Texas Commission on Environmental Quality

Waste Permits Division Correspondence Cover Sheet

Date: 02/06/2026
Facility Name: New Boston Landfill
Permit or Registration No.: 576C

Nature of Correspondence:
☐ Initial/New
☒ Response/Revision to TCEQ Tracking No.: 32071925 (from subject line of TCEQ letter regarding initial submission)

Affix this cover sheet to the front of your submission to the Waste Permits Division. Check appropriate box for type of correspondence. Contact WPD at (512) 239-2335 if you have questions regarding this form.

Table 1 - Municipal Solid Waste Correspondence

Applications	Reports and Notifications
☐ New Notice of Intent	☐ Alternative Daily Cover Report
☐ Notice of Intent Revision	☐ Closure Report
☐ New Permit (including Subchapter T)	☐ Compost Report
☐ New Registration (including Subchapter T)	☐ Groundwater Alternate Source Demonstration
☐ Major Amendment	☐ Groundwater Corrective Action
☐ Minor Amendment	☐ Groundwater Monitoring Report
☐ Limited Scope Major Amendment	☐ Groundwater Background Evaluation
☒ Notice Modification	☐ Landfill Gas Corrective Action
☐ Non-Notice Modification	☐ Landfill Gas Monitoring
☐ Transfer/Name Change Modification	☐ Liner Evaluation Report
☐ Temporary Authorization	☐ Soil Boring Plan
☐ Voluntary Revocation	☐ Special Waste Request
☐ Subchapter T Disturbance Non-Enclosed Structure	☐ Other:
☐ Other:	

Table 2 - Industrial & Hazardous Waste Correspondence

Applications	Reports and Responses
☐ New	☐ Annual/Biennial Site Activity Report
☐ Renewal	☐ CPT Plan/Result
☐ Post-Closure Order	☐ Closure Certification/Report
☐ Major Amendment	☐ Construction Certification/Report
☐ Minor Amendment	☐ CPT Plan/Result
☐ CCR Registration	☐ Extension Request
☐ CCR Registration Major Amendment	☐ Groundwater Monitoring Report
☐ CCR Registration Minor Amendment	☐ Interim Status Change
☐ Class 3 Modification	☐ Interim Status Closure Plan
☐ Class 2 Modification	☐ Soil Core Monitoring Report
☐ Class 1 ED Modification	☐ Treatability Study
☐ Class 1 Modification	☐ Trial Burn Plan/Result
☐ Endorsement	☐ Unsaturated Zone Monitoring Report
☐ Temporary Authorization	☐ Waste Minimization Report
☐ Voluntary Revocation	☐ Other:
☐ 335.6 Notification	
☐ Other:	

WPD RECEIVED: February 6, 2026
PROJECT MANAGER: Steve Niemeyer
TRACKING NUMBER: 32071295
DUE DATE: February 27, 2026

BIGGS & MATHEWS ENVIRONMENTAL, INC
TBPELS No. F-256 & No. 10194895 ♦ TBPG No. 50222

February 6, 2026

Stephen M. Niemeyer, P.E., Project Manager
Municipal Solid Waste Permits – MC 124
Texas Commission on Environmental Quality
P. O. Box 13087
Austin, TX 78711-3087

Re: New Boston Landfill
Bowie County, Texas
TCEQ MSW Permit No. 576C
Remaining Items for Notice Modification
Tracking No. 32071925; RN 102594892; CN 600127856

Mr. Neimeyer:

This response to your email request for additional information addressed to Guy Campbell, dated February 3, 2026, is submitted on behalf of Waste Management of Texas, Inc. for the New Boston Landfill permit modification submitted October 28, 2025, and revisions dated December 10, 2025 and January 16, 2026. Our responses to the Texas Commission on Environmental Quality (TCEQ) comments are presented below in the order listed in your email.

1. Provide a clean, technically complete PDF of the application, i.e., the last versions of each page.

RESPONSE: A clean copy of the permit modification pages including the latest version of the revisions is provided as an attachment to this response submittal.

2. Ensure a signed and dated P.E. seal is affixed to all applicable pages in the technically complete application that were revised as part of this modification, including: title pages for Appendix D9.A, HELP Model Results and Appendix H2, Final Cover System Plans and Details, and calculations pages D5-B-2, D5-B-6 through D5-B-8, and Pages D9.A-1 through D9.A-24.

RESPONSE: The permit pages have been signed and sealed consistent with the requirements of 22 TAC §137.33(f)(2):

> ***"Engineering work required to bear a seal and signature includes:***
> - ***the original title sheet of bound engineering reports, specifications, details, calculations or estimates, and:***
> - ***each original sheet of plans or drawings regardless of size or binding."***

The signed and dated P.E. seal for Appendix D9.A is included on both the title cover sheet and on the Table of Contents for Appendix D9, demonstrating that the engineering work for that entire section has been signed and sealed by a P.E.

Similarly, for the revisions to Appendix H2 - both the title cover page and the Table of Contents bear a P.E. signature and seal as well as Drawing H2.5a (the original sheet of a drawing).

Consistent with the TAC requirements and with past submittals, the calculation pages included in Appendix D5-B and in Appendix D9.A are not required to be signed and sealed on each page. The calculations presented in those sections have been signed and sealed on the original title sheet and on the Table of Contents for each section.

A technically complete copy of the revisions is provided for your review and comment. The provided technically complete copy includes clean versions of pages revised by this permit modification. A copy of the revisions has also been sent to the TCEQ Region 5 office. We believe the enclosed response to be consistent with the requirements of the Texas Commission on Environmental Quality. Please call or e-mail me if you have any questions at 817-563-1144 or chollingshead@biggsandmathews.com.

Sincerely,

BIGGS & MATHEWS ENVIRONMENTAL
TBPE No. F-256 ◆ TBPG No. 50222

Caleb Hollingshead, P.E.
Senior Project Engineer

Attachments: Remaining Items Response (one copy)

cc: Guy R. Campbell, Waste Management of Texas, Inc.
Waste Section Manager, TCEQ Region 5

NEW BOSTON LANDFILL
BOWIE COUNTY, TEXAS
TCEQ PERMIT NO. MSW 576C

PART III – FACILITY INVESTIGATION AND DESIGN

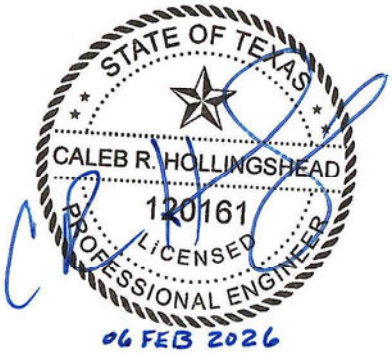
ALTERNATE FINAL COVER DESIGN

PERMIT MODIFICATION

Prepared for

WASTE MANAGEMENT OF TEXAS, INC.

February 2026



Prepared by

BIGGS & MATHEWS ENVIRONMENTAL
1700 Robert Road, Suite 100 ◆ Mansfield, Texas 76063 ◆ 817-563-1144

TEXAS BOARD OF PROFESSIONAL ENGINEERS AND LAND SURVEYORS
FIRM REGISTRATION NO. F-256 AND NO. 10194895

TEXAS BOARD OF PROFESSIONAL GEOSCIENTISTS
FIRM REGISTRATION NO. 50222

NEW BOSTON LANDFILL
BOWIE COUNTY, TEXAS
TCEQ PERMIT NO. MSW 576C

PART III – FACILITY INVESTIGATION AND DESIGN

ALTERNATE FINAL COVER DESIGN

PERMIT MODIFICATION

CONTENTS

Texas Commission on Environmental Quality

Application Form for Municipal Solid Waste Permit or Registration Modification or Temporary Authorization

Application Tracking Information

Facility Name: New Boston Landfill

Permittee or Registrant Name: Waste Management of Texas, Inc.

MSW Authorization Number: 576C

Initial Submission Date: 10/28/2025

Revision Date: 02/06/2026

Instructions for completing this form are provided in form TCEQ-20650-instr[1]. If you have questions, contact the Municipal Solid Waste Permits Section by email to mswper@tceq.texas.gov, or by phone at 512-239-2335.

Application Data

1. Submission Type

☐ Initial Submission ☒ Notice of Deficiency (NOD) Response

2. Authorization Type

☒ Permit ☐ Registration

3. Application Type

☒ Modification with Public Notice ☐ Modification without Public Notice

☐ Temporary Authorization (TA) ☐ Modification for Name Change or Transfer

4. Application Fee

Amount

The application fee for a modification or temporary authorization is $150.

Payment Method

☐ Check

☒ Online through ePay portal www3.tceq.texas.gov/epay/

If paid online, enter ePay Trace Number: 582EA000691665

[1] www.tceq.texas.gov/downloads/permitting/waste-permits/msw/forms/20650-instr.pdf

5. Electronic Versions of Application

For modifications that require public notice, TCEQ will publish electronic versions of the applications online. Applicants must provide complete electronic copies of their initial applications, responses to notices of deficiencies, and the final technically complete versions. (Refer to instructions for this form for how to submit electronically.)

6. Party Responsible for Mailing Notice

For modifications that require notice, indicate who will be responsible for mailing notice:

☐ Applicant ☐ Agent in Service ☒ Consultant

Contact Name: Caleb R. Hollingshead, P.E.

Title: Senior Engineer

Email Address: [redacted]

7. Confidential Documents

Does the application contain confidential documents?

☐ Yes ☒ No

If "Yes", reference the confidential documents in the application, but submit the confidential documents as an attachment in a separate binder marked "CONFIDENTIAL."

8. Facility General Information

Facility Name: New Boston Landfill

Contact Name: Guy R. Campbell Title: Engineering Manager

MSW Authorization Number (if existing): 576C

Regulated Entity Reference Number: **RN** 102594892

Physical or Street Address: 1030 W U.S. Highway 82

City: New Boston County: Bowie State: TX Zip Code: 75570

Phone Number: (903) 628-6595

Latitude (Decimal Degrees): 33° 28' 17.5"

Longitude (Decimal Degrees): 94° 26' 45"

9. Facility Types

☒ Type I ☐ Type IV ☐ Type V

☐ Type IAE ☐ Type IVAE ☐ Type VI

10. Description of the Revisions to the Facility

Provide a brief description of revisions to permit or registration conditions and supporting documents referred to by the permit or registration, and a reference to the specific provisions under which the modification or temporary authorization application is being made. Also, provide an explanation of why the modification or temporary authorization is needed:

Permit modification prepared consistent with 30 TAC 305.70(k)(10) for changes to include an alternative final cover design.

11. Facility Contact Information

Site Operator (Permittee or Registrant)

Name: Waste Management of Texas, Inc.

Customer Reference Number: **CN** 600127856

Contact Name: Guy R. Campbell Title: Engineering Manager

Mailing Address: 5012 MLK Freeway

City: Fort Worth County: Tarrant State: TX Zip Code: 76119

Phone Number: (405) 417-8124

Email Address: [redacted]

Texas Secretary of State (SOS) Filing Number: 22300000

Operator (if different from *Site Operator*)

Name: N/A

Customer Reference Number: **CN** _____

Contact Name: _____ Title: _____

Mailing Address: _____

City: _____ County: _____ State: _____ Zip Code: _____

Phone Number: _____

Email Address: _____

Texas Secretary of State (SOS) Filing Number: _____

Consultant (if applicable)

Firm Name: Biggs and Mathews Environmental, Inc.

Consultant Name: Caleb R. Hollingshead, P.E.

Texas Board of Professional Engineers Firm Registration Number: F-256

Contact Name: Caleb R. Hollingshead, P.E. Title: Senior Engineer

Mailing Address: 1700 Robert Road, Suite 100

City: Mansfield County: Tarrant State: TX Zip Code: 76063

Phone Number: (817) 563-1144

Email Address: [redacted]

Agent in Service (required for out-of-state applicants)

Name: N/A

Mailing Address: _____

City: _____ County: _____ State: TX Zip Code: _____

Phone Number: _____

Email Address: _____

12. Ownership Status of the Facility

Is this a modification that changes the legal description, the property owner, or the Site Operator (Permittee or Registrant)?

☐ Yes ☒ No

If the answer is "No", skip the next question and proceed to signature page.

Does the Site Operator (Permittee or Registrant) own all the facility units and all the facility property?

☐ Yes ☐ No

If "No", provide the following information for other owners.

Owner Name: _____

Mailing Address: _____

City: _____ County: _____ State: TX Zip Code: _____

Phone Number: _____

Email Address: _____

Signature Page

Site Operator or Authorized Signatory

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Name: Guy R. Campbell Title: Engineering Manager

Email Address: [redacted]

Signature: Guy R Campbell Date: 2/6/2026

Operator or Principal Executive Officer Designation of Authorized Signatory

To be completed by the operator if the application is signed by an authorized representative for the operator.

I hereby designate _____ as my representative and hereby authorize said representative to sign any application, submit additional information as may be requested by the Commission; and/or appear for me at any hearing or before the Texas Commission on Environmental Quality in conjunction with this request for a Texas Water Code or Texas Solid Waste Disposal Act permit. I further understand that I am responsible for the contents of this application, for oral statements given by my authorized representative in support of the application, and for compliance with the terms and conditions of any permit which might be issued based upon this application.

Operator or Principal Executive Officer Name: _____

Email Address: _____

Signature: _____ Date: _____

Notary

SUBSCRIBED AND SWORN to before me by the said Guy R. Campbell

On this 6th day of February, 2026

My commission expires on the 19th day of November, 2029

Janet E Anderson

Notary Public in and for

Tarrant County, Texas

JANET E ANDERSON
Notary Public, State of Texas
Comm. Expires 11-19-2029
Notary ID 133456696

Note: Application Must Bear Signature and Seal of Notary Public

Attachments for Permit or Registration Modification with Public Notice

Refer to instruction document **200650-instr** for professional engineer seal requirements.

Attachments Table 1. Required attachments.

Required Attachments	Attachment Number
Land Ownership Map	1
Landowners List	1
Marked (Redline/Strikeout) Pages	2
Unmarked Revised Pages	3

Attachments Table 2. Additional attachments as applicable.

Additional Attachments as Applicable (select all that apply and add others as needed)	Attachment Number
☐ TCEQ Core Data Form(s)	
☐ Signatory Authority Delegation	
☐ Fee Payment Receipt	
☐ Confidential Documents	

PERMIT MODIFICATION NARRATIVE

This permit modification provides changes to the Site Development Plan to include alternate final cover designs in accordance with 30 TAC §305.70(k)(10). The New Boston Landfill has an approved final cover design consisting of a clay infiltration layer, a low-density polyethylene membrane, a geocomposite/geotextile drainage layer, and an erosion layer. This permit modification maintains the approved final cover design and provides additional alternate final cover design for the top deck and for the side slope.

The optional top deck alternate final cover design consists of a 12-inch-thick compacted clay infiltration layer, a 40-mil linear low-density polyethylene membrane, a double sided geocomposite, and a 24-inch-thick erosion layer. The optional side slope alternate final cover design consists of a 12-inch-thick compacted clay infiltration layer, a double sided geocomposite, and a 36-inch-thick erosion layer.

The purpose of this modification is to provide flexibility in final cover construction based on the availability of materials at the time of construction while providing equivalent reduction in infiltration and protection from erosion as the final cover system specified in 30 TAC §330.457. This permit modification includes revisions to Part III Attachment B (General Facility Design), Attachment D (Waste Management Unit Design), and Attachment H (Closure Plan).

The following is a comprehensive list of all pages of the permit revised by this modification:

- Att B:
  - Cover
  - TOC b-ii
  - Pg B-4
- Att D:
  - Cover
  - TOC D-ii
  - TOC D-iii
  - Pg D-8
- Att D3:
  - Cover
  - TOC D3-ii
  - Dwg D3.12a
- Att D5:
  - Cover
  - TOC D5
  - TOC D5-iii
  - TOC D5-iv
  - Pg D5-11
  - Pg D5-15
- App D5-B:
  - Flysheet
  - Pg D5-B-1
  - Pg D5-B-2
  - Pg D5-B-6
  - Pg D5-B-7
  - Pg D5-B-8
- Att D8A:
  - Cover
  - TOC D8a-ii
  - TOC D8a-iii
  - Pg D8A-3
  - Pg D8A-4
  - Pg D8A-7
  - Pg D8A-11
  - Pg D8A-19
  - Pg D8A-20
  - Pg D8A-22
- Att D9 – New section:
  - Cover
  - TOC D9-ii
  - Pg D9-1
  - Pg D9-2
  - Pg D9-3
  - App D9.A
- Att H:
  - Cover
  - TOC H-ii
  - Pg H-2
  - Pg H-3
  - Dwg H2.5a

ATTACHMENT 1

ADJACENT LAND OWNERSHIP INFORMATION

NEW BOSTON LANDFILL
ADJACENT PROPERTY OWNERS
(From Bowie County Records, October 23, 2025)

1 DORIS BURNS
1715 COUNTY ROAD 3004
NEW BOSTON, TX 75570

2 GARY CADDENHEAD
909 SW FRON ST
NEW BOSTON, TX 75570

3 ALLEN SMITH
460 COUNTY ROAD 4001
NEW BOSTON, TX 75570

4 MASON CROSBY
1165 FM 3378
NEW BOSTON, TX 75570

5 LOUIS LEWIS
213 COUNTY ROAD 4005
NEW BOSTON, TX 75570

6 CARA LEWIS
1443 COUNTY ROAD 3004
NEW BOSTON, TX 75570

7 BUFORD RANEY
PO BOX 622
NEW BOSTON, TX 77570

8 CONNIE BARON
1546 COUNTY ROAD 3004
NEW BOSTON, TX 77570

9 MATHEW McGREGOR
1490 COUNTY ROAD 3004
NEW BOSTON, TX 77570

10 BOBBY WALKER
160 COUNTY ROAD 3005
NEW BOSTON, TX 77570

11 JAMES SHIRLEY
60 COUNTY ROAD 3005
NEW BOSTON, TX 77570

12 MICHAEL & KYNZI LONG
201 COUNTY ROAD 4257
NEW BOSTON, TX 77570

13 CHARLES WILLIAMS
684 COUNTY ROAD 3004
NEW BOSTON, TX 77570

14 LARRY & CHARLEAN CARROLL
131 COUNTY ROAD 3003
NEW BOSTON, TX 77570

15 JOHNNY HOOKS
613 N CENTER ST
NEW BOSTON, TX 77570

16 NATHAN & JACKLYN WHITTINGTON
140 COUNTY ROAD 3003
NEW BOSTON, TX 75570

17 VICKI WIGGINS LIVING TRUST
158 COUNTY ROAD 3005
NEW BOSTON, TX 75570

18 PROSPERITY CHURCH
PO BOX 477
NEW BOSTON, TX 75570

19 JAMES & JACQUELINE BARBER
PO BOX 833
NEW BOSTON, TX 75570

20 RONALD & TERRY HUMPHREY
136 MYRTLE DR
NEW BOSTON, TX 75570

21 NEW COVENANT LIFE FELLOWSHIP
136 MYRTLE DR
NEW BOSTON, TX 75570

22 FREDRICK & YVETTE CRAWFORD
112 S MAPLE ST
NEW BOSTON, TX 75570

23 LANDMARK PENTECOSTAL CHURCH
1601 MALL DR
TEXARKANA, TX 75503

24 DRT VENTURES LLC
4 WOODMONT CROSSING ST
TEXARKANA, TX 75503

25 ROGER LYNCH
33 FM 2149
NEW BOSTON, TX 75570

26 REGINA CARSON
PO BOX 431
NEW BOSTON, TX 75570-0431

27 ARTHUR LEE & SANDRA NERO
PO BOX 413
NEW BOSTON, TX 75570-0413

28 VIRGINIA PAIGE BROCK
392 COUNTY ROAD 3012
NEW BOSTON, TX 75570-5920

29 JOHN PERRY
PO BOX 15
MART, TX 76664

30 BRIGETTE CALVERT
719 TEXAS LANE
NEW BOSTON, TX 75570

NEW BOSTON LANDFILL
ADJACENT PROPERTY OWNERS
(From Bowie County Records, October 23, 2025)

31 GRETCHON F & JOYCE POWELL
127 PEARLY ST
NEW BOSTON, TX 75570-0042

32 124 PEARLIE SERIES-A SERIES OF MEDANKA LLC
4506 ALDRIDGE DR
SACHSE, TX 75048

33 ALVIN & DEBORAH FIELDS
PO BOX 193
NEW BOSTON, TX 75570-0193

34 LDJC PROPERTIES, LLC
6023 CALHOON TRAIL
TEXARKANA, AR 71854

35 ODIE B FIELDS, JR
110 PEARLEY ST
NEW BOSTON, TX 75570-1801

36 BILLIE N BARBER
PO BOX 654
NEW BOSTON, TX 75570

37 JEWEL & KISHINA SHAW
50 WOODLAND WAY
NEW BOSTON, TX 75570

38 LINDA FAY HAWTHRON & ERIC J THOMAS
2421 N AKIN AVE
TEXARKANA, TX 75501

39 AUSTIN MARVEL
PO BOX 654
NEW BOSTON, TX 75570

40 TROY PRICE
117 PEARLY ST
NEW BOSTON, TX 75570-1802

41 JUNE JENNINGS
141 PEARLY ST
NEW BOSTON, TX 75570-1602

42 ARDIS COTTON JR & KAY COTTON
764 TEXAS LN
NEW BOSTON, TX 75570

43 BRIGETTE ELAINE TALBERT
719 TEXAS LN
NEW BOSTON, TX 75570

44 DEAR FAMILY LIMITED PARTNERSHIP
207 S PARK DR
NEW BOSTON, TX 75570

45 V HAYWOOD
705 N BOWIE ST
NEW BOSTON, TX 75570-9631

46 JD & VIRGIE HOOKS
613 N CENTER ST
NEW BOSTON, TX 75570

47 BOOKER T & VERA HOOKS
518 N BOWIE ST
NEW BOSTON, TX 76670

48 REGINALD AUSTIN
705 N BOWIE ST
NEW BOSTON, TX 75570

49 FRANK COX
1801 LAKE SHORE CIR
COLLEGE STATION, TX 77845

50 LAFAY CROWELL
351 COUNTY ROAD 3001
NEW BOSTON, TX 75570

51 BILLIE WALKER
721 TEXAS LN
NEW BOSTON, TX 75570

52 RODNEY & DENA ANN TALBERT
719 TEXAS LN
NEW BOSTON, TX 75570

53 JULIE DEE MAY
185 COUNTY ROAD 3001
NEW BOSTON, TX 75570

54 RICHARD R THOMPSON
700 HWY 82 W
NEW BOSTON, TX 75570

55 NEW BOSTON HOUSING AUTHORITY
PO BOX 806
NEW BOSTON, TX 75570

56 DWAYNE & DWIGHT JONES
106 PEGGY ST
NEW BOSTON, TX 75570

57 MAURICE & ALICE HURD
102 PEGGY DR
NEW BOSTON, TX 75570

58 BOYCE & JANA K RANEY
570 TEXAS LN
NEW BOSTON, TX 75570

NEW BOSTON LANDFILL
ADJACENT PROPERTY OWNERS
(From Bowie County Records, October 23, 2025)

59 MICHAEL S McDONALD
620 TEXAS LN
NEW BOSTON, TX 75570

60 RICKY OLSON
205 OAK LN
NEW BOSTON, TX 75570

61 DEBRA ROBINSON
PO BOX 84
DE KALB, TX 75559

62 RICHARD ELLIS
201 CECIL
NEW BOSTON, TX 75570

63 NEW BOSTON WEST LLC
2525 N CANYON RD
PROVO, UT 84604

64 JOY N WILLIAMS
10708 BRISTOL TERR
KANSAS CITY, MO 64134

65 TERRENCE D ELLIS
123 TEXAS LN
NEW BOSTON, TX 75570

66 WILLIAM L BROWN JR
555 TEXAS LN
NEW BOSTON, TX 75570

67 ZACHARY & KRISTEN RIOS
401 HOLLY ST
NEW BOSTON, TX 75570

68 DAMON SHANE & STACIE JOHNSON
912 HWY 82 W
NEW BOSTON, TX 75570

69 PAMELA BELL
303 HOLLY ST
NEW BOSTON, TX 75570

70 CARMEN WHALEN
906 HWY 82 W
NEW BOSTON, TX 75570

71 SAMANTHA M MILLS
302 HOLLY ST
NEW BOSTON, TX 75570

72 TITUS GROUP INVESTMENTS LLC
PO BOX 271004
DALLAS, TX 75227

73 JASON W PIRKEY
913 FM 911 N
AVERY, TX 75554

74 WESTSIDE MISSIONARY BAPTIST CHURCH
PO BOX 21
NEW BOSTON, TX 75570

75 AMERICAN HERITAGE APARTMENTS INC
1430 COLLEGE DR
TEXARKANA, TX 75503

76 LAURA D ROBBINS
808 HWY 82 W
NEW BOSTON, TX 75570

77 JENNY LOU SPURLOCK
806 HWY 82 W
NEW BOSTON, TX 75570

78 JERRY O & CHARLENE YATES
908 HWY 82 W
NEW BOSTON, TX 75570

79 NETEX RENTALS LLC SERIES N2
413 E FRONT ST
DE KALB, TX 75559

80 316 LANDSCAPING SOLUTIONS
3796 HWY 82 W
NEW BOSTON, TX 75570

81 BOWIE COUNTY SOIL & WATER COMPANY
905 HWY 82 W
NEW BOSTON, TX 75570

82 EARNEST SHELTON SR%DAN & EARNEST (JR) SHELTON
909 HWY 82 W
NEW BOSTON, TX 75570

83 BOWIE COUNTY FARM BUREAU
PO BOX 757
NEW BOSTON, TX 75570

84 ENON PRIMITIVE BAPTIST CHURCH
206 E WALTERS BLVD
NEW BOSTON, TX 75570-3807

85 SOUTHWESTERN ELECTRIC POWER COMPANY
PO BOX 16428
COLUMBUS, OH 43216

86 STEVEN K WICKER
5080 COUNTY ROAD 309
DE KALB, TX 75559

NEW BOSTON LANDFILL
ADJACENT PROPERTY OWNERS
(From Bowie County Records, October 23, 2025)

87 ROY SPRADLIN
743 COUNTY ROAD 4008
NEW BOSTON, TX 75570

88 MATHEW JOHNSON
PO BOX 922
NEW BOSTON, TX 75570-0922

89 ANGELA LEWIS
827 COUNTY ROAD 4008
NEW BOSTON, TX 75570

90 JESSE JOHN DUSON
831 COUNTY ROAD 4008
NEW BOSTON, TX 75570

91 JENNIFER S DANIEL
883 COUNTY ROAD 4008
NEW BOSTON, TX 75570

92 LLOYD EDWARDS
949 COUNTY ROAD 4008
NEW BOSTON, TX 75570

93 EDWARD & SHEILA HIGGINS
PO BOX 725
NEW BOSTON, TX 75570-0725

94 TANGATA LAPUAHO & JANIS KASITATI
PO BOX 1164
NEW BOSTON, TX 75570

95 G & W PINEY WOODS PROPERTIES LLC
723 MAIN ST
TEXARKANA, TX 75501

96 WILLIAM N REED
243 COUNTY ROAD 3107
NEW BOSTON, TX 75570-6353

97 STEPHEN F & ANITA MAYES
1237 COUNTY ROAD 4008
NEW BOSTON, TX 75570-9803

98 CITY OF NEW BOSTON
PO BOX 5
NEW BOSTON, TX 75570-0005

99 ROBIN LYNN HALL
313 COUNTY ROAD 4008
NEW BOSTON, TX 75570-5047

100 LINDSEY LIVING TRUST ANNAMARY LINDSEY TRUSTEE
1365 COUNTY ROAD 4008
NEW BOSTON, TX 75570

101 CALVIN N & DIANE THOMPSON
1411 COUNTY ROAD 4008
NEW BOSTON, TX 75570

102 JAMES EDWARD ROBERTS
2571 COUNTY ROAD 3204
DE KALB, TX 75559

103 MARK & JENNIFER HELMICK
1549 COUNTY ROAD 4008
NEW BOSTON, TX 75570

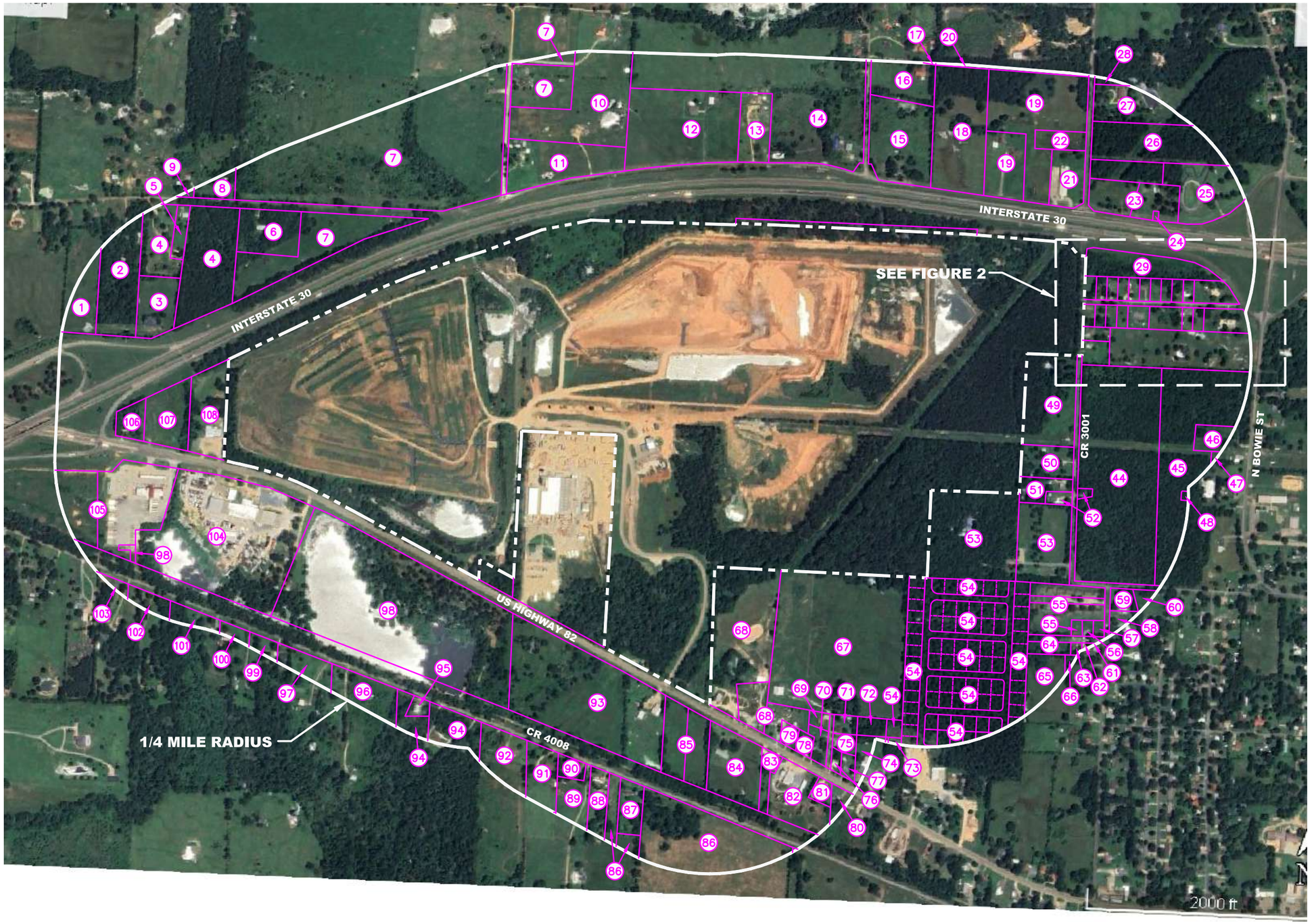
104 PARADIGM INVESTMENTS LLC
PO BOX 957
MAYFIELD, KY 42066

105 VICTRON STORES LP
791 N HWY 77 ST 501C #181
WAXAHACHIE, TX 75165

106 BARBARA S TUCKER
2086 HWY 82 W
NEW BOSTON, TX 75570

107 TRAVELERS PLAZA
10609 GREENBRIAR LN
ROCKWALL, TX 75089

108 AMERICAN LEGION POST #488 % DOYLE WILLIAMS
PO BOX 66
NEW BOSTON, TX 75570



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SCALE IN FEET

LEGEND

PERMIT BOUNDARY

(1) LAND OWNERSHIP IDENTIFICATION

NOTES:

1. REFER TO LAND OWNERS LIST FOR ADJACENT LAND OWNER NAMES.
2. ADJACENT LAND OWNERS BASED ON BOWIE COUNTY APPRAISAL DISTRICT RECORDS DOWNLOADED ON OCTOBER 23, 2025.
3. LAND OWNERS HAVE BEEN IDENTIFIED ADJACENT TO AND WITHIN 1/4 MILE OF THE PERMIT BOUNDARY.
4. IMAGERY TAKEN FROM GOOGLE EARTH ON OCTOBER 23, 2025, IMAGERY DATE JUNE 20, 2023.
5. THERE IS NO MINERAL INTEREST OWNERSHIP UNDER THE FACILITY RECORDED IN THE REAL PROPERTY APPRAISAL RECORDS.

STATE OF TEXAS
CALEB R. HOLLINGSHEAD
120161
LICENSED
PROFESSIONAL ENGINEER
16 JAN 2026

REVISIONS			
1	01/26	NOD2 TECHNICAL REVIEW	CRH
REV	DATE	DESCRIPTION	

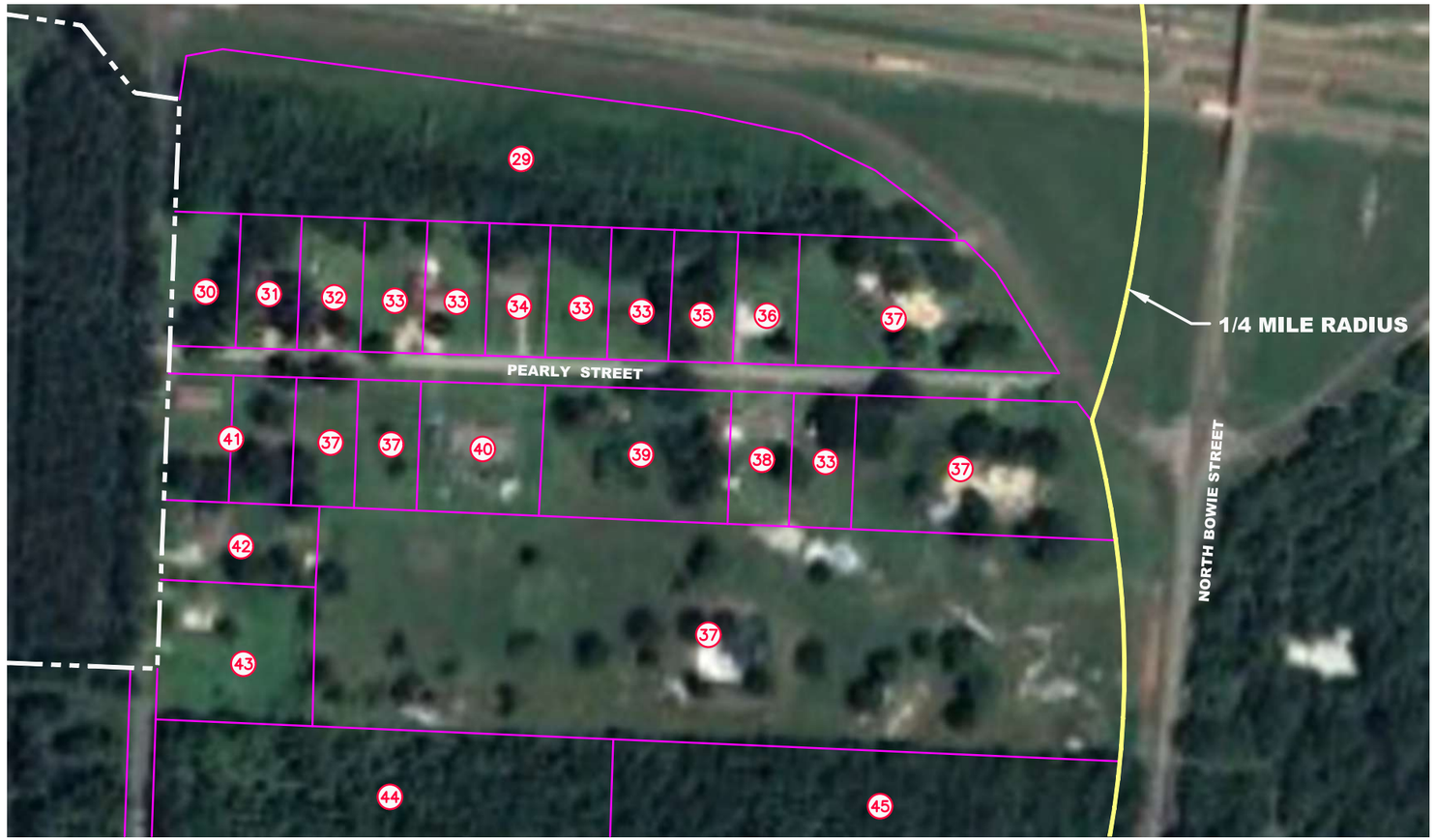
LAND OWNERSHIP MAP

WASTE MANAGEMENT OF TEXAS, INC. NEW BOSTON LANDFILL

BIGGS & MATHEWS ENVIRONMENTAL
1700 ROBERT ROAD, STE. 100
MANSFIELD, TEXAS 76063
817-563-1144

TBPE FIRM NO. F-256
TBPG FIRM NO. 50222

FIGURE 1



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SCALE IN FEET

LEGEND

PERMIT BOUNDARY

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STATE OF TEXAS
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120161
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PROFESSIONAL ENGINEER
16 JAN 2026

REVISIONS			
1	01/26	NOD2 TECHNICAL REVIEW	CRH
REV	DATE	DESCRIPTION	

LAND OWNERSHIP MAP

WASTE MANAGEMENT OF TEXAS, INC.
NEW BOSTON LANDFILL

BIGGS & MATHEWS ENVIRONMENTAL
1700 ROBERT ROAD, STE. 100
MANSFIELD, TEXAS 76063
817-563-1144

TBPE FIRM NO. F-256
TBPG FIRM NO. 50222

FIGURE
2

ATTACHMENT 2

MARKED (REDLINE/STRIKEOUT) PAGES

NEW BOSTON LANDFILL
BOWIE COUNTY, TEXAS
TCEQ PERMIT NO. MSW 576C

PART III – FACILITY INVESTIGATION AND DESIGN
ATTACHMENT B
GENERAL FACILITY DESIGN

Prepared for

Waste Management of Texas, Inc.

Technically Complete September 12, 2014
Permit Issued November 12, 2015
Revised April 2018

Revised October 2025

Prepared by

BIGGS & MATHEWS ENVIRONMENTAL
1700 Robert Road, Suite 100 ◆ Mansfield, Texas 76063 ◆ 817-563-1144

TEXAS BOARD OF PROFESSIONAL ENGINEERS AND LAND SURVEYORS
FIRM REGISTRATION NO. F-256 AND NO. 10194895

TEXAS BOARD OF PROFESSIONAL GEOSCIENTISTS
FIRM REGISTRATION NO. 50222

CONTENTS

APPENDIX B1 – DRAWINGS

Table B-2
New Boston Landfill
Components of the Final Cover Systems

Cover System Component	Description	Minimum Thickness
West and North Disposal Areas Final Cover		
TOPSLOPE		
Erosion Layer	Soil that is capable of sustaining native plant growth	24 inches
Cushion Layer	Geotextile	8 oz
Flexible Membrane Cover	Smooth LLDPE geomembrane	40 mil nominal
Infiltration Layer	Compacted soil with a coefficient of permeability ≤ 1 x 10^{-5} cm/sec	18 inches
TOPSLOPE - ALTERNATE		
Erosion Layer	Soil that is capable of sustaining native plant growth	24 inches
Drainage Layer	Double-sided geocomposite	0.25 inches nominal
Flexible Membrane Cover	Smooth or Textured LLDPE geomembrane	40 mil nominal
Infiltration Layer	Compacted soil with a coefficient of permeability ≤ 1 x 10^{-7} cm/sec	12 inches
SIDESLOPE OPTION A		
Erosion Layer	Soil that is capable of sustaining native plant growth	24 inches
Drainage Layer	Double-sided geocomposite	0.2 inches nominal
Flexible Membrane Cover	Textured LLDPE geomembrane	40 mil nominal
Infiltration Layer	Compacted soil with a coefficient of permeability ≤ 1 x 10^{-5} cm/sec	18 inches
SIDESLOPE OPTION B		
Erosion Layer	Soil that is capable of sustaining native plant growth	24 inches
Drainage Layer	Geotextile over studded geomembrane	8 oz
Flexible Membrane Cover	Textured LLDPE geomembrane with studs on top	40 mil nominal
Infiltration Layer	Compacted soil with a coefficient of permeability ≤ 1 x 10^{-5} cm/sec	18 inches
SIDESLOPE - ALTERNATE		
Erosion Layer	Soil that is capable of sustaining native plant growth	36 inches
Drainage Layer	Double-sided geocomposite	0.25 inches nominal
Infiltration Layer	Compacted soil with a coefficient of permeability ≤ 1 x 10^{-7} cm/sec	12 inches
South Disposal Area Final Cover System		
Erosion Layer	Soil that is capable of sustaining native plant growth	24 inches
Infiltration Layer	Compacted soil with a coefficient of permeability ≤ 1 x 10^{-7} cm/sec	18 inches

Final cover placement will generally follow the sequence of development as shown in Part II, Appendix IIA, Drawings IIA.16 through IIA.24, and will be ongoing as the site is developed. Sectors will be closed according to the closure plan provided in Attachment H – Closure Plan.

RACM

Regulated asbestos-containing material (RACM) may be accepted at the New Boston Landfill as defined in 40 Code of Federal Regulations Part 61 in accordance with 30 TAC §330.171(c)(3). The existing landfill has previously notified TCEQ of its intent to accept RACM. The New Boston Landfill, by inclusion of the requirements of §330.171(c)(3) in the Site Operating Plan, is providing written notification to the executive director of the

NEW BOSTON LANDFILL
BOWIE COUNTY, TEXAS
TCEQ PERMIT NO. MSW 576C

PART III – FACILITY INVESTIGATION AND DESIGN
ATTACHMENT D
WASTE MANAGEMENT UNIT DESIGN

Prepared for

Waste Management of Texas, Inc.

Technically Complete September 12, 2014
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Revised April 2018

Revised January 2026

Prepared by

BIGGS & MATHEWS ENVIRONMENTAL
1700 Robert Road, Suite 100 ◆ Mansfield, Texas 76063 ◆ 817-563-1144

TEXAS BOARD OF PROFESSIONAL ENGINEERS
FIRM REGISTRATION NO. F-256 AND NO. 10194895

TEXAS BOARD OF PROFESSIONAL GEOSCIENTISTS
FIRM REGISTRATION NO. 50222

CONTENTS

30 TAC §330.63(d)

TABLES

Table D-4
New Boston Landfill
Components of the Final Cover Systems

Cover System Component	Description	Minimum Thickness
West and North Disposal Areas Final Cover		
TOPSLOPE		
Erosion Layer	Soil that is capable of sustaining native plant growth	24 inches
Cushion Layer	Geotextile	8 oz
Flexible Membrane Cover	Smooth LLDPE geomembrane	40 mil nominal
Infiltration Layer	Compacted soil with a coefficient of permeability less than or equal to 1 x 10^{-5} cm/sec	18 inches
TOPSLOPE - ALTERNATE		
Erosion Layer	Soil that is capable of sustaining native plant growth	24 inches
Drainage Layer	Double-sided geocomposite	0.25 inches nominal
Flexible Membrane Cover	Smooth or Textured LLDPE geomembrane	40 mil nominal
Infiltration Layer	Compacted soil with a coefficient of permeability less than or equal to 1 x 10^{-7} cm/sec	12 inches
SIDESLOPE OPTION A		
Erosion Layer	Soil that is capable of sustaining native plant growth	24 inches
Drainage Layer	Double-sided geocomposite	0.2 inches nominal
Flexible Membrane Cover	Textured LLDPE geomembrane	40 mil nominal
Infiltration Layer	Compacted soil with a coefficient of permeability less than or equal to 1 x 10^{-5} cm/sec	18 inches
SIDESLOPE OPTION B		
Erosion Layer	Soil that is capable of sustaining native plant growth	24 inches
Drainage Layer	Geotextile over studded geomembrane	8 oz
Flexible Membrane Cover	Textured LLDPE geomembrane with studs on top	40 mil nominal
Infiltration Layer	Compacted soil with a coefficient of permeability less than or equal to 1 x 10^{-5} cm/sec	18 inches
SIDESLOPE - ALTERNATE		
Erosion Layer	Soil that is capable of sustaining native plant growth	36 inches
Drainage Layer	Double-sided geocomposite	0.25 inches nominal
Infiltration Layer	Compacted soil with a coefficient of permeability less than or equal to 1 x 10^{-7} cm/sec	12 inches
South Disposal Area Final Cover		
Erosion Layer	Soil that is capable of sustaining native plant growth	24 inches
Infiltration Layer	Compacted soil with a coefficient of permeability less than or equal to 1 x 10^{-7} cm/sec	18 inches

NEW BOSTON LANDFILL
BOWIE COUNTY, TEXAS
TCEQ PERMIT NO. MSW 576C

PART III – FACILITY INVESTIGATION AND DESIGN
ATTACHMENT D3
CONSTRUCTION DESIGN DETAILS

Prepared for

Waste Management of Texas, Inc.

Technically Complete September 12, 2014
Permit Issued November 12, 2015
Revised April 2018

Revised October 2025

Prepared by

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1700 Robert Road, Suite 100 ◆ Mansfield, Texas 76063 ◆ 817-563-1144

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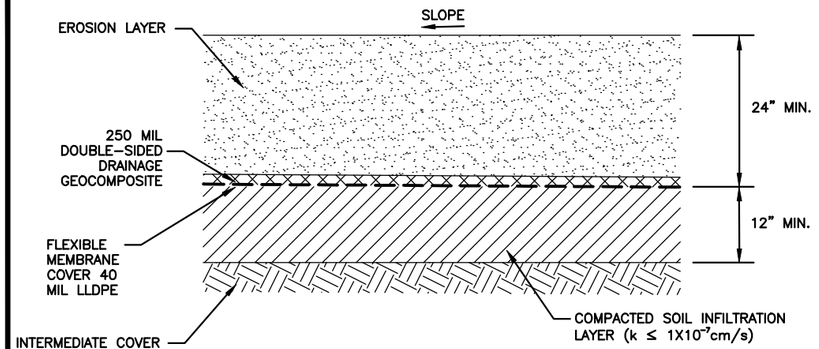
FIRM REGISTRATION NO. F-256 AND NO. 10194895

TEXAS BOARD OF PROFESSIONAL GEOSCIENTISTS
FIRM REGISTRATION NO. 50222

CONTENTS

30 TAC §330.63(d)(4)(F)



ALTERNATE FINAL COVER–TOPSLOPE FC1 D3.12a

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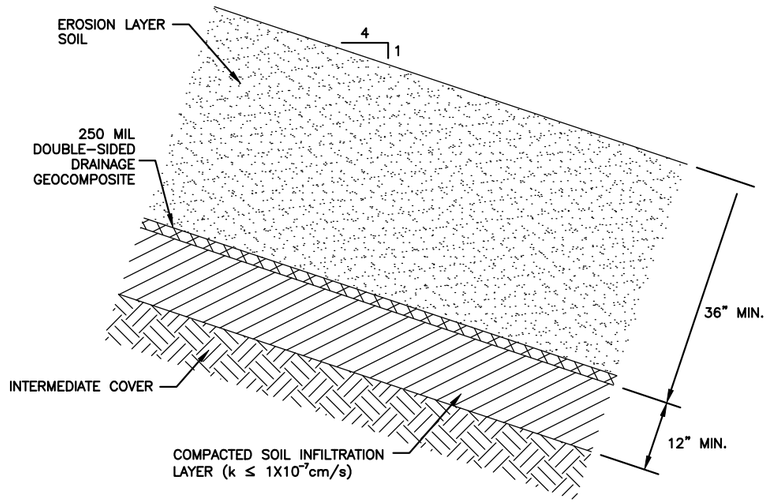

ALTERNATE FINAL COVER–SIDESLOPE FC2 D3.12a

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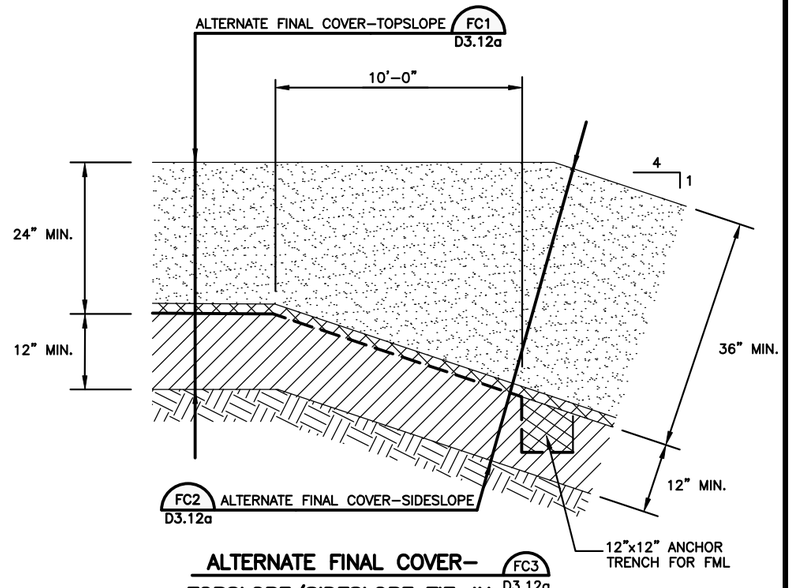

ALTERNATE FINAL COVER–TOPSLOPE/SIDESLOPE TIE–IN FC3 D3.12a

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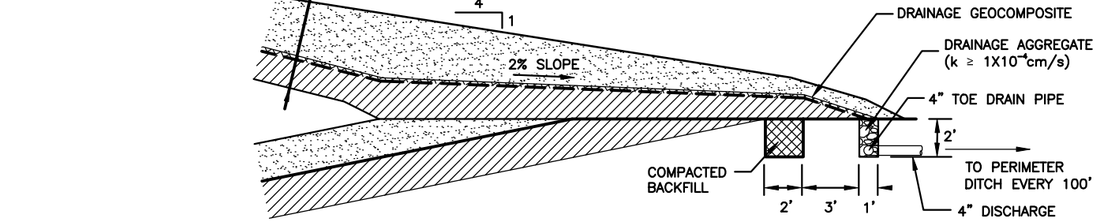

LINER/ALTERNATE FINAL COVER TIE–IN FC4 D3.12a

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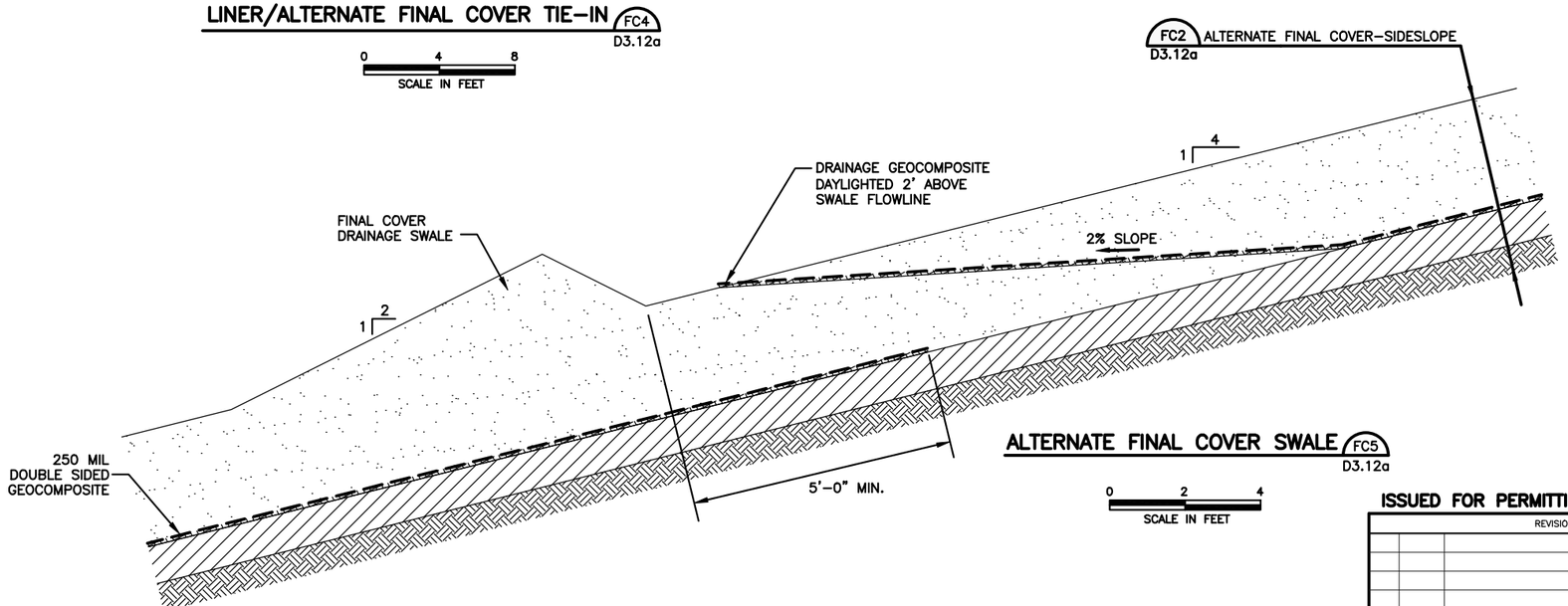
SCALE IN FEET



ALTERNATE FINAL COVER SWALE FC5 D3.12a

0 2 4
SCALE IN FEET

STATE OF TEXAS
CALEB R. HOLLINGSHEAD
120161
LICENSED
PROFESSIONAL ENGINEER
10/28/2025

ISSUED FOR PERMITTING PURPOSES ONLY

REVISIONS			
REV	DATE	DESCRIPTION	DWN BY

FINAL COVER DETAILS ALTERNATE OPTION

WASTE MANAGEMENT OF TEXAS, INC
NEW BOSTON LANDFILL

BIGGS & MATHEWS ENVIRONMENTAL
1700 ROBERT ROAD, STE. 100
MANSFIELD, TEXAS 76063
817–563–1144

TBPELS FIRM NO. F–256 AND NO. 10194895
TBPG FIRM NO. 50222

DRAWING D3.12a

NEW BOSTON LANDFILL
BOWIE COUNTY, TEXAS
TCEQ PERMIT NO. MSW 576C

PART III – FACILITY INVESTIGATION AND DESIGN
ATTACHMENT D5
GEOTECHNICAL DESIGN

Prepared for

Waste Management of Texas, Inc.

Technically Complete September 12, 2014

Revised December 2025

Biggs & Mathews Environmental, Inc.
Firm Registration No. F-256
12/10/2025

Prepared by

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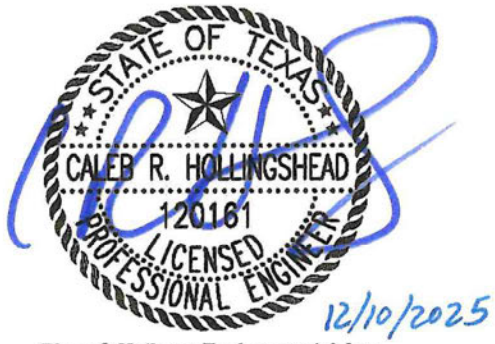
1700 Robert Road, Suite 100 • Mansfield, Texas 76063 • 817-563-1144

TEXAS BOARD OF PROFESSIONAL ENGINEERS
FIRM REGISTRATION NO. F-256 AND NO. 10194895

TEXAS BOARD OF PROFESSIONAL GEOSCIENTISTS
FIRM REGISTRATION NO. 50222



Biggs & Mathews Environmental, Inc.
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CONTENTS

Biggs & Mathews Environmental, Inc.
Firm Registration No. F-256

CONTENTS (Continued)

Biggs & Mathews Environmental, Inc.
Firm Registration No. F-256

TABLES

Table D5-6
New Boston Landfill
Summary of Slope Stability Analyses

Condition	Minimum Calculated Factor of Safety	Recommended Factor of Safety	Acceptable Factor of Safety
NORTH DISPOSAL AREA			
Excavated Slope			
Short Term	1.9	1.3	Yes
Long Term	2.3	1.5	Yes
Interim Waste Slope			
Circular Arc Failure	1.6	1.3	Yes
Sliding Block Failure	1.5	1.3	Yes
Final Waste Slope			
Circular Arc Failure	2.5	1.5	Yes
Sliding Block Failure	2.5	1.5	Yes
Liner Veneer			
Protective Cover/Geocomposite	2.1	1.3	Yes
Geocomposite/Geomembrane	2.6	1.3	Yes
Geomembrane/Soil Liner	2.6	1.3	Yes
Final Cover Veneer (Sideslope)			
OPTION A			
Erosion Layer/Geocomposite	2.8	1.5	Yes
Geocomposite/Geomembrane	3.5	1.5	Yes
Geomembrane/Infiltration Layer	3.5	1.5	Yes
OPTION B			
Erosion Layer/Geotextile	2.8	1.5	Yes
Geotextile/ Studded Geomembrane	2.4	1.5	Yes
Studded Geomembrane/ Infiltration Layer	3.5	1.5	Yes
ALTERNATE			
Erosion Layer/Geocomposite	2.7	1.5	Yes
Geocomposite/ Infiltration Layer	3.2	1.5	Yes
SOUTH DISPOSAL AREA			
Excavated Slope			
Short Term	2.6	1.3	Yes
Long Term	3.3	1.5	Yes
Interim Waste Slope			
Circular Arc Failure	2.1	1.3	Yes
Sliding Block Failure	3.2	1.3	Yes
Final Waste Slope			
Circular Arc Failure	2.7	1.5	Yes
Sliding Block Failure	4.3	1.5	Yes

8 COVER CONSTRUCTION

30 TAC §§330.165, 330.457

8.1 Daily, Weekly, and Intermediate Cover

The daily, weekly, and intermediate cover should be constructed of soils that are free of waste and debris. Suitable cover materials should be available from the proposed excavations or on-site borrow sources. Requirements for the placement of daily, weekly, and intermediate cover are provided in Part IV – Site Operating Plan.

8.2 Final Cover

Final cover construction has been completed over the entire 52.5 acres of the West Disposal Area and details of the cover is documented in the Final Cover Evaluation Reports (FCERs). FCER approval dates are shown on Attachment J, Drawing J.1.

There are two top slope and three sideslope final cover system designs proposed for the West and North Disposal Areas as shown on Table D-4 in Attachment D. The final cover system in the South Disposal Area will consist of an 18-inch-thick compacted soil infiltration layer overlain by an erosion layer. The final cover system requirements are provided in Attachment D8 and the final cover system details are provided in Attachment D3.

The infiltration layer material must consist of relatively homogeneous cohesive materials that are free of debris, rocks greater than one inch in diameter, plant materials, frozen materials, foreign objects, and organic material. The infiltration layer should be constructed directly over the intermediate cover once the waste has reached final grades. The infiltration layer construction procedure should be the same as those outlined in Section 7 for liner construction.

The erosion layer should consist of: (1) topsoil stockpiled during the excavation process, (2) on-site soils which has been modified to be capable of sustaining vegetation, or (3) an imported material suitable to sustain vegetation growth. This layer may be spread and placed in one lift over the drainage layer. After spreading, the layer should be rolled lightly to reduce future erosion, although not to the extent that compaction would inhibit plant growth.

8.3 Final Cover Testing and Documentation

CQA testing of the final cover system must be performed during construction. Final cover system requirements are outlined in Attachment D8.

NEW BOSTON LANDFILL

APPENDIX D5-B
SLOPE STABILITY ANALYSES

Includes pages D5-B-1 through D5-B-194

Biggs & Mathews Environmental, Inc.
Firm Registration No. F-256

APPENDIX D5-B
SLOPE STABILITY ANALYSES

The results of the stability analyses indicate that the proposed slopes are stable under the conditions analyzed. The PCSTABL6 output files are presented on pages D5-B-9 through D5-B-191. The liner and final cover veneer stability calculations are provided on pages D5-B-3 through D5-B-8. Table D5-B-1 summarizes the results of the stability analyses and compares the calculated factor of safety to the recommended minimum factor of safety. The recommended minimum factors of safety were selected from the Corps of Engineers "Design and Construction of Levees" manual (EM 1110-2-1913).

Table D5-B-1
Summary of Slope Stability Analyses

Condition	Minimum Calculated Factor of Safety	Recommended Factor of Safety	Acceptable Factor of Safety
NORTH DISPOSAL AREA			
Excavated Slope			
Short Term	1.9	1.3	Yes
Long Term	2.3	1.5	Yes
Interim Waste Slope			
Circular Arc Failure	1.6	1.3	Yes
Sliding Block Failure	1.5	1.3	Yes
Final Waste Slope			
Circular Arc Failure	2.5	1.5	Yes
Sliding Block Failure	2.5	1.5	Yes
Liner Veneer			
Protective Cover/Geocomposite	2.1	1.3	Yes
Geocomposite/Geomembrane	2.6	1.3	Yes
Geomembrane/Soil Liner	2.6	1.3	Yes
Final Cover Veneer (Sideslope)			
OPTION A			
Erosion Layer/Geocomposite	2.8	1.5	Yes
Geocomposite/Geomembrane	3.5	1.5	Yes
Geomembrane/Infiltration Layer	3.5	1.5	Yes
OPTION B			
Erosion Layer/Geotextile	2.8	1.5	Yes
Geotextile/Studded Geomembrane	2.4	1.5	Yes
Studded Geomembrane/Infiltration Layer	3.5	1.5	Yes
ALTERNATE			
Erosion Layer/Geocomposite	2.7	1.5	Yes
Alternate Geocomposite/Infiltration Layer	3.2	1.5	Yes
SOUTH DISPOSAL AREA			
Excavated Slope			
Short Term	2.6	1.3	Yes
Long Term	3.3	1.5	Yes
Interim Waste Slope			
Circular Arc Failure	2.1	1.3	Yes
Sliding Block Failure	3.2	1.3	Yes
Final Waste Slope			
Circular Arc Failure	2.7	1.5	Yes
Sliding Block Failure	4.3	1.5	Yes

New Boston Landfill
Slope Stability Parameters

Required: Select the appropriate soil parameters for the slope stability analyses.

References:
1) *Attachment E - Geology Report,* New Boston Landfill Permit Application.
2) Table 8-3.1 Typical Engineering Properties of Compacted Materials, *Geotechnical Engineering Procedures for Foundation Design of Buildings and Structures,* Naval Facilities Engineering Command,
3) Tests performed by TRI for Biggs & Mathews Environmental (Appendix D5-C).
4) Qian, X, Koerner, R.M., and Gray, Donald H., *Geotechnical Aspects of Landfill Design and Construction,* Prentice Hall, 2002.
5) Bouazza, A., Zornberg, J.G., and Adam, D., *Geosynthetics in waste containment facilities: recent advances,* 2002.

Solution: The following materials may be included in the slope stability analyses.

Material	Description	Physical Properties Moisture[a] %	Dry Wt[a] pcf	Wet Wt[b] pcf
Layer I	Clay	21.7	101.9	124.0
Liner/Cover	Compacted Clay	21.7	101.9	124.0
Liner/Cover Floor	Geosynthetics	N/A	N/A	124.0
Liner/Cover Sidewall	Geosynthetics	N/A	N/A	124.0
Solid Waste	Solid Waste	N/A	N/A	50.0

[a] Average laboratory test values.
[b] Wet Wt = Dry Wt x (1 + Moisture)

Total stress parameters will be used to analyze short-term stability and effective stress parameters will be used to analyze long-term stability.

Material	Strength Parameters for Circular and Sliding Block Slope Stability Total Stress cohesion (psf)	Total Stress friction (deg)	Effective Stress cohesion (psf)	Effective Stress friction (deg)
Layer I - Clay	1204 [a]	17 [a]	1508 [a]	18 [a]
Liner/Cover - Compacted Clay	1204 [a]	17 [a]	1508 [a]	18 [a]
Sidewall - Geomembrane/Soil Liner	273 [b]	13.5 [b]	273 [b]	13.5 [b]
Floor - Geomembrane/Soil Liner	601 [b]	6.8 [b]	601 [b]	6.8 [b]
Solid Waste	250 [c]	23 [c]	250 [c]	23 [c]

[a] Reference 2.
[b] Reference 3. Critical interface in composite liner or cover system used for calculation.
[c] Reference 4.

Interface parameters for the geosynthetics will be used to evaluate the liner and cover veneer stability.

Material Interface	Liner Strength Parameters for Veneer Slope Stability Friction Angle (Degrees)	Cohesion (psf)
Protective Cover/Geocomposite	32.6 [a]	12 [a]
Geocomposite/Geomembrane/Soil Liner	31.8 [a]	59 [a]
Geomembrane/Soil Liner	31.8 [a]	60 [a]

[a] Reference 3.

Material Interface	Final Cover Strength Parameters for Veneer Slope Stability Friction Angle (Degrees)	Cohesion (psf)
Option A		
Erosion Layer/Geocomposite	32.6 [a]	12 [a]
Geocomposite/Geomembrane	31.8 [a]	59 [a]
Geomembrane/Infiltration Layer	31.8 [a]	60 [a]
Option B		
Erosion Layer/Geotextile	32.6 [a]	12 [a]
Geotextile/Studded Geomembrane	31.0 [b]	0 [b]
Geomembrane/Infiltration Layer	31.8 [a]	60 [a]
Alternate		
Erosion Layer/Geocomposite	32.6 [a]	12 [a]
Geocomposite/Infiltration Layer	32.6 [a]	60 [a]

[a] Reference 3.
[b] Reference 5.

New Boston Landfill
Geosynthetic Stability Parameters

Calculate the factor of safety at each interface in the composite liner system.

Protective cover/geocomposite

Φ =	32.6	deg
β =	18.43	deg
C =	12	psf
u =	0.0	
γ =	124.0	pcf
r_u =	0	
H =	2	ft
a =	1.0	
b =	3.2	

FS @ protective cover/geocomposite = 2.1

Geocomposite/geomembrane/soil liner

Φ =	31.8	deg
β =	18.43	deg
C =	59	psf
u =	0.0	
γ =	124.0	pcf
r_u =	0	
H =	2	ft
a =	1.0	
b =	3.2	

FS @ geocomposite/geomembrane/soil liner = 2.6

Geomembrane/soil liner

Φ =	31.8	deg
β =	18.43	deg
C =	60	psf
u =	0.0	
γ =	124.0	pcf
r_u =	0	
H =	2	ft
a =	1.0	
b =	3.2	

FS @ geomembrane/soil liner = 2.6

Calculate the factor of safety at each interface in the composite final cover system A.

Erosion layer/geocomposite

Φ =	32.6	deg
β =	14.04	deg
C =	12	psf
u =	0.0	
γ =	124.0	pcf
r_u =	0	
H =	2	ft
a =	1.0	
b =	4.2	

FS @ erosion layer/geocomposite = 2.8

New Boston Landfill
Geosynthetic Stability Parameters

Geocomposite/geomembrane

Φ =	31.8	deg
β =	14.04	deg
C =	59	psf
u =	0.0	
γ =	124.0	pcf
r_u =	0	
H =	2	ft
a =	1.0	
b =	4.2	

FS @ geocomposite/geomembrane = 3.5

Geomembrane/infiltration layer

Φ =	31.8	deg
β =	14.04	deg
C =	60	psf
u =	0.0	
γ =	124.0	pcf
r_u =	0	
H =	2	ft
a =	1.0	
b =	4.2	

FS @ geomembrane/infiltration layer = 3.5

Calculate the factor of safety at each interface in the composite final cover system B.

Erosion layer/geotextile

Φ =	32.6	deg
β =	14.04	deg
C =	12	psf
u =	0.0	
γ =	124.0	pcf
r_u =	0	
H =	2	ft
a =	1.0	
b =	4.2	

FS @ erosion layer/geotextile = 2.8

Geotextile/studded geomembrane

Φ =	31.0	deg
β =	14.04	deg
C =	0	psf
u =	0.0	
γ =	124.0	pcf
r_u =	0	
H =	2	ft
a =	1.0	
b =	4.2	

New Boston Landfill
Geosynthetic Stability Parameters

FS @ geotextile/studded geomembrane =	2.4

Studded geomembrane/infiltration layer

Φ =	31.8	deg
β =	14.04	deg
C =	60	psf
u =	0.0	
γ =	124.0	pcf
r_u =	0	
H =	2	ft
a =	1.0	
b =	4.2	

FS @ studded geomembrane/infiltration layer =	3.5

Calculate the factor of safety at each interfacee in the alternate sideslope final cover system.

Erosion layer/geocomposite

Φ =	32.6	deg
β =	14.04	deg
C =	12	psf
u =	0.0	
γ =	127.0	pcf
r_u =	0	
H =	3	ft
a =	1.0	
b =	4.2	

FS @ studded erosion layer/geocomposite =	2.7

Geocomposite/infiltration layer

Φ =	32.6	deg
β =	14.04	deg
C =	60	psf
u =	0.0	
γ =	124.0	pcf
r_u =	0	
H =	3	ft
a =	1.0	
b =	4.2	

FS @ studded geocomposite/infiltration layer =	3.2

NEW BOSTON LANDFILL
BOWIE COUNTY, TEXAS
TCEQ PERMIT NO. MSW 576C

PART III – FACILITY INVESTIGATION AND DESIGN
ATTACHMENT D8A
WEST AND NORTH DISPOSAL AREAS
FINAL COVER QUALITY CONTROL PLAN

Biggs & Mathews Environmental, Inc.
Firm Registration No. F-256
12/10/2025

Prepared for

Waste Management of Texas, Inc.

Technically Complete September 12, 2014

Revised December 2025

Prepared by

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TEXAS BOARD OF PROFESSIONAL ENGINEERS
FIRM REGISTRATION NO. F-256 AND NO. 10194895

TEXAS BOARD OF PROFESSIONAL GEOSCIENTISTS
FIRM REGISTRATION NO. 50222

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2 FINAL COVER SYSTEM

30 TAC §330.457

2.1 Final Cover System

The final cover system in the West and North Disposal Areas will be a composite cover system consisting of an intermediate cover layer, an infiltration layer, a flexible membrane cover, a drainage layer, and an erosion layer. Final cover has been constructed over 18.1 acres of the West Disposal Area and details of the cover are documented in the Final Cover Evaluation Reports (FCERs). Approval dates are shown on Attachment D1 – Site Layout Plans, Drawing D1.3.

The final cover plans are included in Attachment D3 – Construction Design Details, Drawings D3.9 and D3.10. Details of the final cover system are provided in Drawings D3.12, D3.12a, and D3.13. The components of the final cover system are listed from top to bottom in Table D8A-1.

Table D8A-1
New Boston Landfill
Components of the Final Cover System

Cover System Component	Description	Minimum Thickness
West and North Disposal Areas Final Cover		
TOPSLOPE		
Erosion Layer	Soil that is capable of sustaining native plant growth	24 inches
Cushion Layer	Geotextile	8 oz
Flexible Membrane Cover	Smooth LLDPE geomembrane	40 mil nominal
Infiltration Layer	Compacted soil with a coefficient of permeability ≤ 1 x 10^{-5} cm/sec	18 inches
TOPSLOPE - ALTERNATE		
Erosion Layer	Soil that is capable of sustaining native plant growth	24 inches
Drainage Layer	Double-sided geocomposite	0.25 inches nominal
Flexible Membrane Cover	Smooth or Textured LLDPE geomembrane	40 mil nominal
Infiltration Layer	Compacted soil with a coefficient of permeability ≤ 1 x 10^{-7} cm/sec	12 inches
SIDESLOPE OPTION A		
Erosion Layer	Soil that is capable of sustaining native plant growth	24 inches
Drainage Layer	Double-sided geocomposite	0.2 inches nominal
Flexible Membrane Cover	Textured LLDPE geomembrane	40 mil nominal
Infiltration Layer	Compacted soil with a coefficient of permeability ≤ 1 x 10^{-5} cm/sec	18 inches
SIDESLOPE OPTION B		
Erosion Layer	Soil that is capable of sustaining native plant growth	24 inches
Drainage Layer	Geotextile over studded geomembrane	8 oz
Flexible Membrane Cover	Textured LLDPE geomembrane with studs on top	40 mil nominal
Infiltration Layer	Compacted soil with a coefficient of permeability ≤ 1 x 10^{-5} cm/sec	18 inches
SIDESLOPE - ALTERNATE		
Erosion Layer	Soil that is capable of sustaining native plant growth	36 inches
Drainage Layer	Double-sided geocomposite	0.25 inches nominal
Infiltration Layer	Compacted soil with a coefficient of permeability ≤ 1 x 10^{-7} cm/sec	12 inches

Construction Monitoring

Continuous on-site monitoring is necessary to assure that the components of the final cover system are constructed in accordance with this FCQCP. The CQA monitor shall provide continuous on-site observation during the following construction activities:

- Infiltration layer placement, processing, compaction, and testing
- Flexible membrane cover deployment, trial welds, seaming, testing, and repairing
- Drainage layer deployment and seaming
- Erosion layer placement
- Any work that could damage the installed components of the final cover system

4 INFILTRATION LAYER

30 TAC §330.457

4.1 General

The infiltration layer consists of compacted, relatively homogeneous, cohesive material. See Table D8A-1 for the infiltration layer thickness. The CQA monitor shall provide continuous on-site observation during infiltration layer placement, processing, compaction, and testing. The GP shall make sufficient site visits during infiltration layer construction to document the construction activities, testing, and thickness verification in the Final Cover System Report, in accordance with Section 8.

4.2 Materials

Infiltration layer material shall consist of soil that is free from debris, rubbish, frozen materials, foreign objects, and organic material. The required infiltration layer material properties are summarized in Table D8A-2.

Table D8A-2
New Boston Landfill
Infiltration Material Properties

Test	Standard	Required Property
Plasticity Index	ASTM D 4318	15 or greater
Liquid Limit	ASTM D 4318	30 or greater
Percent Passing No. 200 Mesh Sieve	ASTM D 1140	30 or greater
Percent Passing 1-inch Sieve	ASTM D 422	100
Coefficient of Permeability	ASTM D 5084 or COE EM 1110-2-1906 Appendix VII	less than or equal to 1×10^{-5} cm/sec

Preconstruction testing procedures and frequencies for infiltration layer materials are listed in Section 4.8.1.

4.3 Subgrade Preparation

Prior to placing infiltration layer material, the subgrade should be proof rolled with heavy, rubber-tired construction equipment to detect soft areas. The GP or CQA monitor must observe the proof-rolling operation. Soft areas should be compacted and then be proof rolled again.

5 FLEXIBLE MEMBRANE COVER

30 TAC §330.457

5.1 General

The flexible membrane cover (FMC) component of the final cover system consists of:

TOPSLOPE

- Smooth 40-mil thick linear low-density polyethylene (LLDPE) geomembrane

TOPSLOPE - ALTERNATE

- Smooth or textured 40-mil thick linear low-density polyethylene (LLDPE) geomembrane

SIDESLOPE - OPTION A

- Textured 40-mil thick LLDPE geomembrane

SIDESLOPE - OPTION B

- Textured 40-mil thick or greater LLDPE geomembrane with studs on top

The CQA monitor shall provide continuous on-site observation of during FMC deployment, trial welds, seaming, testing, and repairing. The GP shall make sufficient site visits during the FMC installation to document the installation and testing in the Final Cover Evaluation Report, in accordance with Section 8.

5.2 Materials

5.2.1 Properties

FMC shall consist of smooth, textured, and studded LLDPE geomembrane produced from virgin raw materials. Recycled materials are not acceptable. The FMC shall not be manufactured from resin from differing suppliers. The FMC shall meet the requirements in the most current revisions of Geosynthetics Research Institute (GRI) Standard GM17 (LLDPE). Copies of GRI GM17 are included in Appendix D8A-A. Refer to Section 6.2.2 for required drainage properties of the studded geomembrane.

Manufacturer quality control testing procedures and frequencies for FMC are listed in Section 5.5.1. Third party conformance testing procedures and frequencies for FMC are listed in Section 5.5.2.

5.2.2 Delivery and Storage

FMC shall be shipped in rolls labeled with the manufacturer's name, roll number, and lot or batch number. The CQA monitor shall inspect the rolls for shipping damage and complete a geosynthetics receipt log for all materials delivered to the site. Damaged rolls shall be rejected.

The FMC shall be unloaded and handled with equipment that does not damage the rolls. Rolls should not be pushed, slid, or dragged to the storage location. The FMC must not

6 DRAINAGE LAYER

30 TAC §330.457

6.1 General

The drainage layer consists of a geocomposite over textured geomembrane or a geotextile over studded geomembrane on the sideslopes. A geotextile will be installed as a cushion fabric on topslopes. The CQA monitor shall provide on-site observation during geocomposite and geotextile installation. The GP shall make sufficient site visits during the geocomposite drainage layer and geotextile installation to document the installation in the Final Cover Evaluation Report.

6.2 Materials

6.2.1 Geocomposite

Double-sided geocomposite (nonwoven geotextile bonded to the top and bottom of HDPE drainage net) ~~will~~ may be installed on the sideslopes over textured membrane or compacted clay infiltration layer. The geocomposite shall have the minimum properties listed in Table D8A-7.

Table D8A-7
New Boston Landfill
Geocomposite Properties

Material	Test	Standard	Required Property
Geotextile	Material Apparent Opening Size	 ASTM D 4751	Nonwoven polypropylene or polyester 70 sieve
	Unit Weight	ASTM D 5261	6 oz/yd^2
	Grab Strength	ASTM D 4632	150 lb
	Puncture Strength	ASTM D 6241	300 lb
	Trapezoidal Tear Strength	ASTM D 4533	65 lb
	Permittivity	ASTM D 4491	0.1 sec^{-1}
	Deterioration	ASTM D 4355	70%/500 hrs
HDPE Drainage Net	Density Thickness Carbon Black	ASTM D 1505 ASTM D 5199 ASTM D 4218	0.93 g/cm^3 0.2 inch Minimum 2%, maximum 3%
	Resin Melt Flow Index	ASTM D 1238	1 g/10 min
	Tensile Strength	ASTM D 5035 or 7179	40 lb/in
Geocomposite	Transmissivity	ASTM D 4716	5 x 10^{-4} m^2/ sec
	Ply Adhesion	ASTM D 7005	0.5 lb/in

Manufacturer quality control testing procedures for geocomposite are listed in Section 6.5.

6.2.2 Geotextile / Studded Geomembrane

Nonwoven geotextile ~~will~~ may be installed on the topslopes and on sideslopes over the studded geomembrane. The geotextile shall have the minimum properties listed in Table D8A-8. The geotextile over studded geomembrane shall provide a minimum transmissivity of 5 x 10^{-4} m^2/sec when tested in accordance with ASTM D 4716.

Table D8A-8
New Boston Landfill
Geotextile Properties

Test	Standard	Required Property
Material Unit Weight	 ASTM D 5261	Nonwoven polypropylene or polyester 8 oz/yd^2

Manufacturer quality control testing procedures for geotextile are listed in Section 6.5.

6.2.3 Delivery and Storage

Geocomposite and geotextile shall be shipped in rolls with opaque wrappers labeled with the manufacturer's name, roll number, and lot or batch number. The CQA monitor shall inspect the rolls for shipping damage and complete a geosynthetics receipt log for all materials delivered to the site. Damaged rolls shall be rejected.

The geocomposite and geotextile shall be unloaded and handled with equipment that does not cause damage. Rolls should not be pushed, slid, or dragged to the storage location. The geocomposite and geotextile must not be stored on wet, soft, or rocky subgrade, but must be stored on a stable subgrade. Geocomposite and geotextile must not be stacked more than five rolls high to avoid crushing the roll cores. The stored geocomposite and geotextile must be protected from puncture, grease, dirt, excessive heat, or other damage.

6.3 Preparation

Prior to installation of the drainage layer, the FMC shall be tested and verified in accordance with Section 5.5. The CQA monitor shall observe that the surface to receive the geocomposite or geotextile is free of debris, stones, and dirt and verify that the conformance documentation has been submitted and approved.

6.4 Installation

Geocomposite and geotextile shall be deployed by equipment that will not damage, crimp, or stretch it nor damage the underlying FMC. All panels must be anchored with adequate ballast to prevent uplift from wind. Smoking and damaging shoes shall not be permitted on the geocomposite or geotextile and only low-ground pressure supporting equipment shall be allowed on the FMC. Adjacent rolls of geocomposite shall be securely tied through the drainage net with plastic fasteners every five feet along the

7 EROSION LAYER

30 TAC §330.457

7.1 General

The erosion layer consists of a layer of soil with the top six inches capable of sustaining native plant growth. See Table D8A-1 for the erosion layer thickness. The CQA monitor shall provide continuous on-site observation during erosion layer placement to assure that erosion layer placement does not damage underlying geosynthetics. The GP shall make sufficient site visits during erosion layer placement to document the construction activities and thickness verification in the Final Cover Evaluation Report.

7.2 Materials

Erosion layer material shall consist of soil that is free from debris, rubbish, frozen materials, foreign objects, and organic material, or any material that could damage the underlying geosynthetics.

7.3 Preparation

Prior to placing the erosion layer material, the top of infiltration layer elevations shall be verified in accordance with the requirements of Section 4.8.3 and all testing on the underlying geosynthetics shall be completed.

7.4 Placement

The erosion layer shall be placed in a manner that minimizes the potential to damage the underlying geosynthetics. Hauling equipment shall be restricted to haul roads of sufficient thickness to protect the underlying geosynthetics. The erosion layer shall be dumped from the haul road and spread by low ground pressure equipment in a manner that minimizes wrinkles and stress in the geosynthetics. On sideslopes, erosion layer shall be placed from the bottom to the top, not across or down. Erosion layer shall not be placed over geosynthetics that are stretched across the toes of slopes. The minimum separation distance between construction equipment and the geosynthetics are listed in Table D8A-10.

The erosion layer will be seeded or sodded immediately following the application of final cover in order to minimize erosion.

NEW BOSTON LANDFILL
BOWIE COUNTY, TEXAS
TCEQ PERMIT NO. MSW-576C

PART III – FACILITY INVESTIGATION AND DESIGN
ATTACHMENT D9
ALTERNATE FINAL COVER DESIGN DEMONSTRATION

Prepared for

Waste Management of Texas, Inc.

January 2026

Prepared by

BIGGS & MATHEWS ENVIRONMENTAL
1700 Robert Road, Suite 100 ◆ Mansfield, Texas 76063 ◆ 817-563-1144

TEXAS BOARD OF PROFESSIONAL ENGINEERS AND LAND SURVEYORS
FIRM REGISTRATION NO. F-256 AND NO. 10194895

TEXAS BOARD OF PROFESSIONAL GEOSCIENTISTS
FIRM REGISTRATION NO. 50222

CONTENTS

1 ALTERNATE FINAL COVER

In accordance with 30 TAC §330.457(d), the proposed alternate final covers achieve an equivalent reduction in infiltration and provide equivalent erosion protection as the prescribed system. The prescribed final cover system for MSW landfill units with a synthetic bottom liner, as described in 30 TAC §330.457(a)(1,3), consists of the following components from top to bottom:

- A minimum erosion layer consisting of 6-inches of earthen material capable of sustaining native plant growth;
- A clay-rich soil cover layer consisting of a minimum of 18-inches of earthen material with a minimum coefficient of permeability of $1x10^{-5}$ cm/sec, and:
- A synthetic membrane.

The following additional alternate final cover system is proposed for the New Boston Landfill, listed from top to bottom:

Top Deck – Alternate Final Cover:

- 24-inch soil erosion layer;
- 250-mil double-sided geocomposite;
- 40-mil LLDPE geomembrane cover, and;
- 12-inch infiltration layer consisting of compacted soils ($k \leq 1x10^{-7}$cm/s).

Side Slope – Alternate Final Cover:

- 36-inch erosion layer;
- 250-mil double-sided geocomposite, and;
- 12-inch infiltration layer consisting of compacted soils ($k \leq 1x10^{-7}$cm/s).

Perforated HDPE pipe will be installed at the toe of the slope and the geocomposite drainage layer will daylight at intervals approximately 100 feet on the side slopes to collect drainage from the geocomposite drainage layer. The perforated piping will collect the drainage and direct the flow into the perimeter drainage system. The daylighted drainage geocomposite will collect drainage and direct the flow into the invert of the final cover swales and into the final cover letdown structures. Details of the geocomposite alternate final cover system are shown on Drawing D3.12a in Attachment D3.

2 PERFORMANCE EVALUATION

The performances of the top deck and sideslope composite alternate final cover designs were evaluated using the HELP computer modelling program (HELP Model Version 4.0.1). The HELP model simulates hydrologic processes for a landfill by performing daily, sequential water budget analyses using a quasi-two-dimensional deterministic approach. The model accepts weather, soil, and design data and uses solution techniques to account for key factors affecting water movement within the landfill. The model accounts for both surface and sub-surface processes including transpiration, surface runoff, evaporation, vertical percolation, saturated lateral drainage, and geosynthetics leakage to estimate the various movements of water within the selected profile.

The performance evaluations were performed for a unit area of landfill final cover modeled for thirty years. Each model assumed near steady-state values for the simulation period. The model requires input design data including daily and general climatological records, site-specific soil parameters, material properties, and landfill design data. Models for the prescriptive and alternate final cover systems are provided in Appendix D9.A.

3 RESULTS

Four HELP model simulations were conducted to estimate the percolation through the cover systems. Two HELP model simulations were conducted for final cover systems (top deck and sideslope) prescribed by current regulations and two HELP model simulations were conducted for alternate final cover systems (top deck and sideslope). Results from the models are summarized below.

HELP Model Results – Estimated Percolation

Final Cover System Configuration	Description	Avg. Annual Total Summary (in.)
Prescriptive	Top Deck	0.5804
	Side Slope	0.5719
Alternate	Top Deck	0.0000
	Side Slope	~~0.0248~~0.0526

Final Cover System Configuration	Description	Peak Values Summary (in.)
Prescriptive	Top Deck	0.0032
	Side Slope	0.0032
Alternate	Top Deck	0.0000
	Side Slope	~~0.0025~~0.0019

The simulations demonstrate that the proposed alternate final cover systems will provide a greater reduction in infiltration than the prescribed cover system. The erosion layer evaluation, provided in the final cover drainage structure design included in Appendix C1-E, demonstrates the thickness of the alternate final cover erosion layer is greater than the anticipated losses due to erosion.

APPENDIX D9.A
HELP MODEL RESULTS

HYDROLOGIC EVALUATION OF LANDFILL PERFORMANCE
HELP MODEL VERSION 4.0 BETA (2018)
DEVELOPED BY USEPA NATIONAL RISK MANAGEMENT RESEARCH LABORATORY

Title: NB FC: Prescribed (TS) **Simulated On:** 10/17/2025 12:38

Layer 1

Type 1 - Vertical Percolation Layer (Cover Soil)
SCL - Sandy Clay Loam
Material Texture Number 10

Thickness	=	6	inches
Porosity	=	0.398	vol/vol
Field Capacity	=	0.244	vol/vol
Wilting Point	=	0.136	vol/vol
Initial Soil Water Content	=	0.409	vol/vol
Effective Sat. Hyd. Conductivity	=	1.20E-04	cm/sec

Layer 2

Type 1 - Vertical Percolation Layer
SC/CL New Boston Clays (Uncompacted)
Material Texture Number 43

Thickness	=	18	inches
Porosity	=	0.464	vol/vol
Field Capacity	=	0.31	vol/vol
Wilting Point	=	0.187	vol/vol
Initial Soil Water Content	=	0.4603	vol/vol
Effective Sat. Hyd. Conductivity	=	1.00E-05	cm/sec

Layer 3

Type 4 - Flexible Membrane Liner
LDPE Membrane
Material Texture Number 36

Thickness	=	0.04	inches
Effective Sat. Hyd. Conductivity	=	4.00E-13	cm/sec
FML Pinhole Density	=	3	Holes/Acre
FML Installation Defects	=	4	Holes/Acre
FML Placement Quality	=	3	Good

Note: Initial moisture content of the layers and snow water were computed as nearly steady-state values by HELP.

General Design and Evaporative Zone Data

SCS Runoff Curve Number	=	86.2	
Fraction of Area Allowing Runoff	=	100	%
Area projected on a horizontal plane	=	1	acres
Evaporative Zone Depth	=	24	inches
Initial Water in Evaporative Zone	=	10.74	inches
Upper Limit of Evaporative Storage	=	10.74	inches
Lower Limit of Evaporative Storage	=	4.182	inches
Initial Snow Water	=	0	inches
Initial Water in Layer Materials	=	10.74	inches
Total Initial Water	=	10.74	inches
Total Subsurface Inflow	=	0	inches/year

Note: SCS Runoff Curve Number was calculated by HELP.

Evapotranspiration and Weather Data

Station Latitude	=	33.47	Degrees
Maximum Leaf Area Index	=	5	
Start of Growing Season (Julian Date)	=	91	days
End of Growing Season (Julian Date)	=	304	days
Average Wind Speed	=	1.885	mph
Average 1st Quarter Relative Humidity	=	83	%
Average 2nd Quarter Relative Humidity	=	78	%
Average 3rd Quarter Relative Humidity	=	65	%
Average 4th Quarter Relative Humidity	=	77	%

Note: Evapotranspiration data was obtained for New Boston, Texas

Normal Mean Monthly Precipitation (inches)

Jan/Jul	Feb/Aug	Mar/Sep	Apr/Oct	May/Nov	Jun/Dec
3.877037	4.325889	5.150083	3.745899	5.13176	4.523972
3.4829	2.643919	3.968276	5.007685	4.584613	5.01805

Note: Precipitation was simulated based on HELP V4 weather simulation for:
Lat/Long: 33.47/-94.45

Normal Mean Monthly Temperature (Degrees Fahrenheit)

Jan/Jul	Feb/Aug	Mar/Sep	Apr/Oct	May/Nov	Jun/Dec
54.9	53	59.8	70.1	78.2	89
92.1	89.8	80.7	69.9	61.3	53.9

Note: Temperature was simulated based on HELP V4 weather simulation for:
Lat/Long: 33.47/-94.45
Solar radiation was simulated based on HELP V4 weather simulation for:
Lat/Long: 33.47/-94.45

Average Annual Totals Summary

Title: NB FC: Prescribed (TS)
Simulated on: 10/17/2025 12:39

	Average Annual Totals for Years 1 - 30*			
	(inches)	[std dev]	(cubic feet)	(percent)
Precipitation	51.46	[8.49]	186,800.1	100.00
Runoff	15.267	[6.018]	55,418.1	29.67
Evapotranspiration	35.590	[3.56]	129,189.9	69.16
Subprofile1				
Percolation/leakage through Layer 3	0.580392	[0.09213]	2,106.8	1.13
Average Head on Top of Layer 3	11.6263	[1.8587]	---	---
Water storage				
Change in water storage	0.0235	[1.5438]	85.2	0.05

* Note: Average inches are converted to volume based on the user-specified area.

Peak Values Summary

Title: NB FC: Prescribed (TS)
Simulated on: 10/17/2025 12:39

	Peak Values for Years 1 - 30*		
	(inches)		(cubic feet)
Precipitation	5.10		18,522.5
Runoff	4.420		16,043.7
Subprofile1			
Percolation/leakage through Layer 3	0.003240		11.8
Average head on Layer 3	24.0000		
Other Parameters			
Snow water	6.7883		24,641.3
Maximum vegetation soil water	0.4475	(vol/vol)	
Minimum vegetation soil water	0.1743	(vol/vol)	

Final Water Storage in Landfill Profile at End of Simulation Period

Title: NB FC: Prescribed (TS)
Simulated on: 10/17/2025 12:40
Simulation period: 30 years

	Final Water Storage	
Layer	(inches)	(vol/vol)
1	2.4460	0.4077
2	8.2860	0.4603
3	0.0000	0.0000
Snow water	0.7125	---

HYDROLOGIC EVALUATION OF LANDFILL PERFORMANCE
HELP MODEL VERSION 4.0 BETA (2018)
DEVELOPED BY USEPA NATIONAL RISK MANAGEMENT RESEARCH LABORATORY

Title: NB FC: Prescribed (SS) **Simulated On:** 10/17/2025 12:21

Layer 1

Type 1 - Vertical Percolation Layer (Cover Soil)

SCL - Sandy Clay Loam

Material Texture Number 10

Thickness	=	6	inches
Porosity	=	0.398	vol/vol
Field Capacity	=	0.244	vol/vol
Wilting Point	=	0.136	vol/vol
Initial Soil Water Content	=	0.409	vol/vol
Effective Sat. Hyd. Conductivity	=	1.20E-04	cm/sec

Layer 2

Type 1 - Vertical Percolation Layer

SC/CL New Boston Clays (Uncompacted)

Material Texture Number 43

Thickness	=	18	inches
Porosity	=	0.464	vol/vol
Field Capacity	=	0.31	vol/vol
Wilting Point	=	0.187	vol/vol
Initial Soil Water Content	=	0.4603	vol/vol
Effective Sat. Hyd. Conductivity	=	1.00E-05	cm/sec

Layer 3

Type 4 - Flexible Membrane Liner

LDPE Membrane

Material Texture Number 36

Thickness	=	0.04	inches
Effective Sat. Hyd. Conductivity	=	4.00E-13	cm/sec
FML Pinhole Density	=	3	Holes/Acre
FML Installation Defects	=	4	Holes/Acre
FML Placement Quality	=	3	Good

Note: Initial moisture content of the layers and snow water were computed as nearly steady-state values by HELP.

General Design and Evaporative Zone Data

SCS Runoff Curve Number	=	87.3	
Fraction of Area Allowing Runoff	=	100	%
Area projected on a horizontal plane	=	1	acres
Evaporative Zone Depth	=	24	inches
Initial Water in Evaporative Zone	=	10.74	inches
Upper Limit of Evaporative Storage	=	10.74	inches
Lower Limit of Evaporative Storage	=	4.182	inches
Initial Snow Water	=	0	inches
Initial Water in Layer Materials	=	10.74	inches
Total Initial Water	=	10.74	inches
Total Subsurface Inflow	=	0	inches/year

Note: SCS Runoff Curve Number was calculated by HELP.

Evapotranspiration and Weather Data

Station Latitude	=	33.47	Degrees
Maximum Leaf Area Index	=	5	
Start of Growing Season (Julian Date)	=	91	days
End of Growing Season (Julian Date)	=	304	days
Average Wind Speed	=	1.885	mph
Average 1st Quarter Relative Humidity	=	83	%
Average 2nd Quarter Relative Humidity	=	78	%
Average 3rd Quarter Relative Humidity	=	65	%
Average 4th Quarter Relative Humidity	=	77	%

Note: Evapotranspiration data was obtained for New Boston, Texas

Normal Mean Monthly Precipitation (inches)

Jan/Jul	Feb/Aug	Mar/Sep	Apr/Oct	May/Nov	Jun/Dec
3.877037	4.325889	5.150083	3.745899	5.13176	4.523972
3.4829	2.643919	3.968276	5.007685	4.584613	5.01805

Note: Precipitation was simulated based on HELP V4 weather simulation for:
Lat/Long: 33.471528/-94.445833

Normal Mean Monthly Temperature (Degrees Fahrenheit)

Jan/Jul	Feb/Aug	Mar/Sep	Apr/Oct	May/Nov	Jun/Dec
54.9	53	59.8	70.1	78.2	89
92.1	89.8	80.7	69.9	61.3	53.9

Note: Temperature was simulated based on HELP V4 weather simulation for:
Lat/Long: 33.471528/-94.445833
Solar radiation was simulated based on HELP V4 weather simulation for:
Lat/Long: 33.471528/-94.445833

Average Annual Totals Summary

Title: NB FC: Prescribed (SS)
Simulated on: 10/17/2025 12:25

	Average Annual Totals for Years 1 - 30*			
	(inches)	[std dev]	(cubic feet)	(percent)
Precipitation	51.46	[8.49]	186,800.1	100.00
Runoff	15.453	[5.988]	56,094.4	30.03
Evapotranspiration	35.412	[3.534]	128,544.3	68.81
Subprofile1				
Percolation/leakage through Layer 3	0.571949	[0.09251]	2,076.2	1.11
Average Head on Top of Layer 3	11.4489	[1.867]	---	---
Water storage				
Change in water storage	0.0235	[1.6002]	85.2	0.05

* Note: Average inches are converted to volume based on the user-specified area.

Peak Values Summary

Title: NB FC: Prescribed (SS)
Simulated on: 10/17/2025 12:25

	Peak Values for Years 1 - 30*		
	(inches)		(cubic feet)
Precipitation	5.10		18,522.5
Runoff	4.420		16,042.8
Subprofile1			
Percolation/leakage through Layer 3	0.003240		11.8
Average head on Layer 3	24.0000		
Other Parameters			
Snow water	6.7883		24,641.4
Maximum vegetation soil water	0.4475	(vol/vol)	
Minimum vegetation soil water	0.1743	(vol/vol)	

Final Water Storage in Landfill Profile at End of Simulation Period

Title: NB FC: Prescribed (SS)
Simulated on: 10/17/2025 12:25
Simulation period: 30 years

	Final Water Storage	
Layer	(inches)	(vol/vol)
1	2.4460	0.4077
2	8.2860	0.4603
3	0.0000	0.0000
Snow water	0.7125	---

HYDROLOGIC EVALUATION OF LANDFILL PERFORMANCE
HELP MODEL VERSION 4.0 BETA (2018)
DEVELOPED BY USEPA NATIONAL RISK MANAGEMENT RESEARCH LABORATORY

Title: NB FC: Alternate (TS) **Simulated On:** 1/14/2026 10:14

Layer 1

Type 1 - Vertical Percolation Layer (Cover Soil)
SC/CL New Boston Clays (Uncompacted)
Material Texture Number 43

Thickness	=	24	inches
Porosity	=	0.464	vol/vol
Field Capacity	=	0.31	vol/vol
Wilting Point	=	0.187	vol/vol
Initial Soil Water Content	=	0.3757	vol/vol
Effective Sat. Hyd. Conductivity	=	4.20E-05	cm/sec

Layer 2

Type 2 - Lateral Drainage Layer
250-mil DS 6oz Composite
Material Texture Number 123

Thickness	=	0.25	inches
Porosity	=	0.85	vol/vol
Field Capacity	=	0.01	vol/vol
Wilting Point	=	0.005	vol/vol
Initial Soil Water Content	=	0.0152	vol/vol
Effective Sat. Hyd. Conductivity	=	5.00E+01	cm/sec
Slope	=	5	%
Drainage Length	=	100	ft

Layer 3

Type 4 - Flexible Membrane Liner
LDPE Membrane
Material Texture Number 36

Thickness	=	0.04	inches
Effective Sat. Hyd. Conductivity	=	4.00E-13	cm/sec
FML Pinhole Density	=	2	Holes/Acre
FML Installation Defects	=	3	Holes/Acre
FML Placement Quality	=	3	Good

Layer 4

Type 3 - Barrier Soil Liner

Liner Soil (High)

Material Texture Number 16

Thickness	=	12	inches
Porosity	=	0.427	vol/vol
Field Capacity	=	0.418	vol/vol
Wilting Point	=	0.367	vol/vol
Initial Soil Water Content	=	0.427	vol/vol
Effective Sat. Hyd. Conductivity	=	1.00E-07	cm/sec

Note: Initial moisture content of the layers and snow water were computed as nearly steady-state values by HELP.

General Design and Evaporative Zone Data

SCS Runoff Curve Number	=	90.5	
Fraction of Area Allowing Runoff	=	100	%
Area projected on a horizontal plane	=	1	acres
Evaporative Zone Depth	=	24	inches
Initial Water in Evaporative Zone	=	9.017	inches
Upper Limit of Evaporative Storage	=	11.136	inches
Lower Limit of Evaporative Storage	=	4.488	inches
Initial Snow Water	=	0	inches
Initial Water in Layer Materials	=	14.145	inches
Total Initial Water	=	14.145	inches
Total Subsurface Inflow	=	0	inches/year

Note: SCS Runoff Curve Number was calculated by HELP.

Evapotranspiration and Weather Data

Station Latitude	=	33.47	Degrees
Maximum Leaf Area Index	=	5	
Start of Growing Season (Julian Date)	=	91	days
End of Growing Season (Julian Date)	=	304	days
Average Wind Speed	=	1.885	mph
Average 1st Quarter Relative Humidity	=	83	%
Average 2nd Quarter Relative Humidity	=	78	%
Average 3rd Quarter Relative Humidity	=	65	%
Average 4th Quarter Relative Humidity	=	77	%

Note: Evapotranspiration data was obtained for New Boston, Texas

Normal Mean Monthly Precipitation (inches)

Jan/Jul	Feb/Aug	Mar/Sep	Apr/Oct	May/Nov	Jun/Dec
3.877037	4.325889	5.150083	3.745899	5.13176	4.523972
3.4829	2.643919	3.968276	5.007685	4.584613	5.01805

Note: Precipitation was simulated based on HELP V4 weather simulation for:
Lat/Long: 33.47/-94.45

Normal Mean Monthly Temperature (Degrees Fahrenheit)

Jan/Jul	Feb/Aug	Mar/Sep	Apr/Oct	May/Nov	Jun/Dec
54.9	53	59.8	70.1	78.2	89
92.1	89.8	80.7	69.9	61.3	53.9

Note: Temperature was simulated based on HELP V4 weather simulation for:
Lat/Long: 33.47/-94.45
Solar radiation was simulated based on HELP V4 weather simulation for:
Lat/Long: 33.47/-94.45

Average Annual Totals Summary

Title: NB FC: Alternate (TS)
Simulated on: 1/14/2026 10:16

	Average Annual Totals for Years 1 - 30*			
	(inches)	[std dev]	(cubic feet)	(percent)
Precipitation	51.46	[8.49]	186,800.1	100.00
Runoff	11.249	[4.003]	40,832.1	21.86
Evapotranspiration	31.922	[3.428]	115,878.1	62.03
Subprofile1				
Lateral drainage collected from Layer 2	8.2730	[2.7015]	30,030.8	16.08
Percolation/leakage through Layer 4	0.000001	[0]	0.0030	0.00
Average Head on Top of Layer 3	0.0005	[0.0002]	---	---
Water storage				
Change in water storage	0.0163	[1.2201]	59.1	0.03

* Note: Average inches are converted to volume based on the user-specified area.

Peak Values Summary

Title: NB FC: Alternate (TS)
Simulated on: 1/14/2026 10:17

	Peak Values for Years 1 - 30*		
	(inches)		(cubic feet)
Precipitation	5.10		18,522.5
Runoff	3.605		13,087.0
Subprofile1			
Drainage collected from Layer 2	0.4296		1,559.3
Percolation/leakage through Layer 4	0.000000		0.0001
Average head on Layer 3	0.0092		---
Maximum head on Layer 3	0.0061		---
Location of maximum head in Layer 2	0.00	(feet from drain)	
Other Parameters			
Snow water	6.7883		24,641.3
Maximum vegetation soil water	0.4306	(vol/vol)	
Minimum vegetation soil water	0.1870	(vol/vol)	

Final Water Storage in Landfill Profile at End of Simulation Period

Title: NB FC: Alternate (TS)
Simulated on: 1/14/2026 10:17
Simulation period: 30 years

	Final Water Storage	
Layer	(inches)	(vol/vol)
1	8.7923	0.3663
2	0.0047	0.0189
3	0.0000	0.0000
4	5.1240	0.4270
Snow water	0.7125	---

HYDROLOGIC EVALUATION OF LANDFILL PERFORMANCE
HELP MODEL VERSION 4.0 BETA (2018)
DEVELOPED BY USEPA NATIONAL RISK MANAGEMENT RESEARCH LABORATORY

Title: NB FC: Alternate (SS) **Simulated On:** 1/14/2026 10:24

Layer 1

Type 1 - Vertical Percolation Layer (Cover Soil)
SC/CL New Boston Clays (Uncompacted)
Material Texture Number 43

Thickness	=	36	inches
Porosity	=	0.464	vol/vol
Field Capacity	=	0.31	vol/vol
Wilting Point	=	0.187	vol/vol
Initial Soil Water Content	=	0.3801	vol/vol
Effective Sat. Hyd. Conductivity	=	4.20E-05	cm/sec

Layer 2

Type 2 - Lateral Drainage Layer
250-mil DS 6oz Composite
Material Texture Number 123

Thickness	=	0.25	inches
Porosity	=	0.85	vol/vol
Field Capacity	=	0.01	vol/vol
Wilting Point	=	0.005	vol/vol
Initial Soil Water Content	=	0.0137	vol/vol
Effective Sat. Hyd. Conductivity	=	5.00E+01	cm/sec
Slope	=	25	%
Drainage Length	=	100	ft

Layer 3

Type 3 - Barrier Soil Liner
Liner Soil (High)
Material Texture Number 16

Thickness	=	12	inches
Porosity	=	0.427	vol/vol
Field Capacity	=	0.418	vol/vol
Wilting Point	=	0.367	vol/vol
Initial Soil Water Content	=	0.427	vol/vol
Effective Sat. Hyd. Conductivity	=	1.00E-07	cm/sec

Note: Initial moisture content of the layers and snow water were computed as nearly steady-state values by HELP.

General Design and Evaporative Zone Data

SCS Runoff Curve Number	=	91.2	
Fraction of Area Allowing Runoff	=	100	%
Area projected on a horizontal plane	=	1	acres
Evaporative Zone Depth	=	36	inches
Initial Water in Evaporative Zone	=	13.684	inches
Upper Limit of Evaporative Storage	=	16.704	inches
Lower Limit of Evaporative Storage	=	6.732	inches
Initial Snow Water	=	0	inches
Initial Water in Layer Materials	=	18.811	inches
Total Initial Water	=	18.811	inches
Total Subsurface Inflow	=	0	inches/year

Note: SCS Runoff Curve Number was calculated by HELP.

Evapotranspiration and Weather Data

Station Latitude	=	33.47	Degrees
Maximum Leaf Area Index	=	5	
Start of Growing Season (Julian Date)	=	91	days
End of Growing Season (Julian Date)	=	304	days
Average Wind Speed	=	1.885	mph
Average 1st Quarter Relative Humidity	=	83	%
Average 2nd Quarter Relative Humidity	=	78	%
Average 3rd Quarter Relative Humidity	=	65	%
Average 4th Quarter Relative Humidity	=	77	%

Note: Evapotranspiration data was obtained for New Boston, Texas

Normal Mean Monthly Precipitation (inches)

Jan/Jul	Feb/Aug	Mar/Sep	Apr/Oct	May/Nov	Jun/Dec
3.877037	4.325889	5.150083	3.745899	5.13176	4.523972
3.4829	2.643919	3.968276	5.007685	4.584613	5.01805

Note: Precipitation was simulated based on HELP V4 weather simulation for:
Lat/Long: 33.47/-94.45

Normal Mean Monthly Temperature (Degrees Fahrenheit)

Jan/Jul	Feb/Aug	Mar/Sep	Apr/Oct	May/Nov	Jun/Dec
54.9	53	59.8	70.1	78.2	89
92.1	89.8	80.7	69.9	61.3	53.9

Note: Temperature was simulated based on HELP V4 weather simulation for:
Lat/Long: 33.47/-94.45
Solar radiation was simulated based on HELP V4 weather simulation for:
Lat/Long: 33.47/-94.45

Average Annual Totals Summary

Title: NB FC: Alternate (SS)
Simulated on: 1/14/2026 10:26

	Average Annual Totals for Years 1 - 30*			
	(inches)	[std dev]	(cubic feet)	(percent)
Precipitation	51.46	[8.49]	186,800.1	100.00
Runoff	11.982	[4.07]	43,495.2	23.28
Evapotranspiration	33.211	[3.435]	120,555.5	64.54
Subprofile1				
Lateral drainage collected from Layer 2	6.1987	[2.3674]	22,501.3	12.05
Percolation/leakage through Layer 3	0.052603	[0.014138]	190.9	0.10
Average Head on Top of Layer 3	0.0004	[0.0001]	---	---
Water storage				
Change in water storage	0.0157	[1.8679]	57.1	0.03

* Note: Average inches are converted to volume based on the user-specified area.

Peak Values Summary

Title: NB FC: Alternate (SS)
Simulated on: 1/14/2026 10:26

	Peak Values for Years 1 - 30*		
	(inches)		(cubic feet)
Precipitation	5.10		18,522.5
Runoff	3.707		13,457.6
Subprofile1			
Drainage collected from Layer 2	0.3735		1,355.9
Percolation/leakage through Layer 3	0.001911		6.9351
Average head on Layer 3	0.0080		---
Maximum head on Layer 3	0.0011		---
Location of maximum head in Layer 2	0.00	(feet from drain)	
Other Parameters			
Snow water	6.7883		24,641.3
Maximum vegetation soil water	0.4222	(vol/vol)	
Minimum vegetation soil water	0.1870	(vol/vol)	

Final Water Storage in Landfill Profile at End of Simulation Period

Title: NB FC: Alternate (SS)
Simulated on: 1/14/2026 10:26
Simulation period: 30 years

	Final Water Storage	
Layer	(inches)	(vol/vol)
1	13.4443	0.3735
2	0.0025	0.0100
3	5.1240	0.4270
Snow water	0.7125	---

NEW BOSTON LANDFILL
BOWIE COUNTY, TEXAS
TCEQ PERMIT NO. MSW 576C

PART III – FACILITY INVESTIGATION AND DESIGN
ATTACHMENT H
CLOSURE PLAN

Prepared for

Waste Management of Texas, Inc.

Technically Complete September 12, 2014
Permit Issued November 12, 2015
Revised February 2018

Revised October 2025

Prepared by

BIGGS & MATHEWS ENVIRONMENTAL
1700 Robert Road, Suite 100 ◆ Mansfield, Texas 76063 ◆ 817-563-1144

TEXAS BOARD OF PROFESSIONAL ENGINEERS
FIRM REGISTRATION NO. F-256 AND NO. 10194895

TEXAS BOARD OF PROFESSIONAL GEOSCIENTISTS
FIRM REGISTRATION NO. 50222

CONTENTS

2 FINAL COVER SYSTEM

30 TAC §330.457

2.1 Final Cover System Design

2.1.1 West and North Disposal Areas

~~The final cover system in the West and North Disposal Areas will be a composite cover system consisting of an intermediate cover layer, an infiltration layer, a flexible membrane cover, a drainage layer, and an erosion layer.~~There are two final cover system designs for the West and North Disposal Areas at the New Boston Landfill, the components of which are listed on Table H-1 of this section. Final cover has been constructed over ~~18.1~~the entire 52.5 acres of the West Disposal Area and details of the cover are documented in the Final Cover Evaluation Reports (FCERs). Approval dates are shown on Appendix ~~H2~~J, Drawing ~~H2.2~~J.1.

The final cover plans are included in Appendix H2, Drawings H2.2 and H2.3 and the final cover details are provided in Drawings H2.5, H2.5a, and H2.6. The components of the final cover system are listed from top to bottom in Table H-1.

The final cover will be seeded or sodded immediately following the application of the final cover in order to minimize erosion. The vegetation will be native and introduced grasses. Temporary cold weather vegetation will be established if required. Irrigation will be employed as needed until vegetation is established. Erosion control measures such as silt fences and straw bales will be used to minimize erosion until the vegetation is established. Areas that experience erosion or do not readily vegetate will be repaired, reseeded or sodded until vegetation is established, or the soil will be replaced with soil that will support the grasses.

Table H-1
New Boston Landfill
Components of the West and North Disposal Areas Final Cover System

Cover System Component	Description	Minimum Thickness
West and North Disposal Areas Final Cover		
TOPSLOPE		
Erosion Layer	Soil that is capable of sustaining native plant growth	24 inches
Cushion Layer	Geotextile	8 oz
Flexible Membrane Cover	Smooth LLDPE geomembrane	40 mil nominal
Infiltration Layer	Compacted soil with a coefficient of permeability ≤ 1 x 10^{-5} cm/sec	18 inches
TOPSLOPE - ALTERNATE		
Erosion Layer	Soil that is capable of sustaining native plant growth	24 inches
Drainage Layer	Double-sided geocomposite	0.25 inches nominal
Flexible Membrane Cover	Smooth or Textured LLDPE geomembrane	40 mil nominal
Infiltration Layer	Compacted soil with a coefficient of permeability ≤ 1 x 10^{-7} cm/sec	12 inches
SIDESLOPE OPTION A		
Erosion Layer	Soil that is capable of sustaining native plant growth	24 inches
Drainage Layer	Double-sided geocomposite	0.2 inches nominal
Flexible Membrane Cover	Textured LLDPE geomembrane	40 mil nominal
Infiltration Layer	Compacted soil with a coefficient of permeability ≤ 1 x 10^{-5} cm/sec	18 inches
SIDESLOPE OPTION B		
Erosion Layer	Soil that is capable of sustaining native plant growth	24 inches
Drainage Layer	Geotextile over studded geomembrane	8 oz
Flexible Membrane Cover	Textured LLDPE geomembrane with studs on top	40 mil nominal
Infiltration Layer	Compacted soil with a coefficient of permeability ≤ 1 x 10^{-5} cm/sec	18 inches
SIDESLOPE - ALTERNATE		
Erosion Layer	Soil that is capable of sustaining native plant growth	36 inches
Drainage Layer	Double-sided geocomposite	0.25 inches nominal
Infiltration Layer	Compacted soil with a coefficient of permeability ≤ 1 x 10^{-7} cm/sec	12 inches

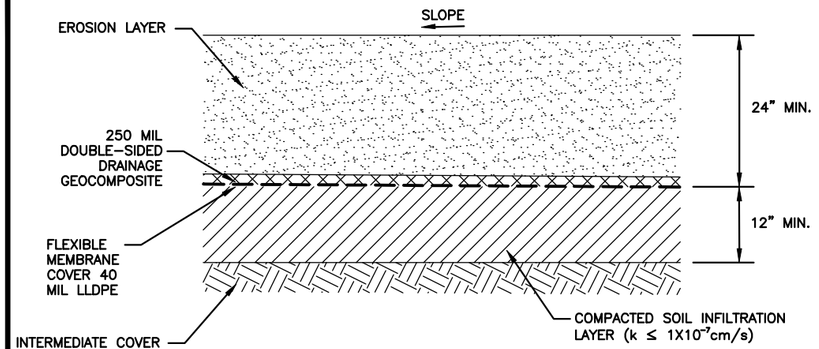
2.1.2 South Disposal Area

The final cover system in the South Disposal Area will consist of an infiltration layer and an erosion control layer. The final cover plan is included in Appendix H2, Drawing H2.3 and the final cover details are provided in Drawing H2.6. The components of the final cover system are listed from top to bottom in Table H-2.

The final cover will be seeded or sodded immediately following the application of the final cover in order to minimize erosion. The vegetation will be native and introduced grasses. Temporary cold weather vegetation will be established if required. Irrigation will be employed as needed until vegetation is established. Erosion control measures such as silt fences and straw bales will be used to minimize erosion until the vegetation is established. Areas that experience erosion or do not readily vegetate will be repaired, reseeded or sodded until vegetation is established, or the soil will be replaced with soil that will support the grasses.

NEW BOSTON LANDFILL

APPENDIX H2
FINAL COVER SYSTEM PLANS AND DETAILS



ALTERNATE FINAL COVER–TOPSLOPE FC1 D3.12a

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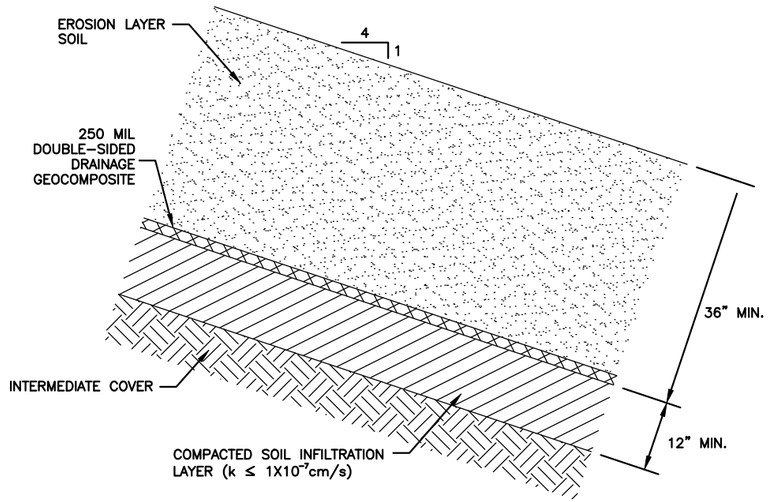
SCALE IN FEET



ALTERNATE FINAL COVER–SIDESLOPE FC2 D3.12a

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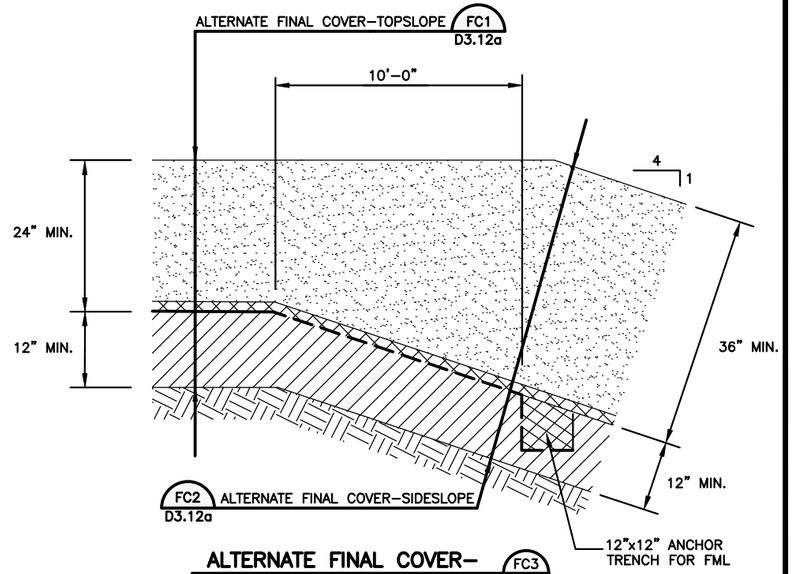
SCALE IN FEET



ALTERNATE FINAL COVER– TOPSLOPE/SIDESLOPE TIE–IN FC3 D3.12a

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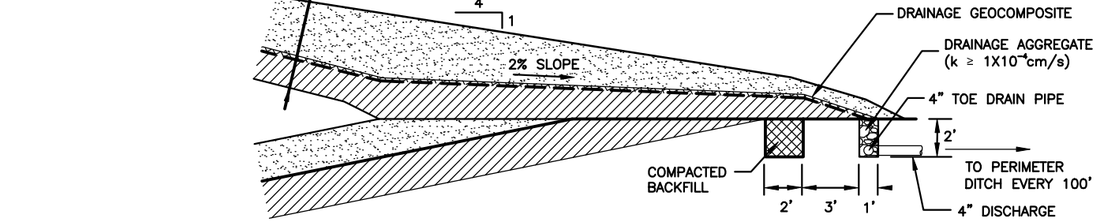
SCALE IN FEET



LINER/ALTERNATE FINAL COVER TIE–IN FC4 D3.12a

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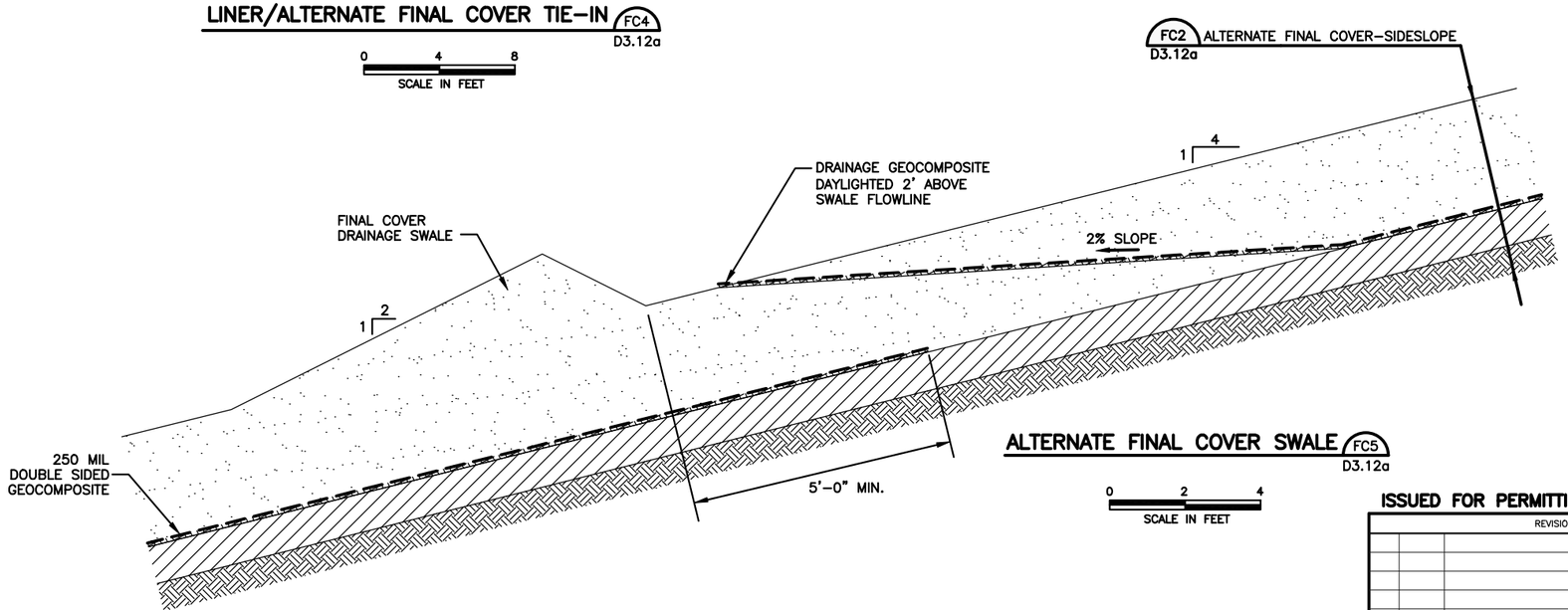
SCALE IN FEET



ALTERNATE FINAL COVER SWALE FC5 D3.12a

0 2 4
SCALE IN FEET

ISSUED FOR PERMITTING PURPOSES ONLY

REVISIONS			
REV	DATE	DESCRIPTION	DWN BY

FINAL COVER DETAILS ALTERNATE OPTION

WASTE MANAGEMENT OF TEXAS, INC
NEW BOSTON LANDFILL

BIGGS & MATHEWS ENVIRONMENTAL
1700 ROBERT ROAD, STE. 100
MANSFIELD, TEXAS 76063
817–563–1144

TBPELS FIRM NO. F–256 AND NO. 10194895
TBPG FIRM NO. 50222

DRAWING H2.5a

ATTACHMENT 3

UNMARKED REVISED PAGES

NEW BOSTON LANDFILL
BOWIE COUNTY, TEXAS
TCEQ PERMIT NO. MSW 576C

PART III – FACILITY INVESTIGATION AND DESIGN
ATTACHMENT B
GENERAL FACILITY DESIGN

Prepared for

Waste Management of Texas, Inc.

Technically Complete September 12, 2014
Permit Issued November 12, 2015
Revised April 2018

Revised October 2025

Prepared by

BIGGS & MATHEWS ENVIRONMENTAL
1700 Robert Road, Suite 100 ◆ Mansfield, Texas 76063 ◆ 817-563-1144

TEXAS BOARD OF PROFESSIONAL ENGINEERS AND LAND SURVEYORS
FIRM REGISTRATION NO. F-256 AND NO. 10194895

TEXAS BOARD OF PROFESSIONAL GEOSCIENTISTS
FIRM REGISTRATION NO. 50222

CONTENTS

APPENDIX B1 – DRAWINGS

Table B-2
New Boston Landfill
Components of the Final Cover Systems

Cover System Component	Description	Minimum Thickness
West and North Disposal Areas Final Cover		
TOPSLOPE		
Erosion Layer	Soil that is capable of sustaining native plant growth	24 inches
Cushion Layer	Geotextile	8 oz
Flexible Membrane Cover	Smooth LLDPE geomembrane	40 mil nominal
Infiltration Layer	Compacted soil with a coefficient of permeability ≤ 1 x 10^{-5} cm/sec	18 inches
TOPSLOPE - ALTERNATE		
Erosion Layer	Soil that is capable of sustaining native plant growth	24 inches
Drainage Layer	Double-sided geocomposite	0.25 inches nominal
Flexible Membrane Cover	Smooth or Textured LLDPE geomembrane	40 mil nominal
Infiltration Layer	Compacted soil with a coefficient of permeability ≤ 1 x 10^{-7} cm/sec	12 inches
SIDESLOPE OPTION A		
Erosion Layer	Soil that is capable of sustaining native plant growth	24 inches
Drainage Layer	Double-sided geocomposite	0.2 inches nominal
Flexible Membrane Cover	Textured LLDPE geomembrane	40 mil nominal
Infiltration Layer	Compacted soil with a coefficient of permeability ≤ 1 x 10^{-5} cm/sec	18 inches
SIDESLOPE OPTION B		
Erosion Layer	Soil that is capable of sustaining native plant growth	24 inches
Drainage Layer	Geotextile over studded geomembrane	8 oz
Flexible Membrane Cover	Textured LLDPE geomembrane with studs on top	40 mil nominal
Infiltration Layer	Compacted soil with a coefficient of permeability ≤ 1 x 10^{-5} cm/sec	18 inches
SIDESLOPE - ALTERNATE		
Erosion Layer	Soil that is capable of sustaining native plant growth	36 inches
Drainage Layer	Double-sided geocomposite	0.25 inches nominal
Infiltration Layer	Compacted soil with a coefficient of permeability ≤ 1 x 10^{-7} cm/sec	12 inches
South Disposal Area Final Cover System		
Erosion Layer	Soil that is capable of sustaining native plant growth	24 inches
Infiltration Layer	Compacted soil with a coefficient of permeability ≤ 1 x 10^{-7} cm/sec	18 inches

Final cover placement will generally follow the sequence of development as shown in Part II, Appendix IIA, Drawings IIA.16 through IIA.24, and will be ongoing as the site is developed. Sectors will be closed according to the closure plan provided in Attachment H – Closure Plan.

RACM

Regulated asbestos-containing material (RACM) may be accepted at the New Boston Landfill as defined in 40 Code of Federal Regulations Part 61 in accordance with 30 TAC §330.171(c)(3). The existing landfill has previously notified TCEQ of its intent to accept RACM. The New Boston Landfill, by inclusion of the requirements of §330.171(c)(3) in the Site Operating Plan, is providing written notification to the executive director of the

NEW BOSTON LANDFILL
BOWIE COUNTY, TEXAS
TCEQ PERMIT NO. MSW 576C

PART III – FACILITY INVESTIGATION AND DESIGN
ATTACHMENT D
WASTE MANAGEMENT UNIT DESIGN

Prepared for

Waste Management of Texas, Inc.

Technically Complete September 12, 2014
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Revised April 2018

Revised January 2026

Prepared by

BIGGS & MATHEWS ENVIRONMENTAL
1700 Robert Road, Suite 100 ◆ Mansfield, Texas 76063 ◆ 817-563-1144

TEXAS BOARD OF PROFESSIONAL ENGINEERS
FIRM REGISTRATION NO. F-256 AND NO. 10194895

TEXAS BOARD OF PROFESSIONAL GEOSCIENTISTS
FIRM REGISTRATION NO. 50222

CONTENTS

30 TAC §330.63(d)

TABLES

Table D-4
New Boston Landfill
Components of the Final Cover Systems

Cover System Component	Description	Minimum Thickness
West and North Disposal Areas Final Cover		
TOPSLOPE		
Erosion Layer	Soil that is capable of sustaining native plant growth	24 inches
Cushion Layer	Geotextile	8 oz
Flexible Membrane Cover	Smooth LLDPE geomembrane	40 mil nominal
Infiltration Layer	Compacted soil with a coefficient of permeability less than or equal to 1 x 10^{-5} cm/sec	18 inches
TOPSLOPE - ALTERNATE		
Erosion Layer	Soil that is capable of sustaining native plant growth	24 inches
Drainage Layer	Double-sided geocomposite	0.25 inches nominal
Flexible Membrane Cover	Smooth or Textured LLDPE geomembrane	40 mil nominal
Infiltration Layer	Compacted soil with a coefficient of permeability less than or equal to 1 x 10^{-7} cm/sec	12 inches
SIDESLOPE OPTION A		
Erosion Layer	Soil that is capable of sustaining native plant growth	24 inches
Drainage Layer	Double-sided geocomposite	0.2 inches nominal
Flexible Membrane Cover	Textured LLDPE geomembrane	40 mil nominal
Infiltration Layer	Compacted soil with a coefficient of permeability less than or equal to 1 x 10^{-5} cm/sec	18 inches
SIDESLOPE OPTION B		
Erosion Layer	Soil that is capable of sustaining native plant growth	24 inches
Drainage Layer	Geotextile over studded geomembrane	8 oz
Flexible Membrane Cover	Textured LLDPE geomembrane with studs on top	40 mil nominal
Infiltration Layer	Compacted soil with a coefficient of permeability less than or equal to 1 x 10^{-5} cm/sec	18 inches
SIDESLOPE - ALTERNATE		
Erosion Layer	Soil that is capable of sustaining native plant growth	36 inches
Drainage Layer	Double-sided geocomposite	0.25 inches nominal
Infiltration Layer	Compacted soil with a coefficient of permeability less than or equal to 1 x 10^{-7} cm/sec	12 inches
South Disposal Area Final Cover		
Erosion Layer	Soil that is capable of sustaining native plant growth	24 inches
Infiltration Layer	Compacted soil with a coefficient of permeability less than or equal to 1 x 10^{-7} cm/sec	18 inches

NEW BOSTON LANDFILL
BOWIE COUNTY, TEXAS
TCEQ PERMIT NO. MSW 576C

PART III – FACILITY INVESTIGATION AND DESIGN
ATTACHMENT D3
CONSTRUCTION DESIGN DETAILS

Prepared for

Waste Management of Texas, Inc.

Technically Complete September 12, 2014
Permit Issued November 12, 2015
Revised April 2018

Revised October 2025

Prepared by

BIGGS & MATHEWS ENVIRONMENTAL
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TEXAS BOARD OF PROFESSIONAL ENGINEERS
FIRM REGISTRATION NO. F-256 AND NO. 10194895

TEXAS BOARD OF PROFESSIONAL GEOSCIENTISTS
FIRM REGISTRATION NO. 50222

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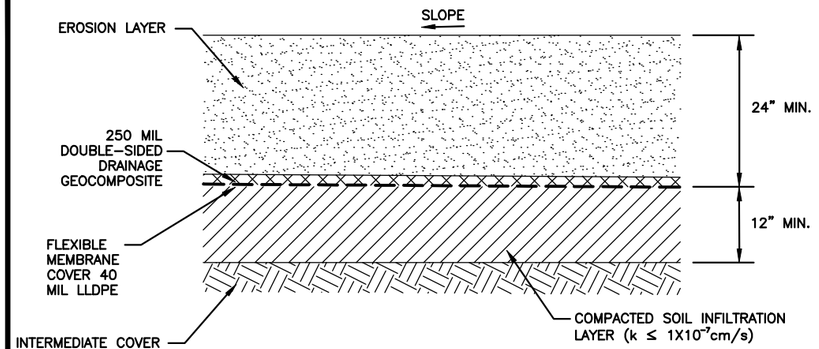
30 TAC §330.63(d)(4)(F)



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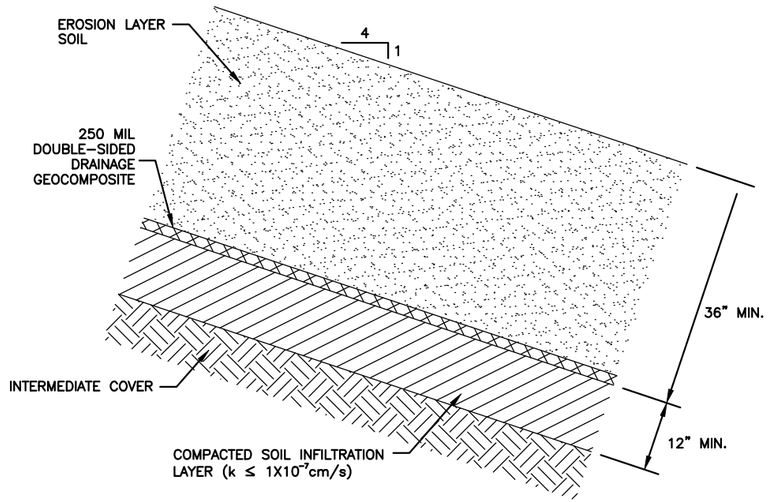

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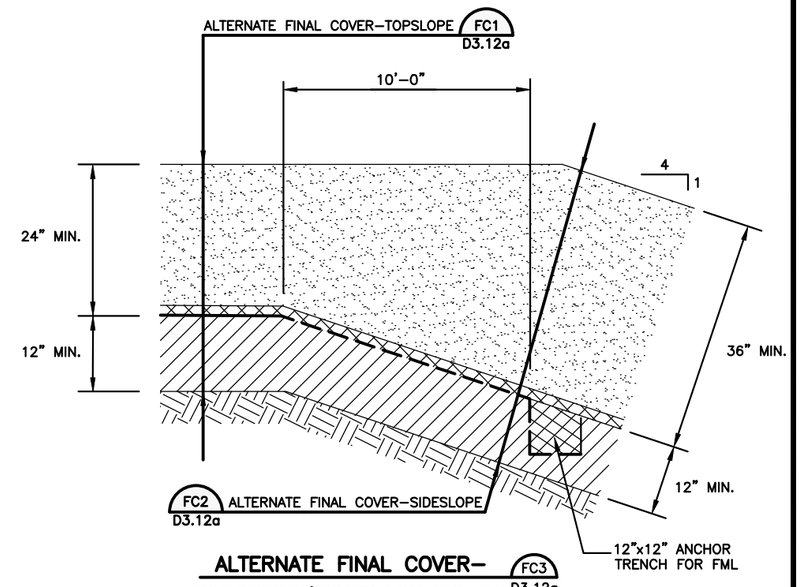

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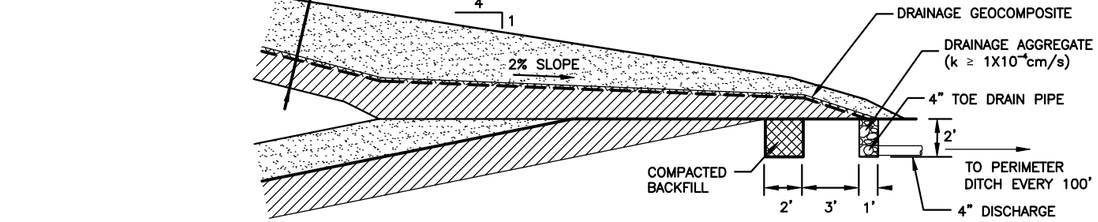

LINER/ALTERNATE FINAL COVER TIE–IN FC4 D3.12a

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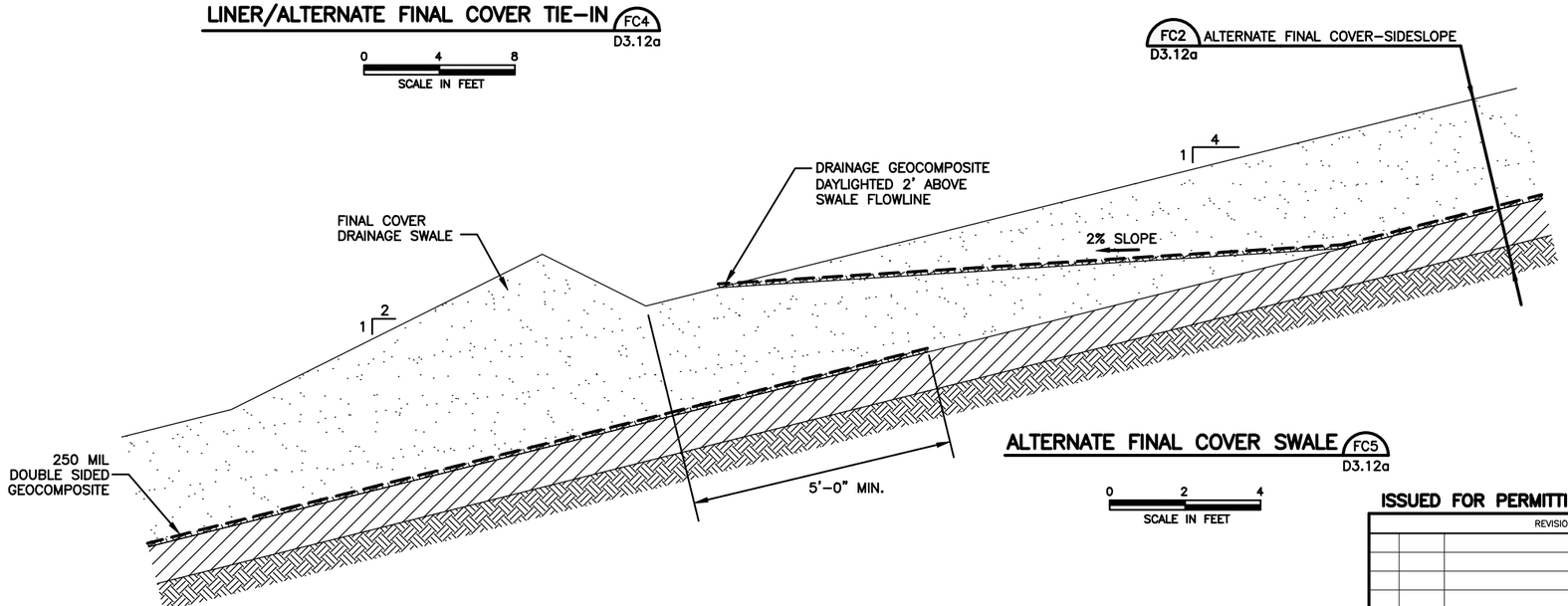

ALTERNATE FINAL COVER SWALE FC5 D3.12a

0 2 4
SCALE IN FEET

STATE OF TEXAS
CALEB R. HOLLINGSHEAD
120161
LICENSED
PROFESSIONAL ENGINEER
10/28/2025

ISSUED FOR PERMITTING PURPOSES ONLY

REVISIONS			
REV	DATE	DESCRIPTION	DWN BY

FINAL COVER DETAILS ALTERNATE OPTION

WASTE MANAGEMENT OF TEXAS, INC NEW BOSTON LANDFILL

BIGGS & MATHEWS ENVIRONMENTAL
1700 ROBERT ROAD, STE. 100
MANSFIELD, TEXAS 76063
817–563–1144

TBPELS FIRM NO. F–256 AND NO. 10194895
TBPG FIRM NO. 50222

DRAWING D3.12a

NEW BOSTON LANDFILL
BOWIE COUNTY, TEXAS
TCEQ PERMIT NO. MSW 576C

PART III – FACILITY INVESTIGATION AND DESIGN
ATTACHMENT D5
GEOTECHNICAL DESIGN

Prepared for

Waste Management of Texas, Inc.

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12/10/2025

Prepared by

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Biggs & Mathews Environmental, Inc.
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TABLES

Table D5-6
New Boston Landfill
Summary of Slope Stability Analyses

Condition	Minimum Calculated Factor of Safety	Recommended Factor of Safety	Acceptable Factor of Safety
NORTH DISPOSAL AREA			
Excavated Slope			
Short Term	1.9	1.3	Yes
Long Term	2.3	1.5	Yes
Interim Waste Slope			
Circular Arc Failure	1.6	1.3	Yes
Sliding Block Failure	1.5	1.3	Yes
Final Waste Slope			
Circular Arc Failure	2.5	1.5	Yes
Sliding Block Failure	2.5	1.5	Yes
Liner Veneer			
Protective Cover/Geocomposite	2.1	1.3	Yes
Geocomposite/Geomembrane	2.6	1.3	Yes
Geomembrane/Soil Liner	2.6	1.3	Yes
Final Cover Veneer (Sideslope)			
OPTION A			
Erosion Layer/Geocomposite	2.8	1.5	Yes
Geocomposite/Geomembrane	3.5	1.5	Yes
Geomembrane/Infiltration Layer	3.5	1.5	Yes
OPTION B			
Erosion Layer/Geotextile	2.8	1.5	Yes
Geotextile/ Studded Geomembrane	2.4	1.5	Yes
Studded Geomembrane/ Infiltration Layer	3.5	1.5	Yes
ALTERNATE			
Erosion Layer/Geocomposite	2.7	1.5	Yes
Geocomposite/ Infiltration Layer	3.2	1.5	Yes
SOUTH DISPOSAL AREA			
Excavated Slope			
Short Term	2.6	1.3	Yes
Long Term	3.3	1.5	Yes
Interim Waste Slope			
Circular Arc Failure	2.1	1.3	Yes
Sliding Block Failure	3.2	1.3	Yes
Final Waste Slope			
Circular Arc Failure	2.7	1.5	Yes
Sliding Block Failure	4.3	1.5	Yes

8 COVER CONSTRUCTION

30 TAC §§330.165, 330.457

8.1 Daily, Weekly, and Intermediate Cover

The daily, weekly, and intermediate cover should be constructed of soils that are free of waste and debris. Suitable cover materials should be available from the proposed excavations or on-site borrow sources. Requirements for the placement of daily, weekly, and intermediate cover are provided in Part IV – Site Operating Plan.

8.2 Final Cover

Final cover construction has been completed over the entire 52.5 acres of the West Disposal Area and details of the cover is documented in the Final Cover Evaluation Reports (FCERs). FCER approval dates are shown on Attachment J, Drawing J.1.

There are two top slope and three sideslope final cover system designs proposed for the West and North Disposal Areas as shown on Table D-4 in Attachment D. The final cover system in the South Disposal Area will consist of an 18-inch-thick compacted soil infiltration layer overlain by an erosion layer. The final cover system requirements are provided in Attachment D8 and the final cover system details are provided in Attachment D3.

The infiltration layer material must consist of relatively homogeneous cohesive materials that are free of debris, rocks greater than one inch in diameter, plant materials, frozen materials, foreign objects, and organic material. The infiltration layer should be constructed directly over the intermediate cover once the waste has reached final grades. The infiltration layer construction procedure should be the same as those outlined in Section 7 for liner construction.

The erosion layer should consist of: (1) topsoil stockpiled during the excavation process, (2) on-site soils which has been modified to be capable of sustaining vegetation, or (3) an imported material suitable to sustain vegetation growth. This layer may be spread and placed in one lift over the drainage layer. After spreading, the layer should be rolled lightly to reduce future erosion, although not to the extent that compaction would inhibit plant growth.

8.3 Final Cover Testing and Documentation

CQA testing of the final cover system must be performed during construction. Final cover system requirements are outlined in Attachment D8.

NEW BOSTON LANDFILL

APPENDIX D5-B
SLOPE STABILITY ANALYSES

Includes pages D5-B-1 through D5-B-194

12/10/2025

Biggs & Mathews Environmental, Inc.
Firm Registration No. F-256

APPENDIX D5-B
SLOPE STABILITY ANALYSES

The results of the stability analyses indicate that the proposed slopes are stable under the conditions analyzed. The PCSTABL6 output files are presented on pages D5-B-9 through D5-B-191. The liner and final cover veneer stability calculations are provided on pages D5-B-3 through D5-B-8. Table D5-B-1 summarizes the results of the stability analyses and compares the calculated factor of safety to the recommended minimum factor of safety. The recommended minimum factors of safety were selected from the Corps of Engineers "Design and Construction of Levees" manual (EM 1110-2-1913).

Table D5-B-1
Summary of Slope Stability Analyses

Condition	Minimum Calculated Factor of Safety	Recommended Factor of Safety	Acceptable Factor of Safety
NORTH DISPOSAL AREA			
Excavated Slope			
Short Term	1.9	1.3	Yes
Long Term	2.3	1.5	Yes
Interim Waste Slope			
Circular Arc Failure	1.6	1.3	Yes
Sliding Block Failure	1.5	1.3	Yes
Final Waste Slope			
Circular Arc Failure	2.5	1.5	Yes
Sliding Block Failure	2.5	1.5	Yes
Liner Veneer			
Protective Cover/Geocomposite	2.1	1.3	Yes
Geocomposite/Geomembrane	2.6	1.3	Yes
Geomembrane/Soil Liner	2.6	1.3	Yes
Final Cover Veneer (Sideslope)			
OPTION A			
Erosion Layer/Geocomposite	2.8	1.5	Yes
Geocomposite/Geomembrane	3.5	1.5	Yes
Geomembrane/Infiltration Layer	3.5	1.5	Yes
OPTION B			
Erosion Layer/Geotextile	2.8	1.5	Yes
Geotextile/Studded Geomembrane	2.4	1.5	Yes
Studded Geomembrane/Infiltration Layer	3.5	1.5	Yes
ALTERNATE			
Erosion Layer/Geocomposite	2.7	1.5	Yes
Alternate Geocomposite/Infiltration Layer	3.2	1.5	Yes
SOUTH DISPOSAL AREA			
Excavated Slope			
Short Term	2.6	1.3	Yes
Long Term	3.3	1.5	Yes
Interim Waste Slope			
Circular Arc Failure	2.1	1.3	Yes
Sliding Block Failure	3.2	1.3	Yes
Final Waste Slope			
Circular Arc Failure	2.7	1.5	Yes
Sliding Block Failure	4.3	1.5	Yes

New Boston Landfill
Slope Stability Parameters

Required: Select the appropriate soil parameters for the slope stability analyses.

References:
1) *Attachment E - Geology Report,* New Boston Landfill Permit Application.
2) Table 8-3.1 Typical Engineering Properties of Compacted Materials, *Geotechnical Engineering Procedures for Foundation Design of Buildings and Structures,* Naval Facilities Engineering Command,
3) Tests performed by TRI for Biggs & Mathews Environmental (Appendix D5-C).
4) Qian, X, Koerner, R.M., and Gray, Donald H., *Geotechnical Aspects of Landfill Design and Construction,* Prentice Hall, 2002.
5) Bouazza, A., Zornberg, J.G., and Adam, D., *Geosynthetics in waste containment facilities: recent advances,* 2002.

Solution: The following materials may be included in the slope stability analyses.

Physical Properties				
Material	Description	Moisture[a] %	Dry Wt[a] pcf	Wet Wt[b] pcf
Layer I	Clay	21.7	101.9	124.0
Liner/Cover	Compacted Clay	21.7	101.9	124.0
Liner/Cover Floor	Geosynthetics	N/A	N/A	124.0
Liner/Cover Sidewall	Geosynthetics	N/A	N/A	124.0
Solid Waste	Solid Waste	N/A	N/A	50.0

[a] Average laboratory test values.
[b] Wet Wt = Dry Wt x (1 + Moisture)

Total stress parameters will be used to analyze short-term stability and effective stress parameters will be used to analyze long-term stability.

Strength Parameters for Circular and Sliding Block Slope Stability				
	Total Stress		Effective Stress	
Material	cohesion (psf)	friction (deg)	cohesion (psf)	friction (deg)
Layer I - Clay	1204 [a]	17 [a]	1508 [a]	18 [a]
Liner/Cover - Compacted Clay	1204 [a]	17 [a]	1508 [a]	18 [a]
Sidewall - Geomembrane/Soil Liner	273 [b]	13.5 [b]	273 [b]	13.5 [b]
Floor - Geomembrane/Soil Liner	601 [b]	6.8 [b]	601 [b]	6.8 [b]
Solid Waste	250 [c]	23 [c]	250 [c]	23 [c]

[a] Reference 2.
[b] Reference 3. Critical interface in composite liner or cover system used for calculation.
[c] Reference 4.

Interface parameters for the geosynthetics will be used to evaluate the liner and cover veneer stability.

Liner Strength Parameters for Veneer Slope Stability		
Material Interface	Friction Angle (Degrees)	Cohesion (psf)
Protective Cover/Geocomposite	32.6 [a]	12 [a]
Geocomposite/Geomembrane/Soil Liner	31.8 [a]	59 [a]
Geomembrane/Soil Liner	31.8 [a]	60 [a]

[a] Reference 3.

Final Cover Strength Parameters for Veneer Slope Stability		
Material Interface	Friction Angle (Degrees)	Cohesion (psf)
Option A		
Erosion Layer/Geocomposite	32.6 [a]	12 [a]
Geocomposite/Geomembrane	31.8 [a]	59 [a]
Geomembrane/Infiltration Layer	31.8 [a]	60 [a]
Option B		
Erosion Layer/Geotextile	32.6 [a]	12 [a]
Geotextile/Studded Geomembrane	31.0 [b]	0 [b]
Geomembrane/Infiltration Layer	31.8 [a]	60 [a]
Alternate		
Erosion Layer/Geocomposite	32.6 [a]	12 [a]
Geocomposite/Infiltration Layer	32.6 [a]	60 [a]

[a] Reference 3.
[b] Reference 5.

New Boston Landfill
Geosynthetic Stability Parameters

Calculate the factor of safety at each interface in the composite liner system.

Protective cover/geocomposite

Φ =	32.6	deg
β =	18.43	deg
C =	12	psf
u =	0.0	
γ =	124.0	pcf
r_u =	0	
H =	2	ft
a =	1.0	
b =	3.2	

FS @ protective cover/geocomposite = 2.1

Geocomposite/geomembrane/soil liner

Φ =	31.8	deg
β =	18.43	deg
C =	59	psf
u =	0.0	
γ =	124.0	pcf
r_u =	0	
H =	2	ft
a =	1.0	
b =	3.2	

FS @ geocomposite/geomembrane/soil liner = 2.6

Geomembrane/soil liner

Φ =	31.8	deg
β =	18.43	deg
C =	60	psf
u =	0.0	
γ =	124.0	pcf
r_u =	0	
H =	2	ft
a =	1.0	
b =	3.2	

FS @ geomembrane/soil liner = 2.6

New Boston Landfill
Geosynthetic Stability Parameters

Calculate the factor of safety at each interface in the composite final cover system A.

Erosion layer/geocomposite

Φ =	32.6	deg
β =	14.04	deg
C =	12	psf
u =	0.0	
γ =	124.0	pcf
r_u =	0	
H =	2	ft
a =	1.0	
b =	4.2	

FS @ erosion layer/geocomposite = 2.8

Geocomposite/geomembrane

Φ =	31.8	deg
β =	14.04	deg
C =	59	psf
u =	0.0	
γ =	124.0	pcf
r_u =	0	
H =	2	ft
a =	1.0	
b =	4.2	

FS @ geocomposite/geomembrane = 3.5

Geomembrane/infiltration layer

Φ =	31.8	deg
β =	14.04	deg
C =	60	psf
u =	0.0	
γ =	124.0	pcf
r_u =	0	
H =	2	ft
a =	1.0	
b =	4.2	

FS @ geomembrane/infiltration layer = 3.5

Calculate the factor of safety at each interface in the composite final cover system B.

Erosion layer/geotextile

Φ =	32.6	deg
β =	14.04	deg
C =	12	psf
u =	0.0	
γ =	124.0	pcf
r_u =	0	
H =	2	ft
a =	1.0	
b =	4.2	

FS @ erosion layer/geotextile = 2.8

Geotextile/studded geomembrane

Φ =	31.0	deg
β =	14.04	deg
C =	0	psf
u =	0.0	
γ =	124.0	pcf
r_u =	0	
H =	2	ft
a =	1.0	
b =	4.2	

FS @ geotextile/studded geomembrane =	**2.4**

Studded geomembrane/infiltration layer

Φ =	31.8	deg
β =	14.04	deg
C =	60	psf
u =	0.0	
γ =	124.0	pcf
r_u =	0	
H =	2	ft
a =	1.0	
b =	4.2	

FS @ studded geomembrane/infiltration layer =	**3.5**

Calculate the factor of safety at each interfacee in the alternate sideslope final cover system.

Erosion layer/geocomposite

Φ =	32.6	deg
β =	14.04	deg
C =	12	psf
u =	0.0	
γ =	127.0	pcf
r_u =	0	
H =	3	ft
a =	1.0	
b =	4.2	

FS @ studded erosion layer/geocomposite =	**2.7**

Geocomposite/infiltration layer

Φ =	32.6	deg
β =	14.04	deg
C =	60	psf
u =	0.0	
γ =	124.0	pcf
r_u =	0	
H =	3	ft
a =	1.0	
b =	4.2	

FS @ studded geocomposite/infiltration layer =	**3.2**

NEW BOSTON LANDFILL
BOWIE COUNTY, TEXAS
TCEQ PERMIT NO. MSW 576C

PART III – FACILITY INVESTIGATION AND DESIGN
ATTACHMENT D8A
WEST AND NORTH DISPOSAL AREAS
FINAL COVER QUALITY CONTROL PLAN

12/10/2025

Biggs & Mathews Environmental, Inc.
Firm Registration No. F-256

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Prepared by

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2 FINAL COVER SYSTEM

30 TAC §330.457

2.1 Final Cover System

The final cover system in the West and North Disposal Areas will be a composite cover system consisting of an intermediate cover layer, an infiltration layer, a flexible membrane cover, a drainage layer, and an erosion layer. Final cover has been constructed over 18.1 acres of the West Disposal Area and details of the cover are documented in the Final Cover Evaluation Reports (FCERs). Approval dates are shown on Attachment D1 – Site Layout Plans, Drawing D1.3.

The final cover plans are included in Attachment D3 – Construction Design Details, Drawings D3.9 and D3.10. Details of the final cover system are provided in Drawings D3.12, D3.12a, and D3.13. The components of the final cover system are listed from top to bottom in Table D8A-1.

Table D8A-1
New Boston Landfill
Components of the Final Cover System

Cover System Component	Description	Minimum Thickness
West and North Disposal Areas Final Cover		
TOPSLOPE		
Erosion Layer	Soil that is capable of sustaining native plant growth	24 inches
Cushion Layer	Geotextile	8 oz
Flexible Membrane Cover	Smooth LLDPE geomembrane	40 mil nominal
Infiltration Layer	Compacted soil with a coefficient of permeability ≤ 1 x 10^{-5} cm/sec	18 inches
TOPSLOPE - ALTERNATE		
Erosion Layer	Soil that is capable of sustaining native plant growth	24 inches
Drainage Layer	Double-sided geocomposite	0.25 inches nominal
Flexible Membrane Cover	Smooth or Textured LLDPE geomembrane	40 mil nominal
Infiltration Layer	Compacted soil with a coefficient of permeability ≤ 1 x 10^{-7} cm/sec	12 inches
SIDESLOPE OPTION A		
Erosion Layer	Soil that is capable of sustaining native plant growth	24 inches
Drainage Layer	Double-sided geocomposite	0.2 inches nominal
Flexible Membrane Cover	Textured LLDPE geomembrane	40 mil nominal
Infiltration Layer	Compacted soil with a coefficient of permeability ≤ 1 x 10^{-5} cm/sec	18 inches
SIDESLOPE OPTION B		
Erosion Layer	Soil that is capable of sustaining native plant growth	24 inches
Drainage Layer	Geotextile over studded geomembrane	8 oz
Flexible Membrane Cover	Textured LLDPE geomembrane with studs on top	40 mil nominal
Infiltration Layer	Compacted soil with a coefficient of permeability ≤ 1 x 10^{-5} cm/sec	18 inches
SIDESLOPE - ALTERNATE		
Erosion Layer	Soil that is capable of sustaining native plant growth	36 inches
Drainage Layer	Double-sided geocomposite	0.25 inches nominal
Infiltration Layer	Compacted soil with a coefficient of permeability ≤ 1 x 10^{-7} cm/sec	12 inches

Construction Monitoring

Continuous on-site monitoring is necessary to assure that the components of the final cover system are constructed in accordance with this FCQCP. The CQA monitor shall provide continuous on-site observation during the following construction activities:

- Infiltration layer placement, processing, compaction, and testing
- Flexible membrane cover deployment, trial welds, seaming, testing, and repairing
- Drainage layer deployment and seaming
- Erosion layer placement
- Any work that could damage the installed components of the final cover system

4 INFILTRATION LAYER

30 TAC §330.457

4.1 General

The infiltration layer consists of compacted, relatively homogeneous, cohesive material. See Table D8A-1 for the infiltration layer thickness. The CQA monitor shall provide continuous on-site observation during infiltration layer placement, processing, compaction, and testing. The GP shall make sufficient site visits during infiltration layer construction to document the construction activities, testing, and thickness verification in the Final Cover System Report, in accordance with Section 8.

4.2 Materials

Infiltration layer material shall consist of soil that is free from debris, rubbish, frozen materials, foreign objects, and organic material. The required infiltration layer material properties are summarized in Table D8A-2.

Table D8A-2
New Boston Landfill
Infiltration Material Properties

Test	Standard	Required Property
Plasticity Index	ASTM D 4318	15 or greater
Liquid Limit	ASTM D 4318	30 or greater
Percent Passing No. 200 Mesh Sieve	ASTM D 1140	30 or greater
Percent Passing 1-inch Sieve	ASTM D 422	100
Coefficient of Permeability	ASTM D 5084 or COE EM 1110-2-1906 Appendix VII	less than or equal to 1×10^{-5} cm/sec

Preconstruction testing procedures and frequencies for infiltration layer materials are listed in Section 4.8.1.

4.3 Subgrade Preparation

Prior to placing infiltration layer material, the subgrade should be proof rolled with heavy, rubber-tired construction equipment to detect soft areas. The GP or CQA monitor must observe the proof-rolling operation. Soft areas should be compacted and then be proof rolled again.

5 FLEXIBLE MEMBRANE COVER

30 TAC §330.457

5.1 General

The flexible membrane cover (FMC) component of the final cover system consists of:

TOPSLOPE

- Smooth 40-mil thick linear low-density polyethylene (LLDPE) geomembrane

TOPSLOPE - ALTERNATE

- Smooth or textured 40-mil thick linear low-density polyethylene (LLDPE) geomembrane

SIDESLOPE - OPTION A

- Textured 40-mil thick LLDPE geomembrane

SIDESLOPE - OPTION B

- Textured 40-mil thick or greater LLDPE geomembrane with studs on top

The CQA monitor shall provide continuous on-site observation of during FMC deployment, trial welds, seaming, testing, and repairing. The GP shall make sufficient site visits during the FMC installation to document the installation and testing in the Final Cover Evaluation Report, in accordance with Section 8.

5.2 Materials

5.2.1 Properties

FMC shall consist of smooth, textured, and studded LLDPE geomembrane produced from virgin raw materials. Recycled materials are not acceptable. The FMC shall not be manufactured from resin from differing suppliers. The FMC shall meet the requirements in the most current revisions of Geosynthetics Research Institute (GRI) Standard GM17 (LLDPE). Copies of GRI GM17 are included in Appendix D8A-A. Refer to Section 6.2.2 for required drainage properties of the studded geomembrane.

Manufacturer quality control testing procedures and frequencies for FMC are listed in Section 5.5.1. Third party conformance testing procedures and frequencies for FMC are listed in Section 5.5.2.

5.2.2 Delivery and Storage

FMC shall be shipped in rolls labeled with the manufacturer's name, roll number, and lot or batch number. The CQA monitor shall inspect the rolls for shipping damage and complete a geosynthetics receipt log for all materials delivered to the site. Damaged rolls shall be rejected.

The FMC shall be unloaded and handled with equipment that does not damage the rolls. Rolls should not be pushed, slid, or dragged to the storage location. The FMC must not

6 DRAINAGE LAYER

30 TAC §330.457

6.1 General

The drainage layer consists of a geocomposite over textured geomembrane or a geotextile over studded geomembrane on the sideslopes. A geotextile will be installed as a cushion fabric on topslopes. The CQA monitor shall provide on-site observation during geocomposite and geotextile installation. The GP shall make sufficient site visits during the geocomposite drainage layer and geotextile installation to document the installation in the Final Cover Evaluation Report.

6.2 Materials

6.2.1 Geocomposite

Double-sided geocomposite (nonwoven geotextile bonded to the top and bottom of HDPE drainage net) may be installed on the sideslopes over textured membrane or compacted clay infiltration layer. The geocomposite shall have the minimum properties listed in Table D8A-7.

Table D8A-7
New Boston Landfill
Geocomposite Properties

Material	Test	Standard	Required Property
Geotextile	Material Apparent Opening Size	 ASTM D 4751	Nonwoven polypropylene or polyester 70 sieve
	Unit Weight	ASTM D 5261	6 oz/yd^2
	Grab Strength	ASTM D 4632	150 lb
	Puncture Strength	ASTM D 6241	300 lb
	Trapezoidal Tear Strength	ASTM D 4533	65 lb
	Permittivity	ASTM D 4491	0.1 sec^{-1}
	Deterioration	ASTM D 4355	70%/500 hrs
HDPE Drainage Net	Density Thickness Carbon Black	ASTM D 1505 ASTM D 5199 ASTM D 4218	0.93 g/cm^3 0.2 inch Minimum 2%, maximum 3%
	Resin Melt Flow Index	ASTM D 1238	1 g/10 min
	Tensile Strength	ASTM D 5035 or 7179	40 lb/in
Geocomposite	Transmissivity	ASTM D 4716	5 x 10^{-4} m^2/ sec
	Ply Adhesion	ASTM D 7005	0.5 lb/in

Manufacturer quality control testing procedures for geocomposite are listed in Section 6.5.

6.2.2 Geotextile / Studded Geomembrane

Nonwoven geotextile may be installed on the topslopes and on sideslopes over the studded geomembrane. The geotextile shall have the minimum properties listed in Table D8A-8. The geotextile over studded geomembrane shall provide a minimum transmissivity of 5 x 10^{-4} m^2/sec when tested in accordance with ASTM D 4716.

Table D8A-8
New Boston Landfill
Geotextile Properties

Test	Standard	Required Property
Material		Nonwoven polypropylene or polyester
Unit Weight	ASTM D 5261	8 oz/yd^2

Manufacturer quality control testing procedures for geotextile are listed in Section 6.5.

6.2.3 Delivery and Storage

Geocomposite and geotextile shall be shipped in rolls with opaque wrappers labeled with the manufacturer's name, roll number, and lot or batch number. The CQA monitor shall inspect the rolls for shipping damage and complete a geosynthetics receipt log for all materials delivered to the site. Damaged rolls shall be rejected.

The geocomposite and geotextile shall be unloaded and handled with equipment that does not cause damage. Rolls should not be pushed, slid, or dragged to the storage location. The geocomposite and geotextile must not be stored on wet, soft, or rocky subgrade, but must be stored on a stable subgrade. Geocomposite and geotextile must not be stacked more than five rolls high to avoid crushing the roll cores. The stored geocomposite and geotextile must be protected from puncture, grease, dirt, excessive heat, or other damage.

6.3 Preparation

Prior to installation of the drainage layer, the FMC shall be tested and verified in accordance with Section 5.5. The CQA monitor shall observe that the surface to receive the geocomposite or geotextile is free of debris, stones, and dirt and verify that the conformance documentation has been submitted and approved.

6.4 Installation

Geocomposite and geotextile shall be deployed by equipment that will not damage, crimp, or stretch it nor damage the underlying FMC. All panels must be anchored with adequate ballast to prevent uplift from wind. Smoking and damaging shoes shall not be permitted on the geocomposite or geotextile and only low-ground pressure supporting equipment shall be allowed on the FMC. Adjacent rolls of geocomposite shall be securely tied through the drainage net with plastic fasteners every five feet along the

7 EROSION LAYER

30 TAC §330.457

7.1 General

The erosion layer consists of a layer of soil with the top six inches capable of sustaining native plant growth. See Table D8A-1 for the erosion layer thickness. The CQA monitor shall provide continuous on-site observation during erosion layer placement to assure that erosion layer placement does not damage underlying geosynthetics. The GP shall make sufficient site visits during erosion layer placement to document the construction activities and thickness verification in the Final Cover Evaluation Report.

7.2 Materials

Erosion layer material shall consist of soil that is free from debris, rubbish, frozen materials, foreign objects, and organic material, or any material that could damage the underlying geosynthetics.

7.3 Preparation

Prior to placing the erosion layer material, the top of infiltration layer elevations shall be verified in accordance with the requirements of Section 4.8.3 and all testing on the underlying geosynthetics shall be completed.

7.4 Placement

The erosion layer shall be placed in a manner that minimizes the potential to damage the underlying geosynthetics. Hauling equipment shall be restricted to haul roads of sufficient thickness to protect the underlying geosynthetics. The erosion layer shall be dumped from the haul road and spread by low ground pressure equipment in a manner that minimizes wrinkles and stress in the geosynthetics. On sideslopes, erosion layer shall be placed from the bottom to the top, not across or down. Erosion layer shall not be placed over geosynthetics that are stretched across the toes of slopes. The minimum separation distance between construction equipment and the geosynthetics are listed in Table D8A-10.

The erosion layer will be seeded or sodded immediately following the application of final cover in order to minimize erosion.

NEW BOSTON LANDFILL
BOWIE COUNTY, TEXAS
TCEQ PERMIT NO. MSW-576C

PART III – FACILITY INVESTIGATION AND DESIGN
ATTACHMENT D9
ALTERNATE FINAL COVER DESIGN DEMONSTRATION

Prepared for

Waste Management of Texas, Inc.

January 2026

Prepared by

BIGGS & MATHEWS ENVIRONMENTAL
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TEXAS BOARD OF PROFESSIONAL ENGINEERS AND LAND SURVEYORS
FIRM REGISTRATION NO. F-256 AND NO. 10194895

TEXAS BOARD OF PROFESSIONAL GEOSCIENTISTS
FIRM REGISTRATION NO. 50222

CONTENTS

1 ALTERNATE FINAL COVER

In accordance with 30 TAC §330.457(d), the proposed alternate final covers achieve an equivalent reduction in infiltration and provide equivalent erosion protection as the prescribed system. The prescribed final cover system for MSW landfill units with a synthetic bottom liner, as described in 30 TAC §330.457(a)(1,3), consists of the following components from top to bottom:

- A minimum erosion layer consisting of 6-inches of earthen material capable of sustaining native plant growth;
- A clay-rich soil cover layer consisting of a minimum of 18-inches of earthen material with a minimum coefficient of permeability of $1x10^{-5}$ cm/sec, and:
- A synthetic membrane.

The following additional alternate final cover system is proposed for the New Boston Landfill, listed from top to bottom:

Top Deck – Alternate Final Cover:

- 24-inch soil erosion layer;
- 250-mil double-sided geocomposite;
- 40-mil LLDPE geomembrane cover, and;
- 12-inch infiltration layer consisting of compacted soils ($k \leq 1x10^{-7}$cm/s).

Side Slope – Alternate Final Cover:

- 36-inch erosion layer;
- 250-mil double-sided geocomposite, and;
- 12-inch infiltration layer consisting of compacted soils ($k \leq 1x10^{-7}$cm/s).

Perforated HDPE pipe will be installed at the toe of the slope and the geocomposite drainage layer will daylight at intervals approximately 100 feet on the side slopes to collect drainage from the geocomposite drainage layer. The perforated piping will collect the drainage and direct the flow into the perimeter drainage system. The daylighted drainage geocomposite will collect drainage and direct the flow into the invert of the final cover swales and into the final cover letdown structures. Details of the geocomposite alternate final cover system are shown on Drawing D3.12a in Attachment D3.

2 PERFORMANCE EVALUATION

The performances of the top deck and sideslope composite alternate final cover designs were evaluated using the HELP computer modelling program (HELP Model Version 4.0.1). The HELP model simulates hydrologic processes for a landfill by performing daily, sequential water budget analyses using a quasi-two-dimensional deterministic approach. The model accepts weather, soil, and design data and uses solution techniques to account for key factors affecting water movement within the landfill. The model accounts for both surface and sub-surface processes including transpiration, surface runoff, evaporation, vertical percolation, saturated lateral drainage, and geosynthetics leakage to estimate the various movements of water within the selected profile.

The performance evaluations were performed for a unit area of landfill final cover modeled for thirty years. Each model assumed near steady-state values for the simulation period. The model requires input design data including daily and general climatological records, site-specific soil parameters, material properties, and landfill design data. Models for the prescriptive and alternate final cover systems are provided in Appendix D9.A.

3 RESULTS

Four HELP model simulations were conducted to estimate the percolation through the cover systems. Two HELP model simulations were conducted for final cover systems (top deck and sideslope) prescribed by current regulations and two HELP model simulations were conducted for alternate final cover systems (top deck and sideslope). Results from the models are summarized below.

HELP Model Results – Estimated Percolation

Final Cover System Configuration	Description	Avg. Annual Total Summary (in.)
Prescriptive	Top Deck	0.5804
	Side Slope	0.5719
Alternate	Top Deck	0.0000
	Side Slope	0.0526

Final Cover System Configuration	Description	Peak Values Summary (in.)
Prescriptive	Top Deck	0.0032
	Side Slope	0.0032
Alternate	Top Deck	0.0000
	Side Slope	0.0019

The simulations demonstrate that the proposed alternate final cover systems will provide a greater reduction in infiltration than the prescribed cover system. The erosion layer evaluation, provided in the final cover drainage structure design included in Appendix C1-E, demonstrates the thickness of the alternate final cover erosion layer is greater than the anticipated losses due to erosion.

APPENDIX D9.A
HELP MODEL RESULTS

HYDROLOGIC EVALUATION OF LANDFILL PERFORMANCE
HELP MODEL VERSION 4.0 BETA (2018)
DEVELOPED BY USEPA NATIONAL RISK MANAGEMENT RESEARCH LABORATORY

Title: NB FC: Prescribed (TS) **Simulated On:** 10/17/2025 12:38

Layer 1

Type 1 - Vertical Percolation Layer (Cover Soil)
SCL - Sandy Clay Loam
Material Texture Number 10

Thickness	=	6	inches
Porosity	=	0.398	vol/vol
Field Capacity	=	0.244	vol/vol
Wilting Point	=	0.136	vol/vol
Initial Soil Water Content	=	0.409	vol/vol
Effective Sat. Hyd. Conductivity	=	1.20E-04	cm/sec

Layer 2

Type 1 - Vertical Percolation Layer
SC/CL New Boston Clays (Uncompacted)
Material Texture Number 43

Thickness	=	18	inches
Porosity	=	0.464	vol/vol
Field Capacity	=	0.31	vol/vol
Wilting Point	=	0.187	vol/vol
Initial Soil Water Content	=	0.4603	vol/vol
Effective Sat. Hyd. Conductivity	=	1.00E-05	cm/sec

Layer 3

Type 4 - Flexible Membrane Liner
LDPE Membrane
Material Texture Number 36

Thickness	=	0.04	inches
Effective Sat. Hyd. Conductivity	=	4.00E-13	cm/sec
FML Pinhole Density	=	3	Holes/Acre
FML Installation Defects	=	4	Holes/Acre
FML Placement Quality	=	3	Good

Note: Initial moisture content of the layers and snow water were computed as nearly steady-state values by HELP.

General Design and Evaporative Zone Data

SCS Runoff Curve Number	=	86.2	
Fraction of Area Allowing Runoff	=	100	%
Area projected on a horizontal plane	=	1	acres
Evaporative Zone Depth	=	24	inches
Initial Water in Evaporative Zone	=	10.74	inches
Upper Limit of Evaporative Storage	=	10.74	inches
Lower Limit of Evaporative Storage	=	4.182	inches
Initial Snow Water	=	0	inches
Initial Water in Layer Materials	=	10.74	inches
Total Initial Water	=	10.74	inches
Total Subsurface Inflow	=	0	inches/year

Note: SCS Runoff Curve Number was calculated by HELP.

Evapotranspiration and Weather Data

Station Latitude	=	33.47	Degrees
Maximum Leaf Area Index	=	5	
Start of Growing Season (Julian Date)	=	91	days
End of Growing Season (Julian Date)	=	304	days
Average Wind Speed	=	1.885	mph
Average 1st Quarter Relative Humidity	=	83	%
Average 2nd Quarter Relative Humidity	=	78	%
Average 3rd Quarter Relative Humidity	=	65	%
Average 4th Quarter Relative Humidity	=	77	%

Note: Evapotranspiration data was obtained for New Boston, Texas

Normal Mean Monthly Precipitation (inches)

Jan/Jul	Feb/Aug	Mar/Sep	Apr/Oct	May/Nov	Jun/Dec
3.877037	4.325889	5.150083	3.745899	5.13176	4.523972
3.4829	2.643919	3.968276	5.007685	4.584613	5.01805

Note: Precipitation was simulated based on HELP V4 weather simulation for:
Lat/Long: 33.47/-94.45

Normal Mean Monthly Temperature (Degrees Fahrenheit)

Jan/Jul	Feb/Aug	Mar/Sep	Apr/Oct	May/Nov	Jun/Dec
54.9	53	59.8	70.1	78.2	89
92.1	89.8	80.7	69.9	61.3	53.9

Note: Temperature was simulated based on HELP V4 weather simulation for:
Lat/Long: 33.47/-94.45
Solar radiation was simulated based on HELP V4 weather simulation for:
Lat/Long: 33.47/-94.45

Average Annual Totals Summary

Title: NB FC: Prescribed (TS)
Simulated on: 10/17/2025 12:39

	Average Annual Totals for Years 1 - 30*			
	(inches)	[std dev]	(cubic feet)	(percent)
Precipitation	51.46	[8.49]	186,800.1	100.00
Runoff	15.267	[6.018]	55,418.1	29.67
Evapotranspiration	35.590	[3.56]	129,189.9	69.16
Subprofile1				
Percolation/leakage through Layer 3	0.580392	[0.09213]	2,106.8	1.13
Average Head on Top of Layer 3	11.6263	[1.8587]	---	---
Water storage				
Change in water storage	0.0235	[1.5438]	85.2	0.05

* Note: Average inches are converted to volume based on the user-specified area.

Peak Values Summary

Title: NB FC: Prescribed (TS)
Simulated on: 10/17/2025 12:39

	Peak Values for Years 1 - 30*		
	(inches)		(cubic feet)
Precipitation	5.10		18,522.5
Runoff	4.420		16,043.7
Subprofile1			
Percolation/leakage through Layer 3	0.003240		11.8
Average head on Layer 3	24.0000		
Other Parameters			
Snow water	6.7883		24,641.3
Maximum vegetation soil water	0.4475	(vol/vol)	
Minimum vegetation soil water	0.1743	(vol/vol)	

Final Water Storage in Landfill Profile at End of Simulation Period

Title: NB FC: Prescribed (TS)
Simulated on: 10/17/2025 12:40
Simulation period: 30 years

	Final Water Storage	
Layer	(inches)	(vol/vol)
1	2.4460	0.4077
2	8.2860	0.4603
3	0.0000	0.0000
Snow water	0.7125	---

HYDROLOGIC EVALUATION OF LANDFILL PERFORMANCE
HELP MODEL VERSION 4.0 BETA (2018)
DEVELOPED BY USEPA NATIONAL RISK MANAGEMENT RESEARCH LABORATORY

Title: NB FC: Prescribed (SS) **Simulated On:** 10/17/2025 12:21

Layer 1

Type 1 - Vertical Percolation Layer (Cover Soil)

SCL - Sandy Clay Loam

Material Texture Number 10

Thickness	=	6	inches
Porosity	=	0.398	vol/vol
Field Capacity	=	0.244	vol/vol
Wilting Point	=	0.136	vol/vol
Initial Soil Water Content	=	0.409	vol/vol
Effective Sat. Hyd. Conductivity	=	1.20E-04	cm/sec

Layer 2

Type 1 - Vertical Percolation Layer

SC/CL New Boston Clays (Uncompacted)

Material Texture Number 43

Thickness	=	18	inches
Porosity	=	0.464	vol/vol
Field Capacity	=	0.31	vol/vol
Wilting Point	=	0.187	vol/vol
Initial Soil Water Content	=	0.4603	vol/vol
Effective Sat. Hyd. Conductivity	=	1.00E-05	cm/sec

Layer 3

Type 4 - Flexible Membrane Liner

LDPE Membrane

Material Texture Number 36

Thickness	=	0.04	inches
Effective Sat. Hyd. Conductivity	=	4.00E-13	cm/sec
FML Pinhole Density	=	3	Holes/Acre
FML Installation Defects	=	4	Holes/Acre
FML Placement Quality	=	3	Good

Note: Initial moisture content of the layers and snow water were computed as nearly steady-state values by HELP.

General Design and Evaporative Zone Data

SCS Runoff Curve Number	=	87.3	
Fraction of Area Allowing Runoff	=	100	%
Area projected on a horizontal plane	=	1	acres
Evaporative Zone Depth	=	24	inches
Initial Water in Evaporative Zone	=	10.74	inches
Upper Limit of Evaporative Storage	=	10.74	inches
Lower Limit of Evaporative Storage	=	4.182	inches
Initial Snow Water	=	0	inches
Initial Water in Layer Materials	=	10.74	inches
Total Initial Water	=	10.74	inches
Total Subsurface Inflow	=	0	inches/year

Note: SCS Runoff Curve Number was calculated by HELP.

Evapotranspiration and Weather Data

Station Latitude	=	33.47	Degrees
Maximum Leaf Area Index	=	5	
Start of Growing Season (Julian Date)	=	91	days
End of Growing Season (Julian Date)	=	304	days
Average Wind Speed	=	1.885	mph
Average 1st Quarter Relative Humidity	=	83	%
Average 2nd Quarter Relative Humidity	=	78	%
Average 3rd Quarter Relative Humidity	=	65	%
Average 4th Quarter Relative Humidity	=	77	%

Note: Evapotranspiration data was obtained for New Boston, Texas

Normal Mean Monthly Precipitation (inches)

Jan/Jul	Feb/Aug	Mar/Sep	Apr/Oct	May/Nov	Jun/Dec
3.877037	4.325889	5.150083	3.745899	5.13176	4.523972
3.4829	2.643919	3.968276	5.007685	4.584613	5.01805

Note: Precipitation was simulated based on HELP V4 weather simulation for:
Lat/Long: 33.471528/-94.445833

Normal Mean Monthly Temperature (Degrees Fahrenheit)

Jan/Jul	Feb/Aug	Mar/Sep	Apr/Oct	May/Nov	Jun/Dec
54.9	53	59.8	70.1	78.2	89
92.1	89.8	80.7	69.9	61.3	53.9

Note: Temperature was simulated based on HELP V4 weather simulation for:
Lat/Long: 33.471528/-94.445833
Solar radiation was simulated based on HELP V4 weather simulation for:
Lat/Long: 33.471528/-94.445833

Average Annual Totals Summary

Title: NB FC: Prescribed (SS)
Simulated on: 10/17/2025 12:25

	Average Annual Totals for Years 1 - 30*			
	(inches)	[std dev]	(cubic feet)	(percent)
Precipitation	51.46	[8.49]	186,800.1	100.00
Runoff	15.453	[5.988]	56,094.4	30.03
Evapotranspiration	35.412	[3.534]	128,544.3	68.81
Subprofile1				
Percolation/leakage through Layer 3	0.571949	[0.09251]	2,076.2	1.11
Average Head on Top of Layer 3	11.4489	[1.867]	---	---
Water storage				
Change in water storage	0.0235	[1.6002]	85.2	0.05

* Note: Average inches are converted to volume based on the user-specified area.

Peak Values Summary

Title: NB FC: Prescribed (SS)
Simulated on: 10/17/2025 12:25

	Peak Values for Years 1 - 30*		
	(inches)		(cubic feet)
Precipitation	5.10		18,522.5
Runoff	4.420		16,042.8
Subprofile1			
Percolation/leakage through Layer 3	0.003240		11.8
Average head on Layer 3	24.0000		
Other Parameters			
Snow water	6.7883		24,641.4
Maximum vegetation soil water	0.4475	(vol/vol)	
Minimum vegetation soil water	0.1743	(vol/vol)	

Final Water Storage in Landfill Profile at End of Simulation Period

Title: NB FC: Prescribed (SS)
Simulated on: 10/17/2025 12:25
Simulation period: 30 years

	Final Water Storage	
Layer	(inches)	(vol/vol)
1	2.4460	0.4077
2	8.2860	0.4603
3	0.0000	0.0000
Snow water	0.7125	---

HYDROLOGIC EVALUATION OF LANDFILL PERFORMANCE
HELP MODEL VERSION 4.0 BETA (2018)
DEVELOPED BY USEPA NATIONAL RISK MANAGEMENT RESEARCH LABORATORY

Title: NB FC: Alternate (TS) **Simulated On:** 1/14/2026 10:14

Layer 1

Type 1 - Vertical Percolation Layer (Cover Soil)
SC/CL New Boston Clays (Uncompacted)
Material Texture Number 43

Thickness	=	24	inches
Porosity	=	0.464	vol/vol
Field Capacity	=	0.31	vol/vol
Wilting Point	=	0.187	vol/vol
Initial Soil Water Content	=	0.3757	vol/vol
Effective Sat. Hyd. Conductivity	=	4.20E-05	cm/sec

Layer 2

Type 2 - Lateral Drainage Layer
250-mil DS 6oz Composite
Material Texture Number 123

Thickness	=	0.25	inches
Porosity	=	0.85	vol/vol
Field Capacity	=	0.01	vol/vol
Wilting Point	=	0.005	vol/vol
Initial Soil Water Content	=	0.0152	vol/vol
Effective Sat. Hyd. Conductivity	=	5.00E+01	cm/sec
Slope	=	5	%
Drainage Length	=	100	ft

Layer 3

Type 4 - Flexible Membrane Liner
LDPE Membrane
Material Texture Number 36

Thickness	=	0.04	inches
Effective Sat. Hyd. Conductivity	=	4.00E-13	cm/sec
FML Pinhole Density	=	2	Holes/Acre
FML Installation Defects	=	3	Holes/Acre
FML Placement Quality	=	3	Good

Layer 4

Type 3 - Barrier Soil Liner

Liner Soil (High)

Material Texture Number 16

Thickness	=	12	inches
Porosity	=	0.427	vol/vol
Field Capacity	=	0.418	vol/vol
Wilting Point	=	0.367	vol/vol
Initial Soil Water Content	=	0.427	vol/vol
Effective Sat. Hyd. Conductivity	=	1.00E-07	cm/sec

Note: Initial moisture content of the layers and snow water were computed as nearly steady-state values by HELP.

General Design and Evaporative Zone Data

SCS Runoff Curve Number	=	90.5	
Fraction of Area Allowing Runoff	=	100	%
Area projected on a horizontal plane	=	1	acres
Evaporative Zone Depth	=	24	inches
Initial Water in Evaporative Zone	=	9.017	inches
Upper Limit of Evaporative Storage	=	11.136	inches
Lower Limit of Evaporative Storage	=	4.488	inches
Initial Snow Water	=	0	inches
Initial Water in Layer Materials	=	14.145	inches
Total Initial Water	=	14.145	inches
Total Subsurface Inflow	=	0	inches/year

Note: SCS Runoff Curve Number was calculated by HELP.

Evapotranspiration and Weather Data

Station Latitude	=	33.47	Degrees
Maximum Leaf Area Index	=	5	
Start of Growing Season (Julian Date)	=	91	days
End of Growing Season (Julian Date)	=	304	days
Average Wind Speed	=	1.885	mph
Average 1st Quarter Relative Humidity	=	83	%
Average 2nd Quarter Relative Humidity	=	78	%
Average 3rd Quarter Relative Humidity	=	65	%
Average 4th Quarter Relative Humidity	=	77	%

Note: Evapotranspiration data was obtained for New Boston, Texas

Normal Mean Monthly Precipitation (inches)

Jan/Jul	Feb/Aug	Mar/Sep	Apr/Oct	May/Nov	Jun/Dec
3.877037	4.325889	5.150083	3.745899	5.13176	4.523972
3.4829	2.643919	3.968276	5.007685	4.584613	5.01805

Note: Precipitation was simulated based on HELP V4 weather simulation for:
Lat/Long: 33.47/-94.45

Normal Mean Monthly Temperature (Degrees Fahrenheit)

Jan/Jul	Feb/Aug	Mar/Sep	Apr/Oct	May/Nov	Jun/Dec
54.9	53	59.8	70.1	78.2	89
92.1	89.8	80.7	69.9	61.3	53.9

Note: Temperature was simulated based on HELP V4 weather simulation for:
Lat/Long: 33.47/-94.45
Solar radiation was simulated based on HELP V4 weather simulation for:
Lat/Long: 33.47/-94.45

Average Annual Totals Summary

Title: NB FC: Alternate (TS)
Simulated on: 1/14/2026 10:16

	Average Annual Totals for Years 1 - 30*			
	(inches)	[std dev]	(cubic feet)	(percent)
Precipitation	51.46	[8.49]	186,800.1	100.00
Runoff	11.249	[4.003]	40,832.1	21.86
Evapotranspiration	31.922	[3.428]	115,878.1	62.03
Subprofile1				
Lateral drainage collected from Layer 2	8.2730	[2.7015]	30,030.8	16.08
Percolation/leakage through Layer 4	0.000001	[0]	0.0030	0.00
Average Head on Top of Layer 3	0.0005	[0.0002]	---	---
Water storage				
Change in water storage	0.0163	[1.2201]	59.1	0.03

* Note: Average inches are converted to volume based on the user-specified area.

Peak Values Summary

Title: NB FC: Alternate (TS)
Simulated on: 1/14/2026 10:17

	Peak Values for Years 1 - 30*		
	(inches)		(cubic feet)
Precipitation	5.10		18,522.5
Runoff	3.605		13,087.0
Subprofile1			
Drainage collected from Layer 2	0.4296		1,559.3
Percolation/leakage through Layer 4	0.000000		0.0001
Average head on Layer 3	0.0092		---
Maximum head on Layer 3	0.0061		---
Location of maximum head in Layer 2	0.00	(feet from drain)	
Other Parameters			
Snow water	6.7883		24,641.3
Maximum vegetation soil water	0.4306	(vol/vol)	
Minimum vegetation soil water	0.1870	(vol/vol)	

Final Water Storage in Landfill Profile at End of Simulation Period

Title: NB FC: Alternate (TS)
Simulated on: 1/14/2026 10:17
Simulation period: 30 years

	Final Water Storage	
Layer	(inches)	(vol/vol)
1	8.7923	0.3663
2	0.0047	0.0189
3	0.0000	0.0000
4	5.1240	0.4270
Snow water	0.7125	---

HYDROLOGIC EVALUATION OF LANDFILL PERFORMANCE
HELP MODEL VERSION 4.0 BETA (2018)
DEVELOPED BY USEPA NATIONAL RISK MANAGEMENT RESEARCH LABORATORY

Title: NB FC: Alternate (SS) **Simulated On:** 1/14/2026 10:24

Layer 1

Type 1 - Vertical Percolation Layer (Cover Soil)
SC/CL New Boston Clays (Uncompacted)
Material Texture Number 43

Thickness	=	36	inches
Porosity	=	0.464	vol/vol
Field Capacity	=	0.31	vol/vol
Wilting Point	=	0.187	vol/vol
Initial Soil Water Content	=	0.3801	vol/vol
Effective Sat. Hyd. Conductivity	=	4.20E-05	cm/sec

Layer 2

Type 2 - Lateral Drainage Layer
250-mil DS 6oz Composite
Material Texture Number 123

Thickness	=	0.25	inches
Porosity	=	0.85	vol/vol
Field Capacity	=	0.01	vol/vol
Wilting Point	=	0.005	vol/vol
Initial Soil Water Content	=	0.0137	vol/vol
Effective Sat. Hyd. Conductivity	=	5.00E+01	cm/sec
Slope	=	25	%
Drainage Length	=	100	ft

Layer 3

Type 3 - Barrier Soil Liner
Liner Soil (High)
Material Texture Number 16

Thickness	=	12	inches
Porosity	=	0.427	vol/vol
Field Capacity	=	0.418	vol/vol
Wilting Point	=	0.367	vol/vol
Initial Soil Water Content	=	0.427	vol/vol
Effective Sat. Hyd. Conductivity	=	1.00E-07	cm/sec

Note: Initial moisture content of the layers and snow water were computed as nearly steady-state values by HELP.

General Design and Evaporative Zone Data

SCS Runoff Curve Number	=	91.2	
Fraction of Area Allowing Runoff	=	100	%
Area projected on a horizontal plane	=	1	acres
Evaporative Zone Depth	=	36	inches
Initial Water in Evaporative Zone	=	13.684	inches
Upper Limit of Evaporative Storage	=	16.704	inches
Lower Limit of Evaporative Storage	=	6.732	inches
Initial Snow Water	=	0	inches
Initial Water in Layer Materials	=	18.811	inches
Total Initial Water	=	18.811	inches
Total Subsurface Inflow	=	0	inches/year

Note: SCS Runoff Curve Number was calculated by HELP.

Evapotranspiration and Weather Data

Station Latitude	=	33.47	Degrees
Maximum Leaf Area Index	=	5	
Start of Growing Season (Julian Date)	=	91	days
End of Growing Season (Julian Date)	=	304	days
Average Wind Speed	=	1.885	mph
Average 1st Quarter Relative Humidity	=	83	%
Average 2nd Quarter Relative Humidity	=	78	%
Average 3rd Quarter Relative Humidity	=	65	%
Average 4th Quarter Relative Humidity	=	77	%

Note: Evapotranspiration data was obtained for New Boston, Texas

Normal Mean Monthly Precipitation (inches)

Jan/Jul	Feb/Aug	Mar/Sep	Apr/Oct	May/Nov	Jun/Dec
3.877037	4.325889	5.150083	3.745899	5.13176	4.523972
3.4829	2.643919	3.968276	5.007685	4.584613	5.01805

Note: Precipitation was simulated based on HELP V4 weather simulation for:
Lat/Long: 33.47/-94.45

Normal Mean Monthly Temperature (Degrees Fahrenheit)

Jan/Jul	Feb/Aug	Mar/Sep	Apr/Oct	May/Nov	Jun/Dec
54.9	53	59.8	70.1	78.2	89
92.1	89.8	80.7	69.9	61.3	53.9

Note: Temperature was simulated based on HELP V4 weather simulation for:
Lat/Long: 33.47/-94.45
Solar radiation was simulated based on HELP V4 weather simulation for:
Lat/Long: 33.47/-94.45

Average Annual Totals Summary

Title: NB FC: Alternate (SS)
Simulated on: 1/14/2026 10:26

	Average Annual Totals for Years 1 - 30*			
	(inches)	[std dev]	(cubic feet)	(percent)
Precipitation	51.46	[8.49]	186,800.1	100.00
Runoff	11.982	[4.07]	43,495.2	23.28
Evapotranspiration	33.211	[3.435]	120,555.5	64.54
Subprofile1				
Lateral drainage collected from Layer 2	6.1987	[2.3674]	22,501.3	12.05
Percolation/leakage through Layer 3	0.052603	[0.014138]	190.9	0.10
Average Head on Top of Layer 3	0.0004	[0.0001]	---	---
Water storage				
Change in water storage	0.0157	[1.8679]	57.1	0.03

* Note: Average inches are converted to volume based on the user-specified area.

Peak Values Summary

Title: NB FC: Alternate (SS)
Simulated on: 1/14/2026 10:26

	Peak Values for Years 1 - 30*		
	(inches)		(cubic feet)
Precipitation	5.10		18,522.5
Runoff	3.707		13,457.6
Subprofile1			
Drainage collected from Layer 2	0.3735		1,355.9
Percolation/leakage through Layer 3	0.001911		6.9351
Average head on Layer 3	0.0080		---
Maximum head on Layer 3	0.0011		---
Location of maximum head in Layer 2	0.00	(feet from drain)	
Other Parameters			
Snow water	6.7883		24,641.3
Maximum vegetation soil water	0.4222	(vol/vol)	
Minimum vegetation soil water	0.1870	(vol/vol)	

Final Water Storage in Landfill Profile at End of Simulation Period

Title: NB FC: Alternate (SS)
Simulated on: 1/14/2026 10:26
Simulation period: 30 years

	Final Water Storage	
Layer	(inches)	(vol/vol)
1	13.4443	0.3735
2	0.0025	0.0100
3	5.1240	0.4270
Snow water	0.7125	---

NEW BOSTON LANDFILL
BOWIE COUNTY, TEXAS
TCEQ PERMIT NO. MSW 576C

PART III – FACILITY INVESTIGATION AND DESIGN
ATTACHMENT H
CLOSURE PLAN

Prepared for

Waste Management of Texas, Inc.

Technically Complete September 12, 2014
Permit Issued November 12, 2015
Revised February 2018

Revised October 2025

Prepared by

BIGGS & MATHEWS ENVIRONMENTAL
1700 Robert Road, Suite 100 ◆ Mansfield, Texas 76063 ◆ 817-563-1144

TEXAS BOARD OF PROFESSIONAL ENGINEERS
FIRM REGISTRATION NO. F-256 AND NO. 10194895

TEXAS BOARD OF PROFESSIONAL GEOSCIENTISTS
FIRM REGISTRATION NO. 50222

CONTENTS

2 FINAL COVER SYSTEM

30 TAC §330.457

2.1 Final Cover System Design

2.1.1 West and North Disposal Areas

There are two final cover system designs for the West and North Disposal Areas at the New Boston Landfill, the components of which are listed on Table H-1 of this section. Final cover has been constructed over the entire 52.5 acres of the West Disposal Area and details of the cover are documented in the Final Cover Evaluation Reports (FCERs). Approval dates are shown on Appendix J, Drawing J.1.

The final cover plans are included in Appendix H2, Drawings H2.2 and H2.3 and the final cover details are provided in Drawings H2.5, H2.5a, and H2.6. The components of the final cover system are listed from top to bottom in Table H-1.

The final cover will be seeded or sodded immediately following the application of the final cover in order to minimize erosion. The vegetation will be native and introduced grasses. Temporary cold weather vegetation will be established if required. Irrigation will be employed as needed until vegetation is established. Erosion control measures such as silt fences and straw bales will be used to minimize erosion until the vegetation is established. Areas that experience erosion or do not readily vegetate will be repaired, reseeded or sodded until vegetation is established, or the soil will be replaced with soil that will support the grasses.

Table H-1
New Boston Landfill
Components of the West and North Disposal Areas Final Cover System

Cover System Component	Description	Minimum Thickness
West and North Disposal Areas Final Cover		
TOPSLOPE		
Erosion Layer	Soil that is capable of sustaining native plant growth	24 inches
Cushion Layer	Geotextile	8 oz
Flexible Membrane Cover	Smooth LLDPE geomembrane	40 mil nominal
Infiltration Layer	Compacted soil with a coefficient of permeability ≤ 1 x 10^{-5} cm/sec	18 inches
TOPSLOPE - ALTERNATE		
Erosion Layer	Soil that is capable of sustaining native plant growth	24 inches
Drainage Layer	Double-sided geocomposite	0.25 inches nominal
Flexible Membrane Cover	Smooth or Textured LLDPE geomembrane	40 mil nominal
Infiltration Layer	Compacted soil with a coefficient of permeability ≤ 1 x 10^{-7} cm/sec	12 inches
SIDESLOPE OPTION A		
Erosion Layer	Soil that is capable of sustaining native plant growth	24 inches
Drainage Layer	Double-sided geocomposite	0.2 inches nominal
Flexible Membrane Cover	Textured LLDPE geomembrane	40 mil nominal
Infiltration Layer	Compacted soil with a coefficient of permeability ≤ 1 x 10^{-5} cm/sec	18 inches
SIDESLOPE OPTION B		
Erosion Layer	Soil that is capable of sustaining native plant growth	24 inches
Drainage Layer	Geotextile over studded geomembrane	8 oz
Flexible Membrane Cover	Textured LLDPE geomembrane with studs on top	40 mil nominal
Infiltration Layer	Compacted soil with a coefficient of permeability ≤ 1 x 10^{-5} cm/sec	18 inches
SIDESLOPE - ALTERNATE		
Erosion Layer	Soil that is capable of sustaining native plant growth	36 inches
Drainage Layer	Double-sided geocomposite	0.25 inches nominal
Infiltration Layer	Compacted soil with a coefficient of permeability ≤ 1 x 10^{-7} cm/sec	12 inches

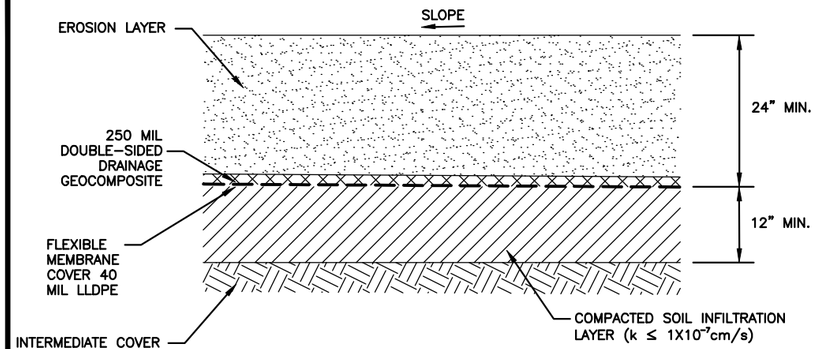
2.1.2 South Disposal Area

The final cover system in the South Disposal Area will consist of an infiltration layer and an erosion control layer. The final cover plan is included in Appendix H2, Drawing H2.3 and the final cover details are provided in Drawing H2.6. The components of the final cover system are listed from top to bottom in Table H-2.

The final cover will be seeded or sodded immediately following the application of the final cover in order to minimize erosion. The vegetation will be native and introduced grasses. Temporary cold weather vegetation will be established if required. Irrigation will be employed as needed until vegetation is established. Erosion control measures such as silt fences and straw bales will be used to minimize erosion until the vegetation is established. Areas that experience erosion or do not readily vegetate will be repaired, reseeded or sodded until vegetation is established, or the soil will be replaced with soil that will support the grasses.

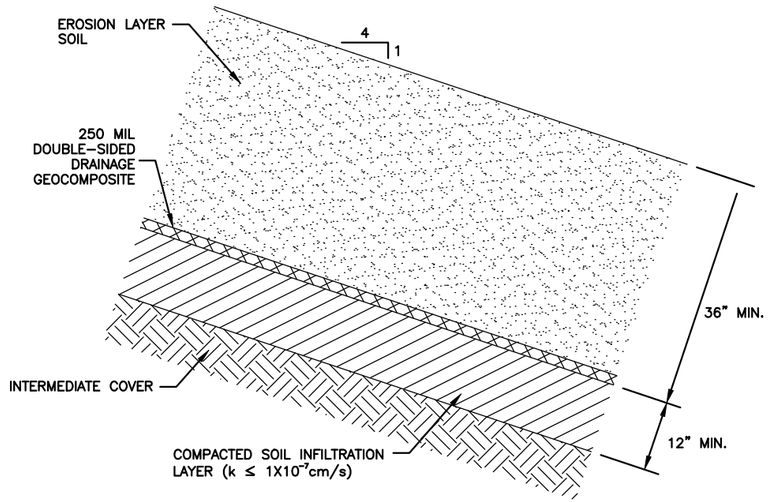
NEW BOSTON LANDFILL

APPENDIX H2
FINAL COVER SYSTEM PLANS AND DETAILS



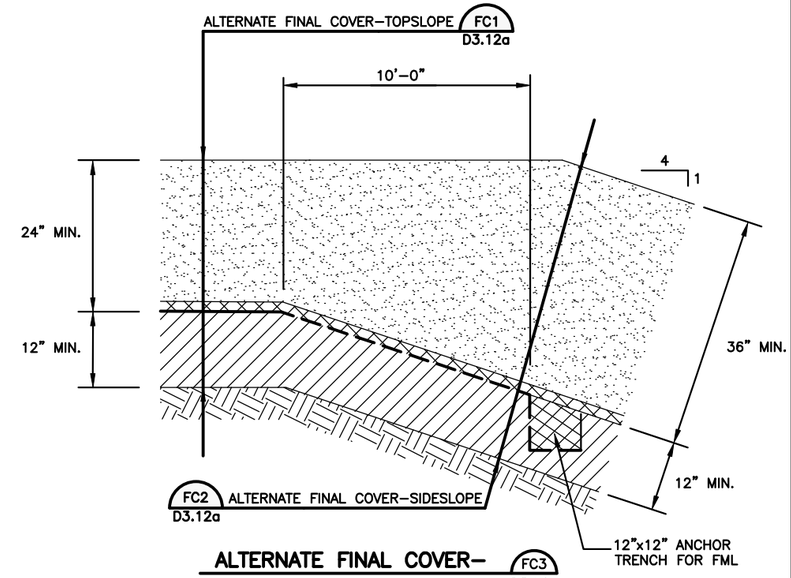
ALTERNATE FINAL COVER–TOPSLOPE FC1 D3.12a

0 1 2
SCALE IN FEET



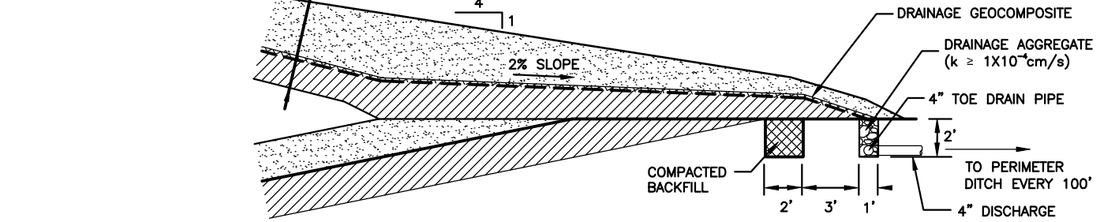
ALTERNATE FINAL COVER–SIDESLOPE FC2 D3.12a

0 1 2
SCALE IN FEET



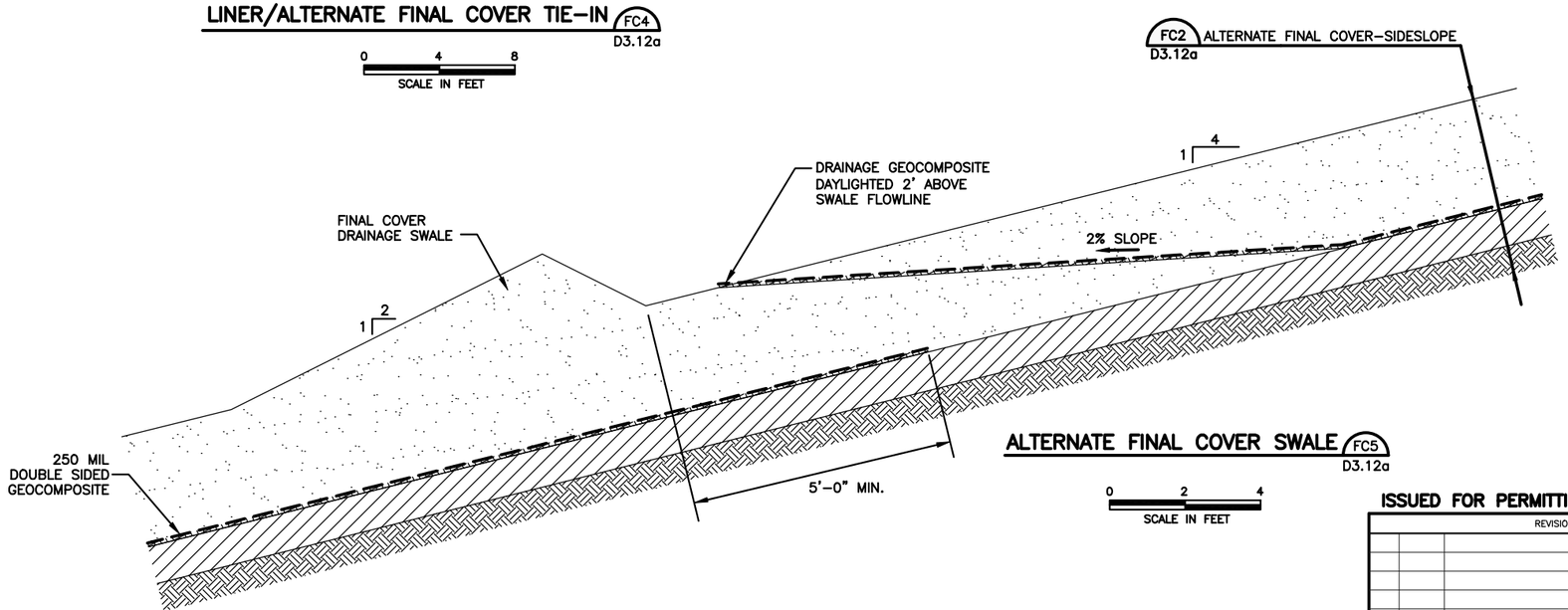
ALTERNATE FINAL COVER– TOPSLOPE/SIDESLOPE TIE–IN FC3 D3.12a

0 1 2
SCALE IN FEET



LINER/ALTERNATE FINAL COVER TIE–IN FC4 D3.12a

0 4 8
SCALE IN FEET



ALTERNATE FINAL COVER SWALE FC5 D3.12a

0 2 4
SCALE IN FEET

ISSUED FOR PERMITTING PURPOSES ONLY

REVISIONS			
REV	DATE	DESCRIPTION	DWN BY

FINAL COVER DETAILS ALTERNATE OPTION

WASTE MANAGEMENT OF TEXAS, INC NEW BOSTON LANDFILL

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1700 ROBERT ROAD, STE. 100
MANSFIELD, TEXAS 76063
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TBPELS FIRM NO. F–256 AND NO. 10194895
TBPG FIRM NO. 50222

DRAWING H2.5a