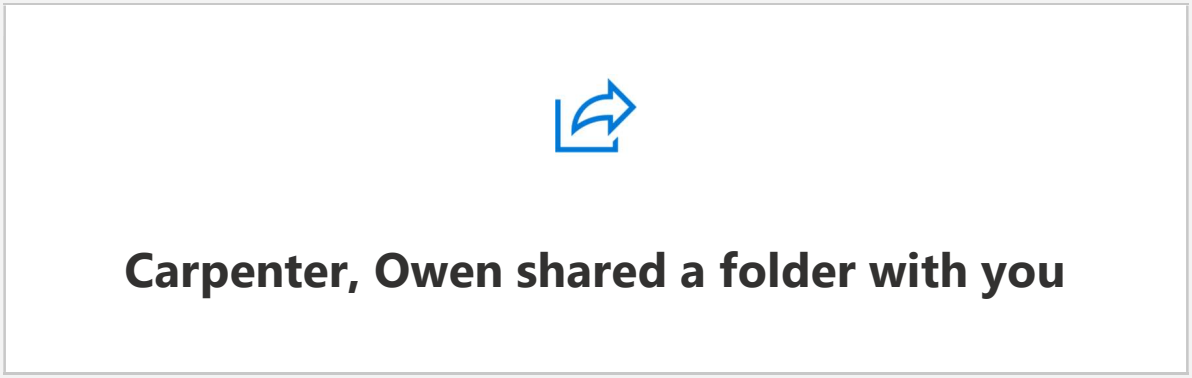
Haley Griffith (adpce.ad)

Subject: RE: Carpenter, Owen shared the folder "2025 Class 1 and Compost AEIRs" with you

From: Carpenter, Owen <Owen.Carpenter@terracon.com>
Sent: Tuesday, March 31, 2026 4:24 PM
To: Greg Banic (adpce.ad) <greg.banic@arkansas.gov>
Subject: Carpenter, Owen shared the folder "2025 Class 1 and Compost AEIRs" with you

CAUTION: External Email



Carpenter, Owen shared a folder with you

Please see accompanying email with download link. This link can also be used to download City of Little Rock Facility calendar year 2025 AEIRs.

2025 Class 1 and Compost AEIRs

This link only works for the direct recipients of this message.

Open

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Private and confidential as detailed here (www.terracon.com/disclaimer). If you cannot access the hyperlink, please e-mail sender.

2025 Annual Engineering Inspection Report

City of Little Rock

Yard Waste Compost Facility

March 31, 2026 | Project No. 35267002

Prepared for:

CITY OF LITTLE ROCK

City of Little Rock – Dept of Public Works
Division of Solid Waste Services
10803 Ironton Cutoff
Little Rock, AR 72206

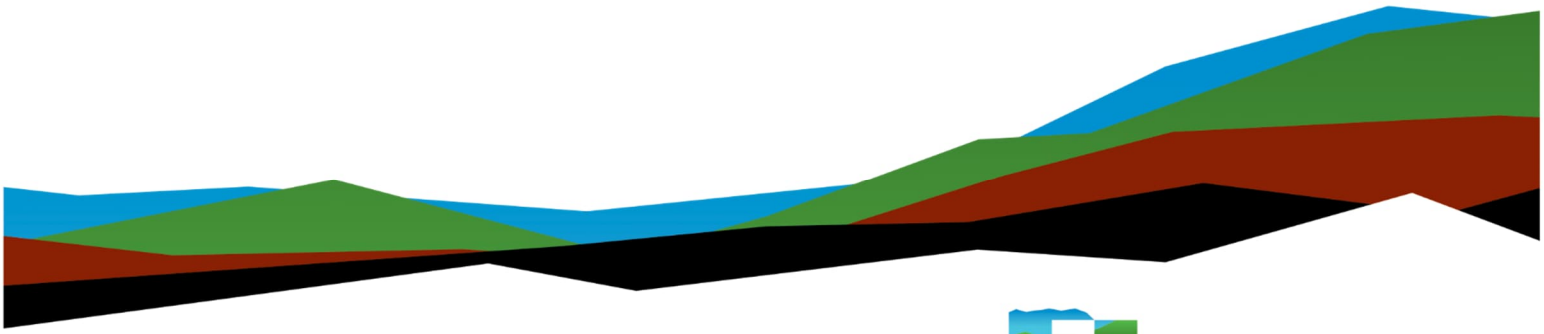

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TABLE OF CONTENTS

LIST OF APPENDICES

PROFESSIONAL ENGINEER'S CERTIFICATION

As required by *Arkansas Regulation 22* (*Reg.22.423*), representatives from Terracon Consultants, Inc. inspected the City of Little Rock Yard Waste Compost Facility (Facility) on March 19, 2026. During this inspection, general Facility operating practices and procedures in relation to *Arkansas Regulation 22* and the Facility's permit were reviewed. Based on site visits, review of the facility operating records, and discussions with the landfill owner/operator, it is my professional opinion that the Facility is being operated and maintained in compliance with *Arkansas Regulation 22* and the Facility's solid waste permit, unless stated herein. This opinion is contingent on the fact that all information supplied to the signatory authority as of the date of this certification is unquestionably accurate and provided in good faith.

March 31, 2026

F. Owen Carpenter, P.E., P.G. — Date

Arkansas Professional Engineer No. 8653

1.0 INTRODUCTION

The City of Little Rock (CLR) owns and operates a municipal solid waste management facility at 10803 Ironton Cutoff Road in Pulaski County, Arkansas. Facilities at this complex include a Class 1 landfill, Class 4 landfill, and yard waste composting site, all permitted on April 27, 1993, by the Arkansas Department of Energy and Environment's Division of Environmental Quality (DEQ) under Permit No. 0266-S. The complex also includes an administration building, shop building, records storage building, scale house, solid waste collection section building, vehicle wash site, fuel station, leachate pretreatment system, and a cart maintenance facility. The solid waste management facility is operated by the Solid Waste Services Division of the CLR Department of Public Works. On October 17, 2008, a separate permit for the yard waste compost facility, Permit No. 0031-SCYW, was issued to CLR. The permit was renewed for an additional 5-year period on May 31, 2023 (Document ID #83480).

DEQ policy requires that all permitted compost facilities prepare an annual report that addresses the quantity of compost produced. This report documents findings of a site inspection by the Engineer on March 19, 2026, and compliance with annual reporting requirements. **APPENDIX A** presents correspondence with DEQ during the year. **APPENDIX B** shows photos from the inspection.

2.0 OPERATIONS SUMMARY

The composting facility is a 20-acre, asphalt-paved site where yard waste is aerobically composted using the windrow composting method. The service area is the city of Little Rock. Incoming yard waste is weighed at the scale house and the source and tonnage recorded in electronic and paper records. The composting process consists of a four-step process as described in the sections below.

2.1 Preliminary Processing

Incoming yard waste is unloaded at a designated receiving area. Unacceptable items or oversized items such as large tree trunks are sorted out and disposed at the landfill. The remaining yard waste is then processed by grinding for size reduction.

2.2 Active Composting

The active compost process begins by constructing windrows of ground yard waste with front-end loaders. As the compost process progresses, windrows are periodically turned using a windrow turning machine or front-end loaders. Water is added as needed and pile temperature is monitored during the process.

2.3 Curing

As the active composting process progresses, windrows are gradually combined until finally, a large curing pile is constructed for final compost curing. The curing process allows time for the compost process to progress to maturity.

2.4 Final Screening

As the curing process is complete the compost is screened to reduce particle size and screen out plastic bag remnants and oversized materials. Final screening produces a uniform, high-quality material suitable for use as a soil amendment. Screen rejects are disposed of in the Class 1 landfill.

3.0 PROCESSED QUANTITIES

In addition to compost, this facility produces mulch (ground hard and soft wood). The scale house tracks the total tons of finished products (compost and mulch) removed from the site, the inert reject material that is sorted out and disposed of in the Class 1 landfill, and the yard and tree waste received at the facility. In addition, CLR tracks the tons of ground yard waste utilized as alternate daily cover (ADC) at the Class 1 landfill. The Facility received 28,327.96 tons of yard waste for the 2025 calendar year. The table in **APPENDIX D** shows the tonnage handled for the 2025 calendar year, including the Class 1 Landfill, Class 4 Landfill, and the Yard Waste Compost Facility. **APPENDIX D** also includes the total processed yard waste removed from the facility for the 2025 calendar year.

4.0 COMPLIANCE WITH OPERATING REQUIREMENTS

Based on quarterly inspections by DEQ, the yard waste compost site is taking corrective measures to maintain compliance with the operating requirements of Regulation No. 22 and permit conditions. Correspondence with DEQ is included in **APPENDIX A**.

4.1 Blowing Litter

Yard waste including leaves, grass, and shrubbery pruning’s are typically collected in plastic bags. During the composting process, some blowing litter problems are generated due to the grinding of the above plastic bags. To address blowing litter problems, CLR installed a perimeter fence in January 2002. Removal of ground plastic trapped by the perimeter fence is carried out regularly at the facility.

4.2 Site Inventory

Site inventory is the comparison between the amount of incoming material (yard and tree waste) and the amount of material leaving the composting site, which is composed of finished products (compost and mulch), compost rejects, and ground yard waste utilized as alternate daily cover material at the Class 1 landfill. The facility had several piles of unprocessed waste, ground waste and compost. The materials were well-segregated. Processed material was being hauled to the Class 1 landfill for use as Alternative Daily Cover (ADC) during the inspection.

4.3 Pond Maintenance

City crews perform ongoing maintenance activities on the compost runoff pond such as mowing of the cover vegetation of the pond's banks. The pond and perimeter swales were in good condition at the time of the inspection. Minor amounts of litter were present in the east swale from traffic to the Class 1 and Class 4 landfills. The facility routinely collects and disposes of this litter.

5.0 PROPOSED CHANGES TO THE OPERATING PLAN

An NOI for a permit renewal was submitted on 8/26/2024. No changes in the current method of operations were required.

6.0 STORMWATER CONTROLS

Stormwater controls are in place and functioning. On October 25, 2006, DEQ issued NPDES Industrial Stormwater General Permit (IGP) No. ARR000220, and the most recent permit renewal was issued April 24, 2020. The IGP Stormwater Pollution Prevention Plan (SWPPP), facility inspections, discharge monitoring results and reports, including the Stormwater Annual Report (SWAR), are included in the facility operating record to be made available to DEQ upon request.

The NPDES permit allows the discharge of the CLR composting runoff pond into "waters of the United States." On November 7, 2006, CLR began discharging the compost runoff pond into a ditch located just north of the pond. As a backup system, stormwater from the compost runoff pond can be diverted to the leachate pond or directly to the city's sewer line.

7.0 CLOSURE COST

The Closure Cost for the Yard Waste Compost Facility is shown in Table 5.7 of Section 5.5 of the **APPENDIX C**. The Closure Cost is estimated to be $225,627.52. This cost includes a unit cost to process and distribute the remaining yard waste of $25.7 per ton.

8.0 CORRECTIVE ACTIONS

The yard waste and compost facility have been taking the following corrective measures to ensure compliance with ADEQ. Correspondence can be found in **APPENDIX A:**

1st Quarter Inspection (2/27/2025)

- **Category 1, Regulation 804** – Permit expired.
- **Category 1, Regulation 805(b)(2); (c)(6)** – Updated Operating Plan is required.

1st Quarter Inspection Response

- **Category 1, Regulation 804** – An NOI was submitted on 8/26/2024.
- **Category 1, Regulation 805(b)(2); (c)(6)** – See response in Appendix A dated March 26, 2025.

2nd Quarter Inspection

- N/A

2nd Quarter Inspection Response

- N/A

3rd Quarter Inspection

- N/A

3rd Quarter Inspection Response

- N/A

4th Quarter Inspection

- N/A

4th Quarter Inspection Response

- N/A

Appendix A:

Department Correspondence

From: Owens, Bernard <sowens@littlerock.gov>
Sent: Wednesday, March 26, 2025 12:36 PM
To: Casey Jackson
Cc: Kimberly Davenport (adpce.ad); Bower, Trent A.
Subject: Re: City of Little Rock CY - Q1 Inspection report - With violations
Attachments: 2-27-2025 ADEQ 1Q compost inspection response.docx; DRAFT COLR Bid Document Final FLATTENED (002).PDF

Good Afternoon,

Here is response to Compost Q1 inspection. Let me know if you need anything else.

Bernard Owens
Solid Waste Services Manager
Department of Public Works | Solid Waste
O: 501-888-4492 | C: 5014121382
sowens@littlerock.gov

From: Kimberly Davenport (adpce.ad) <Kimberly.Davenport@arkansas.gov>
Sent: Monday, March 3, 2025 11:31 AM
To: Owens, Bernard <sowens@littlerock.gov>
Cc: Casey Jackson <Casey.Jackson@arkansas.gov>; Christopher Krou (adpce.ad) <Christopher.Krou@arkansas.gov>; Ryan Hayden (adpce.ad) <Ryan.Hayden@arkansas.gov>; Nicholas Jones (adpce.ad) <Nicholas.Jones@arkansas.gov>; Charles Hurt (adpce.ad) <Charles.Hurt@arkansas.gov>; Greg Banic (adpce.ad) <Greg.Banic@arkansas.gov>
Subject: City of Little Rock CY - Q1 Inspection report - With violations

EXTERNAL EMAIL - This email was sent by a person from outside your organization. Exercise caution when clicking links, opening attachments or taking further action, before validating its authenticity.

Attached:2/3/2025 - City of Little Rock CY - Q1 Inspection report - With violations

Kim Davenport | Solid Waste Inspector Supervisor
Division of Environmental Quality | Office of Land Resources
Regulated Waste Program
5301 Northshore Drive | North Little Rock, AR 72118
t: 501.682.0586 | c: 501.837.6911 | e: Kimberly.Davenport@arkansas.gov

ARKANSAS
ENERGY & ENVIRONMENT

March 26, 2025

Casey Jackson, Inspector
Arkansas Department of Environmental Quality
Solid Waste Management Division
5301 Northshore Drive
North Little Rock, AR 72118-5317

RE: Inspection conducted on February 27, 2025
AFIN 60-01071
Permit Number 0031-SCYW

Dear Mr. Jackson:

In response to your inspection of February 27, 2025, the following is a list of comments and corrective actions to be undertaken on the City of Little Rock's Compost Violations:

AFIN 60-01071 Permit Number 0031-SCYW,

- ***Category 1, Regulation 804: Application Requirements.*** Permit expired. An NOI was submitted via eportal and is awaiting signature. Electronic signature approval was hand delivered 7/3/2024. Still awaiting signature approval. The City had consultant Terracon Matt J. Acree hand delivered hard copy signed by him and myself on 8/26/2024.

- ***Category 1, Regulation 805(b)(2);(c)(6): Conforms to Operating Plan.*** An updated operating plan describing current operations is required. – The City has a contract to complete this. The City is currently updating the operating plan to revise the description of the facility. The City has also completed a design to rehabilitate the facility and hopefully will be constructing the improvements soon. Draft of our Operating plans have to be revised due to the construction improvements the City plans on pursuing by mid Summer. The city has not been composting due to needing these improvements completed. Draft will be submitted after construction bid is selected.

Thank you for your cooperation in this matter. If I can be of any further assistance please contact me at your convenience.

Sincerely,

Bernard Owens

City of Little Rock

Solid Waste Services Manager

Bid Documents and Specifications

Compost Pad Improvement
City of Little Rock
10803 Ironton Cut Off Road
Little Rock, Arkansas

DRAFT

September 2023
Project No. 35237144

Prepared for:
City of Little Rock
10803 Ironton Cut Off Road
Little Rock, Arkansas

Prepared by:
Terracon Consultants, Inc.
25809 Interstate 30 South
Bryant, Arkansas 72022
(501) 249-4334

terracon.com

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BID FORM

BID FORM
CITY OF LITTLE ROCK
COMPOST PAD CONSTRUCTION - SEPTEMBER 2023

Item No.	Description	Unit	Estimated Quantities	Bid Unit Price	Bid Price
1	Mobilization/Demobilization	LS	1		$ -
2	Erosion Controls	LS	1		$ -
3	Subgrade (4" Leveling Layer)	SF	628,000		$ -
	Phase 1	SF	163,500		
	Phase 2	SF	176,000		
	Phase 3	SF	142,500		
	Phase 4	SF	146,000		
4	Geosynthetics				
4a	6 oz/sf Nonwoven Geotextile	SF	628,000		$ -
4b	Tensar NX850 Geogrid	SF	628,000		$ -
				Total Geosynthetics	$ -
5	14" Rock Layer	SF	628,000		$ -
6	Perimeter Road Improvements (12" #67 Stone)	SF	42,500		$ -
				TOTAL COMPOST PAD CONSTRUCTION	$ -

NOTE: The quantities indicated in the Agreement have been estimated by Owner for contracting and comparison purposes. No Claim shall be made against Owner for any excess or deficiency therein. Payment at the prices stated in the Agreement shall be in full for the completed Unit Price Work, and will cover materials, supplies, labor, tools, machinery and all other expenditures incidental to satisfactory completion of the Unit Price Work. The Contractor shall be responsible for verifying these quantities.

Terracon

TECHNICAL SPECIFICATIONS

Technical Specifications

Compost Pad Improvement
City of Little Rock
10803 Ironton Cut Off Road
Little Rock, Arkansas

September 2023
Project No. 35237144

Prepared for:
City of Little Rock
10803 Ironton Cut Off Road
Little Rock, Arkansas

Prepared by:
Terracon Consultants, Inc.
25809 Interstate 30 South
Bryant, Arkansas 72022
(501) 847-9292

TABLE OF CONTENTS

TECHNICAL SPECIFICATIONS

TABLES

SECTION 01010
SUMMARY OF WORK

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:

- Description of Payment Items
- Work Covered by Contract Documents.
- Work by Others.
- Work Sequence.
- Existing Site Conditions.
- Contractor's Use of Premises.
- Erosion and Sediment Controls.

Erosion and Sediment Controls.

1.02 DESCRIPTION OF PAYMENT ITEMS

A. The Earthwork Contractor shall be responsible for the work as described in this document and as indicated in the construction drawings. Payment for work will be made as indicated in the pay items listed below. Payment will be made based upon in-place quantities and will be verified by a Registered Land Surveyor. A ten (10) percent retainer will be applied to each of the monthly invoices. The retainer will be paid in full upon completion of the project and once a Receipt, Waiver, and Release of Lien Rights is executed. Any work, which the Earthwork Contractor believes not to be covered by one of these pay items shall be addressed in the bid, submitted to the Owner.

The Earthwork Contractor shall take all necessary actions needed to meet the proposed schedule, taking into account weather as could be expected for the project area and season. Unless otherwise approved by the Owner, construction activities at the site and material deliveries to the Facility shall be limited to hours approved by the Owner.

1.03 WORK COVERED BY CONTRACT DOCUMENTS

A. The Work consists of, in general, improvements to of the City of Little Rock Compost Pad located in Little Rock, Arkansas. The Contractor shall provide all necessary materials, labor, full-time supervision (defined as Contractor's Superintendent, experienced in similar construction, unless otherwise approved

in writing by Owner and Engineer), and equipment to perform the services in accordance with the Construction Agreement, Plans, and Specifications herein or subsequently approved by the Owner. The Services include, but are not limited to, the following items:

B. Installation of erosion control for the construction process.

C. Installation of a 4 inch gravel leveling layer. Installation includes haul, place, compact, grade, and smooth roll.

D. Installation of a 6 oz/sy nonwoven geotextile. Installation includes unloading, material, and installation.

E. Installation of a geogrid. Installation includes unloading, material, and installation.

F. Installation of a 14 inch gravel layer above the geogrid. Installation includes haul, place, compact, fine grade, and smooth roll.

G. Installation of Perimeter Road Improvements. Installation includes haul, place, compact, and grading of 12 inches of gravel on the compost pad's perimeter roads and entrance ramp areas.

The Contractor is also responsible for the following during all phases of the Compost Pad Improvements Construction:

1. Excavation and Construction Dewatering – maintain and grade construction area to drain, maintain construction areas free of water, and provide, operate, and maintain pumping equipment.
2. Haul Road Grading – Daily Grading and maintaining haul roads near compost pad construction area is required as a part of this Project.
3. Haul Road Watering – Frequent watering of the haul roads will be required on a daily basis to keep dust generated from construction traffic to an absolute minimum. Water is to be obtained from Owners designated on-site source.

Also note that The Contract Price for all Items of Construction shall include but not be limited to performing Earthwork (Excavation, Structural Fill, and gravel placement) to Design Grades, including all labor, material (geotextile, geogrid, etc.), equipment, and other incidentals, such as, excavating, moving, placing and segregating, stockpiling, stockpile grading and maintenance, dewatering, and erosion and sedimentation control materials and practices as required to comply with the attached Drawings and Specifications (unless specifically identified as a pay item).

The quantities indicated in the Agreement have been estimated by Owner for contracting and comparison purposes. No Claim shall be made against Owner for any excess or deficiency therein. Payment at the prices stated in the Agreement shall be in full for the completed Unit Price Work, and will cover

to satisfactory completion of the Unit Price Work. The Contractor shall be responsible for verifying these quantities.

B. The following bid items correspond to the drawing set entitled Compost Pad Improvement Drawings for the City of Little Rock Landfill, Little Rock, Arkansas.

1. Mobilization/Demobilization – The Earthwork Contractor shall mobilize all equipment, materials, personnel, etc. to the site and demobilize after completion of construction, leaving allocated work areas, including borrow sources, haul roads and stockpiles, in a satisfactory condition. The Owner is not responsible for assisting the Contractor with unloading or loading of any materials or equipment. In addition to unloading geosynthetic materials, the Contractor shall be responsible for storing and protecting the materials from weather.

The Lump Sum Price for Mobilization and Demobilization shall be payment in full for all labor, equipment, material and other incidentals to the site, as well as Contractor provided utilities and ongoing related expenses, considered normal for administration of the work. Fifty (50) percent of the Lump Sum price bid will be paid with the first payment request following satisfactory evidence of mobilization of sufficient labor, equipment and material to adequately progress the work of this contract. The remaining fifty (50) percent of the Lump Sum price bid will be paid with the Final Payment request after satisfactory substantial completion of the *project*. The total price paid for this item in the first installment shall not exceed six (6) percent of the original Contract amount for the Contract. Assume one mobilization/demobilization for the project.

- Item #1 Mobilization/Demobilization – Provide Lump Sum Cost

2. Erosion Controls – The Earthwork Contractor shall be responsible for providing and maintaining Erosion Control devices around the downhill perimeter of the Construction area. Erosion control measures will be maintained for the duration of the project. The Contractor shall take all steps necessary to maintain compliance with the Owners Stormwater Permit.

- Item #2 Install silt fencing around the down gradient side of the improvement project.

3. Subgrade – The subgrade of the Compost Pad will need to be graded to the subgrade elevations. Expect approximately 4-inches of stone to be placed to get the existing grade to subgrade elevations.

- Item #3 Supply rock material. The gravel will be from off-site. The price will include material, hauling, grading, and compaction.

4. Geosynthetics (Geotextile and Geogrid)

- Item #4a Supply 6 oz/sf Nonwoven geotextile above the subgrade elevation. The installation includes unloading, material, and installation.
- Item #4b Supply geogrid above the geotextile. The installation includes unloading, material, and installation.

5. 14 - inch Rock Layer

- Item #5a Install a 14 - inch minimum rock layer to the line and grades in the Compost Pad Improvement Drawings. The material will be from an off-site borrow area and the price will include hauling, placing, and compacting the material according to the drawings.

6. Road Improvements

- Item #6a Add 12 inches of #67 stone to compost area support roads.

1.05 WORK SEQUENCE

Sequencing of the Work shall be the responsibility of the Contractor as long as the requirements of these specifications are met, the Contractor's progress is according to the schedule approved by the Engineer and Owner, and compliance with Contract Times stated in the Agreement are met.

1.06 EXISTING SITE CONDITIONS

The landfill is an active disposal facility. Construction operations shall not disturb normal landfill operations.

1.07 CONTRACTOR'S USE OF PREMISES

A. All of the Contractor's operations on the Owner's premises, including the storage of materials, shall be confined to areas approved by the Owner or Engineer.

C. The Owner and Engineer will not assume responsibility for damages to facilities on the site due to negligence or carelessness on the part of the Contractor. The Owner and Engineer will not be liable for loss or damage of Contractor's tools equipment or materials due to theft, vandalism or any other causes whatsoever.

1.08 EROSION AND SEDIMENT CONTROLS

Temporary measures to control soil erosion and sediment transport within the construction limits shall be constructed utilizing BMP's to maintain compliance with the Owners Stormwater Permit.

1.09 TEMPORARY AND PERMANENT SEEDING (If needed)

A stand of grass shall be established on all areas disturbed by construction within the construction limits.

1.10 INTERIM STORMWATER RUN-ON AND RUN-OFF CONTROLS

A. Stormwater management system improvements as shown on the Drawings shall be constructed.

B. Related Sections:

1. Section 02200 - Earthwork

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

NOTE:
At all times this facility must remain in compliance with laws and regulations governing the operation and construction of such a facility. Accordingly, the CONTRACTOR must at all times sequence their work and implement the necessary temporary facilities or activities to maintain the proper operation and compliance of this facility. Furthermore, all of the CONTRACTOR's activities must be completed while focusing on the proper management of stormwater and dust control. The Drawings provide the overall scope of work. It is the CONTRACTOR's responsibility to review and understand the necessary tasks required to complete the work. The CONTRACTOR may need to implement steps not necessarily shown on the Drawings in order to maintain landfill operations and landfill compliance. The CONTRACTOR is responsible for all bid items noted on the Bid Sheet and must complete all the work shown on the Drawings while maintaining the landfill operation and environmental compliance.

END OF SECTION

SECTION 01025
MEASUREMENT AND PAYMENT

PART 1 DESCRIPTION OF WORK

A. The project is specified as the City of Little Rock Compost Pad Improvements in Little Rock, Arkansas.

B. Payment shall be made on a Unit Rate basis and only be made for Work as specifically described in these Specifications and the Contract Documents. All other work shall be considered incidental to the Work. No payment shall be made for defective work or work beyond the lines and grades of the required Work.

C. Payment shall only be made for approved, in-place materials and Work, unless specifically permitted otherwise by these Specifications.

PART 2 PRODUCTS

A. Products are defined herein specific to the various aspects of construction. Products are considered to include those purchased and delivered to the site as well as those constructed on the site.

PART 3 EXECUTION

3.01 UNIT PRICE SCHEDULE

A. See Schedule of Values - Bid Sheet.

3.02 CONTRACT PAY ITEMS

A. See Specification 01010 – Summary of Work.

3.03 INCIDENTALS

A. Some items are considered incidental to the Work and shall not be measured or paid. Items not specifically listed as a pay item are considered incidental.

END OF SECTION

SECTION 01039
COORDINATION AND MEETINGS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Coordination

B. Pre-construction conference

C. Progress Meetings

1.02 COORDINATION

A. Contractor Shall

1. Coordinate scheduling, submittals, and Work of the various sections of Specifications to assure efficient and orderly sequence of installation of interdependent construction elements.
2. Coordinate work of various sections having independent responsibilities for fabrication, installation, connection to, and placing in service, such equipment.
3. Coordinate space requirements and installation of structural work which are indicated diagrammatically on Drawings.
4. Coordinate completion and cleanup of Work of separate sections in preparation for Substantial Completion.
5. After occupancy of premises by Owner, coordinate access to site for correction of defective Work and Work not in accordance with Specifications, to minimize disruption of Owner's activities.

1.03 PRECONSTRUCTION CONFERENCE

A. Owner will schedule a pre-construction conference.

B. Agenda:

1. Distribution of Specifications.
2. Finalize estimated progress schedule, Shop Drawing Schedule and schedule of values.

3. Designation of personnel representing the parties in Contract, and the Engineer.
4. Procedures and processing of field decisions, submittals, substitutions, applications for payments, proposal request, Change Orders, and Contract closeout procedures.
5. Scheduling.

1.04 PROGRESS MEETINGS

A. Owner shall:

1. Schedule and administer meetings throughout progress of the Work.
2. Make arrangements for meeting, prepare agenda with copies for participants, preside at meetings, record minutes, and distribute copies within two calendar days to Engineer, Contractor, participants, and those affected by decisions made.

B. Attendance Required: Contractor, Owner, Engineer or Engineer's Representative, and others as appropriate to agenda topics for each meeting.

C. Agenda:

1. Review minutes of previous meetings.
2. Review of Work in progress.
3. Field observations, problems, and decisions.
4. Identification of problems which impede planned schedules.
5. Review of submittals schedule and status of submittals.
6. Review of off-site fabrication and delivery schedules.
7. Maintenance of progress schedule.
8. Corrective measures to regain projected progress.
9. Planned progress during succeeding work period.
10. Coordination of projected progress.
11. Maintenance of quality and work standards.
12. Effect of proposed changes on progress schedule and coordination.
13. Safety issues relating to Work.
14. Other business relating to Work.

PART 2 PRODUCTS

(NOT USED)

PART 3 EXECUTION

(NOT USED)

END OF SECTION

SECTION 01040
COORDINATION

PART 1 GENERAL

1.01 DESCRIPTION OF WORK

A. The Contractor shall coordinate material supply, construction, and inspection to assure efficient and orderly completion of the Work:

B. The Contractor shall notify the Owner in writing when coordination of the Owner's or other contractors' activities is required.

1.02 PROJECT PERSONNEL

A. The Engineer is:
David C. McCormick, P.E.
Terracon Consultants, Inc.
25809 Interstate 30 South
Bryant, Arkansas 72022
(501) 847-9292 email: dcmccormick@terracon.com

B. The Owner is:
Nathan Charles, P.E.
City of Little Rock Landfill
Solid Waste Services Manager
10803 Ironton Cut Off Road
Little Rock, Arkansas
(501) 888-4492 email: ncharles@littlerock.gov

C. The Surveyor-of-Record is:
TBD

D. The Technical/Quality Assurance Representative is:
David C. McCormick, P.E.
Terracon Consultants, Inc.
25809 Interstate 30 South
Bryant, Arkansas 72022
(501) 847-9292 email: dcmccormick@terracon.com

END OF SECTION

SECTION 01050
FIELD ENGINEERING

PART 1 GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the contract including General Conditions, Supplementary Conditions and other Division 1 Sections apply to work of this section. This section applies to work of all sections of the Specifications.

1.02 OWNER'S RESPONSIBILITY

A. The Owner will provide reference dimensions for the Contractor's use in determining and controlling horizontal dimensions and vertical elevations of improvements as follows:

The Owner's site control will be shown on the drawings as a part of the issued construction package by Terracon. Baseline control and benchmark data as shown on Drawings. Benchmarks and control points will be supplied to the Contractor.

1.03 CONTRACTOR'S RESPONSIBILITY

A. Protect all control points, property pins, right-of-way markers, and elevation bench marks. Replace points disturbed or damaged by Contractor at no additional cost to Owner.

B. Provide additional engineering control surveys as deemed necessary for Contractor's benefit. Employ qualified and approved surveyor, engineer, or engineering technician for field surveys.

C. Provide detailed construction layout staking as required for proper construction of site improvements.

D. Where work requires the removal of property pins, or right-of-way monuments or markers; employ an approved Arkansas Professional Land Surveyor to reference points before they are disturbed and to reset points in their original position and condition after the work in that area is complete.

1.04 CONSTRUCTION LAYOUT STAKING

A. The specifications of this subsection shall be applicable in the event that Contractor

employs the Engineer to furnish detailed construction layout staking.

B. Notification and request for Services:

1. Properly coordinate requests for staking services with construction activities so as to preclude inefficient scheduling of staking crews.

2. Notify Engineer a minimum of 48 hours in advance of the date that specific services are desired.

3. Stipulate the particular stakes or marks required giving the specific location and/or limiting stations, offsets and other pertinent information.

4. Requests for services shall be for a minimum of 1,500 linear feet of line.

C. Control Staking:

1. Control stakes which are referenced points for all construction, work shall be conspicuously and visibly marked with flagging tape, paint, or other suitable means.

2. Contractor shall protect all control points and shall replace points disturbed or damaged by Contractor at his expense.

3. Control stakes which are in the work area and which require removal in order to properly execute work will be referenced and removed at no cost to Contractor.

D. Flagging for Clearing:

1. For utilities, road right-of-way or other proposed improvements presently located in wooded areas, Engineer will flag proposed centerline or one side of right-of-way to be cleared.

2. After clearing and grubbing is completed, the remainder of construction will be staked.

E. Road Alignment and Grade Staking:

1. Contractor is responsible for constructing the proper road cross-section as shown on the Drawings.

2. One set of initial alignment and cut and fill stakes shall be set along one right-of-way for rough grading purposes. Stakes at 100-foot intervals and at other critical

points shall indicate cut and/or fill to finished centerline elevation.

3. One set of final hubs shall be set on 100-foot stations along one side of the road and shall indicate finish gravel course alignment and cut and/or fill to top of gravel.

F. Restaking and Checking:

1. Contractor responsible for verifying location and elevation of all reference stakes and all markings noted thereon.

2. At Contractor's request, Engineer shall check validity of any questionable stake. Any stakes found to be in error will be reset at no charge to the Contractor.

3. Engineer not responsible for any standby or "down" time as a result of such checking and/or resetting.

4. All stakes or reference marks described in this section shall be set one time only. Upon written request by Contractor, Engineer will perform restaking at Contractor's expense.

END OF SECTION

SECTION 01051
CONTROL OF WORK

PART 1 GENERAL

1.01 SUMMARY

A. This section includes the control of Work, including:

1. Plans and working drawings;
2. Conformity with plans and specifications;
3. Construction stakes, lines, and grades;
4. Load restrictions;
5. Maintenance of traffic; and
6. Maintenance during construction.

1.02 PLANS AND WORKING DRAWINGS

A. Plans will show such details of all structures, lines, grades, location, and design of all structures and pipelines as are necessary to give the comprehensive idea of the proposed construction. The Contractor shall keep one set of the most current plans available on the project at all times.

B. The plans may be supplemented by additional drawings as are necessary to adequately control the Work only in the event of an approved change order.

1.03 CONFORMITY WITH PLANS AND SPECIFICATIONS

A. All Work performed and all materials furnished shall be in conformity with the lines, grades, details, dimensions, and material requirements including tolerances as indicated on the drawings or in the specifications.

B. In the event the Engineer finds the materials, the finished product in which the materials are used, or the Work performed are not in conformity with the drawings and specifications or within tolerances specified on the drawings or in the specifications, and the Engineer finds that this has resulted in an inferior or unsatisfactory product, the Work or materials shall be removed and replaced or otherwise corrected by, and at the expense of the Contractor.

C. In the event the Engineer finds the materials, the finished product in which the materials are used, or the Work performed are not in conformity with the drawings

and specifications or within tolerances specified on the drawings or in the specifications, but that reasonably acceptable Work has been produced, the Engineer will document the basis of acceptance by contract modification which will provide for an appropriate adjustment in the contract price for such work or materials.

1.04 CONSTRUCTION STAKES, LINES AND GRADES

A. The Contractor shall be responsible to provide his own construction control stakes to establish lines, slopes, and grades as necessary for layout and completion of the Work. All survey work performed for layout of the site and final grade checks shall be performed by a licensed surveyor of the State of Arkansas. The Surveyor shall have construction experience with projects of similar type and nature to this project.

1.05 LOAD RESTRICTIONS

A. The Contractor shall comply with all legal load restrictions in the hauling of materials on public highways beyond the limits of the project. The Contractor shall be responsible for all damage done by his hauling equipment and his construction activities.

1.06 MAINTENANCE OF TRAFFIC

A. All public and private roads used for haul roads shall be maintained to provide an adequate and safe driving condition for all public and private traffic.

1.07 MAINTENANCE DURING CONSTRUCTION

A. The Contractor shall maintain the Work during construction and until the project is accepted. The maintenance shall constitute continuous and effective work performed day to day with adequate equipment and forces such that all structures are kept in satisfactory condition at all times.

B. The Contractor shall provide all necessary drainage control and diversion structures, and sufficient pumping equipment and manpower to keep the construction area well drained and free of standing water that may adversely impact construction procedures and schedules.

C. The Contractor shall supply a description of the Contractor's maintenance schedule on equipment.

1.08 FUEL STORAGE, WASTE PRODUCTS, TRASH AND DEBRIS

A. The Contractor shall observe all federal, state, and local requirements and regulations regarding the transportation, storage, and containment of fuels.

B. The Contractor shall be responsible for proper containment and labeling of containers, handling of all waste products and trash from all machinery, vehicles, and other items used during the Work with the following exception. Containers will be provided, marked, and routinely picked up for putrescible waste, office trash, etc. Waste will be properly transferred for Off-Site Disposal under the direction of the Owner

PART 2 PRODUCTS

(NOT USED)

PART 3 EXECUTION

(NOT USED)

END OF SECTION

SECTION 01300
SUBMITTALS

PART 1 GENERAL

1.01 SUMMARY

Section includes submittal procedures and types of submittals required prior to the beginning of certain phases of the Work, prior to the incorporation of products in the Work, and during the progress of the Work.

1.02 INITIAL SUBMITTALS

A. Submit the following to the Engineer for review not more than fourteen calendar days after the Effective Date of the Agreement:

1. Preliminary Schedule of Values.
2. Initial Construction Progress Schedule (specified in this Section).
3. Preliminary Schedule of Shop Drawing and Sample Submittals (specified in this Section).
4. Proposed Products List (specified in this Section).

1.03 PROGRESS SUBMITTALS

A. Submit the following to the Engineer for review during the progress of the Work:

1. Applications for Payment.
2. Individual processing submittals and change orders.
3. Independent quality control inspection and testing information.
4. Project Record Documents.
5. Equipment manufacturer's instructions and certificates.
6. All other miscellaneous submittals not mentioned herein and as specified in other individual specification Sections.

1.04 SUBMITTAL PROCEDURES

A. Timing of Submittals

1. Make submittals in advance of scheduled dates for installation, as specified in individual specification sections, to allow for reviews, for securing necessary approvals, for possible revisions and resubmittals, and for placing orders and securing deliveries. Preferred timing for the submittals will be discussed during the Preconstruction Meeting.

2. Contractor shall be responsible for delays occasioned by incomplete submittals.

B. Submittals shall be complete and shall be combined into one package for each Section of the specifications, unless otherwise specified.

C. Sequentially number the transmittal forms.

D. Identify Project, Contractor, Subcontractor or supplier; pertinent Drawing sheet and detail number(s), and specification section number, as appropriate.

E. Apply Contractor's stamp, signed or initialed certifying that review, verification of products required, field dimensions, adjacent construction work, and coordination of information, is in accordance with the requirements of the Work and Contract Documents.

F. Schedule submittals to expedite the project and deliver to Engineer. Coordinate submission of related items.

G. Identify variations from Contract Documents and product or system limitations, which may be detrimental to successful performance of the completed Work.

H. Provide a four-inch square blank space for Engineer's review stamp.

I. Revise and resubmit submittals in the same quantity as required for the original submittal. Identify all changes made since previous submittal.

J. Distribute copies of reviewed submittals to concerned parties. Instruct parties to promptly report any inability to comply with provisions.

K. Maintain one copy of each submittal in Project Record Documents.

1.05 CONSTRUCTION PROGRESS SCHEDULE

A. Submit initial Construction Progress Schedule (first revision of schedule submitted with the Bid) in duplicate within the time specified in subsection 1.02 of this Section.

B. Submit revised Schedule with each Application for Payment, identifying changes since previous version.

C. Show complete sequence of construction by activity, identifying Work of separate stages and other logically grouped activities. Indicate the early and late start, early and late finish, float dates, and duration. Schedule shall be in accordance with the required work sequence and completion dates specified in Section 01010 and elsewhere in the Contract Documents.

D. Indicate estimated percentage of completion for each item of Work at each submission.

E. Indicate submittal dates required for shop drawings, product data, samples, product delivery, and quality control test reports.

F. The Schedule shall be revised as required throughout the project to indicate anticipated and actual duration and sequence of activities. Copies of revised Schedules shall be provided promptly to the Engineer for review and comment.

1.06 PROPOSED PRODUCTS LIST

A. Within the time specified in subsection 1.02 of this Section, submit complete list of major products proposed for use, with name of manufacturer, trade name, and model number of each product.

B. For products specified only by reference standards, give manufacturer, trade name, model or catalog designation, and reference standards.

C. Indicate on the list the product delivery dates, including those furnished by the Owner.

D. The Owner’s Chemical Acquisition Procedure must be adhered to in order to bring in chemicals.

1.07 SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

A. Within the time specified in subsection 1.02 of this Section, submit a preliminary Schedule of Shop Drawings and Samples in accordance. Include the following:

1. The dates for Contractor's submittals.
2. The dates submittals will be required for Owner-furnished products, if applicable.

3. The dates approved submittals will be required from the Engineer.
4. A list of all long lead items (equipment, materials, etc.).

B. Shop Drawings and Product Data Submittals

1. Submit the number of copies, which Contractor requires, plus three copies, which will be retained by Engineer.
2. Mark each copy of product data submittals to identify applicable products, models, options, and other data. Supplement manufacturer's standard data to provide information unique to this Project.

C. Sample Submittals

1. Submit samples to illustrate functional and aesthetic characteristics of the product, with integral parts and attachment devices. Coordinate sample submittals for interfacing work.
2. Include identification on each sample, with full project information.
3. Submit the number of samples specified in the individual specification Sections. The Engineer will retain one sample.

D. After review, distribute in accordance with subsection 1.03 above.

1.08 MANUFACTURERS' INSTRUCTIONS

A. When specified in individual specification Sections, submit manufacturers' printed instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing, in quantities specified for Shop Drawings and Product Data in subsection 1.07.A above.

B. Identify conflicts between manufacturers' instructions and Contract Documents.

1.09 MANUFACTURERS' CERTIFICATES

A. When specified in individual specification Sections, submit manufacturers' certificates to Engineer for review, in quantities specified for Shop Drawings and Product Data in subsection 1.07.A above.

B. Indicate material or product conforms to or exceeds specified requirements Submit supporting reference data, affidavits, and certificates as appropriate.

C. Certificates shall be based on test results acceptable to the Engineer.

1.10 INSPECTION AND TEST CERTIFICATES

A. Submit to Engineer for review, inspection and test certificates required for demonstrating proof or compliance of materials with specification requirements.

B. Each certificate shall be signed by an official authorized to certify on behalf of the manufacturing company and shall indicate the name and address of the Contractor, the project name and location, and the quantity and date or dates of shipment or delivery to which the certificates apply.

C. Copies of laboratory test reports submitted with certificates shall contain the name and address of the testing laboratory and the date or dates of the test to which the report applies.

D. Certification will not be construed as relieving the Contractor from furnishing satisfactory material, if, after tests are performed on selected samples, the material is found not to meet the specified requirements.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 01400
QUALITY CONTROL AND ASSURANCE SERVICES

PART 1 GENERAL

1.01 DESCRIPTION OF WORK

A. Owner will employ and pay for the services of the Technical Representative to perform construction monitoring and testing services to assure the Owner that the Work is completed according to the Specifications and Drawings.

B. Contractor shall cooperate with the Technical Representative to facilitate the execution of its required services.

C. Employment of the Technical Representative shall in no way relieve Contractor's obligations to perform the Work and supply materials in accordance with the Contract Documents.

D. The Contractor shall provide any additional testing and services required to control construction quality at no additional cost to the Owner. Quality control testing and services do not include activities performed by the Technical Representative.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 CONTRACTOR'S RESPONSIBILITIES

The Contractor shall:

A. Cooperate with the Technical Representative and its personnel and provide access to Work and to Supplier's operations.

B. Secure and deliver to the Technical Representative adequate quantities (5-gallon bucket per sample) of representative samples of materials proposed to be used which require testing.

C. Furnish copies of Supplier's test reports as required.

D. Furnish incidental labor and facilities:

1. To provide access to Work to be tested;
2. To obtain and handle samples at the Project site or at the source of the product to be tested;
3. To facilitate inspections and tests; and
4. For storage and curing of test samples.

E. Coordinate activities to accommodate services with a minimum delay. Notify Technical Representative 48 hours in advance of operations to allow for laboratory assignment of personnel and scheduling of tests. When tests or inspections cannot be performed after such notice, reimbursing Owner for laboratory personnel and travel expenses incurred due to Contractor's negligence;

F. Employ and pay for the services of a separate, qualified independent testing laboratory to perform additional inspections, sampling and testing required:

1. For the Contractor's convenience;
2. As required by the Specifications or approved Quality Control Plans; or
3. When initial tests indicate Work does not comply with Contract Documents.

G. Promptly notify the Technical Representative of observed irregularities or deficiencies of Work or products;

H. Promptly submit a copy of a written report of each test to Technical Representative. Each report shall include:

1. Date issued;
2. Project title and number;
3. Testing laboratory name, address and telephone number;
4. Name and signature of laboratory inspector;
5. Date and time of sampling or inspection;
6. Record temperature and weather conditions;
7. Date of test;
8. Identification of product and specification section;
9. Location of sample or test in the Project;
10. Type of inspect or test;
11. Results of tests and compliance with Contract Documents; and
12. Interpretation of test results, when requested by Technical Representative.

I. Be responsible for retesting where results of inspections and tests prove unsatisfactory and indicates noncompliance with requirements.

3.02 REPAIR AND PROTECTION

Unless specified otherwise, the Contractor shall protect construction exposed for testing and shall repair construction damaged by sampling, testing or inspection.

END OF SECTION

SECTION 01500
CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:

1. Mobilization.
2. Temporary Utilities.
3. Barriers and enclosures.
4. Protection of existing utilities and installed Work.
5. Site security.
6. Access roads and parking.
7. Temporary Controls: construction cleaning; noise; water; soil erosion and sediment; pollution; and, dust.
8. Traffic control and haul routes.
9. Project identification and signs.
10. Field offices and sheds.
11. Removal of temporary utilities, facilities and controls.

1.02 MOBLIZATION

A. Mobilize to the site and be prepared to initiate the construction activities within 5 Business days after receiving Notice of Award from the Owner.

B. Mobilization shall not be attempted unless the Contractor has:

1. Obtained all permits, licenses and OSHA training certificates necessary to perform the Work, where required.

2. Received approval from the Owner for the location of temporary structures and storage areas.

3. Submitted initial documents to the Engineer as listed in subsection 1.02 A of Section 01300.

C. Mobilization includes but is not necessarily limited to: transportation of personnel, equipment and operating supplies to the site; establishment of offices, buildings, all necessary temporary utilities; installation and relocation of necessary facilities at the site; and, other preparatory work at the site.

1.03 TEMPORARY UTILITIES

A. The Owner will supply power service to provide required temporary electrical utilities to the project area.

B. The Contractor will provide and maintain adequate lighting for construction operations and field offices.

C. The Owner will provide adequate drinking water for construction operations.

D. The Contractor will provide adequate fire protection at the site as required by local fire codes and standards.

E. The Owner will provide adequate temporary sanitary facilities in compliance with laws and regulations. Arrange for proper maintenance of such facilities.

F. The Contractor will provide, maintain and pay for telephone service to Contractor's offices. The Owner will supply radios for internal communication.

G. The Contractor will provide, maintain and pay for any other temporary utility that is necessary to accomplish the Work.

1.04 BARRIERS AND ENCLOSURES

A. Provide barriers to prevent unauthorized entry to construction areas to protect existing facilities and adjacent properties from damage from construction operations.

B. Provide barricades, covered walkways and other temporary construction required by governing authorities for public rights-of-ways.

C. All temporary construction shall be in accordance with applicable federal, state and local laws and building codes.

D. Provide protection for plant life designated to remain. Trim tree branches if necessary for access and only if permitted by the Owner. Replace damaged plant life, or repair as follows:

1. Damaged branches shall be properly pruned and all wounds covered with approved tree paint.

2. Repair work shall be done on a daily basis without exception.

E. Protect non-covered vehicular traffic, stored materials, site and structures from damage.

1.05 PROTECTION OF EXISTING UTILITIES

A. Contact and cooperate with the Owner and utility companies to locate all utilities (including pipelines, cables, power poles and other structures) on the construction site prior to beginning the Work.

B. All utilities shall be protected from damage during construction, unless otherwise indicated to be removed or abandoned.

C. Comply with requirements of the utility owners for clearances and access for all construction within and adjacent to the utility right-of-way.

D. If damaged, the utilities shall be repaired as required by the Owner at the Contractor's expense.

E. If a utility is encountered which is not shown on the Drawings or otherwise made known to the Contractor prior to beginning the Work, promptly take necessary steps to assure that the utility is not damaged, and give written notice to the Owner or Engineer and to the utility owner. The Owner and Engineer will then review the conditions and determine the extent, if any, to which a change is required in the Contract Documents to reflect and document the consequences of the existence of the utility.

1.06 PROTECTION OF INSTALLED WORK

A. Protect installed Work and provide special protection where required in individual specification sections.

B. Provide temporary and removable protection for installed Products. Control activity in immediate work area to minimize damage.

1.07 SECURITY

The Owner will provide Security at the Construction Gate. Any additional Security the Contractor required in the working area will be paid for by the Contractor.

1.08 ACCESS ROADS AND PARKING

A. Construct and maintain temporary roads accessing existing roads to serve construction area.

B. Extend and relocate, as Work progress requires. Provide detours necessary for unimpeded traffic flow.

C. Designated existing on-site roads may be used for construction traffic, unless otherwise directed by the Owner or Engineer.

D. Construct temporary gravel surface parking areas in areas approved by the Owner to accommodate construction personnel.

E. When site space is not adequate, provide additional off-site parking.

F. Repair existing roads damaged by operation of construction equipment, as determined by the Engineer.

1.09 CONSTRUCTION CLEANING

A. Maintain areas free of trash and rubbish. Maintain site in a clean and orderly condition.

B. No trash or rubbish containers will be supplied by Owner. Supply all containers required for storage and removal of trash, rubbish and debris resulting from the Work included in this project.

C. The Owner will put the pick-up of routine trash on the maintenance route. All disposal shall occur in the approved containers at the facility.

1.10 NOISE CONTROL

Contractor's vehicles and equipment shall be such as to minimize noise to the greatest degree practicable. Noise levels shall conform to the latest OSHA standards and state, county and local ordinance requirements, and in no case will noise levels be permitted which interfere with the work of the Owner or others.

1.11 WATER CONTROL

Provide and maintain water control as specified in Section 01563.

1.12 SOIL EROSION AND SEDIMENT CONTROL

Provide and maintain soil erosion and sediment control as specified in Section 01565.

1.13 POLLUTION CONTROL

A. Provide methods, means and facilities required to prevent contamination of soil, water or atmosphere by the discharge of noxious substances from construction operations.

B. Provide equipment and personnel, perform emergency measures required to contain significant spillage on-site, as determined necessary by the Engineer and Owner. Collect all oil and other fluids discharged during vehicle maintenance operation in drums and dispose of properly.

C. Take special measures to prevent harmful substances from entering public waters. Prevent disposal of wastes, effluents, chemicals, or other such substances adjacent to streams, or in sanitary or storm sewers. Conform to Owner's existing NPDES permit for the facility.

D. Provide systems for control of atmospheric pollutants. Prevent toxic concentrations of chemicals and prevent harmful dispersal of pollutants in the atmosphere.

E. All Contractors' equipment used during construction shall conform to all current federal, state and local laws and regulations. The Contractor must supply all the Spec Sheets for Pumps and Compressors they will bring on site.

1.14 DUST CONTROL

A. Maintain all excavations, embankments, stockpiles, roads, and all other work areas within or outside the project boundaries free from visible airborne dust that would cause a hazard or nuisance to others.

B. Approved temporary methods of stabilization, consisting of sprinkling with clean water, or similar methods, will be required to control dust. Sprinkling must be repeated at such intervals as to keep all parts of the disturbed area at least damp at all times.

1.15 TRAFFIC CONTROL

A. Coordinate movement of construction equipment and hauling vehicles with Owner to prevent interference with public traffic and parking, access by emergency vehicles, and Owner's operations.

B. Provide trained and equipped flag persons to regulate traffic when construction operations or traffic encroach on public traffic lanes.

1.16 HAUL ROUTES

A. Consult with authority having jurisdiction in establishing public thoroughfares to be used for haul routes and site access.

B. Confine construction traffic to designated haul routes.

1.17 FIELD OFFICES AND SHEDS

A. Office: Weather-tight, with lighting, electrical outlets, heating, cooling and ventilating equipment, and equipped with sturdy furniture.

1.18 REMOVAL OF TEMPORARY UTILITIES, FACILITIES AND CONTROLS

A. Remove temporary above-grade and buried utilities, equipment, facilities and materials prior to final inspection.

B. Clean and repair damage caused by installation or use of temporary work.

C. Restore existing facilities used during construction to original condition.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 01563
CONTROL OF WATER

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Controlling surface water runoff.

B. Dewatering trenches, excavations, and other elements.

C. Controlling water of every origin.

1.02 SUBMITTALS

Submit in accordance with Section 01300 -Submittals

PART 2 PRODUCTS

Provide structures, machinery, appliances, and equipment designed and manufactured to control water.

PART 3 EXECUTION

3.01 GENERAL

A. Dewatering Procedures: The Contractor shall construct, maintain, and operate channels, sumps, pumps, or other temporary diversion and protection works. Furnish materials required, install, maintain and operate necessary pumping and other equipment for the environmentally safe removal and disposal of water from the various parts of the Work.

B. Dewater and dispose of water in a manner that will not cause injury to public and private property.

C. Do not cause a nuisance to the Owner's operations.

D. Keep sufficient pumping equipment and machinery on hand at all times for emergencies, including electric power failures.

E. Keep experienced personnel available at all times to operate pumping equipment, machinery and appliances.

F. Do not shut down dewatering systems between shifts, on holidays and weekends, nor during Work stoppages, unless authorized by Owner or Engineer.

END OF SECTION

SECTION 01565
TEMPORARY SOIL EROSION AND SEDIMENT CONTROL

PART 1 GENERAL

1.01 SUMMARY

Section includes construction of temporary measures to control soil erosion and sediment transport within the construction limits.

1.02 REFERENCES

A. "Erosion and Sediment Control Handbook", published by McGraw-Hill Book Company.

B. American Society for Testing and Materials (ASTM):

1. ASTM D 488, Standard Classification for Sizes of Aggregate for Road and Bridge Construction.

1.03 SUBMITTALS

Submit product data and specifications for approval as required by the Engineer prior to use.

1.04 QUALITY ASSURANCE

Comply with the requirements of governmental authorities having jurisdiction.

1.05 PROJECT REQUIREMENTS

A. Obtain all required permits prior to commencement of Work in areas requiring erosion control measures.

B. The use of temporary control measures shall be coordinated with the permanent erosion control features specified elsewhere to the extent practical, to assure effective and continuous erosion control.

PART 2 PRODUCTS

2.01 MATERIALS

A. Mulch: Hay, straw, wood chips, or other suitable material reasonably clean of noxious weeds and deleterious material.

B. Grasses: Rye grass, cereal grasses, or other quick-growing species suitable to the area and as a temporary cover, which will not compete with the grasses specified for permanent cover.

C. Silt Fencing: "Envirofence" by Mirafi, "Propex Silt Stop" by Amoco, or equivalent. Posts shall be as shown on the Drawings.

D. Check Dams shall be constructed of locally available sound crushed stone; size conforming to ASTM D 448, size number 1.

PART 3 EXECUTIONS

3.01 GENERAL

A. All Work under this contract shall be performed in such a manner that objectionable erosion shall not be created in watercourses through or adjacent to the project area.

B. The Contractor shall be responsible for the selection of appropriate temporary erosion control measures to suit the intended construction methods. The Contractor shall submit a scheme of control measures for each potentially impacted area prior to construction for approval by the Engineer.

C. Notify the Engineer and Owner in the event of conflict between these specification requirements and pollution control laws, rules or regulations of other federal, state, or local agencies.

3.02 EROSION AND SEDIMENT CONTROL

A. The Engineer shall have the authority to limit the surface area of erodible earth material exposed by clearing and grubbing, excavation, borrow, and fill operations and to direct the Contractor to provide immediate, permanent or temporary sediment control measures to minimize damage to adjacent property and to minimize effects on adjacent streams or other watercourses, lakes, ponds, or other areas of water impoundment.

B. Incorporate all permanent erosion control features (including seeding) into the project at the earliest practical time. Temporary control measures shall be those that are needed prior to installation of permanent control features; or that is needed temporarily to control erosion that develops during normal construction activities but are not associated with permanent control features on the project.

C. Where erosion is likely to be a problem, clearing and grubbing operation should be so scheduled and performed that grading operations and permanent erosion control features can follow immediately thereafter, if the project conditions permit; otherwise temporary erosion control measures may be required between successive construction stages.

3.03 INSTALLATION AND MAINTENANCE OF SILT FENCING

A. Install in accordance with details shown on the Drawings and as specified in paragraphs B through E below.

B. Install posts at a maximum spacing of six feet, and to depth of approximately 18 inches, or as otherwise approved by the Engineer and Owner.

C. Excavate six-inch wide by six-inch deep trench along line of posts and upslope from barrier, or as otherwise approved by the Engineer and Owner.

D. Fasten fabric to upstream side of posts using heavy-duty wire staples (at least one-inch long), tie wires or hog rings. Eight inches of the fabric shall extend into the trench.

E. Backfill trench and compact soil over the fabric.

F. Remove sediment deposits when deposits reach approximately one-half the height of the barrier. Sediment shall be placed in areas approved by the Engineer and spread uniformly over the ground surface.

G. Replace fabric when it has deteriorated, is torn, loose or no longer effectively performs.

H. Replace any silt fence, which has been overtopped with two new parallel fences.

3.04 APPLICATION OF TEMPORARY GRASS AND MULCH (If Needed)

A. Comply with Section 02930.

B. Temporary seeding shall be applied to areas lacking vegetation if no construction activities will be performed in the area for more than 30 Calendar days. Temporary seed mixtures shall be applied to such areas within 21 Calendar days of temporarily suspending work in the area.

3.05 CONSTRUCTION AND MAINTENANCE OF CHECK DAMS

A. Construct across creeks within the project limits as shown on the Drawings.

B. Inspect after each rainfall event. Make required repairs if the check dams have deteriorated to the extent that their effectiveness is reduced.

C. Remove sediment deposits when deposits reach approximately one-half the height of the dams. Sediments shall be placed in areas approved by the Engineer and spread uniformly over the ground surface.

D. Check dams shall be removed after completion of construction activities. Coarse aggregate shall be deposited on-site where approved by the Engineer.

3.06 INSTALLATION AND MAINTENANCE OF OTHER EROSION CONTROL MEASURES

A. Install according to manufacturer's recommendations and standard local practice.

B. Maintenance of the installations shall be performed as required for proper erosion and sediment control until the Work is accepted by the Owner.

3.07 REMOVAL OF SILT FENCING

A. Silt fencing shall be removed when approved by the Engineer and Owner, after a sufficient stand of grass has been established on all disturbed areas.

B. Any sediment deposits remaining after the silt fence is removed shall be dressed to conform to the existing grade, prepared, and seeded.

END OF SECTION

SECTION 01600
MATERIAL AND EQUIPMENT

PART 1 GENERAL

1.01 SUMMARY

A. Section Addresses:

1. Products;
2. Transportation and handling;
3. Storage and protection;
4. Product options; and
5. Substitutions.

1.02 PRODUCTS

A. Products: Means new material, machinery, components, equipment, fixtures, and systems forming the Work. Does not include machinery and equipment used for preparation, fabrication, conveying and erection of the Work. Products may also include existing materials or components required for reuse.

1.03 TRANSPORTATION AND HANDLING

A. Contractor shall transport and handle products in accordance with manufacturer's instructions.

B. Contractor shall promptly inspect shipments to assure that products comply with requirements, quantities are correct, and products are undamaged.

C. Contractor shall provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, and damage.

1.04 STORAGE AND PROTECTION

A. Contractor shall store and protect products in accordance with manufacturer's instructions, with seals and labels intact and legible. Contractor shall store sensitive products in weather-tight, climate controlled enclosures.

B. For exterior storage of fabricated products, materials shall be placed on sloped supports, above ground.

C. Contractor shall provide off-site storage and protection when site does not permit on-site storage or protection.

D. Contractor shall cover products subject to deterioration with impervious sheet covering. Contractor shall provide ventilation to avoid condensation.

E. Contractor shall store loose granular materials on solid flat surfaces in a well-drained area. Contractor shall make every effort to prevent mixing with foreign matter.

F. Contractor shall provide equipment and personnel to store products by methods to prevent damage.

G. Contractor shall arrange storage of products to permit access for inspection. Contractor shall periodically inspect storage areas to assure products are undamaged and are maintained under specified conditions.

1.05 PRODUCT OPTIONS

A. Products Specified by Reference Standards or by Description Only: Any product meeting those standards or description.

B. Products Specified by Naming One or More Manufacturers: Products of manufacturers named and meeting specifications; no options or substitutions allowed.

C. Products Specified by Naming One or More Manufacturers with a Provision for Substitutions: Submit a request for substitution for any manufacturer not named.

1.06 SUBSTITUTIONS

A. Engineer will consider requests for Substitutions only within 15 Calendar days after Effective Date of Agreement.

B. Subsequent Substitutions will be considered only when a product becomes unavailable through no fault of the Contractor. Improper planning will not be considered as a reason to increase Contract Price as a result of product substitution.

C. A request constitutes a representation that the Contractor:

1. Will provide the same warranty for the Substitution as for the specified product.
2. Will coordinate installation and make changes to other Work which may be required for the Work to be complete with no additional cost to the Owner.

3. Waives claims for additional costs or time extension which may subsequently become apparent.
4. Will reimburse Owner for review or redesign services associated with re-approval by Engineer and Engineer's consultants and regulatory agencies.

D. Substitutions will not be considered when they are indicated or implied on shop drawing or product data submittals, without separate written request, or when acceptance will require revision to the Contract Documents.

E. Substitution Submittal Procedure:

1. Contractor will submit copies of each request for Substitution for consideration. Contractor shall limit each request to one proposed Substitution.
2. Contractor shall submit the number of copies required for all submittals, as specified in Section 01300.
3. Contractor shall submit shop drawings, product data, and certified test results attesting to the proposed product equivalence.

1.07 MANUFACTURER'S INSTRUCTIONS

A. Installation of equipment and materials shall comply with manufacturer's instructions. Contractor shall obtain and distribute printed copies of such instructions to parties involved in installation, including two copies to Owner.

1. Contractor shall maintain one set of complete instructions at job site during installation and until completion of work.

B. Contractor shall handle, store, install, connect, clean, condition, and adjust materials and equipment in accordance with manufacturer's written instructions and in conformance with specifications.

1. If job conditions or specified requirements conflict with manufacturer's instructions, Contractor shall consult with Owner or Engineer for further instructions.
2. Contractor shall not proceed with work without written instructions.

1.08 INSTALLATION, INSTRUCTIONAL, AND POST START-UP SERVICES

A. Installation Services:

1. Where installation services are called for in Specifications, Contractor shall provide competent and experienced technical representatives of manufacturers of equipment and systems to resolve assembly or installation procedures attributable to, or associated with, equipment furnished.
2. After equipment is installed, representatives shall perform initial equipment and system adjustment and calibration to conform to Specifications and manufacturer's requirements and instructions.
3. Contractor shall provide "Certificate of Installation Services" stating proper adjustments have been made to equipment or system and equipment or system ready for start-up and operation.

B. Instructional Services:

1. Where training is called for in Specifications, Contractor shall provide competent and experienced technical representative of supplier to provide detailed instructions to Owner's personnel for operation of equipment. Training services shall include maintenance of instrumentation, maintenance of process equipment and operation of process equipment in classroom and on-site equipment instruction, as stated in Specifications.
2. Contractor shall coordinate pre-startup training periods with Owner and supplier's representatives.
   a. Contractor shall notify Owner at least 48 hours before training sessions are to begin so Owner can make arrangements with operating personnel.
   b. Contractor shall reschedule canceled training sessions 48 hours in advance.
   c. Failure of supplier's or manufacturer's representative to appear for scheduled training, failure to notify Owner 24 hours in advance of need to cancel scheduled training or failure to arrive within 30 minutes of start of scheduled training shall result in reimbursement to Owner for time lost by Owner's operating personnel in waiting for arrival of manufacturer's representative. Except in case of failure to arrive on time, time will not exceed one hour for each employee scheduled to receive training. Failure to arrive on time will be reimbursed by actual time late up to one hour, after one hour training will be rescheduled.
3. Similar types of equipment differing in model, size or manufacturer shall require equal service time as stated in specific Specification section.

4. Contractor shall complete pre-startup training Calendar 14 days prior to system operations demonstrations.
5. O&M data shall constitute basis of instruction.
   a. Contractor shall review data contents with personnel in full detail to explain aspects of operations and maintenance.
6. Contractor shall provide "Certificate of Instructional Services," co-signed by Owner and supplier's representative, verifying training accomplished to satisfaction of all parties.

1.09 SPECIAL TOOLS AND LUBRICATING EQUIPMENT

A. Contractor shall furnish, in accordance with manufacturer's recommendations, special tools required for checking, testing, parts replacement, and maintenance. Special tools are those specially designed or adapted for use on parts of equipment, and not customarily and routinely carried by maintenance mechanics.

B. Special tools and lubricating equipment (when applicable) will be delivered to Owner when unit placed into operation and after operating personnel have been properly instructed in operation, repair, and maintenance of equipment.

C. Tools and lubricating equipment shall be of quality compatible to equipment manufacturer has furnished.

1.10 LUBRICATION

A. Where lubrication is required for proper operation of equipment, Contractor shall incorporate necessary and proper provisions in equipment in accordance with manufacturer's requirements. Where possible, lubrication shall be automated and positive.

B. Where oil is used, reservoir shall be of sufficient capacity to supply unit for 24-hour period.

C. Contractor shall supply a description of the Contractor’s maintenance schedule on equipment.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 01720
PROJECT RECORD DOCUMENTS

PART 1 GENERAL

1.01 DESCRIPTION

A. Owner will have the right to the access of all records, such as correspondence and claims that are maintained on site or any other locations by Contractor.

B. Contractor shall maintain at site for Owner one record copy of:

1. Drawings;
2. Specifications;
3. Addenda;
4. Change orders and other modifications to Contract;
5. Field orders, written instructions, or clarifications;
6. Approved submittals;
7. Field test records;
8. All associated permits; and
9. Certificates of inspection and approvals.

1.02 MAINTENANCE OF DOCUMENTS AND SAMPLES

A. Contractor shall maintain documents in clean, dry, legible condition and in good order. Contractor shall not use record documents for construction purposes.

B. Contractor shall provide secure storage space for storage of samples and maintain same in good order.

C. Contractor shall make documents and samples available at all times for inspection by Owner.

D. Failure to properly maintain record documents may be reason to delay a portion of progress payments until records comply with Contract Documents.

1.03 RECORD DOCUMENTS

A. Contractor shall maintain a record set of drawings and specifications legibly changed to transfer approved modifications in completed work that differ from Contract Documents.

B. Contractor shall label each document "PROJECT RECORD" in neat, large printed letters.

C. Contractor shall record information concurrently with construction progress.

1. Contractor shall not cancel any work until required information is recorded.
2. Contractor shall record changes made by Written Amendment, Field Order, Change Order, or Work Directive Change.

D. Drawings (By Owner)

Based on Contractor mark-ups and survey data provided by Contractor and Owner's survey, a set of record as-built drawings will be prepared by Owner (or Owner's representative) for inclusion in the project Certification Report.

E. At completion of work:

1. Using data accumulated on drawings, Contractor shall submit a set of marked up drawings showing all approved changes and revisions to the Work as authorized by the Owner and Engineer. This information will provide the basis for preparation of the as-built record drawings (by others).
2. Submit separate document indicating changes made to specifications during work.

1.04 SUBMITTALS

A. At substantial completion Contractor shall:

1. Deliver one set of marked up record drawings to Owner; and
2. Deliver documents described in Paragraph 1.01.B to Owner.

B. Submittals shall include a transmittal letter in duplicate, containing:

1. Date;
2. Project title and number;
3. Contractor's name and address;
4. Title of record document; and
5. Signature of Contractor or authorized representative.

PART 2 PRODUCTS

(NOT USED)

PART 3 EXECUTION

(NOT USED)

END OF SECTION

SECTION 02110
CLEARING AND GRUBBING

PART1 GENERAL

1.01 SUMMARY

A. Section includes clearing woodchips from the work area, grubbing of vegetation, stripping of topsoil, and disposal of vegetation in the Work Area.

1.02 QUALITY ASSURANCE

A. Site clearing shall be performed in a manner that does not disturb existing structures, utilities, monitoring wells, or other facilities not indicated to be removed or abandoned.

B. Conform to applicable local codes for disposal of cleared and grubbed vegetation.

C. Coordinate clearing work with utility companies.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 CLEARING

A. Remove compost piles, exposed trees, brush, logs, grass, and other vegetative material resting on or protruding through the ground surface in the work area shown on the Drawings.

B. Remove roots of all vegetation (including tree stumps) to a minimum depth of one foot below existing grade, or the proposed subgrade elevation, whichever is lower.

3.02 TOPSOIL STRIPPING

A. Excavate topsoil from areas to receive fill.

B. Stockpile topsoil in an area on-site where approved by the Owner or Engineer. Implement temporary erosion and sediment control measures specified in Section 01565.

3.03 DISPOSAL OF WOOD AND BRUSH

A. All wood and brush shall be disposed of within 15 calendar days after cutting or felling unless otherwise approved. Coordinate disposal with owner.

END OF SECTION

SECTION 02200
EARTHWORK

PART 1 GENERAL

1.01 SUMMARY

A. Section includes general earthwork for grading of the site, excavation, subgrade fill, general fill, fill placement for access roads, berms, underground pipelines, and stormwater facilities.

B. Related Sections:

1. Section 02220 - Excavation and Backfilling

1.02 REFERENCES

A. American Society for Testing and Materials (ASTM).

1. ASTM D 422, Standard Method for Particle-Size Analysis of Soils.

2. ASTM D 698, Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort.

3. ASTM D 1140, Standard Test Method for Amounts of Material in Soils Finer than the Number 200 Sieve.

4. ASTM D 1557, Standard Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using Ten-Pound (4.54 kg) Hammer and 18-Inch (457 mm) Drop.

5. ASTM D 2216, Standard Test Method for Laboratory Determination of Water (Moisture) Content of Soil and Rock.

6. ASTM D 2487, Standard Test Method for Classification of Soils for Engineering Purposes.

7. ASTM D 6938, Standard Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).

8. ASTM D 3017, Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth).

9. ASTM D 4318, Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.

1.03 DEFINITIONS

A. Excavation: Consists of the removal of material encountered to subgrade elevations and the reuse disposal of materials removed.

B. Subgrade: The uppermost surface of an excavation or the top surface of a fill or backfill immediately below base course.

C. Borrow: Soil material obtained from borrow areas when sufficient approved soil material is not available from excavations.

D. Unauthorized Excavation: Consists of removing materials beyond indicated subgrade elevations or dimensions without direction by the Engineer. Unauthorized excavation shall be at the Contractor's expense.

1.04 QUALITY ASSURANCE/QUALITY CONTROL

Owner will retain the services of an inspection and testing firm to determine conformance of the materials and constructed work with the specifications.

1.05 PROJECT CONDITIONS

A. Provide temporary controls as specified in Sections 01563 and 01565.

B. The Contractor is solely responsible for excavation slope stability. Excavation work shall be in compliance with applicable OSHA regulations and State regulations.

PART 2 PRODUCTS

2.01 GENERAL

Provide all labor, materials, and equipment necessary to accomplish the Work specified in this section.

2.02 SOIL MATERIALS

A. General Fill: On-site soil or borrow material free of large rock, debris, waste, frozen material, vegetation, and other deleterious matter with a maximum particle size of six inches.

B. Prepared Subgrade: In areas to be filled, unless otherwise noted, upper eight inches of in-situ soil, scarified and recompacted to density of subsequent layer of fill/backfill material.

2.03 OTHER MATERIALS

Provide other materials (like gravel), not specifically described herein but required for a complete and proper installation, as selected by the Contractor subject to the approval of the Engineer.

2.04 WATER FOR COMPACTION

Furnish as required. Contractor will have to obtain a source from Owner.

PART 3 EXECUTION

3.01 PREPARATION

A. Protect structures, utilities, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earthwork operations.

B. Protect subgrades and foundation soils against freezing temperatures or frost. Provide protective insulating materials as necessary.

C. Provide erosion control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties.

3.02 DEWATERING

A. Prevent surface water and subsurface or ground water from entering excavations, from ponding on prepared subgrades, and from flooding Project site surrounding areas.

B. Protect subgrade soils from softening and damage by rain or water accumulation.

3.03 EXCAVATION

A. Perform excavation of every type of material encountered within the limits of the Work to the lines, grades, and elevations indicated on the Drawings and specified herein.

B. Satisfactory Excavated Materials shall be transported to, and place in, fill or embankment areas within the limits of Work.

C. Unsatisfactory Excavated Materials

1. Unsatisfactory material excavation shall include excavation and disposal of soft or compressible soils, old spoil material, or any other materials judged by the Engineer to be unsuitable for foundations or the placement of compacted soils.

2. Excavate to a distance below grade as directed by the Engineer and replace with satisfactory materials.

3. The Contractor shall include excavation of unsatisfactory materials, and replacement by satisfactory materials, as parts of the Work of this Section.

4. Dewatering shall be provided in areas of undercutting to a depth of at least two feet below the bottom of the excavation and shall be maintained until compacted earth fill is placed to at least three feet above the original water level or original ground level, whichever is higher.

D. Surplus Materials or unsatisfactory excavated materials, and surplus satisfactory excavated material, shall be disposed of on-site in designated areas.

3.04 DITCHES AND GUTTERS

A. Cut accurately to the cross sections, grades and elevations shown on the Drawings.

B. Maintain excavation from detrimental quantities of debris until completion of work.

C. Dispose of excavated materials as shown on the Drawings or as directed by the Engineer; except do not, in any case, deposit materials less than three feet from the edge of a ditch.

3.05 UNAUTHORIZED EXCAVATION

Unauthorized excavation consists of removal of materials beyond indicated subgrade elevations or dimensions without specific instruction from the Engineer.

3.06 STABILITY OF EXCAVATIONS

Comply with local codes, ordinances, and requirements of authorities having jurisdiction to maintain stable excavations.

3.07 APPROVAL OF SUBGRADE

A. Notify Engineer when excavations have reached required subgrade.

B. When Engineer determines that unforeseen unsatisfactory soil is present, continue excavation and replace with compacted backfill or fill material as directed.

C. Unforeseen additional excavation and replacement material will be paid according to the Contract provisions for changes in Work.

D. Reconstruct subgrades damaged by freezing temperatures, frost, rain, accumulated water, or construction activities, as directed by the Engineer.

3.08 STORAGE OF SOIL MATERIALS

A. Stockpile excavated materials acceptable for backfill and fill soil materials, including acceptable borrow materials. Stockpile soil materials without intermixing. Place, grade, and shape stockpiles to drain surface water. Cover to prevent wind-blown dust.

B. Stockpile soil material away from edge of excavations. Do not store within drip line of remaining trees or coordinate with owner.

3.09 GENERAL BACKFILLING

A. Backfill excavations promptly, but not before completing the following:

1. Acceptance of construction below finish grade including, where applicable, dampproofing, waterproofing, and perimeter insulation.
2. Surveying locations of underground utilities for record documents.
3. Testing, inspecting, and approval of underground utilities.

4. Removal of trash and debris from excavation.
5. Removal of temporary shoring, bracing, and sheeting.
6. Installing permanent or temporary horizontal bracing on horizontally supported walls.

3.10 FILL

A. Preparation: Remove compost, vegetation, topsoil, debris, wet, and unsatisfactorily soil materials, obstructions, and deleterious materials from ground surface prior to placing fills.

B. Place fill material in not more than eight to nine-inch loose layers to required elevations for each location listed below.

3.11 MOISTURE CONTROL

A. Unless otherwise noted, uniformly moisten or aerate subgrade and each subsequent fill or backfill layer to obtain compaction.

1. Do not place backfill or fill material on surfaces that are muddy, frozen, or contain frost or ice.

2. Remove and replace or scarify and air-dry satisfactory soil material that is too wet to compact and is rutting when equipment is operating.

3. Stockpile or spread and dry removed wet satisfactory soil material.

3.12 COMPACTION

A. Place backfill and fill materials in layers not more than eight to nine inches in loose depth for material compacted by heavy compaction equipment and not more than four inches loose depth for material compacted by hand-operated tampers.

B. Place backfill and fill materials evenly on all sides of structures to required elevations.

C. Unless otherwise noted, scarify and recompact upper six inches of subgrade to density not less than required for the subsequent layer of fill/backfill material.

3.13 GRADING

A. General: Uniformly grade areas to a smooth surface free from irregular surface changes. Comply with compaction requirements and grade to cross sections, lines, and evaluations indicated.

1. Provide a smooth transition between existing adjacent grades and new grades.

2. Cut off soft spots, fill low spots, and trim high spots to conform to required surface tolerances.

B. Site Grading: Slope grades to direct water away from buildings and to prevent ponding. Finish subgrades to required elevations within plus or minus 0.10-foot tolerances:

3.14 TOPSOIL

After rough grading is completed and reviewed by Engineer, spread topsoil over specified areas as shown on the Drawings to a minimum compacted thickness of twelve inches.

3.15 FIELD QUALITY CONTROL

A. Testing Agency Services: Allow testing agency to inspect and test each subgrade and each fill or backfill layer. Do not proceed until test results for previously completed work verify compliance with requirements.

B. When testing agency reports that subgrades, fills, or backfill are not properly stable, scarify and moisten or aerate, or remove and replace soil to the depth required, recompact and retest until required density is obtained.

3.16 PROTECTION

A. Protecting Graded Areas: Protect newly graded areas from traffic, freezing, and erosion. Keep free of trash and debris.

B. Repair and re-establish grades to specified tolerances where completed or partially completed surfaces become eroded, rutted, settled, or lose compaction due to subsequent construction operations or weather conditions.

   1. Scarify or remove and replace material to depth directed by the Engineer; reshape and recompact to optimum moisture content or the required density.

C. Settling: Where settling occurs during the Project correction period, remove finished surfacing, backfill with additional approved material, compact, and reconstruct surfacing.

D. Restore appearance, quality, and condition of finished surfacing to match adjacent work, and eliminate evidence of restoration to the greatest extent possible.

END OF SECTION

SECTION 02210
GENERAL FILL

PART 1 GENERAL

1.01 DESCRIPTION OF WORK

A. The Contractor shall furnish all labor, materials, tools, supervision, transportation, and installation equipment necessary for the construction of earthwork structures as specified herein, as shown on the Drawings, and in accordance with the project specifications.

B. The work of this Section shall include, but not necessarily be limited to: separating, hauling, stockpiling, backfilling, compacting, and grading of soils. The work of this Section may pertain in whole or in part to construction of the following: perimeter berm, roads, settling pond, and access pads. The work of this Section also includes dewatering and protection. The Contractor shall be prepared to construct the structural fill in conjunction with other construction activities and subcontractors at the site.

C. Notwithstanding the prequalification of any material sources for the structural fill, the Contractor shall be entirely responsible for meeting the requirements of this Section.

1.02 REFERENCES

A. *Compost Pad Improvements for the City of Little Rock Landfill, Little Rock, Arkansas.*, dated September 2023, Terracon Consultants, Inc.

B. Latest version of American Society for Testing and Materials (ASTM) standards:

1. ASTM D 422, Standard Test Method for Particle-Size Analysis of Soils.

2. ASTM D 698, Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft^3 (600 kN-m/m^3)).

3. ASTM D 1556, Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method.

4. ASTM D 1557, Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft^3 (2,700 kN-m/m^3)).

5. ASTM D 2216, Standard Test Method for Laboratory Determination of

Water (Moisture) Content of Soil and Rock.

6. ASTM D 2487, Standard Classification of Soils for Engineering Purposes (Unified Soil Classification System).

7. ASTM D 6938, Standard Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).

8. ASTM D 2937, Standard Test Method for Density of Soil in Place by the Drive-Cylinder Method.

9. ASTM D 3017, Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth).

10. ASTM D 4220, Standard Practices for Preserving and Transporting Soil Samples.

11. ASTM D 4318, Standard Test Method for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.

1.03 SUBMITTALS

A. The Contractor shall discuss with the Owner and the CQA Consultant the proposed methods of construction, including stripping, dewatering, excavation, filling, compaction, and backfilling for the various portions of the work. The review shall be for method only. The Contractor shall remain responsible for the adequacy and safety of the methods.

B. For each soil type specified in Part 2 of this Section, the Contractor shall submit to the Owner and the CQA Consultant the following information and samples a minimum of calendar 14 days prior to starting construction:

1. the proposed material source;

2. the results of grain-size analyses conducted on the proposed material in accordance with ASTM D 422;

3. for fine-grained materials, the results of liquid and plastic limit tests conducted on the proposed material in accordance with ASTM D 4318;

4. the results of a moisture-density relation test (ASTM D 698); and

5. a 50-lb sample of each of the proposed soils or authorization to access the

proposed source(s) for sampling.

C. The Contractor shall notify the Owner and the CQA Consultant in writing at least seven calendar days in advance of intention to perform the work of this Section.

D. If work is interrupted for reasons other than inclement weather, the Contractor shall notify the Owner and the CQA Consultant immediately and provide a plan and schedule for resumption of the work.

E. The Contractor shall abide by all qualification requirements of the CQA Plan.

1.04 CONSTRUCTION QUALITY ASSURANCE

A. The construction of the structural fill shall be performed in accordance with the requirements of this section.

B. The construction of the structural fill shall be monitored by the CQA Consultant as outlined in the project specifications.

C. The Contractor shall be aware of the CQA activities outlined in the project specifications and account for these CQA activities in the construction schedule.

1.05 PROTECTION

A. The Contractor shall contact utility companies and locate, mark and protect all existing utilities before commencement of construction.

B. The Contractor shall protect trees, shrubs, lawns, rock outcroppings and other features remaining as part of final landscaping.

C. The Contractor shall protect benchmarks, survey markers, fences, roads, sidewalks, paving, curbs and other existing structures from damage due to the Contractor's activities.

D. The Contractor shall repair damage caused by the construction operations.

E. Erosion control must be maintained. Erosion control measures shall be as noted on the grading plan or as directed by the Company.

F. If any damages occur the Contractor shall notify the Owner through their Project Manager.

PART 2 PRODUCTS

2.01 MATERIALS

A. All laboratory testing to evaluate the suitability or conformance of soil materials for the structural fill shall be carried out in accordance with the test methods indicated in Part 1.04 of this Section.

B. Structural fill shall consist of relatively homogeneous, natural soils that are free of debris, foreign objects, large rock fragments, roots, and organics. No materials larger than three in. shall be allowed.

PART 3 EXECUTION

3.01 FAMILIARIZATION

A. Prior to implementing any work described in this Section, the Contractor shall become thoroughly familiar with the site, the site conditions, and all portions of the work falling within this Section and the CQA Plan.

B. Inspection:

1. Prior to implementing any of the work in this Section, the Contractor shall carefully inspect the installed work of all other Sections and verify that all work is complete to the point where the installation of the work specified in this Section may properly commence without adverse impact.

2. If the Contractor has any concerns regarding the installed work of other Sections, the Owner should be immediately notified in writing within 48 hours of the site inspection. Failure to notify the Owner or continuance with structural fill placement shall be construed as Contractor's acceptance of the related work of all other Sections.

3.02 SITE PREPARATION

A. The Contractor shall develop access to the construction area in accordance with the requirements of the Drawings and any supplemental Specifications.

B. The Contractor shall install silt fences immediately down-slope of each area to be disturbed prior to the beginning of work in that area. The Contractor shall maintain the silt fences for the duration of construction. Accumulated sediment behind the silt fences shall be disposed of on-site by the Contractor in a manner approved by the Owner.

C. All brush, vegetation, rubbish, and other objectionable material shall be removed from the construction area and disposed of in an area designated by the Owner.

D. All topsoil shall be removed from the construction area and stockpiled.

E. Stormwater ditches, either permanent or temporary, shall be constructed in accordance with the Drawings. The Contractor shall be responsible for constructing diversion ditches as required to divert potential run-on around the construction area. The construction of temporary ditches not shown on the Drawings shall not be undertaken until the Contractor's plan for constructing the ditches is approved by the Owner.

3.03 EXCAVATION AND STOCKPILING

A. Excavated materials to be used as structural fill shall be stockpiled in designated areas segregated from soils not suitable for use as fill, clearing debris, or other objectionable materials. Stockpile areas shall be designated by the Owner.

B. Stockpiles of structural fill shall have side slopes no steeper than 3H:1V (3 horizontal:1 vertical) unless approved otherwise by the Owner. The stockpiles of structural fill shall be graded to drain, sealed by tracking parallel to the slope with a dozer or other means approved by the Owner, and dressed daily during periods when structural fill is taken from the stockpile. The Contractor may cover structural fill stockpiles with plastic sheeting or other material approved by the Owner in order to preserve the moisture content of the structural fill.

C. Stockpiles that shall remain out of active use for a period greater than seven months shall either be covered as described in Part 3.03.C of this Section or stabilized by seeding and fertilizing in accordance with the requirements given in Section 02930.

D. Surplus excavated soils shall not be removed from the site or disposed of by the Contractor unless such removal or disposal is approved by the Owner.

3.04 STRUCTURAL FILL

A. The structural fill used during this construction shall be constructed to the lines and grades shown on the Drawings using the appropriate material.

B. The structural fill shall meet the requirements of Part 2.01 of this Section.

C. The structural fill shall be placed in a loose lift that results in a compacted lift thickness of no greater than 12 inches.

D. The Contractor shall be responsible for installation of suitable material that meets the projects specifications for classification, moisture content and density. The Contractor shall not proceed to the next lift until the current lift has been tested and approved by the CQA representative. The Contractor will be held responsible for proceeding to the next lift without prior approval from the CQA Firm.

E. If the moisture content of the structural fill is not suitable for proper compaction, the structural fill shall be moisture conditioned and reworked, as appropriate. Wetting shall be accomplished using a water truck and spray nozzle, unless the CQA Consultant approves an alternative method. During wetting or drying, the structural fill shall be regularly disced or otherwise mixed so that uniform moisture conditions are obtained

F. The Contractor shall not place frozen structural fill, nor shall structural fill be placed on frozen ground.

G. If the structural fill freezes during construction, the Contractor shall remove the frozen structural fill, scarify the remaining unfrozen fill, and then place and compact new structural fill in accordance with these Specifications and any supplemental Specifications. The frozen structural fill shall not be reused until it has thawed, been disced, and then reworked to an acceptable uniform moisture content.

3.05 SURVEY CONTROL

A. The Contractor shall survey the location and elevation of the structural fill, access road, drainage ditches, and drainage swales.

B. The Owner will supply surveying for quality assurance purposes and Record Drawings.

3.06 PROTECTION OF WORK

A. The Contractor shall use all means necessary to protect all materials and all partially-completed and completed work specified in this Section and prior work of other Sections.

B. At the end of each day, the Contractor shall verify that the entire work area was left in a state that promotes surface drainage off and away from the area and from finished work. If threatening weather conditions are forecast, compacted surfaces shall be seal-rolled to protect finished work.

C. In the event of damage to prior work or work completed as specified in this Section, the Contractor shall submit a repair plan to the Owner and CQA Consultant(s). The repair plan shall describe the areas requiring repair, and the Contractor shall make all repairs and replacements necessary to the approval of the Owner and CQA Consultant(s) and at no additional cost to the Owner.

3.07 PUMPING AND DRAINAGE

A. At all times during construction, the Contractor shall provide and maintain proper equipment and facilities to remove all water entering excavations and keep such excavations dry so as to obtain a satisfactory condition for progress of work.

B. Drainage shall be disposed of only in an area approved by the Owner. Drainage shall be disposed of in a manner which prevents flow or seepage back into the excavated area.

END OF SECTION

SECTION 02228
SUBGRADE

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

A. The Contractor shall furnish all labor, materials, tools, supervision, transportation, and installation equipment necessary for the construction of the subgrade as specified herein, as shown on the Drawings, and in accordance with the Construction Quality Assurance (CQA) Plan.

B. The Contractor shall be prepared to coordinate the construction of the subgrade with other construction activities and subcontractors at the site.

C. Notwithstanding the prequalification of any material sources for the subgrade, the Contractor shall be entirely responsible for meeting the requirements of this Section.

D. The work of this Section shall include, but not necessarily be limited to, the construction of the subgrade component of the compost area.

1.02 RELATED SECTIONS

A. Section 02200 – Earthwork

B. Section 02278 – Geotextile and Geogrid

1.03 REFERENCES

A. *Compost Pad Improvements for the City of Little Rock Landfill, Little Rock, Arkansas.*, dated September 2023, Terracon Consultants, Inc.

B. Latest version of American Society for Testing and Materials (ASTM) standards:

1. ASTM D 422 — Standard Test Method for Particle-Size Analysis of Soils.
2. ASTM D 698 — Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft^3 (600 kN-m/m^3)).
3. ASTM D 1140 — Standard Test Method for Amount of Material in Soils Finer than the No. 200 (75-µm) Sieve.
4. ASTM D 1556 — Standard Test Method for Density of Soil in Place by the Sand-Cone Method.
5. ASTM D 1557 — Test Method for Laboratory Compaction Characteristics of Soil

Using Modified Effort (56,000 ft-lbf/ft^3 (2,700 kN-m/m^3)).

6. ASTM D 2216 — Standard Test Method for Laboratory Determination of Water (Moisture) Content of Soil and Rock.
7. ASTM D 2487 — Standard Classification of Soils for Engineering Purposes (Unified Soil Classification System).
8. ASTM D 6938 — Standard Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).
9. ASTM D 2937 — Standard Test Method for Density of Soil in Place by the Drive-Cylinder Method.
10. ASTM D 3017 — Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth).
11. ASTM D 4220 — Standard Practices for Preserving and Transporting Soil Samples.
12. ASTM D 4318 — Standard Test Method for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.
13. ASTM D 5084 — Standard Test Method for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible-Wall Permeameter.
14. ASTM D 5093 — Standard Test Method for Field Measurement of Infiltration Rate Using a Double-Ring Infiltrometer with a Sealed-Inner Ring.

1.04 SUBMITTALS

A. The Contractor shall notify the Owner and CQA Consultant in a minimum of 3 calendar days prior to starting construction of the subgrade. The notice shall state the source of the material to be used, the equipment to be used, the date and time that placement operations shall start, and the name of the person in the field who shall be in charge of the construction of the subgrade.

B. If work is interrupted for reasons other than inclement weather, the Contractor shall notify the Owner and CQA Consultant immediately and provide a plan and schedule for resumption of the work.

1.05 CONSTRUCTION QUALITY ASSURANCE

A. The construction of the subgrade shall be monitored by the CQA Consultant as outlined in the project specifications.

B. The Contractor shall be aware of the activities outlined in the project specifications and shall account for these activities in the construction schedule.

PART 2 - PRODUCT

2.01 MATERIAL FOR SUBGRADE

A. All laboratory testing to evaluate the suitability or conformance of soil materials for the subgrade shall be carried out in accordance with the test methods indicated in Part 1.04 of this Section.

B. The subgrade shall consist of relatively homogeneous, natural soils which are substantially free of debris, foreign objects, large rock fragments, roots, and organics. The soils selected shall not be gap-graded or susceptible to piping. Any material which is found by the CQA Consultant to be unsuitable shall be removed from the work area by the Contractor.

C. Soil testing shall be performed by the CQA Consultant provided by the Owner.

PART 3 - EXECUTION

3.01 FAMILIARIZATION

A. Prior to implementing any work of this Section, the Contractor shall become thoroughly familiar with the site, the site conditions, and all portions of the work falling within this Section and the project specifications.

3.02 SUBGRADE PLACEMENT

A. The Contractor shall construct the subgrade to the grades, slopes, and elevations shown on the Drawings and as specified in this Section.

B. No frozen or partially thawed subgrade material shall be placed, spread or compacted.

C. No compacted subgrade material shall be placed or spread while the surface on which the material is to be placed is frozen or thawing, during unfavorable weather conditions, or during periods of precipitation.

D. The subgrade surface shall be made smooth and free from ruts or indentations at the end of every working day when precipitation is forecast and/or at the completion of the compaction operations in that area.

E. The entire area shall be left in a manner to promote runoff at the end of each day.

F. The final surface of the subgrade shall be compacted using a smooth drum or pneumatic wheel compactor.

G. The subgrade material shall be placed in loose lifts which result in a maximum compacted lift thickness of 6 inches.

H. The subgrade must have sufficient compaction and strength to enable the placement and compaction of the gravel subbase. The subgrade also must be stable to prevent large differential settlement that would be conducive to rutting of the top gravel layer.

I. The Contractor shall not proceed to the next lift until the current lift has been approved by the Engineer. The Contractor will be notified of approval by the Engineer or CQA Representative. The Contractor will be held responsible for proceeding to the next lift without prior approval from the CQA Firm.

3.03 FIELD QUALITY CONTROL AND TESTING

A. Frequency:

1. The frequency of quality control testing is outlined below. The Contractor shall take this testing frequency into account in planning his construction schedule.

   a. The minimum testing frequencies for material evaluation and construction quality evaluation shall be as presented in the project specifications.

   b. Sampling locations shall be selected by the CQA Consultant. If necessary, the location of routine in-place moisture content and dry density tests shall be determined using a non-biased sampling plan.

   c. A special testing frequency shall be used at the discretion of the Owner and/or the CQA Consultant when visual observations of construction performance indicate a potential problem. Additional testing for suspected areas shall be considered when:

      i. the rollers slip during rolling operation;

      ii. the lift thickness is greater than specified;

iii. the subgrade soil is at improper and/or variable moisture content;

iv. fewer than the specified number of roller passes are made;

v. dirt-clogged rollers are used to compact the material;

vi. the rollers do not have optimum ballast; or

vii. the degree of compaction is doubtful.

d. During construction, the frequency of testing may also be increased in the following situations:

i. adverse weather conditions;

ii. breakdown of equipment;

iii. at the start and finish of grading;

iv. if the material fails to meet specifications; or

v. the work area is reduced.

B. Defective Areas:

1. If a defective area is discovered in the subgrade, the CQA Consultant shall immediately determine the extent and nature of the defect. If the defect is indicated by an unsatisfactory test result, the CQA Consultant shall determine the extent of the defective area by additional tests, observations, a review of records, or other means that the CQA Consultant deems appropriate. If the defect is related to adverse site conditions, such as overly wet soils or surface desiccation, the CQA Consultant shall define the limits and nature of the defect.

2. After determining the extent and nature of a defect, the CQA Consultant shall notify the Contractor and schedule appropriate retests when the work deficiency has been corrected.

3. The Contractor shall correct the deficiency to the satisfaction of the CQA Consultant. The cost of corrective actions shall be borne by the Contractor.

4. All retests recommended by the CQA Consultant must verify that the defect has been corrected before any additional work is performed by the Contractor in the area of the deficiency. The CQA Consultant shall also verify that all installation requirements are met and that all submittals are provided.

3.04 SURVEY CONTROL

A. The contractor shall be responsible for all layout work. Once the subgrade is completed

and CQA verified, the Contractor shall be responsible for surveying the location and elevation of the top of subgrade. Final elevations of the top of subgrade surface shall be 0 to +0.1 ft. compared to the grades shown on the Construction Drawings.

B. Owner will provide one survey for certification and documentation of subgrade elevations. Any additional surveying will be at the expense of the Contractor.

3.05 PRODUCT PROTECTION

A. The Contractor shall use all means necessary to protect all prior work, including all materials and completed work specified in this and other Sections.

B. In the event of damage to prior work or work completed as specified in this section, the Contractor shall immediately make all repairs and replacements necessary to the approval of the Owner and CQA Consultant and at no additional cost to the Owner.

END OF SECTION

SECTION 02278
GEOTEXTILE AND GEOGRID

PART 1 GENERAL

1.01 SUMMARY

A. Section includes furnishing and installing a geotextile (6 oz nonwoven geotextile) and a geogrid (NX850) as part of the compost area improvement.

1.02 REFERENCES

A. American Society for Testing and Materials (ASTM):

1. ASTM D 413, Standard Test Methods for Rubber Property - Adhesion to Flexible Substrate.
2. ASTM D 7179, Standard Test Method for Determining Geonet Breaking Force.
3. ASTM D 1505, Standard Test Method for Density of Plastics by the Density Gradient Technique.
4. ASTM D 1603, Standard Test Method for Carbon Black in Olefin Plastics.
5. ASTM D 3786, Standard Test Method for Hydraulic Bursting Strength of Knitted Goods and Nonwoven Fabrics - Diaphragm Busting Strength Tester Method.
6. ASTM D 4218, Standard Test Method for Determination of Carbon Black Content in Polyethylene Compounds by the Muffle-Furnace Technique.
7. ASTM D 4354, Standard Practice for Sampling of Geosynthetics for Testing.
8. ASTM D 4491, Standard Test Methods for Water Permeability of Geotextiles by Permittivity.
9. ASTM D 4533, Standard Test Method for Trapezoid Tearing Strength of Geotextiles.
10. ASTM D 4595, Standard Test Method for Tensile Properties of Geotextiles by the Wide-Width Strip Method.
11. ASTM D 4632, Standard Test Method for Grab Breaking Load and Elongation of Geotextiles.

12. ASTM D 4716, Standard Test Method for Constant Head Hydraulic Transmissivity (In-Plane Flow) of Geotextiles and Geotextile Related Products.

13. ASTM D 4751, Standard Test Method for Determining Apparent Opening Size of a Geotextile.

14. ASTM D 4833, Standard Test Method for Index Puncture Resistance of Geotextiles, Geomembranes, and Related Products.

15. ASTM D 5199, Standard Test Method for Measuring Nominal Thickness of Geotextiles and Geomembranes.

16. ASTM D 5261, Standard Test Method for Measuring Mass per Unit Area of Geotextiles.

1.03 SUBMITTALS

A. Submit the following to the CQA Engineer, for review and approval, no later than 14 calendar days prior to scheduled shipment of geotextile and geogrids:

1. Documentation of manufacturers' qualifications as specified in subsection 1.04.A of this Section.

2. Manufacturer's quality control program manual or descriptive documentation.

3. List of material properties and samples of the material.

4. Manufacturers' certification that the products to be furnished will comply with all product specifications in this section.

5. Documentation of installers' qualifications, as specified in subsection 1.04.13 of this Section.

B. Submit the following to the CQA Engineer for review and approval no later than one calendar day prior to shipment of the products:

1. The manufacturers' quality control certifications, including results of source quality control testing of the products, as specified in subsection 2.01 of this Section, to verify that the materials supplied for the project are in compliance with all product specifications in this Section. The certifications shall be signed by a responsible party employed by the manufacturer, such as the QA/QC Manager, Production Manager, or Technical Services Manager. Certifications shall include lot and roll numbers, and corresponding shipping information.

C. No geotextile or geogrid shall be deployed until the manufacturer's quality control certifications are submitted to and approved by the CQA Engineer. Should the material be deployed prior to CQA Engineer's approval, it shall be at sole risk of the Installer and Contractor, and if the material does not meet project specifications, it shall be removed from the project at the expense of the Contractor.

1.04 QUALITY ASSURANCE/QUALITY CONTROL

A. Manufacturer's Qualifications: The manufacturers shall be specialists in the manufacture of geotextile and/or geogrid, as applicable. Geotextile and geogrid manufacturers shall have at least five years experience in the manufacture of such material.

B. Installer's Qualifications

1. The Installer shall be an approved contractor for the City of Little Landfil.
2. The Installer shall have at least five years experience in similar construction projects.

C. Codes and Standards: Perform all work in compliance with applicable requirements of governing authorities having jurisdiction.

1.05 DELIVERY, STORAGE AND HANDLING

A. Store material off of the ground, rolled and covered to protect from ultraviolet light exposure, precipitation or other inundation, mud, dirt, dust, puncture, cutting or any other damaging or deleterious conditions.

B. Rolls shall be marked or tagged with the following information:

1. Manufacturer's name
2. Product identification
3. Lot number
4. Roll number
5. Roll dimensions

C. Replace defective or torn material at no cost to the Owner.

PART 2 PRODUCTS

2.01 SOURCE QUALITY CONTROL

A. The following test methods and frequencies shall be used, at a minimum, by the manufacturer for the quality assurance and control of the geotextiles and geogrids prior to shipment of each product. Sampling and testing frequency shall conform to ASTM D 4354. Every effort shall be made to minimize the number of lots of each geosynthetic for use in the project.

B. Geotextile Manufacturing QC

1. Geotextile Tests:

   a. Mass Per Unit Area - ASTM D 5261

   b. Grab Tensile Strength and Grab Tensile Elongation - ASTM D 4632

   c. Thickness – ASTM D5199

   d. Puncture Resistance - ASTM D 6241

   e. Apparent Opening Size - ASTM D 4751

   f. Permittivity - ASTM D 4491

   g. Trapezoid Tear Strength - ASTM D 4533

   h. Mullin Burst – ASTM D3786

Frequency: Minimum of one test per 100,000 square feet and minimum of one test per lot.

D. For manufacturer's quality control testing of geotextiles and geogrids, the sample average test results (weaker principal direction for mechanical tests) for a particular property for any individual roll tested within a lot designated as first quality shall meet or exceed the Minimum Average Roll Value indicated in the manufacturer's certification.

2.02 GEOTEXTILE

A. The geotextile shall be a continuous filament polyester or polypropylene nonwoven needle-punched fabric. The fabric shall be inert to commonly encountered chemicals, biological degradation, hydrocarbons, acids, alkalines and mildew. The fabric shall be resistant to rot, ultraviolet light, insects and rodents.

B. The polyester or polypropylene filaments shall be formed into a stable network such that the filaments retain their relative position.

C. Geotextile for compost area improvements shall conform to the following minimum requirements shown on attached Table 02278-1.

D. Minimum roll width shall be 12.5 feet. The roll length shall be maximized in order to minimize seams.

PART 3 EXECUTION

3.01 FIELD QUALITY CONTROL

A. The CQA Firm shall ensure that the geotextiles and geogrids are installed according to manufacturer recommendations and the Contract Documents. The CQA Firm shall observe and document the installation activities.

3.02 PREPARATION

Surfaces to receive geotextile and geogrids shall be smooth and free of litter, sharp protrusions, and large stones.

3.03 GEOTEXTILE INSTALLATION

A. General

1. All geotextiles shall be weighted with sandbags or the equivalent when required. Such sandbags shall be installed during placement and shall remain until replaced with cover material.

B. Installation

1. The geotextile shall be placed where shown on the Drawings and placed in such a manner that placement of overlying material will not excessively stretch or tear the fabric.
2. Overlapped seams shall have a minimum overlap of 6 inches.

C. Seaming

1. Seaming shall be by sewing, adhesives, fusion, leister or other approved bonds. All seams shall be continuously seamed. Spot seaming may only be considered as a measure against wind uplift. Overlaps shall be oriented in the direction of earth filling.

2. Any sewing shall be done using polymeric thread with chemical properties equal to or exceeding those of the geotextile.

3.04 GEOTEXTILE REPAIR

A. Holes or tears in the fabric shall be repaired as follows:

1. Flat Areas (flatter than 10 to 1): A fabric patch shall be spot-seamed in place or leistered with a minimum of 12 inches of overlap beyond the perimeter of the tear or damage in all directions.

END OF SECTION

TABLE 1
Geotextile & Geogrid MQC Testing Specifications

Manufacturer's Quality Control			
Test	**Method (1)**	**Testing Frequency**	**Min. Requirements**
Geotextile			
Mass per Unit Area	ASTM D 5261	1/90,000 sf	≥6 oz/sq. yd.
Grab Tensile	ASTM D 4632	1/90,000 sf	160 lbs.
Grab Elongation	ASTM D 4632	1/90,000 sf	50%
Trapezoid Tear Strength	ASTM D 4533	1/90,000 sf	60 lbs.
CBR Puncture Strength	ASTM D 6241	1/90,000 sf	410 lbs.
Permittivity, T	ASTM D 4491	1/540,000 sf	1.50 Sec^{-1}
AOS (largest opening size)	ASTM D 4751	1/540,000 sf	70 Sieve Size
Geogrid			
N/A [2]	-	-	-

1. Test to be performed according to the latest test method as approved by the certifying engineer.
2. Geogrid material shall be Tensare Triax NX850 geogrid or Engineer approved equivalent.

CONTRACT DRAWINGS

DRAWINGS FOR THE
COMPOST PAD CONSTRUCTION

CITY OF LITTLE ROCK
YARD WASTE COMPOSTING FACILITY (PERMIT #0031-SCYW)
LITTLE ROCK, ARKANSAS

SEPTEMBER 2023
PROJECT NO. 018-001-35237144

PROFESSIONAL ENGINEER'S CERTIFICATION

"I CERTIFY TO THE BEST OF MY PROFESSIONAL JUDGMENT THAT THIS DRAWING SET PROPERLY ADHERES TO ESTABLISHED, SOUND ENGINEERING PRACTICES. THIS CERTIFICATION IS CONTINGENT ON THE FACT THAT ALL INFORMATION SUPPLIED TO THE SIGNATORY AUTHORITY, UP TO THE DATE OF THIS CERTIFICATION, IS UNQUESTIONABLY ACCURATE AND WAS PROVIDED IN GOOD FAITH."

PREPARED FOR

LITTLE ROCK SOLID WASTE DEPARTMENT
10805 IRONTON CUT-OFF ROAD
LITTLE ROCK, AR 72206
(501) 888-2208

VICINITY MAP
N.T.S.

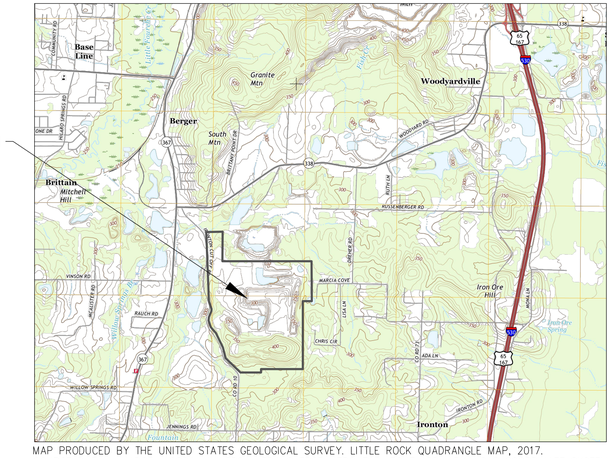
811 Know what's below. Call before you dig.

PREPARED BY

Terracon

25809 I-30 SOUTH — BRYANT, AR 72022
PH. (501) 847-9292 — FAX. (501) 847-9210

SITE LOCATION



MAP PRODUCED BY THE UNITED STATES GEOLOGICAL SURVEY. LITTLE ROCK QUADRANGLE MAP, 2017. SOURCE DATUM: NAD83, WGS84, UNIVERSAL TRANSVERSE MERCATOR, ZONE 15S, ARKANSAS COORDINATE SYSTEM 1983 NORTH AND SOUTH ZONES, NAVD 1988.

SITE LOCATION MAP
SCALE: N.T.S.

ISSUED FOR REVIEW

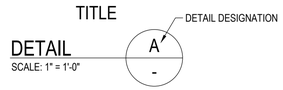
INDEX OF DRAWINGS

DRAWING NO.	TITLE
1.	COVER SHEET
2.	INDEX SHEET
3.	SITE LAYOUT
4.	EXISTING CONDITIONS
5.	TOP OF GRAVEL
6.	CONTROL POINTS

TYPICAL ABBREVIATIONS

ADEQ	ARKANSAS DEPARTMENT OF ENVIRONMENTAL QUALITY
CB	CATCH BASIN
DIA	DIAMETER
DWG	DRAWING
ELEV	ELEVATION
EXIST	EXISTING
FT	FEET
HDPE	HIGH DENSITY POLYETHYLENE
HORZ	HORIZONTAL
ID	INSIDE DIAMETER
IN	INCHES
INV	INVERT
MAX	MAXIMUM
MH	MANHOLE
MIN	MINIMUM
MSL	MEAN SEA LEVEL
NOM	NOMINAL
NSPS	NEW SOURCE PERFORMANCE STANDARDS
NTS	NOT TO SCALE
OD	OUTSIDE DIAMETER
PL	PROPERTY LINE
SDR	STANDARD DIMENSION RATIO
TYP	TYPICAL
VERT	VERTICAL
NPDES	NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

SECTION/DETAIL KEY



DETAIL KEY

SECTION KEY

CONTACT INFORMATION

OWNER:
LITTLE ROCK SOLID WASTE DEPARTMENT
ATTENTION: NATHAN CHARLES, P.E. MANAGER
CIVIL ENGINEERING DIVISION
10805 IRONTON CUT-OFF ROAD
LITTLE ROCK, AR 72206
PHONE: (501) 888-2208

ENGINEER:
TERRACON CONSULTANTS, INC.
ATTENTION: DAVE MCCORMICK P.E. - SR. PROJECT ENGINEER
25809 I-30 SOUTH
BRYANT, ARKANSAS 72022
PHONE: (501) 847-9292
FAX: (501) 847-9210

REGULATORY AUTHORITY:
ARKANSAS DEPARTMENT OF ENVIRONMENTAL QUALITY
SOLID WASTE MANAGEMENT DIVISION
ATTENTION: SOLID WASTE MANAGEMENT DIVISION CHIEF
5301 NORTHSHORE DRIVE
NORTH LITTLE ROCK, AR 72118-5317
PHONE: (501) 682-0600
FAX: (501) 682-0611

GENERAL NOTES

1. EXISTING CONTOURS SHOWN ON THESE PLANS ARE BASED ON AN AERIAL SURVEY PROVIDED BY TERRACON DATED (01-26-23) BASED ON NAD83 SOUTH ARKANSAS HORIZONTAL DATUM AND NAVD88 VERTICAL DATUM. CARE SHOULD BE TAKEN WHEN INTERPRETING CONTOURS TO VERIFY THE AREAS AND THE TRANSITIONS BETWEEN THEM.
2. SLOPES AND GRADES ARE IN UNITS OF FT(H):FT(V), UNLESS OTHERWISE NOTED.
3. THE EROSION CONTROL FACILITIES REQUIRED BY THESE PLANS AND SPECIFICATIONS ARE CONSIDERED MINIMUM AND MAY BE IMPROVED AT THE DISCRETION OF THE OWNER TO CONSIDER CURRENT SITE DRAINAGE AND GENERAL CONDITIONS.
4. THESE DRAWINGS WERE PREPARED IN ACCORDANCE WITH APPLICABLE STATE (ADEQ) AND FEDERAL (EPA) SOLID WASTE REGULATIONS. THESE REGULATIONS INCLUDE ARKANSAS REGULATION 22 (ADEQ, 1995) AND 40 CFR 258 (EPA SUB-TITLE D, 1991).
5. CONTRACTOR SHALL PROTECT EXISTING SITE INFRASTRUCTURE. DAMAGE TO ANY INFRASTRUCTURE BY THE CONTRACTOR WILL BE REPAIRED AT CONTRACTOR EXPENSE.
6. BELOW GRADE UTILITY ALIGNMENTS SHOWN ARE APPROXIMATE AND LOCATED BASED ON INFORMATION PROVIDED BY OWNER. THERE MAY BE UTILITIES NOT SHOW, CONTRACTOR SHALL LOCATE, VERIFY, AND PROTECT IN PLACE BELOW GRADE UTILITIES PRIOR TO EXCAVATION. DAMAGE TO BELOW GRADE UTILITIES WILL BE REPAIRED AT CONTRACTOR EXPENSE.

ISSUED FOR REVIEW

REV.	DATE	BY	DESCRIPTION

City of LITTLE ROCK

INDEX

COMPOST PAD CONSTRUCTION
CITY OF LITTLE ROCK
LITTLE ROCK LANDFILL
LITTLE ROCK ARKANSAS

Terracon
BRYANT, AR 72022
FAX: (501) 847-9210
25809 I-30 SOUTH
PH: (501) 847-9292

DRAWING 2

DESIGNED BY:	TLB
DRAWN BY:	TLB
APPVD. BY:	DCM
SCALE:	SEE SCALE
DATE:	9-14-2023
JOB NO.	018-001-35237144
ACAD NO.	002
SHEET NO.:	1 OF 6

N:\GEC\ARCHIVE\CAD\018001\35237144\PLANS\002 - LR COMPOST INDEX SHEET.DWG

N

LEGEND:

- APPROXIMATE LIMITS OF WORK
- SURVEY MONUMENTS
- MW-3A — MONITORING WELLS GROUNDWATER ELEVATION
- HW-6 — PIEZOMETER

NOTE:
1. AERIAL IMAGE FROM TERRACON DRONE SURVEY 2023

REV.	DATE	BY	DESCRIPTION

City of LITTLE ROCK

SITE LAYOUT

COMPOST PAD CONSTRUCTION
CITY OF LITTLE ROCK
LITTLE ROCK LANDFILL
LITTLE ROCK ARKANSAS

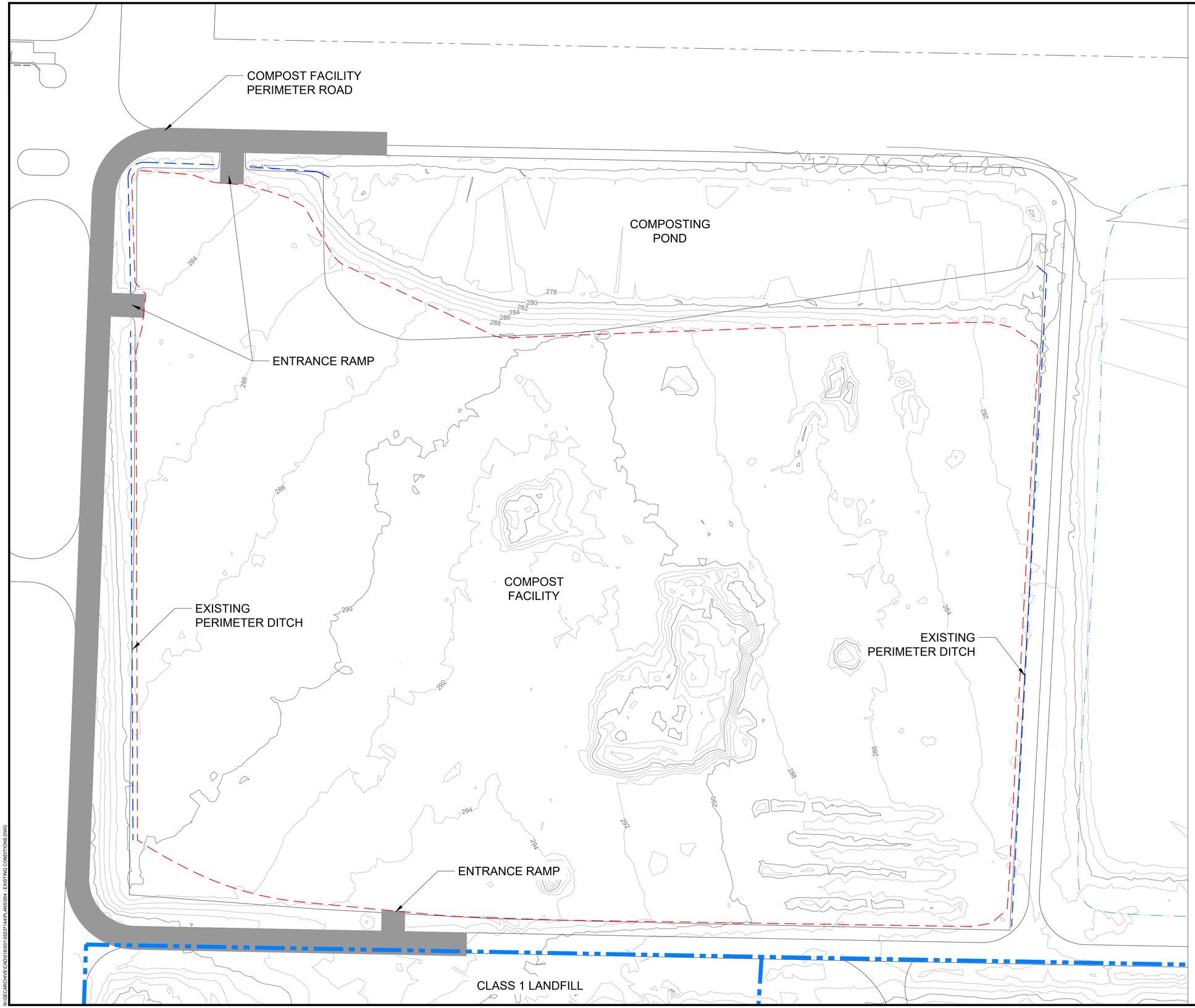
Terracon
25809 I-30 SOUTH
PH. (501) 847-9292
BRYANT, AR 72022
FAX. (501) 847-9210

DRAWING 3

DESIGNED BY:	TLB
DRAWN BY:	TLB
APPVD. BY:	DOM
SCALE:	SEE SCALE
DATE:	9-14-2023
JOB NO.	018-001-35237144
ACAD NO.	003
SHEET NO.:	3 OF 6

ISSUED FOR REVIEW

N:\GEC\ARCHIVE\CAD\018001135237144\PLANS\003 - SITE LAYOUT.DWG



N

SCALE IN FEET: 50 0 25 50

LEGEND:

- 100 — EXISTING GRADE CONTOURS
- APPROXIMATE LIMITS OF WORK AREA
- EXISTING PERIMETER DITCH

NOTE:
1. AERIAL IMAGE FROM TERRACON DRONE SURVEY 2023

ISSUED FOR REVIEW

REV.	DATE	BY	DESCRIPTION

EXISTING CONDITIONS

COMPOST PAD CONSTRUCTION

CITY OF LITTLE ROCK

LITTLE ROCK LANDFILL

LITTLE ROCK ARKANSAS

terracon
25809 I-30 SOUTH
PH. (501) 847-9292
BRYANT, AR 72022
FAX. (501) 847-9210

DRAWING 4	
DESIGNED BY:	TLB
DRAWN BY:	TLB
APPVD. BY:	DCM
SCALE:	SEE SCALE
DATE:	9-14-2023
JOB NO.	018-001-35237144
ACAD NO.	004
SHEET NO.:	4 OF 6

N:\GEC\ARCHIVE\CAD\018001\35237144\PLANS\004 - EXISTING CONDITIONS.DWG

ADD 12" OF GRAVEL TO
PERIMETER ROADS

COMPOSTING
POND

3/5 COMPOST PAD
TIE OUT AT ROAD

2/5 COMPOST PAD
TIE OUT (TYPICAL)

PHASE 3
(3.3 ACRES)

PHASE 1
(3.8 ACRES)

COMPOST PAD SHALL DRAIN
INTO EXISTING PERIMETER DITCH

COMPOST
FACILITY

COMPOST PAD
SYSTEM 1/5

2.1%

2.1%

COMPOST PAD SHALL DRAIN
INTO EXISTING PERIMETER DITCH

PHASE 4
(3.3 ACRES)

PHASE 2
(4.0 ACRES)

3/5 COMPOST PAD
TIE OUT AT ROAD

2/4 COMPOST PAD
TIE OUT (TYPICAL)

278 280 282 284 286 288 290 292 294 296

N

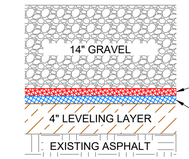
50 0 25 50

SCALE IN FEET

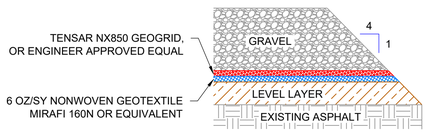
LEGEND:

- 100 EXISTING GRADE CONTOURS (2-FT CONTOURS)
- 100 PROPOSED TOP OF GRAVEL (2-FT CONTOURS)
- APPROXIMATE LIMITS OF WORK AREA
- EXISTING PERIMETER DITCH
- CONSTRUCTION PHASES

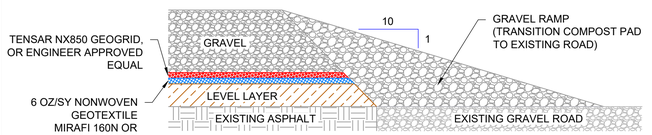
NOTE:
1. AERIAL IMAGE FROM TERRACON DRONE SURVEY 2023



COMPOST PAD SYSTEM
DETAIL 1/5 N.T.S.



COMPOST PAD TIE OUT (TYPICAL)
DETAIL 2/5 N.T.S.



COMPOST PAD TIE OUT AT ROAD
DETAIL 3/5 N.T.S.

ISSUED FOR REVIEW

REV.	DATE	BY	DESCRIPTION

City of LITTLE ROCK

TOP OF GRAVEL

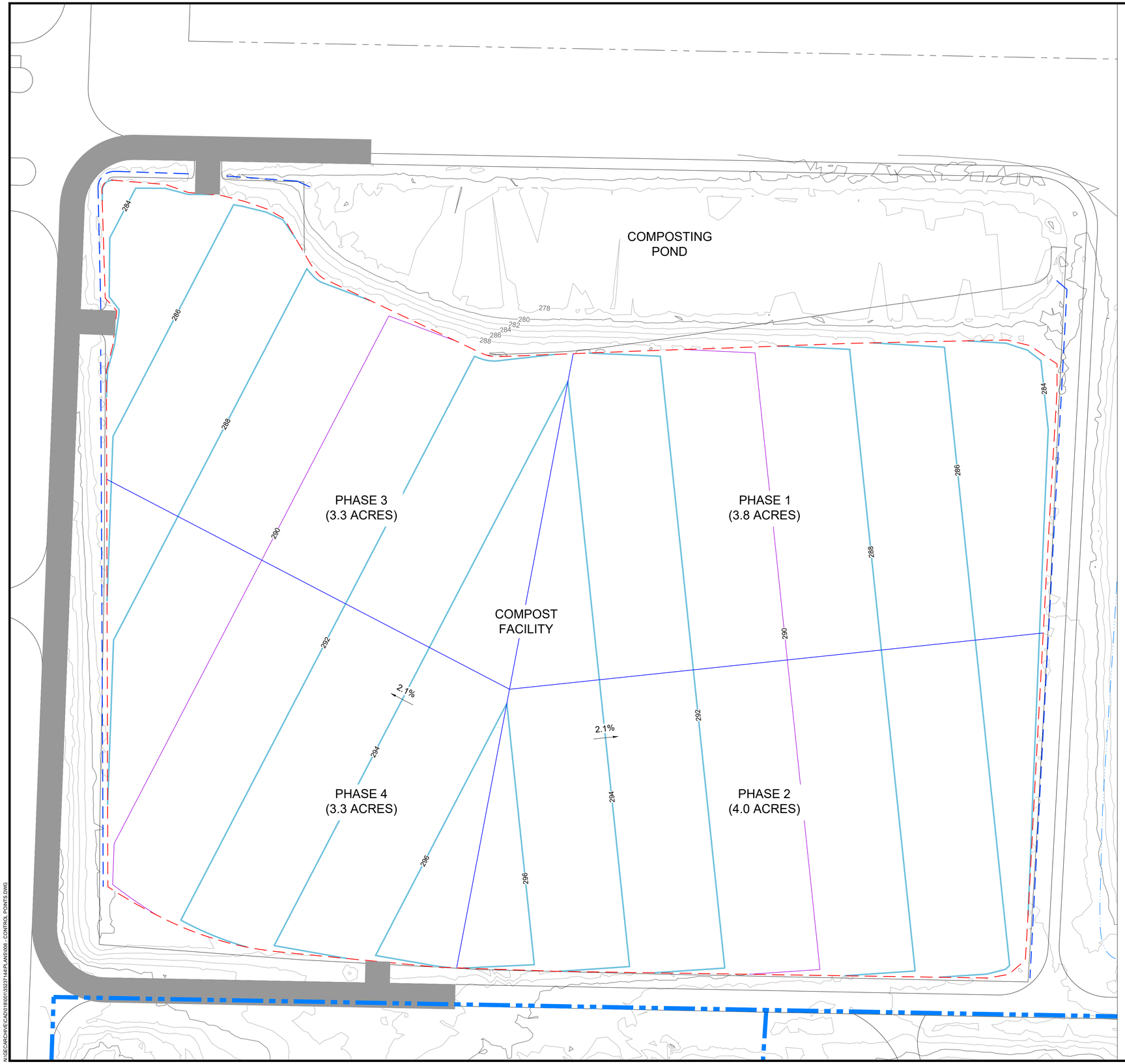
COMPOST PAD CONSTRUCTION
CITY OF LITTLE ROCK
LITTLE ROCK LANDFILL

LITTLE ROCK ARKANSAS

terracon
BRYANT, AR 72022
FAX. (501) 847-9210
25809 I-30 SOUTH
PH. (501) 847-9292

DRAWING 5	
DESIGNED BY:	TLB
DRAWN BY:	TLB
APPVD. BY:	DCM
SCALE:	SEE SCALE
DATE:	9-14-2023
JOB NO.	018-001-35237144
ACAD NO.	005
SHEET NO.:	5 OF 6

N:\GEC\ARCHIVE\CAD\018001\35237144\PLANS\005 - TOP OF GRAVEL.DWG



N

SCALE IN FEET
50 0 25 50

LEGEND:

- EXISTING GRADE CONTOURS (2-FT CONTOURS)
- PROPOSED TOP OF GRAVEL (2-FT CONTOURS)
- APPROXIMATE LIMITS OF WORK AREA
- CONSTRUCTION PHASES

IN PROCESS

ISSUED FOR REVIEW

REV.	DATE	BY	DESCRIPTION

City of LITTLE ROCK

CONTROL POINTS

COMPOST PAD CONSTRUCTION

CITY OF LITTLE ROCK

LITTLE ROCK LANDFILL

LITTLE ROCK ARKANSAS

terracon
25809 I-30 SOUTH
PH. (501) 847-9292
BRYANT, AR 72022
FAX. (501) 847-9210

DRAWING 6

DESIGNED BY:	TLB
DRAWN BY:	TLB
APPVD. BY:	DCM
SCALE:	SEE SCALE
DATE:	9-14-2023
JOB NO.	018-001-35237144
ACAD NO.	006
SHEET NO.:	6 OF 6

N:\GEC\ARCHIVE\CAD\018\001\35237144\PLANS\006 - CONTROL POINTS.DWG

Appendix B:

Photographic Log

Looking W over compost area in the background

Looking W-NW over compost area

Looking E from compost area – Sedimentation pond and Class 4 landfill in background

Looking NW over compost area from Class 1 landfill

Appendix C:

Updated Financial Assurance

2025 Financial Assurance Report

City of Little Rock

Class 1 Landfill / Class 4 Landfill / Yard Waste Compost Facility

Prepared for:

CITY OF LITTLE ROCK

City of Little Rock – Dept of Public Works
Division of Solid Waste Services
10803 Ironton Cutoff
Little Rock, AR 72206

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Table of Contents

Tables

Figures

1 Introduction

1.1 Terms of Reference

Terracon Consultants, Inc. (Terracon) prepared this 2025 Financial Assurance Report (Report) for the active municipal solid waste (MSW) landfills at the City of Little Rock Landfill Facility (CLRLF) in Little Rock, Arkansas.

1.2 Project Background

The City of Little Rock (City) owns and operates the landfill facility located at 10803 Ironton Cutoff Rd. in Little Rock, Arkansas with Global Position System coordinates latitude N 34° 38' 57.02514" and longitude 92° 18' 06.42839". The facility includes an active Class 1 landfill (Permit No. 0266-S1), an active Class 4 landfill (Permit No. 0266-S4J), and a yard waste composting facility (Permit No. 0031-SCYW). The most recent financial assurance report for the MSW facility was prepared by Terracon in March 2025. The general geographic location of the site is shown in **Figure 1.1**. The general layout and site orientation is shown in **Figure 1.2**.

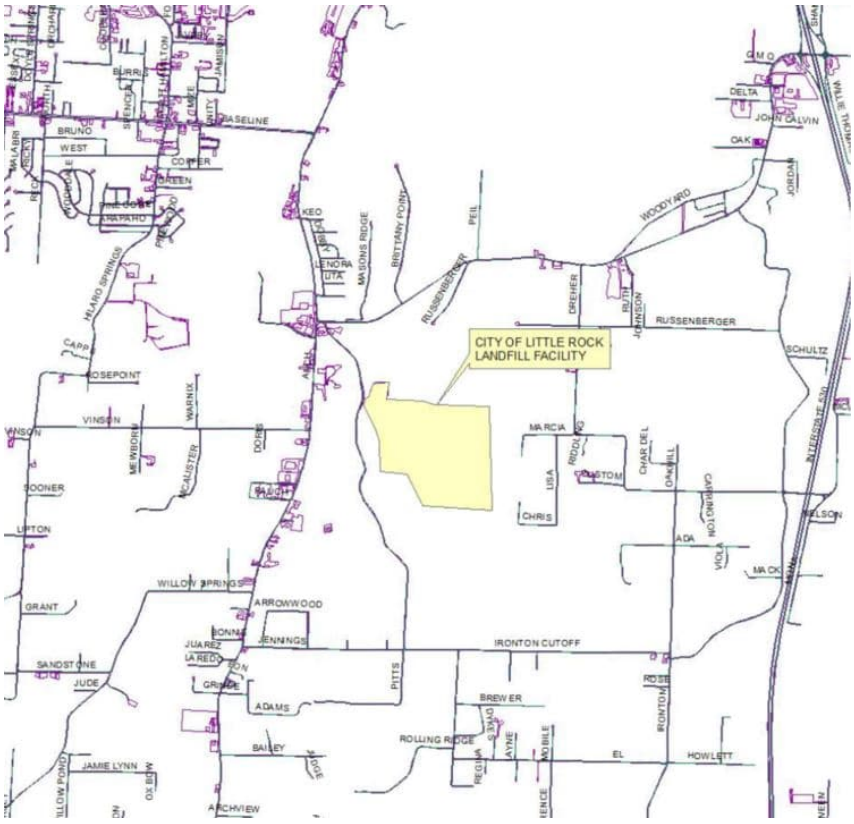

Figure 1.1 – Site Location Map

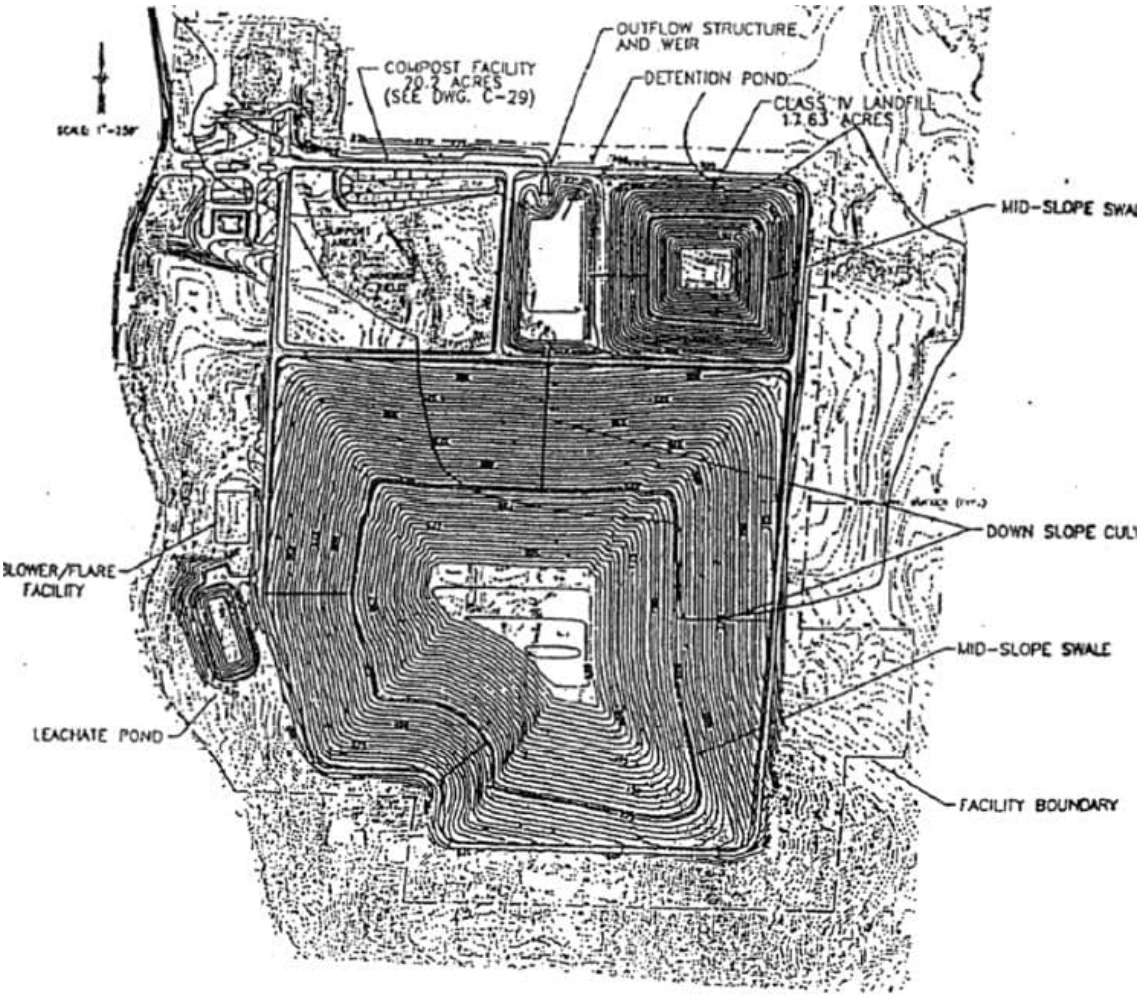

Figure 1.2 – General Site Layout

1.3 Purpose and Scope

This report was prepared to assist the City with financial assurance at the landfill facility for both the active MSW and C&D landfills. The scope of this report includes the closure plan, post-closure plan, calculations for the overall and remaining airspace volumes, in-place waste density (i.e. airspace utilization factor), tonnage data provided by the City, and overall and remaining site life for each landfill. The assumptions and the limits used to calculate the airspace volume are also presented in this report.

1.4 Organization of Report

The remainder of this report is organized as follows:

- Section 2 presents the airspace volume calculations for the MSW landfill;
- Section 3 presents the airspace volume calculations for the C&D landfill; and
- Section 4 provides a summary of the airspace management report.

2 Design and Operation Considerations

Class 1 landfills can accept all types of household waste including putrescible waste, non-hazardous industrial waste, and commercial waste. Due to the nature of the waste materials received, specific siting, design, and operating standards must be considered when developing Class 1 landfills. These standards assist in minimizing the potential for environmental impact associated with the waste disposal operations.

Class 4 landfills, as defined by Regulation No. 22, are eligible to receive non-hazardous C&D waste, furniture, appliances, and other materials that are considered inert. These materials are generally considered “non-putrescible” because they degrade very slowly or not at all. Due to the nature of the waste stream, less-stringent environmental controls are required for Class 4 landfills.

Composting facilities, as defined by Regulation No. 22, are eligible to receive yard waste and other vegetative materials such as grass clippings, leaves, and shredded or chipped brush and tree limbs.

At the CLR solid waste facility, the Class 1, Class 4, and composting operations are managed in separate areas. The Class 1 and Class 4 landfills are divided into cells of varying capacity in order to effectively control the incoming waste stream while managing the separation of leachate and stormwater runoff. For the Class 1 landfill, cell construction generally involves clearing, excavation to established subgrade, preparation of a clay liner, installation of geomembrane (60-mil high-density polyethylene [HDPE]), construction of a leachate collection system, construction of a road for landfill operations, and construction of related drainage improvements. A Class 4 waste disposal cell is similar in design but generally does not include a geomembrane and a leachate collection system. Once a cell or isolated waste disposal area has been prepared, the construction must be certified by an Arkansas-licensed professional engineer and approved by the DEQ Regulated Waste Program, formerly the Solid Waste Management Division.

As waste is deposited in a prepared cell, interim cover soil or an approved alternate daily cover material must be installed on a regular basis to control blowing litter, fires, and disease vectors. During the utilization of a cell, waste is confined to the smallest practical area using heavy compaction equipment. In addition, measures are employed to divert, collect, and manage leachate derived from the waste disposal operations (Class 1 landfill only).

As a portion of a landfill cell is filled to the designed and permitted capacity, that portion of the cell or area of the landfill unit is “closed” in accordance with state and federal regulations. Depending on the landfill unit, closure may consist of placing an impermeable final layer on the landfill, providing topsoil, seeding, constructing drainage or erosion control improvements, installing gas collection systems, and constructing other environmental controls.

After the final cell of the landfill is filled to permitted capacity, and final closure work is completed, there is a mandatory post-closure care period that varies from 30 years for the Class 1 landfill to 2 years for the Class 4 landfill. During this time, CLR must maintain the site by repairing erosion and settlement associated with the Class 1 and Class 4 waste disposal areas. In addition, all systems and environmental controls at the site, including the groundwater monitoring system, leachate collection and treatment systems, and landfill gas control systems, must be maintained.

The CLR composting facility was built in accordance with Regulation No. 22 to include a surface that can withstand heavy equipment loads as well as stormwater management controls to prevent ponding and run-on to the work area. Incoming yard waste materials are processed to produce boiler fuel, mulch, and compost.

2.1 Landfill Operations

In Arkansas, each landfill is required to have a written operating plan that identifies, among other things, the operating sequence of the landfill. CLR has developed operating plans for both the Class 1 and Class 4 waste disposal areas.

The Class 1 landfill is to be developed in nine landfill cells or units. Cells 1 through 8 require bottom liner and leachate collection system construction. Cell 9 expands the height of the landfill by filling over Cells 1 through 8. As portions of each landfill cell are filled to capacity, portions of those areas of the landfill are closed. These areas are designated in the original permit and operating plan as “closure areas.” It should be noted that closure areas do not correspond in size with cell areas. As the landfill is developed, closure work is done only on those areas of the landfill that will not receive waste in the future, primarily completed outer slopes.

To date, Cells 1, 2 and 4 of the Class 1 landfill have been filled to the capacities listed in the original permit, and partial closure of Cells 1 and 2 has been completed. A permanent grass cover has been established on portions of Cells 1 and 2. Partial closure of the east slope of Cell 4 was completed in 2021.

As the footprint of the landfill expands, waste can be placed at higher elevations. During 2016, waste in Cells 1, 2 and 4 reached levels within Cell 9, the upper cell covering Cells 1 through 8. Operationally, it is more cost effective to maximize the height of the open area before expanding horizontally by constructing a new cell.

Originally, the Class 1 cells were to be developed in sequence from one through nine. Due to the cost of rock excavation in Cell 3, the planned utilization sequence has changed. In the future, disposal operations will move to the western, remaining portion of Cell 5, and progress to Cells 3, 6, 7, and 8. Waste will continue to be placed within Cell 9 as the landfill develops.

For the Class 4 landfill, the unit is divided into four operating cells that are to be developed in sequence from Cells 1 through 4. As of the date of this report, Cells 1 and 2 are at capacity and filling operations have moved to Cell 3. The next cell to be developed at the Class 4 landfill will be Cell 4. Figure 2.1 illustrates the revised general layout and orientation of the Class 1 and Class 4 waste disposal areas.

2.2 Final Cover System Design

According to applicable state (DEQ) and federal (EPA) solid waste management regulations, municipal solid waste landfills (Class 1, as defined by Regulation No. 22) must be designed and constructed with a final cover system that will minimize infiltration of surface water while controlling drainage and preventing erosion of soils. The final cover system also serves to reduce landfill gas emissions that can adversely affect air quality.

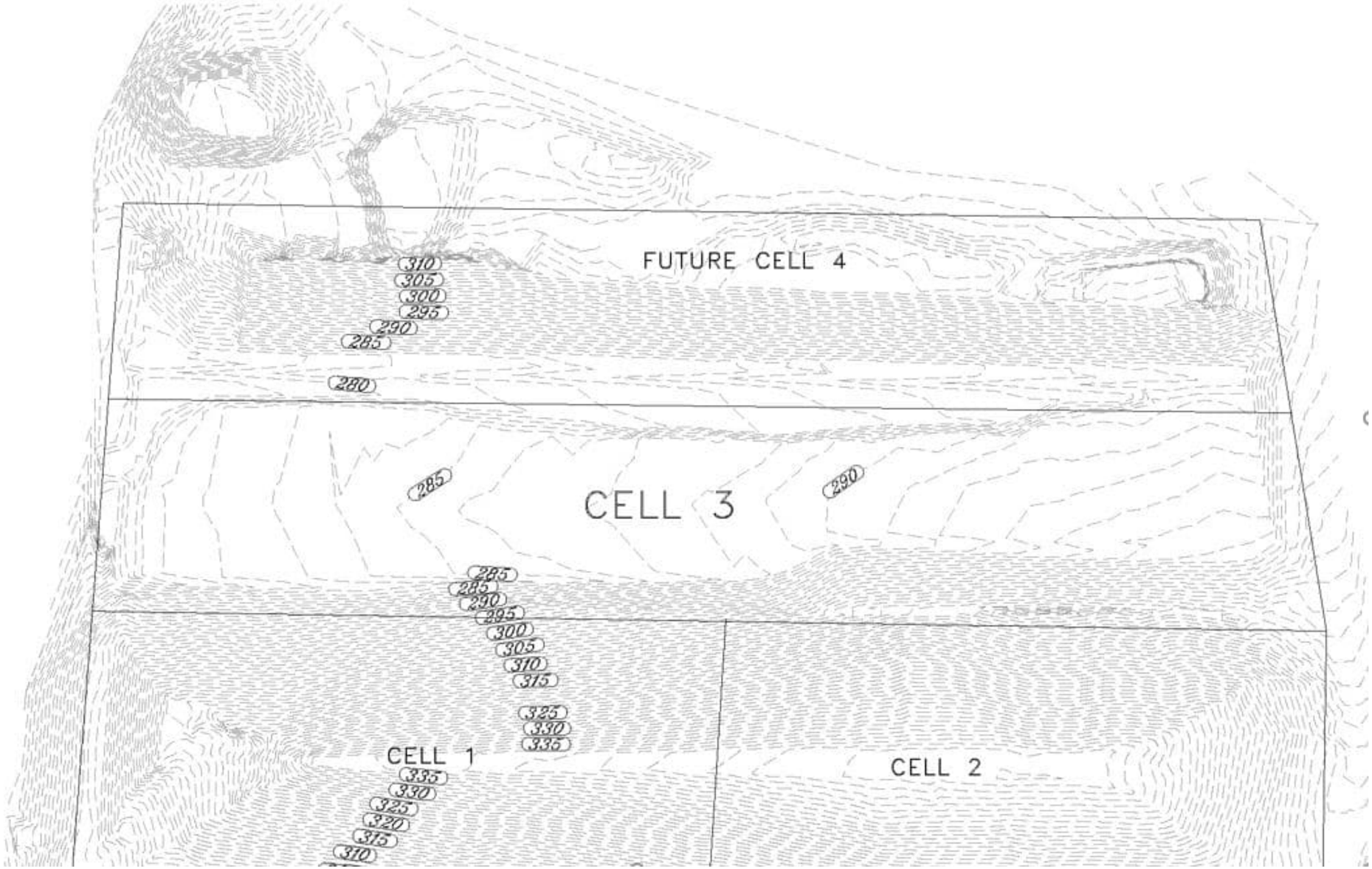

Figure 2.1 – Revised General Layout of Class 4 Waste Disposal Areas

The final cover system design for the Class 1 landfill includes the following general cross-section from top to bottom:

- A 6-inch topsoil layer;
- A 12-inch protective cover layer (onsite sandy, silty soil);
- A 12-inch drainage layer of sand, or a geocomposite, or geotextile;
- A geomembrane layer (40-mil very-low-density polyethylene [VLDPE]);
- A compacted clay cover (24-inch minimum thickness, k < 1.0x10-7 cm/s); and
- A 12-inch foundation layer (onsite sandy, silty soil).

On March 29, 2004, DEQ approved an alternative final cover system for the closure of Cells 2 through 9. The alternative final cover system design includes the following general cross-section from top to bottom:

- A vegetative cover/erosion layer with a minimum thickness of 18 inches,
- A protective cover with a minimum thickness of 18 inches,
- A drainage geocomposite layer,
- A low-permeability geosynthetic clay liner (GCL), and
- Daily and intermediate cover layers over the waste (with a minimum thickness of
- 18 inches).

The Class 4 waste disposal area will receive a final cover system that includes at least 24 inches of compacted clay cover and 6 inches of topsoil. The compacted clay cover for the Class 4 waste disposal area must demonstrate a maximum hydraulic conductivity of 1.0x10-5 cm/s.

The final cover systems for both the Class 1 and Class 4 waste disposal areas will be placed over the entire surface of the completed portions of the landfill as soon as practicable once final contours are achieved. Once the final cover layers have been placed, the completed areas will be graded and hydroseeded. Erosion control measures will be employed as needed and required to control soil loss from the area.

2.3 Closure Requirements

Each landfill owner or operator must have a written closure plan, as required by Regulation No. 22, describing the steps necessary to close all facility operations at any point during its active life, and an estimate of the cost to hire a third party to conduct closure activities. The plan is developed as part of the initial permitting of the facility and updated as necessary.

2.4 Post-Closure Care Requirements

Each landfill owner or operator must have a written post-closure care plan, as required by Regulation No. 22, that describes the monitoring and maintenance that will be performed during the post-closure care period, a description of planned land uses, and the person or office responsible for post-closure activities. This plan is also developed as part of the initial permitting of the facility and updated as necessary.

3 Municipal Solid Waste Landfill

3.1 Introduction

The CLRLF has been serving the disposal needs of the City since 1993, utilizing the Class 1 landfill. The landfill is permitted to comply with Subtitle D of Title 40 Code of Federal Regulations (CFR) Part 258. The landfill accepts household waste and non-hazardous industrial waste (NHIW). The landfill has a permitted volume of 19,860,298 cubic yards over an area of approximately 110 acres. The landfill will hold approximately 8,003,987 tons of waste.

3.2 Estimated Volumes

Table 3.1 presents the acreage, estimated volume, and estimated tonnage data of MSW accepted and disposed in Cells 1 - 9.

TABLE 3.1
CELL AREAS AND ASSOCIATED WASTE DISPOSAL CAPACITIES
CLASS 1 LANDFILL

Cell/ Area	Cell Acreage [1][4] (Acres)	Partial Closure Area [4] (Acres)	Estimated Volume [2][4] (CY)	Estimated Waste [3][5] (Tons)
1	12.30	4.22	821,527	331,942
2	12.60	4.41	1,269,075	527,340
3	12.00	7.82	865,800	338,203
4	18.86	16.61	2,280,617	1,094,284
5 EAST	6.36	0.00	1,676,654	654,943
5 WEST	9.80	0.00	2,728,831	1,065,950
6	11.00	7.00	2,146,200	838,359
7	17.08	23.04	4,507,970	1,760,926
8	10.00	25.50	2,131,300	832,539
9	0.00	21.40	1,432,324	559,502
TOTAL	**110.00**	**110.00**	**19,860,298**	**8,003,987**

Notes:
[1] Cells 1 and 2 updated in 1999 to reflect actual surveyed area of the completed cells
[2] Volumes for Cell 1 and 2 are final measured volumes
[3] Cell 1 and Cell 2 tonnage is actual amount recorded
[4] Closure Area and Estimated Volume and Waste reflect the 2001 size increase of Cells 4 and 5 and the corresponding decrease in size of Cell 7.
[5] Estimated tons for Cells 3 and 5 through 9 calculated as Estimated Volume/2.56

3.3 Airspace Volume Calculations

AutoCAD® Civil 3D® [Autodesk, 2025] was used to compute the airspace volumes. Civil 3D® calculates volumes from a digital terrain model that represents each surface of interest (i.e., base surface and comparison surface). From these surfaces, Civil 3D® calculates the respective difference in elevations and generates isopachous (isopach) maps (i.e., contour lines of equal thickness over an area). The volume is then calculated by integrating the isopachs over the area being considered.

3.3.1 Consumed Operating Airspace

An aerial survey was completed by Terracon in March 2026 to measure the total volume of waste that had been placed in open cells between March 6, 2025 and March 19, 2026. To maintain consistency between reporting periods, a factor of approximately 0.986 was used to adjust for the aerial survey being taken on March 19, 2026 as opposed to March 6, 2026. The consumed operating airspace as of March 2026 was 7,261,073 cubic yards and encompassed Cells 1, 2, 4, 5, & 9 of the landfill. According to the most recent financial assurance report, the total consumed operating airspace as of March 2025 was 7,034,648 cubic yards. From March 2025 to March 2026, approximately 212,095 cubic yards was placed in the active cells of the landfill, with 3,234 cubic yards being filled in Cell 1, 41,862 cubic yards being filled in Cell 2, 5,863 cubic yards being filled in Cell 4, and 161,136 cubic yards being filled in Cell 5. All fill volumes for Cells 1, 2, and 4 are included as Cell 9 volumes. These volumes are shown in **Table 3.2**.

3.3.2 Effective In-Place Density

Table 3.2 presents the summary of the gross fill volumes, tonnages, landfill utilization, effective in-place densities, and daily/ intermediate cover based on survey data ranging from March 2025 & March 2026 and also based on information provided by the City. The effective waste density is a measure of the tons of waste disposed divided by the overall (gross) airspace consumed during the period in question. The volume includes waste, cover soil, construction materials, gas system materials and anything else that consumes landfill space. As shown in **Table 3.2**, the airspace utilization rate for 2025 was 1.72 cubic yards per ton and the effective waste density was 1,164 pounds per cubic yard.

3.3.3 Remaining Operational Airspace

Based on the recent aerial survey, the remaining useable airspace as of March 2026 was 2,122,360 cubic yards, with Cell 5 having 1,417,264 cubic yards of useable airspace and Cell 9 having 705,096 cubic yards of remaining useable airspace. These volumes were obtained by comparing the existing contours to an intermediate surface developed for Cells 1 – 5 and Cell 9. The overall remaining permitted airspace for the entire Class 1 landfill as of March 2026 was 6,363,014 cubic yards with the remaining permitted airspace in Cell 5 of 2,707,234 cubic yards and remaining permitted airspace in Cell 9 of 3,655,780 cubic yards.

TABLE 3.2
UTILIZATION RATE SUMMARY - CLASS 1 LANDFILL

Year	Gross Fill Volume [1]		Waste Tonnage		Landfill Utilization [2]		Effective Waste Density [3]		Daily/Intermediate Cover		
	This Year (CY)	To Date (CY)	This Year (TONS)	To Date (TONS)	This Year (CY/TON)	To Date (CY/TON)	This Year (LBS/CY)	To Date (LBS/CY)	This Year (CY)	To Date (CY)	Percent of Fill (%/YEAR)
1993	17,920	17,920	3,122	3,122	5.74	5.74					
1994	215,036	232,956	83,793	86,915	2.57	2.68	779	746	48,945	48,945	23%
1995	211,731	444,687	118,890	205,805	1.78	2.16	1,123	926	89,290	138,235	42%
1996	242,590	687,277	76,222	282,027	3.18	2.44	628	821	61,109	199,344	25%
1997	264,366	951,643	93,993	376,020	2.81	2.53	711	790	71,560	270,904	27%
1998	230,140	1,181,783	87,695	463,715	2.62	2.55	762	785	78,681	349,585	34%
1999	174,950	1,356,733	85,270	548,985	2.05	2.47	975	809	90,566	440,151	52%
2000	202,920	1,559,653	84,557	633,542	2.40	2.46	833	812	93,461	533,612	46%
2001	225,293	1,784,946	86,118	719,660	2.62	2.48	764	806	77,957	611,569	35%
2002	157,269	1,942,215	79,584	799,244	1.98	2.43	1,012	823	70,006	681,575	45%
2003	187,610	2,129,825	75,047	874,291	2.50	2.44	800	821	97,895	779,470	52%
2004	192,998	2,322,823	76,257	950,548	2.53	2.44	790	818	70,784	850,254	37%
2005	206,062	2,528,885	71,518	1,022,066	2.88	2.47	694	808	83,818	934,072	41%
2006	232,333	2,761,218	97,770	1,119,836	2.38	2.47	842	811	84,083	1,018,155	36%
2007	261,334	3,022,552	113,311	1,233,147	2.31	2.45	867	816	86,606	1,104,761	33%
2008	228,998	3,251,550	106,942	1,340,089	2.14	2.43	934	824	67,325	1,172,086	29%
2009	159,997	3,411,547	97,346	1,437,435	1.64	2.37	1,217	843	51,207	1,223,293	32%
2010	162,109	3,573,656	87,406	1,524,841	1.85	2.34	1,078	853	61,270	1,284,563	38%
2011	250,402	3,824,058	93,131	1,617,972	2.69	2.36	744	846	92,454	1,377,017	37%
2012	221,129	4,045,187	97,699	1,715,671	2.26	2.36	884	848	98,687	1,475,704	45%
2013	211,617	4,256,804	131,758	1,847,429	1.61	2.30	1,245	868	117,821	1,593,525	56%
2014	272,415	4,529,219	106,137	1,953,566	2.57	2.32	779	863	82,340	1,675,865	30%
2015	263,673	4,792,892	124,617	2,078,183	2.12	2.31	945	867	92,556	1,768,421	35%
2016	254,940	5,047,832	118,704	2,196,887	2.15	2.30	931	870	118,892	1,887,313	47%
2017	261,030	5,308,862	115,074	2,311,961	2.27	2.30	882	871	88,371	1,975,684	34%
2018	274,980	5,583,842	123,796	2,435,757	2.22	2.29	900	872	99,725	2,075,409	36%
2019	221,670	5,805,512	129,706	2,565,463	1.71	2.26	1,170	884	90,014	2,165,423	41%
2020	153,610	5,959,122	77,985	2,643,448	1.97	2.25	1,015	887	58,132	2,223,555	32%
2021	311,820	6,270,942	132,439	2,775,887	2.35	2.26	849	885	140,322	2,363,877	37%
2022	242,246	6,513,188	131,442	2,907,329	1.84	2.24	1,085	893	109,884	2,473,762	52%
2023	329,659	6,842,847	170,878	3,078,207	1.93	2.22	1,037	900	158,176	2,631,938	42%
2024	206,131	7,048,978	132,879	3,211,086	1.55	2.20	1,289	911	177,219	2,809,157	86%
2025	212,095	7,261,073	123,473	3,334,559	1.72	2.18	1,164	918	181,019	2,990,176	85%
Cell Estimates [4]: **Total Cell 1:**	3,234	1,027,364	--	412,169	--	--	--	--	--	--	--
Total Cell 2:	41,862	1,556,242	--	624,351	--	--	--	--	--	--	--
Total Cell 4:	5,863	2,964,886	--	1,189,486	--	--	--	--	--	--	--
Total Cell 5:	161,136	1,698,251	--	681,323	--	--	--	--	--	--	--
5-Year Average:	**260,390**	--	**138,222**	--	**1.88**	**2.22**	**1,085**	**901**	**153,324**	--	60%
Planned Average:	--	--	--	--	--	2.25	--	1,042	--	--	--

[1] Total in-place landfill volume utilized for waste and earthen/grindings berms and cover, in cubic yards.

[2] Cubic yard volume of landfill space utilized per ton of waste.

[3] Effective density of compacted waste in landfill with soil berms, roads and interim cover.

3.4 Life Expectancy

Table 3.3 presents the life expectancy for the entire landfill based on the calculated remaining airspace discussed in Section 3.3.3. Life expectancy is calculated adding the estimated yearly airspace depleted to the total airspace depleted to date.

TABLE 3.3
PROJECTIONS OF REMAINING LIFE - CLASS 1 LANDFILL [1]

Scenario	Projected 2026 Waste (CY)	Estimated Site Life (Years)
Current Utilization Rate, No Growth	212,095	59
Current Utilization Rate Plus 1% Annual Growth	214,216	54
5-Year Historical Average Utilization Rate Plus 1% Annual	262,994	39
5-Year Historical Average Utilization Rate Plus 3% Annual	268,202	29

[1] As of March 2026.

The lifetime is calculated for no growth, an average of 1% annual growth, a 5-year historical average plus 1% annual growth, and a 5-year historical average plus 3% annual growth. For purposes of annual financial projections, it is recommended that the 5-year historical average landfill utilization rate plus and a 1% annual growth rate used for this year and years after. Under this scenario, the timing of cell construction, closure, and post-closure care would be approximately as described in **Table 3.4**.

TABLE 3.4
PROJECTION OF USEFUL LIFE BASED ON 5-YEAR AVERAGE UTILIZATION RATE, 1% GROWTH

End of Year	Operation in Cell	Volume Added in New Construction	Volume Depleted	Total Depleted To Date	Constructed Volume Remaining
1993	1	821,527	17,920	17,920	803,607
1994	1		215,036	232,956	588,571
1995	1		211,731	444,687	376,840
1996	1		242,590	687,277	134,250
1997	1&2	1,260,019	264,366	951,643	1,129,903
1998	2		230,140	1,181,783	899,763
1999	2		174,950	1,356,733	724,813
2000	2		202,920	1,559,653	521,893
2001	2		225,293	1,784,946	296,600
2002	2		157,269	1,942,215	139,331
2003	2&4	2,239,718	187,610	2,129,825	2,191,439
2004	4		192,998	2,322,823	1,998,441
2005	4		206,062	2,528,885	1,792,379
2006	4		232,333	2,761,218	1,560,046
2007	4		261,334	3,022,552	1,298,712
2008	4		228,998	3,251,550	1,069,714
2009	4		159,997	3,411,547	909,717
2010	4		162,109	3,573,656	747,608
2011	4		250,402	3,824,058	497,206
2012	4		221,129	4,045,187	276,077
2013	4		211,617	4,256,804	64,460
2014	4 & 5 E	1,676,654	272,415	4,529,219	1,468,699
2015	5 EAST		263,673	4,792,892	1,205,026
2016	5 EAST		254,940	5,047,832	950,086
2017	5 EAST		261,030	5,308,862	689,056
2018	5 EAST		274,980	5,583,842	414,076
2019	5 EAST		221,670	5,805,512	192,406
2020	5E & 5W	2,728,831	153,610	5,959,122	2,767,627
2021	5 WEST		311,820	6,270,942	2,455,807
2022	5 WEST		242,246	6,513,188	2,213,561
2023	5 WEST		329,659	6,842,847	1,883,902
2024	5 WEST		206,131	7,048,978	1,677,771
2025	**5 WEST**		**212,095**	**7,261,073**	**1,465,676**
2026	5 WEST		262,994	7,524,067	1,202,682
2027	5 WEST		265,624	7,789,691	937,058
2028	5 WEST		268,280	8,057,971	668,778
2029	5 WEST		270,963	8,328,934	397,815
2030	5 WEST		273,673	8,602,607	124,142

TABLE 3.4 PROJECTION OF USEFUL LIFE BASED ON 5-YEAR AVERAGE UTILIZATION RATE, 1% GROWTH					
End of Year	Operation in Cell	Volume Added in New Construction	Volume Depleted	Total Depleted To Date	Constructed Volume Remaining
2031	5 W & 3/6	3,012,000	276,409	8,879,016	2,859,733
2032	3/6		279,174	9,158,190	2,580,559
2033	3/6		281,965	9,440,155	2,298,594
2034	3/6		284,785	9,724,940	2,013,809
2035	3/6		287,633	10,012,573	1,726,176
2036	3/6		290,509	10,303,082	1,435,667
2037	3/6		293,414	10,596,496	1,142,253
2038	3/6		296,348	10,892,844	845,905
2039	3/6		299,312	11,192,156	546,593
2040	3/6		302,305	11,494,461	244,288
2041	3/6 & 7	4,507,970	305,328	11,799,789	4,446,930
2042	7		308,381	12,108,170	4,138,549
2043	7		311,465	12,419,635	3,827,084
2044	7		314,580	12,734,215	3,512,504
2045	7		317,725	13,051,940	3,194,779
2046	7		320,903	13,372,843	2,873,876
2047	7		324,112	13,696,955	2,549,764
2048	7		327,353	14,024,308	2,222,411
2049	7		330,626	14,354,934	1,891,785
2050	7		333,933	14,688,867	1,557,852
2051	7		337,272	15,026,139	1,220,580
2052	7		340,645	15,366,783	879,936
2053	7		344,051	15,710,835	535,884
2054	7		347,492	16,058,326	188,393
2055	7 & 8	2,131,300	350,967	16,409,293	1,968,726
2056	8		354,476	16,763,769	1,614,250
2057	8		358,021	17,121,790	1,256,229
2058	8		361,601	17,483,391	894,628
2059	8		365,217	17,848,609	529,410
2060	8		368,869	18,217,478	160,541
2061	8 & 9	1,482,279	372,558	18,590,036	1,270,262
2062	9		376,284	18,966,320	893,978
2063	9		380,047	19,346,367	513,931
2064	9		383,847	19,730,214	130,084
2065	9		387,685	20,117,899	-257,601
Totals		19,860,298	19,860,298		
Final Closure:		5/3/2065			

Table 3.5 presents the useable life expectancy and the permitted life expectancy for the permitted cells of the landfill (Cells 1 - 5, & 9).

TABLE 3.5
PERCENTAGE OF CLASS 1 LANDFILL DEPLETION [1]

Cell	Permitted Total Volume (CY)	Estimated Volume Used to Date (CY)	Estimated Utilization To Date (%)	Usable Remaining Volume [2] (CY)	Usable Remaining Life [3] (Years)	Permitted Remaining Volume (CY)	Permitted Remaining Life [3] (Years)
Constructed Cells:							
Cell 1	821,527	821,527	100.0%	0	0.0	0	0
Cell 2	1,269,075	1,269,075	100.0%	0	0.0	0	0
Cell 4	2,280,617	2,280,617	100.0%	0	0.0	0	0
Cell 5	4,405,485	1,698,251	38.5%	1,417,264	5.4	2,707,234	10
Cell 9	1,432,324	1,177,273	82.2%	705,096	2.7	3,655,780	13
TOTAL	**10,209,028**	**7,246,743**	**71.0%**	**2,122,360**	**8.1**	**6,363,014**	**23**
All Cells:							
Cells 1-9	19,860,298	7,246,743	36.5%			12,613,555	39
Depreciation of Capital Improvements:							
Construction Cost for Cell 1			100.0%				
Construction Cost for Cell 2			100.0%				
Construction Cost for Cell 4			100.0%				
Construction Cost for Cell 5			100.0%				
General Class 1 Landfill Capital Improvements			36.5%				
Depreciation of Capital Improvements:							
Cell 1 Phased Closure Cost			100.0%				
Cell 2 Phased Closure Cost			100.0%				
Cell 4 Phased Closure Cost			27.7%	(4.6 acres closed)			
Cell 5 Phased Closure Cost			N/A	(Internal cell)			
Class 1 Closure Cost (Area Closed / Total Area)			13.6%				

[1] As of March 2026.
[2] Usable remaining volume/life based upon estimated maximum fill elevation before a new cell must be constructed.
[3] Estimated. Based on 5-year historical average utilization rate plus 1%.

4 Construction & Demolition Landfill

4.1 Introduction

The Class 4 landfill has been receiving waste since 1993 and is permitted to comply with Subtitle D of Title 40 Code of Federal Regulations (CFR) Part 258. The landfill accepts construction and demolition (C&D) waste. The landfill has a permitted volume of 1,217,800 cubic yards over an area of approximately 18 acres. The landfill will hold approximately 900,052 tons of waste.

4.2 Estimated Volumes

Table 4.1 presents the acreage, estimated volume, and estimated tonnage data of C&D waste accepted and disposed in Cells 1 - 4.

TABLE 4.1
LANDFILL CAPACITY SUMMARY - CLASS 4 LANDFILL

Cell	Total Area (Ac)	Phased Closure Area (Ac)	Gross Volume (CY)	Total Waste Capacity (Tons)
1	4.5	2.1	181,860	127,925
2	4.5	2.1	229,100	195,812
3	4.3	2.3	351,534	251,095
4	4.7	11.5	455,306	325,220
TOTAL	**18.0**	**18.0**	**1,217,800**	**900,052**

4.3 Airspace Volume Calculations

AutoCAD® Civil 3D® [Autodesk, 2025] was used to compute the airspace volumes. Civil 3D® calculates volumes from a digital terrain model that represents each surface of interest (i.e., base surface and comparison surface). From these surfaces, Civil 3D® calculates the respective difference in elevations and generates isopachous (isopach) maps (i.e., contour lines of equal thickness over an area). The volume is then calculated by integrating the isopachs over the area being considered.

4.3.1 Consumed Operating Airspace

An aerial survey was completed by Terracon in March 2026 to measure the total volume of waste that had been placed in open cells between March 2025 and March 2026. To maintain consistency between reporting periods, a factor of approximately 0.986 was used to adjust for the aerial survey being taken on March 19, 2026 as opposed to March 6, 2026. The consumed operating airspace as of March 2026 was 648,861 cubic yards and encompassed Cells 1, 2, & 3 of the landfill. According to the most recent financial assurance report, the total consumed operating airspace as of March 2025 was 637,620 cubic yards. From March 2025 to March 2026, approximately 7,741 cubic yards was placed in the active cells of the landfill, with all waste being placed in Cell 3.

4.3.2 Effective In-Place Density

Table 4.2 presents the summary of the gross fill volumes, tonnages, landfill utilization, effective in-place densities, and daily/ intermediate cover based on survey data ranging from March 2025 & March 2026 and also based on information provided by the City. The effective waste density is a measure of the tons of waste disposed divided by the overall (gross) airspace consumed during the period in question. The volume includes waste, cover soil, construction materials, gas system materials and anything else that consumes landfill space. As shown in **Table 4.2**, the airspace utilization rate for 2025 was 1.99 cubic yards per ton and the effective waste density was 1,006 pounds per cubic yard.

TABLE 4.2
UTILIZATION RATE SUMMARY - CLASS 4 LANDFILL

Year	Gross Fill Volume [1]		Waste Tonnage		Landfill Utilization [2]		Effective Waste Density [3]		Daily/Intermediate Cover	
	This Year (CY)	To Date (CY)	This Year (TONS)	To Date (TONS)	This Year (CY/TON)	To Date (CY/TON)	This Year (LBS/CY)	To Date (LBS/CY)	This Year (CY)	Percent of Fill (%/YEAR)
1993	1,524	1,524	343	343	4.44	4.44	450	450		
1994	18,284	19,808	3,675	4,018	4.97	4.93	402	406		
1995	18,284	38,092	16,030	20,049	1.14	1.90	1,753	1,053		
1996	47,896	85,988	20,053	40,101	2.39	2.14	837	933		
1997	71,411	157,399	73,161	113,262	0.98	1.39	2,049	1,439		
1998	24,555	181,954	10,775	124,037	2.28	1.47	878	1,363		
1999	33,489	215,443	36,430	160,467	0.92	1.34	2,176	1,490		
2000	20,135	235,578	17,937	178,403	1.12	1.32	1,782	1,515		
2001	25,348	260,926	37,197	215,600	0.68	1.21	2,935	1,653		
2002	33,550	294,476	15,002	230,602	2.24	1.28	894	1,566		
2003	17,424	311,900	9,253	239,855	1.88	1.30	1,062	1,538		
2004	13,582	325,482	11,879	251,735	1.14	1.29	1,749	1,547		
2005	16,904	342,386	10,249	261,984	1.65	1.31	1,213	1,530		
2006	15,160	357,546	10,612	272,596	1.43	1.31	1,400	1,525		
2007	32,200	389,746	22,950	295,546	1.40	1.32	1,425	1,517		
2008	3,108	392,854	2,220	297,766	1.40	1.32	1,429	1,516		
2009	3,570	396,424	2,550	300,316	1.40	1.32	1,429	1,515		
2010	8,879	405,303	15,051	315,367	0.59	1.29	3,390	1,556		
2011	3,500	408,803	8,150	323,517	0.43	1.26	4,657	1,583		
2012	2,100	410,903	6,526	330,043	0.32	1.24	6,215	1,606		
2013	20	410,923	14	330,057	1.42	1.25	1,409	1,606		
2014	24,706	435,629	12,813	342,870	1.93	1.27	1,037	1,574		
2015	27,523	463,152	16,481	359,351	1.67	1.29	1,198	1,552		
2016	44,658	507,810	16,400	375,751	2.72	1.35	1,042	1,480	13,173	29%
2017	18,655	526,465	19,678	395,429	0.95	1.33	2,659	1,502	3,855	21%
2018	19,370	545,835	12,463	407,892	1.55	1.34	1,555	1,495	3,343	17%
2019	27,592	573,427	13,314	421,206	2.07	1.36	1,111	1,469	3,622	13%
2020	17,270	590,697	8,420	429,626	2.05	1.37	1,313	1,455	4,445	22%
2021	20,299	610,996	9,081	438,707	2.24	1.39	1,124	1,436	4,140	18%
2022	9,888	620,884	8,563	447,270	1.15	1.39	3,661	1,441	5,210	46%
2023	10,038	630,922	6,685	453,956	1.50	1.39	2,389	1,439	4,441	38%
2024	10,197	641,119	10,065	464,021	1.01	1.38	1,974	1,448	0	0%
2025	7,741	648,861	3,892	467,913	1.99	1.39	1,006	1,442	0	0%
Total Cell 1:	0	181,860		127,925		1.42		1,407		
Total Cell 2:	0	229,100		202,132		1.13		1,765		
Total Cell 3:	7,741	237,901		137,856		1.73		1,159		
3-Year Average:	**9,326**		**6,881**			**1.39**	**1,789**			

[1] Total in-place landfill volume utilized for waste and earthen berms and cover, in cubic yards.

[2] Cubic yard volume of landfill space utilized per ton of waste.

4.3.3 Remaining Operational Airspace

Based on the recent aerial survey, the remaining permitted airspace as of March 2026 was 113,633 cubic yards, with all remaining airspace being in Cell 3. The overall remaining permitted airspace for the entire Class 1 landfill as of March 2026 was 568,939 cubic yards with the remaining permitted airspace in Cell 3 of 113,633 cubic yards and remaining permitted airspace in Cell 4 of 455,306 cubic yards. Note that Cell 4 has not yet been constructed. These volumes were obtained by comparing the topographic map generated from the March 2025 aerial survey with the March 2026 aerial survey.

4.4 Life Expectancy

Table 4.3 presents the life expectancy for the entire landfill based on the calculated remaining airspace discussed in Section 4.3.3.

TABLE 4.3
PROJECTION OF USEFUL LIFE BASED ON 3-YEAR AVERAGE UTILIZATION RATE, 1% GROWTH

End of Year	Operation in Cell	Volume Added in New Construction	Volume Depleted	Total Depleted To Date	Constructed Volume Remaining
1993	1	181,860	1,524	1,524	180,336
1994	1		18,284	19,808	162,052
1995	1		18,284	38,092	143,768
1996	1		47,896	85,988	95,872
1997	1		71,411	157,399	24,461
1998	1&2	229,100	24,555	181,954	229,006
1999	2		33,489	215,443	195,517
2000	2		20,135	235,578	175,382
2001	2		25,348	260,926	150,034
2002	2		33,550	294,476	116,484
2003	2		17,424	311,900	99,060
2004	2		13,582	325,482	85,478
2005	2		16,904	342,386	68,574
2006	2		15,160	357,546	53,414
2007	2		32,200	389,746	21,214
2008	2		3,108	392,854	18,106
2009	2		3,570	396,424	14,536
2010	2		8,879	405,303	5,657
2011	2		3,500	408,803	2,157
2012	2		2,100	410,903	57
2013	2		20	410,923	37
2014	3	351,534	24,706	435,629	326,865
2015	3		27,523	463,152	299,342
2016	3		44,658	507,810	254,684
2017	3		18,655	526,465	236,029
2018	3		19,370	545,835	216,659
2019	3		27,592	573,427	189,067
2020	3		17,270	590,697	171,797
2021	3		20,299	610,996	151,498
2022	3		9,888	620,884	141,610

TABLE 4.3 PROJECTION OF USEFUL LIFE BASED ON 3-YEAR AVERAGE UTILIZATION RATE, 1% GROWTH					
End of Year	Operation in Cell	Volume Added in New Construction	Volume Depleted	Total Depleted To Date	Constructed Volume Remaining
2023	3		10,038	630,922	131,572
2024	3		10,197	641,119	121,375
2025	**3**		**7,741**	**648,861**	**113,633**
2026	3		9,326	658,186	104,308
2027	3		9,419	667,605	94,889
2028	3		9,513	677,118	85,376
2029	3		9,608	686,726	75,768
2030	3		9,704	696,430	66,064
2031	3		9,801	706,231	56,263
2032	3		9,899	716,131	46,363
2033	3		9,998	726,129	36,365
2034	3		10,098	736,227	26,267
2035	3		10,199	746,426	16,068
2036	3		10,301	756,727	5,767
2037	3&4	455,306	10,404	767,132	450,668
2038	4		10,508	777,640	440,160
2039	4		10,613	788,253	429,547
2040	4		10,719	798,973	418,827
2041	4		10,827	809,799	408,001
2042	4		10,935	820,734	397,066
2043	4		11,044	831,778	386,022
2044	4		11,155	842,933	374,867
2045	4		11,266	854,199	363,601
2046	4		11,379	865,578	352,222
2047	4		11,493	877,071	340,729
2048	4		11,608	888,679	329,121
2049	4		11,724	900,402	317,398
2050	4		11,841	912,243	305,557
2051	4		11,959	924,203	293,597
2052	4		12,079	936,282	281,518
2053	4		12,200	948,481	269,319
2054	4		12,322	960,803	256,997
2055	4		12,445	973,248	244,552
2056	4		12,569	985,818	231,982
2057	4		12,695	998,513	219,287
2058	4		12,822	1,011,335	206,465
2059	4		12,950	1,024,285	193,515
2060	4		13,080	1,037,365	180,435
2061	4		13,211	1,050,575	167,225
2062	4		13,343	1,063,918	153,882
2063	4		13,476	1,077,394	140,406
2064	4		13,611	1,091,005	126,795
2065	4		13,747	1,104,752	113,048
2066	4		13,884	1,118,636	99,164
2067	4		14,023	1,132,660	85,140
2068	4		14,164	1,146,823	70,977
2069	4		14,305	1,161,128	56,672
2070	4		14,448	1,175,576	42,224
2071	4		14,593	1,190,169	27,631
2072	4		14,739	1,204,908	12,892
2073	4		14,886	1,219,794	-1,994
Totals		**1,217,800**	**1,161,128**		
			Final Closure:	11/13/2073	

Life expectancy is calculated adding the estimated yearly airspace depleted to the total airspace depleted to date. The lifetime is calculated for a 3-year average plus 1% annual growth.

Table 4.4 presents the useable life expectancy and the permitted life expectancy for the permitted cells of the landfill (Cells 1 - 4).

TABLE 4.4
PERCENTAGE OF CLASS 4 LANDFILL DEPLETION [1]

Cell	Permitted Total Volume (CY)	Estimated Volume Used to Date (CY)	Estimated Utilization To Date (%)	Permitted Remaining Volume (CY)	Permitted Remaining Life (Years)[2]
Constructed Cells:					
Cell 1	181,860	181,860	100.0%	0	0
Cell 2	229,100	229,100	100.0%	0	0
Cell 3	351,534	237,901	67.7%	113,633	10.8
TOTAL	**762,494**	**648,861**	**85.1%**	**113,633**	**10.8**
All Cells:					
Cells 1-4	1,217,800	648,861	53.3%	568,939	47
Depreciation of Capital Improvements:					
	Construction Cost for Cell 1				100.0%
	Construction Cost for Cell 2				100.0%
	Construction Cost for Cell 3				67.7%
	General Class 4 Landfill Capital Improvements				53.3%
Depreciation of Capital Improvements:					
	Cell 1 Closure Cost				100.0%
	Cell 2 Closure Cost				100.0%
	Cell 3 Closure Cost				0.0%
	Class 4 Closure Cost				53.3%

[1] As of March 2026.
[2] Based on 3-year historical average utilization rate plus 1% annual growth (Table 4.3)

5 Closure/ Post-Closure

The following information provides cost estimates for the closure of the composting facility, and cell preparation, closure, and post-closure care associated with the Class 1 and Class 4 landfills. Unit costs for the estimates are based on actual construction/maintenance costs associated with similar operations in Arkansas.

5.1 Closure Liability of the Class 1 Landfill

The costs for landfill closure associated with the Class 1 landfill are summarized in T**able 5.1**. These costs are based on the design considerations outlined in Section 2 and the facility closure plan. The current estimated cost per acre for landfill closure is shown below. According to Regulation No. 22, estimates involving closure for the purpose of establishing financial assurance are to be updated at least annually to consider inflation, design changes, etc.

TABLE 5.1
ESTIMATED CLOSURE CONSTRUCTION COSTS PER ACRE - CLASS 1 LANDFILL

Item Description	Unit Cost for Closure Areas with Acreage Between:		
	0 and 10 Acres [1]	10 and 20 Acres [1]	20 and 30 Acres [1]
Top soil/Compost Layer [2]	$11,709.96	$10,542.08	$9,487.88
Soil Cover Layer	$28,493.36	$25,651.59	$23,086.45
Geocomposite	$24,365.08	$21,935.05	$19,741.56
Geosynthetic Clay Liner (GCL)	$26,562.36	$23,913.19	$21,521.88
Subgrade preparation (foundation by CLR)	$3,160.83	$2,845.59	$2,561.03
Seeding	$3,024.14	$2,722.53	$2,450.28
Gas Collection Wells	$11,018.33	$9,919.43	$8,927.49
Drainage Improvements	$17,133.14	$15,424.38	$13,881.95
Erosion Control	$3,101.12	$2,791.83	$2,512.65
Mobilization	$18,144.85	$16,335.19	$14,701.68
Preparation of Plans and Specifications	$6,048.28	$5,445.06	$4,900.56
Construction Quality Assurance	$13,824.65	$12,445.86	$11,201.28
Contingencies - 5%	$8,329.31	$7,498.59	$6,748.73
TOTAL CLOSURE COST PER ACRE	**$174,915.41**	**$157,470.36**	$141,723.42
Largest area (acres) ever needing final cover (Area 7):			69.26
Largest area unit closure cost ($/acre):			$141,723.42
TOTAL FINANCIAL ASSURANCE CLOSURE COST:			**$9,815,764.40**

[1] Cost per acre, as estimated based on 2020 bid unit prices.
Adjusted by DEQ Inflation factor (2021: 1.016, 2022: 1.062, 2023: 1.065, 2024: 1.027, 2025: 1.025)
[2] Includes letdowns, swales, toe drains, culverts, ditches.
[3] Includes permitting, pre- and post-construction BMPs, and maintenance.

The estimated costs associated with each Class 1 landfill closure area are summarized in **Table 5.2**. To satisfy state and federal regulations (Regulation No. 22 and Subtitle D of 40 CFR 258), the largest area of the landfill that will need final cover at one time must be determined. This area will not correspond to the largest closure area identified in **Table 5.2**, but rather would be the largest open (unclosed) area that would have to be

closed should state or federal regulators order the landfill to close before it reaches the end of its operating life. This is a worst-case scenario.

TABLE 5.2
CLOSURE SEQUENCE AND ASSOCIATED COST ESTIMATES - CLASS 1 LANDFILL

Event	Acreage Closed	Acreage Closed	Total Acreage Needing Final Cover	Approximate Year [1]	Estimated Closure Cost [2]
Construction of Cell 1	12.30	0.00	12.30	1993	
Construction of Cell 2	12.60	0.00	24.90	1997	
Closure of Area 1		4.22	20.68	2000	COMPLETED
Construction of Cell 4	18.86	0.00	39.54	2002	
Closure of Area 2		4.41	35.13	2004/2005	COMPLETED
Construction of Cell 5 EAST 40%	6.36	0.00	41.49	2014	
Closure of Area 4		5.50	35.99	2021	COMPLETED
Construction of Cell 5 WEST 60%	9.80	0.00	45.79	2020	
Construction of Cell 3/6[3]	23.00	0.00	68.79	2031	
Closure of Area 5		16.61	52.18	2033	N/A [4]
Construction of Cell 7	17.08	0.00	69.26	2041	
Closure of Area 3/6 [2]		14.82	54.44	2043	$2,333,710.79
Construction of Cell 8	10.00	0.00	64.44	2056	
Closure of Area 7		23.04	41.40	2058	$3,265,307.71
Filling in Area 9, No Construction	0.00	0.00	41.40	2060	
Closure of Area 8		25.50	15.90	2064	$3,613,947.33
Final Closure, Area 9		15.90	0.00	2066	$2,503,778.78
TOTAL	**110**	**110**			**$11,716,744.60**

[1]Based on 5-year historical average LF utilization plus 1% annual growth (see Table 3.4)
[2]Cell 3 and Cell 6 will be constructed together and are hereby noted as Cell 3/6
[3]See Table 4.1 for Estimated Closure Costs per Acre.
[4]Cell 5 is internal cell. No closure required.

As can be seen from **Table 5.2**, the largest area needing final cover during the operating life of the landfill (69.26 acres) occurs when Cell 7 is placed in service but before the partial closure designated for Cells 3 and 6 is completed. This is projected to potentially occur in 2041 (see **Table 5.2**). The projected cost for this closure in December 2025 dollars would be $2,333,710.79 (see **Table 5.2**). After Cells 3 and 6 are closed, financial assurance liability would be reduced for the remainder of the operating life. The final closure liability is projected to occur around 2067 when Cell 9 is filled to capacity (**Table 3.4).** At that time, $2,503,778.78 (in December 2025 dollars) would be needed to perform closure activities (**Table 5.2**).

5.2 Post-Closure Liability of the Class 1 Landfill

The current post-closure liability is estimated to be $10,349,097.08 (see **Table 5.3**) and post-closure is projected to begin in 2067. Because so many costs are fixed, this liability will remain substantially the same regardless of the actual year final closure occurs or the number of landfill cells that are actually constructed and filled. However, the estimated post-closure care cost is reviewed and adjusted each year (if needed) to consider inflation as required by the regulations.

TABLE 5.3
POST-CLOSURE COST ESTIMATE - CLASS 1 LANDFILL

Item Description	Basis of Cost	Units	Estimated Quantity	Unit Cost [1]	Total Cost
Site Inspection	Includes site inspection and summary report, quarterly for 30 years	each	4	$1,451.59	$5,806.35
Groundwater Monitoring	Semiannual sampling, analysis, and report writing for 12 GW wells	$/well	24	$4,092.67	$98,224.13
Groundwater Well Maintenance	Twelve GW wells, maintenance and occasional replacement as needed	$/well	12	$502.01	$6,024.09
Gas Monitoring	Eight locations tested quarterly for monitoring	$/well	32	$423.38	$13,548.16
Gas Probe & Gas Meter	Eight gas probes, general maintenance and replacement as needed	$/well	8	$6,659.16	$53,273.28
Leachate Collection System	Annual O&M of leachate collection and recirculation systems	each	1	$20,806.10	$20,806.10
Leachate Treatement	Leachate Treatment cost at Little Rock Wastewater Utility	gallons	100,000	$0.00	$483.86
Leachate Pretreatement	Costs associated with pumping then aerobically treating leachate	gallons	100,000	$0.00	$483.86
Pump Station Maintenance	Pump Station Maintance, Including pumps and electrical	each	6	$4,838.63	$29,031.76
Electrical Power	Electrical power costs	kilowatts	175,000	$0.15	$25,402.79
Gas System Operation & Maintenance	O&M Costs for gas extraction and methane flaring system	system	1	$51,410.41	$51,410.41
Site Maintenance	Site Maintenance. Assumes one acre of surface repair each year	acre	1	$4,233.80	$4,233.80
Site Mowing	Site Mowing. Assumes four mowings per year	acre	117	$169.35	$19,814.18
Administration	General expenses for administration and supervision	lump sum	1	$0.00	$16,427.14
				Total Annual Cost for Post-Closure Care:	**$344,969.90**
				Total Post-Closure Cost for 30 Years:	**$10,349,097.08**

[1] Cost per acre, as estimated based on 2020 actual unit prices.
Adjusted by DEQ Inflation factor (2021: 1.016, 2022: 1.062, 2023: 1.065, 2024: 1.027, 2025: 1.025)

Liability associated with certain landfill fixed costs such as pump station and force main construction, treatment facilities, leachate injection systems, roads, and drainage improvements should be depreciated throughout the operating life of the landfill. Also,

the financial capability of CLR to cover this cost must be demonstrated and assured with an acceptable financial assurance mechanism as required by the regulations.

5.3 Closure Liability of the Class 4 Landfill

The current estimated cost per acre for closure of the Class 4 landfill is shown in **Table 5.4**. Each year these costs are updated based on the current inflation rate or actual current costs. This report shows current costs as of December 2025. It should be noted that the Class 4 landfill does not have to meet the same stringent closure criteria as the Class 1 landfill.

TABLE 5.4
ESTIMATED CLOSURE COSTS PER ACRE - CLASS 4 LANDFILL

Item Description	Cost / Acre [(1)]
Clay Liner	$56,634.84
Soil Cover Layer	$18,598.55
Subgrade Preparation	$3,160.83
Seeding	$3,024.14
Mobilization	$1,814.49
Preparation of Plans and Specifications	$2,540.28
Construction Quality Assurance	$6,169.25
Contingencies - 5%	$4,597.12
Total Closure Cost per Acre:	$96,539.50
Total Finnancial Assurance Closure Cost:	**$1,332,245.06**

[(1)] Cost per acre, as estimated based on 2020 bid unit prices.
Adjusted by DEQ Inflation factor:
(2021: 1.016, 2022: 1.062, 2023: 1.065, 2024: 1.027, 2025: 1.025)

To satisfy state and federal regulations, a worst-case scenario must be determined using the largest area of the Class 4 landfill that will ever need final cover, should state regulators order the landfill to close before it reaches the end of its operating life.

As can be seen from **Table 5.5**, the largest area ever needing final cover during the operating life of the landfill (13.8 acres) occurs when Cell 4 is placed in service but before partial closure of Cell 3 is completed. This is projected to occur around 2037 (see **Table 5.5**). The projected cost for closure of this area in December 2025 dollars would be $222,040.84 (see **Table 5.5**).

After Cell 3 is closed, financial assurance liability is reduced for the remainder of the operating life. The final closure liability is projected to occur around 2073 when Cell 4 is filled to capacity (**Table 4.3**). At that time, $1,110,204.22 would be needed to perform closure activities (**Table 5.5**).

TABLE 5.5 CLOSURE AREA SEQUENCE AND ASSOCIATED COST - CLASS 4 LANDFILL					
Event	Acreage Added to Landfill	Acreage Closed	Total Acreage Needing Final Cover	Approximate Year	Estimated Closure Cost
Construction of Cell 1	4.5	0.0	4.5	1993	--
Construction of Cell 2	4.5	0.0	9.0	1998	--
Construction of Cell 3	4.3	0.0	13.3	2015	--
Closure of Area 1	0.0	2.1	11.2	2023	$202,732.94
Closure of Area 2	0.0	2.1	9.1	2023	$202,732.94
Construction of Cell 4	4.7	0.0	13.8	2037	--
Closure of Area 3	0.0	2.3	11.5	2041	$222,040.84
Closure of Area 4	0.0	11.5	0.0	2073	$1,110,204.22
TOTAL	18	18			$1,737,710.95
2025 Closure Cost per Acre: **$96,539.50**					

5.4 Post-Closure Liability of the Class 4 Landfill

The current post-closure liability is projected to be $27,304.37 (see **Table 5.6**) and post-closure is projected to begin around 2073. This liability will remain substantially the same regardless of the actual year final closure occurs. The financial capability of CLR to cover this cost must be demonstrated and assured with an acceptable financial assurance mechanism as required by regulation.

TABLE 5.6 POST-CLOSURE COST ESTIMATE - CLASS 4 LANDFILL					
Item	Basis of Cost	Units	Estimated Quantity	Unit Cost [1]	Total Cost per Year
Site Inspection	Site insp.and summary report, quarterly for 2 years	each	4	$1,451.59	$5,806.35
Site Maintenance	Assumes one acre of surface needs repair each year	acre	1	$4,233.80	$4,233.80
Site Mowing	Assumes four mowing per year	acre	14	$169.35	$2,370.93
Administration	General exp. for administrative and supervision (10%)	LS	1	--	$1,241.11
				Total Annual Cost for Closure Care:	**$13,652.19**
				Total Post-Closure Cost for 2 Years:	**$27,304.37**

[1] Cost per acre, as estimated based on 2020 actual unit prices.
Adjusted by DEQ Inflation factor (2021: 1.016, 2022: 1.062, 2023:1.065, 2024: 1.027, 2025: 1.025)

5.5 Closure Liability of the Composting Facility

The current estimated closure cost for the composting facility, in December 2025 dollars, is $225,627.52, as shown in **Table 5.7**. As required by DEQ, the cost is calculated by multiplying the maximum design storage capacity of 36,000 tons by 150% (45,000 tons), subtracting 36,000 tons that would be distributed to other CLR agencies, and multiplying the remainder (9,000 tons) by the cost to process and remove the remaining materials ($25.07 per ton).

TABLE 5.7
ESTIMATED CLOSURE COSTS - YARD WASTE COMPOSTING FACILITY

Item Description	Units	Estimated Quantity	Unit Cost (1)	Total Cost
Hauling & redistribution of compost material to parks	ton	36,000	$0.00	$0.00
Processing and distribution of remaining yard waste by private contractor	ton	9,000	$25.07	$225,627.52
Total Financial Assurance Closure Cost:				**$225,627.52**

(1) Cost per acre, as estimated by Edwards Engineering, P.A. on January 2008 adjusted annually for inflation.

6 Requirements for Financial Assurance

Under state and federal regulations, each facility owner or operator must provide financial assurance to the state permitting authority. The purpose is to show that the owner or operator has the financial ability to close the composting facility and, for the Class 1 and Class 4 landfills, to close the largest open area of each landfill and to conduct post-closure care. A financial assurance mechanism must be in place throughout the operating life of the facilities, and the instrument must be updated annually.

Originally, CLR used a “contract of obligation” as the mechanism to satisfy financial assurance. A contract of obligation is essentially a resolution from the City Board recognizing the liability associated with landfill operations, a pledge to meet that obligation, and an agreement to allow the state to garnish turn-back money if CLR fails to fully meet the obligations. However, since that time, changes in state law removed the contract of obligation from the list of acceptable financial assurance mechanisms.

In 2002, CLR decided to utilize a financial test as the financial assurance mechanism. Under this option, an accounting demonstration is used to show that sufficient funds are available to meet all needs for closure and post-closure care. If a successful demonstration can be made, the governing body can use that demonstration to guarantee financial assurance through a formal resolution.

According to DEQ, the total amount to be placed in the financial assurance instrument is calculated as 100% of the combined closure cost estimates plus 20% of the combined post-closure cost estimates. **Table 6.1** provides a summary of closure and post-closure costs for all three facilities.

The total financial assurance amount for the whole facility is the sum of the financial assurance for the Class 1 landfill, the Class 4 landfill, and the composting facility. Therefore, $13,120,895 must be guaranteed by the financial assurance instrument utilized by CLR.

TABLE 6.1
ESTIMATED CLOSURE COSTS - CLASS 1, CLASS 4, & COMPOST FACILITY

Item Description	Source	Cost
100% of Closure Cost Estimates of Class 1 LF	From Table 5.1	$9,815,764
20% of Post-Closure Cost Estimates of Class 1	From Table 5.3	$2,069,819
Total Financial Assurance of Class 1		**$11,885,584**
100% of Closure Cost Estimates of Class 4 LF	From Table 5.4	$1,332,245
20% of Post Closure Estimates of Class 4	From Table 5.6	$5,461
Total Financial Assurance of Class 4		**$1,337,706**
100% of Closure Cost Estimate of Compost	From Table 5.7	$225,628
Total Financial Assurance of Composting Facility		**$225,628**
TOTAL FINANCIAL ASSURANCE		**$13,448,917**

Appendix D:

Monthly Tonnages / Yard Waste Removed

2025

CITY OF LITTLE ROCK - LANDFILL

MONTHLY AND YEARLY TONNAGE TOTALS

MNTH	CLASS I TOTAL TONS	CLASS 4 TOTAL TONS	YW TOTAL TONS	TIRES REC'D (COLL.)	TIRE TONS (COLL.)	TIRES W/RIMS & RIMS REC'D	NEW PLST GRBG CRT	PLT GRB CRTS W/ LIDS	BRKN DOWN GRB CRTS	SCRP TIN	RECYC PAP/CANS CRDBRD PLST	ELET TONS	APP TONS	CROSS TIES (FOR SALE)	TOTAL TONS
JAN.	10,273.93	265.35	1,659.74	191	6.81	6	24.44	0.00	0.00	10.78	0.00	10.62	13.93	0	12,265.60
FEB.	8,539.45	293.57	1,224.11	193	2.80	0	0.00	0.00	0.00	5.76	0.00	7.64	20.87	0	10,094.20
MAR.	10,566.90	236.21	2,019.78	0	10.85	0	0.00	0.00	0.00	1.51	0.00	9.55	7.35	0	12,852.15
APR.	11,373.29	223.29	4,844.85	501	11.70	18	32.23	0.00	0.00	6.43	0.00	9.56	12.18	0	16,513.53
MAY	11,839.75	206.33	2,958.13	298	2.63	28	0.00	0.00	0.00	13.15	0.00	5.52	5.00	0	15,030.51
JUN.	9,884.59	673.60	2,674.20	217	4.86	0	0.00	0.00	0.00	5.29	0.00	5.85	19.28	0	13,267.67
JUL.	10,508.52	330.38	2,128.85	523	13.69	0	21.26	0.00	0.00	11.03	0.00	3.31	17.12	0	13,034.16
AUG.	10,360.31	272.79	1,893.89	362	9.39	0	0.00	0.00	0.00	3.33	0.00	4.34	13.02	0	12,557.07
SEPT.	10,295.66	382.15	1,726.88	180	10.36	0	0.00	0.00	0.00	12.86	0.00	6.63	6.63	0	12,441.17
OCT.	10,115.48	412.07	1,642.06	194	7.78	0	0.00	0.00	0.00	2.34	0.00	3.52	19.96	0	12,203.21
NOV.	9,654.13	366.24	2,456.91	431	13.51	7	21.85	0.00	0.00	0.00	0.00	4.39	10.38	0	12,527.41
DEC.	10,061.36	230.00	3,098.56	105	5.41	0	0.00	0.00	0.00	11.22	0.00	3.76	9.47	0	13,419.78
TOTALS	123,473.37	3,891.98	28,327.96	3,195	99.79	59	99.78	0.00	0.00	83.70	0.00	74.69	155.19	0	156,206.46