PRELIMINARY DETERMINATION

PERMIT RENEWAL & MODIFICATION

TAMKO Building Products, LLC
2300 35th Street
Tuscaloosa, Alabama 35403

Permit No. 63-17
TAMKO Building Products, LLC Industrial Landfill

December 17, 2020

TAMKO Building Products, LLC has submitted to the Alabama Department of Environmental Management (ADEM) an application to renew and modify the permit to operate an industrial waste landfill known as the TAMKO Building Products, LLC. Industrial Landfill (Permit No. 63-17). The modification includes adding dust suppressant coated sand to the waste stream. The waste stream for the TAMKO Building Products, LLC Industrial Landfill would be nonhazardous industrial wastes and construction and demolition waste such as asphalt, concrete, steel, dust collector bags/cartridge, fume filter elements, fiber glass/polyester/organic mat materials, fiber glass/organic shingles, dust suppressant coated sand, misc. packing materials, roll roofing, fiber glass/organic roofing felt, solid materials and fiberglass mat process materials from process operations and settling ponds, similar materials from fume filters and fiberglass and polyester baghouse bags, and misc. waste with prior ADEM approval. The service area for the TAMKO Building Products, LLC Industrial Landfill would remain TAMKO Building Products, LLC, plant located in Tuscaloosa, Alabama. The maximum average daily volume of waste disposed at the TAMKO Building Products, LLC. Industrial Landfill would remain 350 tons per day. The previously approved variances were re-requested by the applicant and would be granted in the renewed permit. All other permit conditions would remain the same.

The TAMKO Building Products, LLC. Industrial Landfill is described as being located in Southwest ¼ of the Southeast ¼ of Section 27 and Northwest ¼ of the Northeast ¼ of Section 34, Township 21 South, Range 10 West in Tuscaloosa County. The TAMKO Building Products, LLC. Industrial Landfill consists of 21.52 acres with 20 acres for disposal operations.

The Solid Waste Engineering Section of ADEM has determined that the proposed renewal and modification complies with the requirements of ADEM's Administrative Code Division 13 for an industrial waste landfill.

Technical Contact:

Hunter Baker
Solid Waste Engineering Section
Land Division
(334) 270-5607

ALABAMA
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

SOLID WASTE DISPOSAL FACILITY *PERMIT*

PERMITTEE:	**TAMKO Building Products, LLC**
FACILITY NAME:	**TAMKO Building Products, Inc. Industrial Landfill**
FACILITY LOCATION:	**Southwest ¼ of the Southeast ¼ of Section 27 and Northwest ¼ of the Northeast ¼ of Section 34, Township 21 South, Range 10 West in Tuscaloosa County, Alabama. The permitted facility consists of 21.52 acres with approximately 20 acres for disposal.**
PERMIT NUMBER:	**63-17**
PERMIT TYPE:	**Industrial**
WASTE APPROVED FOR DISPOSAL:	**Nonhazardous industrial and construction and demolition waste such as asphalt, concrete, steel, dust collector bags/cartridge, fume filter elements, fiberglass/polyester/organic mat materials, fiber glass/organic shingles, dust suppressant coated sand, misc. packing materials, roll roofing, fiber glass/organic roofing felt, solid materials and fiberglass mat process materials from process operations and settling ponds, similar materials from fume filters and fiberglass and polyester baghouse bags, and misc. waste with prior ADEM approval. .**
APPROVED WASTE VOLUME:	**Maximum Average Daily Volume of waste is 350 tons per day**
APPROVED SERVICE AREA:	**TAMKO Building Products, Inc. plant located in Tuscaloosa County, Alabama**

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

ISSUANCE DATE:	**?????**
EFFECTIVE DATE:	**?????**
EXPIRATION DATE:	**?????**

_____

Alabama Department of Environmental Management

ALABAMA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
SOLID WASTE PERMIT

Permittee:	TAMKO Building Products LLC. 2300 35th Street Tuscaloosa, AL 35403
Landfill:	TAMKO Building Products LLC Industrial Landfill
Landfill Location:	Southwest ¼ of the Southeast ¼ of Section 27 and Northwest ¼ of the Northeast ¼ of Section 34, Township 21 South, Range 10 West in Tuscaloosa County, Alabama.
Permit No.	63-17
Landfill Type:	Industrial

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

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

This permit is based on the information submitted to ADEM on April 3, 2020 and as amended and known as the Permit Application (hereby incorporated by reference and hereinafter referred to as the Application). Any inaccuracies found in this information could lead to the termination or modification of this permit and potential enforcement action. The Permittee must inform ADEM of any deviation from or changes in the information in the Application that would affect the Permittee's ability to comply with the applicable ADEM Admin. Code or permit conditions.

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

_____ _____

Alabama Department of Environmental Management Date Signed

SECTION I. STANDARD CONDITIONS.

A. Effect of Permit. The Permittee is allowed to dispose of nonhazardous solid waste in accordance with the conditions of this permit and 335-13. Issuance of this permit does not convey property rights of any sort or any exclusive privilege, nor does it authorize any injury to persons or property, any invasion of other private rights, or any infringement of state or local laws or regulations. Except for actions brought under the Act, compliance with the conditions of this permit shall be deemed to be compliance with applicable requirements in effect as of the date of issuance of this permit and any future revisions.

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

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

D. Definitions. For the purpose of this permit, terms used herein shall have the same meaning as those in 335-13, unless this permit specifically provides otherwise; where terms are not otherwise defined, the meaning associated with such terms shall be as defined by a standard dictionary reference or the generally accepted scientific or industrial meaning of the term.

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

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

E. Duties and Requirements.

1. Duty to Comply. The Permittee must comply with all conditions of this permit except to the extent and for the duration such noncompliance is authorized by a variance granted by ADEM. Any permit noncompliance, other than noncompliance authorized by a variance, constitutes a violation of the Act and is grounds for enforcement action, permit suspension, revocation, modification, and/or denial of a permit renewal application.

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

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

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

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

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

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

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

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

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

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

   d. Sample or monitor, at reasonable times, any substances or parameters at any location for the purposes of assuring permit compliance or as otherwise authorized by the Act.

9. Monitoring, Corrective Actions, and Records.

   a. Samples and measurements taken for the purpose of monitoring or corrective action shall be representative of the monitored activity. The methods used to obtain representative samples to be analyzed must be the appropriate method from 335-13-4 or the methods as specified in the Application attached hereto and incorporated by reference. Laboratory methods must be those specified in Standard Methods for the Examination of Water and Wastewater (American Public Health Association, latest edition), Methods for Chemical Analysis of Water and Wastes (EPA-600/4-79-020), Test Methods for Evaluating Solid Waste, Physical/Chemical Methods (EPA Publication SW-846, latest edition), other appropriate EPA methods, or as specified in the Application. All field tests must be conducted using approved EPA test kits and procedures.

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

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

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

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

      iii. The date(s) analyses were performed.

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

      v. The analytical techniques or methods used.

vi. The results of such analyses.

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

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

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

12. Certification of Construction. The Permittee may not commence disposal of waste in a new cell or phase until the Permittee has submitted to ADEM, by certified mail or hand delivery, a letter signed by both the Permittee and a professional engineer stating that the facility has been constructed in compliance with the permit. ADEM must inspect the constructed cells or phases before the owner or operator can commence waste disposal unless the Permittee is notified that ADEM will waive the inspection.

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

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

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

F. Design and Operation of Facility. The Permittee shall maintain and operate the facility to minimize the possibility of a fire, explosion, or any unplanned sudden or nonsudden release of contaminants (including leachate and explosive gases) to air, soil, groundwater, or surface water, which could threaten human health or the environment. The Permittee shall comply with all applicable requirements set forth under Rule 335-13-4-.21 and Rule 335-13-4-.23 of the ADEM Admin. Code. The Permittee is granted a variance from Rule 335-13-4-.21(1)(b) and (c).

G. Inspection Requirements.

1. The Permittee shall perform periodic inspection of the landfill in accordance with the permit application (Specifically section 6.3.9 Operation Inspection in the Operation Manual prepared November 2006 and as amended).

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

H. The Permittee shall conduct personnel training in accordance with the procedures described in permit application (Specifically section 6.1.4. Operating Personnel in the Operation Manual prepared November 2006 and as amended). The Permittee shall maintain training documents and records as a part of the operating record required by Section I., 1.

I. Recordkeeping and Reporting.

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

   a. Documentation of inspection (Section I., G.).

   b. Daily and quarterly volume reports (Section I., I., 2.).

   c. Personnel training records (Section I., H.).

   d. Groundwater monitoring records (Section I., I., 3.).

   e. Copies of this Permit, application and other pertinent operating, inspection, maintenance and monitoring information. (Rule 335-13-4-.29)

   f. Copies of all variances granted by ADEM, including copies of all approvals of special operating conditions.

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

3. Monitoring and Corrective Action Reports. The Permittee shall submit reports on all monitoring and corrective activities conducted pursuant to the requirements of this permit, including, but not limited to, groundwater, surface water and leachate monitoring. The groundwater monitoring shall be conducted in March and September of each year, or as directed by ADEM, and the reports shall be submitted at least semi-annually, or as directed by ADEM. The reports should contain all monitoring results and conclusions from samples and measurements conducted during the sampling period. Copies of the groundwater reports shall be maintained in the operating record.

4. Availability, Retention, and Disposition of Records.

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

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

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

J. Documents to be Maintained by the Permittee. The Permittee shall maintain, at the TAMKO Building Products LLC office the following documents and amendments, revisions and modifications to these documents until an engineer certifies closure of the permitted landfill.

1. Operating record.

2. Closure Plan.

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

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

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

L. Signatory Requirement. All applications, reports or information required by this permit, or otherwise submitted to ADEM, shall be signed and certified by the owner as follows:

1. If an individual, by the applicant.

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

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

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

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

SECTION II. GENERAL OPERATING CONDITIONS.

A. Operation of Facility. The Permittee shall operate and maintain the disposal facility consistent with the Application, this permit, and 335-13. The Permittee is granted a variance from Rule 335-13-4-.21(1)(b) and (c).

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

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

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

E. Industrial Waste Disposal. The Permittee shall dispose of industrial waste as specified in Section III, B.

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

SECTION III. SPECIFIC REQUIREMENTS FOR INDUSTRIAL WASTE LANDFILLS.

A. Waste Identification and Management.

1. Subject to the terms of this permit, the Permittee may accept for disposal the nonhazardous solid wastes listed in Section III., B. Disposal of any other wastes is prohibited, except waste granted a temporary or one time waiver by the Director or waste streams approved following the Solid Waste Form process.

2. The total permitted area for the TAMKO Building Products LLC Industrial Landfill is approximately 21.52 acres with 20 acres for disposal.

3. The maximum average daily volume of waste disposed at the facility, as contained in the permit application, shall not exceed 350 tons/day. Should the average daily volume exceed this value by 20% or 100 tons/day, whichever is less, for two (2) consecutive quarters the permittee shall be required to modify the permit in accordance with 335-13-5-.06(2)(a)5 The average daily volume shall be computed as specified by 335-13-5-.06(2)(a)5.(i).

B. Waste Streams. The Permittee may accept for disposal nonhazardous industrial wastes and construction and demolition waste such as asphalt, concrete, steel, dust collector bags/cartridge, fume filter elements, fiber glass/polyester/organic mat materials, fiber glass/organic shingles, dust suppressant coated sand , misc. packing materials, roll roofing, fiber glass/organic roofing felt, solid materials and fiberglass mat process materials from process operations and settling ponds, similar materials from fume filter and fiberglass and polyester baghouse bags, and misc. waste with prior ADEM approval.

C. Service Area. The service area for this landfill, as contained in the permit application is TAMKO Building Products LLC plant located in Tuscaloosa, Alabama.

D. Waste Placement, Compaction, and Cover. All waste shall be confined to an area as small as possible and placed onto an appropriate slope not to exceed 33% (See Section VIII., 3.). All waste shall be spread in layers two feet or less in thickness and thoroughly compacted weekly with adequate landfill equipment prior to placing additional layers of waste unless otherwise approve by ADEM. No cover is required until final fill elevations have been reached (See Section VIII., 11.).

E. Liner Requirements. The Permittee shall not be required to construct a liner. The base of the waste shall be a minimum of five (5) feet above the highest measurement of the groundwater table as demonstrated by the permit application documents.

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

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

H. Adverse Weather Disposal. The Permittee shall provide for disposal activities in adverse weather conditions.

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

J. Environmental Monitoring and Treatment Structures. The Permittee shall provide protection and proper maintenance of environmental monitoring and treatment structures.

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

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

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

N. Other Requirements. ADEM may enhance or reduce any requirements for operating and maintaining the landfill as deemed necessary by the Land Division.

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

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

Q. Litter Control. The Permittee shall control litter.

R. Fire Control. The Permittee shall provide fire control measures.

SECTION IV. GROUNDWATER MONITORING REQUIREMENTS.

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

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

2. The Permittee shall maintain groundwater monitoring well MW-6 as the background groundwater monitoring wells for the entire facility.

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

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

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

    b. Well development method(s);

    c. A complete analysis of well construction materials;

    d. A schedule of implementation for construction; and

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

B. Groundwater Monitoring Requirements.

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

2. The Permittee shall determine the groundwater flow direction in the first zone of saturation at least annually or each time groundwater is sampled and submit as required Section I.I.3.

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

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

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

1. Samples shall be collected, preserved, and shipped (when shipped off-site for analysis) in accordance with the procedures specified in the Application. Monitoring wells shall be bailed or pumped to remove at least four times the well volume of water or as specified in the Operation Manual prepared November 2006 and as amended. Slow recharge wells shall be bailed until dry. Wells shall be allowed to recharge prior to sampling.

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

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

4. Intra-well analysis shall be used for determination of the occurrence of Statistically Significant Increases.

D. Recordkeeping and Reporting Requirements.

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

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

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

TABLE IV.1.
GROUNDWATER MONITORING WELLS.

Monitoring Well Number	Top of Casing (feet msl)	Part Monitoring
UPGRADIENT/BACKGROUND MONITORING WELLS		
MW-6	173.58	Northern Portion
DOWNGRADIENT MONITORING WELLS		
MW I	174.21	Southern Portion
MW 2	161.14	Southern Portion
MW 3	161.29	Southern Portion
MW-4	171.17	Northern Portion
MW-5	170.32	Northern Portion
MW-7*	To Be Installed*	Southern Portion

*Groundwater monitoring well to be installed prior to September 2021 sampling per the application.

TABLE IV.2.
SEMI-ANNUAL GROUNDWATER MONITORING PARAMETERS.

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

SECTION V. GAS MONITORING REQUIREMENTS.

At this time, gas monitoring is not being required (See Section VIII., 1.). If at any time the Department determines that a explosive gas monitoring system is deemed necessary for the protection of human health and the environment, the Permittee must, within 90 days, submit an application for permit modification for the installation of an explosive gas monitoring system that meets the proper regulatory requirements of the Alabama Department of Environmental Management.

SECTION VI. LEACHATE AND SURFACE WATER MANAGEMENT REQUIREMENTS.

At this time, a leachate management collection system is not being required (See Section VIII., 6.). If at any time the Department determines that a leachate management collection system is deemed necessary for the protection of human health and environment, the permittee must, within 90 days submit an application for permit modification for the installation of a leachate management collection system that meets the proper regulatory requirements of the Alabama Department of Environmental Management.

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

SECTION VII. CLOSURE AND POST-CLOSURE REQUIREMENTS.

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

A. Final Cover. The Permittee shall grade final soil cover such that surface water does not pond over the permitted area as specified in the Application submitted to the Department on June 14, 2002. The final grade of the two foot earthen material cover shall not exceed 2.5H to 1V with a minimum grade of 2 percent (See Section VIII., 2.). The final cover system shall comply with 335-13.

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

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

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

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

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

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

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

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

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

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

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

SECTION VIII. VARIANCES AND SPECIAL CONDITIONS.

1. The permittee is granted a variance from Rule 335-13-4-.16 requiring explosive gas monitoring. If at any time the Department determines that an explosive gas monitoring system is deemed necessary for the protection of human health and the environment, the Permittee must, within 90 days, submit an application for permit modification for the installation of an explosive gas monitoring system that meets the proper regulatory requirements of the Alabama Department of Environmental Management. (See Section V.).

2. The Permittee is granted a variance from Rule 335-13-4-.20(2)(c)2 which requires the final grade of the two-foot earthen-material cover not to exceed 25 percent. The Permittee will be allowed to use a 2.5H to 1V maximum final grade and shall be a minimum of 2 percent as shown in the permit application. (See Section VII., A.)

3. A variance is granted from Rule335-13-4-.23(1)(c) allowing the active face to have a maximum slope of 33 percent (See Section III., D.).

4. A variance is granted from Rule 335-13-4-.12(f) concerning 100 foot buffer zones for the north, south and west boundaries. However 100 foot buffer is still in effect for the portion of the landfill starting at the northeast corner then a distance of 199.91 feet in a south easterly direction, continuing 380.80 feet in a southerly direction, continuing 182.16 feet in a southerly direction, continuing 213.27 feet in a south easterly direction.

5. A variance is granted for Rule 335-13-4-.27(3)(b)(1)(i) concerning monitoring the first semiannual period in accordance with the Rule 335-13-4-.27(1)(a) as the landfill is an existing landfill.

6. A variance is granted for Rule 335-13-4-.18(c) requiring a leachate collection system. (See Section VI.).

7. A variance is granted from Rule 335-13-4-.17 so that the Permittee is not required to collect and control the water volume resulting from the 24-hour, 25-year storm. The Permittee must construct and maintain run-on and run-off control structures in accordance with the permit application and operate the landfill in accordance with the existing NPDES permit. (See Section VI.)

8. A variance is granted for Rule 335-13-4-.29(1)(c) relating to the site records for control measures or procedures that are not required at the landfill as follows:

    (a) 335-13-4-.29(1)(c)1. explosive gas monitoring and reporting records.
    (b) 335-13-4-.29(1)(c)4. analytical and monitoring records for leachate collection and surface water.
    (c) 335-13-4-.29(2) inspection training and notification pertaining to random load inspection for improper waste disposal.
    (d) 335-13-4-.29(6) waste certifications.

9. A variance is granted from Rule 335-13-4-.21(1)(b) relating to the implementation of detecting and preventing the disposal of free liquids, regulated hazardous waste, regulated medical wastes, and regulated PCB wastes. As the landfill is permitted for use only by the Permittee and for specified waste sources as described in this permit, Rule 335-13-4-.21(1)(b) does not apply.

10. A variance is granted for Rule 335-13-4-.21(1)(c) concerning written certification from each generator. As the landfill is permitted for use only by the Permittee and for specified waste sources as described in this permit, Rule 335-13-4-.21(1)(c) does not apply.

11. The Permittee is granted a variance from Rule 335-13-4-.23(1)(a)1. requiring weekly cover. The Permittee shall be required to cover all exposed waste when final fill elevations are reached (See Section III, D.).

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

Permit Application

TAMKO®
BUILDING PRODUCTS LLC

December 8, 2020

Jared Kelly
Chief – Land Division
Alabama Department of Environmental Management
1400 Coliseum Boulevard
Montgomery, Alabama 36110

Subject: Hydrogeology Review Response
TAMKO Building Products LLC – Industrial Landfill in Tuscaloosa, Alabama
ADEM Permit No. : 63-17

Dear Mr. Kelly:

Please find attached our response to the ADEM Hydrogeology Review letter dated November 9, 2020 (attached) and received by TAMKO on November 10, 2020.

As always, please feel free to contact Mark Tucker or me at 205-752-3555 should you have any questions or require additional information.

Best Regards,

For TAMKO Building Products LLC

Justin Allen
General Manufacturing Manager

Enclosures

2300 35th STREET TUSCALOOSA, AL 35401 205-752-3555 FAX 205-349-2049

Mr. Jared Kelly, Chief
Solid Waste Engineering Section
Land Division
Alabama Department of Environmental Management
P.O. Box 301463
Montgomery, Alabama 36130-1463

December 7, 2020

Subject: **Response to Alabama Department of Environmental Management's Hydrogeology Review Letter, dated November 9, 2020**
TAMKO Building Products LLC Industrial Landfill in Tuscaloosa, Alabama
ADEM Permit No.: 63-17

Dear Mr. Kelly:

Apex Companies LLC, ("Apex") on behalf of TAMKO Building Products LLC ("TAMKO") is pleased to submit this response letter and associated updated Operations Manual for the industrial landfill referenced above. This letter provides a response to the Hydrology Review letter point by point and includes a revised Operations Manual to ensure landfill operations are consistent with the anticipated 2020 permit language.

1. Well MW-5 has been changed to a compliance well only. We would like to note that the statistical method for the facility is an intra-well analysis, so each well is evaluated independently for a statistically significant increase (SSI). Well locations are defined in Section 7.2 of the attached and updated Operations Manual.

2. TAMKO is pursuing installing a new monitoring well, MW-7, located between wells MW-2 and MW-3. The additional well is discussed in section 7.2 of the Operations Manual. Figure 7-1 in the operations shows the proposed location as discussed during the November 19th meeting with ADEM. TAMKO is currently negotiating an access permit with the City of Tuscaloosa to install, develop and routinely sample the new well. TAMKO intends to have the well installed and sampled for the Fall 2021 semi-annual sampling event.

3. Section 7.6.1 in the attached Operations Manual has been updated to briefly describe the prediction intervals used to determine if a statistically significant increase has occurred at the landfill in accordance with the requirements of ADEM Admin. Code r. 335-13-4-.27(2)(l)

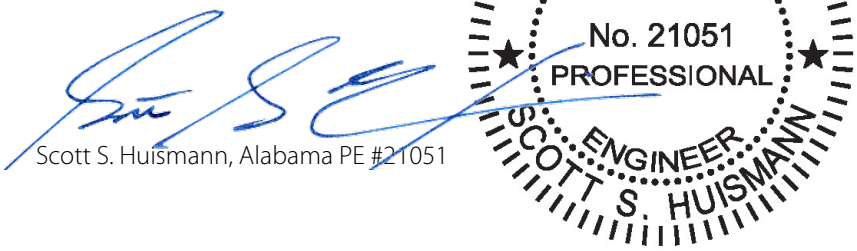
4. Section 7.6.2 in the attached Operations Manual has been updated to include an attached table of historical analytical results in the semi-annual report.

Also, since the semi-annual reports will now be forwarded to ADEM, not just kept onsite in the landfill record, and since the reports will now be significantly larger, please provide an email address for the electronic submittals of the reports.

On behalf of TAMKO, I thank you in advance for reviewing this response letter. Please do not hesitate to contact TAMKO or me at (256) 520-2398 should you have any questions regarding this project.

Sincerely,

Apex Companies LLC



Scott S. Huismann, Alabama PE #21051

Enclosures:

Revised Operations Manual, dated December 7, 2020

LANCE R. LEFLEUR
DIRECTOR

KAY IVEY
GOVERNOR

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

November 9, 2020

CERTIFIED MAIL 9489 0090 0027 6286 8012 52
RETURN RECEIPT REQUESTED

Mr. Mark Tucker
TAMKO Building Products LLC
2300 35th Street
Tuscaloosa, AL 35401

RE: Hydrogeology Review
TAMKO Building Products LLC Industrial Landfill
Permit 63-17

Dear Mr. Tucker:

The Alabama Department of Environmental Management (ADEM) has conducted a hydrogeology review for TAMKO Building Products LLC's response, dated September 30, 2020, to ADEM's Hydrogeology Review letter dated July 30, 2020. After review, the following comments were made:

1. Intra-well analysis is used at the facility and involves a comparison of historical background data compared to current data collected at each individual well location. Inter-well analysis involves a comparison of data from down-gradient wells to data of upgradient wells. It is recommended that monitoring well MW-5 remain as a compliance well at this time.

2. Based on the potentiometric surface maps submitted by the facility, it appears that groundwater flow between MW-2 and MW-3 is not being monitored. Therefore, an additional compliance monitoring well should be installed downgradient of the landfill in this area.

3. The 2012 Statistical Analysis of Groundwater Data for the Industrial Landfill in Tuscaloosa, Alabama inserted in the Operations Manual provides some information about the statistical analysis. It is recommended that the statistical analysis plan be included in the Operations Manual that meets the requirements of ADEM Admin. Code r. 335-13-4-.27(2)(l).

4. It is recommended that the Operations Manual indicate that a table of historical analytical results will be included in semi-annual groundwater monitoring reports.

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)

In oreder for the Department to consider the permit renewal, please review all comments and provide the suggested information within 30 days of receipt of this letter.

If you have any questions regarding this matter, please contact Mr. Hunter Baker of the Solid Waste Engineering Section at (334) 270-5607.

Sincerely,

Jared Kelly, Chief
Solid Waste Engineering Section
Land Division

JDK/hb

Operations Manual:
Industrial Landfill, ADEM Permit Number 63-17

TAMKO®

BUILDING PRODUCTS LLC

2300 35th Street
Tuscaloosa, Alabama 35401

PREPARED FOR:

TAMKO Building Products LLC
220 West 4th Street
Joplin, Missouri 64801

November 7, 2020

PREPARED BY:

Apex Companies, LLC
303-D Beltline Place, SW #422
Decatur, AL 35603

APEX

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1.0 INTRODUCTION

TAMKO Building Products LLC (TAMKO) currently operates an industrial landfill (Alabama Department of Environmental Management (ADEM) Permit Number 63-17) in Tuscaloosa, Alabama. TAMKO permitted the northern portion of the property to expand the landfill in 2006. This area was previously excavated for cover and base material. See Figure 1-1 on page 3.

This report, together with the accompanying engineering drawings, serve as the operations manual for the industrial landfill operated by TAMKO in Tuscaloosa, Alabama. TAMKO has operated the existing industrial landfill since 1988 under ADEM Permit No. 63-17. A previous expansion was approved by ADEM in 1999. A slope modification for the southern portion of the landfill was granted by ADEM on October 10, 2003 and the permit was most recently renewed in 2015. A copy of the most recent permit is included in Appendix A.

This manual contains the technical design and operation information for efficient utilization of the existing landfill and presents the procedures for preparation, operation, and closure of the proposed expanded landfill.

This manual contains the following sections:

- **Section 2 – Site Characterization:** Describes the characteristics of the site, including location, topography, soil classification, and groundwater.
- **Section 3 – Design Concepts:** Describes the design concepts utilized to optimize site utilization while considering proper environmental controls.
- **Section 4 – Environmental Control:** Describes the variety of environmental control measures included in the design and operation of the landfill sections.
- **Section 5 – Facility Design and Construction:** Presents the design documentation for the engineering drawings and describes how the landfill sections will be constructed.
- **Sections 6 – Operational Plan:** Provides detailed instructions for the landfill operation, and sets forth operation standards and controls.
- **Section 7 – Groundwater Sampling and Analysis Plan:** Presents the sampling procedures, analytical methods and evaluation and reporting criteria to be completed semiannually to ensure that the landfill has not adversely impacted the environment.

- **Section 8 – Closure and Post Closure Maintenance Plan:** Provides instructions for closing the landfill when it is filled to capacity and for the maintenance and monitoring during the post closure period.

Figure 1-1 Vicinity Map

2.0 SITE CHARACTERIZATION

TAMKO is a manufacturer of composition asphalt roofing products. TAMKO has operated the existing industrial landfill since 1988 under ADEM Permit No. 63-17. Previous horizontal and vertical expansions were approved by ADEM in 1999 and 2006. A slope modification for the southern portion of the landfill was granted by ADEM on October 10, 2003 and the permit was most recently renewed in 2015. Two Landfill Siting Studies were completed for each of the vertical expansions. Key information from the previous siting studies and updated information form ongoing landfill monitoring is provided below.

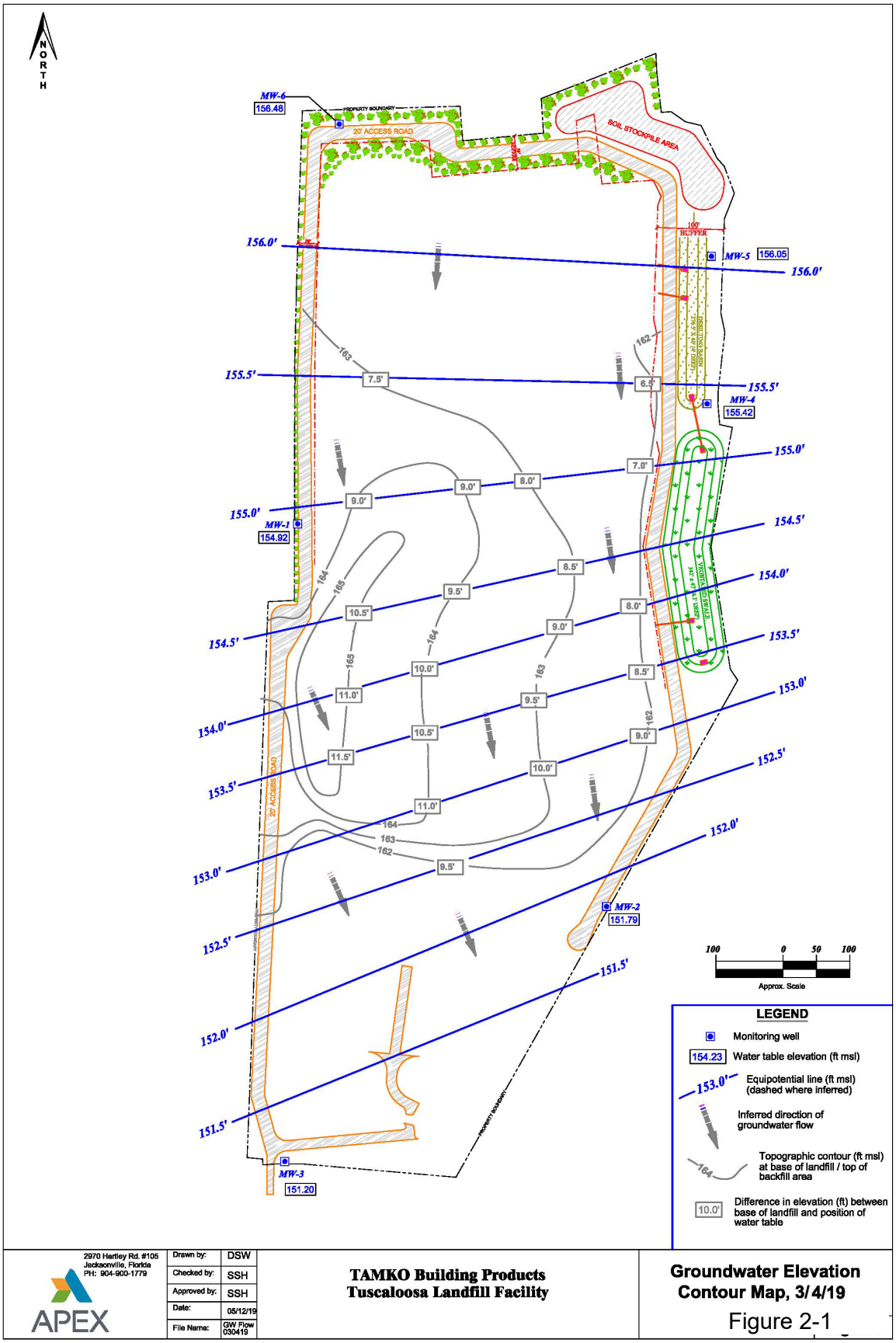
2.1 Site Location and Topography

The landfill is located in the City of Tuscaloosa, Tuscaloosa County, Alabama. See Figure 1-1 Vicinity Map on page 2.

The legal description of the permitted landfill and the 2006 expansion areas are presented in the Siting Study prepared by Tom Joiner and Associates, June 26, 2006. A copy of the legal descriptions included in Appendix B.

The surface topography is divided into two regimes. The northern one-half of the landfill is characterized by a general east to southeast slope toward a tributary (tributary No. 3) of the Moody Swamp. The highest natural elevation is at the northwest corner of the site at approximately 171 feet above mean sea level (MSL). The lowest portion of the existing landfill is approximately 158 MSL. The bottom of the proposed landfill cell permitted in 1999 ranges from approximately 161 feet above MSL to 163 feet above MSL. The proposed bottom elevation is approximately 7-feet above the measured high-water table to meet the 5-foot elevation requirement from ADEM.

The base elevation of the north cell has been revised based on the last several years of groundwater potentiometric surface maps. The groundwater buffer started being plotted and reported in 2011. The highest groundwater elevation plotted since then was in the Spring 2019 sampling event. Due to this higher than normal water table reducing the planned buffer for the future cell from the designed minimum of 7-feet to an estimated 6.5-feet estimated, the base elevation still ranges from 162 MSL to 163 MSL, but slopes from north to south instead of northwest to southeast. The revised base elevation plan protects the 7-foot buffer between the landfill bottom and the groundwater high elevation. See Figure 2 below which shows the old base elevations and groundwater contours which necessitated the landfill design update. See Sheet 1 Site Plan with Updated North Base Grading Plan attached.


NORTH
MW-6
156.48
PROPERTY BOUNDARY
20' ACCESS ROAD
SOIL STOCKPILE AREA
100' BUFFER
MW-5
156.05
MW-4
155.42
MW-1
154.92
MW-2
151.79
MW-3
151.20
156.0'
155.5'
155.0'
154.5'
154.0'
153.5'
153.0'
152.5'
152.0'
151.5'
7.5'
6.5'
7.0'
8.0'
9.0'
8.5'
9.5'
10.5'
10.0'
11.0'
11.5'
162
163
164
165
100 0 50 100
Approx. Scale
LEGEND
Monitoring well
154.23 Water table elevation (ft msl)
153.0' Equipotential line (ft msl) (dashed where inferred)
Inferred direction of groundwater flow
164 Topographic contour (ft msl) at base of landfill / top of backfill area
10.0' Difference in elevation (ft) between base of landfill and position of water table
2970 Hartley Rd. #105
Jacksonville, Florida
PH: 904-900-1779
APEX
Drawn by: DSW
Checked by: SSH
Approved by: SSH
Date: 05/12/19
File Name: GW Flow 030419
TAMKO Building Products
Tuscaloosa Landfill Facility
Groundwater Elevation Contour Map, 3/4/19
Figure 2-1

The southern one-half of the site is the existing landfill area, which is mounded from use as a landfill.

2.3 Site Geology and Hydrogeology

2.3.1 Site Geology

The Site Geology according to Tom Joiner and Associates in the June 26, 2006 report is as follows:

The landfill is located on surficial deposits that are Quarternary-aged alluvial and terrace deposits. These deposits are comprised of lenticular beds of clay, sands, and gravels that range in thickness up to 80 feet. Underlying these deposits is the Cretaceous-aged Gordo and Coker Formations. The Gordo Formation consists of light colored brownish-gray to light brown sand with lenses of gravel (chert) and variegated clay and has a reported thickness of 190 to 350 feet. Underlying the Gordo Formation, the Coker Formation consists of light-colored unconsolidated sand with lenses of gravel and variegated clay and ranges in thickness from 230 to 500 feet in Tuscaloosa County. Both the Gordo and Coker formations contain aquifers that are a sufficient to supply water for domestic and some agricultural purposes (Drennen, 1961; Hunter & Moses 1990).

Three borings were advanced in areas outside of the southern landfill cell by a truck mounted drilling rig in 1993. The borings were sampled continuously either with a five-foot continuous sampling spilt spoon, or with two-foot split spoons. The samples were described and logged in the field by an experienced geologist, and representative samples were collected from each strata (where possible) for confirmation testing of soil parameters by a qualified geotechnical laboratory. Each boring log was completed as a groundwater monitoring well. Boring logs and soil parameter testing results are presented in the previously submitted sitting study. Soil parameter testing results are presented in Siting and Hydrogeological Study of Proposed Landfill in Tuscaloosa County, Alabama, prepared by ENSR Consulting and Engineering (ENSR) (April 1993).

Boring MW-1 was advanced in a topographically up gradient area near the northwest corner of the existing landfill. Soils in this area are characterized by an upper zone consisting of silty and sandy clays extending to approximately 9 feet in depth. This zone overlies unconsolidated sand extending to approximately 21 feet in depth that grades into unconsolidated gravelly sand encountered until boring termination at 29 feet in depth from the ground surface. Groundwater was encountered in the borehole at approximately 18 feet in depth from the ground surface.

Boring MW-2 was advanced in a topographically down gradient area along the eastern end of the site. Soils in this area are characterized by a silty clay to a depth of four feet over a clayey sand which grades into a gravelly sand at approximately 12 feet in depth. Groundwater was encountered during drilling at approximately 11 feet in depth.

Boring MW-3 was advanced in a topographically downgradient area near the southwest corner of the site. Since the southern area of the site has been filled and is bordered on the south by low, moist wooded areas, a drilling platform was created by pushing clean fill material over the edge of the existing fill area. As a result, the upper portion of the boring was advanced through fill encountering native undisturbed soils at a depth of eight feet. From eight feet to 13 feet in depth, the native soils consist of an organic-rich clay which terminates on top of a two-foot thick sandy clay. At 15 feet in depth (seven feet from native soils), a gravelly sand was encountered to a boring termination at 24 feet (16 feet below native soils). Groundwater was encountered in the sandy clay interval at approximately 13 feet in depth (5 feet below native soils).

Three monitoring wells MW-4, MW-5 and MW-6 were installed around the perimeter of the north expansion in June 2005. Three borings were advanced in areas outside of the north landfill expansion by a truck mounted drilling rig and converted to monitoring wells. Soil boring logs and monitoring well construction diagrams are presented in the Tom Joiner and Associates siting study dated June 26, 2006.

Shallow soils from the six borings are characterized by increasing grain size and higher permeability with depth. Similar shallow soil types were encountered in each of the borings indicating that soil type (clay, sand, gravel) is extensive across the site, although thicknesses vary and may be dependent on topography. Uppermost groundwater in each boring was encountered in the sand unit immediately on top of gravelly sand encountered in the base of each boring.

2.3.2 Site Hydrogeology

All of the monitoring wells installed at the site are constructed from 2-inch diameter PVC, as described in this paragraph. The wells consist 10 to 15 feet of slotted PVC screen, followed by blank riser pipe to the surface. The annulus of the borehole outside the casing was filled such that sand filter packs were constructed adjacent to each screened interval, followed by a two-foot bentonite seal and bentonite cement and/or portland cement grout to the surface. Surface completion included a riser stickup, slip-on top cap, locking shroud, and concrete pad.

After well completion, each well was developed until the water was relatively free of sediment. After development, the wells were allowed to stabilize for a minimum of 24 hours prior to obtaining well measurements including depth to water, pH, and conductivity. The wells were surveyed to obtain elevations at the ground surface and the top of casing. Initial well measurements are presented in Table 2-1.

TABLE 2-1

TAMKO – Tuscaloosa, Alabama
Monitoring Well Installation Data

Well I.D.	Sample Date	Ground Surface Elevation	Top of Casing Elevation	Static Water Elevation	Total Well Depth (Feet)	Depth to Water (Feet)
MW-1	3/10/93	171.60	174.21	153.64	29.53	20.57
MW-2	3/10/93	158.30	161.14	150.39	22.58	10.75
MW-3	3/10/93	158.70	161.29	150.16	25.66	11.13
MW-4	6/23/05	169.12	171.17	154.48	20.5	16.69
MW-5	6/23/05	167.90	170.32	155.14	19.0	15.18
MW-6	6/23/05	171.04	173.58	155.85	23	17.73

On October 1, 1993, slug tests were performed for the existing landfill on monitoring wells MW-1, MW-2, and MW-3 by introducing and eventually removing a five-foot length of solid PVC. Water level changes were recorded using an In-Situ® Hermit 2000 data logger and an In-Situ® pressure transducer. Data was downloaded onto a computer, and estimated hydraulic conductivities were computed using the program AQTESOLV®. Estimated hydraulic conductivities were then input into a combination of Darcy's equation and the standard continuity equation to compute groundwater velocity in feet per day.

Hydraulic conductivities in monitoring wells MW-1 and MW-2 ranged from 1.39 – 1.65 X 10^{-2} ft/min. The hydraulic conductivity computed from MW-3 ranged from 1.31 – 2.16 X 10^{-2} ft/min. The conductivities computed from the data correspond to the sand and gravel fluvial deposits encountered when drilling the wells. The difference in hydraulic conductivities could be due to several possible factors: the heterogeneity of the fluvial deposits where the wells are screened, the sand packs surrounding the well pipe, or the degree of well development.

As stated in Section 2.1 above some of the highest groundwater elevations since the landfill was permitted were found in March 2019. The updated elevations are included in Table 2-2 below. The groundwater comparison shown in Figure 2 show that the groundwater elevation came up to 6.5-feet below the base northern portion of the landfill expansion area. While this is greater than the five feet required in the regulations it is less than the planned seven-foot buffer. The high groundwater elevations were used to increase the base elevation on the north portion of the landfill to keep the planned seven-foot buffer.

The highest groundwater elevations found at the site are shown in the following table.

TABLE 2-2

TAMKO – Tuscaloosa, Alabama
High Water Table Data, MW-4, MW-5, & MW-6
March 14, 2019

Well I.D.	Top of Casing Elevation	High Water Elevation	Sampling Date
MW-4	171.17	155.42	3/14/19
MW-5	170.32	156.05	3/14/19
MW-6	173.58	156.48	3/14/19

2.3.3 Well Survey

Per ADEM's request, a historical well survey was conducted. The Geological Survey of Alabama's Special Map 219, Ground-water Availability in Tuscaloosa County, Alabama located a number of domestic, stock, irrigation or other use wells in the TAMKO area. These wells which are located within ½ mile of the landfill were looked at further in the detailed well survey completed by TAMKO. The results of this detailed well survey are included in Appendix C. Tuscaloosa city engineers, Dan Madison and Travis Marshall, were contacted for information on the city wells in the area but were unable to provide any new information.

Hunt Oil Refinery provided monitoring well Appendix IX analytical results from the alluvium. These data provide background groundwater data from an alluvial aquifer. However, the well from which the samples were obtained is approximately 2.5 miles to the northeast and groundwater flow is in the opposite direction. Given the heterogeneity of alluvial deposits, the distance from the sampled well to the TAMKO landfill, and the opposite groundwater flow direction, the data from this well was previously discounted and is not considered an accurate characterization of the aquifer below the TAMKO landfill.

Harrison Radiator was contacted regarding onsite wells. Harrison provided TAMKO with Sieve Analysis Study of Well Sediment Samples from the Rochester-GM Tuscaloosa Plant. This report provided well yield information for the 20 to 100-foot deep aquifer. No water quality data was provided. The groundwater flow direction for this aquifer is in the opposite direction of the groundwater flow under the landfill.

2.3.4 Seismic Impact Zones. Sink Holes and Karst Terrian

According to Mr. Jim Pashin of the Alabama Geological Survey, there are no known active (Holocene age) faults in the Tuscaloosa area. The Siting Study by Tom Joiner and Associates concludes that "*no seismic*

impact zones and no unstable soils that would require special engineering considerations and studies for the construction of the proposed landfill expansion."

2.4 Background Water Quality

An initial background statistical analysis conducted for the original three wells MW-1 through MW-3 was complete on February 12, 2001. The original statistical analyses were completed in accordance with the U.S. Environmental Protection Agency (EPA) in its 1989 Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities Interim Final Guidance and the July 1992 Addendum. The previous statistics procedures require updating to minimize false positives for evaluations of a statistically significant increase due to the reoccurring false positives with the 45 original comparisons that will increase to 100 comparisons and inherently more false positives. The reoccurring false positive rate has resulted in numerous re-sampling efforts and adding some new data to the background data set.

The statistics were revised in 2011. This analysis was completed in accordance with the guidelines issued by the U.S. Environmental Protection Agency (EPA) in its Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Unified Guidance dated March, 2009 ("guidance document"). Summaries of the background data by well is included in Table 2-3 below.

TABLE 2-3

TAMKO – Tuscaloosa, Alabama

Background Data Summary For Statistical Analysis, Revised 2012

	Well											
	MW-1				MW-2				MW-3			
Parameter	Obs	% ND	Mean	Std Dev	Obs	% ND	Mean	Std Dev	Obs	% ND	Mean	Std Dev
Antimony	3	100%	5	0	3	100%	5	0	3	100%	5	0
Arsenic	14	93%	25.7	67.5	14	93%	7.4	2.7	14	79%	10.4	6.7
Barium	15	13%	72.3	10.1	13	38%	62.3	13.9	13	39%	127	63.5
Benzene	5	80%	1.62	1.93	3	100%	2.33	2.31	3	100%	2.33	2.31
Beryllium	14	93%	1.57	2.14	14	100%	1	0	14	100%	1	0
Cadmium	14	100%	1	0	14	93%	1.01	0.027	14	86%	1.39	1.16
Chloride	16	0%	8.64	1.93	23	0%	26.8	23.5	14	0%	26.9	13.8
Chromium	14	93%	104	200	14	100%	50	0	14	100%	50	0
Lead	14	86%	12.6	28	14	100%	5	0	14	100%	5	0
Nitrate	14	0%	1.3	0.5	14	7%	0.81	0.9	14	93%	0.12	0.1
pH	26	0%	4.56	0.55	14	0%	5.3	0.39	14	0%	5.7	0.27
Spec. Conductivity	14	0%	207	312	14	0%	178	141	14	0%	366	105
Sulfate	15	0%	8.54	4.18	27	0%	16.3	5.18	14	0%	4.24	2.33
Tetrachloroethene	14	21%	5.04	2.65	14	100%	5	0	14	100%	5	0
Thallium	14	93%	34.5	125	14	100%	1	0	14	100%	1	0
Vanadium	4	75%	4.15	1.1	4	75%	4.1	1	4	75	4.57	1.95
Zinc	14	93%	115	244	14	93%	63	48	14	29%	152	189

	Well											
	MW-4				MW-5				MW-6			
Parameter	Obs	% ND	Mean	Std Dev	Obs	% ND	Mean	Std Dev	Obs	% ND	Mean	Std Dev
Antimony	15	93%	5.7	2.8	15	93%	5.1	0.26	15	100%	5	0
Arsenic	15	100%	10	0	15	100%	10	0	15	100%	10	0
Barium	15	0%	71.4	30.8	15	0%	85.1	30.9	15	0%	82.6	23
Benzene	2	100%	1	0	2	100%	1	0	2	100%	1	0
Beryllium	15	100%	1	0	15	100%	1	0	15	100%	1	0
Cadmium	15	100%	1	0	15	100%	1	0	15	100%	1	0
Chloride	2	0%	10.8	0.99	2	0%	9.44	2.1	2	0%	9.69	0.58
Chromium	15	87.0%	53.6	9.6	15	100%	50	0	15	93%	50.7	2.6
Lead	15	93%	6.4	5.4	15	87%	7.7	7.1	15	93%	6.7	6.5
Nitrate	2	0%	1.56	0.13	2	0%	1.46	0.14	2	0%	1.1	0.61
pH	15	0%	4.9	0.54	15	0%	4.8	0.46	15	0%	4.2	0.45
Spec. Conductivity	15	0%	143	39	15	0%	146	49	15	0%	108	38
Sulfate	2	0%	20.3	2.97	2	0%	24.5	5.6	2	0%	20	0.78
Tetrachloroethene	15	100%	5	0	15	100%	5	0	15	93%	5.01	0.05
Thallium	15	100%	1	0	15	100%	1	0	15	100%	1	0
Vanadium	15	80%	9.41	15	15	93%	3.72	0.46	15	93%	3.8	0.67
Zinc	15	93%	51	2.3	15	100%	50	0	15	100%	50	0

3.0 DESIGN CONCEPTS

This section presents an overview of the factors that were integrated into the design, operation and closure plan of the proposed expanded landfill section. The factors were developed from a variety of sources, which include the following:

- Current regulations, ADEM Administrative Code Chapter 335-3-4, Permit Requirements.
- Landfill design guidance documents – Principals of Solid Waste Management and Solid Waste Management by the Department of the Defense.
- Waste volume reports generated by TAMKO.
- Discussion with TAMKO personnel relative to the characteristics and appearance of the operating landfill.
- Periodic inspections of the operating landfill and proposed north expansion area.

The basic concepts utilized by the design team are described in the following sub-sections. Such concepts include environmental protection, aesthetics, maximum site and material utilization, coordination with plant activities, safety, reclamation and conformance to applicable regulations.

3.1 Waste Volume

Based on a review of TAMKO's waste disposal records, TAMKO estimates approximately 15,000 cubic yards of waste are disposed of in the landfill every year. Based on production and market estimates for waste materials, the yearly volume of waste disposed of in the landfill may or may not remain constant. TAMKO periodically sees a large increase in waste volume generated when a new product or production line is started at the plant. The introduction of new products or production lines will have a great impact on the type and quantity of waste generated.

3.2 Waste Type

The landfill will be strictly for use by TAMKO. Solid waste will only be accepted from the firm's plant and contiguous property in Tuscaloosa, Alabama. Waste to be landfilled includes Asphalt for building products, concrete, steel, and other inert construction and demolition waste as defined in ADEM Administrative Code 334-13-1-.03, dust collector bags/cartridges fume filter elements, fiberglass/polyester/organic mat materials, fiberglass/organic shingles, miscellaneous packing materials, roll roofing, fiberglass/organic roofing felt, solid materials, such as colored granite, coal/copper/steel slag, roofing granules/fines, volcanic ash, talc, mica, sand, dolomite particles, and fiberglass mat process

materials from the process operations and settling ponds, similar materials from fume filters and fiberglass and polyester baghouse bags, other roofing materials and wastes consistent with the information provided, and miscellaneous waste with prior ADEM approval

No hazardous, municipal, septic sewage or putrescible wastes will be accepted. No liquid wastes will be accepted, even if containerized.

3.3 Site Utilization and Site Life Estimation

The site design consists of three sections as shown on Sheet 2 (attached); the Regrade Area is the southern portion of the landfill that has already been filled. The Regrade Area requires additional filling and regrading to meet the contours of the final design. The Active Face is the area accepting the majority of the incoming waste. The Future Area is a portion of the existing landfill and the northern expansion area that will be filled as the active face makes it way from the south to the north. The landfill expansion design includes a total capacity for lateral and vertical expansion is approximately 461,000 cubic yards, giving an estimated site life of approximately 25 years.

This new calculation also uses a much lower annual average cubic yard estimate of 16,425. This estimate is based on the fill volumes from the last two years and the consistent density estimate of 1,400 pounds per cubic yard. This estimate is considered conservative for the landfill.

Apex removed some usable landfill space to account for filling the base of the expansion area of the landfill. This area is a little lower than it should be to keep the minimum 5-foot buffer between the seasonally high groundwater table based on recent groundwater data and the base of the waste fill as planned. This base elevation has changed since the 2006 design due to the changes in water table elevation and gradients shown in the semi-annual statistics reports. This removal accounts for approximately 1-foot of fill over the 5-acre expansion area. Apex removed additional landfill space to account for the filling of the mis-located stormwater retention basin. This basin needs to be removed and structurally filled to provide an adequate base for future landfilling operations.

3.4 Cover Material/Fill Material

Fill and cover material will be imported as needed from off site. The expansion area adjacent and to the north of the current landfill has minimal cover material available for use. This material is consistent with the previously excavated materials. TAMKO has a permit from the City of Tuscaloosa for the excavation of cover fill material from this property as needed. A copy of this permit is included in Appendix E. TAMKO has also been previously approved variance by ADEM to use shredded asphalt tiles and/or tabs and

granules and fines form the manufacturing process including dried materials from the wastewater treatment pond for periodic cover to reduce imported cover requirements.

The active face will be covered on a periodic basis. Since the waste is not putrescible, the active face will be covered only when new waste will not be placed on the active face for a period of seven days or more. A maximum of six inches of cover material including soil, tabs, sand, granules or shredded asphalt shingles, over the compacted waste will be used for periodic cover and 12-inches of soil material will be used for intermediate cover.

Imported cover materials will be evaluated for appropriateness and certified clean by the source providing the cover material. TAMKO may choose to require environmental testing of all soils imported to the site for use as cover materials to ensure no industrial contaminants have impacted the imported fill materials. TAMKO may choose to require geotechnical testing for the suitability of any material to be used as cover material. Because the waste disposed in the TAMKO landfill is not attractive to pests and vectors, TAMKO will only use imported soil cover material for intermediate cover.

3.5 Access

Trucks will travel from the staging area at the plant to the active landfill section via company roads. No public traffic is allowed on these roads. All weather access roads will be constructed using asphalt shingle tabs, shredded shingles, crushed limestone, and/or other suitable materials.

3.6 Control Points and Benchmarks

A permanent brass marker set in concrete is established in the Northwest corner of the landfill near monitoring well 4. The marker is set near the high point of the natural elevation at the landfill and in the buffer zone in an area that can remain for the life of landfill operations and closure period. This marker serves and the main control point for the landfill for both horizontal and vertical control. There are other control points and benchmarks set around the landfill for surveying purposes, but these are not considered permanent and can be moved as needed for landfill operations. The temporary control points and benchmarks are iron pipes in the locations shown on Sheet 1 Site Plan and can be located with a metal detector.

3.7 Waste Extent Markers

Horizontal waste extent markers are installed around the landfill apart from the southeast corner as no new waste will be placed into this portion of the landfill. The markers are painted white poles that stand fifteen

feet above the grade for ease of identification. The poles are just general markers so TAMKO will not exceed the waste extents during filling of the landfill. No vertical extent markers are installed at this time as the top of the landfill still has over 20-feet of elevation to fill.

3.8 Terraces

The previous design for the landfill followed the ADEM required terrace every 20-feet of elevation change. Based on maintenance concerns and the reach of available mowing equipment the terrace spacing has been reduced to every 15-feet of elevation change. The change along with a 3:1 side slope provides for a 22.5 foot reach up and down the terrace to mow the side slopes of the landfill from the terraces.

4.0 ENVIRONMENTAL CONTROL

4.1 Leachate Management

Leachate is not expected to be generated due to non-putrescible waste characteristics. Leachate has never been detected at the landfill during the past 25 years of operations.

4.2 Gas and Odor Control

The landfill only accepts non-putrescible waste and therefore waste degradation and gas generation does not occur above negligible quantities. Odors have never been detected at an unpleasant level at the landfill during the past 25-years of operations.

4.3 Vector Control

The non-putrescible waste will not serve as a food source for birds, insects, and animals; therefore, vector control will not be required. Birds, insects, animals or other vectors have not been present at the landfill in increased populations during the past 25 years of operations.

4.4 Surface Water Run-On/Run-off Control

As part of the site preparation, the soils will be shaped to minimize run-on into the active landfill cells. The portions of the landfill that are intermediately or permanently closed will be vegetated and maintained to reduce erosion and sedimentation in run-off water. Rainfall and snow melt occurring in covered sections or final graded areas will be diverted to drainage swales that will discharge into existing ditches primarily east of the landfill. Silt fencing, straw wattle, and fiberglass waste bales or other appropriate production waste materials will be used as necessary to help control discharge quality.

TAMKO may use temporary down drains to remove water from on top of the intermediate closed section of the landfill as well as from the temporary terraces to promote water draining from the landfill more rapidly. These temporary drains may only be used during the wet season and the number and locations may change based on the need due to changing landfill contours. The down drains will be constructed in accordance with Alabama Handbook for Installation Maintenance, and Inspection of Best Management Practices 2018 and the attached design drawings.

The current detention basin on the north section of the landfill was installed in a location that varies from the design documents. This basin will be removed once the correct detention basin and vegetated swale are installed.

The designed detention basin will be installed to control sedimentation from the northern portion of the expanded landfill and a vegetated swale will be installed to drain the detention basin and aide in run-off control as shown on the design drawings. Run-off water will be monitored in accordance with TAMKO's current NPDES permit. Details of control structures are included on Sheet 5, attached.

4.5 Waste Inspection

The landfill operating personnel will be responsible for inspecting the incoming waste to ensure that prohibited wastes are not entering the facility. Excluded wastes include the following:

- Hazardous.
- Septic sewage sludges.
- Liquids.
- Medical.
- Infectious.
- Radioactive.
- Sanitary (putrescible).

5.0 FACILITY DESIGN AND CONSTRUCTION

This section presents the design for the engineering drawings (attached to this report) and provides a general description of how the future landfill sections (future area) will be constructed. Construction activities begin with the initial survey layout of the project baseline and ends when the landfill section is ready to receive the waste. Construction of additional landfill sections will continue throughout the life of the site.

5.1 Project Layout

The project baseline and benchmark was established in the northwest corner of the landfill near monitoring well MW-6. Sufficient control points will be provided for accurate horizontal and vertical control for facility construction operation, closure, and post closure as needed. Visual indicators are placed at the extents waste disposal area permitted boundaries for field reference. These indicators are established for the waste disposal area as permitted.

5.2 Site Preparation, Excavation, and Grading

The landfill sections will require site preparation and grading. The engineering drawings show the lines and grade along which the construction must proceed. The following steps will be followed to complete the final grades as shown on Sheet 4.

- The temporary desilting basin on the north portion of the landfill disposal area will be removed once the east desilting basin, vegetated swale and other erosion control measures are installed as shown on Sheets 4 and 5.

- Prior to waste disposal, soil will be excavated and the existing desilting basin will be filled in the future area to the elevations shown on Sheet 1 which are approximately 7 feet above the measured seasonally high water table. The seasonally highwater is estimated to be approximately 154.5 feet above MSL in the southern portion of the future area to approximately 156.5 feet above MSL in the northwest section of the future area. Procedures used to determine the seasonally high water table are described in Section 2.3.2, Hydrogeology. Sheet 1 shows the grading plan to be completed prior to waste disposal.

- Provide drainage to reduce run-on and provide flow and erosion controls, as detailed on Sheets 4 and 5, for run-off.

5.3 Rainfall Diversion

Surface flow from the access road will be diverted by a swale constructed between the road and the Landfill, as shown on Sheet 4. Refer to Sheet 5 for details on rainfall diversion.

5.4 Access Road

Access to the active and future expanded landfill is by private road. Unauthorized vehicles are not allowed on company property; therefore, access is limited to company owned or designated vehicles. An all-weather access road will be constructed from the existing access road to the working face. This road will be constructed using asphalt shingle tabs, crushed limestone and/or other suitable material and will be properly graded.

5.5 Construction Quality Control

Quality control of the construction of the landfill section is critical to the implementation of the overall design of the landfill. An Alabama registered surveyor will be utilized to lay-out the project baseline and establish the benchmark for the future area. TAMKO will appoint an overall landfill manager who will be responsible for overseeing construction of the facility. The landfill manager will have the authority to stop construction work or order corrective measures.

5.6 Construction Quality Assurance/Quality Control Plan

A Construction Quality Assurance/Quality Control (QA/QC) Plan was prepared and implemented to ensure that a seven-foot buffer remained between the anticipated high water table and waste disposal in the borrow area. This QA/QC Plan presents sampling and testing, calibration, and documentation procedures that were implemented during the construction of the buffer zone. The QA/QC Plan is included as Appendix F.

Portions of this plan will be adopted as necessary for the construction of the future area. The QA/QC Plan will be used for filling the desilting basin and brining the north section of the landfill to base grade as shown on Sheet 1.

6.0 OPERATION PLAN

6.1 Administrative

6.1.1 Landfill Manager

TAMKO is the sole owner and operator of the industrial landfill. A landfill manager will be appointed who will be familiar with all aspects of the landfill operation including design, operation, controls, finances, reporting, closing and responding to regulatory agency communications. The landfill manager will be responsible for assigning operation personnel and/or sub-contraction services such as construction, operation and monitoring. The landfill manager will be appointed from the existing supervisory personnel based on duties/time commitment of the landfill manager.

6.1.2 Hours of Operation

The landfill will normally be operated on an as-needed basis during daylight hours on any day of the week.

6.1.3 Landfill Use and Waste Type

The landfill will be strictly for use by TAMKO. Solid waste will be accepted from the firm's plant and contiguous property in Tuscaloosa, Alabama. Waste to be landfilled includes Asphalt for building products, concrete, steel, and other inert construction and demolition waste as defined in ADEM Administrative Code 334-13-1-.03, dust collector bags/cartridges fume filter elements, fiberglass/polyester/organic mat materials, fiberglass/organic shingles, miscellaneous packing materials, roll roofing, fiberglass/organic roofing felt, solid materials, such as colored granite, coal/copper/steel slag, roofing granules/fines, volcanic ash, talc, mica, sand, dolomite particles, and fiberglass mat process materials from the process operations and settling ponds, similar materials from fume filters and fiberglass and polyester baghouse bags, other roofing materials and wastes consistent with the information provided, and miscellaneous waste with prior ADEM approval

No hazardous, municipal, septic sewage or putrescible wastes will be accepted. No liquid wastes will be accepted, even if containerized.

6.1.4 Operating Personnel

In addition to the landfill manager, there will be a landfill operator. The operator will be at the site during the hours of operation when trucks are delivering wastes. The operator must direct the unloading, spreading, compacting and covering operations. The duties of the landfill operator will be as follows:

- Keep waste collection points clean and proper.
- Load vehicles.
- Transport and unload wastes.
- Lock and unlock gates.
- Clean up any debris scattered around the site.
- Determine the unloading area.
- Direct trucks to the working face, when other persons are involved.
- Keep records of waste received.
- Inspect site for vandalism.
- Prevent unauthorized entry and dumping.
- Operate heavy equipment for spreading, compacting, and covering waste.
- Maintain heavy equipment.
- Report spills, accidents, fires and other emergencies to the landfill manager.

All landfill personnel will attend training in landfill operation and management. Topics personnel shall be trained on include, but are not limited to:

- Surface water run-on/run-off control.
- Waste inspections.
- Safety.
- Record keeping.
- Equipment usage.
- Waste segregation and collection.
- Unloading.
- Spreading and compaction.
- Cover.
- Fire protection.
- Erosion.
- Operation inspections.

In the event of illness or vacation involving the operator, TAMKO will assign another operator who will have been trained to operate the landfill on a stand-by basis. Training documentation will be maintained at the main offices of the facility. Because the landfill is private, the landfill operator does not need to be certified.

6.1.5 Operating Records

The operator will track the daily landfill waste volume hauled to the landfill and compacted. These daily volumes are summarized on a daily operating record and submitted to the landfill manager as required by the landfill manager. The landfill manager will fill out the monthly volume summaries. Appendix G presents the Daily Operating Record form.

Monthly inspection forms will be completed by the landfill manager; these inspection forms will be maintained in the landfill manager's office. An inspection report form is included in Appendix H.

The landfill manager will be responsible for submitting a quarterly volume report to ADEM by the 15th of the month following the reporting quarter. Appendix I contains the Quarterly Volume Report form for use by the manager. The form will be completed and submitted to:

CHIEF, SOLID WASTE BRANCH
ALABAMA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
SOLID WASTE SECTION
PO BOX 301463
MONTGOMERY, ALABAMA 36130-1463

A copy of the permit, as-built drawings, the operational plan (this document), engineering drawings, and variances will be kept at the office of the landfill manager at the TAMKO plant located at 2300 35th Street, in Tuscaloosa, Alabama.

All records will be kept for a period of at least 5 years.

6.1.6 Communication

The landfill operator will regularly maintain communications with the landfill manager to receive instructions and notify the landfill manager of any emergencies, such as fire, accidents, acts of vandalism, equipment breakdown, or unauthorized entry. In the event of a small onsite fire, the operator shall contact (via wireless communication methods, e.g. cell phone) the TAMKO security guard, who will then contact the City of Tuscaloosa Fire Department (911) immediately.

6.1.7 Safety

The landfill operator and truck drivers, employed by TAMKO (or if a Sub-contractor) shall abide by safety regulations as set forth by TAMKO Building Products LLC, and all OSHA, RCRA, ADEM, or other regulations as they apply to landfills.

Such safety provisions will include but not limited to the following:

- Use of proper foot gear, clothing
- Hand washing
- Truck speed, unloading safety
- Control of dust
- Exclusion of unauthorized personnel
- Proper use of heavy equipment
- Backup warning signals on trucks and heavy equipment

A copy of the facility safety procedures shall be maintained in the landfill manager's office.

6.1.8 Equipment Requirement

The heavy equipment used for landfill operation will be a track-type loader or dozer, or equivalent piece(s) of equipment will be used to complete spreading and compaction operations at the landfill. Track-type equipment is stable in loose waste and safe for the operator. A compactor may be used at times to spread and compact the waste.

6.2 Method of Operation

6.2.1 Waste Segregation and Collection

Two waste collection points will be utilized at the facility. The solid granular and fiberglass waste from the industrial wastewater basins will be removed and placed adjacent to the basins for dewatering. This waste will be removed when dry and acceptable for landfill disposal. All remaining waste, excluding hazardous, putrescible and liquid waste, will be transported to the collection point west of the plant. Waste located in this area will be removed at least once per week (weather permitting). All rainwater collected from either collection point will be disposed of in accordance with the facility's NPDES permit. Front end loaders and/or excavators will load the waste from the two collection points into dump trucks which transport the

waste to the landfill. During the loading of the waste, the operator is to visually inspect each load and segregate waste that is of questionable nature, for example, closed containers such as drums, cans, or closed bags. Because the waste is inspected at the time of loading, incompatible waste does not make it to the landfill for segregation.

6.2.2 Traffic Flow and Unloading

It is anticipated that approximately 960 tons or 1,370 cubic yards of waste per month will be delivered to the landfill. Typically, each truck carries approximately 10-12 tons of waste so the number of trips to the landfill per month is approximately 91. This is a relatively small amount of traffic and the drivers(s) will be essentially the same every time. The drivers will receive the following instructions:

a) Upon loading the waste at the collection points, the trucks are to transport the loads to the landfill via company access roads. Trucks are not to travel public streets. If the TAMKO bridge which provides access to the landfill fails, waste will be stored at the facility until the bridge can be repaired, or TAMKO may use public roads in the interim.

b) Loaded trucks entering the site will proceed to the working face, back up and dump the waste at the location designated by the operator. The truck should not back up to the toe or the edge of the fill area where the waste may be loose and where the truck may cause severe rutting or become immobilized.

c) Drivers will check the truck bodies after dumping to be sure all waste was deposited and that none is hanging or falling out of the tailgate. The driver will then proceed out of the landfill back to the plant.

d) Any waste that is left on the landfill access road is picked up during a subsequent trip.

6.2.3 Landfill Construction

The plan of operation requires three distinct landfill sections. The landfill will be filled from the south end, beginning with the re-graded and proceed north. The Regrade Area (as shown on Sheet 2) will only be filled with waste as necessary to contour the site to match the final design elevation minus the final cover thickness. Once re-graded this section will be covered with intermediate cover consisting of 12 inches of soil or a mixture of soil, tabs, and/or shredded asphalt tiles.

The Active Face (as shown Sheet 2) will continue to be the primary area for waste disposal. The active face will proceed from the south towards the north. The active face will be filled to within the boundaries depicted in Sheet 3, to a maximum waste elevation of approximately 225 feet MSL. The maximum

elevation allows for the final cap and intermediate cover to be installed to reach a maximum height of 228 feet MSL as previously approved by ADEM.

The Active Face will be filled from the south to north through the Future Area. All sections will be filled with waste to three feet below final grades (depicted on Sheet 3). Within each section, the area method of landfilling will be used. The new section (Future Area) will be a separately constructed unit with a minimum of a seven-foot vertical buffer from the highest measured groundwater table, as shown on Sheet 1. The Future Area will need to have the existing desilting basin filled and brought to grade with structural fill as shown on Sheet 1. The base fill in the Future area has been increased in elevation by about ½-foot to maintain the seven-foot soil thickness between the high-water table and waste. The base grade topography has also been modified based on the last ten years of consistent water table and flow direction.

6.2.4 Spreading and Compaction

The waste delivered to the landfill will be spread and compacted in layers with repeated passages of landfill equipment to eliminate voids within the landfill. The loose layer will not exceed a depth of two feet prior to compaction. Spreading and compaction will be completed as rapidly as practical. Additionally, the active face of the landfill will be contained into as small a space as practical and will typically be a 4:1 slope to reduce rainfall infiltration and remain stable.

The side slopes of the landfill have been increased to allow 3:1 slopes on the north, west and east sides. The existing southern portion of the landfill has been modified to allow a 2.5:1 slope to reduce the re-grading required from historical filling activities. The active face may be constructed at slopes steeper than 4:1 to meet the approved closure slopes. Scavenging will not be permitted.

6.2.5 Cover

The active face of the landfill will be covered on a periodic basis. Cover will be placed on the landfill when the active face will not have waste added during a seven-day period. Therefore, the landfill can operate continuous without cover material until a brief inactive period prior to placing a maximum of six inches of soil, tabs, sand, granules or shredded asphalt shingles, all inert materials, as cover over the compacted waste.

If a portion of the landfill will not be active for longer than 90 days, 12-inches of soil or a mixture of soil, tabs, and/or shredded asphalt tiles will be placed on this portion of the landfill. This cover will be graded so that surface water does not pond over the facility. Appropriate species of grass seed will be applied along with fertilizer and mulch. Watering and maintenance will be provided such that germination of

grass can reasonably be anticipated. To protect against erosion during seed germination, a mulch of dry straw will be applied at a rate of two tons per acre. Alternatively, hydroseeding may be used to stabilize steeper slopes, e.g. 2.5:1 and 3:1.

6.3 Operation Controls

6.3.1 Access Roads

The operator will maintain the access roads from the plant to the working face. The operator will place sufficient amounts of soil, gravel, shingle tabs, or shredded shingles in potholes and evenly grade the road to provide free access to the working face by the delivery trucks. Additionally, the main entrance and exit road will be constructed using asphalt shingle tabs shredded shingles, crushed limestone, and/or other suitable material to ensure an all-weather road.

6.3.2 Litter

During the landfill operation, the landfill operator will patrol the landfill section perimeter and the access road and pick up any waste spilled in the area. Approved waste will be deposited onto the working face and covered as appropriate. If other litter or debris is found it will be added to the facility's trash dumpsters for offsite disposal.

6.3.3 Dust

In dry weather, the operator will control dust generation on the access roads by applying asphalt shingle tabs, shredded asphalt tiles, or water. If dust occurs at the working face, then soil or shredded asphalt tiles should be used to cover the waste. Spraying of oil is strictly prohibited.

6.3.4 Odors

No odors are expected to be emitted from the landfill. Odors emanating from the landfill, if any, will be controlled by applying 6-inches of soil, grit/granules, tabs, and/or shredded asphalt shingles to the exposed waste.

6.3.5 Gases

Due to the nature of the "inert" waste disposed, methane and carbon-dioxide gas are not expected to be generated in regulated, harmful, or explosive quantities by the long-term decomposition of the covered waste.

6.3.6 Fire Protection

Fire protection will be provided for the landfill operation in the following ways:

- Each truck or piece of heavy equipment carries a fire extinguisher.
- Onsite stockpiled cover material can be used to smother fires.
- A City of Tuscaloosa Fire Department Station is located approximately 1-½ miles from the plant.
- No open burning of waste is allowed at the landfill.

In the event of a fire, the operator will call the TAMKO security guard, landfill manager, or general manager by wireless communication. The security guard will then call the fire department by telephone for a response.

The fire danger is considered minimal due to the known characteristics and origin of incoming waste. The waste does not contain chemicals or substances that would be conducive to spontaneous combustion.

6.3.7 Erosion

Heavy rainfall on soil-covered cells may result in periodic sediment flow. The landfill is designed with drainage swales and a sediment basin to help control erosion and the release of sedimentation. The operator may erect silt fences, fiberglass mat bales, hay bales, straw waddle or other appropriate measures to intercept and retain sand, silt and clay being carried in the run-off. The landfill manager will be responsible for monitoring the need for such controls. In any event, the landfill operator will make all efforts to prevent turbid water from flowing offsite. The run-off from the landfill is regulated under TAMKO's NPDES permit.

6.3.8 Groundwater Monitoring

Groundwater monitoring will be completed every six months in accordance with ADEM Admin. Code 335-13-4-.27 and the groundwater sampling and analysis plan included as Section 7.0.

6.3.9 Operation Inspection

The landfill manager will perform the periodic inspections of landfill operation. The inspections will be performed at least once per month. The landfill manager will document the inspections on the "Landfill Operation Inspection Report" as presented in Appendix H and provided by ADEM. The report will be made available for agency review.

7.0 GROUNDWATER SAMPLING AND ANALYSIS PLAN

7.1 Introduction

This Groundwater Sampling and Analysis Plan was developed to ensure the quality of groundwater monitoring, sampling, and analysis at the TAMKO Landfill in Tuscaloosa County, Alabama. The Plan is in compliance with ADEM Administrative Code R. 335-13-4.27 as required by ADEM.

7.2 Groundwater Monitoring System

During the two siting studies, a groundwater monitoring system was installed with a sufficient number of wells at appropriate locations and depths to yield groundwater samples from the first saturated zone. The first sampling event for background water quality for the operating landfill was completed on March 10, 1993. The results from this event and the boring logs from the well installations are included in the Siting and Hydrogeological Study of Proposed Landfill submitted to ADEM Land Division in April 1993. Monitoring well installation data are included in Section 2.3, Table 2-1 in this report.

As discussed in the Tom Joiner and Associates siting study new wells (MW-4, MW-5, and MW-6) were installed around the proposed expansion area of the landfill in June of 2005. The wells were sampled quarterly to establish background concentrations of detected parameters prior to permitting the expansion. Monitoring well installation data are included in Section 2.3, Table 2-1 in this report. Six rounds of sampling and analyses initial completed for background data. The statistics were revised in 2011. This analysis was completed in accordance with the guidelines issued by the U.S. Environmental Protection Agency (EPA) in its Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Unified Guidance dated March, 2009 ("guidance document") and increased the background population by adding additional rounds of sampling and analysis. Summaries of the background data by well is included in Table 2-3 above.

The groundwater monitoring wells were installed in accordance with "Design and Installation of Groundwater Monitoring Wells in Aquifers" ASTM Subcommittee D18.21. If new wells are to be installed or existing wells to be abandoned at the permitted site location, design, construction specifications shall be submitted to ADEM for review prior to field work. Future abandonment of wells or boreholes will be in accordance with the requirements in the current ADEM Admin Code.

Details of the perimeter wells construction, hydraulic gradients and depths to groundwater are discussed in detail in section 2.0 above.

Groundwater monitoring well MW-6 serves as the upgradient well for facility monitoring. The remaining wells, MW-1 through MW-5 are considered down gradient wells

During the 2020 Permit renewal process ADEM requested an additional well be installed between the existing MW-2 and MW-3 . During a site walk on November 19, 2020, TAMKO and ADEM agreed on the new well location as shown in Figure 7-1 on the next page. TAMKO is currently permitting the new well location with the City of Tuscaloosa. The well will be installed and developed in accordance with Alabama Environmental Investigation and Remediation Guidance (AEIRG) before the Fall 2021 semi-annual sampling event, unless an access agreement with the City of Tuscaloosa cannot be negotiated in a timely manner.

7.3 Sampling Protocol

7.3.1 Sampling Frequency

Groundwater sampling and analysis will be collected semiannually in accordance with ADEM Admin. Code R. 335-13-4-.27 during the active life, closure and post closure maintenance period for the landfill.

7.3.2 Sample Collection

The collection of groundwater samples from monitoring wells consists of a three-step process: measuring the water level, well purging, and sample collection. Measuring the water level is the first step taken before the water in the well is disturbed. This measurement can be obtained by lowering a sounding water level meter into the monitoring well. The meter will be lowered slowly into the well until an audible sound is heard. A precise measurement will be determined by repeatedly raising and lowering the tape to converge on an exact reading.

The well will then be purged prior to sample collection to remove stagnant water from the bottom of the well and allow a fresh sample to be extracted. A minimum of three well volumes will be withdrawn by using a pump or Teflon® bailer. Low flow purging methods will be used. Low flow purging will limit the removal of water from the well to 100 ml/min to 500 ml/min. The volume of the water present in each well will be computed from the depth of the water column measured and the well casing diameter. See Figure 7-1 for an example Groundwater Purge Log. There are currently no slow recharge wells onsite, but if any wells become slow recharge wells they will be bailed until dry. Temperature, pH, specific conductivity turbidity will be monitored to ensure a representative water sample is collected. See the groundwater purge log in Figure 7-2.

LEGAL DESCRIPTION

BEGINNING AT THE SOUTHEASTERLY CORNER MARKED POB.
THENCE NORTHEASTERLY ALONG PROPERTY LINE
NORTH 27° 32' 15" EAST 134.11 FEET;
THENCE SOUTH 62° 27' 45" EAST 9.74 FEET;
THENCE NORTH 27° 32' 15" EAST 20.00 FEET;
THENCE NORTH 62° 27' 45" WEST 9.74 FEET; END.

0' 30' 60' 90' 120' 180'

GRAPHIC SCALE : 1" = 60'

6' CHAINLINK FENCE
W/ TOP RAIL
1'-3 STRAND BARB WIRE

20' SPACING

MONITORING WELL #2
TOP METAL CASING 161.07

6' CHAINLINK FENCE
NO TOP RAIL
1'-3 STRAND BARB WIRE

EXISTING SANITARY SEWER
LINE, CITY OF TUSALOOSA
TO FILL WITH SLURRY

APPROXIMATE EXTENT OF
PROPOSED 40' NEW SEWER
LINE EASEMENT

APPROXIMATE LOCATION
OF NEW SEWER LINE

FLOOD PLAIN
ZONE AE

NEW CHAIN
LINK FENCE

PROPOSED WELL MW-7
N: 1158105.8588
E: 1947806.7213

LOCATION FROM
PREVIOUS SURVEY

REGULATED FLOODWAY
ZONE AE

ACCESS ROAD

GATE

18"ESS

PERMANENT 30' SANITARY SEWER EASEMENT
DB #737, PG #423

842.48'

END

BREAK CHAIN
LINK FENCE

ABANDONED SANITARY
SEWER LINE

134.11'

POB

114°10'

12"EWM

APPROXIMATE FLOOD
PLAIN ZONE BOUNDARY
ZONE AE

FLOOD PLAIN
ZONE AE

6' CHAINLINK FENCE
W/ TOP RAIL

SOUTH BOUNDARY SECTION 27, TOWNSHIP 21 SOUTH, RANGE 10 WEST
NORTH BOUNDARY SECTION 34, TOWNSHIP 21 SOUTH, RANGE 10 WEST

NW 1/4 of NE 1/4

TAMKO ROOFING PRODUCTS INC
DB #988, PG #540

APEX COMPANIES, LLC 303-D Beltline Place, SW #422 Decatur, Alabama 35603	DATE NOVEMBER 2020 DESIGNED: S. HUISMANN TECHNICIAN: C. BUELL CHECKED:	PROPOSED MONITORING WELL MAP LOCATION WELL MW-7, DOWNGRADIENT OPERATIONS MANUAL	TAMKO BUILDING PRODUCTS LLC TUSCALOOSA FACILITY INDUSTRIAL LANDFILL #63-17	FIGURE 7-1 PAGE NO. 31

TAMKO-NEW WELL.DWG

Groundwater Purge Log

Project Name: _____ **SM ID:** _____

Purge Date: _____ **Start Time:** _____ **Collector:** _____

Well ID: _____ **Total Depth of Well:** _____ **Depth to Water:** _____ **Well Casing Diameter:** ____

One Well Volume [(Total Depth – Depth to Water) X 3.14 X (Well Casing RADIUS (in feet)^2) X 7.4805]: _____ **gallons**

Time									
Volume (gal)									
Temp (C)									
pH (1st Meter)									
pH (2nd Meter)									
Cond (1st Meter)									
Cond (2nd Meter)									
Turbidity									

Total Volume Purged: _____

Other Comments: _____

_____

_____

Signature

Figure 7-2 Example Groundwater Purge Log

Once the well has recharged to 70% - 90% of its static volume, samples will be collected by lowering the bailer to the midpoint or lower within the water column. Specific conductance and pH will be measured to ensure representative water will be sampled. The sample collected in the bailer will be poured directly into the sample containers allowing zero headspace within the container. The sampling container will then be sealed, labeled, entered into chain-of-custody documentation and preserved. Samples will not be field filtered prior to laboratory analysis. The following parameters will be analyzed in the field and reported to ADEM along with the laboratory reports:

- Temperature.
- pH.
- Specific conductance measurements.
- Turbidity

See Figure 7-3 for an example Groundwater Monitoring Form

Meter Calibrations

Name: _____ **Date:** _____

pH: **Meter** _____

4 pH Buffer: **MV** _____ **pH** _____ **Slope:** _____

7 pH Buffer: **MV** _____ **pH** _____ **Offset:** _____

Meter _____

4 pH Buffer: **MV** _____ **pH** _____ **Slope:** _____

7 pH Buffer: **MV** _____ **pH** _____ **Offset:** _____

Cond: **Meter** _____

1000 uS/cm Standard: _____

Meter _____

1000 uS/cm Standard: _____

Turbidity: **10 NTU Check Standard:** _____

Other Notes _____

_____

_____

Signature

Figure 7-3 Example Meter Calibration Form

Groundwater Monitoring Form

Project Name: _____ **SM ID:** _____

Sample Date: _____ **Time:** _____ **Collector:** _____

Well ID: _____ **Total Depth of Well:** _____

Sampling Equipment/Method: _____

pH	_____/_____ (s.u.)
Specific Conductance	_____/_____ (uS/cm)
Temperature	_____ (C)
Turbidity	_____ (NTU)
Odor of sample	_____
Condition of well	_____
Accessibility of well	_____
Weather Conditions	_____

Other Notes _____

_____

_____

_____

Signature

Figure 7-4 Example Groundwater Monitoring Form

7.3.3 Sample Containers, Preservation and Shipment

To ensure the integrity of the groundwater samples, one 1,000-ml amber glass bottle will be used for storing the metals and inorganic samples, one 1,000-ml glass bottle will be used for the nitrate/nitrate-N samples and three 40-mil glass VOA vials will be used to store the volatiles scan samples. Precleaned sample containers with the appropriate acid for preservation will be supplied by the laboratory.

To maintain the integrity of the samples from the time of collection until the analyses are performed, sample preservation techniques and procedures recommended by the EPA will be used. The precleaned sample containers supplied by the laboratory will contain acid preservatives where appropriate. Additionally, groundwater samples will be preserved by maintaining a temperature of 4°C.

To expedite analysis and minimize the possibility of exceeding holding times, samples will be sent to the laboratory by a fast, reliable method in time to reach the laboratory prior to holding times being exceeded after collection. After the sample container has been labeled, all samples will be packaged according to standard protocol. Samples will be placed in a plastic ice chest with appropriate preservation material and tightly packed with suitable packing material. The original chain of custody (COC) form will be signed, dated, and the time recorded by the sampler prior to transferring custody for shipment. A notation will be made in the remarks section of the record indicating method of shipment, courier's name, and other pertinent information. The original COC form and one copy will be sealed in an envelope and a custody seal will be placed on the envelope flap. The envelope will be taped to the inside of the ice chest with the name and address of the receiving laboratory prominently displayed.

7.3.4 Sample Labels

Each sample will be labeled with a water-resistant, adhesive label similar to the one shown in Figure 7-5. The label will consist of the following:

- Project name.
- Location of sample.
- Date and time of collection.
- Type of analyses requested.
- Field I.D. identification.
- Sample media, e.g. groundwater.
- Name of sampler.

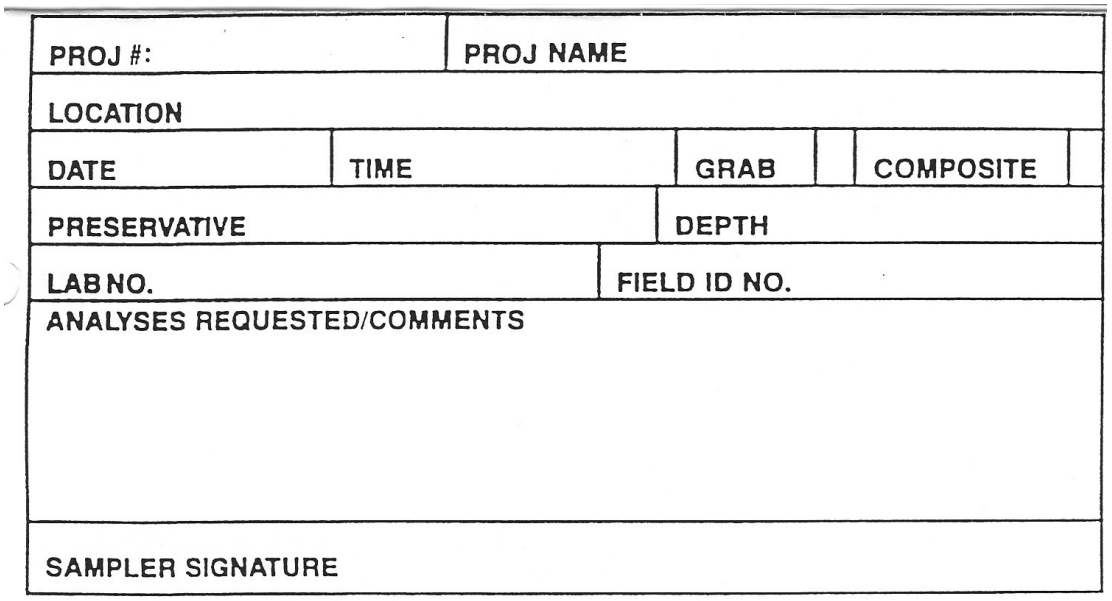


Figure 7-5 Example Sample Label

7.3.5 Chain-of-Custody (COC) Documentation

Once the sample has been properly prepared, a COC form will be completed to record each sample. An example of a typical COC form is shown in Figure 7-6. The COC form will be sealed in a plastic bag and placed on top of the samples in a thermally-insulated shipment container. The COC form will include the following information:

- Site location.
- Name of project.
- Date and time sample is collected.
- Sample I.D. number.
- Sample matrix (soil, water, etc.).
- Type of preservative.
- Constituent(s) for analysis.
- Sample container size and material.
- Sample method (grab, discrete).
- Sampler's signature.
- Chain-of-possession signatures, dates, and times of person(s) receiving and relinquishing samples.

Chain of Custody Form 63-17

Company Name: TAMKO Building Products, LLC

Sample Date: ___/___/___ Sampled By: _____

McGehee Engineering Corp.
Post Office Box 3431
450 19th Street West
Jasper, Alabama 35502-3431
(205) 221-0686 (FAX) 221-7721

Facility / Permits / Certified	Tracking	Sample I.D. #	Field Time	Depth Feet	pH s.u.	Temp C	Conductance µS/cm	SO4 mg/L	Turbidity NTU	ICP Metals (µg/L) (Sb, As, Ba, Be, Cd, Cr, Co, Cu, Pb, Ni, Se, Ag, Tl, V, Zn)	Hg µg/L	Cl mg/L	Nitrate Nitrite	Appendix 1 VOCs
Landfill 63-17	√				No Preservative	No Preservative	No Preservative	No Preservative	No Preservative	NO3 Preservative	NO3 Preservative	No Preservative	No Preservative	HCl Preservative
		MW-1												
		MW-2												
		MW-3												
		MW-4												
		MW-5												
		MW-6												

Relinquished by	Date/Time	Received by
Signature:	Date:	Signature:
Print Name:	Time:	Print Name:

Figure 7-6 Example Chain of Custody

7.3.6 Decontamination Procedures

Decontamination of sampling equipment will be performed following each sampling event and between wells if the same bailer is to be used for all wells. Gross contamination will be removed by brushing or rinsing with tap water. Sampling equipment will then be washed with a solution of non-phosphate detergent and tap water. The equipment will be rinsed thoroughly with tap water followed by a de-ionized or distilled water rinse. A final rinse with methanol will be provided to ensure that any trace organics are removed. Equipment will be air-dried before reusing.

The procedure will be conducted as follows:

- Remove any solid particles from sampling equipment by brushing and then rinsing with tap water.
- Wash equipment with a detergent/deionized water solution.
- Rinse with tap water.

- Rinse with distilled water.
- Rinse with methanol.
- Allow equipment to air dry before reusing.

Decontamination will not be required if new, precleaned sampling equipment is used for each sampling event.

7.3.7 Field Documentation

A groundwater monitoring report will be maintained by the sampling team throughout the semi-annual monitoring events. The information to be kept on groundwater monitoring report includes, but is not limited to, the following:

- Facility name and project number.
- Well construction description.
- Description of well condition and access.
- Field methods (samples collection, will purge method, purge volume, sample preservation, decontamination procedures, etc., relating to sampling protocol).
- Sample location and identification.
- Field information and measurements (water levels, mean sea level elevation measuring point, depth to water, and a field test for pH and specific conductance).
- Field observations (sample odor, or appearance, weather conditions, etc.).
- Name and affiliation of sampling personnel present.

7.4 Analytical Procedures

All groundwater samples will be analyzed for the following list of analytical constituents shown in Table 7-1, which is consistent with ADEM Admin. Code Rule 335-13-4 Appendix I. In addition to the constituents, Table 7-1 gives the EPA-SWA 846 Method, sampling container, preservative, and maximum holding time required procedure. The analytical procedures are in accordance with ADEM Admin. Code R. 335-13-4-Appendix I.

TABLE 7-1

Constituents for Detection
Monitoring and Analytical Procedures
Sampling and Analysis Plan
TAMKO, Tuscaloosa Facility Landfill

Analytical Procedures	EPA-SW846 Method Number	Sample Container	Preservative	Holding Time
Inorganic Constituents				
Antimony Arsenic Barium Cadmium Chromium Cobalt Copper Lead Nickel Selenium Silver Thallium Vanadium Zinc	6010	Glass or Plastic G or P 500 ml. minimum	Cool to 4° C and Acidify to pH < 2	6 months
Organic Constituents				
Volatile Organics (VOCs)	8260	VOA 40 ml (x3)	Cool to 4°	14 days
Other Constituents				
pH	150.1*	G or P 100 ml	Cool to 4°	immediate
Specific Conductance	9059	G or P 100 ml	Cool to 4°	28 days
Sulfate	9036	G or P 100 ml	Cool to 4°	28 days
Nitrate/Nitrite-N	353.2*	G or P 1,000 ml	Cool to 4°	48 hours
Chlorides	9251	G or P 100 ml		28 days
*Standard EPA Method Number.				

Additionally, field measurement will be completed for depth to water, temperature, pH specific conductance and turbidity.

7.5 Quality Assurance/Quality Control (QA/QC)

The laboratory QA/QC program will provide for the use of method blanks, matrix spikes, and internal standards. Data from the laboratory QC samples will be used as a measure of performance or as an indicator of potential sources of cross-contamination but will not be used to alter or correct the sample analytical results. These QC measures are further described in the following sections.

7.5.1 Method Blank

A method blank is an analytical control sample consisting of all reagents and standards that is exposed to the complete sample preparation beginning with sample preparation and ending with sample analysis. Method blank measures contamination introduced in the analytical laboratory. One blank will be analyzed for every sampling event.

7.5.2 Duplicate Analysis

One laboratory duplicate analysis will be performed for each sampling event. The relative percent difference (RPD) between duplicates should be < 20% (for constituents that are detected at concentrations greater than 2 times the detection limit – DL – or practical quantitation limit – PQL). If the RPD is greater than 20%, but less than 30% for a constituent detected at 2 x the DL or PQL (whichever is reported by the laboratory), the sample results will be qualified as estimated, and must therefore be evaluated carefully to determine if they are valid. If the estimated data significantly differs from past results, the samples will be reanalyzed. If the RPD between duplicates exceeds the 20% criteria by greater than 10%, the samples will be reanalyzed (if sufficient quantity remains). For samples with constituents detected at concentrations less than 2 times the PQL, the 20% criteria shall not apply.

7.5.3 Internal Standard

A standard consisting of the analyte of concern, at concentrations representing the midpoint of the calibration curve, will be analyzed at a frequency predetermined by the subject lab. Results will be used to verify the standard calibration curve used. The standard sample recoveries will be compared to the control limits which are maintained and periodically updated by the laboratory; they will be rerun whenever they exceed those limits. If the recovery of the rerun exceeds the control limits, the analytical instruments will be recalibrated.

7.6 Reporting

7.6.1 Sampling Evaluation

Evaluation of the analytical results is completed semi-annually for the permitted wells at the site (MW-1 through MW-6, and MW-7 once it is installed). The evaluation consists of an intrawell analyses as required by the ADEM and in accordance with the ADEM administrative code section 335-13-4-.27 and the operating permit for the industrial landfill. Groundwater quality at the landfill is evaluated semi-annually to determine if a statically significant increase ("SSI") of contaminants has occurred, if an SSI has occurred the facility must report it to ADEM in accordance with section 335-13-4-.27 (2) l. TAMKO completes intrawell prediction intervals evaluation consistent with Section 335-13-4-.27 (2) l (3). Parametric, non-parametric and Poisson prediction intervals are used based on the distribution and normality of the background data.
The statistics were revised in 2012. This analysis was completed in accordance with the guidelines issued by the U.S. Environmental Protection Agency (EPA) in its Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Unified Guidance dated March, 2009 ("guidance document"). This document specifies that a number of statistical tests for trends such as normality of the data should be completed prior to SSI analyses. Once these data trends are documented, appropriate statistical analyses can be applied to the data to determine if a SSI has occurred. The format of the analysis followed the guidance for the data trends tests and analyses as issued by the USEPA.

The ASTM Standard Guide for Developing Appropriate Statistical Approaches for Groundwater Detection Programs (D6312) 2005 was used as a reference for the approach. Apex used Starpoint's ChemPoint and ChemStat to complete the statistical analyses.
To provide for an evaluation that is consistent with EPA's updated procedures, additional background data was added to the background data set. This additional data was limited to some re-sampling data for parameters that have continued to indicate potential SSIs. Because there was no available calculation to compare new data set means and variances in an intra-well approach, the additions to background data were limited. Summaries of the analytical results initial evaluated for suitability as background data is included in Table 2-3 above.

7.6.2 Reporting

A comprehensive report will be generated semi-annually which will include the following information:

- Cover letter summarizing the semiannual analytical results.
- Statistical analyses and determination of an SSI as described in the Statistical Analysis of Groundwater Monitoring Data For the Industrial Landfill in Tuscaloosa, Alabama, January 2012.

- Analytical results including field results. The analytical results will include the ADEM Groundwater Monitoring form and well purge logs that provide purging method, well volume calculation, well volumes removed and temperature, pH, specific conductivity, and turbidity monitoring results.
- Groundwater contour map with well groundwater elevations, flow direction and groundwater gradient for each semiannual sampling event.
- If samples are collected outside the standard semiannual sampling event, groundwater elevations will be provided in a table format in the cover letter.
- A table of historical analytical results will be attached to the semi-annual report.

7.6.3 SSI Reporting

If a statistically significant increase over background groundwater quality is detected, or if in the interim, an analytical parameter is detected above an EPA MCL, TAMKO will place a notice in the operating record, submit a copy of the notice to ADEM indicating which constituents have shown statistically significant increases, and notify the department that the notice was placed in the file within 14 days of the determination.

An assessment monitoring program meeting the requirements of the current ADEM Admin. Code will be submitted to the department within 90 days of the determination date unless TAMKO can demonstrate that at a source other than the landfill caused the statistically significant increase.

8.0 CLOSURE AND POST CLOSURE PLAN

8.1 Introduction

Alabama State law requires persons desiring to operate a solid waste disposal area to obtain a permit from ADEM. Administrative regulations promulgated pursuant to the law require that persons desiring to obtain a permit and file a site closure plan at the time a permit application is submitted (ADEM Admin Code R. 335-13-5.30). Where wastes are not removed as part of the closure plan, the owner of a solid waste disposal area will provide for care of the area for thirty years. The procedures and activities presented herein constitute closure and post-closure plans for the industrial landfill operated by TAMKO Building Products LLC, in Tuscaloosa, Alabama (ADEM Number 63-17).

8.1.1 Scope of Plan Contents

The closure and post-closure plans presented herein apply to the entire landfill because the landfill will be filled both vertically as well as horizontally into the expansion area.

The closure plan describes the final cover design, details methods for its installation, and provides cost estimates for closure/post-closure activities. Cost estimates for closure are not included since the industrial landfill is not required to provide financial assurance.

The post-closure plan describes methods for maintenance of cover integrity and vegetation. Contact information for the responsible party and planned property uses during post-closure are also provided.

8.2 Facility Description

8.2.1 Site Location

TAMKO, is located at 2300 35th Street, Kaul Industrial Park, City of Tuscaloosa, Tuscaloosa County, Alabama. The landfill site is in the SW ¼ of the SE ¼ of Section 27, and the ¼ NW of the NE ¼ of Section 34, Township 21, Range 10 West. The landfill property encompasses approximately 21.5 acres.

8.2.2 Nature of Operations

TAMKO is engaged in the manufacture of roofing products consisting of rolled paper felt and fiberglass-based shingles. The primary raw materials used in the production process include blown asphalt flux, crushed limestone granules, sand, water, and paper felt and fiberglass mat.

8.2.3 Landfill Operation

The landfill will be strictly for use by TAMKO. Solid waste will only be accepted from the firm's plant and contiguous property in Tuscaloosa, Alabama. Waste to be landfilled includes Asphalt for building products, concrete, steel, and other inert construction and demolition waste as defined in ADEM Administrative Code 334-13-1-.03, dust collector bags/cartridges fume filter elements, fiberglass/polyester/organic mat materials, fiberglass/organic shingles, miscellaneous packing materials, roll roofing, fiberglass/organic roofing felt, solid materials, such as colored granite, coal/copper/steel slag, roofing granules/fines, volcanic ash, talc, mica, sand, dolomite particles, and fiberglass mat process materials from the process operations and settling ponds, similar materials from fume filters and fiberglass and polyester baghouse bags, other roofing materials and wastes consistent with the information provided, and miscellaneous waste with prior ADEM approval

No hazardous, municipal, septic sewage or putrescible wastes will be accepted. No liquid wastes will be accepted, even if containerized.

Based on current production schedules and landfill records, approximately 45 tons of solid waste are generated daily (five days per week) and deposited in the landfill on an as need basis. The waste is transferred from the point of generation (production plants short term storage) using dump trucks. The area method of operation is used at the site. Imported or excavated soil, fines and granules, or shredded asphalt tiles and/or shingle tabs are used to cover the waste periodically.

8.3 Closure Plan

The closure plan has been prepared in conformance with State of Alabama, ADEM regulations (ADEM Admin. Code R. 335-13-4-.20 Closure). Contents of a closure plan are determined by ADEM based on applicability. Elements typically addressed in closure plans include type and depth of cover material, landscaping and access control, surface water drainage patterns, and plans for monitoring and surveillance activities. The closure plan describes the final cover design, installation methods, landscaping, access control, cost estimates, and schedule.

Since the landfill does not accept municipal solid waste, the operation is not subject to federal regulations (40 CFR Parts 257/258). Financial assurance for closure and post-closure activities is currently not required by the State of Alabama or the EPA for industrial landfills.

8.3.1 Final Cover

Final cover for the waste management cells will consist of 12-inches of intermediate cover, capped with 18-inches of a clay soil with a maximum permeability 1 x 10^{-5} cm/s, covered by 6- inches of soil capable of supporting vegetation. Final cover construction will be started within 30 days after completion of the final grading requirements on the landfill. Cap construction may take in excess of three months to complete.

The vegetative layer will be constructed using material obtained from a local borrow area. This layer will not be mechanically compacted and the final thickness will be a minimum of 6-inches. Appropriate species of grass seed will be applied along with fertilizer and mulch to supply the nutrients to the grass. The seed may be hydroseeded to allow for proper adherence to the previously approved slopes. Watering and maintenance will be provided such that germination of grass can reasonably be anticipated. To protect against erosion during seed germination, a mulch of dry straw will be applied at a rate of two tons per acre.

All seed will be sown during the appropriate spring/summer or fall/winter planting season. If an area is closed during winter months, seed will be applied in the spring, but within 30 days or final grading.

8.3.2 Final Contours/Drainage Patterns

Contours of the final surface will be graded to prevent ponding and excessive erosion. Final grade of the soil cover will a exceed 25 percent as previously approved by ADEM. A 2.5:1 horizontal to vertical slope will be used and terraced as required on the southern end of the landfill. Side slopes of 3:1 will be used around the other portions of the landfill. The minimum final grade for the disposal facility will be 2 percent. Estimated surface water drainage patterns are depicted in the design drawings.

8.3.3 Landscape and Access Control

The perimeter of the TAMKO landfill area will be screened by planting tree seedlings as needed. Individual trees will be planted as needed to fill out the current tree lined perimeter. Appropriate species of grass seed will be applied to the landfill vegetative layer of the final cover. Fertilizer and mulch will also be provided to supply the nutrients to the grass. No trees or deep-rooted plants will be planted into the final cover. Use of the waste management area is limited to TAMKO Personnel and is accessible only by private

road. The manufacturing facility is manned 24 hours per day. "Closed Landfill" and "No Entry" signs will be placed on the perimeter fence at various locations.

8.3.4 Schedule

Prior to beginning closure of each landfill unit, TAMKO will submit to ADEM and place in the operating record a notice of intent to close the landfill. Final grading will be completed within 90 days after landfilling has either reached the final approved elevations, or ceased to occur in each phase. Final cover construction will be started within 30 days after completion of the final grading requirements on each phase. Should weather or other unforeseen circumstances delay the implementation or completion of closure, ADEM will be notified and a revised schedule provided.

Based on current rates of solid waste generation, the projected closure dates for the respective waste management cells are as follows:

Regrade Area - This section will be utilized to achieve final waste grades in preparation for the cap. This area will be used for several years to regrade the south section for closure.

Active Face - The Active Face will be used as the main fill area until the landfill is full. The landfill is anticipated to last until 2045.

Future Area - The landfill will progress into the Future Area as it is filled. The landfill is anticipated to reach its lateral and vertical extents in 2046. Refer to Sheet 6 for maximum inventory and site life calculations.

8.3.5 Maximum Area Estimate

The maximum area estimated to contain waste as required, is the entire area of the property dedicated to the landfill. Almost the entire landfill area could be filled due to the variances in place for typical buffer zones. The maximum area estimate can be taken from the legal property description, which denotes21.5-acres. The extent of waste will be approximately 20-acres.

8.3.6 Maximum Inventory Estimate

Maximum estimated quantity of waste to be disposed in the landfill, as required, is estimated as the total volume of waste which has been disposed plus the remaining capacity based on this design. The past volume of disposed waste can be estimated from a survey of landfill records for the years of 1991 and

1992. These records indicate that approximately 29 tons per day of solid waste was disposed in the landfill. Assuming the landfill has had a constant rate of disposal since it opened in 1988, the maximum quantity of waste disposed is 63,510 tons in 1993. Assuming an approximate density of the solid waste in place as 1,400 pounds per cubic yard, the estimate volume in place through 1993 is approximately 91,000 cubic yards.

From 1994 through 2006 it is estimated that approximately 350,000 cubic yards of landfill space was used. The proposed design of the landfill will allow for an additional 467,000 cubic yards of space remaining. Therefore, the maximum quantity of material, which will be deposited into the landfill, is estimated at approximately 908,000 cubic yards.

8.3.7 Closure Certification

Upon completion of all the procedures specified in the closure plan, an independent registered professional engineer or land surveyor licensed to practice in Alabama will certify in writing that all closure requirements have been completed as determined necessary by ADEM (ADEM Admin. Code R. 335-13-4-.20).

8.3.8 Land Deed Notification

Within 90 days after the preceding closure requirements are completed as determined by ADEM, TAMKO will record a notation onto the land deed used by the property for disposal. The notation will include and or reference the following information:

- State that a portion of the total facility has been used as a solid waste disposal facility.
- State the use restrictions located in ADEM Admin. Code R. 335-13-4-.20.
- Present the locations and dimensions of the disposal facility with respect to the permanent survey benchmarks and section corners on a plat prepared and sealed by a land surveyor licensed in the State of Alabama.
- Prominently display the disposal site owner/operating agency (TAMKO), the type of disposal facility, and the beginning and closure dates of the facility.
- The aforementioned certification will be by a registered professional engineer or land surveyor licensed to practice in Alabama.

8.4 Post-Closure Maintenance Plan

The post-closure plan has been prepared in conformance with ADEM Administrative Regulations. The post-closure plan describes activities necessary to maintain the integrity and effectiveness of the final cover; the name, address and telephone number of the contact person for the landfill, and a description of planned uses of the property during the post-closure period.

8.4.1 Inspection

Inspections of the final cover to identify conditions which may compromise cover integrity will be conducted semi-annually following closure of each section in accordance with ADEM Admin Code R. 335-13-4-.20. The inspections will include documentation of settlement, surface cracking, stressed vegetation, significant erosion, changes in slope angles, drainage, exposed waste, and the condition of drainage channels. In areas where one of the above conditions is unsatisfactory, the operator will repair the condition, return the impacted area to the original grade, and re-vegetate. If any waste were to be found at the facility after the closure of the landfill, the waste will be removed to an approved disposal facility by the permittee, operating agency or, or owner.

8.4.2 Final Cover Maintenance

The appropriate cover will be maintained on the past waste disposal area at all times in accordance with ADEM Admin. Code R. 335-13-4-.20 and as described below. Eroded areas will be filled with suitable soil cover, compacted, graded, and appropriate cover established has described in ADEM Admin. Code R. 335-13-4-.20. Areas which may results in ponding of surface water due to settling shall be filled, graded, and appropriate cover established as described above.

Landfilled areas with extensive surface cracks in soil cover will be corrected to prevent infiltration of surface water.

8.4.3 Contact Person

The name, address, and telephone number of the responsible contact person will be available in the administrative office of TAMKO. The contact person is anticipated to be the plant manager of TAMKO's Tuscaloosa facility.

8.4.4 Planned Property Use

Upon closure of the landfill, and during the 30-year post-closure period, the property will remain idle. Following the post-closure period, the area is currently anticipated to continue to remain idle.

8.4.5 Post Closure Certification

Upon completion of the post-closure period, an independent, registered professional engineer licensed to practice in Alabama, will prepare a written certification that post-closure procedures were completed according to this plan.

APPENDICES

Appendix A Most Recent Landfill Permit
Appendix B Legal Descriptions
Appendix C Detailed Well Survey
Appendix D Site Development Permit
Appendix E Construction QA/QC Plan
Appendix F Daily Operating Record Form
Appendix G Monthly Inspection Form
Appendix H Quarterly Volume Report Form

Appendix A Most Recent Landfill Permit

LANCE R. LEFLEUR
DIRECTOR

ADEM

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

September 25, 2015

Mr. Allen Bolton
General Manufacturing Manager
TAMKO Building Products, Inc.
2300 35th Street
Tuscaloosa, Alabama 35403

Re: TAMKO Building Products, Inc. Industrial Landfill
Tuscaloosa County, Alabama
Permit No. 63-17

Dear Mr. Bolton:

Enclosed is the Solid Waste Facility Permit for the TAMKO building Products, Inc. Industrial Landfill (Permit No. 63-17). The effective date of the permit is October 7, 2015 and the permit will expire on October 6, 2020.

If you have any questions, please contact Mr. Chris Griffin of the Solid Waste Engineering Section at (334) 270-5607.

Sincerely,

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

SSS/cg

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

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

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

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

FINAL DETERMINATION

RENEWAL

TAMKO Building Products, Inc.
2300 35th Street
Tuscaloosa, Alabama 35403

Permit No. 63-17
TAMKO Building Products, Inc. Industrial Landfill

September 25, 2015

TAMKO Building Products, Inc submitted to the Alabama Department of Environmental Management (ADEM) an application to continue to operate an industrial waste landfill known as the TAMKO Building Products, Inc. Industrial Landfill (Permit No. 63-17). The waste stream for the TAMKO Building Products, Inc. Industrial Landfill would remain nonhazardous industrial wastes and construction and demolition waste such as asphalt, concrete, steel, dust collector bags/cartridge, fume filter elements, fiber glass/polyester/organic mat materials, fiber glass/organic shingles, misc. packing materials, roll roofing, fiber glass/organic roofing felt, solid materials and fiberglass mat process materials from process operations and settling ponds, similar materials from fume filters and fiberglass and polyester baghouse bags, and misc. waste with prior ADEM approval. The service area for the TAMKO Building Products, Inc. Industrial Landfill would remain TAMKO Building Products, Inc., plant located in Tuscaloosa, Alabama. The maximum average daily volume of waste disposed at the TAMKO Building Products, Inc. Industrial Landfill would remain 350 tons per day.

The TAMKO Building Products, Inc. Industrial Landfill is described as being located in Southwest ¼ of the Southeast ¼ of Section 27 and Northwest ¼ of the Northeast ¼ of Section 34, Township 21 South, Range 10 West in Tuscaloosa County. The TAMKO Building Products, Inc. Industrial Landfill consists of 21.52 acres with 20 acres for disposal operations.

A public comment period was announced by ADEM on July 13, 2015 and ended on August 16, 2015. The permit application and draft permit was available for inspection at the Alabama Department of Environmental Management. The Department received no comments during the comment period.

The Solid Waste Engineering Section of ADEM has determined that the proposed renewal complies with the requirements of ADEM's Administrative Code Division 13 for an industrial waste landfill.

Technical Contact:

Chris Griffin
Solid Waste Engineering Section
Land Division
(334) 270-5607

ADEM
Alabama Department of Environmental Management

SOLID WASTE DISPOSAL FACILITY PERMIT

PERMITTEE:	TAMKO Building Products, Inc.
FACILITY NAME:	TAMKO Building Products, Inc. Industrial Landfill
FACILITY LOCATION:	Southwest ¼ of the Southeast ¼ of Section 27 and Northwest ¼ of the Northeast ¼ of Section 34, Township 21 South, Range 10 West in Tuscaloosa County, Alabama. The permitted facility consists of 21.52 acres with approximately 20 acres for disposal.
PERMIT NUMBER:	63-17
PERMIT TYPE:	Industrial
WASTE APPROVED FOR DISPOSAL:	Nonhazardous industrial and construction and demolition waste such as asphalt, concrete, steel, dust collector bags/cartridge, fume filter elements, fiberglass/polyester/organic mat materials, fiber glass/organic shingles, misc. packing materials, roll roofing, fiber glass/organic roofing felt, solid materials and fiberglass mat process materials from process operations and settling ponds, similar materials from fume filters and fiberglass and polyester baghouse bags, and misc. waste with prior ADEM approval.
APPROVED WASTE VOLUME:	Maximum Average Daily Volume of 350 tons per day
APPROVED SERVICE AREA:	TAMKO Building Products, Inc. plant located in Tuscaloosa County, Alabama

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

ISSUANCE DATE:	September 25, 2015
EFFECTIVE DATE:	October 7, 2015
EXPIRATION DATE:	October 6, 2020

Alabama Department of Environmental Management

ALABAMA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
SOLID WASTE PERMIT

Permittee:	TAMKO Building Products, Inc. 2300 35th Street Tuscaloosa, AL 35403
Landfill:	TAMKO Building Products, Inc. Industrial Landfill
Landfill Location:	Southwest ¼ of the Southeast ¼ of Section 27 and Northwest ¼ of the Northeast ¼ of Section 34, Township 21 South, Range 10 West in Tuscaloosa County, Alabama.
Permit No.	63-17
Landfill Type:	Industrial

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

The Permittee must comply with all terms and conditions of this permit. This permit consists of the conditions set forth herein (including those in any attachments), and the applicable regulations contained in 335-13-1 through 335-13-14 of the ADEM Administrative Code (hereinafter referred to as the "ADEM Admin. Code" or as "335-13"). Rules cited are set forth in this document for the purpose of Permittee reference. Any rule that is cited incorrectly in this document does not constitute grounds for noncompliance on the part of the Permittee. Applicable ADEM Admin. Codes are those that are in effect on the date of issuance of this permit or any revisions approved after permit issuance.

This permit is based on the information submitted to ADEM on February 23, 2015 and as amended and known as the Permit Application (hereby incorporated by reference and hereinafter referred to as the Application). Any inaccuracies found in this information could lead to the termination or modification of this permit and potential enforcement action. The Permittee must inform ADEM of any deviation from or changes in the information in the Application that would affect the Permittee's ability to comply with the applicable ADEM Admin. Code or permit conditions.

This permit is effective as of **October 7, 2015**, and shall remain in effect until **October 6, 2020**, unless suspended or revoked.

Alabama Department of Environmental Management

9/25/15
Date Signed

SECTION I. STANDARD CONDITIONS.

A. Effect of Permit. The Permittee is allowed to dispose of nonhazardous solid waste in accordance with the conditions of this permit and 335-13. Issuance of this permit does not convey property rights of any sort or any exclusive privilege, nor does it authorize any injury to persons or property, any invasion of other private rights, or any infringement of state or local laws or regulations. Except for actions brought under the Act, compliance with the conditions of this permit shall be deemed to be compliance with applicable requirements in effect as of the date of issuance of this permit and any future revisions.

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

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

D. Definitions. For the purpose of this permit, terms used herein shall have the same meaning as those in 335-13, unless this permit specifically provides otherwise; where terms are not otherwise defined, the meaning associated with such terms shall be as defined by a standard dictionary reference or the generally accepted scientific or industrial meaning of the term.

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

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

E. Duties and Requirements.

1. Duty to Comply. The Permittee must comply with all conditions of this permit except to the extent and for the duration such noncompliance is authorized by a variance granted by ADEM. Any permit noncompliance, other than noncompliance authorized by a variance, constitutes a violation of the Act and is grounds for enforcement action, permit suspension, revocation, modification, and/or denial of a permit renewal application.

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

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

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

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

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

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

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

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

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

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

   d. Sample or monitor, at reasonable times, any substances or parameters at any location for the purposes of assuring permit compliance or as otherwise authorized by the Act.

9. Monitoring, Corrective Actions, and Records.

   a. Samples and measurements taken for the purpose of monitoring or corrective action shall be representative of the monitored activity. The methods used to obtain representative samples to be analyzed must be the appropriate method from 335-13-4 or the methods as specified in the Application attached hereto and incorporated by reference. Laboratory methods must be those specified in Standard Methods for the Examination of Water and Wastewater (American Public Health Association, latest edition), Methods for Chemical Analysis of Water and Wastes (EPA-600/4-79-020), Test Methods for Evaluating Solid Waste, Physical/Chemical Methods (EPA Publication SW-846, latest edition), other appropriate EPA methods, or as specified in the Application. All field tests must be conducted using approved EPA test kits and procedures.

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

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

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

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

      iii. The date(s) analyses were performed.

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

      v. The analytical techniques or methods used.

vi. The results of such analyses.

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

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

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

12. Certification of Construction. The Permittee may not commence disposal of waste in a new cell or phase until the Permittee has submitted to ADEM, by certified mail or hand delivery, a letter signed by both the Permittee and a professional engineer stating that the facility has been constructed in compliance with the permit. ADEM must inspect the constructed cells or phases before the owner or operator can commence waste disposal unless the Permittee is notified that ADEM will waive the inspection.

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

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

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

F. Design and Operation of Facility. The Permittee shall maintain and operate the facility to minimize the possibility of a fire, explosion, or any unplanned sudden or nonsudden release of contaminants (including leachate and explosive gases) to air, soil, groundwater, or surface water, which could threaten human health or the environment. The Permittee shall comply with all applicable requirements set forth under Rule 335-13-4-.21 and Rule 335-13-4-.23 of the ADEM Admin. Code. The Permittee is granted a variance from Rule 335-13-4-.21(1)(b) and (c).

G. Inspection Requirements.

1. The Permittee shall perform periodic inspection of the landfill in accordance with the permit application (Specifically section 6.3.9 Operation Inspection in the Operation Manual prepared November 2006 and as amended).

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

H. The Permittee shall conduct personnel training in accordance with the procedures described in permit application (Specifically section 6.1.4. Operating Personnel in the Operation Manual prepared November 2006 and as amended). The Permittee shall maintain training documents and records as a part of the operating record required by Section I., 1.

I. Recordkeeping and Reporting.

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

   a. Documentation of inspection (Section I., G.).

   b. Daily and quarterly volume reports (Section I., I., 2.).

   c. Personnel training records (Section I., H.).

   d. Groundwater monitoring records (Section I., I., 3.).

   e. Copies of this Permit, application and other pertinent operating, inspection, maintenance and monitoring information. (Rule 335-13-4-.29)

   f. Copies of all variances granted by ADEM, including copies of all approvals of special operating conditions.

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

3. Monitoring and Corrective Action Reports. The Permittee shall submit reports on all monitoring and corrective activities conducted pursuant to the requirements of this permit, including, but not limited to, groundwater, surface water and leachate monitoring. The groundwater monitoring shall be conducted in March and September of each year, or as directed by ADEM, and the reports shall be submitted at least semi-annually, or as directed by ADEM. The reports should contain all monitoring results and conclusions from samples and measurements conducted during the sampling period. Copies of the groundwater reports shall be maintained in the operating record.

4. Availability, Retention, and Disposition of Records.

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

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

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

J. Documents to be Maintained by the Permittee. The Permittee shall maintain, at the TAMKO Building Products, Inc. office the following documents and amendments, revisions and modifications to these documents until an engineer certifies closure of the permitted landfill.

1. Operating record.

2. Closure Plan.

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

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

2. Physical Address.
Chief, Solid Waste Branch, Land Division
Alabama Department of Environmental Management
1400 Coliseum Blvd.
Montgomery, Alabama 36110-2059

L. Signatory Requirement. All applications, reports or information required by this permit, or otherwise submitted to ADEM, shall be signed and certified by the owner as follows:

1. If an individual, by the applicant.

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

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

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

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

SECTION II. GENERAL OPERATING CONDITIONS.

A. Operation of Facility. The Permittee shall operate and maintain the disposal facility consistent with the Application, this permit, and 335-13. The Permittee is granted a variance from Rule 335-13-4-.21(1)(b) and (c).

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

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

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

E. Industrial Waste Disposal. The Permittee shall dispose of industrial waste as specified in Section III, B.

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

SECTION III. SPECIFIC REQUIREMENTS FOR INDUSTRIAL WASTE LANDFILLS.

A. Waste Identification and Management.

1. Subject to the terms of this permit, the Permittee may accept for disposal the nonhazardous solid wastes listed in Section III., B. Disposal of any other wastes is prohibited, except waste granted a temporary or one time waiver by the Director or waste streams approved following the Solid Waste Form process.

2. The total permitted area for the TAMKO Building Products, Inc. Industrial Landfill is approximately 21.52 acres with 20 acres for disposal.

3. The maximum average daily volume of waste disposed at the facility, as contained in the permit application, shall not exceed 350 tons/day. Should the average daily volume exceed this value by 20% or 100 tons/day, whichever is less, for two (2) consecutive quarters the permittee shall be required to modify the permit in accordance with 335-13-5-.06(2)(a)5 The average daily volume shall be computed as specified by 335-13-5-.06(2)(a)5.(i).

B. Waste Streams. The Permittee may accept for disposal nonhazardous industrial wastes and construction and demolition waste such as asphalt, concrete, steel, dust collector bags/cartridge, fume filter elements, fiber glass/polyester/organic mat materials, fiber glass/organic shingles, misc. packing materials, roll roofing, fiber glass/organic roofing felt, solid materials and fiberglass mat process materials from process operations and settling ponds, similar materials from fume filter and fiberglass and polyester baghouse bags, and misc. waste with prior ADEM approval.

C. Service Area. The service area for this landfill, as contained in the permit application is TAMKO Building Products, Inc., plant located in Tuscaloosa, Alabama.

D. Waste Placement, Compaction, and Cover. All waste shall be confined to an area as small as possible and placed onto an appropriate slope not to exceed 33% (See Section VIII., 3.). All waste shall be spread in layers two feet or less in thickness and thoroughly compacted weekly with adequate landfill equipment prior to placing additional layers of waste. No cover is required until final fill elevations have been reached (See Section VIII., 11.)

E. Liner Requirements. The Permittee shall not be required to construct a liner. The base of the waste shall be a minimum of five (5) feet above the temporal fluctuation of the groundwater table as demonstrated by the permit application documents.

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

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

H. Adverse Weather Disposal. The Permittee shall provide for disposal activities in adverse weather conditions.

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

J. Environmental Monitoring and Treatment Structures. The Permittee shall provide protection and proper maintenance of environmental monitoring and treatment structures.

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

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

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

N. Other Requirements. ADEM may enhance or reduce any requirements for operating and maintaining the landfill as deemed necessary by the Land Division.

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

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

Q. Litter Control. The Permittee shall control litter.

R. Fire Control. The Permittee shall provide fire control measures.

SECTION IV. GROUNDWATER MONITORING REQUIREMENTS.

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

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

2. The Permittee shall maintain groundwater monitoring wells MW-1 and MW-6 as the background groundwater monitoring wells for the entire facility.

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

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

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

    b. Well development method(s);

    c. A complete analysis of well construction materials;

    d. A schedule of implementation for construction; and

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

B. Groundwater Monitoring Requirements.

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

2. The Permittee shall determine the groundwater flow direction in the first zone of saturation at least annually or each time groundwater is sampled and submit as required Section I.I.3.

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

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

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

1. Samples shall be collected, preserved, and shipped (when shipped off-site for analysis) in accordance with the procedures specified in the Application. Monitoring wells shall be bailed or pumped to remove at least four times the well volume of water or as specified in the Operation Manual prepared November 2006 and as amended. Slow recharge wells shall be bailed until dry. Wells shall be allowed to recharge prior to sampling.

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

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

D. Recordkeeping and Reporting Requirements.

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

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

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

TABLE IV.1.
GROUNDWATER MONITORING WELLS.

Monitoring Well Number	Top of Casing (feet msl)	Part Monitoring
UPGRADIENT/BACKGROUND MONITORING WELLS		
MW I	174.21	Southern Portion
MW-6	173.58	Northern Portion
DOWNGRADIENT MONITORING WELLS		
MW 2	161.14	Southern Portion
MW 3	161.29	Southern Portion
MW-4	171.17	Northern Portion
MW-5	170.32	Northern Portion

TABLE IV.2.
SEMI-ANNUAL GROUNDWATER MONITORING PARAMETERS.

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

SECTION V. GAS MONITORING REQUIREMENTS.

At this time, gas monitoring is not being required (See Section VIII., 1.). If at any time the Department determines that a explosive gas monitoring system is deemed necessary for the protection of human health and the environment, the Permittee must, within 90 days, submit an application for permit modification for the installation of an explosive gas monitoring system that meets the proper regulatory requirements of the Alabama Department of Environmental Management.

SECTION VI. LEACHATE AND SURFACE WATER MANAGEMENT REQUIREMENTS.

At this time, a leachate management collection system is not being required (See Section VIII., 6.). If at any time the Department determines that a leachate management collection system is deemed necessary for the protection of human health and environment, the permittee must, within 90 days submit an application for permit modification for the installation of a leachate management collection system that meets the proper regulatory requirements of the Alabama Department of Environmental Management.

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

SECTION VII. CLOSURE AND POST-CLOSURE REQUIREMENTS.

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

A. Final Cover. The Permittee shall grade final soil cover such that surface water does not pond over the permitted area as specified in the Application submitted to the Department on June 14, 2002. The final grade of the two foot earthen material cover shall not exceed 2.5H to 1V with a minimum grade of 2 percent (See Section VIII., 2.). The final cover system shall comply with 335-13.

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

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

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

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

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

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

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

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

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

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

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

SECTION VIII. VARIANCES AND SPECIAL CONDITIONS.

1. The permittee is granted a variance from Rule 335-13-4-.16 requiring explosive gas monitoring. If at any time the Department determines that an explosive gas monitoring system is deemed necessary for the protection of human health and the environment, the Permittee must, within 90 days, submit an application for permit modification for the installation of an explosive gas monitoring system that meets the proper regulatory requirements of the Alabama Department of Environmental Management. (See Section V.).

2. The Permittee is granted a variance from Rule 335-13-4-.20(2)(c)2 which requires the final grade of the two-foot earthen-material cover not to exceed 25 percent. The Permittee will be allowed to use a 2.5H to 1V maximum final grade and shall be a minimum of 2 percent as shown in the permit application. (See Section VII., A.)

3. A variance is granted from Rule335-13-4-.23(1)(c) allowing the active face to have a maximum slope of 33 percent (See Section III., D.).

4. A variance is granted from Rule 335-13-4-.12(f) concerning 100 foot buffer zones for the north, south and west boundaries. However 100 foot buffer is still in effect for the portion of the landfill starting at the northeast corner then a distance of 199.91 feet in a south easterly direction, continuing 380.80 feet in a southerly direction, continuing 182.16 feet in a southerly direction, continuing 213.27 feet in a south easterly direction.

5. A variance is granted for Rule 335-13-4-.27(3)(b)(1)(i) concerning monitoring the first semiannual period in accordance with the Rule 335-13-4-.27(1)(a) as the landfill is an existing landfill.

6. A variance is granted for Rule 335-13-4-.18(c) requiring a leachate collection system. (See Section VI.).

7. A variance is granted from Rule 335-13-4-.17 so that the Permittee is not required to collect and control the water volume resulting from the 24-hour, 25-year storm. The Permittee must construct and maintain run-on and run-off control structures in accordance with the permit application and operate the landfill in accordance with the existing NPDES permit. (See Section VI.)

8. A variance is granted for Rule 335-13-4-.29(1)(c) relating to the site records for control measures or procedures that are not required at the landfill as follows:

   (a) 335-13-4-.29(1)(c)1. explosive gas monitoring and reporting records.
   (b) 335-13-4-.29(1)(c)4. analytical and monitoring records for leachate collection and surface water.
   (c) 335-13-4-.29(2) inspection training and notification pertaining to random load inspection for improper waste disposal.
   (d) 335-13-4-.29(6) waste certifications.

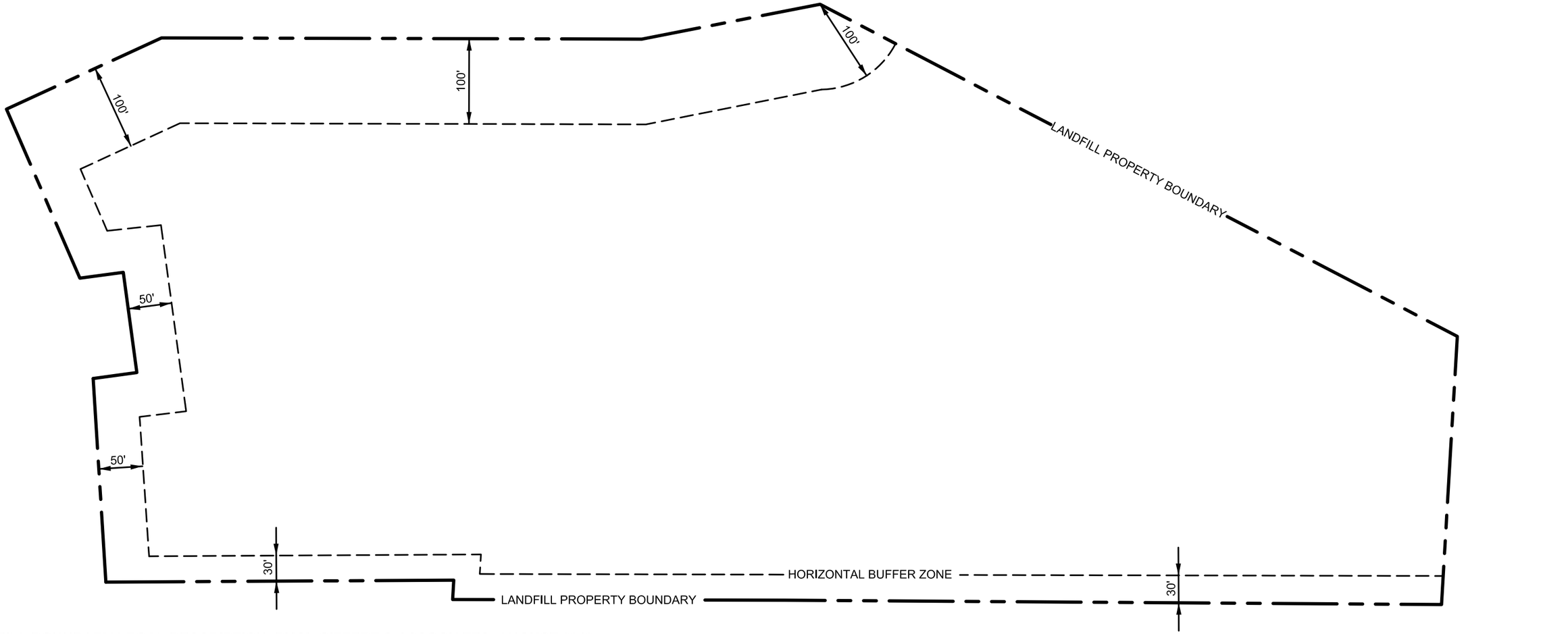
9. A variance is granted from Rule 335-13-4-.21(1)(b) relating to the implementation of detecting and preventing the disposal of free liquids, regulated hazardous waste, regulated medical wastes, and regulated PCB wastes. As the landfill is permitted for use only by the Permittee and for specified waste sources as described in this permit, Rule 335-13-4-.21(1)(b) does not apply.

10. A variance is granted for Rule 335-13-4-.21(1)(c) concerning written certification from each generator. As the landfill is permitted for use only by the Permittee and for specified waste sources as described in this permit, Rule 335-13-4-.21(1)(c) does not apply.

11. The Permittee is granted a variance from Rule 335-13-4-.23(1)(a)1. requiring weekly cover. The Permittee shall be required to cover all exposed waste when final fill elevations are reached (See Section III, D.).

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

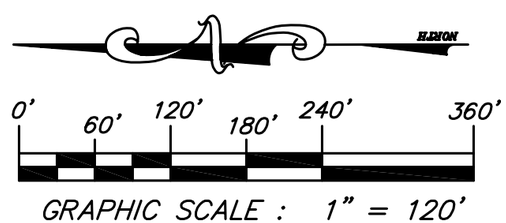
Appendix B Legal Descriptions



LANDFILL BOUNDARY LEGAL DESCRIPTION, BY McGIFFERT & ASSOCIATES, AUGUST 2019

A parcel of land located in the Southwest Quarter of the Southeast Quarter of Section 27 and the Northwest Quarter of the Northeast Quarter of Section 34, all in Township 21 South, Range 10 West in Tuscaloosa County, Alabama and being more particularly described as follows:

As a POINT OF BEGINNING, start at a 3-inch capped iron pipe marking the Southwest corner of said Southwest Quarter of the Southeast Quarter of said Section 27; thence run in a Northerly direction along the West boundary of said Quarter-Quarter for a distance of 389.25 feet to a railroad spike found; thence with an interior angle of 86 degrees 41 minutes, run in an Easterly direction for a distance of 22.70 feet to a capped rebar placed (McGiffert CA-00032LS); thence with an interior angle of 273 degrees 45 minutes, run in a Northerly direction for a distance of 407.80 feet to a 1/2-inch rebar found at the Southwest corner of lot 1 of Jackson Acres as recorded in Plat Book 1999, Page 132 in the Probate Office of said Tuscaloosa County, Alabama; thence with an interior angle of 93 degrees 16 minutes, run in an Easterly direction along the South boundary of said lot 1 for a distance of 239.26 feet to a rebar found; thence with an interior angle of 94 degrees 07 minutes, run in a Southeasterly direction along said South boundary for a distance of 51.65 feet to a rebar found; thence with an interior angle of 269 degrees 59 minutes, run in a Northeasterly direction along said South boundary for a distance of 118.59 feet to a rebar found; thence with an interior angle of 269 degrees 55 minutes, run in a Northwesterly direction along said South boundary for a distance of 51.37 feet to a rebar found; thence with an interior angle of 105 degrees 51 minutes, run in a Northeasterly direction along said South boundary for a distance of 215.99 feet to a 1/2-inch iron pipe found; thence with an interior angle of 91 degrees 16 minutes, leaving the South boundary of said lot 1 run in a Southeasterly direction for a distance of 199.92 feet to a 1-inch iron pipe found; thence with an interior angle of 155 degrees 08 minutes, run in a Southerly direction for a distance of 563.08 feet to a 3/4-inch iron pipe found; thence with an interior angle of 191 degrees 12 minutes, run in a Southeasterly direction for a distance of 212.91 feet to a 3/4-inch iron pipe found; thence with an interior angle of 141 degrees 24 minutes, run in a Southwesterly direction for a distance of 842.48 feet to a 1/2-inch iron pipe found; thence with an interior angle of 114 degrees 10 minutes, run in a Westerly direction for a distance of 314.97 feet to a capped rebar placed (McGiffert CA-00032LS) on the West boundary of the Northwest Quarter of the Northeast Quarter of said Section 34; thence with an interior angle of 93 degrees 00 minutes, run in a Northerly direction along the West boundary of said Quarter-Quarter for a distance of 769.95 feet to the POINT OF BEGINNING of the parcel herein described, at which point the interior angle is 180 degrees 16 minutes. Said parcel containing 21.51 acres, more or less.



APEX COMPANIES, LLC
303-D Beltline Place, SW #422
Huntsville, Alabama 35603

SITE BOUNDARY AND HORIZONTAL BUFFER ZONE

TAMKO BUILDING PRODUCTS LLC
TUSCALOOSA FACILITY

SHEET
1

LEGAL DESCRIPTION

TAMKO LANDFILL PROPERTY

A parcel of land located in the Southwest Quarter of the Southeast Quarter of Section 27 and the Northwest Quarter of the Northeast Quarter of Section 34, all in Township 21 South, Range 10 West in Tuscaloosa County, Alabama and being more particularly described as follows:

As a POINT OF BEGINNING, start at a 3-inch capped iron pipe marking the Southwest corner of said Southwest Quarter of the Southeast Quarter of said Section 27; thence run in a Northerly direction along the West boundary of said Quarter-Quarter for a distance of 389.25 feet to a railroad spike found; thence with an interior angle of 86 degrees 41 minutes, run in an Easterly direction for a distance of 22.70 feet to a capped rebar placed (McGiffert CA-00032LS); thence with an interior angle of 273 degrees 45 minutes, run in a Northerly direction for a distance of 407.80 feet to a 1/2-inch rebar found at the Southwest corner of lot 1 of Jackson Acres as recorded in Plat Book 1999, Page 132 in the Probate Office of said Tuscaloosa County, Alabama; thence with an interior angle of 93 degrees 16 minutes, run in an Easterly direction along the South boundary of said lot 1 for a distance of 239.26 feet to a rebar found; thence with an interior angle of 94 degrees 07 minutes, run in a Southeasterly direction along said South boundary for a distance of 51.65 feet to a rebar found; thence with an interior angle of 269 degrees 59 minutes, run in a Northeasterly direction along said South boundary for a distance of 118.59 feet to a rebar found; thence with an interior angle of 269 degrees 55 minutes, run in a Northwesterly direction along said South boundary for a distance of 51.37 feet to a rebar found; thence with an interior angle of 105 degrees 51 minutes, run in a Northeasterly direction along said South boundary for a distance of 215.99 feet to a 1/2-inch iron pipe found; thence with an interior angle of 91 degrees 16 minutes, leaving the South boundary of said lot 1 run in a Southeasterly direction for a distance of 199.92 feet to a 1-inch iron pipe found; thence with an interior angle of 155 degrees 08 minutes, run in a Southerly direction for a distance of 563.08 feet to a 3/4-inch iron pipe found; thence with an interior angle of 191 degrees 12 minutes, run in a Southeasterly direction for a distance of 212.91 feet to a 3/4-inch iron pipe found; thence with an interior angle of 141 degrees 24 minutes, run in a Southwesterly direction for a distance of 842.48 feet to a 1/2-inch iron pipe found; thence with an interior angle of 114 degrees 10 minutes, run in a Westerly direction for a distance of 314.97 feet to a capped rebar placed (McGiffert CA-00032LS) on the West boundary of the Northwest Quarter of the Northeast Quarter of said Section 34; thence with an interior angle of 93 degrees 00 minutes, run in a Northerly direction along the West boundary of said Quarter-Quarter for a distance of 769.95 feet to the POINT OF BEGINNING of the parcel herein described, at which point the interior angle is 180 degrees 16 minutes. Said parcel containing 21.51 acres, more or less.

Appendix C Detailed Well Survey

TO: Tom Deloughery

FROM: Dwight Wood

DATE: February 21, 1995

SUBJECT: Well Survey (Landfill Permit)

The Well Survey, concerning the Landfill permit, has been completed as of February 21, 1995. There were five hundred fity-three (553) homes and businesses to contact within the survey area designed by the Alabama Department of Environmental Management.

Of the five hundred fifty-three (553) homes and businesses three hundred fifty-one (351) were contacted by telephone and two hundred two (202) were visited in person to acquire the needed information. There were approximately sixty (60) homes that we were unable to contact even after repeated phone calls and visits.

A total of eight (8) wells were discovered during the survey. All eight (8) wells were out of service.

Thank you.

filed under landfl.mem

Appendix D Site Development Permit

CITY OF TUSCALOOSA
DEPARTMENT OF TRANSPORTATION
SITE DEVELOPMENT PERMIT

PERMIT # 475 BEGIN WORK: 11/15/96

PROPERTY OWNER: David Humphries
ADDRESS: Tamko, 220 W 4th St
Joplin, Mo. 64802
TELEPHONE: unknown

CONTRACTOR OR REPRESENTATIVE: Perry Acklin
2300 35th Street
Tuscaloosa, Al. 35403
TELEPHONE: 752-3555

ADDRESS OF SITE DEVELOPMENT : 2300 35th Street

LAND USE TO BE SERVED: TamKo

FLOOD PERMIT REQUIRED?: NO HISTORICAL DISTRICT?: NO

The undersigned is hereby granted permission to perform the herein described site development and guarantees to be in conformance with the driveway and site development regulations of the City of Tuscaloosa.

As a condition for the issuance of this permit, the applicant shall agree to indemnify and hold harmless the City, its employees, and agents from any liability to persons or property resulting from any act or omission of applicant in performing the work. As a further condition for the issuance of this permit, the owner shall agree that all maintenance of said site development shall be the owners responsibility or his successors, heirs and assigns. The owner shall upon receipt of notice from the Director of TDOT, perform maintenance work required by the order. As a condition of issuing this permit, the owner, his successors, heirs or assigns agree to indemnify and hold harmless the City, its employees and agents from all liability to persons or property resulting from the owner, his successors, heirs or assigns failing to maintain the site development.

BY: Perry Acklin

APPROVED: Joseph A. Robinson 11-15-1996
DEPARTMENT OF TRANSPORTATION DIRECTOR

Approved
Director
Joseph A. Robinson

DATE: 11/15/96

Appendix E Construction QA/QC Plan

Construction Quality Assurance/Quality Control (CQA/QC) Plan
Groundwater Buffer Zone Construction:
Industrial Landfill, ADEM Permit Number 63-17

TAMKO®

BUILDING PRODUCTS LLC

2300 35th Street
Tuscaloosa, Alabama 35401

PREPARED FOR:

TAMKO Building Products LLC
220 West 4th Street
Joplin, Missouri 64801

March 31, 2020

PREPARED BY:

Apex Companies, LLC
303-D Beltline Place, SW #422
Decatur, AL 35603

APEX

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LIST OF TABLES

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1.0 INTRODUCTION

1.1 CQA/QC Plan Purpose

This plan shall provide Construction Quality Assurance and Quality Control (CQA/QC) for the construction of the remaining soil buffer zone below the north portion of the industrial landfill at the TAMKO Building Products LLC (TAMKO) facility in Tuscaloosa, Alabama. This plan has been developed to ensure that the completed construction meets or exceeds all plans, permit conditions, and other applicable contract documents issued for the landfill. See Figure 1-1 on page 2 for a vicinity map.

1.2 CQA/QC Plan Objective

The CQA/QC Plan will be implemented by the Construction Quality Assurance (CQA) engineer who will provide oversight to:

- direct and perform tests for quality assurance activities,
- verify that the construction contractor's Quality Control (QC) plan is implemented,
- perform independent on-site inspections of the work to assess compliance with project plans,
- verify that equipment and material incorporated into the work conform to materials approved,
- verify that equipment and test procedures meet test requirements,
- implement the CQA/QC plan for all aspects of the work, and
- report the results of all inspections to TAMKO. The CQA engineer will report to TAMKO.

The quality of the data can be defined in terms of completeness, accuracy and precision, comparability, representativeness, and traceability. The terms are defined below.

Completeness is the adequacy in quantity of valid measurements to prevent misinterpretation and to meet the needs of the sampling and analysis program. Completeness will be addressed in two ways:

- in the design of the sampling program, by the selection of sufficient sampling sites and measurement parameters; and
- in the implementation of the sampling program by the maximization of successful sample collection and analysis and corresponding field and laboratory documentation.

Figure 1-1 Site Vicinity

Accuracy is the agreement between a measurement and the true value. **Precision** is the degree of variability among individual measurements of the same property under similar conditions.

Comparability represents the extent to which comparisons among different measurements of the same quantity or quality will yield valid conclusions. Comparability will be achieved using standard techniques to collect and analyze the samples and by reporting analytical results in appropriate units.

Representativeness is the extent to which discrete measurements accurately describe a characteristic of a population, parameter variations at a sampling point, or an environmental condition. Representativeness will be optimized through the informed selection of sampling sites, the proper collection and handling of samples.

Traceability is the extent to which data can be substantiated by hard-copy documentation. Documentation will exist in two forms: that which links quantitation to authoritative standards, and that which explicitly describes the history of each sample from collection to analysis. This plan describes the sampling and analytical procedures, documentation, quality control requirements, audits, and quality assurance procedures which will be employed during the construction at the TAMKO Tuscaloosa Alabama industrial landfill to ensure quality as defined above.

1.3 Project Overview

TAMKO in Tuscaloosa is a manufacturer of composition asphalt roofing products. TAMKO has operated the current industrial landfill since 1988 under ADEM Permit No. 63-17. The north expansion area of the landfill will require site preparation and grading. The attached engineering drawings show the lines and grades along which the construction will proceed. Excavated areas will have clean structural fill placed and compacted at a minimum thickness of seven feet above the seasonal high groundwater elevation prior to the placement of any wastes.

2.0 PROJECT ORGANIZATION AND RESPONSIBILITY

2.1 Organizations Involved in CQA/QC

The following organizations will be involved during construction activities associated with the construction activities:

- Agency shall mean Alabama Department of Environmental Management (ADEM),
- Owner shall mean TAMKO Building Products LLC (TAMKO),
- Contractor shall mean the construction contractor (yet to be chosen), any person, company, or entity performing the work described in the plans
- Owner's Representative shall mean TAMKO's on-site construction manager,
- CQA engineer shall mean the Engineer of Record which performs or manages all onsite QA/QC activities (yet to be chosen),
- CQA inspector shall mean the on-site, representative appointed by the QA/QC engineer, and
- Observer /Inspector shall mean the contractor's on-site QA/QC personnel responsible for contractor's QA/QC activities.

ADEM may review any design revisions, requests for variance submitted by TAMKO, and all CQA documentation during and subsequent to buffer zone construction to confirm that the CQA/QC Plan was followed and that the buffer zone was constructed in accordance with the approved construction plan.

TAMKO is the owner of the facility, and has the authority to accept or reject reports and recommendations from the CQA engineer, and the materials and workmanship of the contractor.

TAMKO is responsible for the design and construction of the buffer zone. Additionally, TAMKO will assure the permitting agencies that the buffer zone was constructed as specified in the design by retaining the CQA engineer to certify the construction of the facility.

The CQA engineer has the responsibility of performing activities specified in the CQA/QC Plan, such as inspection, sampling, testing and documentation. Construction is monitored, controlled, and certified through the CQA/QC Plan. The CQA engineer reports directly to TAMKO.

The Contractor will be responsible for managing the construction of the buffer zone such that it is built in accordance with the design criteria, plans, and will implement additional quality control

procedures and techniques as necessary during construction and as outlined in this CQA Plan.

2.2 CQA/QC Personnel Qualifications

The certifying CQA engineer for the site construction activities will verify that construction activities are performed in accordance with the grading permit, construction documents, the CQA/QC Plan, and the approved construction drawings.

The CQA inspector for the facility will have the practical experience to execute and record inspection activities conducted at the site. This includes specific knowledge of:

- field practices relating to construction techniques used,
- codes and regulations concerning fill installation,
- observation and testing procedures,
- documentation procedures, and
- site safety.

The CQA inspector will work under the supervision of the CQA engineer.

2.3 Responsibilities

The CQA engineer will be responsible for ensuring that all the activities outlined in the following sections are performed.

2.3.1 General Preconstruction Responsibilities

General preconstruction responsibilities for CQA personnel shall consist of reviewing and becoming familiar with design criteria and plans. An on-site orientation with TAMKO will be conducted.

The CQA engineer shall conduct a preconstruction meeting which should be attended by TAMKO, CQA personnel, and ADEM representatives (at ADEM's option). This meeting will serve to review all design plans, review the responsibilities of each party, determine sample sizes, and conduct a site visit. CQA personnel shall be responsible for scheduling, establishing the agenda, conducting and issuing minutes for the preconstruction meeting.

In addition, the CQA engineer will be responsible for developing pre-construction engineering data on soil materials that will be used during construction. The criteria for selected tests are outlined in Table 3-1.

Prior to the commencement of field work, all field personnel, including contractors, will be given instructions specific to the Tuscaloosa site. The instructions will cover the following areas:

- project organization and lines of communication and authority,
- description of the site,
- overview of the project,
- documentation requirements,
- personal protection,
- emergency procedures.

Training of field personnel will be provided by a qualified designee.

2.3.2 CQA Construction Responsibilities

2.3.2.1 Stripping

The CQA inspector will observe the preparation of the subgrade. The inspector shall also observe that all stripped and excavated materials are segregated and stockpiled in accordance with standard practice. If segregated and stockpiled properly, these materials may be of future use during construction. A surveyor shall verify the elevation of the subgrade after preparation procedures are complete.

2.3.2.2 Bottom Fill

Onsite fill material will be used to obtain seven-foot buffer for the bottom of the proposed landfill cells in accordance with the design drawings. Inspection activities prior to placement of the buffer zone include material inspection and collection of samples from the material before construction begins. Samples will be tested for density/moisture content relationships.

During construction, activities will be monitored by visual inspection to determine compliance with design criteria and by testing of the materials used. Criteria to be inspected are as follows:

- removal of organic material and debris;
- proper preparation of the subgrade;
- uniformity of compaction effort;
- density and moisture content after compaction;

CQA inspection personnel will observe the compaction process and will test each compacted layer using the following tests at the frequency outlined in Section 3.0:

- in-place field density tests using a nuclear density gauge per ASTM D2922,
- in-place field moisture test using a nuclear density gauge per ASTM D3017,

Additional inspection activities will be conducted to ensure that the water content of the soil does not decrease significantly. Atmospheric conditions will be observed and recorded by CQA inspection personnel, and appropriate actions will be taken when unsuitable weather conditions exist.

After the seven-foot buffer zone is installed, it will be surveyed to verify elevation indicated on the plans have been met. Construction testing of materials will conform with tests and frequencies as shown in Table 3-1.

2.3.2.3 Other Responsibilities

The CQA inspector shall schedule the collection and sampling of fill materials in accordance with Section 3.0 of this plan. The CQA engineer shall receive all submittals from the Contractor and forward them to TAMKO for review.

Meetings with project personnel will be held periodically during the project duration. The CQA personnel will be responsible for scheduling, establishing the agenda, conducting, and issuing minutes of all meetings. These meetings, as a minimum, will include the following:

- preconstruction CQA meeting,
- daily progress meetings, and
- problem or work deficiency meetings.

The preconstruction meeting will be attended by TAMKO, CQA personnel, ADEM representatives (if desired), and the selected Contractor's representatives. This meeting will serve to review all Design plans, review the responsibilities of each party, determine sample sizes, and conduct a site visit. Daily progress meetings with the CQA inspector and the construction Contractor will be held following completion of each day's work as necessary. The purpose of this meeting is to review all work completed that day and discuss any potential construction problems. If problems or work deficiencies arise, a meeting will be held to define and resolve those problems.

3.0 SAMPLING AND TESTING

Sampling and testing pertaining to the construction activities will consist of both laboratory and field testing. All samples will be selected to be representative of the material, and will, therefore, accurately represent the material's properties as a whole. Tests will be located in areas the CQA inspector believes the construction materials or work is deficient (if any).

The thickness of all fills will be measured at least once per lift to determine the thickness based on loose measurement and compacted measurement. The soil testing will be conducted using the methods presented in Table 3-1.

Elevation, locations and slopes will be surveyed at the completion of relevant components.

Table 3-1

Construction Quality Assurance Testing Frequencies

Construction Component	Test Observation	Minimum Frequency	Minimum Standards
In Situ Soils (Bottom of cell prior to placement of fill soils)	Proof roll with fully loaded dump truck	Entire area of prepared subgrade.	No rutting or soft areas should be identified.
Thickness of Fill	Thickness of each uniform loose layer	once per lift	Maximum of 10-inches
Compacted fill (Source)	ASTM D 2216 - Laboratory Determination of Moisture Content of Soil	1 Per 5,000 Cu. Yd.	For future reference when testing in-place fill material.
	ASTM D 698 - Standard Proctor Compaction Test	1 Per 5,000 Cu. Yd.	For future reference when testing in-place fill material.
		1 Per 5,000 Cu. Yd.	Fill material liquid limit: 35 % maximum Fill material plasticity index: 7minimum, 15 maximum. The plasticity index has no units.
Compacted fill (Installed)	ASTM D 2922 Density of Soil and Soil Aggregate in Place by Nuclear Methods (Shallow Depths)	1 Per 1000 Cu. Yd.	Maintain fill density of not less 95% using 10-inch maximum thickness of each loose uniform layer.
	ASTM D 3017 Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depths)	1 Per 1000 Cu. Yd.	Maintain fill moisture content of not less than 3% dry or more than 3% wet of optimum

4.0 *CALIBRATION PROCEDURES*

The CQA engineer shall be responsible for ensuring that both field and laboratory testing equipment are calibrated at the required frequency established by applicable standards. The CQA engineer will also ensure that testing equipment subject to the Nuclear Regulatory Commission authority is stored in accordance with applicable local, state, and federal regulations.

5.0 DOCUMENTATION

Throughout the course of the project, CQA personnel will prepare various reports and correspondence for the activities being performed as necessary. The CQA engineer shall submit the reports and correspondence to TAMKO for distribution.

CQA personnel shall prepare written records of all meetings, discussions, site investigations and directions related to the project. These reports shall be called "Confirmation Notices", be numbered consecutively, and shall be complete in identifying dates, locations, participating personnel, subjects discussed, observations made, conclusions drawn, decisions and recommendations. Each "Confirmation Notice" shall be forwarded to TAMKO within five working days following the transaction.

5.1 Daily Record Keeping

All observations and data from inspections will be recorded and will include the following information:

- a unique identifying inspection report number,
- a description of inspection activity,
- the location of the inspection activity and location of all samples collected,
- data on weather conditions,
- the type of inspection with reference to equipment and standard methods when appropriate,
- a record of observations or test data, with all necessary calculations,
- results of inspection activity,
- photographs taken,
- time of observation,
- personnel involved in inspection, and
- signatures of the CQA inspector and CQA engineer.

For those inspections identifying material or workmanship that does not meet the design goals, a problem identification and corrective measures report will be developed. This report will include the following information:

- a unique identifying report number,
- a detailed description of the problem,
- the location of the problem,
- the probable cause,

- how and when the problem was located, with reference to inspection data sheets,
- an estimate of how long problem has existed,
- suggested corrective measures,
- documentation of corrections, with reference to inspection data sheets,
- final results,
- photographs taken,
- suggested methods of preventing similar problems, and
- the signatures of the CQA inspector and the CQA engineer.

5.2 Quality Assurance Audits and Responses

An audit of this project for conformance with this CQA/QC Plan may be conducted at the request of TAMKO. The audit may include observations of procedures, discussions with project personnel, and review of field documentation.

If quality deficiencies are observed that warrant immediate attention, quality assurance response requests will be issued to the CQA engineer. A Response Form is used for recording responses to quality assurance deficiency notifications. The CQA engineer will retain one copy of the form when it is issued. TAMKO will complete and sign the form when a quality assurance response has been implemented, and will return the original to the CQA engineer to close the loop.

5.3 As-Built Documentation

The CQA engineer shall meet with the construction Contractors at completion of the construction to review the as-built drawings to verify that all information is being properly recorded.

5.4 Final Report

At the completion of the construction, the CQA engineer will prepare a final report summarizing all CQA documentation for the project. The report shall contain CQA engineer's certification that the project was completed in accordance with all applicable plans, TAMKO approved deviations and all other applicable contract documents. This final report will be submitted to TAMKO for distribution.

Confirmation Notice

Conf Notice Number:		Meeting Location:	
Meeting Date / Time:		Meeting Lead Name:	
Attendees / Full Name		Company	Phone Number
Topics Discussed			
1.			
2.			
3.			
4.			
5.			
6.			
Observations Made			
1.			
2.			
3.			
4.			
5.			
6.			
Agreed Upon Outcomes: Conclusions, Decisions, and Recommendations			
1.			
2.			
3.			
4.			
5.			
6.			
Role	Name	Company	Date
Meeting Lead			
CQA/QC engineer			
Contractor			
Owner		TAMKO	

Response Form

Response Number:		Response Date:	
Quality Deficiency Title:			
Quality Deficiency Detailed Description:			
Observations made of the cause of the deficiency:			
Corrective Measures Implemented:			
Additional checks or inspections to be completed:			
Revised Specifications or New Source Material Requirements			
Role	Name	Company	Date
Response Prepared By:			
CQA/QC engineer			
Contractor			
Owner		TAMKO	

Appendix F Daily Operating Record Form

DAILY OPERATING RECORD

TAMKO ASPHALT PRODUCTS, INC.
INDUSTRIAL LANDFILL
TUSCALOOSA, ALABAMA
PERMIT NUMBER:

DATE:_____

OPERATOR'S NAME:_____

MANAGER'S NAME:_____

WASTE QUANTITIES RECEIVED:

SLUDGE_____TRUCK LOADS = _____CUBIC YARDS

DEBRIS_____TRUCK LOADS = _____CUBIC YARDS

DAILY TOTAL_____TRUCK LOADS = _____CUBIC YARDS

LANDFILL SECTION BEING USED_____

DEBRIS CLEANED UP ____YES ____NO

WASTE SPREAD & COMPACTED ____YES ____NO

WASTE PROPERLY COVERED ____YES ____NO

VISITORS NAME: _____

REASON FOR VISIT: _____

REMARKS: _____
_____
_____
_____
_____
_____
_____

OPERATOR'S SIGNATURE: _____

Appendix G Monthly Inspection Form

TAMKO LANDFILL INSPECTION FORM

DATE: _____ TIME: _____(a.m./p.m.)

INSPECTED BY: _____

REQUIREMENT:	YES(NA)	NO	COMMENT
1. ACCESS CONTROL MEASURES	_____	_____	_____
2. THERE IS NO OPEN BURNING WITHOUT PERMIT	_____	_____	_____
3. ONLY APPROVED WASTE STREAMS ACCEPTED. PERMITTED WASTE STREAMS:	_____	_____	_____
4. THERE ARE NO FREE LIQUIDS/ CONTAINERS > 10 GALLONS	_____	_____	_____
5. THERE IS NO WATER POLLUTION OR UNAUTHORIZED DISCHARGE	_____	_____	_____
6. FACILITY BOUNDARY ADEQUATELY MARKED	_____	_____	_____
7. ALL WASTE COVERED WEEKLY/ MINIMUM 6 INCHES	_____	_____	_____
8. WASTE CONFINED TO SMALL AREA < 2 FOOT THICK LAYERS.	_____	_____	_____
9. APPROPRIATE SLOPE FOR OPERATING FACE	_____	_____	_____
10. ALL WASTE THOROUGHLY COMPACTED	_____	_____	_____
11. SCAVENGING PROHIBITED	_____	_____	_____
12. LITTER CONTROLLED	_____	_____	_____
13. ADEQUATE FIRE CONTROL MEASURES	_____	_____	_____
14. PERSONNEL FACILITIES (SHELTER-COMMUNICATIONS-LAVATORY-TOILET) PROVIDED	_____	_____	_____

REQUIREMENT:	YES (NA)	NO	COMMENT
15. ADEQUATE EQUIPMENT PROVIDED	_____	_____	_____
16. ALL-WEATHER ACCESS ROAD TO DUMPING FACE	_____	_____	_____
17. VECTOR CONTROL MEASURES ADEQUATE	_____	_____	_____
18. WET WEATHER PROVISIONS PROVIDED	_____	_____	_____
19. SITE ADEQUATELY SECURED	_____	_____	_____
20. INFORMATION SIGN LOCATED AT ENTRANCE	_____	_____	_____
21. GROUNDWATER MONITORING WELLS IN GOOD REPAIR.	_____	_____	_____
22. COMPLETED AREAS PROPERLY CLOSED	_____	_____	_____
23. RECORDS MAINTAINED ON DAILY VOLUMES	_____	_____	_____
24. ALL WASTE RECEIVED FROM PERMITTED SERVIC AREA	_____	_____	_____
25. PERMITTED VOLUME NOT EXCEEDED BY 20 % OR 100 TONS	_____	_____	_____

Appendix H Quarterly Volume Report Form

SOLID WASTE - QUARTERLY VOLUME REPORT

Name of Facility: TAMKO Asphalt Products, Inc., Tuscaloosa, AL Permit No. 63-17

For the Quarter Ending:					
Month:		Month:		Month:	
Date	Volume (cyds)	Date	Volume (cyds)	Date	Volume (cyds)
1		1		1	
2		2		2	
3		3		3	
4		4		4	
5		5		5	
6		6		6	
7		7		7	
8		8		8	
9		9		9	
10		10		10	
11		11		11	
12		12		12	
13		13		13	
14		14		14	
15		15		15	
16		16		16	
17		17		17	
18		18		18	
19		19		19	
20		20		20	
21		21		21	
22		22		22	
23		23		23	
24		24		24	
25		25		25	
26		26		26	
27		27		27	
28		28		28	
29		29		29	
30		30		30	
31		31		31	
Total		Total		Total	

Total for Quarter: _____ cyds
Average Daily Volume: _____ cyds per day

Report Submitted by: _____
Report Submitted on: _____

TAMKO®
BUILDING PRODUCTS LLC

September 11, 2020

Hunter Baker
Land Division
Alabama Department of Environmental Management
1400 Coliseum Boulevard
Montgomery, Alabama 36110

Subject: Solid Waste Disposal Facility Permit Modification Application
TAMKO Building Products LLC – Industrial Landfill in Tuscaloosa, Alabama
ADEM Permit No. : 63-17

Dear Mr. Baker:

As per your conversation with Tony Kilgore of TAMKO, TAMKO Building Products LLC – Tuscaloosa requests modification of Landfill Permit No. 63-17 to include dust suppressant coated sand as a waste type. You had indicated that an updated ADEM Form 439, updated Operations Manual Section 6.1.3, and a TCLP analysis would be required for the modification. Therefore, please find attached to this letter an updated ADEM Form 439, updated Operations Manual Section 6.1.3, a TCLP analysis and a check in the amount of $1,460 for the permit modification fee. Please note that our renewal application was submitted to ADEM on April 2, 2020.

As always, please feel free to contact Mark Tucker or me at 205-752-3555 should you have any questions or require additional information.

Best Regards,

For TAMKO Building Products LLC

Justin Allen
General Manufacturing Manager

Enclosure

2300 35th STREET TUSCALOOSA, AL 35401 205-752-3555 FAX 205-349-2049

FORM 439

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

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

2. **Facility Name** TAMKO Building Products LLC, Industrial Landfill Permit #63-17

3. **Applicant:**

   Name: TAMKO Building Products LLC

   Address: 2300 35th Street, Tuscaloosa, Alabama, 35401
   Attn: Mr. Justin Allen

   Telephone: (205) 752-3555

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

   Township 21 South **Range** 10 West
   Section 34 **County** Tuscaloosa

5. **Land Owner:**

   Name: TAMKO Building Products LLC

   Address: 220 West 4th Street, Joplin, MO 64801
   Attn: General Counsel

   Telephone: (800) 641-4691

   (Attach copy of agreement from landowner if applicable.)

6. Contact Person:

Name Mark Tucker

Position or Affiliation Landfill Manager, EH&S Manager

Address: 2300 35th Street, Tuscaloosa, Alabama, 35401

Telephone: (205) 342-6232

7. Size of Facility: ~21.5 Acres **Acres**

Size of Disposal Area(s): ~20 Acres **Acres**

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

The landfill will be strictly for use by TAMKO Building Products LLC

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

350 **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.):

Asphalt for building products, concrete, steel, and other inert construction and demolition waste as defined in ADEM Admin. Code 334-13-1-.03, and wastes consistent with the information provided in Section 6.1.3 of the August 2020 Operations Manual (attached to this form) and miscellaneous waste with prior ADEM approval.

SIGNATURE **DATE** 9/11/2020

OPERATIONS MANUAL SECTION 6.1.3

6.0 OPERATION PLAN

6.1 Administrative

6.1.1 Landfill Manager

TAMKO is the sole owner and operator of the industrial landfill. A landfill manager will be appointed who will be familiar with all aspects of the landfill operation including design, operation, controls, finances, reporting, closing and responding to regulatory agency communications. The landfill manager will be responsible for assigning operation personnel and/or sub-contraction services such as construction, operation and monitoring. The landfill manager will be appointed from the existing supervisory personnel based on duties/time commitment of the landfill manager.

6.1.2 Hours of Operation

The landfill will normally be operated on an as-needed basis during daylight hours on any day of the week.

6.1.3 Landfill Use and Waste Type

The landfill will be strictly for use by TAMKO. Solid waste will be accepted from the firm's plant and contiguous property in Tuscaloosa, Alabama. Waste to be landfilled includes Asphalt for building products, concrete, steel, and other inert construction and demolition waste as defined in ADEM Administrative Code 334-13-1-.03, dust collector bags/cartridges fume filter elements, fiberglass/polyester/organic mat materials, fiberglass/organic shingles, miscellaneous packing materials, roll roofing, fiberglass/organic roofing felt, solid materials, such as colored granite, coal/copper/steel slag, roofing granules/fines, volcanic ash, talc, mica, sand, dust suppressant coated sand, dolomite particles, and fiberglass mat process materials from the process operations and settling ponds, similar materials from fume filters and fiberglass and polyester baghouse bags, other roofing materials and wastes consistent with the information provided, and miscellaneous waste with prior ADEM approval

No hazardous, municipal, septic sewage or putrescible wastes will be accepted. No liquid wastes will be accepted, even if containerized.

TCLP ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

August 14, 2020

Ron Kelley
Tamko Building Products
601 N. High Street
Joplin, MO 64802

RE: Project: TCLP METALS
Pace Project No.: 60344435

Dear Ron Kelley:

Enclosed are the analytical results for sample(s) received by the laboratory on August 04, 2020. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Kansas City

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Jeffrey Shopper
jeff.shopper@pacelabs.com
1(913)563-1408
Project Manager

Enclosures

cc: Jen Johnson, Tamko Building Products
Tony Kilgore, Tamko Building Products

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

CERTIFICATIONS

Project: TCLP METALS
Pace Project No.: 60344435

Pace Analytical Services Kansas
9608 Loiret Boulevard, Lenexa, KS 66219
Missouri Inorganic Drinking Water Certification #: 10090
Arkansas Drinking Water
Arkansas Certification #: 20-020-0
Arkansas Drinking Water
Illinois Certification #: 200030
Iowa Certification #: 118
Kansas/NELAP Certification #: E-10116
Louisiana Certification #: 03055
Nevada Certification #: KS000212020-2
Oklahoma Certification #: 9205/9935
Florida: Cert E871149 SEKS WET
Texas Certification #: T104704407-19-12
Utah Certification #: KS000212019-9
Illinois Certification #: 004592
Kansas Field Laboratory Accreditation: # E-92587
Missouri SEKS Micro Certification: 10070

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

SAMPLE SUMMARY

Project: TCLP METALS
Pace Project No.: 60344435

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60344435001	**MSI SAND 9018**	Solid	08/03/20 14:00	08/04/20 08:50

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

SAMPLE ANALYTE COUNT

Project: TCLP METALS
Pace Project No.: 60344435

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60344435001	**MSI SAND 9018**	EPA 6010	HKC	7	PASI-K
		EPA 7470	MRV	1	PASI-K

PASI-K = Pace Analytical Services - Kansas City

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: TCLP METALS
Pace Project No.: 60344435

Sample: MSI SAND 9018 **Lab ID: 60344435001** Collected: 08/03/20 14:00 Received: 08/04/20 08:50 Matrix: Solid

Results reported on a "wet-weight" basis

Parameters	Results	Units	Report Limit	Reg. Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP, TCLP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
	Leachate Method/Date: EPA 1311; 08/12/20 15:42 Initial pH: 3.93; Final pH: 5.18								
	Pace Analytical Services - Kansas City								
Arsenic	**<0.50**	mg/L	0.50		1	08/13/20 14:35	08/14/20 11:58	7440-38-2	
Barium	**<2.5**	mg/L	2.5		1	08/13/20 14:35	08/14/20 11:58	7440-39-3	
Cadmium	**<0.050**	mg/L	0.050		1	08/13/20 14:35	08/14/20 11:58	7440-43-9	
Chromium	**<0.10**	mg/L	0.10		1	08/13/20 14:35	08/14/20 11:58	7440-47-3	
Lead	**<0.50**	mg/L	0.50		1	08/13/20 14:35	08/14/20 11:58	7439-92-1	
Selenium	**<0.50**	mg/L	0.50		1	08/13/20 14:35	08/14/20 11:58	7782-49-2	
Silver	**<0.10**	mg/L	0.10		1	08/13/20 14:35	08/14/20 11:58	7440-22-4	
7470 Mercury, TCLP	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
	Leachate Method/Date: EPA 1311; 08/12/20 15:42 Initial pH: 3.93; Final pH: 5.18								
	Pace Analytical Services - Kansas City								
Mercury	**<0.0020**	mg/L	0.0020	.2	1	08/13/20 15:06	08/14/20 10:23	7439-97-6	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: TCLP METALS
Pace Project No.: 60344435

QC Batch: 671000
QC Batch Method: EPA 7470
Analysis Method: EPA 7470
Analysis Description: 7470 Mercury TCLP
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60344435001

METHOD BLANK: 2714148 Matrix: Water
Associated Lab Samples: 60344435001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	mg/L	<0.0020	0.0020	08/14/20 10:07	

LABORATORY CONTROL SAMPLE: 2715080

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	mg/L	0.015	0.015	102	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2715081 2715082

Parameter	Units	60344258001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	mg/L	ND	0.015	0.015	0.015	0.015	100	100	75-125	1	20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: TCLP METALS
Pace Project No.: 60344435

QC Batch: 671029
QC Batch Method: EPA 3010
Analysis Method: EPA 6010
Analysis Description: 6010 MET TCLP
Laboratory: Pace Analytical Services - Kansas City

Associated Lab Samples: 60344435001

METHOD BLANK: 2714148 Matrix: Water
Associated Lab Samples: 60344435001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic	mg/L	<0.50	0.50	08/14/20 11:41	
Barium	mg/L	<2.5	2.5	08/14/20 11:41	
Cadmium	mg/L	<0.050	0.050	08/14/20 11:41	
Chromium	mg/L	<0.10	0.10	08/14/20 11:41	
Lead	mg/L	<0.50	0.50	08/14/20 11:41	
Selenium	mg/L	<0.50	0.50	08/14/20 11:41	
Silver	mg/L	<0.10	0.10	08/14/20 11:41	

LABORATORY CONTROL SAMPLE: 2715249

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	mg/L	10	10.1	101	80-120	
Barium	mg/L	10	9.9	99	80-120	
Cadmium	mg/L	10	9.9	99	80-120	
Chromium	mg/L	10	10.2	102	80-120	
Lead	mg/L	10	10.0	100	80-120	
Selenium	mg/L	10	10.2	102	80-120	
Silver	mg/L	5	5.0	99	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2715250 2715251

Parameter	Units	60344258001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic	mg/L	ND	10	10	10.3	10.4	103	104	75-125	1	20	
Barium	mg/L	ND	10	10	10.1	10.1	101	101	75-125	0	20	
Cadmium	mg/L	ND	10	10	10.1	10.0	101	100	75-125	0	20	
Chromium	mg/L	ND	10	10	10.4	10.4	103	104	75-125	0	20	
Lead	mg/L	ND	10	10	10.3	10.3	103	103	75-125	0	20	
Selenium	mg/L	ND	10	10	10.4	10.4	104	104	75-125	1	20	
Silver	mg/L	ND	5	5	5.1	5.0	101	101	75-125	1	20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALIFIERS

Project: TCLP METALS
Pace Project No.: 60344435

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: TCLP METALS
Pace Project No.: 60344435

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60344435001	**MSI SAND 9018**	EPA 3010	671029	EPA 6010	671064
60344435001	**MSI SAND 9018**	EPA 7470	671000	EPA 7470	671111

Pace Analytical®
www.pacelabs.com

Sample Condition Upon Receipt

WO#: 60344435

60344435

Client Name: Tamko

Courier: FedEx ☑ UPS ☐ VIA ☐ Clay ☐ PEX ☐ ECI ☐ Pace ☐ Xroads ☐ Client ☐ Other ☐

Tracking #: 4628 4769 5750 Pace Shipping Label Used? Yes ☐ No ☑

Custody Seal on Cooler/Box Present: Yes ☑ No ☐ Seals intact: Yes ☑ No ☐

Packing Material: Bubble Wrap ☐ Bubble Bags ☑ Foam ☐ None ☐ Other ☐

Thermometer Used: T299 **Type of Ice:** Wet Blue None ☑

Cooler Temperature (°C): **As-read** 20.0 **Corr. Factor** +0.9 **Corrected** 20.9

Date and initials of person examining contents: 8/4/20 HF

Temperature should be above freezing to 6°C

Chain of Custody present:	☑Yes ☐No ☐N/A	
Chain of Custody relinquished:	☑Yes ☐No ☐N/A	
Samples arrived within holding time:	☑Yes ☐No ☐N/A	
Short Hold Time analyses (<72hr):	☐Yes ☑No ☐N/A	
Rush Turn Around Time requested:	☐Yes ☑No ☐N/A	
Sufficient volume:	☑Yes ☐No ☐N/A	
Correct containers used:	☑Yes ☐No ☐N/A	
Pace containers used:	☑Yes ☐No ☐N/A	
Containers intact:	☑Yes ☐No ☐N/A	
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	☐Yes ☑No ☐N/A	
Filtered volume received for dissolved tests?	☐Yes ☑No ☐N/A	
Sample labels match COC: Date / time / ID / analyses	☑Yes ☐No ☐N/A	
Samples contain multiple phases? Matrix: SL	☐Yes ☑No ☐N/A	
Containers requiring pH preservation in compliance? (HNO_3, H_2SO_4, HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO) LOT#	☐Yes ☐No ☑N/A	List sample IDs, volumes, lot #'s of preservative and the date/time added.
Cyanide water sample checks: Lead acetate strip turns dark? (Record only)	☐Yes ☐No	
Potassium iodide test strip turns blue/purple? (Preserve)	☐Yes ☐No	
Trip Blank present:	☐Yes ☑No ☐N/A	
Headspace in VOA vials (>6mm):	☐Yes ☐No ☑N/A	
Samples from USDA Regulated Area: State:	☐Yes ☐No ☑N/A	
Additional labels attached to 5035A / TX1005 vials in the field?	☐Yes ☐No ☑N/A	

Client Notification/ Resolution: Copy COC to Client? Y / N Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: Jeffrey Shopper Date: _____

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CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page: of

Section A — Required Client Information:

Company:	Tamko Roofing Products
Address:	3001 Newman Rd.
	Joplin, MO 64801
Email To:	
Phone: (417) 624-6644	Fax:
Requested Due Date/TAT:	

Section B — Required Project Information:

Report To:	Ron Kelly
Copy To:	Tony Kilgore
Purchase Order No.:	
Project Name:	TCLP Metals
Project Number:	

Section C — Invoice Information:

Attention:	
Company Name:	
Address:	
Pace Quote Reference:	
Pace Project Manager:	Jeffrey Shopper
Pace Profile #:	1014-7

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER _____

Site Location STATE: MO

Section D — Required Client Information

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

Requested Analysis Filtered (Y/N)

ITEM #	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED: COMPOSITE START DATE	COLLECTED: COMPOSITE START TIME	COLLECTED: COMPOSITE END/GRAB DATE	COLLECTED: COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	Preservatives: H_2SO_4	Preservatives: HNO_3	Preservatives: HCl	Preservatives: NaOH	Preservatives: $Na_2S_2O_3$	Preservatives: Methanol	Preservatives: Other	Y/N	Analysis Test: TCLP Metals	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	SL	G	8/3/20	1:55	8/3/20	2:00	RT	1	1									X	N	
2																				
3																				
4																				
5																				
6																				
7																				
8																				
9																				
10																				
11																				
12																				

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
	Cyril CHEVILLARD	8/3/20	2:05	Henry Fowler / MSI	8/4/20	0850	20.9	N	Y	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Cyril CHEVILLARD

SIGNATURE of SAMPLER: [signature]

DATE Signed (MM/DD/YY): 8/3/20

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

FEE SCHEDULE E
SOLID WASTE PERMITS/REGISTRATION

Type of Activity	Initial Issuance	Modification	Reissuance
Medical Waste Transfer Facility	$2,035	$725	$1,330
New Technology Review	$10,205	------	------
Commercial Treatment Facility	$16,460	$7,280	$9,180
Commercial Transportation of Medical Waste	$3,490	$1,460	$2,035
Storage of Untreated Medical Waste	$2,630	$665	$1,960
Municipal Solid Waste Landfill/ CCR Unit	$83,880	------	$37,270
Minor Mod. (1)*	------	$3,275	------
Major Mod. (2)*	------	$32,615	------
Construction/Demolition Waste Landfill	$7,145	------	$5,400
Minor Mod. (1)*	------	$1,460	------
Major Mod. (2)*	------	$2,915	------
Industrial Waste Landfill	$12,670	------	$8,150
Minor Mod. (1)*	------	$1,460	------
Major Mod. (2)*	------	$4,375	------
Compost Facility	$4,860		$3,670
Minor Mod.	------	$1,225	------
Major Mod	------	$1,945	------
Additive Fees			
Geological Review	$4,865	$3,275	$3,275
Solid Waste Disposal Notification	$215	$215	$215
Variance Request	$1,460	$1,460	$1,460
Beneficial Use Facility Registration	$1,015		$510

(1)*. These are modifications as included in ADEM Admin. Code rule 335-13-5-.06(2).

(2)*. These are modifications as included in ADEM Admin. Code rule 335-13-5-.06(1).

ALABAMA
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

(334) 271-7700 1400 Coliseum Blvd. Montgomery, AL 36110
mailing address: Post Office Box 301463, Montgomery, AL 36130-1463

Receipt Confirmation Page

ADEM requires that when you pay online, you MUST print out the confirmation information and submit it as proof of payment with your permit application or any other correspondence requiring proof of payment.

Payment Summary	
Payment Item	**Fee**
Online Payment - 09/30/2020 10:43:24	$1,460.00
Total Fee through Alabama.gov (more info)	**$1,503.80**

Receipt Confirmation Number: 20200930000012102

General Invoice Information

Choose the type of payment you are making: 5359-LAND- SOLID WASTE LANDFILL PERMIT
Description of Other Fees:
Additional Information/Fee Description: Permit Modification Fee for Landfill Permit 63-17
Number on your ADEM invoice:
Date on your ADEM invoice:

Contact Information

Company/Facility or Individual Name: TAMKO Building Products LLC
Facility Permit Number (if applicable): 63-17
Company or Facility Phone: 205-759-5741
Contact Person: Tony Kilgore
Contact Phone: 417-437-3327
Contact email address: tony_kilgore@tamko.com
Name of an ADEM Program Staff Member (if known): Hunter Baker

Policy Related Questions: 334-271-7700
Application Support: 866-353-3468 or support@alabamainteractive.org

Version 2.0.0

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

November 09, 2020

Ron Kelley
Tamko Building Products
601 N. High Street
Joplin, MO 64802

RE: Project: TCLP METALS TRIAL SAND
Pace Project No.: 60353053

Dear Ron Kelley:

Enclosed are the analytical results for sample(s) received by the laboratory on October 30, 2020. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Kansas City

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Jeffrey Shopper
jeff.shopper@pacelabs.com
1(913)563-1408
Project Manager

Enclosures

cc: Jen Johnson, Tamko Building Products
Tony Kilgore, Tamko Building Products

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

CERTIFICATIONS

Project: TCLP METALS TRIAL SAND
Pace Project No.: 60353053

Pace Analytical Services Kansas
9608 Loiret Boulevard, Lenexa, KS 66219
Missouri Inorganic Drinking Water Certification #: 10090
Arkansas Drinking Water
Arkansas Certification #: 20-020-0
Arkansas Drinking Water
Illinois Certification #: 200030
Iowa Certification #: 118
Kansas/NELAP Certification #: E-10116
Louisiana Certification #: 03055
Nevada Certification #: KS000212020-2
Oklahoma Certification #: 9205/9935
Florida: Cert E871149 SEKS WET
Texas Certification #: T104704407-19-12
Utah Certification #: KS000212019-9
Illinois Certification #: 004592
Kansas Field Laboratory Accreditation: # E-92587
Missouri SEKS Micro Certification: 10070

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

SAMPLE SUMMARY

Project: TCLP METALS TRIAL SAND
Pace Project No.: 60353053

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60353053001	**TRIAL SAND**	Solid	10/29/20 10:00	10/30/20 08:56

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SAMPLE ANALYTE COUNT

Project: TCLP METALS TRIAL SAND
Pace Project No.: 60353053

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60353053001	**TRIAL SAND**	EPA 6010	HKC	7	PASI-K
		EPA 7470	MRV	1	PASI-K

PASI-K = Pace Analytical Services - Kansas City

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(913)599-5665

ANALYTICAL RESULTS

Project: TCLP METALS TRIAL SAND
Pace Project No.: 60353053

Sample: TRIAL SAND **Lab ID: 60353053001** Collected: 10/29/20 10:00 Received: 10/30/20 08:56 Matrix: Solid

Results reported on a "wet-weight" basis

Parameters	Results	Units	Report Limit	Reg. Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP, TCLP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
	Leachate Method/Date: EPA 1311; 11/04/20 15:20 Initial pH: 6.16; Final pH: 5.29								
	Pace Analytical Services - Kansas City								
Arsenic	**<0.50**	mg/L	0.50	5	1	11/05/20 15:40	11/06/20 12:54	7440-38-2	
Barium	**<2.5**	mg/L	2.5	100	1	11/05/20 15:40	11/06/20 12:54	7440-39-3	
Cadmium	**<0.050**	mg/L	0.050	1	1	11/05/20 15:40	11/06/20 12:54	7440-43-9	
Chromium	**<0.10**	mg/L	0.10	5	1	11/05/20 15:40	11/06/20 12:54	7440-47-3	
Lead	**1.6**	mg/L	0.50	5	1	11/05/20 15:40	11/06/20 12:54	7439-92-1	
Selenium	**<0.50**	mg/L	0.50	1	1	11/05/20 15:40	11/06/20 12:54	7782-49-2	
Silver	**<0.10**	mg/L	0.10	5	1	11/05/20 15:40	11/06/20 12:54	7440-22-4	
7470 Mercury, TCLP	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
	Leachate Method/Date: EPA 1311; 11/04/20 15:20 Initial pH: 6.16; Final pH: 5.29								
	Pace Analytical Services - Kansas City								
Mercury	**<0.0020**	mg/L	0.0020	.2	1	11/05/20 16:30	11/06/20 13:09	7439-97-6	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: TCLP METALS TRIAL SAND
Pace Project No.: 60353053

QC Batch: 687607
QC Batch Method: EPA 7470
Analysis Method: EPA 7470
Analysis Description: 7470 Mercury TCLP
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60353053001

METHOD BLANK: 2776769 Matrix: Water
Associated Lab Samples: 60353053001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	mg/L	<0.0020	0.0020	11/06/20 12:46	

LABORATORY CONTROL SAMPLE: 2778816

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	mg/L	0.015	0.014	95	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2778817 2778818

Parameter	Units	60352961001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	mg/L	ND	0.015	0.015	0.014	0.015	95	97	75-125	2	20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: TCLP METALS TRIAL SAND
Pace Project No.: 60353053

QC Batch: 687511
QC Batch Method: EPA 3010
Analysis Method: EPA 6010
Analysis Description: 6010 MET TCLP
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60353053001

METHOD BLANK: 2776769 Matrix: Water
Associated Lab Samples: 60353053001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic	mg/L	<0.50	0.50	11/06/20 12:29	
Barium	mg/L	<2.5	2.5	11/06/20 12:29	
Cadmium	mg/L	<0.050	0.050	11/06/20 12:29	
Chromium	mg/L	<0.10	0.10	11/06/20 12:29	
Lead	mg/L	<0.50	0.50	11/06/20 12:29	
Selenium	mg/L	<0.50	0.50	11/06/20 12:29	
Silver	mg/L	<0.10	0.10	11/06/20 12:29	

LABORATORY CONTROL SAMPLE: 2778349

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	mg/L	10	10.2	102	80-120	
Barium	mg/L	10	9.1	91	80-120	
Cadmium	mg/L	10	9.6	96	80-120	
Chromium	mg/L	10	9.8	98	80-120	
Lead	mg/L	10	9.9	99	80-120	
Selenium	mg/L	10	10.1	101	80-120	
Silver	mg/L	5	4.9	99	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2778350 2778351

Parameter	Units	60352961001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic	mg/L	ND	10	10	10.3	10.1	103	100	75-125	2	20	
Barium	mg/L	ND	10	10	9.6	9.4	93	91	75-125	2	20	
Cadmium	mg/L	ND	10	10	9.8	9.5	98	95	75-125	2	20	
Chromium	mg/L	ND	10	10	10.1	9.8	101	98	75-125	3	20	
Lead	mg/L	ND	10	10	10.1	9.9	101	99	75-125	2	20	
Selenium	mg/L	ND	10	10	10.1	9.9	101	99	75-125	2	20	
Silver	mg/L	ND	5	5	5.1	5.0	102	99	75-125	3	20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALIFIERS

Project: TCLP METALS TRIAL SAND
Pace Project No.: 60353053

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: TCLP METALS TRIAL SAND
Pace Project No.: 60353053

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60353053001	**TRIAL SAND**	EPA 3010	687511	EPA 6010	687611
60353053001	**TRIAL SAND**	EPA 7470	687607	EPA 7470	687628

Pace Analytical
www.pacelabs.com

Sample Condition Upon Receipt

WO# : 60353053

60353053

Client Name: Tamko

Courier: FedEx ☐ UPS ☐ VIA ☐ Clay ☐ PEX ☐ ECI ☐ Pace ☐ Xroads ☐ Client ☐ Other ☐

Tracking #: 1707 5998 0024 Pace Shipping Label Used? Yes ☐ No ☐

Custody Seal on Cooler/Box Present: Yes ☐ No ☐ Seals intact: Yes ☐ No ☐ 10/30 20 HT

Packing Material: Bubble Wrap ☐ Bubble Bags ☐ Foam ☐ None ☐ Other ☐

Thermometer Used: T296 **Type of Ice:** Wet Blue None

Cooler Temperature (°C): As-read 17.8 Corr. Factor -0.4 Corrected 17.4

Date and initials of person examining contents: 10/30/20 HT

Temperature should be above freezing to 6°C

Chain of Custody present:	☐Yes ☐No ☐N/A	
Chain of Custody relinquished:	☐Yes ☐No ☐N/A	
Samples arrived within holding time:	☐Yes ☐No ☐N/A	
Short Hold Time analyses (<72hr):	☐Yes ☐No ☐N/A	
Rush Turn Around Time requested:	☐Yes ☐No ☐N/A	
Sufficient volume:	☐Yes ☐No ☐N/A	
Correct containers used:	☐Yes ☐No ☐N/A	
Pace containers used:	☐Yes ☐No ☐N/A	
Containers intact:	☐Yes ☐No ☐N/A	
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	☐Yes ☐No ☐N/A	
Filtered volume received for dissolved tests?	☐Yes ☐No ☐N/A	
Sample labels match COC: Date / time / ID / analyses	☐Yes ☐No ☐N/A	
Samples contain multiple phases? Matrix: SL	☐Yes ☐No ☐N/A	
Containers requiring pH preservation in compliance? (HNO_3, H_2SO_4, HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO) LOT#	☐Yes ☐No ☐N/A	List sample IDs, volumes, lot #'s of preservative and the date/time added.
Cyanide water sample checks: Lead acetate strip turns dark? (Record only)	☐Yes ☐No	
Potassium iodide test strip turns blue/purple? (Preserve)	☐Yes ☐No	
Trip Blank present:	☐Yes ☐No ☐N/A	
Headspace in VOA vials (>6mm):	☐Yes ☐No ☐N/A	
Samples from USDA Regulated Area: State:	☐Yes ☐No ☐N/A	
Additional labels attached to 5035A / TX1005 vials in the field?	☐Yes ☐No ☐N/A	

Client Notification/ Resolution: Copy COC to Client? Y / N Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: Jeffrey Shopper Date: _____

Pace Analytical
www.pacelabs.com

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page: 1 of 1

Section A — **Required** Client Information:

Company:	TAMKO Building Products LLC
Address:	601 High St
	Joplin, MO 64801
Email To:	tony_kilgore@tamko.com
Phone:	Fax:
Requested Due Date/TAT:	

Section B — **Required** Project Information:

Report To:	Tony Kilgore
Copy To:	
Purchase Order No.:	
Project Name:	TCLP Metals Trial Sand
Project Number:	

Section C — Invoice Information:

Attention:	
Company Name:	
Address:	
Pace Quote Reference:	
Pace Project Manager:	Jeffrey Shopper
Pace Profile #:	

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER _____

Site Location STATE: MO

Section D — **Required** Client Information

SAMPLE ID
(A-Z, 0-9 / , -)
Sample IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

ITEM #	Section D Required Client Information (SAMPLE ID)	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED: COMPOSITE START DATE	COLLECTED: COMPOSITE START TIME	COLLECTED: COMPOSITE END/GRAB DATE	COLLECTED: COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	Preservatives: H_2SO_4	Preservatives: HNO_3	Preservatives: HCl	Preservatives: NaOH	Preservatives: $Na_2S_2O_3$	Preservatives: Methanol	Preservatives: Other	Analysis Test Y/N	Analysis Test: TCLP Metals	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	Trial Sand					10/29/20	10:00		1	1									X	N	60353053
2																					
3																					
4																					
5																					
6																					
7																					
8																					
9																					
10																					
11																					
12																					

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
	Ron Kelley	10/29/20	11:00	Henry Fowler/PASI	10/30/20	0852	17.4	N	N	Y

SAMPLER NAME AND SIGNATURE			Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
PRINT Name of SAMPLER:	Ron Kelley					
SIGNATURE of SAMPLER:	Ron Kelley	DATE Signed (MM/DD/YY): 10/29/20				

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.