



HODGES, HARBIN,
NEWBERRY & TRIBBLE, INC.

Consulting Engineers

August 5, 2021

Received: 8/5/21 7:17

Mr. Scott Story P.E.
Chief of Solid Waste - Engineering Section
Alabama Department of Environmental Management
1400 Coliseum Boulevard
Montgomery, AL 36110

**Re: Arrowhead Landfill
Solid Waste Permit (#53-03) Renewal
HHNT Project No. 6750-012-01**

Dear Mr. Story:

The Solid Waste Permit for the subject site expires on February 9, 2022. As required by ADEM regulations, a renewal application is required to be filed for permit renewal at least 180 days prior to the permit expiration. To satisfy this requirement and per the meeting on April 15, 2021, HHNT, on behalf of Perry County Associates, LLC, has enclosed the renewal application, which includes:

1. Three (3) copies of the signed application for renewal (ADEM Form 439);
2. Two checks equaling the amount of \$45,720.00 for the 10-yr renewal application fee (\$37,270.00) and hearing fee (\$8,450.00);
3. A list of adjacent property owners and a map showing the location of each property;
4. An updated Topographic Site Map (Existing Topographic Conditions – Tracts 1, 2, & 3);
5. Design and Operations Section 2.0 from 2016 Renewal Application (i.e. LF Operations Plan Narrative); and
6. The Gas Monitoring Plan (excerpt from the Environmental Monitoring Plan).

We request that all previously approved variances for the subject facility be included. A list of the approved variances from Section X of the current permit is listed below:

- A. A variance is granted for the Arrowhead Landfill from Rule 335-13-4-.22.(1)(b) which states that all waste shall be confined to as small an area as possible. Under this variance the Arrowhead Landfill is allowed to operate three working faces. Two working faces have been approved as follows: the first for the placement of MSW/Construction and Demolition waste and the second for the placement of ash waste. Additionally, a temporary working face has been approved for newly constructed cells. This working face will consist of a fluff layer or selected waste that will protect the integrity of the liner and will only be applicable for newly constructed cells until a sufficiently thick initial fluff lift has been achieved. Each of the working faces should be confined to as small an area as possible.

Mr. Scott Story, P.E.

August 5, 2021

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- B. A variance is granted from Rule 335-13-4-.20(2)(c)3. requiring terraces every 20 feet rise in elevation. This variance requires terraces every 40 feet rise in elevation.
- C. The Permittee is allowed to solidify waste within the waste solidification mixing pit constructed as shown in the Application. Solidification shall follow the procedures specified in the Application. The solidification mixing pit shall be located within a lined cell area at all times.

We appreciate your assistance with this project. Please let me know if there is anything else that you need or if you have any questions, please call.

Sincerely,

HODGES, HARBIN, NEWBERRY & TRIBBLE, INC.



K. Matthew Cheek, P.E.
Professional Engineer

KMC/mp

Enclosure

cc: William Gay (w/ enclosure)
Jim Francesco (w/ enclosure)
Michael Thomas (w/ enclosure)



HODGES, HARBIN,
NEWBERRY & TRIBBLE, INC.

Consulting Engineers

December 1, 2021

Received: 12/1/21 7:17

Mr. Devin Jenkins, P.E.
Environmental Engineering Specialist
Alabama Department of Environmental Management
1400 Coliseum Boulevard
Montgomery, AL 36110

**Re: Arrowhead Landfill
Solid Waste Permit (#53-03) Renewal
HHNT Project No. 6750-012-01**

Dear Mr. Jenkins:

Per your request, we have reviewed the acreage reported on Form 439 as part of the August 5, 2021, Solid Waste Permit Renewal submittal. The acreage reported for the size of the facility was 976.97 acres and should have been 973.85 acres per the boundary survey by Wellston & Associates revised January 25, 2016. As you are aware, a minor modification was submitted on February 10, 2016 to ADEM, to revise the permit boundary to remove the New Hope Cemetery property from the landfill property. This was subsequently approved by ADEM (attached) on February 29, 2016.

We appreciate your assistance with this project. Please let me know if there is anything else that you need or if you have any questions, please call.

Sincerely,

HODGES, HARBIN, NEWBERRY & TRIBBLE, INC.

K. Matthew Cheek, P.E.
Professional Engineer

KMC/mp

Enclosure

cc: William Gay (w/ enclosure)
Jim Francesco (w/ enclosure)
Robert Berns (w/ enclosure)
Michael Thomas (w/ enclosure for Operating Record)

LANCE R. LEFLEUR
DIRECTOR



ROBERT J. BENTLEY
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

February 29, 2016

Mr. Ernest Kaufmann
President
Perry County Associates, LLC
134 Riverstone Terrace, Suite 203
Canton, GA 30114

RE: Permit Modification
Arrowhead Landfill
Permit No. 53-03

Dear Mr. Kaufmann:

On February 11, 2016, the Department received a request from HHNT, Inc. on behalf of Perry County Associates, LLC to reduce the permitted landfill boundary to 973.85 acres (a reduction of 3.12 acres). In addition, the application also requests the modification of the methane monitoring points to reflect the changes in the property boundary. The Department has reviewed and approves your request.

Enclosed please find the modified permit. The permit is effective February 29, 2016, and the expiration date will remain September 26, 2016. If you have any questions on this matter, please contact Mr. Shane Lovett of the Solid Waste Engineering Section at (334) 270-5628.

Sincerely,

A handwritten signature in black ink, appearing to read "S. Scott Story".

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

SSS/sl

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)

- 1. THREE (3) COPIES OF THE SIGNED APPLICATION FOR RENEWAL
(ADEM FORM 439)**
-

SOLID WASTE APPLICATION

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

1. **Facility type:** **Municipal Solid Waste Landfill (MSWLF)**
 Industrial Landfill (ILF)
 CCR Landfill (CCRLF)
 CCR Surface Impoundment (CCRSI)
 Other (explain) _____
2. **Facility Name** Arrowhead Landfill
3. **Applicant:**
Name: Perry County Associates, LLC
Address: 65 Challenger Road
 Suite 312
 Ridgefield Park, NJ 07660
Telephone: (551) 999-8261
4. **Location: (include county highway map or USGS map)**
Township 17 North **Range** 6 East
Section 21, 22, 27 & 28 **County** Perry
5. **Land Owner:**
Name: Howling Coyote, LLC
Address: 65 Challenger Road, Suite 312
 Ridgefield Park, NJ 07660
Telephone: (551) 999-8261

(Attach copy of agreement from landowner if applicable.)

Solid Waste Permit Application
Page 2

6. Contact Person:

Name William Gay

Position or Affiliation Chief Executive Officer

Address: 65 Challenger Road, Suite 312
Ridgefield Park, NJ 07660

Telephone: (551) 999-8261

7. Size of Facility:

976.97 **Acres**

Size of Disposal Area(s):

425.33 **Acres**

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

States of Alabama, Arkansas, Connecticut, Delaware, Florida, Georgia, Illinois, Indiana, Iowa, Kentucky,
Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, New Hampshire,
New Jersey, New York, North Carolina, Ohio, Oklahoma, Pennsylvania, Rhode Island, South Carolina,
Tennessee, Texas, Vermont, Virginia, West Virginia and Wisconsin.

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

15,000 **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.):

Nonhazardous solid wastes, noninfectious putrescible and nonputrescible wastes including but
not limited to household garbage, commercial waste, industrial waste, construction and demolition
debris, tires and other similar type materials. Special waste approved by ADEM may also be accepted.



SIGNATURE

8/4/21

DATE

SOLID WASTE APPLICATION

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

1. Facility type: X Municipal Solid Waste Landfill (MSWLF)
 Industrial Landfill (ILF)
 CCR Landfill (CCRLF)
 CCR Surface Impoundment (CCRSI)
 Other (explain) _____
2. Facility Name Arrowhead Landfill
3. Applicant:
- Name: Perry County Associates, LLC
- Address: 65 Challenger Road
 Suite 312
 Ridgefield Park, NJ 07660
- Telephone: (551) 999-8261
4. Location: (include county highway map or USGS map)
- Township 17 North Range 6 East
 Section 21, 22, 27 & 28 County Perry
5. Land Owner:
- Name: Howling Coyote, LLC
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- (Attach copy of agreement from landowner if applicable.)

Solid Waste Permit Application
Page 2

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New Jersey, New York, North Carolina, Ohio, Oklahoma, Pennsylvania, Rhode Island, South Carolina,
Tennessee, Texas, Vermont, Virginia, West Virginia and Wisconsin.

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

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SIGNATURE

8/4/21

DATE

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

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2. Facility Name Arrowhead Landfill

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Name: Perry County Associates, LLC

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 Suite 312
 Ridgefield Park, NJ 07660

Telephone: (551) 999-8261

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

Township 17 North Range 6 East
Section 21, 22, 27 & 28 County Perry

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 Ridgefield Park, NJ 07660

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(Attach copy of agreement from landowner if applicable.)

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Position or Affiliation Chief Executive Officer

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Ridgefield Park, NJ 07660

Telephone: (551) 999-8261

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Size of Disposal Area(s):

976.97 Acres

425.33 Acres

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

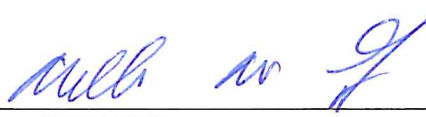
States of Alabama, Arkansas, Connecticut, Delaware, Florida, Georgia, Illinois, Indiana, Iowa, Kentucky,
Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, New Hampshire,
New Jersey, New York, North Carolina, Ohio, Oklahoma, Pennsylvania, Rhode Island, South Carolina,
Tennessee, Texas, Vermont, Virginia, West Virginia and Wisconsin.

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

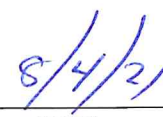
15,000 Tons/Day _____ Cubic Yards/Day

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

Nonhazardous solid wastes, noninfectious putrescible and nonputrescible wastes including but
not limited to household garbage, commercial waste, industrial waste, construction and demolition
debris, tires and other similar type materials. Special waste approved by ADEM may also be accepted.



SIGNATURE



DATE

2. TWO CHECKS EQUALING THE AMOUNT OF \$45,720.00

PERRY COUNTY ASSOCIATES, L.L.C.
 622 TAYLOE RD.
 UNIONTOWN, AL 36786-4535

1-2/210 6015

DATE 7/28/2021

PAY TO THE ORDER OF Alabama Department of Environmental Management \$ 37,270.00
Thirty Seven Thousand Two Hundred Seventy and 00/100 DOLLARS

CHASE
 JPMorgan Chase Bank, N.A.
 www.Chase.com

MEMO 10 yr renewal app fee

⑆02⑆100002⑆⑆⑆ 670588⑆25⑆⑆60⑆5

PERRY COUNTY ASSOCIATES, L.L.C.
 622 TAYLOE RD.
 UNIONTOWN, AL 36786-4535

1-2/210 6014

DATE 7/29/2021

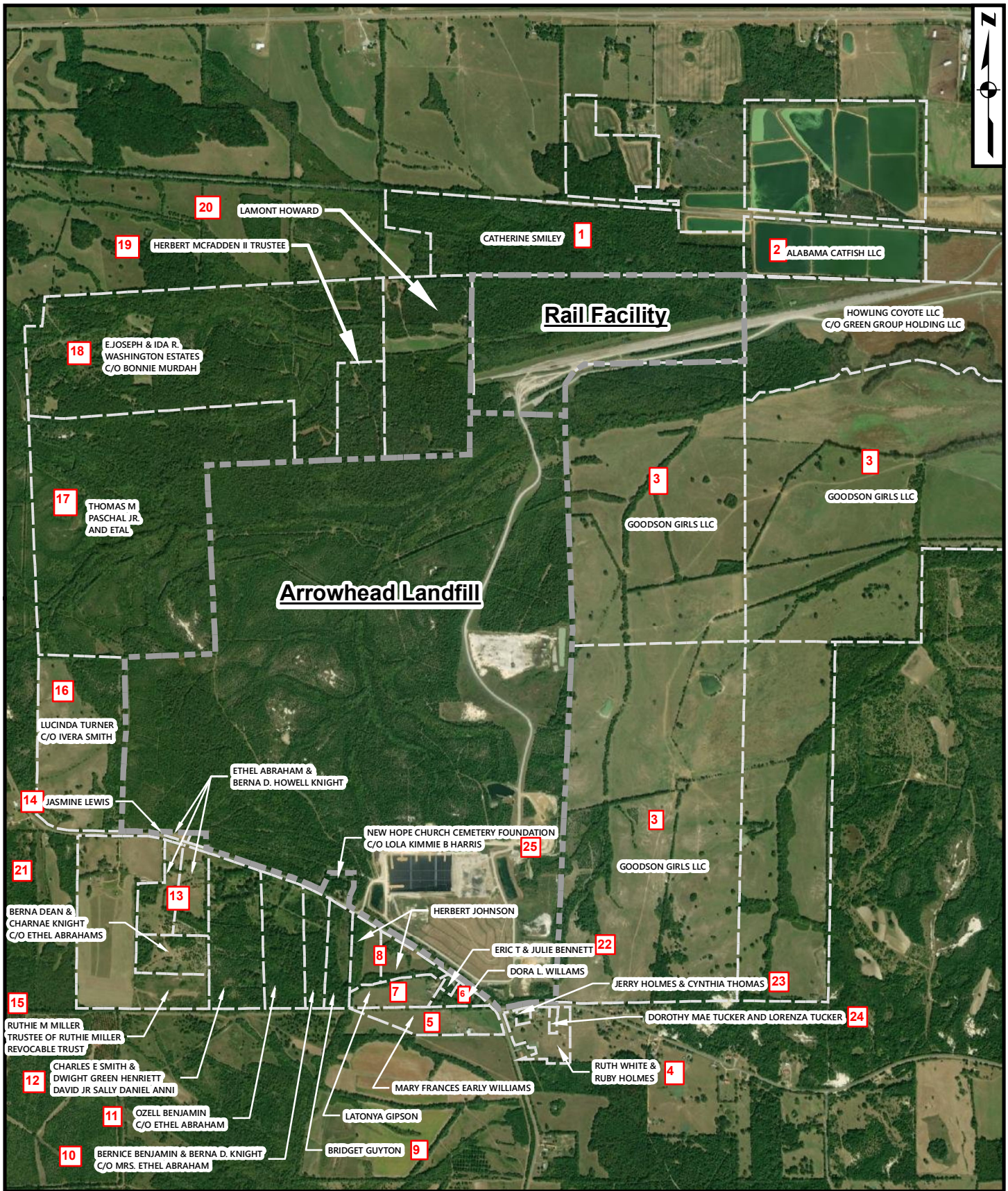
PAY TO THE ORDER OF Alabama Department of Environmental Management \$ 8450.00
Eight Thousand Four Hundred Fifty and 00/100 DOLLARS

CHASE
 JPMorgan Chase Bank, N.A.
 www.Chase.com

MEMO hearing fee

⑆02⑆100002⑆⑆⑆ 670588⑆25⑆⑆60⑆4

3. LIST OF ADJACENT PROPERTY OWNERS AND MAP SHOWING THE LOCATION OF EACH PROPERTY



1,750 875 0 1,750



GRAPHIC SCALE IN FEET

Vivid Maxar Aerial October 1, 2019

Adjacent Property Owners Map

Arrowhead Landfill

Date: 8/2/2021

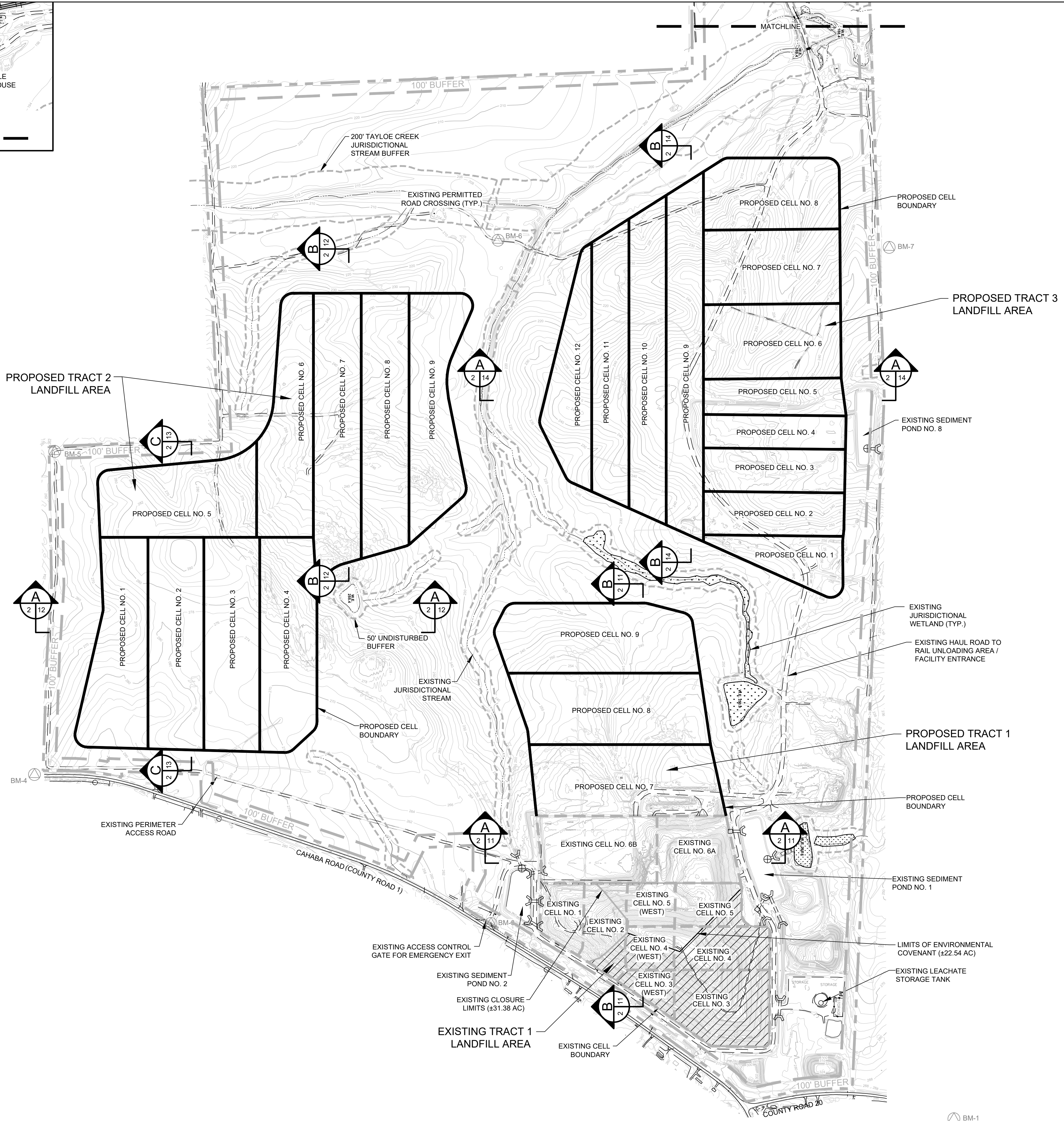
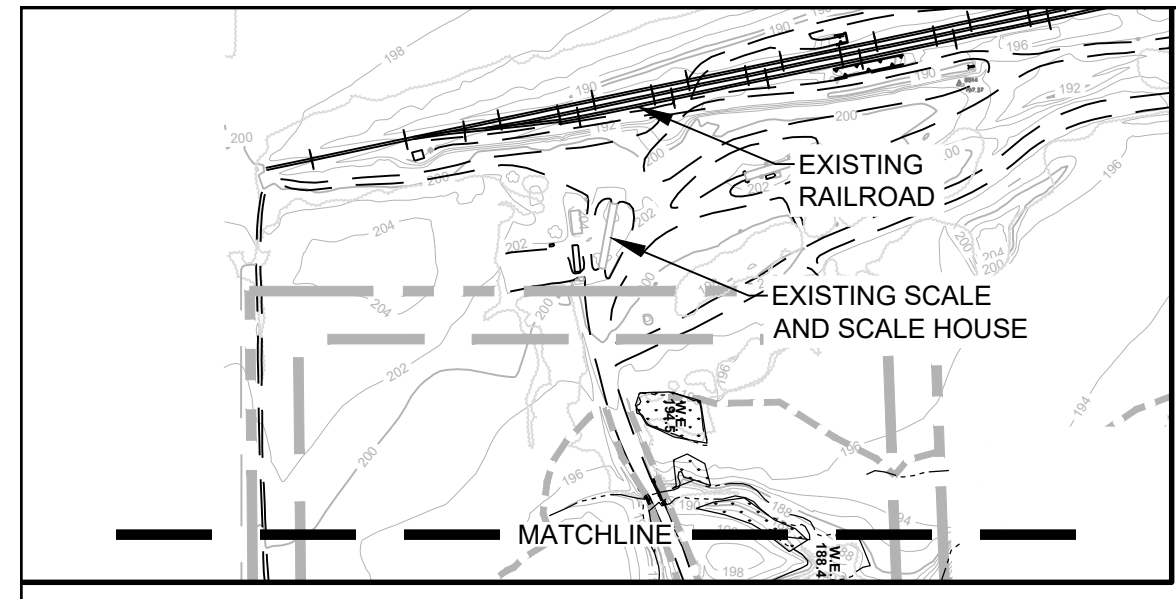


Name and Address	Parcel Number
1. Catherine I. Smiley (Deceased) c/o C. B. Smiley, Jr. P. O. Box 538 Uniontown, AL 36786	53-22-05-15-0-000-012.000
2. Alabama Catfish LLC 1550 McFarland Blvd Tuscaloosa, AL 36506	53-22-06-14-0-000-010.000
3. Goodson Girls, LLC 701 22 nd Avenue, Suite 1 Tuscaloosa, AL 35401	53-22-05-22-0-000-003.000
4. Ruby Holmes & Ruth White 110 Shaw Rd. Uniontown, AL 36786	53-22-06-23-0-000-001.000
5. Mary Frances Early Williams 4060 Central Mills Road Uniontown, AL 36786	53-22-08-27-0-000-001.000
6. Dora L. Williams 27262 Flagler Ave Brooksville, FL 34602	53-22-08-34-0-000-003.000
7. LaTonya Gipson P. O. Box 654 Uniontown, AL 36786	53-22-08-34-0-000-005.001
8. Herbert Johnson 75 Daglilly Lane Uniontown, AL 36786	53-22-08-27-0-000-003.000
9. Bridget Guyton 3420 NE 43rd Place Ocala, FL 34479	53-22-08-27-0-000-003.001
10. Bernice Benjamin and Berna D. Knight c/o Ethel Abraham 3044 Central Mills Road Uniontown, AL 36786	53-22-08-27-0-000-004.000
	53-22-08-28-0-000-012.000
	53-22-08-28-0-000-010.000
	53-22-08-28-0-000-009.002

Name and Address	Parcel Number
11. Ozell Benjamin c/o Ethel Abraham 3044 Central Mills Road Uniontown, AL 36786	53-22-08-28-0-000-009.000
12. Charles E. Smith & Dwight Green Henriett Sally Daniel Anni Jr 817 Hatcher Street Montgomery, AL 36109	53-22-08-28-0-000-008.000
13. Ethel Abraham and Berna D. Howell Knight 3044 Central Mills Road Uniontown, AL 36786	53-22-08-28-0-000-007.000 53-22-08-28-0-000-007.002
14. Jasmine Lewis P. O. Box 1154 Uniontown, AL 36786	53-22-08-28-0-000-007.001
15. Ruthie M. Miller, Trustee of the Ruthie Miller Revocable Trust Dated 6/27/1996 250 Shaw Road Uniontown, AL 36786	53-22-08-28-0-000-006.000
16. Lucinda Turner c/o Ivera Smith 15340 Little Field Detroit, MI 48227	53-22-08-28-0-000-002.000
17. Thomas M. Paschal, Jr., et al 1054 Foxcraft Road NW Atlanta, GA 30327	53-22-05-21-0-000-004.000
18. E. Joseph & Ida R. Washington Estates c/o Bonnie Murdah 6815 Mower Street Philadelphia, PA 19119	53-22-08-21-0-000-001.000
19. Herbert McFadden II Trustee 337 1 st Ave North Birmingham, AL 35204	53-22-08-21-0-000-002.000
20. Lamont G Howard 9916 Highway 5 Marion, AL 36756	53-22-08-22-0-000-002.000

Name and Address	Parcel Number
21. Berna Dean & Charnae Knight c/o Ethel Abrahams 3044 Central Mills Rd Uniontown, AL 36786	53-22-08-28-0-000-007.003 0
22. Eric T & Julie Bennett PO Box 394 Uniontown, AL 36786	53-22-08-27-0-000-003.002 0
23. Jerry Holmes & Cynthia Thomas 30 Shaw Rd Uniontown, AL 36786	53-22-08-34-0-000-003.002 0
24. Dorothy May Tucker & Lorenza Tucker 230 Shaw Road, Uniontown, AL 36786	53-22-08-34-0-000-003.003 0
25. New Hope Church Cemetery Foundation C/O Lola Kimmie B Harris 86 Banks Quarter Uniontown, AL 36786	53-22-08-28-0-000-001.002 0

4. TOPOGRAPHIC SITE MAP



BENCHMARK

BENCHMARK	NORTHING	EASTING	ELEVATION
BM-1	876210.33	1980424.75	294.38
BM-2	878163.34	1977770.88	282.98
BM-3	877782.48	1976696.51	291.40
BM-4	878981.35	1973019.78	278.93
BM-5	881582.13	1973182.74	294.32
BM-6	883283.04	1976752.92	206.20
BM-7	883226.17	1979903.25	219.42

- REFERENCE NOTES:
- TOPOGRAPHIC INFORMATION FOR THE TRACT 1 WASTE FOOTPRINT WAS PROVIDED BY WELLSTON ASSOCIATES LAND SURVEYORS, LLC. DATE OF SURVEY 3/1/21.
 - REMAINING TOPOGRAPHIC INFORMATION PROVIDED BY SOUTHERN RESOURCES MAPPING CORPORATION. DATE OF PHOTOGRAPHY 04/30/10.
 - PERMITTED WETLAND BOUNDARY WAS TAKEN FROM THE INDIVIDUAL PERMIT APPLICATION PREPARED BY RICHARDSON, SMITH, GARDNER & ASSOCIATES. THE DRAWING ENTITLED "EXISTING CONDITIONS STREAMS AND WETLANDS" DATED MARCH 2008.



REVISED: MARCH 2021- PERMIT RENEWAL

EXISTING TOPOGRAPHIC CONDITIONS - TRACTS 1, 2 & 3

ARROWHEAD LANDFILL
2021 PERMIT RENEWAL
 FOR
HOWLING COYOTE, LLC
PERRY COUNTY ASSOCIATES, LLC
 PERRY COUNTY, ALABAMA

HHNT
 HODGES, HARBIN,
 NEWBERRY & TRIBBLE, INC.
 Consulting Engineers

3920 ARKWRIGHT RD.
 SUITE 101
 MACON, GEORGIA 31210

(478) 743-7175
 (478) 743-1703 (FAX)

PROJ. NO. 6750-012-01 DWG. AH-2016PR-TP EDIT 3-23-2021
 SCALE 1" = 400'
 DATE MARCH 2016

SHEET 2 OF 19

5. DESIGN AND OPERATIONS SECTION 2.0 FROM 2016 RENEWAL APPLICATION (I.E. LF OPERATIONS PLAN NARRATIVE)

Attached is the currently approved landfill Operation Plan from the 2016 Permit Renewal Application. As part of this permit renewal process, this Operation Plan has been reviewed and found to be consistent with current landfill operations. Therefore no changes have been made.

Arrowhead Landfill remains committed to operating in accordance with this plan, the permit, and the ADEM Solid Waste Rules. As a result, whenever the Alabama Department of Environmental Management (ADEM) updates the Land Division – Solid Waste Program Division 13 Rules, the facility will operate in accordance with the updated rules.

2016 SOLID WASTE PERMIT RENEWAL APPLICATION

**ARROWHEAD LANDFILL
PERMIT #53-03**

**PERRY COUNTY ASSOCIATES, LLC
PERRY COUNTY, ALABAMA**

MARCH 2016

VOLUME 1 OF 2



**HODGES, HARBIN,
NEWBERRY & TRIBBLE, INC.**

Consulting Engineers



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2.0 DESIGN AND OPERATIONS

- 2.1 General Design Standards for Disposal Facilities (335-13-4-.11)
- 2.2 Plans and Operational Reports (335-13-4-.12)
- 2.3 Site Geology and Hydrology (335-13-4-.13)
- 2.4 Groundwater Resources (335-13-4-.14)
- 2.5 Cover (335-13-4-.15)
- 2.6 Explosive Gases (335-13-4-.16)
- 2.7 Drainage (335-13-4-.17)
- 2.8 Liners and Leachate Collection (335-13-4-.18)
- 2.9 Access (335-13-4-.19)
- 2.10 Closure and Post-Closure (335-13-4-.20)
- 2.11 General Operational Standards for Landfill Units (335-13-4-.21)
- 2.12 Specific Requirements for Municipal Solid Waste Landfills (335-13-4-.22)
- 2.13 Septic Tank Pumpings and Sewage Sludge (335-13-4-.24)
- 2.14 Requirements for Management and Disposal of Special Waste (335-13-4-.26).
- 2.15 Recordkeeping Requirements (335-13-4-.29).

3.0 CLOSURE PLAN

- 3.1 Closure and Post-Closure (335-13-4-.20).

4.0 POST CLOSURE CARE PLAN

- 4.1 Closure and Post-Closure (335-13-4-.20).

5.0 CONSTRUCTION QUALITY ASSURANCE (CQA) PLAN

6.0 TECHNICAL SPECIFICATIONS

7.0 ENVIRONMENTAL MONITORING PLAN

8.0 LEACHATE COLLECTION SYSTEM CALCULATIONS

9.0 STORM WATER, EROSION AND SEDIMENT CONTROL DESIGN CALCULATIONS

VOLUME 2 of 2

10.0 FINANCIAL ASSURANCE

11.0 PROHIBITED WASTE EXCLUSION PLAN

12.0 GEOTECHNICAL DESIGN CALCULATIONS

APPENDIX

- A. Permit Application (Form 439)
- B. Application Fee
- C. List of Adjacent Property Owners & Addresses
- D. Site Location Map
- E. Site Analysis Report, prepared by JJ&G Inc. & dated September 2005 -
(Hydrogeologic Evaluation)
- F. Alabama Historical Commission Clearance Letter
- G. Updated FEMA Flood Insurance Rate Map
- H. Statement of Consistency from the Alabama-Tombigbee Regional Commission
- I. Host Government Approval
- J. CCR Acceptance Plan

2.0 DESIGN AND OPERATIONS

In accordance with the Alabama Solid Waste Management Regulations prepared by the Alabama Department of Environmental Management (ADEM), Division 13, Solid Waste program, this document presents the information for the Arrowhead Landfill. This document is divided into sections which correspond to ADEM rules found in Chapter 4 of Division 335-13. Each paragraph is subdivided to correspond with the items listed for each rule part in the ADEM Permit Review List.

2.1 *General Design Standards for Disposal Facilities (335-13-4-.11)*

(1) General Standards.

335-13-4-.12 through 335-13-4-.20 provides standards for establishing a landfill unit providing that the siting standards of 335-13-4-.01 have been fully complied with to the satisfaction of the Department. Certain requirements contained in 335-13-4-.01 through 335-13-4-.20 may be enhanced or reduced by the Department as deemed necessary to comply with the Act and this Division.

The landfill is designed at a minimum to the standards of the Alabama Department of Environmental Management (ADEM) Solid Waste Rules dated April 3, 2012. The landfill includes a composite liner system with a leachate collection system.

Where a liner with leachate collection system is placed on virgin earth, settlement and stability have been calculated using soil boring information.

Siting standards including the Hydrogeological Evaluation, were submitted in Volume 1 of 2 of the original Solid Waste Permit Application entitled, Site Analysis, Perry County Associates Landfill prepared by Jordan, Jones, & Goulding, Inc. (JJ&G) and dated September, 2005 (see Appendix E). This document is further referenced throughout this 2016 Renewal Application as the Hydrogeologic Evaluation.

(2) Hydrogeology Standards.

(a) *For purposes of designing the bottom elevation of the liner system, the applicant shall measure the ground water elevation at the location of the proposed cell or liner system. Such determinations shall be based on groundwater measurements taken in the area of the proposed cell or liner system as approved by the Department. At each measuring location, the applicant shall obtain a minimum of two measurements taken during each of the three consecutive months of February, March and April with no two measurements taken within any twelve-day period. Having*

obtained the measurements, the applicant shall design the facility so that the bottom elevation of the liner shall be a minimum of five feet above the highest measured groundwater level. The applicant shall submit to the Department all data known to exist concerning groundwater elevations at the landfill site and shall submit to the Department a location map showing all monitoring wells or piezometers and drilling logs for all monitoring wells or piezometers used to obtain any groundwater elevation data that is submitted. Nothing herein shall prevent the Department from requiring additional groundwater measurements or from requiring an additional buffer as it may deem appropriate with respect to a particular site.

The Hydrogeologic Evaluation prepared by JJ&G is attached in Appendix E. The facility is designed to maintain a five foot vertical separation after settlement between the seasonal high water table, and the bottom elevation of the liner system when measured as described above.

- (b) *When the geological and hydrological data so indicate, the Department may specify greater separation distances, a liner(s), or a leachate collection system, or combination of the above to protect the groundwater.*

The required separation is shown and in most cases is much greater than that required by ADEM.

- (c) *When the geological and hydrological data so indicate, the Department may allow engineering controls to remove, divert, drain, or otherwise modify zones of saturation above the uppermost aquifer.*

Any perched zones of water present on clay lenses will be drained during excavation of cells for landfill construction. The use of underdrains is not anticipated for this facility.

2.2 *Plans and Operational Reports (335-13-4-.12)*

(1) Compliance.

Plans and operational reports for construction, operation, maintenance, closure, and post-closure care of landfill units shall be prepared and kept on site and shall comply with 335-13-5-.02(1) and this Chapter.

The Regional Planning Commission Statement of Consistency and the Host Government Approval are included in Appendix H and I, respectively of this document.

(2) Plan Requirements.

These plans and reports shall include the following as determined necessary by the Department:

- (a) *Sufficient control points on-site to provide for accurate horizontal and vertical control for facility construction, operation and closure and post-closure.*

Benchmarks and a system of coordinates have been established on the site to provide for accurate horizontal and vertical control for the facility during construction, operation, and closure. Benchmarks are shown on the Design and Operation Plans. Existing on-site control was established by Wellston Associates Land Surveyors, LLC and is based on state plane coordinates.

- (b) *Detail presentation of geological and hydrogeological units in the disposal site, with typical sections of disposal method and plan and profile sheets on all areas or trenches.*

Refer to the Design and Operation Plans and Hydrogeologic Evaluation. Details and cross sections are provided therein.

- (c) *Boundary plat and legal property description prepared, signed, and sealed by a land surveyor of the proposed boundary of the facility and disposal area of the facility.*

Refer to the Design and Operation Plans, Sheets 1 and 2 of 2, Boundary Survey.

- (d) *Initial and final topographical maps at contour intervals of five feet or as otherwise specified by the Department.*

Refer to the Design and Operation Plans.

- (e) *Existing and proposed surface drainage pattern to include control structures designed to handle run-on and run-off. Design calculations for sediment control basins, etc. should be provided.*

Refer to the Design and Operation Plans and the Stormwater, Erosion and Sediment Control Design Calculations attached in Section 9 of this document.

- (f) *Buffer zones, screening and other aesthetic control measures. Buffer zones around the perimeter of the landfill unit shall be a minimum of 100 feet in width measured in a horizontal plane. No disposal or storage practices for waste shall take place in the buffer zone. Roads, access control measures, earth storage, and buildings may be placed in the buffer zone.*

A 100 foot minimum waste disposal buffer zone has been established around the perimeter of the site. Refer to the Design and Operation Plans for location of this buffer zone.

(g) *Details of plans for temporary and permanent all weather access roads.*

All access roads are shown on the Design and Operation Plans. The facility will be accessed from the North from Tayloe Road. There is an emergency/special use access on the South at Cahaba Road.

(h) *A summary of 335-13-4-.01 standards and conclusions of action to be taken and implemented into facility design.*

a. **The waste footprints are not located within the 100-year floodplain. Please refer to the FEMA Flood Insurance Rate Map Information attached in Appendix G.**

b. **A threatened and endangered species evaluation was performed on site by Ecological Solutions, Inc. in June 2001. This evaluation included an office review and site reconnaissance. During this evaluation, no federally protected or state protected species were observed and no habitat was observed for any protected species of potential occurrence within the study corridor.**

This MSWLF is sited at a distance greater than 10,000 feet to any airport runway end. Please see the Hydrogeologic Evaluation (Appendix E) and Site Location Map (Appendix D) showing the proximity of this facility to airports.

c. **The disturbed portion of the facility is not located in an archaeologically or historically sensitive area as determined by the Alabama Historical Commission. In the original permit application, there were eight potentially historically sensitive areas identified and one potential cemetery. After further evaluations of these potentially historically sensitive areas were completed by the applicant, clearance was obtained by the Alabama Historical Commission. A copy of the letter from the Deputy State Historic Preservation Officer is attached in Appendix F verifying this condition. In addition, these nine historical areas were removed through a minor modification approved by ADEM on January 31, 2008.**

- (i) *Location of any areas of the facility used for disposal of solid wastes.*

Refer to the Design and Operation Plans.

- (j) *Presentation of special engineering features or considerations which must be included or maintained in facility construction, operation, maintenance and closure. Items required in 335-13-4-.12 through 335-13-4-.20 shall be included.*

Refer to the Design and Operation Plans, Section 5.0 – Construction Quality Assurance Plan, Section 6.0 – Technical Specifications, Section 8.0 – Leachate Collection System Calculations, and Section 9.0 – Storm Water, Erosion and Sediment Control Design Calculations.

Specifically, the facility does perform waste solidification periodically. This process is defined in the Design and Operation Plans.

- (k) *Quality assurance/quality control (QA/QC) plan for all components of the liner, leachate collection, and cap systems.*

See Section 5.0 - Construction Quality Assurance Plan.

- (l) *Location of all explosive gas wells and/or monitoring points.*

An Environmental Monitoring Plan is included in Section 7.0 of this document for the site. An Environmental Monitoring Plan Sheet is included as part of the Design and Operation Plans which shows the location of existing and future sampling points.

2.3 *Site Geology and Hydrology (335-13-4-.13)*

- (1) *Site Hydrogeology.*

The site hydrogeology shall be established to the upper most aquifer and subsequent interconnecting aquifers.

Refer to the Hydrogeologic Evaluation, prepared by JJ&G, attached in Appendix E.

- (2) *Hydrogeological Evaluation.*

The hydrogeological evaluation for a specific site, as required by the Department, may be provided for as follows:

- (a) *A hydrogeological evaluation performed by a firm or individual having expertise in hydrogeology. The expense of this evaluation shall be borne wholly by the applicant. The following shall be required on such evaluations made under this Rule:*
1. *The installation of a minimum of three exploration borings to include sampling and geologic logging and completion of these borings as piezometers. Subsequent establishment of the first saturated zone, the upper most aquifer and subsequent underlying and interconnected aquifers, piezometer measuring point elevations, water table elevations and an estimate of groundwater flow direction and rate will be required.*
 2. *A report shall be submitted to the Department which includes all items, information and analyses contained in 335-13-4-.13(2)(a)1.*
 3. *Resumes and references, as necessary, to establish the qualifications of the firm or individual preparing the evaluation.*

Refer to the Hydrogeologic Evaluation, prepared by JJ&G, located in Appendix E. The report was furthermore performed under the direction of, and sealed by, a registered professional in Alabama.

- (b) *A review of the information submitted under 335-13-4-.13(2)(a) shall be conducted by the Department.*

This document was reviewed and approved by the Department prior to original permit issuance.

- (c) *The requirement for a hydrogeological evaluation may be waived by the Department based on specific geology, hydrology, or waste types proposed for disposal.*

Not applicable.

- (3) *Department Action.*

The Department will conduct a site background hydrogeological evaluation and review all other related reports, plans or submittals.

- (a) *Expense for the background hydrogeological evaluation and reviews conducted by the Department shall be borne by the applicant in accordance with established procedures of the Department.*

Not applicable.

- (b) *The expense for soil borings, soil tests, piezometers and other data as needed by the Department shall be borne by the applicant.*

Not applicable.

2.4 Groundwater Resources (335-13-4-.14)

(1) Groundwater.

Groundwater resources in the vicinity of the landfill unit shall be determined as a basis for facility design, groundwater protection, and groundwater monitoring required under 335-13-4-.27.

- (a) *The depth to the groundwater and the direction of flow shall be established during the hydrogeological evaluation.*

Refer to the Hydrogeologic Evaluation, prepared by JJ&G and dated September 2005, located in Appendix E.

- (b) *The groundwater in the first saturated zone below the landfill unit shall be evaluated as follows:*

1. *A minimum of one hydraulically upgradient monitoring well for background data and two hydraulically downgradient monitoring wells shall be required.*

Refer to the Design and Operation Plans, Environmental Monitoring Plan Sheet. The facility plans to continue monitoring groundwater with upgradient and downgradient monitoring wells.

2. *The location and design of the monitoring wells shall be approved by the Department prior to installation and the upgradient well shall be located so as not to be affected by the landfill unit.*

The upgradient groundwater monitoring wells are located so that they will not be affected by the landfill unit. A detail of the groundwater monitoring well is shown on a Detail Sheet in the Design and Operation Plans.

3. *The monitoring wells shall be installed well in advance of projected facility opening so as to provide an undisputed background water quality sample from each well. Background water quality shall be established using the sampling and analysis procedures described in 335-13-4-.27.*

Groundwater monitoring wells will be installed in accordance with the Phasing Schedule listed in the Environmental Monitoring Plan attached in Section 7.0.

4. *Additional monitoring wells above the minimum may be required by the Department based on site hydrology, geology, topographical features and waste characteristics.*

If required by ADEM, these will be installed.

5. *Groundwater monitoring wells shall be designed and constructed as described in 335-13-4-.27.*

The applicant has and will install all groundwater monitoring wells as described in 335-13-4-.27.

- (c) *The groundwater sampling and analysis plan shall be prepared in accordance with 335-13-4-.27.*

An Environmental Monitoring Plan Sheet is included as part of the Design and Operation Plans. A narrative Environmental Monitoring Plan is attached in Section 7.0 of this binder. This has been prepared in accordance with 335-13-4-.27.

- (2) Soil Permeability.

The permeability of on-site soils, specifically those underlying the disposal site, shall be determined by laboratory testing at a qualified soils laboratory and followed up by pump testing or slug testing of monitoring wells.

Refer the Hydrogeologic Evaluation prepared by JJ&G and dated September 2005 located in Appendix E. Soil permeabilities beneath the site are described in this report.

2.5 Cover (335-13-4-.15)

Daily, weekly, or some other periodic cover shall be required at all landfill units, as determined by the Department.

- (1) *The suitability and volume of any soils for daily, intermediate and final cover requirements shall be determined by soil borings and analysis.*

During previous construction activities, the suitability of on-site soil for daily, intermediate, and final cover has been verified through proper analyses. This facility currently has sufficient volumes of on-site soils to meet the sites needs for periodic cover requirements. A

summary of estimated soil needs broken out by tract is included at the end of this section.

- (2) *Any proposal to use alternate cover systems shall be submitted to and approved by the Department prior to implementation.*

Excavation within future disposal areas of the site and areas of the site not utilized for disposal operations will be used to obtain soil cover materials. A sufficient volume of soil material will be available on site to meet site requirements for liner construction, daily cover, intermediate cover, and final cover.

Any proposal to use alternate cover systems shall be submitted to and approved by ADEM prior to implementation. Currently, at this facility, the following Alternate Daily Cover (ADC's) are approved for use in place of soil: synthetic tarps, petroleum contaminated soils (PCS), Posi-Shell, and automotive shredder residue (ASR). All four of these ADC's were approved by minor modification on July 20, 2009.

2.6 *Explosive Gases (335-13-4-.16)*

The generation of explosive gases, especially methane (CH₄), at a landfill unit which accepts organic waste shall be considered in the design and operation of the facility. Special attention shall be given to control and monitoring of explosive gases as follows:

(1) Control.

- (a) *Explosive gases shall not exceed the lower explosive limit at the facility boundary.*
- (b) *Explosive gases shall not exceed 25 percent of the lower explosive limit in facility structures except for gas control or recovery system components.*
- (c) *Facility structures shall be designed and constructed so as not to allow explosive gases to collect in, under or around structures in concentrations exceeding the requirements of this Rule.*

The facility will be monitored in accordance with the Design and Operation Plans and the Environmental Monitoring Plan attached in Section 7.0.

(2) Monitoring.

- (a) *Gas monitoring equipment as required by the Department shall be provided at the landfill unit by the operating agency.*

- (b) *The Department upon review of waste type, facility structures, site geology and surrounding land use may require installation of permanent gas monitoring structures, gas vents, gas control or recovery systems.*

Currently the facility is monitored through the use of methane probes and bar hole punches.

- (c) *An explosive gas monitoring and reporting plan shall be prepared and filed at the facility for all landfill units receiving organic wastes. All sites required to monitor for explosive gases shall submit a plat which indicates permanent monitoring points. The plan shall also include what measures shall be taken by the permittee, landfill supervisor, and any operators present on-site to protect human health and property should explosive gases be detected which exceed the lower explosive limit (LEL). The plan must be prepared by a registered professional engineer and include seal or signature and registration number in accordance with Rule 335-13-5-.02(1)(e)1. of the ADEM Administrative Code.*

The locations of all existing and future methane monitoring points are included in the Design and Operation Plans. The Environmental Monitoring Plan in Section 7.0 details the sampling requirements and measures that will be taken should explosive gases be detected.

1. *The type and frequency of monitoring must be determined based on the following factors:*
 - (i) *Soil conditions;*
 - (ii) *Hydrogeological conditions surrounding the landfill unit;*
 - (iii) *Hydraulic conditions surrounding the landfill unit;*
 - (iv) *Location of the facility structures and property boundaries;*
 - (v) *Location of structures adjacent to facility.*
2. *The minimum frequency for monitoring shall be quarterly for MSWLF and yearly for C/DLF and ILF.*
 - (i) *All monitoring reports shall be submitted to the Department and placed in the operating record of the facility within 30 days of the monitoring event.*
 - (ii) *Levels of gas detected shall be expressed in percent LEL and percent volume.*

All items in this rule will continue to be compiled with. The monitoring frequency for methane gas will be quarterly.

3. *If explosive gas levels exceed the limits specified in this Rule, the permittee shall:*
- (i) *Immediately take all necessary steps to ensure protection of human health and property and notify the Department;*
 - (ii) *Within 7 days of detection, place in the operating record of the facility the explosive gas levels detected and the immediate steps taken to protect human health and property;*
 - (iii) *Within 20 days of detection, submit to the Department 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 the Department, but within 60 days of detection. Also within 60 days of detection, a copy of the plan shall be placed in the operating record of the facility and the Department notified that the plan has been implemented.*

Should a detection of methane gas be confirmed, the steps and requirements outlined herein will be followed.

4. *Monitoring points shall be located every 300 feet along the landfill permit boundaries. In areas where a dwelling is within 1000 feet of the boundaries, the monitoring points shall be 100 feet apart or as otherwise directed by the Department.*

Spacing of Methane Monitoring points is shown on the Design and Operation Plans.

- (i) *Monitoring shall be conducted in structures, culverts, under bridges, drop inlets, and any other place that is conducive to gas accumulation.*

This is specified in the Environmental Monitoring Plan.

- (ii) *Permanent gas monitoring structures, or use of the bar hole punch method, are required by the Department.*

The site currently utilizes methane probes and bar hole punches.

- (iii) *A minimum depth of six feet must be obtained for permanent monitoring structures and four feet when using the bar hole punch method.*

A Methane Monitoring Plan complying with this rule is included in the Environmental Monitoring Plan attached in Section 7.0 of this Permit Application. Locations for the Methane Monitoring Points and bar hole punches are included in the Design and Operation Plans.

2.7 Drainage (335-13-4-.17)

Owners or operators of all facilities must design, construct and maintain:

- (1) *A run-on control system to prevent flow onto the active and/or closed portions of the landfill during the peak discharge from a 25-year storm;*

Off-site drainage or storm water run-on which enters the site is directed away from the active portions of the landfill during peak discharge from a 24-hour, 25-year storm by ditches, berms and piping systems.

- (2) *A run-off control system from the active and/or closed portions of the landfill to collect and control at least the water volume resulting from a 24-hour, 25-year storm.*

Stormwater drainage berms, downdrain pipes, ditches, culverts and sediment ponds are designed to control and treat the volume of water from the 24-hour, 25-year storm event. Calculations confirming that the design of the ponds are adequate are attached in Section 9.

- (3) *On-site drainage structures to carry incident precipitation from the disposal site so as to minimize the generation of leachate, erosion and sedimentation. Run-off from the active and/or closed portions of the landfill unit must be handled in accordance with 335-13-4-.01(2)(a), and (b) and shall be routed to a settling basin or other sedimentation control structure to remove sediment prior to release onto adjacent properties or waters.*

The on-site drainage from a 24-hour, 25-year rainfall will be controlled by the use of berms, downdrains, culverts, ditches, and sediment ponds. See Section 9 for detailed design information on all erosion and sediment control structures.

The ponds and ditch side slopes will be vegetated and stabilized. Prior to the vegetation being established, erosion will be controlled by the use of temporary vegetation, hay bales or rock check dams, siltation fences and erosion control blankets. Specific erosion

controls have been designed and are included in the Design and Operation Plans and Section 9. The facility currently maintains coverage under NPDES Permit ALG160167 for stormwater discharges associated with this type of industrial activity.

Each sediment pond will be cleaned of sediment as required. Sediment shall also be removed when the sediment reaches the red stripe of the sediment gauge. When water levels prevent the visual inspection of sediment, the operator shall use the red stripe on the sediment gauge as an indicator. If the water level stays above the red stripe for more than 60 days, then sediment shall be removed.

2.8 Liners and Leachate Collection (335-13-4-.18)

(1) Liners.

Where natural hydrogeologic conditions may be determined by the Department to be insufficient to minimize the impact of leachate on waters, the use of an appropriate liner(s) shall be used as approved by the Department. New MSWLF units and lateral expansions, as a minimum, shall be constructed with a composite liner, as defined in 335-13-1-.03, or an alternate design as specified in 335-13-4-.18(3)(h). Multiple liners, including composite liners, may be required if determined necessary by the Department.

The facility plans to continue using a regulatory liner system. The regulatory liner system consists of a 24" thick Compacted Clay Liner with a permeability (k) of $\leq 1 \times 10^{-7}$ cm/sec and a 60 mil minimum thick textured HDPE geomembrane liner. The facility will use a 12" thick protective cover system with a minimum hydraulic conductivity of 1×10^{-2} cm/sec. This 12" thick protective cover material shall be placed on top of an 8 osy non-woven cushion geotextile fabric which will lay on top of the 60 mil FML. The 12" thick protective cover system was approved through a minor modification dated October 27, 2009 for any areas receiving coal ash waste material, and then extended to all areas of the landfill through a minor modification approved on October 25, 2010.

(2) Leachate Collection System.

A leachate collection system shall be required that is designed and constructed to maintain less than a 30 cm depth of leachate over the liner.

The facility will utilize a leachate collection system which has been demonstrated to maintain less than a 30 cm depth of leachate over liner. This demonstration is provided as part of the Leachate Collection System Calculations attached in Section 8.0.

The permeability of the leachate collection system will be in accordance with Section 8.0 of the Permit Application and will have a permeability $k \geq 1 \times 10^{-2}$ cm/sec.

(3) Specifications.

The composite liner(s) shall comply with the following minimum standards:

- (a) *The permeability shall be 1×10^{-7} cm/sec or less for clay liners.*
- (b) *The synthetic liner(s) shall be resistant to physical and chemical attack by leachate.*
- (c) *The liner system shall be capable of maintaining integrity for the design life which must be determined on a site specific basis.*
- (d) *The minimum allowable thickness of each layer of the composite liner shall be:*
 - 1. *40 mil for the flexible membrane liner component unless FML consists of HDPE which requires 60 mil, and*
 - 2. *Two feet, measured after compaction, for the natural soil liner component meeting the permeability requirements of 335-13-4-.18(3)(a).*
- (e) *The installation of synthetic liners shall be as recommended by the manufacturer providing that:*
 - 1. *The installation recommendations of the manufacturer to be used are provided to the Department for review.*
 - 2. *The Department finds that the recommended installation procedures are consistent with the intent of the Act and this Chapter.*
 - 3. *The installation of the liner shall be under the supervision of an engineer who shall certify to the Department that the liner was installed and maintained in accordance with this Division, QA/QC plans, and approved design plans.*

These items will be complied with. This is detailed in the CQA Plan and Technical Specifications which are located in Sections 5 and 6, respectively.

- (f) *The design and installation of soil liners and the properties of soils used in a soil liner shall meet the following minimum requirements:*

1. *Design of soil liner(s) shall be by a qualified soils engineer, or geotechnical engineer.*

The soil liner component was designed by a qualified soils engineer registered in Alabama.

2. *The soil liner must be compacted in lifts of 4 to 6 inches within 4 percent of optimum moisture content (or as approved by the Department) to a field density which correlates with a laboratory permeability of 1×10^{-7} cm/sec or less.*

This compaction criteria is discussed in the Technical Specifications for the liner system.

3. *The installation of soil liner(s) shall be under the supervision of a soils engineer, geotechnical engineer or geologist who shall certify to the Department that the liner(s) was installed and maintained in accordance with this Division, QA/QC plans, and approved design plans.*

This is detailed in the CQA Plan which is included in this Permit Application in Section 5.0.

4. *The soils used in soil liners shall meet the minimum following criteria:*
 - (i) *Free of oversize particles, such as rocks, roots, limbs and other foreign substances which would alter the design integrity of the liner;*
 - (ii) *Classified under the Unified Soil Classification System as CL, CH or SC (ASTM Standard D2 487-69);*
 - (iii) *Allow greater than 30 percent passage through a No. 200 sieve (ASTM Test D-1140);*
 - (iv) *Have a liquid limit equal to or greater than 30 units (ASTM Test D-423); and*
 - (v) *Have a plasticity greater than or equal to 15 units (ASTM Test D-424).*

The soil requirements for the regulatory liner system are detailed in the CQA Plan and the Technical Specifications found in Sections 5.0 and 6.0 of this document.

- (g) *For a composite liner system, the synthetic liner shall be installed in direct contact with the soil liner.*

For the 24” thick clay liner, the 60 mil textured liner will be installed in direct contact with the top of the 24” thick ($k \leq 1 \times 10^{-7}$ cm/sec) compacted clay liner.

(h) *An alternate liner design may be approved by the Department provided that:*

1. *The owner or operator demonstrates that the alternate design ensures the concentration values listed in Table 1 of this Rule will not be exceeded in the first saturated zone at the relevant point of compliance, as specified by the Department under 335-13-4-.27(2)(a)3.*

Not applicable.

2. *When approving a design that complies with subparagraph (a) of this paragraph, the Department shall consider at least the following factors:*
 - (i) *The hydrogeologic characteristics of the facility and surrounding land;*
 - (ii) *The climatic factors of the area; and*
 - (iii) *The volume and physical and chemical characteristics of the leachate.*

TABLE 1

Chemical	MCL (mg/l)
Arsenic	0.05
Barium	1.0
Benzene	0.005
Cadmium	0.01
Carbon tetrachloride	0.005
Chromium (hexavalent)	0.05
2,4-Dichlorophenoxy acetic acid	0.1
1,4-Dichlorobenzene	0.075
1,2-Dichloroethane	0.005
1,1-Dichloroethylene	0.007
Endrin	0.0002
Fluoride	4
Lindane	0.004
Lead	0.015
Mercury	0.002
Methoxychlor	0.1
Nitrate	10
Selenium	0.01
Silver	0.05

Chemical	MCL (mg/l)
Toxaphene	0.005
1,1,1-Trichloromethane	0.2
Trichloroethylene	0.005
2,4,5-Trichlorophenoxy acetic acid	0.01
Vinyl Chloride	0.002

Not applicable.

2.9 Access (335-13-4-.19)

The owner or operator of the facility must control public access and prevent unauthorized vehicular traffic and illegal dumping of wastes by using artificial barriers, natural barriers, or both, as appropriate to protect human health and the environment.

The access road will be restricted by a gate which is opened and attended to during daily operating hours and locked at night and whenever the landfill is closed. Other fences and natural barriers prevent site access. Additional fencing may be added by the Owner at locations determined to be potential access points.

2.10 Closure and Post-Closure (335-13-4-.20)

(1) Submittal.

The owner or operator must submit a closure/post-closure plan to the Department and place in the operating record, no later than the effective date of these regulations or by the initial receipt of waste, whichever is later.

The Closure Plan is located in Section 3.0. The Post-Closure Plan is located in Section 4.0.

(2) Closure.

The requirements for closure of existing and proposed landfill units shall include the following unless otherwise noted.

- (a) *The owner or operator must prepare a written closure plan that describes the steps necessary to close all existing and proposed landfill units at any point during their active life in accordance with the cover design requirements in 335-13-4-.20(2)(b). The owner or operator must submit the closure plan as part of the Permit Application to the Department. The closure plan, at a minimum, must include the following information:*

1. *A description of the final cover, designed in accordance with 335-13-4-.20(2)(b) and the methods and procedures to be used to install the cover;*
2. *An estimate of the largest area of the landfill unit ever requiring a final cover as required under 335-13-4-.20(2)(b) at any time during the active life;*
3. *An estimate of the maximum inventory of wastes ever on-site over the active life of the facility; and*
4. *A schedule for completing all activities necessary to satisfy the closure criteria in this Rule.*

A written Closure Plan meeting this criteria is included in Section 3.0.

- (b) *A final cover system must be installed which is designed to minimize infiltration and erosion. The final cover system must be comprised of an erosion layer(s) underlain by an infiltration layer(s) as follows:*
1. *The infiltration layer for MSWLF and ILF must be comprised of a minimum of 18 inches of earthen material and/or a synthetic layer that has a permeability less than or equal to the permeability of any bottom liner system or natural subsoils present, or a permeability no greater than 1×10^{-5} cm/sec, whichever is less. The infiltration layer for C/DLF must be comprised of a minimum of 18 inches of compacted earthen material excluding sands, and*
 2. *The erosion layer must consist of a minimum 6 inches of earthen material that is capable of sustaining native plant growth, as specified in 335-13-4-.20(2)(d).*
 3. *The Department may approve an alternative final cover design that includes:*
 - (i) *An infiltration layer that achieves an equivalent reduction in infiltration as the infiltration layer specified in 335-13-4-.20(2)(b)1., and*
 - (ii) *An erosion layer that provides equivalent protection from wind and water erosion as the erosion layer specified in 335-13-4-.20(2)(b)2.*

The final cap detail (previously approved) is found in the Design and Operation Plans which specifies the cap system as outlined in this rule section.

(c) *Final soil cover shall be graded so that:*

1. *Surface water does not pond over the landfill unit.*

The minimum slope for the final grade will be 5%.

2. *The maximum final grade of the final cover system shall not exceed 25 percent or as specified by the Department to minimize erosion.*

The final grading plan shows the maximum slope for the final grade equal to 4H:1V, or 25% as specified in this rule.

3. *Slopes longer than 25 feet shall require horizontal terraces, of sufficient width for equipment operation, for every 20 feet rise in elevation or utilize other erosion control measures approved by the Department.*

Sideslope drainage berms are shown on the final drainage plan and are spaced every 40 vertical feet. Detail calculations provided by Golder and Associates, Inc. have been included in Section 3.0 which demonstrate the effectiveness of this berm spacing.

A variance was granted by ADEM to increase the vertical spacing on the sideslope drainage berms from 20' vertical to 40' vertical for the currently permitted facility. The calculations referenced above were used to support this request.

4. *The minimum final grade of the final cover system shall not be less than 5 percent or as specified by the Department to minimize ponding.*

The minimum final grade shown on the Final Grading Plan is 5%.

5. *For a permitted facility utilizing the area fill method or the trench method, final grading of the infiltration layer shall be completed within 90 days after the unit has received the last known receipt of waste.*

A final cover system meeting this criteria is proposed for this facility. The final cover system is detailed in the Design and Operation Plans Detail Sheets and Technical Specifications located in Section 6.0.

(d) *A vegetative or some other appropriate cover must be established to minimize erosion and, when applicable, maximize*

evapotranspiration. Within 90 days after completion of final grading requirements on each phase or each trench as specified in 335-13-4-.20(2)(a), the Permittee or owner of a permitted landfill unit shall prepare the final cover for the establishment of a vegetative cover or alternative cover. Deep rooted vegetation (roots that may grow below the 6 inch erosion layer) shall be prohibited as vegetative cover. Preparation of a vegetative cover shall include, but not be limited to, the following:

- 1. Placement of appropriate species of grass seed, fertilizer and mulch; and*
- 2. Watering and maintenance necessary such that germination of grass will occur.*

A final vegetative cover meeting this requirement is shown in the Design and Operation Plans and detailed in the Technical Specifications located in Section 6.0. In addition to mulch, other measures such as matting, flexible growth media, or hydroseeding may be employed to assist with permanent vegetation.

- (e) Prior to beginning closure of each landfill unit as specified in this Rule, an owner or operator must submit to the Department and place in the operating record a notice of the intent to close the unit.*

Prior to closure of any area, notice will be provided to ADEM of the intent to close. This notice will be placed in the Facility Operating Record.

- (f) The owner or operator must begin closure activities of each LF unit no later than 30 days after the date of which the LF unit receives the known final receipt of wastes. If the LF unit has remaining capacity and there is reasonable likelihood that the LF unit will receive additional wastes, closure activities of each LF unit must begin no later than one year after the date of known final receipt of wastes. Extensions beyond the one-year deadline for beginning closure may be granted by the Department if the owner or operator demonstrates that the LF unit has the capacity to receive additional wastes and the owner or operator has taken and will continue to take all steps necessary to prevent threats to human health and the environment from the unclosed LF unit.*

This schedule for closure will be complied with by this facility.

- (g) The owner or operator of all LF units must complete closure activities of each LF unit in accordance with the closure plan within 180 days following the last known receipt of waste.*

Extensions of the closure period may be granted by the Department if the owner or operator demonstrates that closure will, of necessity, take longer than 180 days and he has taken and will continue to take all steps necessary to prevent threats to human health and the environment from the unclosed LF unit. Extensions granted for closure of each LF unit shall not exceed a total of 180 days.

This schedule for closure will be complied with by this facility.

- (h) *Following closure of each LF unit, the owner or operator must submit to the Department a certification, signed by an independent registered professional engineer verifying that closure has been completed in accordance with the closure plan, and a copy placed in the operating record. C/DLF and/or ILF owner or operator may submit certification signed by a registered professional engineer in lieu of an independent registered professional engineer.*

This certification will be submitted to ADEM at the time of closure by an Alabama registered professional engineer.

- (i) *Within 90 days after permit expiration, revocation or when final closure requirements in 335-13-4-.20 are achieved as determined by the Department, the permittee or owner of a facility shall record a notation onto the land deed containing the property utilized for disposal, and/or some other legal instrument that is normally examined during a title search, that will in perpetuity, notify any potential purchaser of the property that:*

1. *The land has been used as a solid waste disposal facility landfill unit;*
2. *Its use is restricted by the items contained in 335-13-4-.20(3)(c) and 335-13-4-.20(3)(d);*
3. *The locations and dimensions of the landfill unit 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 or operating agency, the type of landfill unit and the beginning and closure dates of the disposal activity.*
5. *Certification by an Engineer or Land Surveyor that all closure requirements have been completed as determined necessary by the Department.*

These documentation requirements will be met at the time the facility completes closure activities.

- (j) *For a permitted facility, the permittee or land owner shall submit a certified copy of the recording instrument to the Department and place a copy in the operating record within 120 days after permit expiration, revocation or as otherwise directed by the Department.*

The requirement of submission of the recording instrument to ADEM will be met by this facility.

- (k) *Detail design for the closure of existing and proposed LF units shall be shown on a final contour and drainage plan. Items required in 335-13-4-.20(2)(b) through (d), (i), (j), and (3)(a), (d), and (f) shall be included.*

This detail design is part of the facility design and it will be made part of any closure construction plans.

(3) Post-closure.

The requirements for post-closure of existing and proposed landfill units shall include the following unless otherwise noted.

- (a) *Following closure of each LF unit, the owner or operator must conduct post-closure care. Post-closure care must be conducted for a minimum of 30 years; or a minimum of 5 years if closed prior to October 9, 1993, or the effective date of § 258.1 of 40 CFR 258, Solid Waste Disposal Criteria, whichever is later; except as provided under 335-13-4-.20(3)(b), and consist of at least the following:*
1. *Eroded areas shall be filled with suitable soil cover, compacted, graded and appropriate cover established as described in 335-13-4-.20(2)(d).*
 2. *Areas which provide for ponding of surface water shall be filled, graded and an appropriate cover established as described in 335-13-4-.20(2)(d).*
 3. *Landfilled areas with extensive surface cracks in soil cover shall be corrected as necessary, or as determined by the Department, to prevent infiltration of surface water.*
 4. *An appropriate cover shall be maintained on the facility at all times as described in 335-13-4-.20(2)(d).*
 5. *Access control structures shall be maintained or erected and signs shall be posted stating that the facility is closed and giving the location of the nearest permitted landfill unit.*

6. *Any waste dumped at the landfill unit following closure shall be removed to an approved landfill unit by the permittee, operating agency, or owner.*
7. *Monitoring devices and pollution control equipment such as groundwater monitoring wells, explosive gas monitoring systems, erosion, and surface water control structures, and leachate facilities shall be maintained. Monitoring requirements shall continue in effect throughout the active life and post-closure care period as determined by the Department unless all solid waste is removed and no unpermitted discharge to waters has occurred.*
8. *Other deficiencies such as vector control which may be observed by the Department shall be corrected.*

These requirements for 30 years of post-closure care will be met by this facility. The facility will be inspected monthly and after major precipitation events to confirm the integrity of the site is being maintained.

(b) *The length of the post-closure care period may be:*

1. *Decreased by the Department if the owner or operator demonstrates that the reduced period is sufficient to protect human health and the environment and this demonstration is approved by the Department; or*
2. *Increased by the Department if the Department determines that the lengthened period is necessary to protect human health and the environment.*

This rule will be complied with during the post-closure period. The planned Post-Closure period for this facility is anticipated to be 30 years.

(c) *The owner or operator of all LF units must submit to the Department and receive approval as part of the Permit Application, a written post-closure plan. A copy must also be placed in the operating record. The post-closure plan must include, at a minimum, the following information:*

1. *A description of the monitoring and maintenance activities required in 335-13-4-.20(3)(a) for each LF unit, and the frequency at which these activities will be performed;*
2. *Name, address, and telephone number of the person or office to contact about the facility during the post-closure period; and*

3. *A description of the planned uses of the property during the post-closure period.*

The Post-Closure Care Plan for this facility is included in Section 4.0 of this 2016 Renewal Application document.

- (d) *Post-closure use of the property used for the disposal operation must never be allowed to disturb the integrity of the final cover, liner(s), or any other component of the containment system, or the function of the monitoring systems necessary to comply with the requirements of these Rules. The Department may approve any other disturbance if the owner or operator demonstrates that the disturbance, including any removal of waste, complies with the following:*

1. *The activities will not increase the potential threat to human health or the environment; or*
2. *The activities are necessary to reduce a threat to human health or the environment.*

This rule will be complied with during the post-closure period.

- (e) *Following completion of the post-closure care period for each LF unit, the owner or operator must submit to the Department a certification, signed by an independent registered professional engineer verifying that post-closure care has been completed in accordance with the post-closure plan, and a copy placed in the operating record. A C/DLF Owner or Operator may submit certification signed by a registered professional engineer in lieu of an independent registered professional engineer.*

This certification will be provided by the facility at the conclusion of the post-closure care period.

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

Should all waste be removed from this facility, this request will be made in a timely manner.

2.11 *General Operational Standards for Landfill Units (335-13-4-.21)*

Any person or agency operating or planning to operate a landfill unit shall operate and maintain the facility consistent with this Division. General requirements for operating and maintaining an acceptable landfill unit shall be:

(1) *General Operation.*

(a) *The operation and use of the landfill unit shall be as stipulated in the permit.*

(b) *Waste accepted at the facility shall be strictly controlled so as to allow only waste stipulated on the permit or otherwise as may be approved by the Department. The permittee of any facility permitted under these Rules must have in the operating record a plan describing procedures the permittee will implement for detecting and preventing the disposal of free liquids, regulated hazardous wastes, regulated medical wastes, and regulated PCB wastes at the facility. This plan must include at a minimum:*

1. *Random inspections of incoming loads to ensure that incoming loads do not contain free liquids, regulated hazardous wastes, regulated medical wastes, or regulated PCB wastes.*
2. *Inspection of suspicious loads.*
3. *Records of all inspections to include origin of waste suspected to be regulated hazardous, regulated medical, or regulated PCB waste if known; transporters, to include transfer stations and all handlers of the waste enroute to the disposal site; and any certifications from generators provided to the permittee or facility personnel. These records must be maintained on file in the operating record of the facility.*
4. *Training of facility personnel to recognize free liquids, regulated hazardous wastes, regulated medical wastes, and regulated PCB wastes.*
5. *Procedures for notifying the proper authorities if free liquids, regulated hazardous wastes, regulated medical wastes, or regulated PCB wastes are discovered at the facility.*
6. *Methods to identify all industrial users of the facility, producers of special wastes, and transporters of these wastes.*

The facility will comply with these general operation requirements. Compliance will be demonstrated in the Facility Operating Record. A Prohibited Waste Exclusion Plan is attached in Section 11.0 which outlines these requirements.

- (c) *Prior to disposal of industrial waste and/or medical waste, the permittee shall obtain from each generator a written certification that the material to be disposed does not contain free liquids, regulated hazardous wastes, regulated medical wastes, or regulated PCB wastes.*
1. *This certification may be based on laboratory analysis of the waste on a case-by-case basis, or documentation supporting the generator's knowledge of the wastestream(s), or as may be required by the Department.*
 2. *Copies of the certification shall be submitted to the Department for disposal approval and for any specific requirements prior to disposal. After submittal of the required certification, the Department shall have five (5) working days to respond. If no response is given, the permittee may dispose of the material as proposed.*
 3. *In the case of one-time emergency disposal requests, the permittee shall submit the required certification no later than five (5) days after the disposal of waste.*
 4. *Certification shall be renewed or revised biennially (every two years) or at such time that operational changes at the point of generation could render the waste hazardous, whichever is more frequent and submitted to the Department for approval.*
 5. *Copies of these certifications and approvals shall be maintained on file in the operating record of the facility and shall be made available for the Department upon request.*
 6. *The above requirements notwithstanding and, as may otherwise be required, pursuant to Division 13 rules, generators will not be required to submit certification to the Department provided that:*
 - (i) *The waste will be disposed of at a non-commercial industrial waste landfill which has been permitted by the Department, and is owned either exclusively or mutually by the generator(s) of the waste, and which disposes of waste generated only by the owner(s);*

- (ii) *The wastestream(s) to be disposed of are specifically described in the Solid Waste Landfill Permit issued by the Department or in the final application as referenced by the permit for the site designated to receive the waste;*
- (iii) *The required certification, as described above, is maintained on-site by the owner(s) of the landfill; and*
- (iv) *The required certification, as described above, is made available for inspection by the Department upon request.*

The facility will comply with the requirements for industrial and/or medical waste acceptance and appropriate demonstrations will be made in the Facility Operating Record.

- (d) *The landfill unit shall be operated in such a manner that there will be no water pollution or unauthorized discharge.*
 - 1. *Any discharge resulting from a landfill unit or practice may require:*
 - (i) *A National Pollutant Discharge Elimination System (NPDES) permit under the Alabama Water Pollution Control Act as issued by the Department.*
 - (ii) *A dredge or fill permit from the Army Corps of Engineers as required under Section 404 of the Clean Water Act, as amended; or*
 - (iii) *That a non-point source of surface waters does not violate an area wide or statewide water quality management plan that has been approved under the Alabama Water Pollution Control Act.*

All proposed Jurisdictional Wetland Impacts have been properly permitted through the U.S. Army Corps of Engineers. These impacts have been completed in accordance with the approved permit. The facility will continue to maintain coverage under NPDES Permit ALG160167 for this type of industrial activity.

- 2. *The groundwater shall not be contaminated as specified by this Division.*

This rule will be complied with.

- (e) *The facility shall be identified with a sufficient number of permanent markers which are at least visible from one marker to the next.*

Appropriate facility boundary markers will be installed and maintained as required by this rule. As shown on the Design and Operation Plans, marker posts for waste disposal units will be placed on 300' centers at a minimum, and at all corners.

- (f) *Measuring or weighing devices shall be required for all municipal solid waste landfill units accepting solid waste. All solid waste shall be properly measured or weighed prior to disposal unless otherwise approved by the Department.*

This facility will utilize certified truck scales for measuring incoming waste for disposal.

(2) Open Burning.

- (a) *Open burning of solid waste at any landfill unit is prohibited unless approved by the Department as follows:*
1. *Clearing debris at the landfill unit such as trees and stumps may be burned if prior approval is received from the Department and the Alabama Forestry Commission.*
 2. *Emergency clean-up debris resulting from catastrophic incidents may be burned at a permitted landfill unit if consistent with the intent of this Division and air pollution control requirements. Prior approval must be received from this Department and other appropriate agencies.*
 3. *If approved, the burning shall not occur over previously filled areas or within 200 feet of existing disposal operations unless otherwise specified by the Department and such burning shall not cause a public nuisance or pose a threat to public health.*

Appropriate approvals will be obtained prior to any open burning. Records of this activity will be maintained in the Facility Operating Record.

- (b) *The person or agency requesting permission to burn solid waste shall apply in writing to the Department, outlining why a 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.*

Appropriate approvals will be obtained prior to any open burning. Records of this activity will be maintained in the Facility Operating Record.

2.12 *Specific Requirements for Municipal Solid Waste Landfills (335-13-4-.22)*

The following requirements in conjunction with 335-13-4-.21 shall be for operating and maintaining an acceptable MSWLF:

(1) Daily Operation.

(a) *All waste shall be covered as follows:*

1. 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.

A minimum 6 inches of clean compacted earth (or other alternative daily cover (ADC) material approved by ADEM) will be applied to the working face at the conclusion of each working day. A list of currently approved ADC's are listed below:

1. **Synthetic Tarps**
2. **Petroleum Contaminated Soil (PCS)**
3. **Posi-shell**
4. **Automotive Shredder Residue (ASR)**

These ADC's were approved by minor modification on 7/20/09.

2. *Final closure shall be carried out in accordance with Rule 335-13-4-.20 of this Division.*

Final grading, final cover and vegetative cover requirements are discussed in detail in Section 3.0 - Closure Plan.

- (b) *All waste shall be confined to as small an area as possible and spread to a depth not exceeding two feet prior to compaction, and such compaction shall be accomplished on a face slope not to exceed 4 to 1 (25%) or as otherwise approved by the Department.*

The operations at the site will be conducted in phases. Typically operations will be conducted by filling one area to a workable height prior to proceeding to the next area. The areas may be divided with berms. Exterior containment berms may be utilized. The outside slope of the exterior

containment berm will be near final grade and direct storm water run-off to the perimeter ditch.

All waste will be spread to a depth not to exceed 2 feet prior to compaction. Each working face slope will not exceed 25% and a maximum of 200 feet by 200 feet in size. Should waste receipt be less than 1,500 tons/day the working face size will be reduced to 150' x 100'. During the course of the day the active face will be constantly compacted.

This facility is currently approved to operate 3 working faces through variances dated 10/25/10 and 6/17/2013 which allows one for the placement of MSW / C&D waste, one for the placement of ash waste, and a third temporary working face for a fluff layer over the liner of newly constructed cells. It is also possible that Tract 3 may accept CCR while operations continue as described in Tract 1. All working faces should be confined to as small an area as possible.

- (c) *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.*

A completed "daily cell" will not exceed eight feet in vertical thickness measured perpendicular to the slope of the preceding "daily cell". The initial "daily cell" will be evenly distributed over the entire daily cell area prior to placement of waste above this height. The following "daily cells" will be distributed over an area which will generate maximum final grades (exterior slopes) and therefore, reduce leachate generation. At the end of each day, 6 inches of soil cover (or an approved alternate daily cover) will be placed over the active "daily cell" and working face.

- (d) *The site shall be operated in accordance with approved plans and permits.*

The site shall be operated in accordance with the Design and Operation Plans and permits.

- (e) *Adequate personnel shall be provided to insure continued and smooth operation of the facility.*

The following personnel will be provided to insure smooth operation of this facility. A Landfill Manager will be on-site who is responsible to assure that operations at the facility are performed in accordance with the Plans and ADEM regulations. A scalehouse attendant who will inspect all waste and record both the origin and quantity; equipment

operators who will be responsible for the daily earthwork, fill placement and compaction, and cover operations, as well as the maintenance and operation of diversion and sediment structures, and the access road; laborers as needed to control litter, wash equipment, perform maintenance, and support, etc. All personnel will be trained in municipal solid waste landfill techniques.

A Certified Landfill Operator in accordance with the ADEM regulations will be present at the site at all times.

- (f) *Adequate equipment shall be provided to insure continued operation in accordance with permit and regulations.*

The landfill anticipates the following minimum equipment to be maintained on-site and utilized for various aspects of the landfill operations:

- 1 Steel Wheel Compactor**
- 1 Bulldozer**
- 1 Excavator**
- 1 Off-Road Haul Truck**
- 1 Small Farm Tractor for Maintenance**
- Miscellaneous Tools, Pumps, Pick-up Trucks, etc.**

Substitutions and additions to the equipment listed above may occur. However, equipment capable of performing comparably to the listed equipment will always be maintained on-site or nearby.

In the case of a prolonged breakdown of primary equipment, then backup equipment will be available within 24 hours.

- (g) *Provisions shall be made for disposal activities in adverse weather conditions.*

By providing an all-weather access road to the working face, the landfill provides for waste disposal in all weather conditions. During saturation conditions, a dozer or scraper can remove the top saturated earthen material in the daily cover stockpile to uncover dry material for use as workable daily cover. The all weather access road detail is shown in the Design and Operation Plans.

The storm water management system will facilitate disposal operations during periods of excessive rainfall by allowing for positive drainage to sediment ponds and temporary sediment traps.

- (h) *The site shall be adequately secured using artificial barriers, natural barriers, or both to prevent entry of unauthorized vehicular traffic.*

The access road will be restricted by a gate which is opened during daily operating hours and locked at night and whenever the landfill is closed. Other natural barriers prevent site access. Additional fences may be added at points deemed necessary by the Owner.

- (i) *A sign outlining instructions for use of the site shall be posted at the entrance and shall include:*

1. *name of facility,*
2. *name of permittee and/or operating agency or person,*
3. *days and hours of operation,*
4. *disposal fees, and*
5. *types of waste accepted if the site is available to the general public or commercial haulers.*

The informational sign at the entrance gate includes the name of the facility, name of permittee, days and hours of operation, disposal fees, types of waste accepted, restrictions (no hazardous, liquid or infectious wastes), and a telephone number for contact person in case of emergency or need after operating hours.

- (j) *Special provisions shall be made for handling large dead animals or highly putrescible waste. Immediately covering the waste with a minimum of 12 inches of cover in a designated area of the facility shall be included in these provisions.*

All large dead animals and highly putrescible waste will be disposed of at the toe of the active working face immediately upon arrival. Immediately following, the waste will be covered with a minimum of 12 inches of soil or waste.

- (k) *Bulk or noncontainerized liquid waste, or containers capable of holding liquids, shall not be accepted at a landfill unit unless:*

1. *The liquid is household waste other than septic waste;*
2. *The liquid is leachate or gas condensate derived from the MSWLF unit, and the MSWLF unit is designed with a minimum composite liner and leachate collection system or approved equivalent liner and leachate collection system;*
or
3. *The containers:*

- (i) *Are similar in size to that normally found in household waste;*
- (ii) *Are designed to hold liquids for use other than storage; or*
- (iii) *Contain household wastes.*

Liquid wastes not meeting the requirements of this section will be prohibited from disposal in this landfill. This facility does have an approved Waste Solidification Plan which requires that the solidification of liquid wastes be performed over the lined, constructed waste footprint. Liquid wastes that have been handled in accordance with the approved Waste Solidification Plan may be disposed in the landfill.

- (l) *Empty containers larger in size than normally found in household waste must be rendered unsuitable for holding liquids prior to disposal in the landfill unit unless otherwise approved by the Department.*

This rule will be complied with.

- (m) *MSWLF units containing sewage sludge and failing to satisfy the criteria in this Division violate Sections 309 and 405(e) of the Clean Water Act.*

This rule will be complied with.

(2) Routine Maintenance.

- (a) *Scavenging shall be prohibited and salvaging operations shall be controlled.*

Scavenging and salvaging will be prohibited at this facility.

- (b) *Litter shall be controlled within the permitted facility.*

Litter will be controlled along the entrance, access roads and within the confines of the facility by daily policing. Litter may be controlled as necessary with portable fencing. Any litter blowing onto adjoining properties will be cleaned up immediately by the landfill. The potential problem of wind blown litter will be reduced by limiting the size of the active working face and using daily cover over the active fill area. Also, litter control fences may be utilized.

- (c) *An all-weather access road shall be provided to the dumping face.*

The landfill will construct and maintain an all-weather access road to the working face. Adequate crushed stone aggregate

will be stockpiled on-site to provide materials for routine maintenance of the access road.

- (d) *Measures shall be taken to prevent the breeding or accumulation of disease vectors. If determined necessary by the Department or the State Health Department, additional disease vector control measures shall be conducted.*

Vectors will be controlled by compaction and the use of daily cover, or approved ADC materials.

- (e) *Environmental monitoring and treatment structures shall be clearly marked and identified, protected and maintained in good repair and shall be easily accessible.*

Environmental monitoring and treatment facilities will be protected and maintained in good condition throughout the life and post-closure period of this facility. They will either be replaced or repaired as the need arises. All monitoring points will be protected with appropriate bollards or other controls.

- (f) *Completed sites or portions of sites shall be properly closed as provided by this Division and approved facility plans.*

Completed portions of the site shall be properly closed as provided by ADEM and the approved facility plan.

- (g) *Records shall be maintained on the daily volume of waste received at MSWLFs. A quarterly report utilizing a format approved by the Department which summarizes the daily volumes shall be submitted to the Department and maintained on file in the operating record of the facility by the permittee.*

The landfill maintains records on the daily volume of waste received at the landfill. An automated management system is used in the scale house which enables the landfill to monitor all transactions through the use of truck scales. Quarterly reports summarizing daily volumes will be submitted to ADEM utilizing a format approved by ADEM.

(3) *Additional Requirements.*

- (a) *Owners or operators of all MSWLFs must ensure that the units do not violate any applicable requirements developed under a State Implementation Plan (SIP) approved or promulgated by the Administrator pursuant to Section 110 of the Clean Air Act, as amended.*

This facility will comply with all Clean Air Act requirements. This facility submitted a Title V Application in July 2010 and

an updated Title V Application in February 2012 to the ADEM Air Branch.

- (b) *Notwithstanding this Rule, additional requirements for operating and maintaining a MSWLF may be imposed by the Department, as deemed necessary, to comply with the Act and this Division.*

No response necessary.

2.13 *Septic Tank Pumpings and Sewage Sludge (335-13-4-.24)*

The practice of accepting septic tank pumpings and sewage sludge shall not occur at landfill units unless specifically approved in writing by the Department.

Septic tank pumpings will not be accepted for disposal unless approved in writing by Department.

Sewage sludge will be treated before being transported to the landfill and will arrive in such condition that will provide for the best management practice at the solid waste facility and as approved by ADEM. The practice of accepting sewage sludge as described above shall not occur until approved in writing by the Department.

2.14 *Requirements for Management and Disposal of Special Waste (335-13-4-.26)*

(1) Exceptions.

- (a) *Requirements for the management and disposal of special waste at a landfill unit permitted by the Department shall meet the requirements of this Rule.*
- (b) *Certain requirements may be modified by the Department as deemed necessary to comply with the Act and this Division.*
1. *Waste types for which specific rules and regulations under this Division have not been developed shall be managed and disposed of in a manner as determined by the Department to be consistent with the intent of the Act and this Division.*
 2. *Generators of a special waste may be required by the Department to provide an analysis and certification that the waste is nonhazardous waste or treated medical waste.*

This facility is currently approved to dispose of asbestos waste, foundry sand, petroleum contaminated waste, and municipal solid waste ash in accordance with Rule 335-13-4-.26.

The landfill will control the disposal of special waste at the facility by requiring written certification from the generator that the waste is

nonhazardous or is treated medical waste. The generator will also be required to provide a description of the special waste, SDS data if available, a TCLP laboratory analysis of a representative sample of the special waste, and that approval has been granted by ADEM to accept and dispose of this special waste at the landfill.

(2) Disposal requirements for friable asbestos.

Any person who generates, processes, treats, or disposes of friable asbestos shall comply with the following practices:

- (a) *Friable asbestos shall be disposed of in a facility permitted by the Department. The friable asbestos shall arrive at the landfill unit in properly labeled, leak-tight containers as determined by the Department's Air Division.*

Asbestos may be accepted at the landfill if properly packaged.

- (b) *Containers shall be placed intact in a specially prepared place and covered with a minimum of 12 inches of earth at the end of each working day. Asbestos waste may be landfilled in an excavation at the bottom of the operating face if no liner is present or the design depth restriction is not exceeded. The waste may also be placed in a separately designated area. If a separate area is utilized, it shall be clearly marked to prevent future excavation into the waste.*

Asbestos must be delivered in properly labeled, leak-tight containers as determined by ADEM before acceptance for disposal. The material inside the containers should be in a form that it will not easily become airborne.

- (c) *Proper handling precautions shall be taken to ensure that containers are not ruptured prior to placing the required daily earth cover as noted in 335-13-4-.26(2) (b). No machinery shall be operated directly over uncovered containers.*

The asbestos containers will be placed intact at the daily asbestos waste disposal area, and covered with a minimum of 12 inches of earth cover by the end of the work day. These areas will be established daily by the facility operator. Proper handling precautions for asbestos will be taken when unloading, disposing, and covering these containers to ensure that rupturing does not occur prior to being covered. No machinery will be operated over the uncovered containers.

(d) *Final cover shall be as noted in 335-13-4-.20(2)(b).*

A final cover system meeting the requirements of this rule will be utilized as specified in the Design and Operation Plans.

(3) *Disposal requirements for foundry wastes.*

Foundry waste which exhibits less than 50 percent of each of the TC Levels for metals as defined by the USEPA's Toxicity Characteristic Leaching Procedure (TCLP) may be managed in the following manner:

(a) *Foundry waste may be managed in areas other than*

1. *Flood Plains;*
2. *Wetlands;*
3. *Residential zones; or*
4. *Areas less than 5 feet above the uppermost aquifer.*

(b) *Each foundry must maintain records at the manufacturing facility. These records must include:*

1. *A description of the site to within the ¼, ¼ Section of a specific Township and Range.*
2. *Volume of foundry waste disposed of at each location.*

(c) *The waste must be certified by the generator on a quarterly basis or whenever the process changes which would significantly alter the test results, whichever is more frequent. Certification of the foundry waste shall be accomplished by submitting the following:*

1. *A completed Solid/Hazardous Waste Determination Form.*
2. *A TCLP Analysis for metals.*

(d) *Each foundry must contact the Water Division of ADEM with regards to General Storm Water and/or NPDES permits.*

(e) *Foundry waste from two or more foundries may be managed at one location provided adequate documentation and record keeping is maintained for each foundry.*

(f) *Foundry waste not meeting the requirements of paragraph (2) of this Rule must be managed at an approved recycle/reuse facility or at a landfill unit approved for the disposal of foundry waste and permitted by the Department.*

Foundry waste will only be managed at this landfill in accordance with ADEM requirements.

(4) Disposal requirements for petroleum contaminated waste.

Any person who disposes of petroleum contaminated waste shall comply with the following practices:

- (a) *Petroleum contaminated waste must be disposed of in a MSWLF and/or a synthetically lined facility having a solid waste disposal permit issued by the Department and having groundwater monitoring wells.*
- (b) *Prior to disposing of a petroleum contaminated waste in accordance with subparagraph (a) of this paragraph, the generator of the waste must provide the Department with a written certification that the waste is non-hazardous.*
 - 1. *The generator of a petroleum contaminated waste may use his knowledge of the processes producing the waste to certify that the waste is non-hazardous; however the Department, on a case-by-case basis, may require additional information and/or laboratory analyses to support the generator's certification.*
 - 2. *The written certification that the waste is non-hazardous must include laboratory analysis for metals if the source of the petroleum contamination is leaded gasoline, used automotive crank case oil, or if the generator has reason to believe that the source contains TCLP metals.*

Prior to acceptance of petroleum contaminated waste, requirements of this rule section will be complied with and records kept in the Facility Operating Record.

- (c) *Small quantities of petroleum contaminated waste may be disposed in MSWLFs, C/DLFs, or ILFs, and shall not require approval and/or testing, provided that the waste:*
 - 1. *Contains less than twenty-five (25) gallons of petroleum; and*
 - 2. *Total material (i.e., soil, rags, sorbent, etc.) is less than five (5) cubic yards per occurrence.*

The facility will comply with this rule.

(5) Disposal requirements for municipal solid waste ash.

Municipal solid waste ash shall be disposed of at a MSWLF meeting at a minimum the design criteria established under 335-13-4-.18. Alternative

disposal methods or uses must be approved by the Department prior to implementation.

Municipal Solid Waste Ash may be accepted at this MSWLF as approved by ADEM.

2.15 *Recordkeeping Requirements (335-13-4-.29)*

Recordkeeping shall be maintained as follows:

(1) *Operating Record.*

The owner or operator of a MSWLF, C/DLF or ILF unit must record and retain in an operating record at the facility, or in an alternative location approved by the Department, the following information as it becomes available:

(a) *Solid Waste Disposal Facility Permit as issued by the Department.*

(b) *Permitted application, operational narrative, and engineering drawings. This may include, but is not limited to:*

1. *Any location restriction demonstration required under 335-13-4-.01 of this Division;*
2. *Any MSWLF unit design documentation for placement of leachate or gas condensate in a MSWLF unit as required under 335-13-4-.22(1)(k) of this Division;*
3. *Closure and post closure care plans as required by 335-13-4-.20 of this Division;*
4. *Explosive gas monitoring plans as required by 335-13-4-.16 of this Division;*
5. *Corrective action plan, if necessary, which includes detection in assessment monitoring;*
6. *Any other documentation submitted to the Department during the permitting process.*

(c) *Reports or documentation generated during the normal operation of the facility may include, but are not limited to:*

1. *Gas monitoring results from monitoring and any remediation plans required by 335-13-4-.16;*
2. *Inspection records, training procedures, notification procedures, and other information required in 335-13-4-.21(1)(b);*

3. *Any monitoring, testing, or analytical data as required by 335-13-4-.20 of this Division concerning closure;*
 4. *Any demonstration, certification, finding monitoring, testing, or analytical data required by 335-13-4-.27 concerning groundwater monitoring and corrective action;*
 5. *Quarterly volume reports as required in 335-13-4-.22(2)(g) or 335-13-4-.23(2)(f) of this Division;*
 6. *Waste certifications as required by 335-13-4-.21(1)(c) of this Division;*
 7. *Any other report or document generated in the normal operation of the facility which is submitted to the Department.*
- (d) *Any cost estimates and financial assurance documentation required by 40 CFR 258, Subpart G.*

Each of the items listed above shall be placed in the Facility Operating Record which is maintained on site.

(2) *Department notification.*

The owner/operator must notify the Department when the documents from subparagraph (1)(b) of this Rule have been placed or added to the operating record, and all information contained in the operating record must be furnished upon request to the Department or be made available at all reasonable times for inspection by the Department.

The Department will be notified when documents are placed in or added to the Facility Operating Record. The Facility Operating Record will be made available to the Department for inspection, as requested.

(3) *Alternative schedules.*

The Department can set alternative schedules for recordkeeping and notification requirements as specified in paragraphs (1) and (2) of this Rule, except for notification requirements in 335-13-4-.01(1)(c) and 335-13-4-.27 (4)(g)3.(iii).

If requested, by the Department, this rule will be complied with.

6. GAS MONITORING PLAN

METHANE GAS MONITORING PLAN



METHANE GAS MONITORING PLAN

The objective of the Methane Gas Monitoring Plan is to detect the lateral movement of potentially explosive gases in the subsoil and along man-made migration pathways toward on-site and off-site structures. The information gathered from gas monitoring stations will be used to evaluate the potential explosive hazard of methane gas accumulations within the explosive limits of 5 - 15 percent by volume.

1.0 Monitoring Network Design and Phasing of Installation

Landfill gas monitoring points have been established on site between the landfill units and the facility boundary. Since groundwater is a vertical barrier for potential methane gas migration, areas selected for monitoring are along the facility boundary where streams, wetlands, and sediment ponds are not present.

As a result of a change in the facility’s permitted property boundary in 2016 along Cahaba Road, existing methane monitoring probes MM-105 and MM-106 and existing barhole punch locations MM-107 and MM-108 have to be abandoned and relocated. The abandoned locations will be replaced with two new methane monitoring probes (MM-105R and MM-106R) and two new bar-hole punch locations (MM-107R and MM-108R). The proposed new methane monitoring locations, the existing methane monitoring locations to be abandoned, and the new facility boundary are indicated on the revised *Environmental Monitoring Plan* of the D&O Plan prepared by HHNT.

Methane monitoring will be conducted at 81 proposed bar-hole punch locations (MM-1 through MM-58 and MM-107R through MM-129), 6 existing bar-hole punch locations (MM-63, MM-86 through MM-90), 40 existing monitoring probe locations (MM-59, through MM-62, MM-64 through MM-85 and MM-91 through MM-104), 2 proposed methane monitoring probe locations (MM-105R and MM-106R), one on-site structure (scalehouse), and culverts/drop inlets once they are constructed. The bar-hole punch locations and methane monitoring points are spaced approximately 300 feet apart in the western, northern, and eastern portions of the facility. In the southern portion of the site the bar-hole punch locations and methane monitoring points (MM-66 through MM-129) are spaced approximately 100 feet apart or 300 feet apart due to residences located as close as 600 feet west of the facility. The locations of the methane monitoring points are indicated on the *Environmental Monitoring Plan* of the D&O Plan. All bar-hole punch locations have been established by a licensed surveyor and marked with identification posts prior to the completion of the first waste cell constructed at the facility.

Bar-hole punch locations shown as existing are currently being sampled. All bar-hole punch locations shown as proposed will be sampled after cell construction progresses to that area of the landfill.

MONITORING LOCATION	LOCATIONS AND JUSTIFICATION
MM-1 to MM-20	Proposed bar-hole punch locations on a 300-foot spacing at the western property boundary.
MM-21 to MM-40	Proposed bar-hole punch locations on a 300-foot spacing at the northern property boundary.



MONITORING LOCATION	LOCATIONS AND JUSTIFICATION
MM-41 to MM-58	Proposed bar-hole punch locations on a 300-foot spacing at the eastern property boundary.
MM-59 to MM-62	Existing methane monitoring probe locations on a 300-foot spacing at the eastern property boundary.
MM-63	Existing bar-hole punch location on a 300-foot spacing at the eastern property boundary.
MM-64 to MM-65	Existing methane monitoring probe locations on a 300-foot spacing at the eastern property boundary.
MM-66 to MM-70	Existing methane monitoring probe locations on a 100-foot spacing at the eastern property boundary.
MM-71 to MM-85	Existing methane monitoring probe locations on a 100-foot spacing at the southern property boundary.
MM-86 to MM-90	Existing bar-hole punch locations on a 100-foot spacing at the southwestern property boundary.
MM-91 to MM-102	Existing methane monitoring probe locations on a 100-foot spacing at the southwestern property boundary.
MM-103 to MM-104	Existing methane monitoring probe locations on a 300-foot spacing at the southwestern property boundary.
MM-105R to MM-106R	Proposed replacement methane monitoring probe locations on a 300-foot spacing at the southwestern property boundary.
MM-107R to MM-108R	Proposed replacement bar-hole punch locations on a 100-foot spacing at the southwestern property boundary.
MM-109 to MM-129	Proposed bar-hole punch locations on a 100-foot or 300-foot spacing at the southwestern property boundary.
On-site structures	scale house

2.0 Gas Monitoring Schedule

Gas monitoring stations will be established by land surveyors and marked with a permanent station marker. For the purpose of detecting migration of potentially explosive gas from the landfill, the following monitoring schedule will be implemented:

1. Upon commencement of active operations and quarterly prior-to-closure.
2. Quarterly for at least 30 years during the post-closure care period or until demonstration is made to ADEM that methane gas no longer presents a threat to the environment.



3. Each monitoring event is to include observations for stressed vegetation due to methane gas movement. If present, areas around and beyond stressed vegetation will be monitored with a bar punch to determine if gas is moving off site.
4. Monitoring in, beneath, and around site structures will be a part of each screening event.

3.0 Monitoring Procedures

3.1 Bar-hole Punch Locations and Structures

Screening at each monitoring station will consist of initially forming a small diameter hole (1" hole with a minimum depth of four feet into the soil). This will be achieved by utilizing a punch bar or small auger (manual or gas power). At most locations, this hole should remain open for sufficient time to allow for collection and measurement of gases within the soil. If the hole tends to collapse, a small temporary perforated pipe will be placed in the hole.

After punching the bar-hole, an air sample from the bar-hole will be withdrawn and analyzed with a combustible gas indicator. The combustible gas indicator shall provide direct readings of methane concentrations (0 - 100% methane by volume). Percent of methane by volume and percent of oxygen will be recorded on approved ADEM forms along with pertinent data such as ambient air temperatures and weather for a permanent record. Should initial reading yield an exceedance, the bar-hole will be sealed at the ground surface for 30 to 60 minutes and then retested. Both initial test and retest results should be reported.

Each gas monitoring event will include monitoring of all on-site structures. Readings of percent methane by volume, percent LEL and percent oxygen will be obtained inside, beneath, and around structures. Any other installations such as a scale pit will also be monitored. Readings obtained will be recorded in the field and reported to ADEM as described below in Section 6.0.

3.2 Methane Probe Locations

An air sample from the probe casing will be withdrawn and analyzed with a combustible gas indicator, immediately after approaching the probe and opening the casing. Should an initial reading yield an exceedance (5% methane by volume or greater), the probe will be covered for 30 to 60 minutes and retested. Both initial test and retest results should be reported to ADEM along with pertinent data such as ambient air temperatures and weather for a permanent record.

4.0 Quality Assurance and Quality Control Procedures

The following quality assurance and control procedures will be implemented.

Sampling will not be performed if conditions conducive to decreasing gas concentrations are present (e.g., subsurface gas pressure less than atmospheric pressure). In this case, sampling will be delayed until such conditions pass.

Sampling must be conducted when gas pressures are at a maximum. Subsurface gas pressures have a diurnal cycle and generally are at a maximum during the afternoon. Therefore, sampling should be



conducted after 12 noon.

Gas production will vary with changes in seasons and climatic conditions. Each sampling event must be conducted under the same conditions, as near as possible, as the preceding event. Therefore, the operator will review the log of the time and conditions which existed during the preceding sampling event and attempt to emulate those conditions as closely as possible during subsequent events.

Landfill gas will be analyzed using a combustible gas indicator, such as an E.G. Gascope, Model 62S, manufactured by Mine Safety Appliances Co., Decatur, Ga., (or equal). The combustible gas indicator will be calibrated according to the manufacture's specifications prior to the landfill gas survey.

Air samples from the bar-hole punches will be withdrawn and analyzed with the combustible gas indicator. The combustible gas indicator will provide direct readings of methane concentrations (0-100% methane and 0-100% LEL). Percent of methane and percent of LEL will be recorded, along with pertinent data such as ambient air temperatures, barometric pressure, subsurface pressure, weather conditions, and soil moisture conditions for a permanent record.

Each gas survey will include screening at on-site structures. Monitoring in on-site structures will be conducted at times when the dilution of indoor air is minimized and the concentration of soil gas is expected to be at its highest concentration. Recommended sampling locations within structures include: basements, crawl spaces, ceiling areas, and around subsurface utility lines such as service or electrical connections. Reading of percent methane and percent LEL will be recorded on forms along with pertinent data such as ambient air temperatures, barometric pressure, and weather conditions.

5.0 Methane Gas Safety Guidelines

The following guidelines should be followed when at a landfill in the presence of potentially dangerous gases:

1. No person should enter a vault or a trench on a landfill without first checking for the presence of methane gas. The person should also wear a safety harness with a second person standing by to pull him or her to safety.
2. Anyone installing probes in a landfill should wear a safety rope to prevent falling in the borehole. Open holes should be covered when they are left unattended.
3. Smoking should be prohibited on the landfill where drilling, excavating, or installation of equipment is taking place or where gas is venting from the landfill.
4. Collected gas from a mechanically evacuated system should always be cleared to minimize air pollution and any potential explosion or fire hazard.
5. Methane gas in a concentration of 5 to 15 percent is an explosive mixture. Gas accumulations should be monitored inside enclosed structures to avoid explosive conditions and properly ventilate dangerous areas when needed.

Personnel working on a landfill must be provided training regarding the danger posed by landfill gases.



Personnel operating safety equipment around the landfill must be thoroughly trained in its use and have a clear understanding of the meaning of observations made with the monitoring equipment. Monitoring equipment must also be periodically calibrated to ensure continued accuracy in the results.

6.0 Reporting

Interpretation of quarterly sampling for methane gas will be as follows:

1. Methane gas concentrations shall not exceed 25 percent of the lower explosive limit (LEL) (1.25%) for gases in facility structures.
2. Methane gas concentrations shall not exceed the lower explosive limit for methane facility boundaries (5%).

Results of methane gas monitoring will be submitted to ADEM quarterly within 30 days of the methane monitoring event.

Upon findings of methane gas migration, a contingency plan including the following will be implemented:

1. Verification of explosive gas concentrations by immediate retesting.
2. Upon verifications of readings above the 25 percent of the LEL in facility structures or the LEL at facility boundaries, immediate notifications to ADEM and appropriate local public safety authorities such as the local health district, fire department, and police department will be given. Structures within 300 feet of the site boundary where the reading was at LEL will be tested for methane.
3. The monitoring frequently of the subject soil gas station(s) will be increased from quarterly monitoring to a frequency determined appropriate by ADEM until such time that the problem is corrected or determined not to pose a significant threat to the environment and public health and safety.
4. The need for methane gas control systems will be assessed upon validated finding of methane gas migration and appropriate recommendations implemented. A remediation plan as required by Rule 335-13-4-.16 will be prepared, submitted to ADEM, and implemented.



HODGES, HARBIN,
NEWBERRY & TRIBBLE, INC.

Consulting Engineers

October 18, 2021

Received: 10/18/21 7:17

Mr. Devin M. Jenkins, P.E.
Environmental Engineering Specialist
ADEM Land Division, Solid Waste Branch
1400 Coliseum Boulevard
Montgomery, AL 36110

**Re: Arrowhead Landfill
10 Year Permit Review Comment Response Letter
HHNT Project No. 6750-012-01**

Dear Mr. Jenkins:

We have received your email dated September 22, 2021, regarding the above-referenced facility. Outlined below are your comments in *italics* and our response in **bold**.

Comment: As we discussed, please submit Arrowhead's groundwater monitoring plan (GWMP) for review as part of the renewal process. Additionally, the GWMP should have language discussing well replacement as shown:

If it is determined that a well should be placed for any reason, a Monitoring Well Abandonment and Replacement Plan (the Plan) will be prepared for submittal to ADEM within 60 days of making the determination. The Plan will include, at a minimum, consideration of the following:

- The appropriate method for abandonment.*
- The need for relocation to protect the replacement well from future damage.*
- The anticipated replacement well type, depth, screened interval, casing diameter and surface completion in accordance with ADEM Admin Code 335-13-4-.27(2)(c).*
- The need for replicate sample collection and if required, the number of replicate samples and a schedule for completing sample collection.*
- Statistical analysis to be used for groundwater quality data collected from the replacement well and a determination addressing pooling data from the abandoned well with the new well is appropriate.*

Mr. Devin Jenkins, P.E.

October 18, 2021

Page 2 of 2

Upon approval of the Plan and the replacement of the new well, a report documenting the abandonment and replacement activities will be prepared and submitted to ADEM along with a Minor Permit Modification request to update the facility Permit and include the newly installed well into the Permit compliance well network.

Response: The attached Environmental Monitoring Plan by Bunnell-Lammons Engineering, Inc. (BLE) has been updated (see GWMS page 7) based on the above comments.

Should you have any questions, please call.

Sincerely,

HODGES, HARBIN, NEWBERRY & TRIBBLE, INC.



K. Matthew Cheek, P.E.

Professional Engineer

KMC/lc

Enclosure

cc: William Gay (w / enclosure)
James Francesco (w / enclosure)
Robert Berns (w / enclosure)
Mark Preddy, P.G. (w / enclosure)



December 15, 2021

Received: 12/15/21 7:17

Compliance and Enforcement Section
Solid Waste Engineering, Land Division
Alabama Department of Environmental Management
1400 Coliseum Boulevard
Montgomery, AL 36110

Attention: Mr. Jared Kelly, Chief

Subject: **BLE Reply to ADEM Letter Dated December 9, 2021**
Hydrogeology Review – Groundwater Monitoring Plan
Arrowhead Landfill
Permit Number 53-03
Perry County, Alabama
BLE Project Number J21-4999-51C
HHNT Project Number 6750-012-03

Dear Mr. Kelly:

As requested by our client, Bunnell-Lammons Engineering, Inc. (BLE) has prepared this letter on behalf of the Arrowhead Landfill and Hodges, Harbin, Newberry, & Tribble, Inc. (HHNT). This letter addresses comments and recommendations in the ADEM letter concerning BLE's *Groundwater Monitoring Plan* dated October 12, 2021 (BLE Project Number J20-4999-49). Listed below is ADEM's comment in *italics* and BLE's response in **bold**.

ADEM Comment:

ADEM Admin. Code r. 335-1 3-4-.27(2)(m)5 states that any practical quantitation limit (PQL) that is used in the statistical method shall be the lowest concentration level that can be reliably achieved within specified limits of precision and accuracy during routine laboratory operating conditions that are available to the facility. Section 1.0 of the Groundwater Detection Monitoring Plan includes a table of EPA methods and maximum detection limits for metals and inorganics, last revised in February 2017. It is recommended that the facility verify that PQLs identified in the table are currently the lowest available to the facility and revise the table as appropriate to meet ADEM requirements.

BLE Response:

The last update to the facility's Environmental Monitoring Plan (EMP) on October 12, 2021 did not include the updated PQLs that were in BLE's letter to ADEM dated May 20, 2020 as "Appendix C". Therefore, BLE has updated the EMP to include the new PQLs in the two tables in Section 1.0 (Monitoring Parameters and Frequency; pages DMP-2, DMP-3, and DMP-4) of the Groundwater Detection Monitoring Plan.



Arrowhead Landfill – Perry County, Alabama
BLE Reply Letter to ADEM – Hydrogeology Review

December 15, 2021
BLE Project No. J20-4999-51C

We appreciate the continued opportunity to work with the ADEM to address regulatory issues and to develop solutions for compliance. If you have any questions, please do not hesitate to contact us at (864) 288-1265.

Sincerely,

BUNNELL LAMMONS ENGINEERING INC.

Mark S. Preddy, P.G.
Consultant Geologist
Registered, AL #801

Attachments: Environmental Monitoring Plan – Horizontal Expansion, Arrowhead Landfill, Perry Co., Alabama, BLE Project J11-4999-29, dated April 6, 2011 (Last Revised December 15, 2021)

cc: Mr. William Gay, CEO – Arrowhead Landfill
Mr. James Francesco – Arrowhead Landfill
Mr. Robert Berns – Arrowhead Landfill
Mr. Michael Thomas – Arrowhead Landfill
Mr. Clint L. Courson, CHMM – HHNT

Appendix A – X

Appendix B – X

Appendix C – X