



Texas Commission on Environmental Quality Waste Permits Division Correspondence Cover Sheet

Date: 01/16/2026

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

Table 2 - Industrial & Hazardous Waste Correspondence

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

January 16, 2026

Steve Niemeyer

32071295

February 6, 2026



BIGGS & MATHEWS ENVIRONMENTAL, INC

TBPELS No. F-256 & No. 10194895 ♦ TBPG No. 50222

January 16, 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
Second Notice of Deficiency (NOD2)
Tracking No. 32071925; RN 102594892; CN 600127856

Mr. Neimeyer:

This response to your request for additional information addressed to Guy Campbell, dated December 23, 2025, is submitted on behalf of Waste Management of Texas, Inc. for the New Boston Landfill permit modification submitted October 28, 2025, and revision dated December 10, 2025. Our responses to the Texas Commission on Environmental Quality (TCEQ) comments are presented below in the order listed in your email.

1. Figures 1 and 2, "Land Ownership Map." Provide a list of all mineral interest ownership under the facility or add a statement that there is no mineral interest ownership under the facility recorded in the real property appraisal records, in accordance with 30 TAC §330.59(c)(3)(B).

RESPONSE: Figures 1 and 2 have been revised and are included in the attachment to this response.

2. Attachment D3, Construction Design Details, Drawing D3.12a, "Alternate Option." Distinguish between the 6-inch vegetative growth layer and the immediately underlying 1×10^{-5} cm/sec soil layer.

RESPONSE: The final cover system erosion layer will be constructed from homogenized on-site native soils, with the top 6-inches capable of supporting vegetation. There is no practical difference between soil types or mechanical properties in the erosion layer. Additionally, the HELP models for each scenario have been revised to include a consistent permeability in the erosion layer (refer to NOD2 comment response 8.b.). As such, and consistent with email correspondence dating January 14, 2026, no revisions have been made to this section.

3. Attachment D6, Appendix D6-B, Case 5, "Final Cover." Demonstrate that the leachate collection system can accommodate the percolation through the proposed alternate

final cover designs.

RESPONSE: The leachate collection system was designed for a peak generation rate of 0.101 cfs (page D6A-4 of the approved permit), while the estimated peak percolation through the proposed alternate final cover is only 0.00008 cfs. Therefore, the leachate collection system can accommodate the percolation through the proposed alternate final cover designs.

4. Attachment D8A, "Erosion Layer." Add three tables, the erosion material properties; the erosion layer material preconstruction tests; and the erosion layer material construction tests.

RESPONSE: The erosion layer for the final cover system design is essentially a protective cover over the underlying final cover geosynthetics, and the system does not rely on the erosion layer to provide an "impermeable" barrier. Consistent with current rules and the approved permit, field and conformance testing is not required for soils used to construct the erosion layer. Material properties required for the protective erosion layer are included in Attachment D8A of the approved permit (page D8A-22) and are appropriate for the alternate final cover design. As quality control testing is required for the compacted clay infiltration layer underlying the final cover geosynthetics per 30 TAC §330.457(c), those material properties and field/conformance testing procedures have been included in the Final Cover Quality Control Plan but are not applicable to the erosion layer.

5. Attachment D8A, "West and North Disposal Areas Final Cover Quality Control Plan." Specify the permeability of the soil layer beneath the uppermost 6-inches of soil in Tables B-2, D-4, and D8A-1.

RESPONSE: As stated in response #4 above, the final cover soil erosion layer is not required to meet a specific permeability.

6. Attachment D9, "Alternative Final Cover Design Demonstration." Distinguish between the uppermost six inches of soil and the immediately underlying soil in the alternative designs.

RESPONSE: The final cover system erosion layer will be constructed from homogenized on-site native soils, with the top 6-inches capable of supporting vegetation. There is no practical difference between soil types or mechanical properties in the erosion layer. Additionally, the HELP models for each scenario have been revised to include a consistent permeability in the erosion layer (refer to NOD2 comment response 8.b.). As such, and consistent with email correspondence dating January 14, 2026, no revisions have been made to this section.

7. Attachment D9, Section 3, "HELP Model Results – Estimated Percolation."
 - a. The average annual and peak values for the alternate top deck were

reported as "0.0000" based on an incorrect slope of 25%. Rerun the analysis(es) with the correct slope(s) and correct the table entry(ies).

- b. The peak value for the alternate side slope should be reported as 0.0019 based on the analyses provided.

RESPONSE: The HELP models for the alternate top deck and alternate side slope have been revised to include a top deck slope of 5% and to include a consistent permeability value for the erosion layer over the final cover system geosynthetics. The results of the revised HELP model are included in the attachment to this response, and the summarized results table in Attachment D9, Section 3 has been appropriately revised to include the updated peak values estimate.

8. Appendix D9.A, "HELP Model Results."
 - a. Correct the page numbering so that page numbers 1-3 of 426 and 424-426 are not repeated.
 - b. The HELP analyses for the proposed alternatives do not distinguish between the uppermost six inches of soil supporting growth and the immediately underlying soil with a permeability of 1×10^{-5} cm/sec. Revise the analyses to distinguish between the uppermost six inches of soil and the rest of the soil or use the permeability value in the original permit, i.e. 4.2×10^{-5} cm/sec.

RESPONSE: The selected HELP model result pages have been renumbered to have a unique page number, and are included in the attachment to this response.

The final cover system erosion layer will be constructed from homogenized on-site native soils, with the top 6-inches capable of supporting vegetation. There is no practical difference between soil types or mechanical properties in the erosion layer. The HELP analyses have been revised to reflect the permeability value in the original permit ($k = 4.2 \times 10^{-5}$ cm/sec) for the entirety of the erosion layer. The results of the revised HELP model are included in the attachment to this response.

9. Attachment H, "Closure Plan." Specify the permeability of the soil layer beneath the uppermost 6-inches of soil in Table H1.

RESPONSE: The final cover system erosion layer will be constructed from homogenized on-site native soils, with the top 6-inches capable of supporting vegetation. There is no practical difference between soil types or mechanical properties in the erosion layer. Additionally, the HELP models for each scenario have been revised to include a consistent permeability in the erosion layer (refer to NOD2 comment response 8.b.). As such, and consistent with email correspondence dating January 14, 2026, no revisions have been made to this section.

Stephen M. Niemeyer, P.E.
January 16, 2026
Page 4

10. Appendix H2. Drawing H2.5a, "Alternate Option." Distinguish between the 6-inch vegetative growth layer and the immediately underlying 1×10^{-5} cm/sec soil layer.

RESPONSE: The final cover system erosion layer will be constructed from homogenized on-site native soils, with the top 6-inches capable of supporting vegetation. There is no practical difference between soil types or mechanical properties in the erosion layer. Additionally, the HELP models for each scenario have been revised to include a consistent permeability in the erosion layer (refer to NOD2 comment response 8.b.). As such, and consistent with email correspondence dating January 14, 2026, no revisions have been made to this section.

One original and a copy of the revisions are provided for your review and comment. Only revised sheets have been included as redline/strikeout (marked) copies. A copy of the revisions have 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: NOD Responses (one original and one copy)

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



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: 01/16/2026

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
<input type="checkbox"/> Initial Submission <input checked="" type="checkbox"/> Notice of Deficiency (NOD) Response
2. Authorization Type
<input checked="" type="checkbox"/> Permit <input type="checkbox"/> Registration
3. Application Type
<input checked="" type="checkbox"/> Modification with Public Notice <input type="checkbox"/> Modification without Public Notice <input type="checkbox"/> Temporary Authorization (TA) <input type="checkbox"/> Modification for Name Change or Transfer
4. Application Fee
Amount The application fee for a modification or temporary authorization is \$150.
Payment Method
<input type="checkbox"/> Check <input checked="" type="checkbox"/> Online through ePay portal www3.tceq.texas.gov/epay/
If paid online, enter ePay Trace Number XXXXXXXXXX

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:

Email Address: 

Texas Secretary of State (SOS) Filing Number: _____

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: 

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: [Handwritten Signature] Date: 1-16-2026

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

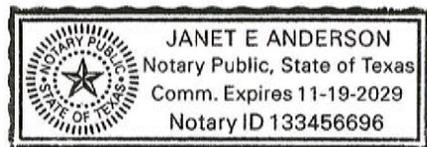
On this 16th day of JANUARY, 2026

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

[Handwritten Signature]

Notary Public in and for

TARRANT County, Texas



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.

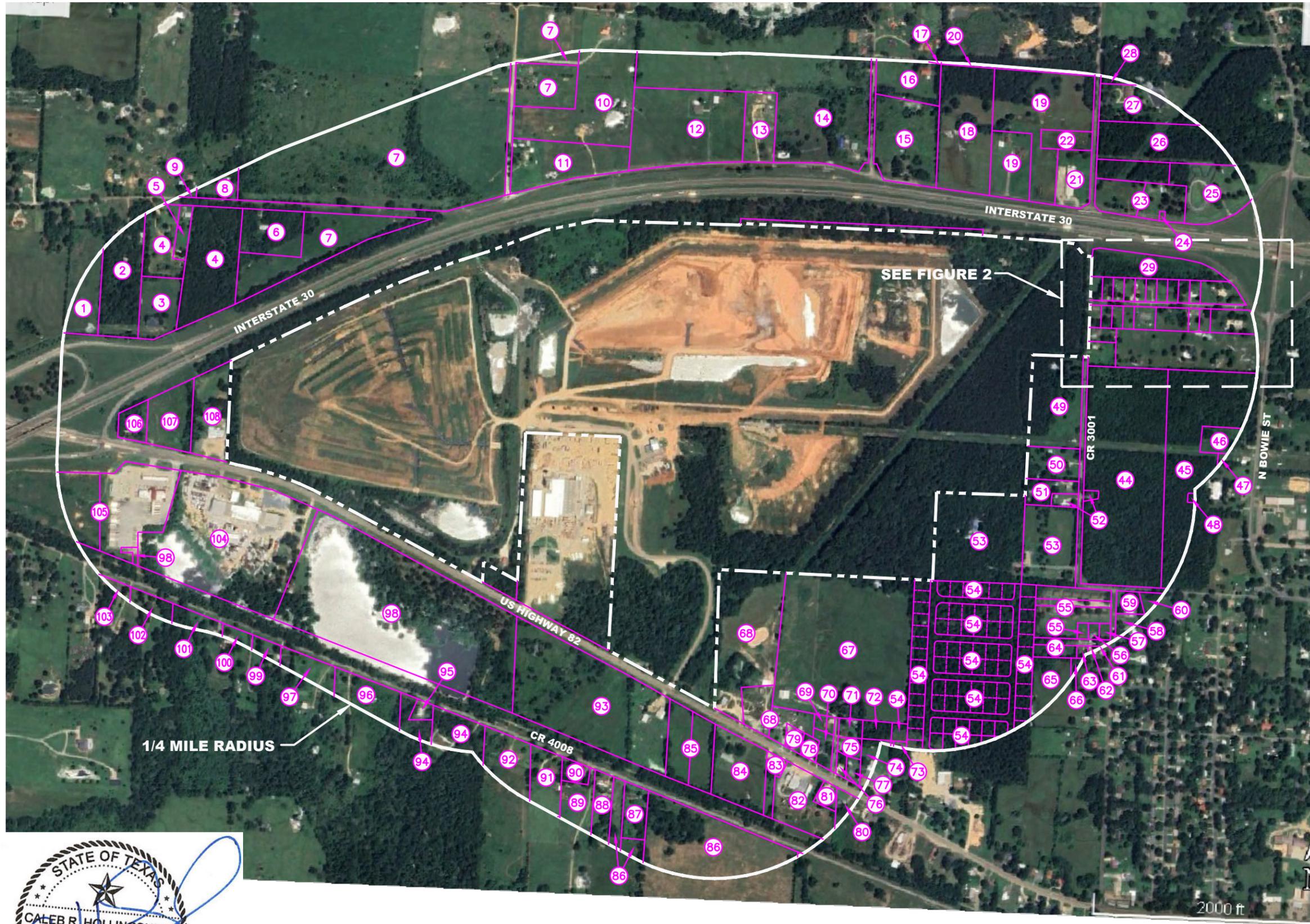
Attachments Table 1. Required attachments.

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
<input type="checkbox"/> TCEQ Core Data Form(s)	
<input type="checkbox"/> Signatory Authority Delegation	
<input type="checkbox"/> Fee Payment Receipt	
<input type="checkbox"/> Confidential Documents	

ATTACHMENT 1
MARKED (REDLINE/STRIKEOUT) PAGES



LEGEND
 PERMIT BOUNDARY
 ① LAND OWNERSHIP IDENTIFICATION

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

REVISIONS:

- ADDED NOTE 5 REGARDING MINERAL INTEREST



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

LAND OWNERSHIP MAP	
WASTE MANAGEMENT OF TEXAS, INC. NEW BOSTON LANDFILL	
BME	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



- 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.

- REVISIONS:**
1. ADDED NOTE 5 REGARDING MINERAL INTEREST



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

LAND OWNERSHIP MAP	
WASTE MANAGEMENT OF TEXAS, INC. NEW BOSTON LANDFILL	
BME	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

**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
Permit Issued November 12, 2015
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



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30 TAC §330.63(d)

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Attachment D1 – Site Layout Plans

Attachment D2 – Cross Sections

Attachment D3 – Construction Design Details

Attachment D4 – Site Life

Attachment D5 – Geotechnical Design

Attachment D6 – Leachate and Contaminated Water Management Plan

Attachment D7 – Liner Quality Control Plans

Attachment D7A – North Disposal Area Liner Quality Control Plan

Attachment D7B – South Disposal Area Liner Quality Control Plan

Attachment D8 – Final Cover Quality Control Plans

Attachment D8A – West and North Disposal Areas Final Cover Quality Control Plan

Attachment D8B – South Disposal Area Final Cover Quality Control Plan

Attachment D9 – Alternate Final Cover Design Demonstration

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**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



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APPENDIX D9.A Help Model Results

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 <u>0.0526</u>

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 <u>0.0019</u>

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)

<u>Jan/Jul</u>	<u>Feb/Aug</u>	<u>Mar/Sep</u>	<u>Apr/Oct</u>	<u>May/Nov</u>	<u>Jun/Dec</u>
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)

<u>Jan/Jul</u>	<u>Feb/Aug</u>	<u>Mar/Sep</u>	<u>Apr/Oct</u>	<u>May/Nov</u>	<u>Jun/Dec</u>
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

Layer	Final Water Storage	
	(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)

<u>Jan/Jul</u>	<u>Feb/Aug</u>	<u>Mar/Sep</u>	<u>Apr/Oct</u>	<u>May/Nov</u>	<u>Jun/Dec</u>
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)

<u>Jan/Jul</u>	<u>Feb/Aug</u>	<u>Mar/Sep</u>	<u>Apr/Oct</u>	<u>May/Nov</u>	<u>Jun/Dec</u>
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

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

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)

<u>Jan/Jul</u>	<u>Feb/Aug</u>	<u>Mar/Sep</u>	<u>Apr/Oct</u>	<u>May/Nov</u>	<u>Jun/Dec</u>
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)

<u>Jan/Jul</u>	<u>Feb/Aug</u>	<u>Mar/Sep</u>	<u>Apr/Oct</u>	<u>May/Nov</u>	<u>Jun/Dec</u>
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

Layer	Final Water Storage	
	(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	---

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)

<u>Jan/Jul</u>	<u>Feb/Aug</u>	<u>Mar/Sep</u>	<u>Apr/Oct</u>	<u>May/Nov</u>	<u>Jun/Dec</u>
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)

<u>Jan/Jul</u>	<u>Feb/Aug</u>	<u>Mar/Sep</u>	<u>Apr/Oct</u>	<u>May/Nov</u>	<u>Jun/Dec</u>
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)	

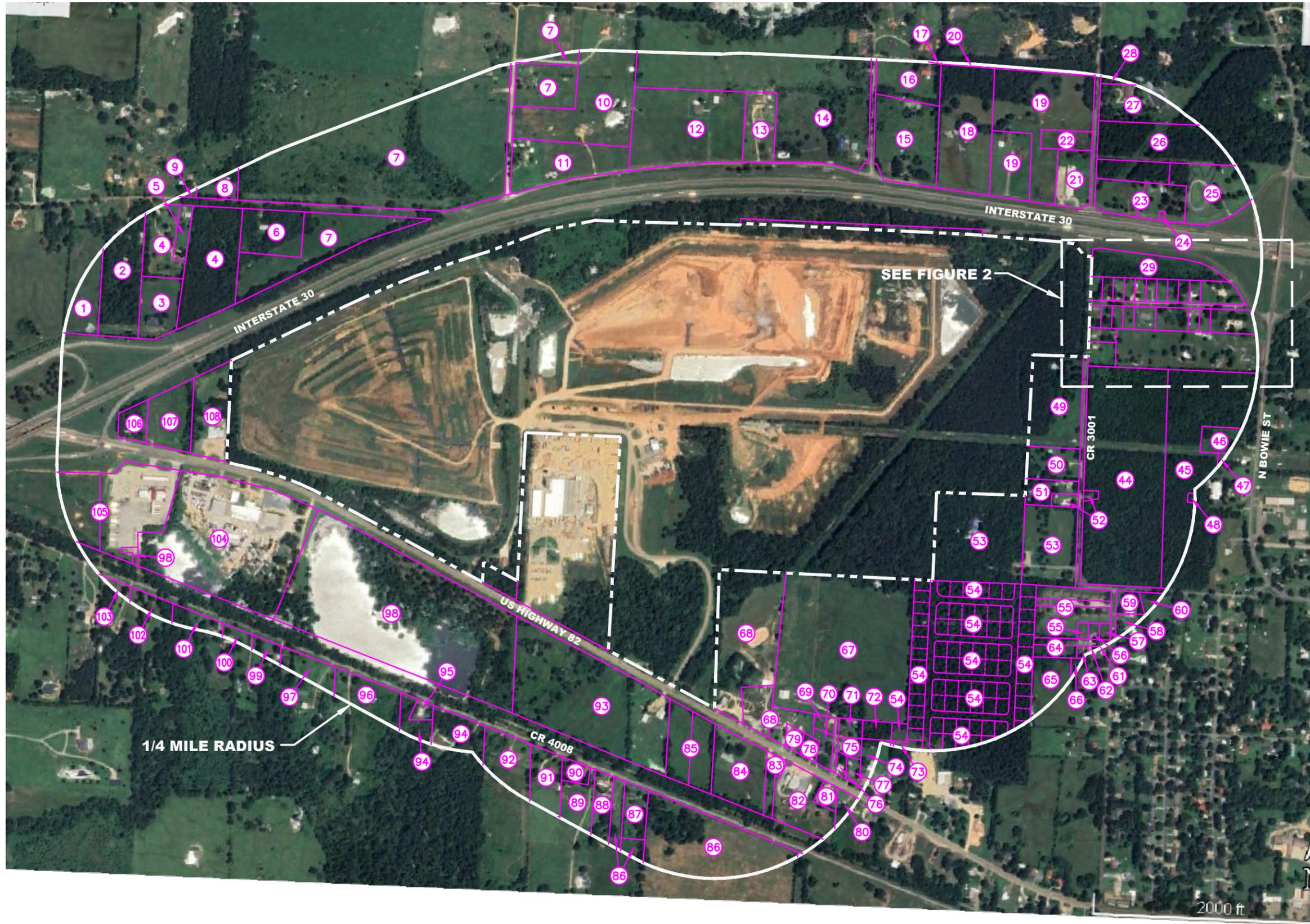
Final Water Storage in Landfill Profile at End of Simulation Period

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

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

ATTACHMENT 2
UNMARKED REVISED PAGES

O:\Waste Management\New Boston\Solid Waste\2025 Alt Final Cover Permit Mod\NOD2\Drawings\PropertyOwners 10-25 - REV.dwg Layout: 1-CLN User: CHollingshead



LEGEND
 PERMIT BOUNDARY
 ① LAND OWNERSHIP IDENTIFICATION

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



LAND OWNERSHIP MAP
WASTE MANAGEMENT OF TEXAS, INC.
NEW BOSTON LANDFILL

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

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

TBPE FIRM NO. F-256
 TBPG FIRM NO. 50222
 FIGURE
1

O:\Waste Management\New Boston\Solid Waste\2025 Alt Final Cover Permit Mod\NOD2\Drawings\PropertyOwners 10-25 - REV.dwg Layout: 2-CLN User: CHollingshead



- 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.



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

FIGURE
2

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

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

**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
Permit Issued November 12, 2015
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



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30 TAC §330.63(d)

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Attachment D3 – Construction Design Details

Attachment D4 – Site Life

Attachment D5 – Geotechnical Design

Attachment D6 – Leachate and Contaminated Water Management Plan

Attachment D7 – Liner Quality Control Plans

Attachment D7A – North Disposal Area Liner Quality Control Plan

Attachment D7B – South Disposal Area Liner Quality Control Plan

Attachment D8 – Final Cover Quality Control Plans

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Attachment D9 – Alternate Final Cover Design Demonstration

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**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



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1	ALTERNATE FINAL COVER	1
2	PERFORMANCE EVALUATION.....	2
3	RESULTS.....	3

APPENDIX D9.A Help Model Results

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)

<u>Jan/Jul</u>	<u>Feb/Aug</u>	<u>Mar/Sep</u>	<u>Apr/Oct</u>	<u>May/Nov</u>	<u>Jun/Dec</u>
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)

<u>Jan/Jul</u>	<u>Feb/Aug</u>	<u>Mar/Sep</u>	<u>Apr/Oct</u>	<u>May/Nov</u>	<u>Jun/Dec</u>
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

Layer	Final Water Storage	
	(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)

<u>Jan/Jul</u>	<u>Feb/Aug</u>	<u>Mar/Sep</u>	<u>Apr/Oct</u>	<u>May/Nov</u>	<u>Jun/Dec</u>
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)

<u>Jan/Jul</u>	<u>Feb/Aug</u>	<u>Mar/Sep</u>	<u>Apr/Oct</u>	<u>May/Nov</u>	<u>Jun/Dec</u>
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

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

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)

<u>Jan/Jul</u>	<u>Feb/Aug</u>	<u>Mar/Sep</u>	<u>Apr/Oct</u>	<u>May/Nov</u>	<u>Jun/Dec</u>
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)

<u>Jan/Jul</u>	<u>Feb/Aug</u>	<u>Mar/Sep</u>	<u>Apr/Oct</u>	<u>May/Nov</u>	<u>Jun/Dec</u>
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

Layer	Final Water Storage	
	(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	---

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)

<u>Jan/Jul</u>	<u>Feb/Aug</u>	<u>Mar/Sep</u>	<u>Apr/Oct</u>	<u>May/Nov</u>	<u>Jun/Dec</u>
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)

<u>Jan/Jul</u>	<u>Feb/Aug</u>	<u>Mar/Sep</u>	<u>Apr/Oct</u>	<u>May/Nov</u>	<u>Jun/Dec</u>
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

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