:

2.1.1 Outlier Testing

An outlier is defined as an observation that is unlikely to have come from the same distribution as the rest of the data. A statistical outlier test, such as the 1989 EPA Outlier Test, Dixon's Test or Rosner's Test as discussed in the USEPA Guidance. Dixon's and Rosner's Tests are recommended for datasets that are normally distributed. Dixon's Test can be used for smaller

datasets (n≤25 datapoints) while Rosner's Test is used for larger datasets (n≥20). Turkey or Box Plots will be performed on the monitoring well data that indicate the presence of extreme observations relative to other observations and datasets that are not normally distributed or cannot be transformed to a normal distribution. The outlier test will serve as a data quality check to help identify errors from data entry and other sources. All identified outliers should be identified as such in data tables that are included in the groundwater reports.

Statistical outliers in the background data will be deselected unless it can be proven that the data point is not an anomalous value and does represent naturally occurring variation. This is conservative from a regulatory perspective in that it ensures that the background limits are not artificially elevated. When outliers are identified, they are flagged in the data set and the values excluded from background limit calculations. Re-testing for outliers will be performed when background updates are proposed.

2.1.2 Testing and Adjusting for Seasonal Effects

Testing and adjusting data for seasonal factors ensures that seasonal effects will not affect the test results. When seasonal effects are suspected, the Kruskal-Wallis seasonality test will be used to determine whether the seasonal effects are statistically significant when there is sufficient data to test for seasonality. When seasonal effects are confirmed, the data will be de-seasonalized prior to calculating a statistical limit. Data are de-seasonalized by subtracting the seasonal mean and adding back the grand mean to each observation. Background data will be re-tested when there are at least four new values available, and a background update is proposed.

2.1.3 Temporal Trend Testing

The Sen's Slope/Mann-Kendall statistical analysis will be performed on all well/constituent pairs to evaluate concentrations over time. The Sen's Slope Estimator will be used to estimate the rate of change (increasing, no change, or decreasing) for each constituent at each well. The Mann Kendall statistic will be used to determine whether each of those trends is statistically significant. The Sen's Slope/Mann Kendall analysis requires at least five observations.

When a significant trend is present, older historical values may be deselected from the background data prior to computing background limits in cases where groundwater is presumed not to be impacted by the unit. The resulting limits will reflect more current conditions and will not be influenced by older, historical conditions that are no longer relevant. If upgradient concentration levels are changing over time (i.e. trending upward or downward), the prospective background data set may need to be truncated, removing older data to ensure that the resulting limits continue to represent current natural conditions.

For instance, when background concentration levels are increasing over time due to upgradient water quality changes, if the background data sets are not adjusted, the established PLs could result in increased false positive or false negative risk. In some cases, including older historical data in the background data set may result in overly sensitive limits and an increased chance of false positive readings. In other cases, using all background data when there are temporal changes in background levels may artificially elevate limits. This scenario may occur even when there is a decreasing trend in background concentration levels. An elevated limit under these circumstances is a direct result of an inflated standard deviation that is used in the computation of the parametric limit, which in turn will increase the risk of false negative test outcomes.

Well /constituent pairs that have increasing or decreasing concentration levels over time will be evaluated to determine if earlier data are no longer representative of present-day groundwater quality. In those cases, earlier data may be deselected prior to construction of limits to reduce variation as well as to provide limits that are conservative from a regulatory perspective that will detect future changes in groundwater quality.

Background limits also need to allow for random variation in groundwater concentration levels that are naturally present at a site. The availability of multiple background wells can give an indication of the natural variability in groundwater constituent levels across a site.

2.1.4 Sample Size

While a parametric prediction limit may be constructed with as little as four samples per well, the EPA Unified Guidance recommends that a minimum of at least 8 independent background

observations be collected for constructing statistical limits. The reliability of the statistical results is greatly enhanced by increasing the sample size to eight or more. An increased sample size tends to more accurately characterize the variation and typically reduce the probability of erroneous conclusions. Furthermore, if a nonparametric prediction limit is required, the confidence level associated with the test will be dependent on the number of background data available as well as the number of comparisons to the statistical limit.

2.1.5 Non-Detect Data

When data contain <15% non-detects in background, simple substitution of one-half the reporting limit is utilized in the statistical analysis. The reporting limit (RL) utilized for non-detects is the practical quantification limit (PQL) used by the laboratory.

When data contain between 15-50% non-detects, the Kaplan-Meier non-detect adjustment is applied to the background data. This technique adjusts the mean and standard deviation of the historical concentrations to account for concentrations below the reporting limit. Trace (or estimated) values which are reported above the method detection limit (MDL) and below the PQL/RL are used in the statistical analysis as reported by the laboratory. These values are flagged with “J” to distinguish between estimated values and values reported above the PQL.

If detection limits change over a period of analysis, then a statistically significant trend could be the result of increasing or decreasing laboratory precision and not an actual change in water quality. Under those circumstances, an appropriate substitution of the detection limit will be considered, such as the median or most recent detection limit.

2.2 Updating Interwell Background

The following describes the process that will be used to update interwell background data sets. Background updates as described below will be performed every 2 years (ADEM, 2011).

Interwell statistical methods are constructed by pooling upgradient well data from 2 or more upgradient wells. For the Detection Monitoring program, background-derived Prediction Limits

will be updated during each semi-annual event by incorporating the most recent sampling results from the existing background well network into the background data set. New background data will be screened for any new outliers as described above.

For the Assessment and Corrective Action program, background-derived tolerance limits are used to construct background limits using pooled upgradient well data for comparison against established standards. The tolerance limits will be updated every 2 years after screening as described above.

Once background has been established, the background well network may be updated by (1) adding wells to the background well network, or (2) removing wells and data from the background well network. The following describes the additional statistical screening steps that will be taken to update the background after a site-specific determination is made that the wells meet the hydraulic and geochemical requirements of a background location.

2.2.1 Adding to the Background Well Network

The background data set may be updated or adjusted by incorporating new wells into the network or installing new background monitoring wells. When new wells are installed, the following process will be used to statistically evaluate the results and incorporate them into the background data set upon receipt of ADEM approval.

Prior to incorporating new upgradient well data for construction of statistical limits, Tukey's, Dixon's or Rosner's outlier test and visual screening are used to evaluate data. Any confirmed outliers are flagged as such in the database and deselected prior to construction of interwell prediction limits. Any flagged data are displayed in a lighter font and as a disconnected symbol on the time series reports, as well as in a lighter font on the accompanying data pages. A summary of Tukey's test results and flagged values will be provided with the report.

Upgradient well data will be further tested for trends as described earlier. When no statistically significant trends are identified, all new well data will be incorporated into the background. Any

records with trending data will be evaluated on a case-by-case basis, and records may require deselection if historical data are no longer representative of present-day groundwater quality conditions. Interwell prediction limits using all upgradient well data are re-calculated as a result of this screening.

2.2.2 Removing Wells and Data from Background

As additional background data are collected, or site conditions change, a recommendation may be made to remove a well from the background network for any number of reasons (e.g. removal, change in groundwater flow conditions, change in chemistry, vandalism, etc.). If an upgradient well will no longer be part of the background network, the historical data from that well will no longer be included in the construction of interwell limits (which pool upgradient well data) without Department approval.

When wells are proposed for removal from the network, a site-specific statistical and geochemical evaluation will be made to identify the population(s) of data that may not represent background conditions. A proposal will be submitted to the Department for approval identifying the recommended use or disuse of historical data from the well(s) proposed for removal. The proposal will include statistical data screening and will explain the rationale for the proposed use of the data.

In the case where an upgradient well is no longer sampled (i.e. due to well damage, etc.), but historical data are still representative of upgradient water quality, an evaluation will be conducted as described below to determine whether data are still representative of background and should continue to be included in the background data set. When a demonstration shows that groundwater quality from a well is still representative of naturally occurring groundwater quality upgradient of the facility, this data will be used in construction of statistical limits with ADEM approval. In cases where data from upgradient wells removed from the network do not represent upgradient groundwater quality, a proposal will be made for ADEM approval whereby interwell prediction limits will be re-calculated using data from only those upgradient wells in the network. When preparing a background data evaluation for Department approval, the statistical

portion of the evaluation will be accomplished by:

(i) Using the Analysis of Variance (ANOVA) to determine whether significant variation exists among upgradient wells which would prevent the well's data from being included in construction of interwell prediction limits;
(ii) Visual screening using Time Series and Box Plots to determine whether measurements are similar to neighboring upgradient wells;
(iii) Screening the background data set for outliers as described above; and
(iv) Performing trend tests to identify statistically significant increasing or decreasing trends which may require adjustment of the record to eliminate trending data and reduce variation.

3.0 STATISTICAL APPROACH FOR DETECTION MONITORING

The following sections describe the concepts related to developing a site-specific SAP for detection monitoring. The statistical evaluation includes screening upgradient well data to characterize groundwater upgradient of the facility and determine the most appropriate statistical method for each Appendix I constituent.

3.1 Statistical Method

When data from multiple upgradient wells are available, a determination will be made as to whether the upgradient well data appear to come from the same population or whether there is evidence of spatial variation upgradient of the facility. Data for each constituent are plotted using box and whisker plots to assist in making this determination, providing visual representation of concentrations within and across wells. ANOVA may be used initially to statistically evaluate whether significant spatial variation exists at each unit.

Interwell prediction limits (PLs) pool upgradient well data to construct statistical limits which are used to evaluate data at downgradient wells. These tests are appropriate when the ANOVA determines that no significant spatial variation exists among the background wells.

3.2 Prediction Limits

The use of PL tests is restricted to Appendix I parameters recently sampled at groundwater monitoring wells to represent current conditions. Background stability will be tested using temporal and seasonal trend tests, utilizing de-seasonalizing adjustments when seasonal trends are present. Moreover, statistical conditions including background sample size requirements as specified in USEPA guidance and regulations will be verified prior to the use of each statistical approach.

3.3 Criteria for Using the Interwell Statistical Methodology

There are a number of conditions that need to be met before an interwell statistical analysis can be considered appropriate for a specific site.

The conditions as described in this section include:

1. Ensuring that the aquifer underlying the site is continuous and that all monitoring wells are screened in the same level;
2. Ensuring that limits will be adequately sensitive in detecting a facility release;
3. Ensuring that limits reflect current background conditions; and
4. Ensuring that confounding factors will not confuse the results.

3.3.1 Aquifer Designation and Monitoring Wells

Given the nature of the uppermost aquifer underlying the site the use of an interwell statistical approach will be appropriate. The statistical approach for constituents of concern will be based on interwell PLs. Box and whisker plots may be provided to demonstrate concentration levels within each well and across wells. When significant differences exist in concentration levels, particularly between upgradient wells, this indicates spatial variation in the groundwater quality. Spatial variation and/or limited upgradient well data would tend to create statistical limits that are:

1. not conservative from a regulatory perspective; or
2. not representative of background water quality.

3.4 Site-Wide False Positive Rates (SWFPR) and Statistical Power

The USEPA Unified Guidance recommends an annual site-wide false positive rate of 10%, which is distributed equally among the total number of sampling events. A site-wide false positive rate of 5% is targeted for each semi-annual sampling event. USEPA also requires demonstration that the statistical methodology selected for a facility will provide adequate statistical power, as discussed in Section 3.7 to detect a release, should one occur.

3.5 Determination of Future Compliance Observations Falling Within Background Limits

Interwell upper PL are constructed with a test-specific alpha based on the overall site-wide false positive rate (SWFPR) of 5% for each sampling event. Any compliance observation that exceeds the background prediction limit will be followed with one or two independent resamples, depending on the resample plan, to determine whether the initial exceedance is verified.

The following pretests are used to ensure that the statistical test criteria are met:

1. Data Distribution. The distribution of the data will be tested using either the Shapiro-Wilk test (for background sample sizes of 50 or less) or the Shapiro-Francia test (for background sample sizes greater than 50). Non-normally distributed data will be transformed using the ladder of powers to normalize the data prior to construction of background limits. When background data cannot be normalized, nonparametric PL will be calculated.
2. Handling Non-Detects. Simple substitution per USEPA Guidance will be used when non-detects comprise less than or equal to 15% of the individual well data. Simple substitution refers to the practice of substituting one-half the reporting or detection limit for non-detects. When the proportion of non-detects (NDs) in background falls between 16 and 50%, a non-detect adjustment such as the Kaplan-Meier or Regression on Order Statistics (ROS) method for adjustment of the mean and standard deviation will be used

prior to constructing a parametric prediction limit. When the proportion of non-detects exceeds 50%, or when the data cannot be normalized, a nonparametric prediction limit will be used.

3.6 Statistical Power

The USEPA Unified Guidance also requires that facilities achieve adequate statistical power to detect a release, even if only at one facility well and involving a single constituent. More specifically, EPA recommends power of approximately 55% when concentration levels are 3 standard deviations above the background mean, or approximately 80% power at 4 standard deviations above the background mean.

The performance of a given testing strategy is displayed in Power Curves which are based on the particular statistical method chosen combined with the resampling plan, the false positive rate associated with the statistical test, as well as the number of background samples available and the size and configuration of the monitoring network.

4.0 STATISTICAL APPROACH FOR ASSESSMENT MONITORING & CORRECTIVE ACTION

The following describes the general statistical procedures that will be used if a facility enters Assessment or Corrective Action monitoring because of SSIs in the Detection monitoring program. Site-specific and event-specific SAPs may be developed at that time according to permit or regulatory requirements.

4.1 Assessment Monitoring

Assessment Monitoring may be initiated when there is a confirmed SSI over background in one or more wells for any of the Appendix I parameters. Wells are sampled for Appendix II parameters semiannually concurrent with Appendix I constituents.

When in assessment monitoring, Appendix II constituent concentrations are compared to Groundwater Protection Standards (GWPS), or other applicable standards, using Confidence

Intervals. Upgradient well data are screened for outliers and trends as described above and tolerance limits are used to develop background limits. Tolerance limits should only be used when there is minimal interwell spatial variability within the background data. Checks of the background well data for spatial variability should be conducted using box plots or ANOVA. GWPS may be based on background limits when background concentrations are higher than the established Maximum Contaminant Levels (MCLs).

Parametric confidence intervals around the population mean will be constructed at the 99% confidence level when data follow a normal distribution, and around the geometric mean (or population median) when data follow a transformed-normal distribution.

Non-parametric confidence intervals will be constructed when data do not pass a normality test and cannot be normalized via a transformation. The confidence level associated with the non-parametric tests is dependent on the number of values used to construct the interval. Confidence intervals require a minimum of four samples; however, a minimum of eight samples are recommended. When non-parametric confidence intervals are constructed, a maximum of eight of the most recent samples will be used in the comparison. When a well/constituent pair does not have the minimum sample requirement, the well/constituent pair will continue to be reported and tracked using time series plots and/or trend tests until such time that enough data are available.

In Assessment Monitoring, when the Lower Confidence Limit (LCL), or the entire interval, exceeds the GWPS as discussed in the USEPA Unified Guidance (2009), the result is recorded as an SSI.

4.2 Corrective Action

If groundwater corrective action is triggered, semi-annual sampling of the assessment monitoring wells will continue, and Confidence Intervals will monitor the progress of remediation efforts. Confidence Intervals are compared to GWPS, and the entire interval must fall below a specified limit (i.e. the Upper Confidence Limit [UCL] must be below the limit) to demonstrate

compliance. A site-specific monitoring program will be developed based on the final corrective action plan and points-of-compliance.

5.0 SITE-SPECIFIC STATISTICAL ANALYSIS METHODS

A site-specific statistical analysis approach was developed after applying the screening criteria described previously. The following is a detailed description of the statistical analysis methodology that will be used for groundwater quality analysis at the Landfill when monitored constituents are present in any of the downgradient wells. Background sampling began in 1997. The monitoring well network is described above.

For the statistical analysis of analytical results obtained from the existing monitoring well network,

1. the number of samples collected will be consistent with the appropriate statistical procedures as recommended by the USEPA Unified Guidance;
2. the statistical method will comply with the EPA-recommended performance standards; and
3. determination of whether there is a statistically significant increase (SSI) over background values in the future will be completed per the above-mentioned regulations.
4. all statistical tests should be accompanied by graphical representation of the data/test.

5.1 Detection Monitoring Program

Groundwater quality data will be evaluated through use of interwell prediction limits, combined with a 1-of-2 resampling strategy. If a statistical exceedance is found, the resample strategy allows for collection of one independent resample to determine whether the initial exceedance is verified.

When the initial finding is not verified by resampling, the resampled value will replace the initial finding. When the resample confirms the initial finding, the exceedance will be reported. If a resample is not collected, the initial exceedance will be considered a confirmed exceedance.

The Sen's Slope/Mann Kendall trend test will be used, in addition to PL, to statistically evaluate concentration levels over time and determine whether concentrations are increasing, decreasing, or stabilizing.

The chance of false positive results increases with increasing numbers of statistical tests. The total number of statistical tests for a facility is the number of parameters tested multiplied by the number of monitoring wells. To reduce the overall number of statistical tests performed at each semi-annual sampling event, thereby lowering the chance of a false exceedance while maintaining a high degree of statistical confidence that a release will be detected, the Landfill will:

1. Monitor constituents in wells with detections (i.e. excluding well/constituent pairs with 100% non-detects); and
2. Incorporate a 1-of-2 retesting strategy The following statistical methods will be used:

5.1.1 Parametric Prediction Limits

Parametric Prediction Limits, per USEPA Unified Guidance, require the sample data to be either normally distributed or normalized via transformation. In order to determine if a parametric or non-parametric statistical analysis should be conducted, a test for normality will be completed for the constituents with less than 50% non-detects to determine if the data set is normally distributed or can be transformed to a normal distribution. The Shapiro-Wilks Test for Normality will be used for constituents with less than 50 measurements, and the Shapiro-Francia Test for Normality will be used for constituents with greater than 50 measurements, as discussed in Chapter 10 of the Unified Guidance.

If data is normally distributed, or can be transformed to a normal distribution, parametric prediction limits will be calculated as discussed in Section 18.2 of the Unified Guidance. The results for the tests for normality will be submitted in each semi-annual groundwater monitoring report.

5.1.2 Nonparametric Prediction Limits

When the data is not normally distributed, or cannot be transformed to create a normal distribution, a non-parametric statistical method will be used as discussed in Section 18.3 of the Unified Guidance. When the data set contains a percentage of non-detects greater than 50%, it is suggested that a non-parametric method be used.

The highest background value will be used to set the upper nonparametric prediction limit. The associated confidence level takes into account the prospect of additional future compliance values (retests) when there is an initial exceedance. The achieved confidence level is determined based on the background sample size, the number of monitoring wells in the network, and the number of proposed retests, using tables provided in the USEPA Unified Guidance.

5.1.3 Retesting Strategy

When the prediction limit analyses indicate initial exceedances, discrete verification resamples from the indicating well(s) will be collected within 30 days and prior to the next regularly scheduled sampling event. If the initial exceedance is verified, a confirmed SSI will be reported. For the test to be valid, the resample needs to be statistically independent which requires that sufficient time elapse between the initial sample and resample. A minimum time interval between samples will be established to ensure that separate volumes of groundwater are being sampled.

5.1.4 Background Data Set

Interwell tests, which compare downgradient well data to statistical limits constructed from all pooled upgradient well data after careful screening, are appropriate when average concentrations are similar across upgradient wells. A minimum of 8 background samples are required for interwell tests.

The background data set will be managed, screened and updated as described previously after receipt of Department approval.

5.2 Assessment Monitoring Program

Assessment monitoring will be performed following the procedures described in Section 4.0. When assessment monitoring is initiated, Appendix II constituents are sampled semi-annually, and concentrations in downgradient wells are statistically compared as described below to GWPS. Following the Unified Guidance, the Maximum Contaminant Level (MCL) is used as the GWPS. When reported concentrations in upgradient wells are higher than the established MCLs, background limits may be developed as described below from an interwell tolerance limit using the pool of all approved upgradient well data (see Chapter 7 of the Unified Guidance). Tolerance limits should only be used when there is minimal interwell spatial variability within the background data. Checks of the background well data for spatial variability should be conducted using box plots or ANOVA.

Parametric tolerance limits, which are used when pooled upgradient well data follow a normal or transformed-normal distribution, may be constructed on upgradient well or wells with the highest average concentrations with Department approval. This step serves to reduce the effect of spatial variation on the standard deviation in the parametric case when calculating a GWPS. Non-parametric tolerance limits will be constructed when data do not follow a normal or transformed-normal distribution or when a parametric tolerance limit is not approved.

Appendix II background data are screened for outliers and extreme trending patterns that would lead to artificially elevated statistical limits. Confidence Intervals are then constructed using a maximum of 8 of the most recent assessment measurements from a given downgradient well for comparison to the GWPS to determine compliance. Additionally, the Sen's Slope/Mann Kendall trend test will be used to evaluate the most recent measurements to determine whether concentration levels are statistically significantly increasing, decreasing, or stabilizing.

Parametric tolerance limits (i.e. UTLs) are calculated when data follow a normal or transformed-normal distribution using pooled upgradient well data as described above for Appendix II parameters with a target of 95% confidence and 95% coverage. When data sets contain greater

than 50% non-detects or do not follow a normal or transformed-normal distribution, the confidence and coverage levels for nonparametric tolerance limits are dependent upon the number of background samples. The UTLs are then used as background levels for establishing the GWPS under case 2 below.

As described in ADEM Admin. Code r. 335-13-4-.27(4)(h) the GWPS is:

1. The maximum contaminant level (MCL) established under 40 CFR § 141
2. Background levels for constituents where the background level is higher than the MCL.

In assessment monitoring, when the Lower Confidence Limit (LCL), or the entire confidence interval, exceeds the GWPS as discussed in the USEPA Unified Guidance (2009), the result is recorded as a statistically significant level (SSL).
With Department approval, the background limits will be updated and compared to the specified limits for Appendix II constituents every two years to determine whether the established limit or background will be used as the GWPS in the confidence interval comparisons, as discussed above.

5.3 Corrective Action Monitoring Program

When implemented, groundwater corrective action will include a remedy monitoring program. If the site requires corrective action, the Confidence Interval Method comparison to the Groundwater Protection Standard (CI-GWPS) using the Upper Confidence Limit (UCL) will be used to evaluate the data. When the UCL is below the respective groundwater protections standard the concentration is considered below the GWPS and cleanup standards will be attained. Application of the CI-GWPS method will be in accordance with the guidelines found in Chapter 21 of the USEPA Unified Guidance (March 2009).

6.0 REFERENCES

ADEM, 2011, Alabama Groundwater Monitoring Reporting Guidance For Solid Waste Facilities (March 2011)

U.S. EPA, April 1989. Interim Final Guidance, Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities. Office of Solid Waste Management Division, U.S. Environmental Protection Agency, Washington, D. C.

U.S. EPA, June 1992. Addendum to Interim Final Guidance, Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities. Office of Solid Waste Management Division, U.S. Environmental Protection Agency, Washington, D. C.

U.S. EPA, March 2009. Unified Guidance, Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities. Office of Solid Waste Management Division, U.S. Environmental Protection Agency, Washington, D. C.

APPENDIX C

EXAMPLE FIELD SAMPLING LOG FORM



GROUNDWATER SAMPLING LOG

SITE NAME: **Fort Payne Landfill**	SITE LOCATION: **Fort Payne, Dekalb County, Alabama**

WELL NO:	SAMPLE METHOD:	DATE:

PURGING DATA

WELL DIAMETER (inches):	TUBING DIAMETER (inches):	WELL DEPTH (feet):	STATIC WATER LEVEL DEPTH (feet):
PURGING INITIATED AT:		PURGING ENDED AT:	TOTAL VOLUME PURGED (gallons):

TIME	PUMPING RATE (gpm)	DEPTH TO WATER (feet)	TEMP. (^{O}C)	DISSOLVED OXYGEN (circle mg/L or % saturation)	COND. (μmhos/cm or μS/cm)	pH (standard units)	ORP (Mv)	TURBIDITY (NTUs)	COLOR (describe)	ODOR (describe)

SAMPLING DATA

SAMPLE DATE:	SAMPLE COLLECTION TIME:
SAMPLED BY (PRINT):	SAMPLER(S) SIGNATURES:
REMARKS:	

Groundwater Level Measurements

Well/ Piezometer Number.	Casing Elevation ft-amsl	Total Depth ft - btc	Bottom Elevation ft-amsl	Water Level Date:

QA/QC Samples	Date	Time
Field Blank	_____	_____
Rinsate Blank	_____	_____
Duplicate ( )	_____	_____

Well Volume Calculation: (Total Depth – Static Water Level) x 0.163 (gallons per foot in 2" well) = 1 Well Volume
Divide: 1 Well Volume by purge rate to get amount of time needed to purge 1 well volume

APPENDIX D

EXAMPLE CHAIN OF CUSTODY FORM



Chain of Custody Record

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other:

Client Contact	**Project Manager:**	**Site Contact:**	**Date:**	COC No:
Site :	**Tel/Fax:**	**Lab Contact:**	**Carrier:**	_____ of _____ COCs
Address:	**Analysis Turnaround Time**			Sampler:
City/State/Zip:	☐ CALENDAR DAYS ☐ WORKING DAYS			**For Lab Use Only:**
Phone	TAT if different from Below _____			Walk-in Client:
Fax:	☐ 2 weeks			Lab Sampling:
Project Name:	☐ 1 week			
Site:	☐ 2 days			Job / SDG No.:
P O #	☐ 1 day			

Sample Identification	**Sample Date**	**Sample Time**	**Sample Type (C=Comp, G=Grab)**	**Matrix**	**# of Cont.**	**Filtered Sample (Y / N)**	**Perform MS / MSD (Y / N)**																Sample Specific Notes:

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _____

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

☐ Return to Client ☐ Disposal by Lab ☐ Archive for _____ Months

Special Instructions/QC Requirements & Comments:

Custody Seals Intact: ☐ Yes ☐ No | Custody Seal No.: | Cooler Temp. (°C): Obs'd:_____ Corr'd:_____ Therm ID No.:_____

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time: