Texas Commission on Environmental Quality

Waste Permits Division Correspondence Cover Sheet

Date: April 30, 2025
Facility Name: Chisholm Trail Disposal Landfill
Permit or Registration No.: 2421

Nature of Correspondence:
☐ Initial/New
☒ Response/Revision to TCEQ Tracking No.: 29623137 (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:	

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

April 30, 2025

Adam Schnuriger, Project Manager
Municipal Solid Waste Permits – MC 124
P. O. Box 13087
Austin, Texas 78711-3087

Re: Chisholm Trail Disposal Landfill
TCEQ Permit No. MSW 2421
Wise County, Texas
Type IV Municipal Solid Waste Landfill Permit Application
Technical NOD 3, Tracking No. 29623137

Dear Mr. Schnuriger:

This response to your request for additional information addressed to Thad Owings, dated March 4, 2025, is submitted on behalf of Chisholm Trail Disposal, LLC for the Chisholm Trail Type IV Municipal Solid Waste Landfill Permit Application submitted February 26, 2024, revisions dated May 23, 2024, September 20, 2024 and full application submitted with the date December 2024, revisions dated January 13, 2025. Our responses to the Texas Commission on Environmental Quality (TCEQ) comments are presented below in the order listed in your email.

1. Part III of the application is named "Facility Investigation and Design." Issued MSW permits refer to Part III as "Site Development Plan" consistent with 330.63. Revise to name Part III "Site Development Plan" and revise throughout the application. All references should be changed to "Site Development Plan" for Part III.

RESPONSE: The parts of an application are listed in 330.57(c) with Part III being described but not named in 330.57(c)(3). The first section in Part III is designated as the "Site Development Plan" in 330.63(a). Referring to Part III as the "Facility Investigation and Design" is consistent with 330.57 and 330.63. Further, we have used this naming convention on multiple approved permit applications and amendments since the current rules were adopted in 2006.

2. Table of Contents for Volume 2 of 3 names Attachment A (in Part III) as Site Development Plan Narrative; while the same attachment is titled Site Development Plan in the Part III Table of Contents. Revise the application to consistently name attachments.

RESPONSE: The application has been revised to consistently name Part III Attachment A as the Site Development Plan.

3. Revise the first paragraph on Page 1 of Attachment B by removing "or property boundary."

RESPONSE: Attachment B Page 1 has been revised as requested.

4. Revise the fourth paragraph on Page 2 of Attachment B to specify that the removal of CFCs will follow all applicable regulatory requirements. If this statement is already in the application, revise to refer to the specific statement location.

RESPONSE: Attachment B Page 2 has been revised as requested.

5. For the Large Item Staging Area depicted in Drawing B.1, remove "metals" and replace "recycled" with "disposed of in the landfill working face," to be consistent with the descriptions on Page 2.

RESPONSE: Drawing B.1 has been revised as requested.

6. 1. Add a note to Drawing B.2 to provide necessary information on the citizens' convenience center; and to refer to Part IV for its operation provisions.

   2. Revise Note 3 to Drawing B.2 by inserting "over existing lined areas" between "located" and "within."

   3. Revise Note 4 to Drawing B.2 to refer to Part IV for operation provisions for the wood mulching area.
   4. Drawing B.2 shows the citizens' convenience center at a location within the footprint, conflicting with the last paragraph on Page 3. Revise Drawing B.2 to reflect the correct location of the citizens' convenience center. Also, revise other relevant portions of the application to reflect the correct location of the citizens' convenience center (for example, but not limited to, Drawing D1.2 of Attachment D1.).

   5. Revise Drawing B.3 to refer to Section 8.26.1 of Part IV for the design and operation provisions for the large item staging area.

RESPONSE:
1. Drawing B.2 has been revised as requested.
2. Drawing B.2 has been revised as requested.
3. Drawing B.2 has been revised as requested.

4. Attachment B page 3 has been revised to be consistent with the drawings.
5. Drawing B.3 has been revised as requested.

7. 1. Revise Section 1.1 of Attachment C by replacing "after" with "alter."

   2. Revise the tables on Page 4 of Attachment C1A to add pre- and post- changes in percentages.

   3. Revise Section 1.1 of Attachment C to more specifically explain how the existing drainage patterns will not be adversely altered (for example, add brief discussions on any changes in peak flows, velocities, and volumes at the comparison points between pre- and post-development conditions).

RESPONSE:
1. Revised per comment.
2. Quantity changes are already provided in the applicable units (cubic feet per second for flow rates, acre-feet for volumes) in the tables on Page 4 of Attachment C1A. For CP2, the percent change cannot be calculated since there is no runoff in the existing condition (dividing by zero is mathematically undefined). For CP1, the design intentionally maintains similar discharge characteristics between pre- and post-development conditions. The current presentation of absolute values provides the most appropriate and technically accurate comparison of the hydrologic conditions. No changes made.
3. Section 1.1 was revised to include a reference to Attachment C1, Section 7.

8. 1. Clarify if discharge flow rate is specified in the industrial stormwater permit for CA2. If specified, explain why it is not used for the comparison between existing and post-development scenarios.

   2. Revise Section 1.3 in Attachment C1 to briefly discuss the drainage area lost/gained between CP-1 and CP-2.

   3. Revise Drawing C1A.2 to show the drainage area exchanges.

   4. Revise the list on Drawing C1A.2 to identify drainage areas discharging via CP-1 and CP-2, respectively.

   5. Revise Section 7 of Attachment C1 to describe if CP-1 discharge is overland flow, concentrated flow, or other (ensure the descriptions are consistent throughout the application). Identify structure/profile (constructed or existing) of CP-1 discharge point and erosion prevention measures.

   6. Revise Section 7 of Attachment C1 to refer to discharge points' structure design and drawings (including cross-sections).

7. Since both CP-1 and CP-2 will discharge directly into the 100-year floodplain, revise Section 7 and other relevant portions of the application to discuss whether the site surface discharges will be hindered by the 100-year flood. Revise to include counter measures.

RESPONSE:

1. ***Attachment C1, Section 3 was revised to include a statement that the industrial stormwater permit does not specify a flow rate at CP2.***
2. ***A note was added below the table on Page 4 of Attachment C1A to discuss the area lost/gained between CP1 and CP2.***
3. ***See response 7.2.***
4. ***A note was added to Drawings C1A.2 and C1C.1 stating that only DA11 contributes to CP1 in the postdevelopment condition.***
5. ***Section 7 of Attachment C1 was revised per comment. The permit application was reviewed for consistency and no other revisions were made based on this comment.***
6. ***Section 7 of Attachment C1 is a narrative comparison of existing/postdevelopment comparison. Attachment C3, Drawing C3.1 was revised to include width and slope at CP2 outlet channel. As discussed in the previous comment, CP1 will be overland flow.***
7. ***Attachment C1, Section 3 – Existing condition was revised to state that the discharge points CP1 and CP2 are located outside of the 100-year floodplain as shown on Drawings C1A.1 and C1B.1. The facility permit boundary was intentionally established outside of the FEMA-designated 100-year floodplain. Since both discharge points are outside of the 100-year floodplain, site surface discharges will not be hindered by the 100-year flood. Therefore, no counter measures are necessary.***

9. Revise Page 7 of Attachment C1, Appendix C1E to summarize the maximum swale spacing, minimum vegetation coverage, and calculated soil loss. (Note that a summary is provided on Intermediate Cover Evaluation).

RESPONSE: Revised per comment.

10. Provide design and drawings for the comparison points CP-1 and CP-2. If no design and drawings are necessary for CP-1 and CP-2, please clarify as such (refer to other comments related to the two comparison points).

RESPONSE: As discussed in response to comment 8.6, discharge point CP1 will be overland flow, which requires no specific design or drawings. For CP2, Attachment C3, Drawing C3.1 has been revised to include width and slope details at the CP2 outlet channel. These revisions provide the necessary design information for the CP2 discharge point.

11. Page 3 of Attachment C1 indicates that drainage of final cover and intermediate cover are analyzed using the Rational Method. Since CP2 is 241 acres, briefly explain how the use of the Rational Method complies with 330.305(f)(1) which is for areas of not more than 200 acres. Revise Page 3 of Attachment C1 and other relevant portions of the application as necessary.

RESPONSE: In accordance with §330.305(f)(2), the existing and postdevelopment hydrologic condition, which includes the perimeter channels and detention ponds, was evaluated with HEC-HMS as required for areas exceeding 200 acres. In accordance with §330.305(f)(1), the final cover drainage systems, which have contributing drainage areas of less than 200 acres, were designed using the rational method. This methodology is clearly described in Attachment C1, Section 2.0 where the analysis methods are detailed. No changes are necessary as the application follows the regulatory requirements for hydrologic analysis methods based on drainage area size.

12. 1. Revise Drawing C3.1, or add a new drawing, to show the flow directions in the perimeter channels and the stations. Mark where the East and West channels meet. Ensure that Drawing C3.1 contents are consistent with Drawings C3.5 through C3.8.

    2. It is not clear which culvert structure Detail 8 on Drawing C3.11 applies to. It is also unclear where the turf matting shown in Detail D2 on Drawing C3.10 is used. Revise to ensure all drawings/details/callouts are clearly tied to the relevant drainage features.

RESPONSE:

1. ***Drawing C3.1 has been revised as requested to show flow directions in the perimeter channels, station markings, and the junction point where the East and West channels meet. The revised drawing maintains consistency with Drawings C3.5 through C3.8.***
2. ***Detail 8 on Drawing C3.11 applies to Ponds 1, 2, and 3 as shown in the detail's accompanying table "Culvert Dimensions". A note was added to Detail D2 on Drawing C3.11.***

13. 1. Revise Appendix C1D of Attachment C1 to briefly discuss design of ponds 1 and 2.

    2. Revise Appendix C1D to discuss erosion control measures at the inlets and outlets (spillways and culverts) of the ponds (1, 2, and 3).

    3. Revise existing drawings or add new drawings to illustrate the erosion control measures for the ponds (plan view and cross-sections). Use legends and notes as necessary.

4. Revise text and designs/drawings in Attachment C to discuss the flow conditions from pond 3 outlet to CP2 channel (sheet flow, concentrated flow, etc.) Discuss erosion prevention/control. Include calculations and designs as necessary.

RESPONSE:

1. ***Revised per comment.***
2. ***Appendix C1D has been revised to include a discussion of erosion control measures at the inlets and outlets (spillways and culverts) of Ponds 1, 2, and 3.***
3. ***Detail 8 on Drawing C3.11, shown in plan view and cross-section was revised to include erosion control callouts.***
4. ***Narrative edit was included in the response to comment 13.2. Drawing C3.1 was revised to better describe the outlet channel CP2, downstream of Pond 1.***

14. 1. Revise Section 2 of Attachment C1 to specify source of the rainfall data. Note that to the degree applicable, the updated NOAA Texas rainfall data in NOAA Atlas 14 needs to be used. If the rainfall data used are not NOAA Atlas 14, justify/explain the use of non-NOAA Atlas 14 data or revise to use the NOAA Atlas 14 data. Refer to the notice posted at https://www.tceq.texas.gov/downloads/permitting/waste-permits/msw/docs/rainfall-ests.pdf.

    2. Page 12 of Attachment C1, Appendix C1A contains rainfall data for Rhome, Texas. Clarify if Rhome is the closest representative rainfall data source; this data is used for both pre- and post-development analyses. Revise if necessary to reflect the correct data.

RESPONSE:

1. ***Section 2 of Attachment C1 describes the methodology, while the rainfall data source is clearly identified on pages 2 and 12 of Appendix C1B. The rainfall data used is from NOAA Atlas 14 as required by TCEQ guidance. No changes made.***
2. ***Data is based on the facility's specific latitude and longitude coordinates entered into the NOAA Atlas 14 precipitation frequency tool. When exact coordinates are entered, the tool identifies Rhome, Texas as the nearest reference location in its database for displaying results, but the actual precipitation data is interpolated for the precise site coordinates. The precipitation values are correct for the site location and were used consistently for both pre- and post-development analyses. No changes made.***

15. 1. Revise to provide design and drawings for erosion control/energy dissipation at discharge points/areas of chutes, culverts, pond outlets/spillways.

    2. Drawing C3.2 of Attachment C3 shows that pond 1 bottom will be the existing grade. Revise to briefly explain if the pond is designed to be a wet pond and how the unavailable capacity is considered in the design.

3. Based on Drawing D2.4 and other drawings of Attachment D2, the pond bottom will likely be lower than the groundwater table. Discuss the need to have a constructed bottom of appropriate liner material (with proper considerations of the pond's impact on groundwater table and the uplift by the groundwater, etc.).

4. Provide necessary liner design and construction measures.

5. Describe maintenance procedures for the pond for retaining its design capacity.

6. Revise other portions of the application for consistency with the revisions to Attachment C1.

RESPONSE:

1. ***Erosion protection at chute discharges is shown on Drawing C3.9 in Attachment C3. Refer to comment 13.2 regarding erosion protection at pond culverts and spillways.***
2. ***The narrative in Appendix C1D was revised to explain that Pond 1's bottom will be at existing grade. The explanation addresses the wet pond design and how the available capacity is considered in the design.***
3. ***The construction of Pond 1 will not significantly affect groundwater elevations since water already ponds in the vicinity of Pond 1. Further, any future increase in the highest recorded groundwater elevations will be accounted for in the design of each cell as described in Attachment D5, Section 3.***
4. ***Liner Design and construction measures are included in Attachment D.***
5. ***The narrative in Appendix C1D was revised to describe the maintenance procedures for Pond 1 that will be implemented to maintain its design capacity. The procedures include regular inspections and sediment removal as needed.***
6. ***As requested, the permit application was reviewed for consistency with the revisions to Attachment C1. No changes were required.***

16. 1. Section 3.1 of Attachment D indicates use of multiple disposal units and an additional disposal area for wet weather operations. Note that this application proposes to have just one landfill disposal unit. Explain the discrepancy and/or revise the application for consistency.

    2. Explain the meaning of "existing" used in the note to Drawing D1.4 of Attachment D1. If this is not accurate, delete "existing" from the note.

RESPONSE:

1. Attachment D Section 3.1 has been revised for clarity.
2. Existing has been deleted on the note from on Drawing D1.4.

17. Revise Attachment D, Section 3.3 of Part III to identify the location(s) where the elevation of deepest excavation (EDE) will occur and revise one plan-view drawing

to mark the EDE locations.

RESPONSE: Attachment D Section 3.3 and Drawing D1.5 have been revised as requested.

18. 1. Page 3 of Attachment D4 indicates that the landfill capacity includes waste, weekly cover and intermediate cover. Pages 2 and 4 of Attachment D4 seem to exclude intermediate cover from the landfill capacity. Explain the discrepancy and revise all portions of the application as necessary.

    2. Page 1 of Attachment D4 states that the site will initially receive waste at a rate of 750 tons per day, six days a week. Part IV SOP indicates that the facility will operate a half day on Saturdays. Briefly clarify if the assumptions in Attachment D4 need to be revised and make the revisions to reflect the correct facility operating schedule.

RESPONSE:
1. Attachment D4 Page 2 has been revised for consistency.
2. Although the site will be open for 2 hours less on Saturdays than weekdays, the waste tonnage is assumed to be the same because the waste haulers will adjust their schedule based on the operating hours.

19. Revise Drawing D3.4 of Attachment D3 to refer to Attachment D7 for more information regarding the temporary dewatering system. Ensure Drawing D3.4 contents are consistent with Attachment D7.

RESPONSE: Drawing D3.4 has been revised as requested.

20. Revise Section 4.3 of Attachment D7 to discuss necessary subgrade preparation related to conditions caused by the existing soil mining/excavation. Revise other relevant portions of the application for consistency. Cross-sections included in Attachment D2 indicate that at some areas, the liner and landfill toe structures will be constructed above the existing grades.

RESPONSE: Attachment D7 Section 4.3 has been revised as requested.

21. Revise the cover page of the geology report in volume 3 of 3, Part III, to indicate that it pertains to a new permit rather than permit amendment.

RESPONSE: The cover page has been revised as requested.

22. Revise the term transmissibility to transmissivity in the third paragraph of Section 3.1 regarding the Paluxy aquifer.

RESPONSE: Section 3.1 has been revised as requested.

23. 1. Provide discussion on the hydraulic interconnectivity of Units I and III, since the cross-sections show the Unit II aquitard to not be contiguous across the site.

    2. Provide more justification to clarify why Unit II is recognized as a significant aquitard across the site.

    3. Provide a discussion on the differences between Units I and III, particularly in their classification as separate aquifers and their characterization as distinct water bearing zones.

RESPONSE: Unit II's presence across the site has been altered by ongoing soil mining activities at the site. Where Unit II is absent, Unit I and III are in hydrogeologic communication.

Clarifying language has been added to Table 5 and Section 5.4.2 of Attachment E in response to this comment. This clarifying language has also been added to Section 1.1 of Attachment F.

24. Explain why three different lithologies, as shown in Borings: BME-2, BME-4, BME-6, BME-15, BME-17, BME-18, BME-24 and BME-26 within Unit III of the geological cross-section, have been combined as a single, cohesive hydrogeological layer.

RESPONSE: There are several different lithologies present in Unit III, all of which are granular in nature. These granular lithologies contain sand and silt of various degrees. Unit III is confined from the top and bottom by low permeability limestone of Unit II and IV. Horizontal permeability lab tests were performed on samples from Unit II and IV. The results of the Unit II and Unit IV lab testing are on the order of 10^{-8} and 10^{-9} cm/sec. Slug testing conducted on some of the Unit III piezometers yielded results on the order of 10^{-5} and 10^{-4} cm/sec, several orders of magnitude more permeable than the overlying and underlying limestone layers of Unit II and Unit IV. Groundwater preferential pathway would be through the granular materials of Unit III in order to monitor groundwater quality at the proposed facility.

25. Revise to clarify the descriptions on logs and cross-sections of lithology as being fill material. Clarify if the lithology is deposited by humans, which would be "fill", or by natural processes like sedimentary deposits, which should be called "terrace deposits" or "alluvium" instead of fill.

RESPONSE: "Fill" that is noted on logs and cross-sections was all deposited and/or altered by humans. The key to Soil Classification Terms and Symbols (page E2.3 in Appendix E2) has been updated. The symbol for "Fill" has been revised to include "Deposited by humans".

26. Further clarification is required regarding the interpretation of Unit II as a confining unit to Unit III in Section 5.4.3. Explain the interpretation of Unit III in relation to

drawings E2.87, E2.88, versus the cross section across B-B'.

RESPONSE: As discussed in response to comment #23. Where present, Unit II acts as a confining layer to Unit III. However, ongoing sand mining activities have removed Unit II in some areas of the site. The lithology of Boring BME-4 was verified. Drilling of soil borings were done utilizing drilling techniques that allow for soil sample collection for observation and characterization through visual and laboratory testing. Soil samples obtained for BME-4 were reviewed and verified that what is shown on the log is correct. Drilling differences account for the description differences shown on boring logs for BME-4 (pages E2.12 – E2.14) and P-4D. Piezometer installation was focused on drilling to target areas for proper screening of discreet intervals using cuttings to determine when selected unit was reached to set piezometer screen. No changes to the application was made as a result of this comment.

27. Although the lithological interpretation classifies gravel and sand as coarse grades, clarify in the narrative why constant head test results with back pressure, in conducting the permeability tests, are not applicable to this site. Provide a detailed justification for this conclusion, ensuring compliance with the requirements outlined in §330.63(e)(5)(B)(i).

RESPONSE: Attachment E Section 5.1 has been revised as requested.

28. An acknowledgment page should be included clearly stating that groundwater monitoring will be conducted during both the operational phase and the post-closure care period of the landfill, as required for solid waste management units in accordance with §330.401(f).

RESPONSE: The required language has been added to Section 3 of Appendix F2 as requested.

29. The lithology of Unit V displays variability in composition and thicknesses and few data points were used to make the conclusion that the groundwater in that unit flows to a very small portion of the site. Explain how the monitoring network is sufficient to accurately determine the flow of groundwater.

RESPONSE: During a telephone discussion with TCEQ staff on March 14, 2025, it was agreed upon that an additional upgradient monitoring well would be added to the groundwater monitoring network of Unit V. The following sections in Attachment F were revised to reflect the additional well proposed for Unit V: Section 3.1 and Drawings F1.1, F1.4, and F1.5.

30. The well test analysis using the Bower-Rise method for the confined aquifers shown in drawings E5.9g to E5.9w assumes radial flow, that the well only influences a small area of the aquifer, and that the aquifer is homogeneous and

isotropic. However, the aquifer's complex composition, as seen in the geological cross sections and potentiometric surface maps, reveals significant anisotropy. Provide further discussion on why the method used is appropriate for the site. Additionally, provide justification for the absence of the storativity coefficient in the data.

RESPONSE: During a telephone discussion with TCEQ staff on March 18, 2025. The conversation included a detailed discussion pertaining to Comment 30. The following responses were verbally accepted by TCEQ personnel. No revisions pertaining to Comment 30 were made.

The Bouwer-Rice (1976) equation was applied in the analysis of slug testing pursuant of hydraulic conductivity values for each water bearing zone identified by BME. The Bouwer-Rice equation can be applied to confined and unconfined aquifers with fully or partially penetrating wells. Storativity values can be neglected with this model because it assumes a quasi-steady state flow. Aquifer assumptions of "infinite areal extent" and "homogeneous and of uniform thickness" are ideal conditions applied to all models for hydraulic conductivity analysis.

The confined water bearing units (Units III and V) identified by BME do present heterogenetic lithology. AQTESOLV was utilized in the analysis of slug test data. After a conversation via email with Glenn Duffield, the author of AQTESOLV, it was conveyed that there is not a way to estimate anisotropy values directly from the test well data curve matching. To account for heterogeneity identified in Units III and V lithology, different effective porosities, correlated to the specific lithologies identified, were represented when calculating flow velocities for Units III and V (see Part III Attachment E Appendix E5 for Groundwater Velocity Calculations).

The hydrogeologic model proposed by BME establishes water bearing units composed of granular materials (Units I, III, V) confined, where present, by units of limestone (Units II and IV). Samples of the confining limestone from Units II and IV were lab-tested for horizontal permeability. The results, included in Attachment E, have permeabilities on the order of 10^{-8} and 10^{-9} cm/sec (see Part III Attachment E Appendix E6 for geotechnical testing results). Where confining Unit II is absent, proposed monitoring wells for combined Unit I/III are sufficient such that contaminant transport would be identified.

31. The landfill gas management plan shows a phased approach to installation of the gas probes. Further information is required on ensuring that gas exceedance levels remain within the permitted boundary limits before the installation of all probes.

    Include a statement acknowledging sampling for specified trace gases may be required under 330.371(j).

RESPONSE: As a Type IV landfill, the amount of landfill gas expected to be generated at the site should be minimal. This means that the distance any generated gas can

travel in a subsurface environment will also be limited. Because of this, all probes will not initially be needed to ensure that any potential migrating landfill gas is detected before it can leave the permitted boundary. Only the probes located close enough to the active waste sectors for gas to feasibly reach will be needed as each sector is developed. As such, the probe phasing is based on installing all probes within 1,000 feet of a waste sector, prior to waste acceptance in that sector.

The requested statement regarding trace gases has been added to the end of Section 3.1.4.

32. On page 8 of the Attachment G, include an additional bullet point to indicate that more frequent monitoring will be implemented at sites where gas migration is occurring or accumulating in structures.

RESPONSE: The requested language already exists in the first paragraph of Section 3.5 of Attachment G. As such, the additional bullet point is unnecessary and has not been added.

33. To comply with 330.457(e)(3) and to be consistent with Section 3.4 of Part III, Attachment D, revise Section 3.3 of Attachment D by replacing each of the two "will not exceed" with "will be."

RESPONSE: Attachment D Section 3.4 has been revised to read "will be 4H:1V or flatter".

34. Acknowledge that a copy of the post-closure plan will be placed in the operating record by the initial receipt of waste.

RESPONSE: Attachment I Section 1 has been revised as requested.

35. Add the frequency of the monitoring and maintenance activities required by the section.

RESPONSE: Attachment I Section 2.1 states that site inspections will be conducted semi-annually, maintenance will be as needed, groundwater monitoring will be semi-annual and methane monitoring will be quarterly.

36. Acknowledge that final cover for the landfill must be in accordance with Subchapter K along with the site closure plan in Attachment H.

RESPONSE: Part IV Section 8.18.6 has been revised as requested.

Sincerely,

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

Gregory W. Adams, P.E.
Principal

Attachments: Chisholm Trail Disposal Landfill – Type IV Permit Application – Response to Technical Notice of Deficiency 3

cc: Mr. Thad Owings, Vice President, Chisholm Trail Disposal, LLC

MARKED (REDLINE/STRIKEOUT) PAGES

CHISHOLM TRAIL DISPOSAL LANDFILL
WISE COUNTY, TEXAS
TCEQ PERMIT NO. MSW 2421

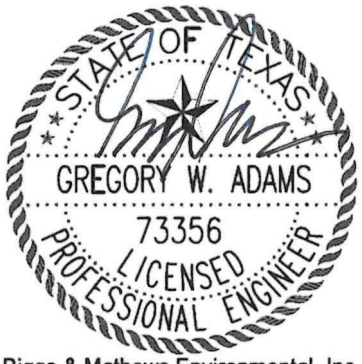
TYPE IV PERMIT APPLICATION

VOLUME 1 OF 3

Prepared for

Chisholm Trail Disposal, LLC

December 2024
Revised April 2025



Biggs & Mathews Environmental, Inc.
Firm Registration No. F-256
4/29/2025

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

CHISHOLM TRAIL DISPOSAL LANDFILL
WISE COUNTY, TEXAS
TCEQ PERMIT NO. MSW 2421

TYPE IV PERMIT APPLICATION

VOLUME 1 OF 3

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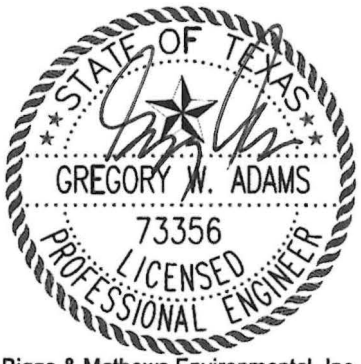

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Firm Registration No. F-256
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CHISHOLM TRAIL DISPOSAL LANDFILL
WISE COUNTY, TEXAS
TCEQ PERMIT NO. MSW 2421

TYPE IV PERMIT APPLICATION

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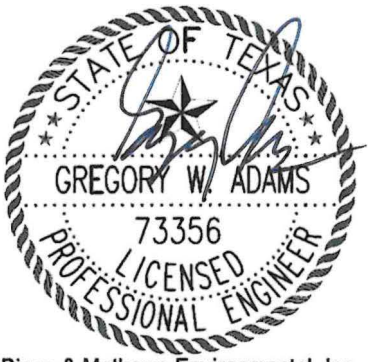
December 2024
Revised April 2025



Biggs & Mathews Environmental, Inc.
Firm Registration No. F-256
4/29/2025

Prepared by

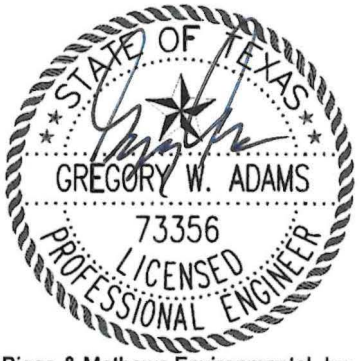
BIGGS & MATHEWS ENVIRONMENTAL
1700 Robert Road, Suite 100 • Mansfield, Texas 76063 • 817-563-1144

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

TEXAS BOARD OF PROFESSIONAL GEOSCIENTISTS
FIRM REGISTRATION NO. 50222

CHISHOLM TRAIL DISPOSAL LANDFILL
WISE COUNTY, TEXAS
TCEQ PERMIT NO. MSW 2421

TYPE IV PERMIT APPLICATION



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

4/29/2025

CONTENTS

TCEQ Use Only

TCEQ Core Data Form

For detailed instructions on completing this form, please read the Core Data Form Instructions or call 512-239-5175.

SECTION I: General Information

1. Reason for Submission (*If other is checked please describe in space provided.*)

☒ New Permit, Registration or Authorization (*Core Data Form should be submitted with the program application.*)

☐ Renewal (*Core Data Form should be submitted with the renewal form*) ☐ Other

2. Customer Reference Number (if issued)	Follow this link to search for CN or RN numbers in Central Registry**	3. Regulated Entity Reference Number (if issued)
CN 606237394		RN 111930335

SECTION II: Customer Information

4. General Customer Information	5. Effective Date for Customer Information Updates (mm/dd/yyyy)	03/24/2025

☐ New Customer ☒ Update to Customer Information ☐ Change in Regulated Entity Ownership
☐ Change in Legal Name (Verifiable with the Texas Secretary of State or Texas Comptroller of Public Accounts)

The Customer Name submitted here may be updated automatically based on what is current and active with the Texas Secretary of State (SOS) or Texas Comptroller of Public Accounts (CPA).

6. Customer Legal Name (If an individual, print last name first: eg: Doe, John)	If new Customer, enter previous Customer below:
Chisholm Trail Disposal, LLC	

7. TX SOS/CPA Filing Number	8. TX State Tax ID (11 digits)	9. Federal Tax ID (9 digits)	10. DUNS Number (if applicable)
0804977428	32088911816		

11. Type of Customer: ☒ Corporation ☐ Individual Partnership: ☐ General ☐ Limited
Government: ☐ City ☐ County ☐ Federal ☐ Local ☐ State ☐ Other ☐ Sole Proprietorship ☐ Other:

12. Number of Employees
☒ 0-20 ☐ 21-100 ☐ 101-250 ☐ 251-500 ☐ 501 and higher

13. Independently Owned and Operated?
☐ Yes ☒ No

14. Customer Role (Proposed or Actual) – *as it relates to the Regulated Entity listed on this form. Please check one of the following*

☐ Owner ☐ Operator ☒ Owner & Operator
☐ Occupational Licensee ☐ Responsible Party ☐ VCP/BSA Applicant ☐ Other:

15. Mailing Address:								
	225 Reformation Parkway							
	Ste. 200							
	City	Canton	State	GA	ZIP	30114	ZIP + 4	1705

16. Country Mailing Information (if outside USA)	17. E-Mail Address (if applicable)
	[redacted]

18. Telephone Number	19. Extension or Code	20. Fax Number *(if applicable)*
(770) 720-2717		( ) -

SECTION III: Regulated Entity Information

21. General Regulated Entity Information *(If 'New Regulated Entity" is selected, a new permit application is also required.)*

☐ New Regulated Entity ☐ Update to Regulated Entity Name ☒ Update to Regulated Entity Information

The Regulated Entity Name submitted may be updated, in order to meet TCEQ Core Data Standards (removal of organizational endings such as Inc, LP, or LLC).

22. Regulated Entity Name *(Enter name of the site where the regulated action is taking place.)*

Chisholm Trail Disposal Landfill

23. Street Address of the Regulated Entity: ***(No PO Boxes)***	291 P.R. 4674							
	City	Aurora	**State**	TX	**ZIP**	76078	**ZIP + 4**	
24. County	Wise							

If no Street Address is provided, fields 25-28 are required.

25. Description to Physical Location:					
26. Nearest City			**State**		**Nearest ZIP Code**

Latitude/Longitude are required and may be added/updated to meet TCEQ Core Data Standards. (Geocoding of the Physical Address may be used to supply coordinates where none have been provided or to gain accuracy).

27. Latitude (N) In Decimal:	33.05116		**28. Longitude (W) In Decimal:**	-97.5398	
Degrees	Minutes	Seconds	Degrees	Minutes	Seconds
33	03	04.1760	-97	32	23.2800

29. Primary SIC Code (4 digits)	**30. Secondary SIC Code** (4 digits)	**31. Primary NAICS Code** (5 or 6 digits)	**32. Secondary NAICS Code** (5 or 6 digits)
4953		562212	

33. What is the Primary Business of this entity? *(Do not repeat the SIC or NAICS description.)*

Disposal of municipal solid waste.

34. Mailing Address:	**225 Reformation Parkway**							
	Ste. 200							
	City	**Canton**	**State**	**GA**	**ZIP**	**30114**	**ZIP + 4**	**1705**
35. E-Mail Address:	[redacted]							

36. Telephone Number	**37. Extension or Code**	**38. Fax Number** *(if applicable)*
(770) 720-2717		( ) -

39. TCEQ Programs and ID Numbers Check all Programs and write in the permits/registration numbers that will be affected by the updates submitted on this form. See the Core Data Form instructions for additional guidance.

☐ Dam Safety	☐ Districts	☐ Edwards Aquifer	☐ Emissions Inventory Air	☐ Industrial Hazardous Waste
☒ Municipal Solid Waste	☐ New Source Review Air	☐ OSSF	☐ Petroleum Storage Tank	☐ PWS
2421				
☐ Sludge	☐ Storm Water	☐ Title V Air	☐ Tires	☐ Used Oil
☐ Voluntary Cleanup	☐ Wastewater	☐ Wastewater Agriculture	☐ Water Rights	☐ Other:

SECTION IV: Preparer Information

40. Name:	Gregory W. Adams, P.E.	**41. Title:**	Principal Engineer

42. Telephone Number	**43. Ext./Code**	**44. Fax Number**	**45. E-Mail Address**
(817) 563-1144		( ) -	[redacted]

SECTION V: Authorized Signature

46. By my signature below, I certify, to the best of my knowledge, that the information provided in this form is true and complete, and that I have signature authority to submit this form on behalf of the entity specified in Section II, Field 6 and/or as required for the updates to the ID numbers identified in field 39.

Company:	Chisholm Trail Disposal, LLC	**Job Title:**	Vice President
Name *(In Print):*	Thad Owings	**Phone:**	(770) 720- **2717**
Signature:	Thad Owings	**Date:**	4/29/2025

Administrative and Technical Review Checklist for Municipal Solid Waste (MSW) Permits, Registrations and Amendments

This checklist is designed to provide guidance for the Municipal Solid Waste (MSW) rules found in Title 30 Texas Administrative Code (30 TAC) Chapter 330, for Type I, IV and V registration, permit, and permit amendment applications. Areas of the checklist that are shaded in gray are for information purposes only.

Please fill out application information before selecting and filling out a checklist.

Applicant Information				
Company:	Chisholm Trail Disposal, LLC			
First name:	Thad	Last name	Owings	
Applicant Title:	Vice President		Prefix:	Mr
Street Address:	225 Reformation Parkway, Suite 200			
City:	Canton	State: GA	Zip code:	30114
Applicant E-Mail:	[redacted]			

Consultant Information				
First name:	Gregory	Last name:	Adams	
Consultant Title:	Principal		Prefix:	Mr
Consultant Firm:	Biggs and Mathews Environmental, Inc.			
Consultant Address:	1700 Robert Road			
City:	Mansfield	State: TX	Zip code:	76063
Consultant E-Mail:	[redacted]			

Application Information			
Facility Name:	Chisholm Trail Disposal Landfill		
Application Date	12/16/2024		
CN:	606237394	MSW ID:	2421
RN:	111930335	Authorization Type:	Permit
County:	Wise	Application Type:	New Permit

Texas Commission on Environmental Quality

Part I Application Form for New Permit, Permit Amendment, or Registration for a Municipal Solid Waste Facility

Instructions for completing this Part I Application Form are provided in TCEQ 00650-instr[1]. Include a Core Data Form (TCEQ 10400)[2] with the application for the facility owner, and Core Data Forms for the operator and property owner if different from the facility owner. If you have questions, contact the Municipal Solid Waste (MSW) Permits Section by email to mswper@tceq.texas.gov, or by phone at 512-239-2335. Rules cited on this form are in Title 30 Texas Administrative Code (30 TAC) and may be viewed online at www.tceq.texas.gov/goto/view-30tac.

Application Tracking Information

Facility Regulated Entity Name[3]:
Chisholm Trail Disposal Landfill

Site Operator (Permittee or Registrant Name)[4]:
Chisholm Trail Disposal, LLC

MSW Authorization Number: 2421

Initial Submission Date: 02/26/2024

Revision Date: 04/30/2025

Application Data

1. Submission Type

☐ Initial Submission ☒ Notice of Deficiency (NOD) Response

2. Authorization Type

☒ Permit ☐ Registration

3. Application Type

☒ New Permit

☐ Permit Major Amendment ☐ Permit Limited Scope Major Amendment

☐ New Registration

[1] www.tceq.texas.gov/downloads/permitting/waste-permits/msw/forms/00650-instr.pdf
[2] www.tceq.texas.gov/goto/coredata
[3] Facility Regulated Entity Name must match the Regulated Entity Name indicated on the TCEQ Core Data Form.
[4] Site Operator is defined in 30 TAC 330.3(148) as the holder of, or the applicant for, an authorization (or license) for a municipal solid waste facility.

17. Facility Contact Information

Site Operator (Permittee or Registrant)

Name: Chisholm Trail Disposal, LLC

Customer Reference Number: **CN** 606237394

Contact Name: Thad Owings Title: Vice President

Mailing Address: 225 Reformation Parkway, Suite 200

City: Canton County: Cherokee State: GA Zip Code: 30114

Phone Number: 770-720-2717

Email Address: [redacted]

Operator (if different from *Site Operator*)

Name: _____

Customer Reference Number: **CN** _____

Contact Name: _____ Title: _____

Mailing Address: _____

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

Phone Number: _____

Email Address: _____

Consultant (if applicable)

Firm Name: Biggs and Mathews Environmental, Inc.

Consultant Name: Gregory W. Adams, P.E.

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

Contact Name: Gregory W. Adams, P.E. Title: Principal

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: Corporation Service Company d/b/a CSC

Mailing Address: 211 E. 7th Street, Suite 620

City: Austin County: Travis State: TX Zip Code: 78701

Phone Number: 512-397-1550

Email Address: [redacted]

PAGE REVISION DATE: 04/30/2025

Applicant Signature Page

Site Operator (Permittee or Registrant Name) 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: Thad Owings Title: Vice President

Email Address: [redacted]

Signature: Thad Owings Date: 4-30-25

Authorization by Facility Owner for Operator to Submit Application

To be completed by the facility owner if the application is submitted by an operator who is not the facility owner.

I am the owner of the facility that is the subject of this application, and authorize the operator, _____ to submit this application pursuant to 30 TAC 305.43(c).

Name: _____ Title: _____

Email Address: _____

Signature: _____ Date: _____

Notary

SUBSCRIBED AND SWORN to before me by the said Thad Owings

On this 30th day of April, 2025

My commission expires on the 27th day of Jan., 2029

Cherokee County, GA

Notary Public in and for

Joy Hammonds (notary's jurisdiction, including county and state)

Note: Application Must Bear Signature & Seal of Notary Public

JOY HAMMONDS NOTARY PUBLIC CHEROKEE COUNTY, GEORGIA MY COMMISSION EXPIRES JANUARY 07, 2029

CHISHOLM TRAIL DISPOSAL LANDFILL
WISE COUNTY, TEXAS
TCEQ PERMIT NO. MSW 2421

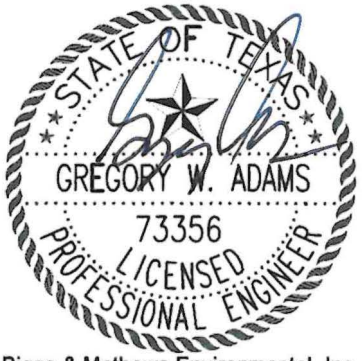
TYPE IV PERMIT APPLICATION

VOLUME 2 OF 3

Prepared for

Chisholm Trail Disposal, LLC

December 2024
Revised April 2025



Biggs & Mathews Environmental, Inc.
Firm Registration No. F-256
4/29/2025

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

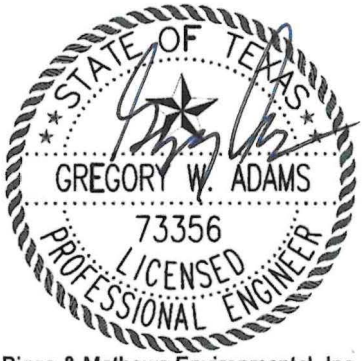
TEXAS BOARD OF PROFESSIONAL GEOSCIENTISTS
FIRM REGISTRATION NO. 50222

CHISHOLM TRAIL DISPOSAL LANDFILL
WISE COUNTY, TEXAS
TCEQ PERMIT NO. MSW 2421

TYPE IV PERMIT APPLICATION

VOLUME 2 OF 3

CONTENTS



Biggs & Mathews Environmental, Inc.
Firm Registration No. F-256
4/29/2025

CHISHOLM TRAIL DISPOSAL LANDFILL
WISE COUNTY, TEXAS
TCEQ PERMIT NO. MSW 2421

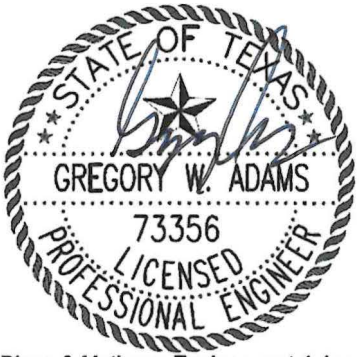
TYPE IV PERMIT APPLICATION

PART III
FACILITY INVESTIGATION AND DESIGN

Prepared for

CHISHOLM TRAIL DISPOSAL, LLC

December 2024
Revised April 2025



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

4/29/2025

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
TEXAS BOARD OF PROFESSIONAL GEOSCIENTISTS
FIRM REGISTRATION NO. 50222

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

4/29/2025

CONTENTS

CHISHOLM TRAIL DISPOSAL LANDFILL
WISE COUNTY, TEXAS
TCEQ PERMIT NO. MSW 2421

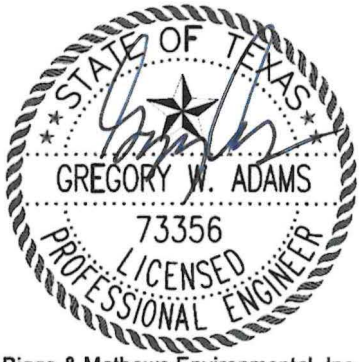
TYPE IV PERMIT APPLICATION

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

Prepared for

Chisholm Trail Disposal, LLC

December 2024
Revised April 2025



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Firm Registration No. F-256
4/29/2025

Prepared by

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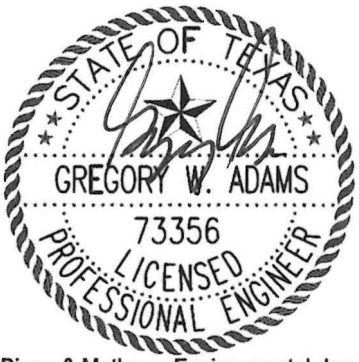
FIRM REGISTRATION NO. 50222



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

4/29/2025

CONTENTS

1 FACILITY ACCESS

30 TAC 330.63(b)(1)

Access to the Chisholm Trail Disposal (CTD) Landfill will be provided by an entrance road from CR 4668 approximately 600 feet west of the intersection of CR 4668 and CR 4659. Access to the facility will be controlled by a perimeter fence along the permit boundary ~~or property boundary~~ and locking gate at the site entrance. The fence and gate will prevent the entry of livestock, protect the public from exposure to potential health and safety hazards, and discourage unauthorized entry or uncontrolled disposal of solid waste or prohibited materials.

Entry to the active portion of the site will be restricted to designated personnel, approved waste haulers, properly identified persons whose entry is authorized by site management, and TCEQ personnel. Visitors may be allowed on the active area only when accompanied by a site representative. Signs will be located along the entrance road directing traffic to the gatehouse. The gate attendant will restrict site access to authorized vehicles and direct these vehicles appropriately. Waste hauling vehicles will be directed to appropriate fill areas by signs located along the landfill haul road and access road. These vehicles will deposit their loads and depart the site. Private, commercial, or public solid waste vehicles will not be allowed access to any areas other than the active portion of the landfill. Site personnel will provide traffic directions as necessary to facilitate safe movement of vehicles. Within the site, signs will be placed along the landfill haul road and access road at a frequency adequate for users to be able to determine where the disposal area locations are, and which roads are to be used. Roads not being used for access to disposal areas will be blocked or otherwise marked for no entry.

2 WASTE MOVEMENT

30 TAC 330.63(b)(2)

The CTD Landfill will dispose of municipal solid waste and Class 2 and Class 3 industrial solid wastes consisting of construction or demolition waste, brush, and rubbish as defined by §330.3. The landfill will not accept for disposal putrescible wastes, conditionally exempt small-quantity generator waste, household wastes, grease or trap wastes, sludges, septage, or other liquid wastes, lead acid storage batteries, used motor vehicle oil, used oil filters whole used or scrap tires, refrigerators, freezers, air conditioners or other items containing chlorinated fluorocarbons (CFC), bulk or noncontainerized liquid waste from non-household sources, regulated hazardous waste, polychlorinated biphenyls (PCB) waste, radioactive materials, or other wastes prohibited by TCEQ regulations. Procedures for waste acceptance, handling, processing, and disposal are provided in Part IV.

Waste disposal facilities include a waste disposal area, large item staging area, reusable materials staging area, citizen's convenience area, and wood waste mulching area. Appendix B1 includes a waste flow diagram, schematic drawings, and details that depict disposal and materials staging activities.

Waste movement through the facility is depicted on Drawing B.1 and a waste disposal material staging plan is provided on Drawing B.2. As waste enters the facility via the entrance road, the attendant will observe the incoming waste, conduct waste screening and weighing, and document incoming waste. The attendant will be familiar with the rules and regulations governing the various types of waste that can or cannot be accepted into this facility and will direct the waste hauler to the appropriate waste disposal or material staging area. The site personnel will also have the authority to reject prohibited wastes and have the rejected waste removed by the waste haul vehicle or transporter immediately upon discovery. Trained personnel will observe waste unloading at the active working face and large item staging area and will have the authority and responsibility to reject loads which contain prohibited wastes. The working face personnel will also have the authority to have unauthorized and prohibited waste removed by the waste haul vehicle or transporter immediately upon discovery.

The waste disposal area will have a constructed liner system as described in Attachment D. A staging area for large items and white goods and a wood waste mulching area may be provided over lined areas near the active working face. The large item staging area is shown on Drawing B.3. Large items and white goods include items such as ovens, dishwashers, freezers, air conditioners, and other large items. Runon or runoff from the area will be contained within the active area and handled as contaminated water, as discussed in Part IV. These items will be disposed of after CFCs have been removed in accordance with all applicable regulatory requirements and within 10 days of acceptance at the facility. The wood waste mulching area will include source-separated yard trimmings, brush, and clean wood materials. Materials will be chipped and mulched in small piles and will be managed to prevent fire, safety, or health hazards in accordance 30 TAC §330.209(a). Periodically, a third party contractor will be called to the site to grind and transport the wood waste material off-site for re-use. Wood waste mulch will be

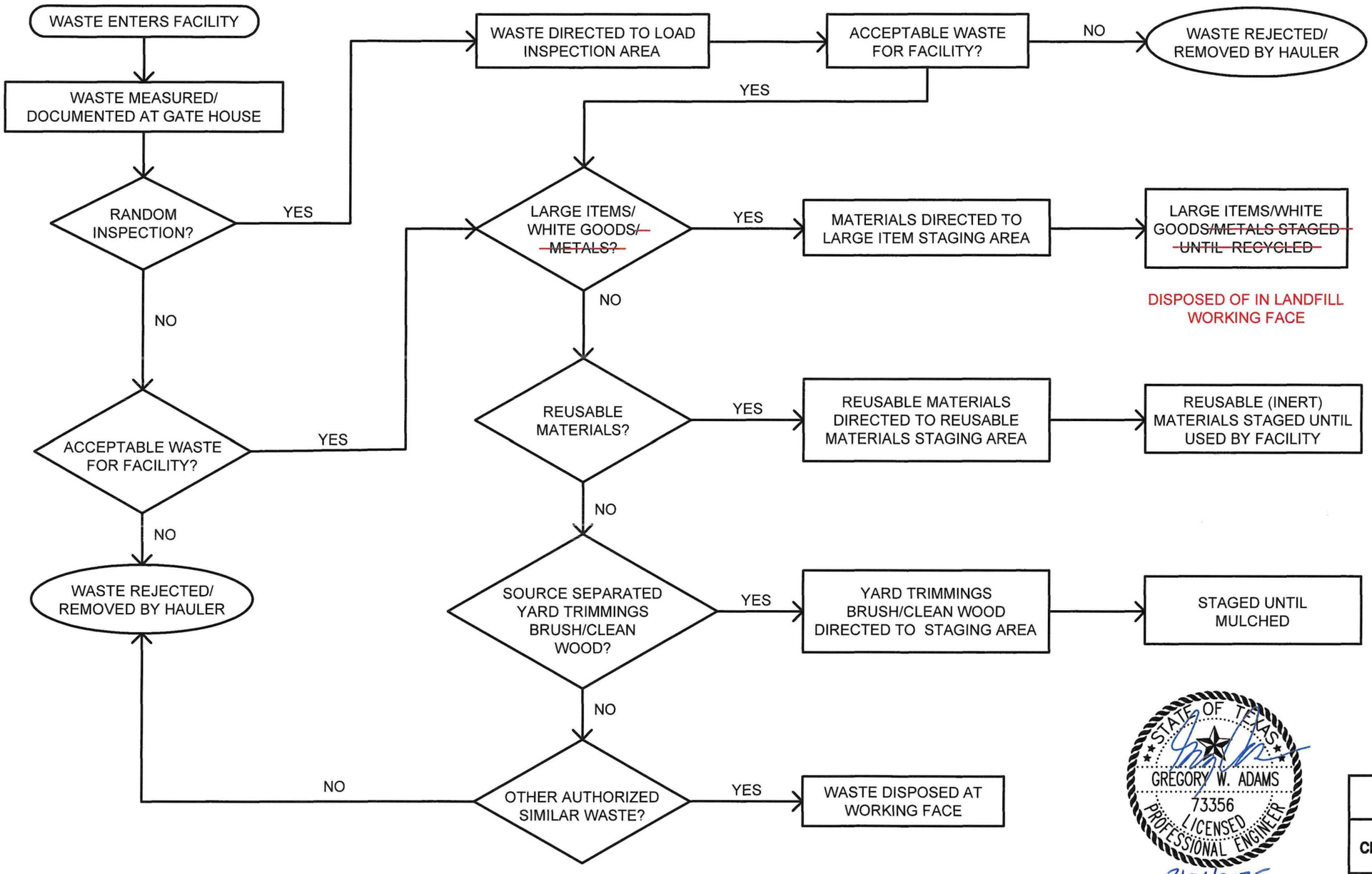
re-used within the facility or transported for off-site re-use within 90 days of acceptance at the facility.

Source-separated inert materials such as brick, concrete, rubble, aggregate, and reclaimed asphalt pavement may be staged at the facility for use on facility access roads, staging areas, and drainage structures. The reusable materials staging area will be located above existing lined areas and will be relocated periodically as the active working face moves. The size of the stockpiles will vary depending on the amount of materials received. Since brick, concrete, rubble, aggregate materials, and reclaimed asphalt pavement are inert, their staging will not create a public health hazard or nuisance, and separate management of runon and runoff from rainfall in this area will not be required. Since these inert materials will continuously be reused for site operations, there is no time limit on the staging of these materials. Reclaimed asphalt pavement that contains asbestos will not be used and will not be accepted.

The Citizen's Convenience Area will be located within limits of the waste management unit beside the access road~~, past the scale house~~. The Citizen's Convenience Area will consist of 30 cy roll off boxes as depicted on Drawing B.4. The roll off boxes will be emptied at the working face.

CHISHOLM TRAIL DISPOSAL LANDFILL

APPENDIX B1
DRAWINGS



STATE OF TEXAS
GREGORY W. ADAMS
73356
LICENSED
PROFESSIONAL ENGINEER
3/24/2025

FOR PERMITTING PURPOSES

REVISIONS		
REV	DATE	DESCRIPTION

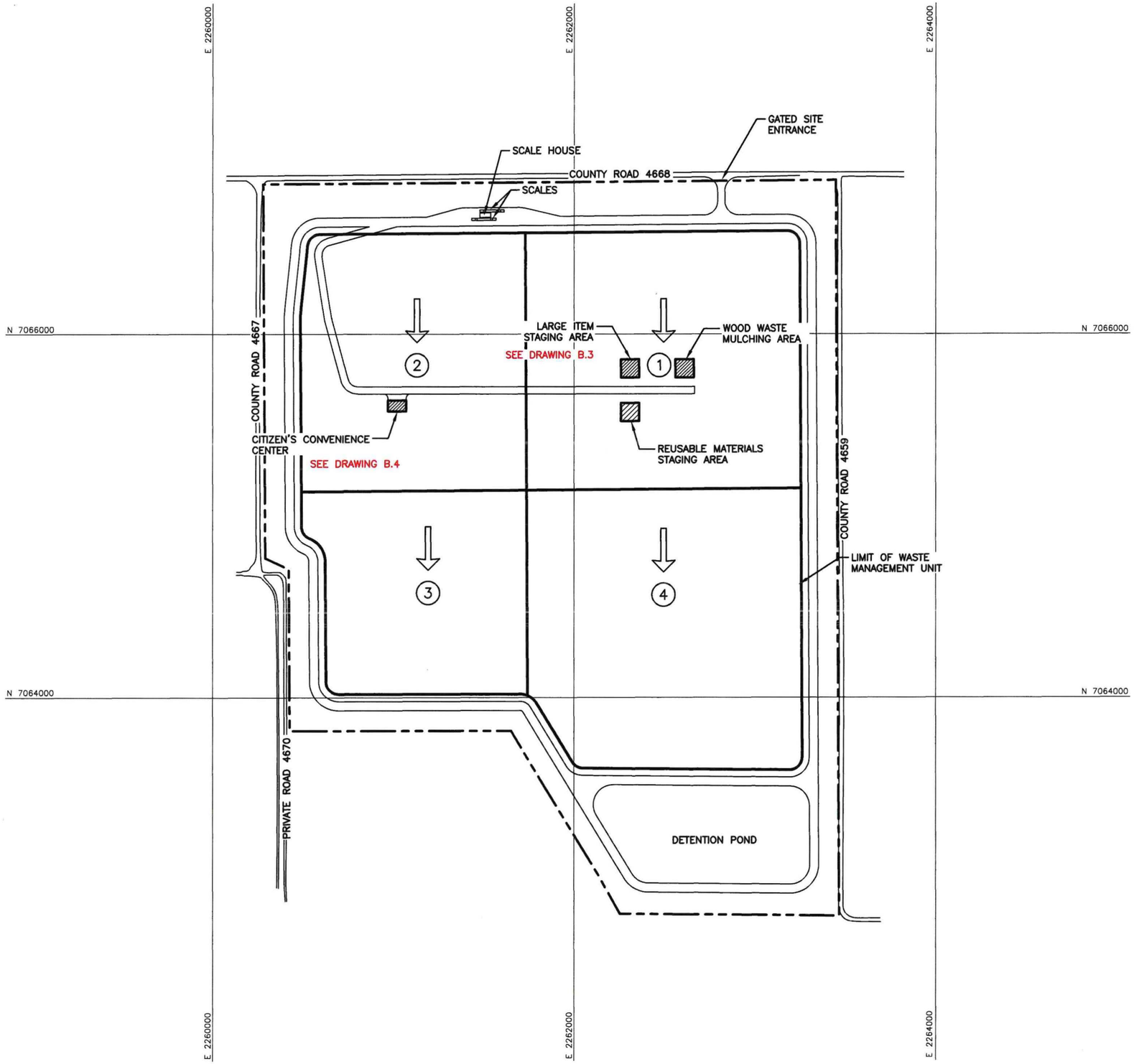
WASTE MOVEMENT FLOW DIAGRAM

CHISHOLM TRAIL DISPOSAL, LLC
CHISHOLM TRAIL DISPOSAL 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

DRAWING
B.1

O:\Green Group\Wise County\Solid Waste\Type IV\P\Drawings\AIT B\(redline)B.1-WasteFlowDiagram.dwg Layout: Layout1 User: gwhite



0 300 600
SCALE IN FEET

LEGEND

- PERMIT BOUNDARY
- WASTE MANAGEMENT UNIT
- N 7062000 — STATE PLANE COORDINATES
- (1) — SECTOR NUMBER
- DEVELOPMENT DIRECTION

NOTE(S):

1. SECTOR 1, 2, 3 AND 4 WILL BE DEVELOPED IN SEQUENTIAL ORDER.
2. THE LARGE ITEM STAGING AREA WILL BE LOCATED OVER LINED AREAS AND WILL BE RELOCATED PERIODICALLY AS THE SITE IS DEVELOPED.
3. THE REUSABLE MATERIALS STAGING AREA WILL BE LOCATED ~~WITHIN THE LANDFILL FOOTPRINT~~ AND WILL BE RELOCATED PERIODICALLY AS THE SITE IS DEVELOPED.
4. THE WOOD WASTE MULCHING AREA WILL BE LOCATED WITHIN ~~THE LANDFILL FOOTPRINT~~ AND WILL BE RELOCATED PERIODICALLY AS THE SITE IS DEVELOPED. REFER TO PART IV FOR OPERATIONAL PROVISIONS.
5. THE CITIZEN'S CONVENIENCE CENTER WILL BE LOCATED WITHIN THE LIMITS OF THE WASTE MANAGEMENT UNIT AND WILL BE RELOCATED AS THE SITE IS DEVELOPED. REFER TO PART IV FOR OPERATIONAL PROVISIONS.

OVER LINED AREAS

THE LIMITS OF THE WASTE MANAGEMENT LIMITS

STATE OF TEXAS
GREGORY W. ADAMS
73356
LICENSED
PROFESSIONAL ENGINEER
3/24/2025

FOR PERMITTING PURPOSES

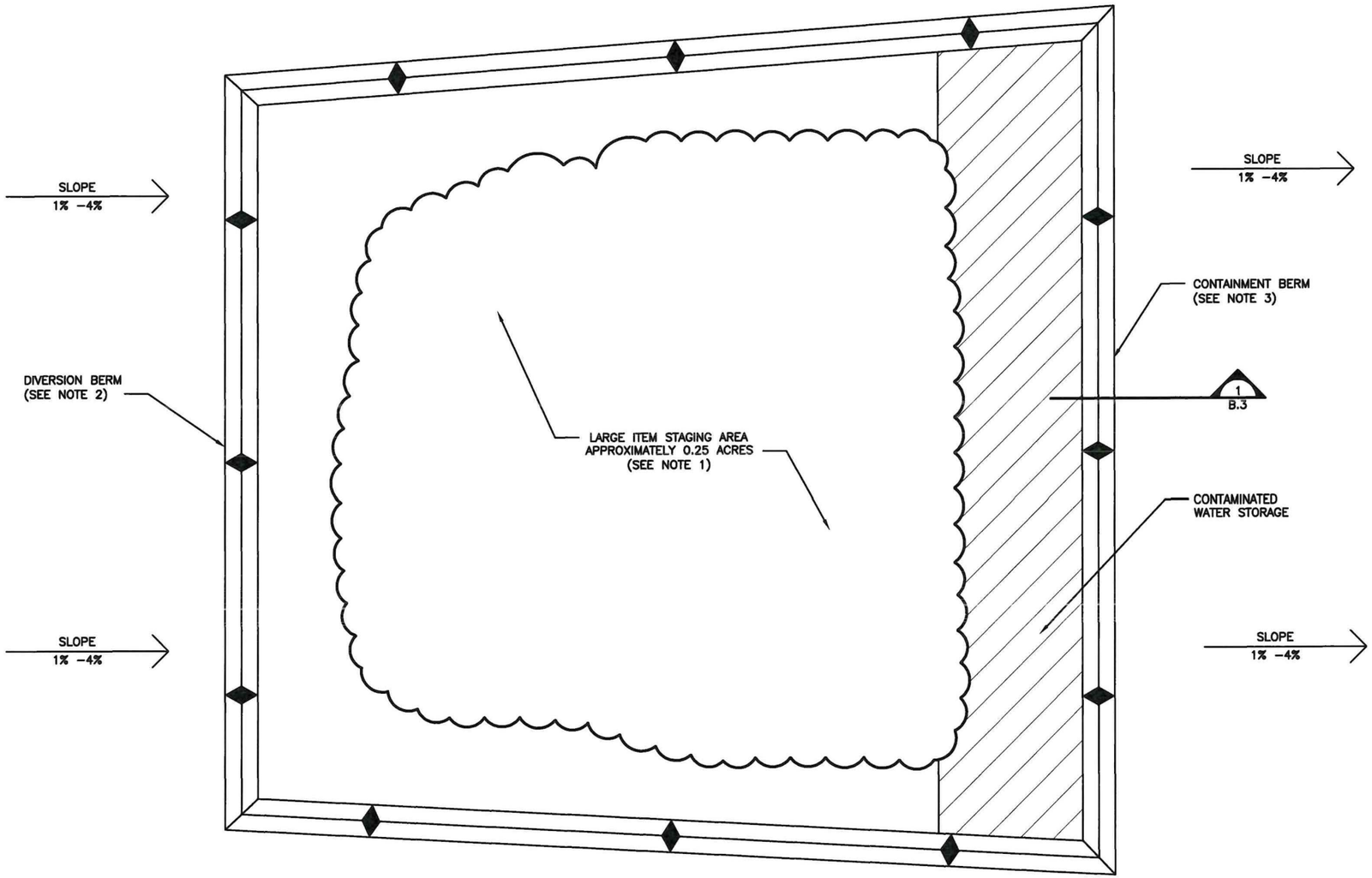
REVISIONS			
REV	DATE	DESCRIPTION	DWN BY

WASTE DISPOSAL AND MATERIAL STAGING SCHEMATIC PLAN

CHISHOLM TRAIL DISPOSAL, LLC
CHISHOLM TRAIL DISPOSAL LANDFILL

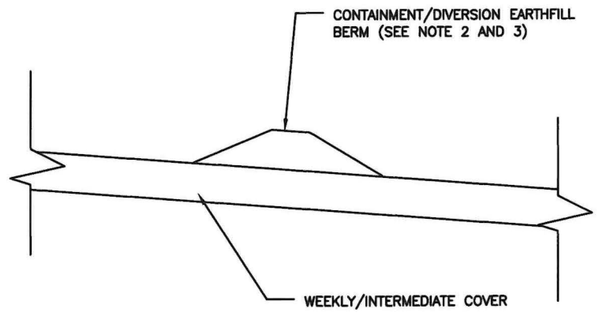
BME
BIGGS & MATHEWS ENVIRONMENTAL
1700 ROBERT ROAD, STE. 100
MANSFIELD, TEXAS 76063
817-563-1144
TBPE FIRM NO. F-256
TBPG FIRM NO. 50222

DRAWING
B.2



LARGE ITEM STAGING AREA

NOT TO SCALE



CONTAINMENT BERM SECTION 1 B.3

NTS

NOTES:

1. LARGE ITEMS MAY BE STAGED OVER EXISTING LINED AREAS PRIOR TO RECYCLING OR DISPOSAL. MATERIALS WILL BE PROVIDED WITH RUN ON AND RUN OFF CONTROLS FOR THE 25 YEAR 24 HOUR RAINFALL EVENT.
2. WHEN PRACTICAL, MATERIALS WILL BE STORED IN AREAS WITH POSITIVE DRAINAGE. WHEN NECESSARY DIVERSION BERMS WILL BE PROVIDED TO DIVERT SURFACE WATER. REFER TO PART III, ATTACHMENT D6, FOR DIVERSION BERM SIZING.
3. REFER TO PART III, ATTACHMENT D6, FOR CONTAINMENT BERM SIZING.
4. REFER TO PART IV SECTION 8.26.1 FOR THE DESIGN AND OPERATION PROVISIONS.

STATE OF TEXAS
GREGORY W. ADAMS
73356
LICENSED
PROFESSIONAL ENGINEER

3/24/2025

FOR PERMITTING PURPOSES

REVISIONS		
REV	DATE	DESCRIPTION

LARGE ITEM STAGING AREA

CHISHOLM TRAIL DISPOSAL, LLC
CHISHOLM TRAIL DISPOSAL 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

DRAWING
B.3

CHISHOLM TRAIL DISPOSAL LANDFILL
WISE COUNTY, TEXAS
TCEQ PERMIT NO. MSW 2421

TYPE IV PERMIT APPLICATION

PART III – FACILITY INVESTIGATION AND DESIGN
ATTACHMENT C
FACILITY SURFACE WATER DRAINAGE REPORT

Prepared for

Chisholm Trail Disposal, LLC

December 2024
Revised April 2025

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

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

4/29/2025

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

CONTENTS

1 FACILITY SURFACE WATER DRAINAGE REPORT

30 TAC §330.63(c) and §§330.301-330.307

The facility surface water drainage report has been prepared consistent with the requirements of §330.63(c) and §330.301 through 330.307. The facility design complies with the requirements of §330.303(a)-(b) concerning the management of runon and runoff during peak discharge of a 25-year rainfall event, the prevention of off-site discharge of waste and feedstock materials, and the control of surface water discharge in and around the facility.

1.1 Drainage Analysis and Design

The drainage analysis and design of the facility includes calculations and demonstrations consistent with the requirements of §330.63(c), and §330.301-330.305. The attachment includes a comparison of surface water runoff from the existing condition to the postdevelopment condition at each location where surface water enters or exits the permit boundary for the 25-year, 24-hour rainfall event. The existing condition for this evaluation is defined as the current existing site conditions. The postdevelopment condition for this evaluation is defined as the landfill completion plan. The comparison between the existing condition and the postdevelopment condition, included in Attachment C1, Section 7, demonstrates that the proposed landfill will not adversely ~~after~~ alter the existing drainage patterns. In addition, this attachment includes the drainage design for the final cover system, drainage swales, chutes, perimeter channels, and detention ponds. The drainage analysis is provided in Attachment C1.

1.2 Flood Control Analysis

A flood control analysis consistent with the requirements of §330.63(c)(2) and §§330.301-330.307 demonstrates that the proposed landfill will not adversely impact the flooding conditions of the receiving channel and that the landfill footprint will not be located within the 100-year floodplain. Since the waste management unit will not be located within the 100-year floodplain, the levees referenced in §330.307 are not necessary to protect the facility from a 100-year frequency flood or otherwise prevent the washout of solid waste from the facility. The flood control analysis is provided in Attachment C2.

1.3 Drainage System Plans and Details

Attachment C3 provides the plans and details for the proposed drainage system consistent with §330.63(c) and §§330.301-330.305.

CHISHOLM TRAIL DISPOSAL LANDFILL
WISE COUNTY, TEXAS
TCEQ PERMIT NO. MSW 2421

TYPE IV PERMIT APPLICATION

PART III – FACILITY INVESTIGATION AND DESIGN
ATTACHMENT C1
DRAINAGE ANALYSIS AND DESIGN

Prepared for

Chisholm Trail Disposal, LLC

December 2024
Revised April 2025

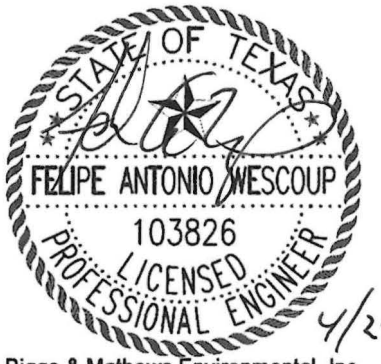
Biggs & Mathews Environmental, Inc.
Firm Registration No. F-256

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



4/29/2025

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

CONTENTS

3 EXISTING CONDITION

The permit boundary, as shown in Appendix C1A on Drawing C1A.1, was used to evaluate the existing condition and postdevelopment runoff conditions. The postdevelopment condition runoff summary is shown on Drawing C1A.2. The existing condition hydrology calculations are provided in Appendix C1B. Discharge values at the comparison points along the permit boundary, as shown on Drawing C1A.1, were determined for the existing condition. Under existing conditions, only drainage area CA1 contributes surface runoff to the permit boundary at CP1. Stormwater from drainage area CA2 is retained in onsite ponds and depressions. The industrial stormwater permit for the soil mining operation allows pumping water to the West Fork Trinity River at CP2. The industrial stormwater permit does not specify a maximum discharge flow rate at CP2.

Discharge points CP1 and CP2 are located outside of the 100-year floodplain as shown on Drawings C1A.1 and C1B.1. The facility permit boundary was intentionally established outside of the FEMA-designated 100-year floodplain. Since both discharge points are outside of the 100-year floodplain, site surface discharges will not be hindered by the 100-year flood.

Comparison point CP3 is a cross-section location on the West Fork Trinity River. A regional analysis of the West Fork Trinity River was performed at a section immediately south of the site. This analysis establishes a baseline for evaluating the relative contribution of postdevelopment stormwater discharges to the river.

7 EXISTING CONDITION /POSTDEVELOPMENT COMPARISON

30 TAC §330.63(c)(1)(D)(iii) and §330.305(a)

Consistent with 30 TAC §330.63(c)(1)(D)(iii) and §330.305(a), the proposed landfill development will not adversely alter existing drainage patterns. A comparison of the existing and postdevelopment drainage conditions is included in Appendix C1A. Supporting calculations are presented in Appendix C1B and C1C.

For the postdevelopment site configuration shown on Drawing C1C.1, the stormwater outfall locations along the proposed permit boundary CP1 and CP2 remain consistent with the existing locations shown on Drawing C1B.1. The existing condition and postdevelopment surface water runoff has been evaluated for the peak flow rate, volume of runoff, and peak velocity at each of these comparison points. A comparison table is included in Appendix C1A. The table also includes a summary of a regional drainage analysis of the West Fork Trinity River at a cross-section located immediately south of the site, shown and identified as CP3.

The existing site is currently being mined for construction materials. While there is evidence of historical discharges from the site at comparison point CP2, for purposes of this evaluation and to demonstrate the proposed landfill will not adversely alter existing drainage patterns, the existing condition discharge at CP2 was assumed to be zero, with all stormwater from a 25-year, 24-hour storm collected on-site in existing ponds and depressions. This represents a conservative approach for this analysis; although, some discharges will continue to occur at this location prior to landfill development, as authorized by the industrial stormwater discharge permit for the mining operation.

~~Discharges from CP1 flow overland into the floodplain of the West Fork Trinity River just south of the site in both the existing and postdevelopment conditions.~~ Discharges from CP1 maintain the existing overland flow characteristic into the floodplain of the West Fork Trinity River just south of the site in both the existing and postdevelopment conditions. The peak flow rate and volume will increase slightly at CP1. However, this change will not result in adverse alterations because the postdevelopment velocity is maintained at a low, non-erodible velocity, well below the typical erosive threshold of 5 feet per second, and the change in volume is released at a rate that will not adversely alter existing drainage patterns.

In the postdevelopment condition, discharges will occur from CP2 during a 25-year, 24-hour storm event. Such discharges will be routed from CP2 to the floodplain of the West Fork Trinity River in a channel. The velocity in the channel will remain well below an erodible velocity of 5 fps. The channel will be sized to contain the peak flow from a 25 year, 24-hour storm and will be located entirely within property to be owned by Chisholm Trail Disposal, LLC. To further evaluate the impact of postdevelopment condition discharges from the site, a regional hydrologic analysis of the West Fork Trinity River was conducted at cross-section CP3. The analysis shows that the additional postdevelopment discharges from the site will increase the river's 25-year, 24-hour peak flow rate by less than 0.025% and its volume by less than 0.06%. These changes will not adversely alter drainage patterns of the West Fork Trinity River.

Given that the proposed landfill development (1) will not change existing drainage discharge locations and (2) will not significantly increase the peak flow rate or volume in the West Fork Trinity River, and that (3) the postdevelopment discharges from CP1 will continue to flow overland into the floodplain of the West Fork Trinity River and (4) the discharges from CP2 will flow in a channel on property to be owned by Chisholm Trail Disposal, LLC prior to entering the West Fork Trinity River

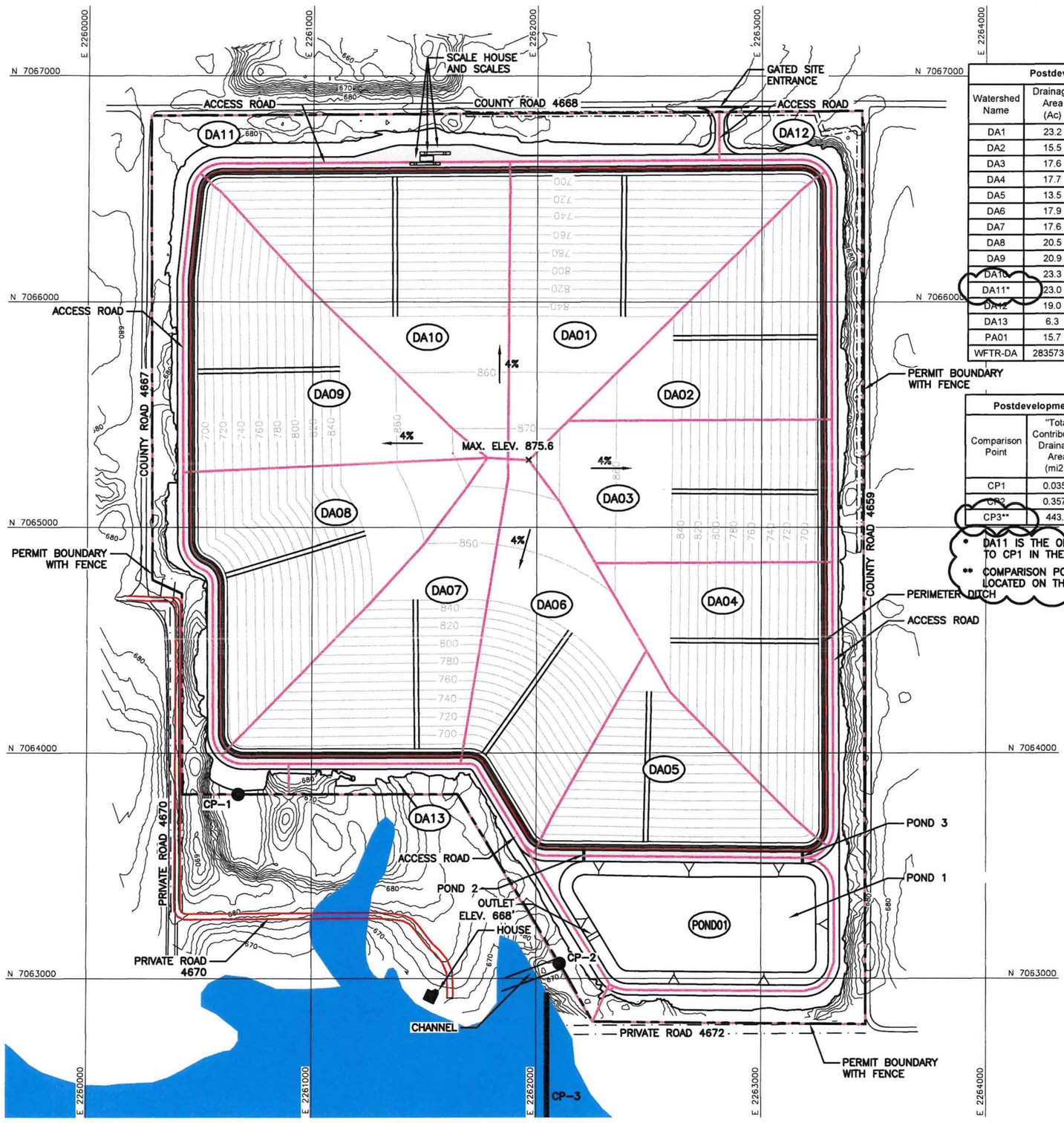
floodplain, it is concluded that the proposed landfill development will not adversely alter existing drainage patterns consistent with §330.305(a).

8 CONCLUSIONS

- The drainage design criteria and analyses used for these drainage analyses satisfy the requirements of 30 TAC Chapter 330.
- The final cover drainage structures (swales, chutes) are designed in accordance with the rules to convey peak flow rates from the 25-year, 24-hour rainfall event.
- Perimeter channels are designed in accordance with the rules for the 25-year, 24-hour rainfall event.
- Detention pond capacity and outlet are designed in accordance with the rules for the 25-year, 24-hour rainfall event.
- Erosion will be minimized by using Best Management Practices.
- The proposed landfill development will not adversely alter existing drainage patterns.

CHISHOLM TRAIL DISPOSAL LANDFILL

APPENDIX C1A
EXISTING CONDITION/POSTDEVELOPMENT COMPARISON



Postdevelopment Flow Summary				
Watershed Name	Drainage Area (Ac)	Drainage Area (mi2)	25-Year Peak Flow (cfs)	25-Year Volume (Ac-ft)
DA1	23.2	0.0362	86.8	10.6
DA2	15.5	0.0242	61.6	7.1
DA3	17.6	0.0275	66.7	8.1
DA4	17.7	0.0277	72.1	8.1
DA5	13.5	0.0210	58.2	6.2
DA6	17.9	0.0279	69.4	8.2
DA7	17.6	0.0275	68.4	8.1
DA8	20.5	0.0321	78.4	9.4
DA9	20.9	0.0326	79.6	9.6
DA10	23.3	0.0364	87.3	10.7
DA11*	23.0	0.0359	33.6	7.8
DA12	19.0	0.0298	26.2	6.5
DA13	6.3	0.0098	18.3	2.1
PA01	15.7	0.0245	30.5	8.9
WFTR-DA	283573.0	443.0828	129140.4	103581.3

Postdevelopment Boundary Analysis Summary				
Comparison Point	"Total Contributing Drainage Area (mi2)"	"25-Year Peak Flow Rate (cfs)"	"25-Year Volume (ac-ft)"	"25-Year Peak Velocity (fps)"
CP1	0.0359	33.6	7.8	1.49
CP2	0.3572	46.1	57.5	1.75
CP3**	443.5	129175.0	103646.5	

* DA11 IS THE ONLY DRAINAGE AREA THAT CONTRIBUTES TO CP1 IN THE POSTDEVELOPMENT CONDITION

** COMPARISON POINT 3 (CP3) IS A CROSS SECTION LOCATED ON THE WEST FORK TRINITY RIVER

0 250 500
SCALE IN FEET

LEGEND

- PERMIT BOUNDARY
- 700 — 10' CONTOUR
- N 7066000 — STATE PLANE COORDINATES
- 900 — LANDFILL 10' CONTOUR
- DRAINAGE AREA BOUNDARY
- DA02 — DRAINAGE AREA DESIGNATION
- CHUTE
- COMPARISON POINT
- 100-YEAR FLOOD PLAIN

NOTE(S):

1. EXISTING CONTOURS TAKEN FROM DRONE SURVEY PROVIDED BY BIGGS AND MATHEWS ENVIRONMENTAL DATED APRIL 5, 2024.
2. PERMIT BOUNDARY INFORMATION FROM SURVEYING AND MAPPING, LLC.

REVISION NOTES:

1. ADDED POSTDEVELOPMENT FLOW SUMMARY NOTATION FOR DA11.
2. ADDED POSTDEVELOPMENT BOUNDARY ANALYSIS SUMMARY NOTATION FOR CP3.

STATE OF TEXAS
FELIPE ANTONIO WESCOUP
103826
LICENSED
PROFESSIONAL ENGINEER

4/22/2025

FOR PERMITTING PURPOSES

REVISIONS		
REV	DATE	DESCRIPTION

POSTDEVELOPMENT DRAINAGE AREA SUMMARY

CHISHOLM TRAIL DISPOSAL, LLC
CHISHOLM TRAIL DISPOSAL LANDFILL

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

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

DRAWING
C1A.2

EXISTING CONDITION/POSTDEVELOPMENT BOUNDARY ANALYSIS SUMMARY TABLE

Discharge Point	Total Contributing Drainage Area (ac)			25-Year Peak Flow Rate (cfs)			25-Year Volume (Ac-ft)			25-Year Peak Velocity (fps)		
	Existing	Post-Development	Difference	Existing	Post-Development	Difference	Existing	Post-Development	Difference	Existing	Post-Development	Difference
CP1	10.4	23.0	12.5	27.6	33.6	6.0	4.0	7.8	3.8	1.4	1.5	0.1
CP2	241.2	228.6	-12.6	0.0	46.1	46.1	0.0	57.5	57.5	0.0	1.8	1.8

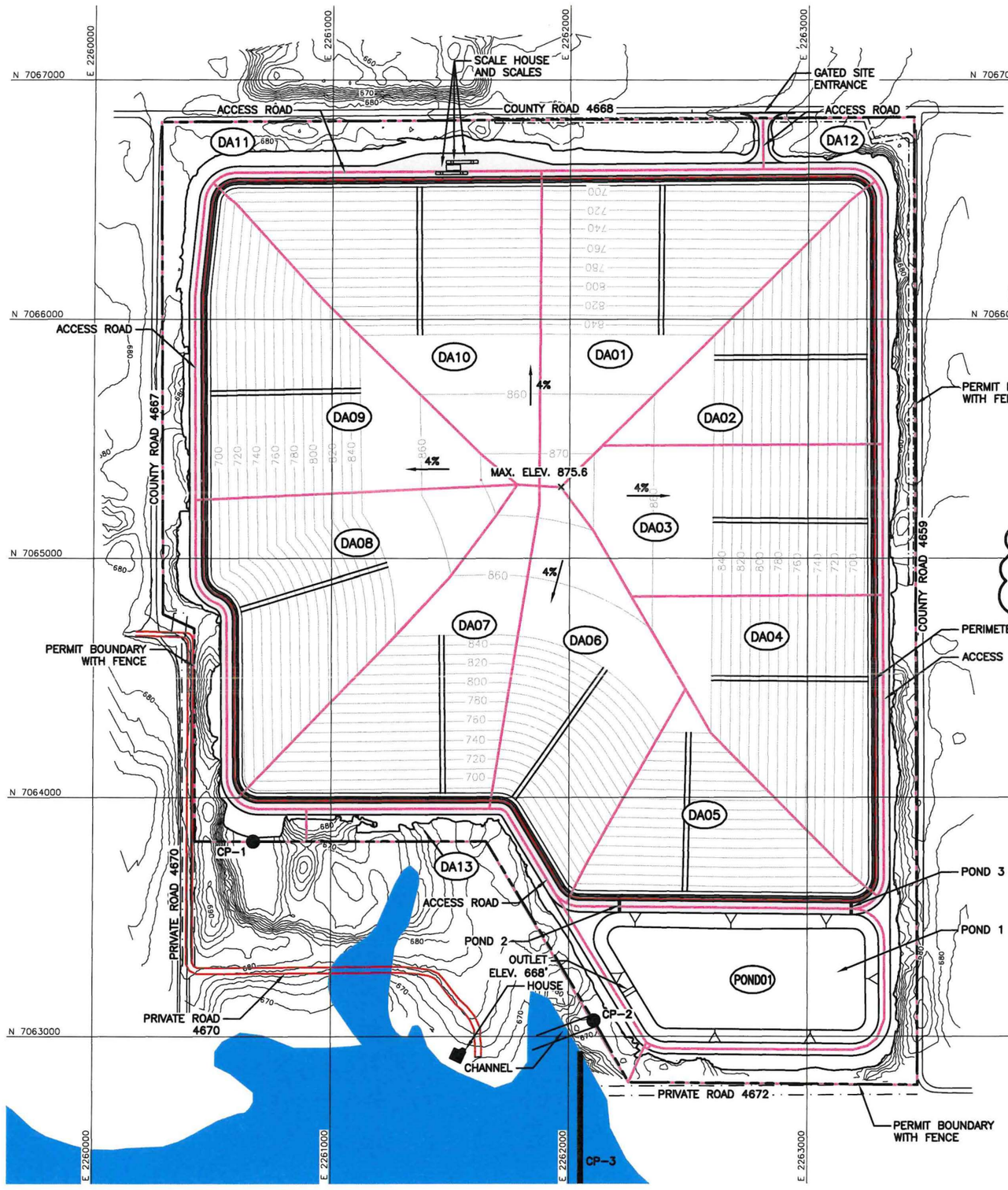
Note: The postdevelopment drainage design redirects 12.6 acres from CP2's contributing area to CP1, resulting in a corresponding 12.5 acre increase to CP1's drainage area while maintaining overall hydrologic balance between the discharge points.

REGIONAL DRAINAGE ANALYSIS WEST FORK TRINITY RIVER

Discharge Point	Total Contributing Drainage Area (ac)			25-Year Peak Flow Rate (cfs)			25-Year Volume (Ac-ft)		
	Existing	Post-Development	Difference	Existing	Post-Development	Difference	Existing	Post-Development	Difference
CP3	283583.4	283824.6	241.2	129142.9	129175.0	32.1	103585.3	103646.5	61.2

CHISHOLM TRAIL DISPOSAL LANDFILL

APPENDIX C1C
POSTDEVELOPMENT HYDROLOGIC CALCULATIONS



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DA7	17.6	0.0275	68.4	8.1
DA8	20.5	0.0321	78.4	9.4
DA9	20.9	0.0326	79.6	9.6
DA10	23.3	0.0364	87.3	10.7
DA11*	23.0	0.0359	33.6	7.8
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Postdevelopment Boundary Analysis Summary				
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* DA11 IS THE ONLY DRAINAGE AREA THAT CONTRIBUTES TO CP1 IN THE POSTDEVELOPMENT CONDITION

** COMPARISON POINT 3 (CP3) IS A CROSS SECTION LOCATED ON THE WEST FORK TRINITY RIVER

0 250 500
SCALE IN FEET

LEGEND

- PERMIT BOUNDARY
- 700 — 10' CONTOUR
- N 7066000 — STATE PLANE COORDINATES
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- DRAINAGE AREA BOUNDARY
- DA02 — DRAINAGE AREA DESIGNATION
- CHUTE
- COMPARISON POINT
- 100-YEAR FLOOD PLAIN

NOTE(S):

1. EXISTING CONTOURS TAKEN FROM DRONE SURVEY PROVIDED BY BIGGS AND MATHEWS ENVIRONMENTAL DATED APRIL 5, 2024.
2. PERMIT BOUNDARY INFORMATION FROM SURVEYING AND MAPPING, LLC.

REVISION NOTES:

1. ADDED POSTDEVELOPMENT FLOW SUMMARY NOTATION FOR DA11.
2. ADDED POSTDEVELOPMENT BOUNDARY ANALYSIS SUMMARY NOTATION FOR CP3.

STATE OF TEXAS
FELIPE ANTONIO WESCOUP
103826
LICENSED
PROFESSIONAL ENGINEER
4/22/2025

FOR PERMITTING PURPOSES

REVISIONS		
REV	DATE	DESCRIPTION

POSTDEVELOPMENT DRAINAGE AREA SUMMARY

CHISHOLM TRAIL DISPOSAL, LLC
CHISHOLM TRAIL DISPOSAL LANDFILL

BIGGS & MATHEWS ENVIRONMENTAL
1700 ROBERT ROAD, STE. 100
MANSFIELD, TEXAS 76063
817-563-1144
TBPE FIRM NO. F-256
TBPG FIRM NO. 50222

DRAWING
C1C.1

CHISHOLM TRAIL DISPOSAL LANDFILL

APPENDIX C1D
PERIMETER DRAINAGE SYSTEM DESIGN

NARRATIVE

30 TAC §§330.303 and 330.305

This appendix presents the design of the Chisholm Trail Disposal Landfill perimeter drainage channels and detention ponds in accordance with §330.305(a)-(d).

PERIMETER DRAINAGE PLAN

Drawing C1D.1 depicts the perimeter drainage system and detention pond location for the Chisholm Trail Disposal Landfill. The plan reflects the perimeter channel design and stationing. The perimeter channel hydraulic analysis is included for the 25-year rainfall event.

PERIMETER CHANNEL DESIGN

The perimeter channels are designed for peak discharge resulting from the 25-year storm event. The perimeter channel depths and calculated normal depths are summarized in the table below. In several locations along the perimeter channel, the depths are much greater than necessary to convey the predicted stormwater flow rates; however, minimum channel slopes were maintained to help prevent excessive velocity and erosion. The perimeter channel design calculations are shown on page C1D.5. Perimeter channel profiles are included in Attachment C3.

DETENTION POND ANALYSIS

~~The d~~Detention ~~p~~Pond 1 was designed to provide the necessary storage and outlet control to mitigate impacts to the receiving channels downstream of the Chisholm Trail Disposal Landfill. Ponds 2 and 3 function as intermediate stormwater collection and conveyance structures that capture runoff from their respective drainage areas and transfer it via culverts to Pond 1, which serves as the primary detention basin for mitigating downstream impacts. The hydraulic design parameters for the detention pond is provided on page C1C.~~16~~10. Pond 1 is designed as a wet-bottom detention pond with its bottom elevation at approximately 660 feet, as illustrated on drawing C3.2 in Attachment C3. For conservative modeling purposes, the hydrologic and hydraulic analysis used an initial water surface elevation of 668 feet, which corresponds to the inlet elevation of the pond's outlet structure. This approach effectively excludes the bottom 8 feet of storage volume from the detention calculations. Detention pond design information is included in Attachment C3. The following table provides storage volume and surface elevation for the 25-year storm event.

25-Year, 24-Hour Storm Events Analysis

Detention Pond	Maximum Water Surface Elevation	Perimeter Pond Berm Elevation	Freeboard (feet)	Access Road Elevation
Pond 1	675.3	682	6.7	682

EROSION PROTECTION

Pond 1 will be inspected annually to assess sediment accumulation and overall condition. Maintenance excavation will be performed when sediment buildup reduces the operational storage capacity below design specifications. This proactive maintenance schedule ensures the pond maintains its designed detention volume and continues to effectively mitigate downstream impacts as required by permit conditions.

Concrete will be used at all pond inlets and outlets to prevent scour and maintain structural integrity of the spillways and culverts as shown on Detail 8 on page C3.11 of Attachment C3. The concrete aprons shall extend sufficiently beyond the inlet/outlet structures to adequately dissipate flow energy and prevent undermining of the pond embankments. The grass-lined outlet channel at CP2, located downstream of Pond 1, has a width of 100-feet and 0.7% slope specifically designed to maintain low flow velocities. Due to these design parameters, additional erosion protection measures are not required for this channel.

CHISHOLM TRAIL DISPOSAL LANDFILL

APPENDIX C1E
FINAL COVER DRAINAGE STRUCTURE DESIGN

EROSION LAYER EVALUATION

This appendix presents the supporting documentation for evaluation of the thickness of the erosion layer for the final cover system at the Chisholm Trail Disposal Landfill. The evaluation is based on the premise of adding excess soil to increase the time required before maintenance is needed as recommended in the EPA Solid Waste Disposal Facility Criteria Technical Manual (EPA 530-R-93-017, November 1993).

The design procedure is as follows:

1. The minimum thickness of the erosion layer is based on the depth of frost penetration, or 10 inches, whichever is greater. For Wise County, the approximate depth of frost penetration is less than 10 inches.

2. Soil loss is calculated using the Universal Soil Loss Equation (USLE) by following SCS procedures. ~~In accordance with regulatory guidance~~Based on 85% vegetative cover, the calculated soil loss from final cover will not exceed 3 tons per acre per year. Soil loss thickness is calculated by multiplying the soil loss by the postclosure year period (30 years), multiplying by a safety factor of 2, and then converting the soil loss to a thickness. The USLE, with a safety factor of 2, calculates the soil loss of the 4 percent top slopes to be 0.05 inches and the side slopes to be 0.64 inches. These thicknesses are then compared to the actual soil thickness of the erosion layer, which is 12 inches. These calculations begin on page C1E.8.

	4% slope	25% slope
Maximum Sheet Flow Length	820 ft	120 ft
Soil Loss	0.05 tons/acre/year	0.64 tons/acre/year

3. Sheet flow velocities for a 25-year storm event are calculated to be less than permissible nonerodible velocities. The supporting calculations are presented on page C1E.15.

4. Vegetation for the site will be native and introduced grasses with root depths of 6 inches to 8 inches.

5. Native and introduced grasses will be hydroseeded with fertilizer on the disked (parallel to contours) erosion layer upon final grading. Temporary cold weather vegetation will be established if needed. Irrigation may be employed for 6 to 8 weeks or until vegetation is well 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 after hydroseeding will be reseeded until vegetation is established.

6. Slope stability information is included in Attachment D5 – Geotechnical Design.

CHISHOLM TRAIL DISPOSAL LANDFILL
WISE COUNTY, TEXAS
TCEQ PERMIT NO. MSW 2421

TYPE IV PERMIT APPLICATION

PART III – FACILITY INVESTIGATION AND DESIGN
ATTACHMENT C3
DRAINAGE SYSTEM PLANS AND DETAILS

Prepared for

Chisholm Trail Disposal, LLC

December 2024
Revised April 2025

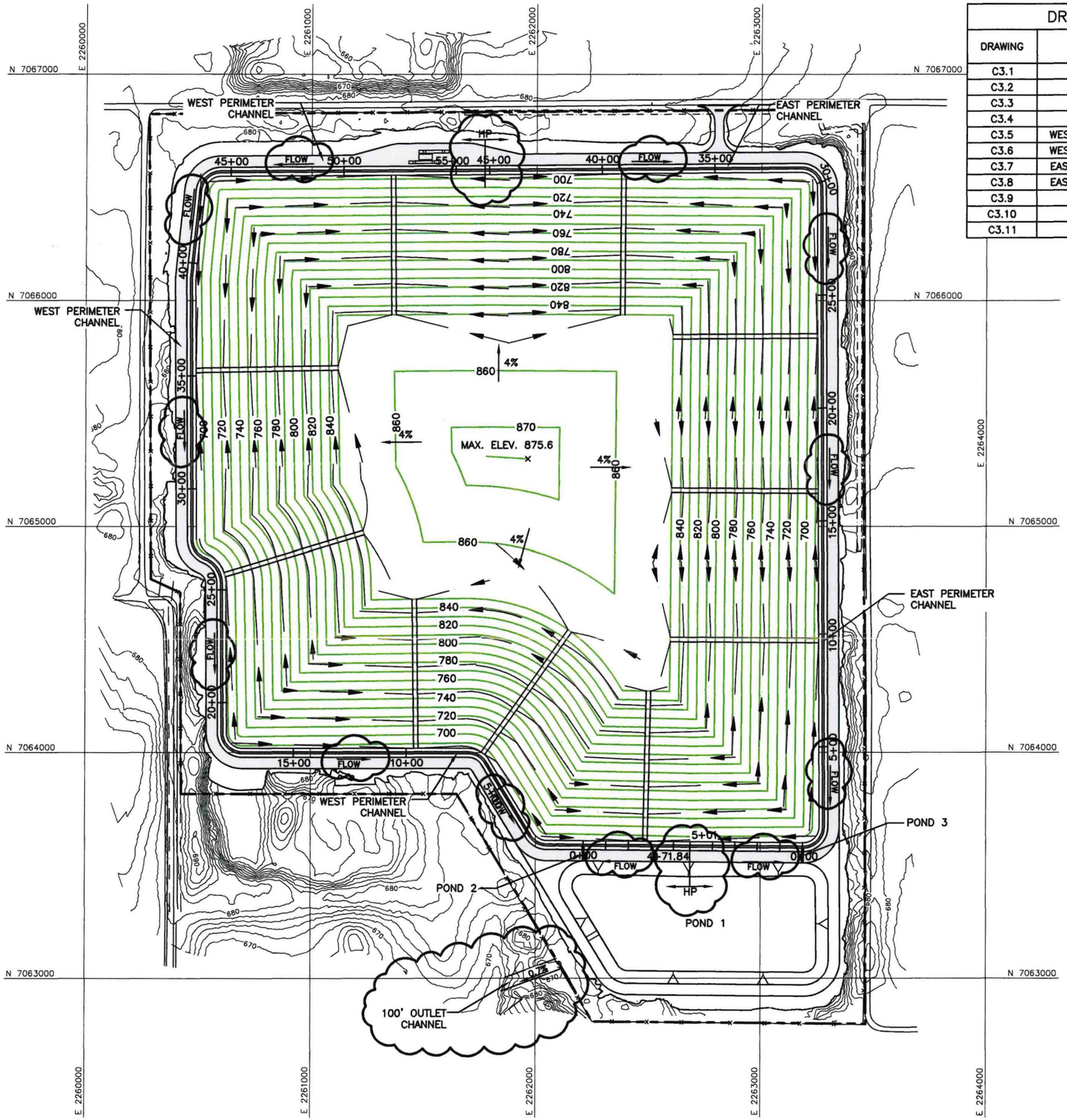
Biggs & Mathews Environmental, Inc.
Firm Registration No. F-256

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



DRAWING INDEX	
DRAWING	DESCRIPTION
C3.1	DRAINAGE PLAN
C3.2	POND 1
C3.3	POND 2
C3.4	POND 3
C3.5	WEST PERIMETER CHANNEL PROFILE
C3.6	WEST PERIMETER CHANNEL PROFILE
C3.7	EAST PERIMETER CHANNEL PROFILE
C3.8	EAST PERIMETER CHANNEL PROFILE
C3.9	CHUTE & PROFILES
C3.10	DRAINAGE DETAILS
C3.11	DRAINAGE DETAILS

0 250 500
SCALE IN FEET

LEGEND

- PERMIT BOUNDARY
- 700 — 10' CONTOUR
- N 7062000 — STATE PLANE COORDINATES
- FENCE
- 800 — FINAL COVER CONTOUR
- FLOW — CHANNEL FLOW DIRECTION
- HP — HIGH POINT

NOTES:

1. EXISTING CONTOURS TAKEN FROM DRONE SURVEY PROVIDED BY BIGGS AND MATHEWS ENVIRONMENTAL DATED APRIL 5, 2024.
2. PERMIT BOUNDARY INFORMATION FROM SURVEYING AND MAPPING, LLC.

REVISION NOTES:

1. ADDED FLOW DIRECTION AND HIGH POINT FOR CHANNELS.
2. ADDED GRADE AND WIDTH TO OUTLET CHANNEL.

STATE OF TEXAS
FELIPE ANTONIO WESCOUP
103826
LICENSED
PROFESSIONAL ENGINEER

4/22/2025

FOR PERMITTING PURPOSES

REVISIONS			
REV1	REV1 DATE	REV1 DESC	REV1 DWN
REV	DATE	DESCRIPTION	DWN BY

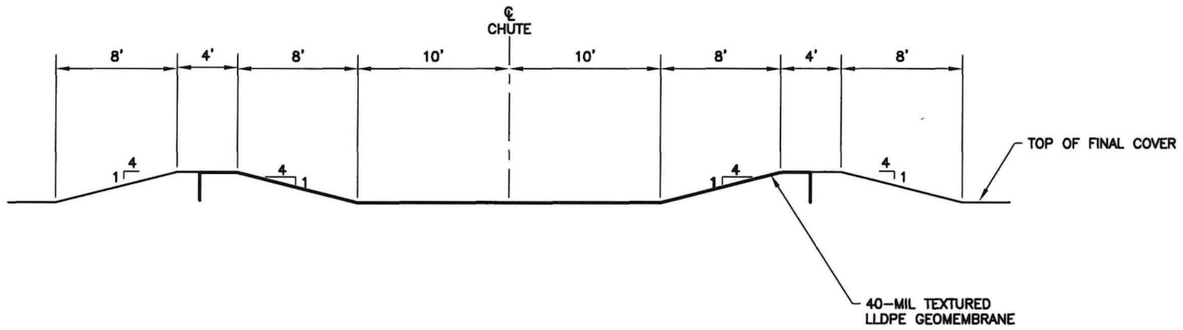
DRAINAGE PLAN

CHISHOLM TRAIL DISPOSAL, LLC
CHISHOLM TRAIL DISPOSAL LANDFILL

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

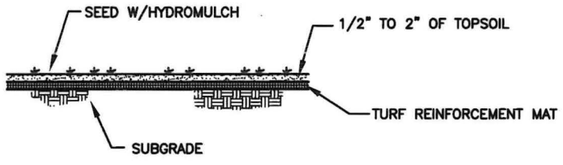
TBPE FIRM NO. F-256
TBPG FIRM NO. 50222

DRAWING
C3.1



SIDESLOPE CHUTE D1 C3.10

0 5 10
SCALE IN FEET



TURF REINFORCEMENT MATTING (TYP) D2 C3.10

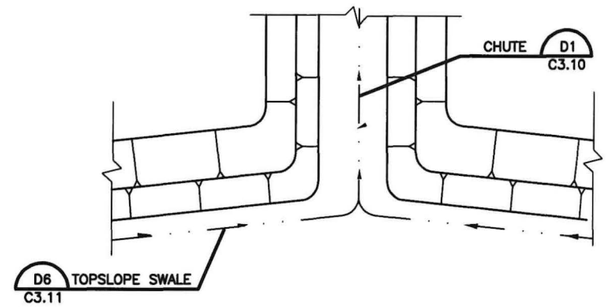
NTS

NOTES:

TURF REINFORCEMENT MATTING SHALL BE INSTALLED IN AREAS SUSCEPTIBLE TO EXPERIENCING EROSION AS FIELD CONDITIONS WARRANT.

REVISION NOTES:

1. ADDED TURF REINFORCEMENT MATTING NOTE.



SWALE/CHUTE TOPSLOPE CONFLUENCE D3 C3.10

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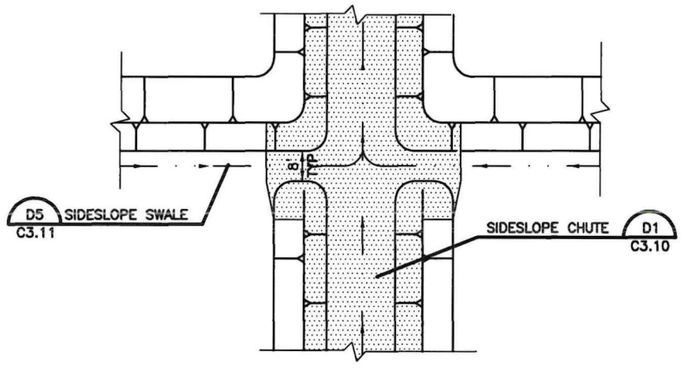


SWALE/CHUTE SIDESLOPE CONFLUENCE D4 C3.10

0 5 10
SCALE IN FEET

STATE OF TEXAS
FELIPE ANTONIO WESCOUP
103826
LICENSED
PROFESSIONAL ENGINEER

4/22/2025

FOR PERMITTING PURPOSES

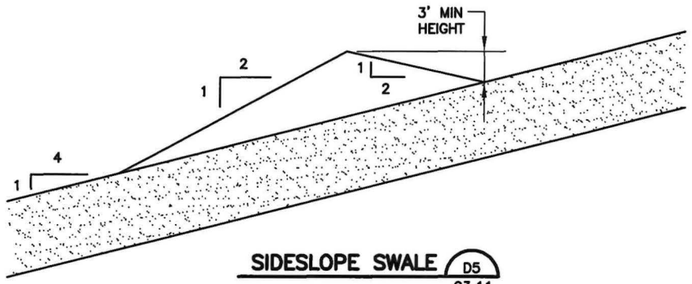
REVISIONS			
REV	DATE	DESCRIPTION	DWN BY

DRAINAGE DETAILS

CHISHOLM TRAIL DISPOSAL, LLC
CHISHOLM TRAIL DISPOSAL LANDFILL

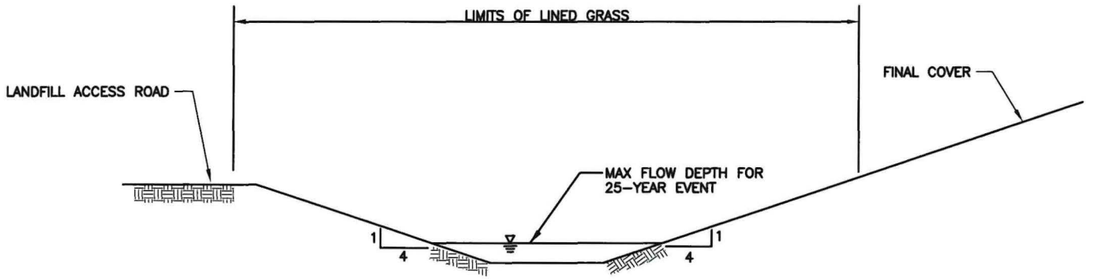
BME
BIGGS & MATHEWS ENVIRONMENTAL
CONSULTING ENGINEERS
MANSFIELD • WICHITA FALLS
817-563-1144
TBPE FIRM NO. F-256
TBPG FIRM NO. 50222

C3.10



SIDESLOPE SWALE D5 C3.11

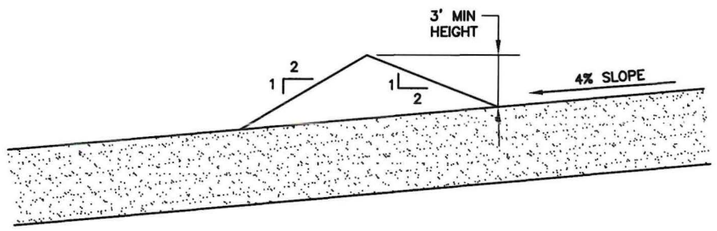
NTS



GRASS LINED

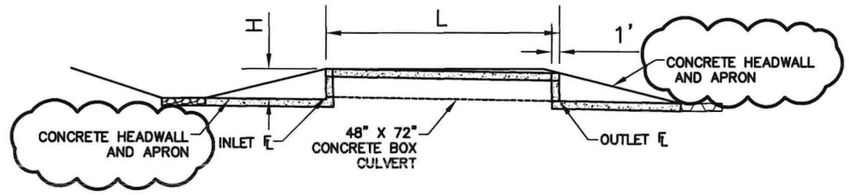
TRAPEZOIDAL DITCH D7 C3.11

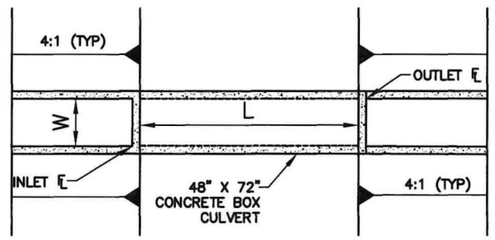
NTS



TOPSLOPE SWALE D6 C3.11

NTS





CULVERT DIMENSIONS					
POND	LENGTH (FT.)	HEIGHT (FT.)	WIDTH (FT.)	INLET ELEV. (FT.)	OUTLET ELEV. (FT.)
1	150	1.5	1.5	668.0	667.0
2	90	4	6	678.6	677.0
3	90	4	6	678.6	677.0

CULVERT DETAIL D8 C3.11

NTS

REVISION NOTES:

1. ADDED CALLOUTS FOR CULVERT DETAIL.

STATE OF TEXAS
FELIPE ANTONIO WESCOUP
103826
LICENSED
PROFESSIONAL ENGINEER

4/22/2025

FOR PERMITTING PURPOSES

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DRAINAGE DETAILS

CHISHOLM TRAIL DISPOSAL, LLC
CHISHOLM TRAIL DISPOSAL LANDFILL

BIGGS & MATHEWS ENVIRONMENTAL
CONSULTING ENGINEERS
MANSFIELD • WICHITA FALLS
817-563-1144

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

C3.11

CHISHOLM TRAIL DISPOSAL LANDFILL
WISE COUNTY, TEXAS
TCEQ PERMIT NO. MSW 2421

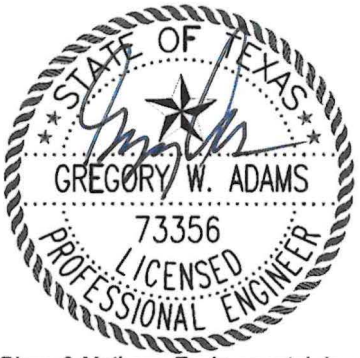
TYPE IV PERMIT APPLICATION

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

Prepared for

Chisholm Trail Disposal, LLC

December 2024
Revised April 2025



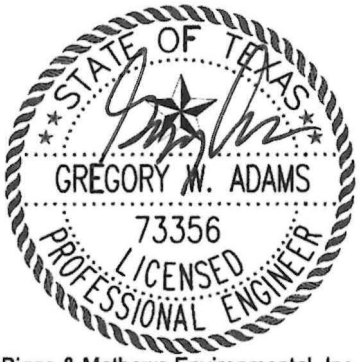
Biggs & Mathews Environmental, Inc.
Firm Registration No. F-256
4/29/2025

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



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

4/29/2025

CONTENTS

3 LANDFILL UNITS

30 TAC §§330.63(d)(4) and 330.4537

3.1 All Weather Operation

A permanent all-weather entrance road will be constructed from County Road 4668 to the scale facility and a permanent all-weather perimeter road will be constructed around the landfill units as shown in Attachment D1 on Drawing D1.2. The entrance road will be constructed prior to opening the facility and the perimeter road will be constructed as the facility is developed. The entrance road will be constructed of asphalt or reinforced concrete and the perimeter road will be constructed of aggregate as shown in Attachment D1 on Drawing D1.4. The entrance road surface will limit the tracking of mud onto the public access road.

Temporary all-weather access roads will be constructed as needed to provide access from the scale facility to the various staging areas and active waste disposal ~~units~~areas. The access roads will be moved as the facility is developed. The access roads will be constructed of aggregate, concrete rubble, masonry rubble, recycled asphalt, or other similar material to provide access to the active areas during all weather conditions as shown in Attachment D1 and Drawing D1.4.

Stockpiles of aggregate, concrete rubble, masonry rubble, recycled asphalt or other similar material will be available for use in maintaining access roads. Grading equipment will be used to control or remove mud accumulations on the landfill access roads around the landfill and entrance road. In addition, a disposal area near the access road will be available for use during wet weather operations.

3.2 Landfilling Methods

The development method for the landfill is a combination of area-excavation fill followed by aerial fill to the proposed landfill completion heights. Final cover placement will generally follow the sequence of development as shown in Part II, Appendix IIA, and may be ongoing as the site is developed. The landfill will be closed according to the closure plan provided in Attachment H.

3.3 Landfill Design Parameters

The 251 permitted acres will include a total of 167 acres for waste disposal and 84 acres of buffer and other non-waste fill areas. The deepest excavation elevation will be 619.6 feet msl at the south toe of slope, the maximum waste elevation will be 872.1 feet msl, and the maximum final cover elevation will be 875.6 feet msl. Excavation side slopes ~~will not exceed 4H:1V~~ and waste side slopes will be~~not exceed~~ 4H:1V or flatter. Waste topslopes will have a 4 percent slope. Excavation and final completion plans are presented in Attachment D1 on Drawings D1.5 and D1.6.

3.4 Site Life Projection

The total disposal capacity will be 39,481,000 cubic yards (waste and weekly cover), which will provide an estimated 78 years of site life. Calculations for the disposal capacity and site life estimate are provided in Attachment D4.

CHISHOLM TRAIL DISPOSAL LANDFILL
WISE COUNTY, TEXAS
TCEQ PERMIT NO. MSW 2421

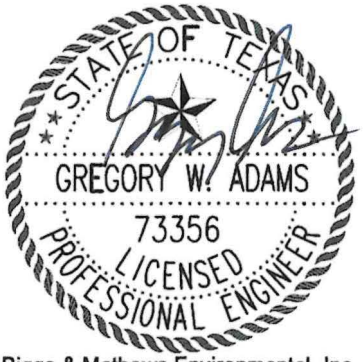
TYPE IV PERMIT APPLICATION

PART III – FACILITY INVESTIGATION AND DESIGN
ATTACHMENT D1
SITE LAYOUT PLANS

Prepared for

Chisholm Trail Disposal, LLC

December 2024
Revised April 2025



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Firm Registration No. F-256
4/29/2025

Prepared by

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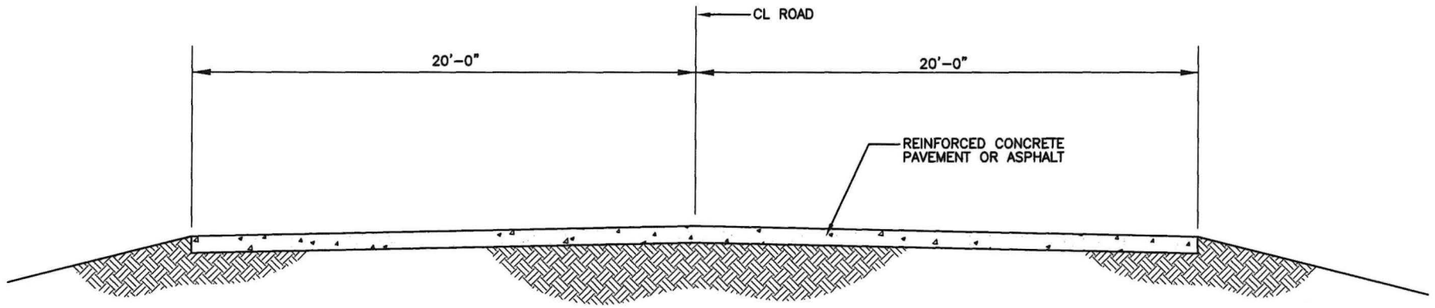
TEXAS BOARD OF PROFESSIONAL ENGINEERS AND LAND SURVEYORS
FIRM REGISTRATION NO. F-256 AND NO. 10194895

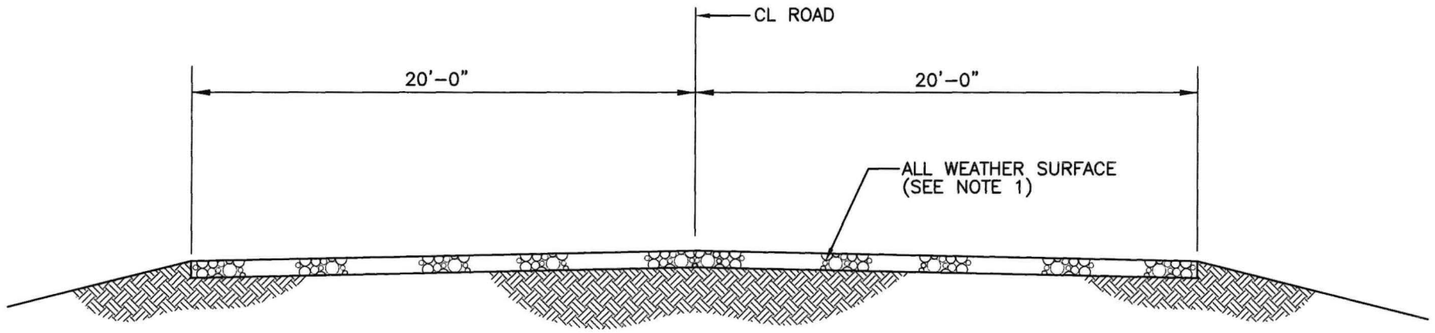
TEXAS BOARD OF PROFESSIONAL GEOSCIENTISTS
FIRM REGISTRATION NO. 50222



SITE ENTRANCE ROAD R1 D1.4

0 3 6

SCALE IN FEET



LANDFILL ACCESS ROAD R2 D1.4

0 3 6

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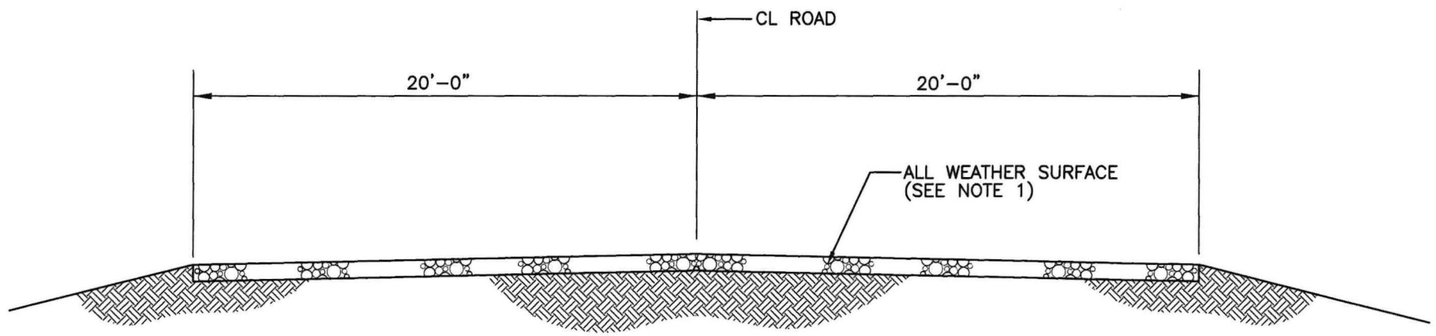


PERIMETER ROAD 3 D1.4

0 3 6

SCALE IN FEET

NOTE(S):

1. ~~EXISTING~~ LANDFILL ACCESS ROAD SHALL BE MAINTAINED WITH ALL WEATHER SURFACE (CRUSHED STONE, GRAVEL, CONCRETE RUBBLE, MASONRY DEMOLITION DEBRIS, WOOD CHIPS, OR OTHER SIMILAR MATERIALS) WHERE USED AS ACCESS TO WORKING FACE BY WASTE HAUL VEHICLES.

STATE OF TEXAS
GREGORY W. ADAMS
73356
LICENSED
PROFESSIONAL ENGINEER

3/24/2025

FOR PERMITTING PURPOSES

REVISIONS		
REV	DATE	DESCRIPTION

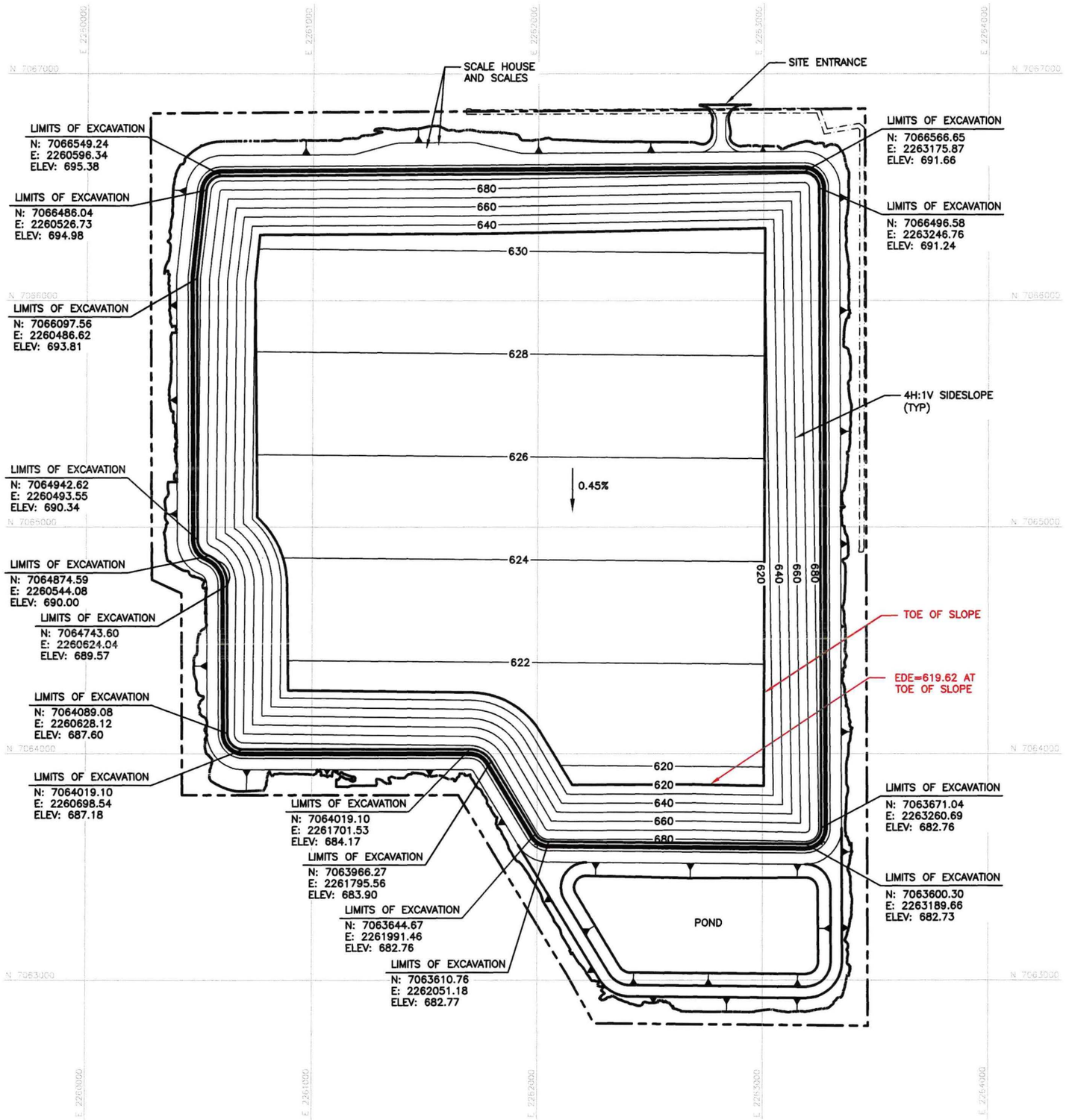
ENTRANCE FACILITIES DETAILS

CHISHOLM TRAIL DISPOSAL, LLC
CHISHOLM TRAIL DISPOSAL 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

DRAWING
D1.4



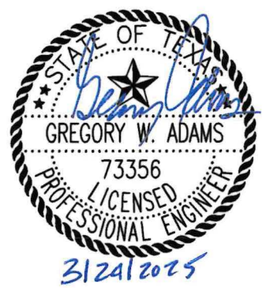
0 250 500
SCALE IN FEET

LEGEND

- PERMIT BOUNDARY
- N 7062000 STATE PLANE COORDINATES
- 620 EXCAVATION CONTOUR

NOTE(S):

1. PERMIT BOUNDARY INFORMATION FROM SURVEYING AND MAPPING, LLC.
2. PROPOSED CONTOURS DEPICT EXCAVATION GRADES.
3. ELEVATION OF DEEPEST EXCAVATION IS 619.62 FT–MSL.



3/24/2025

FOR PERMITTING PURPOSES

REVISIONS			
REV	DATE	DESCRIPTION	DWN BY

EXCAVATION PLAN

CHISHOLM TRAIL DISPOSAL, LLC
CHISHOLM TRAIL DISPOSAL LANDFILL

BIGGS & MATHEWS ENVIRONMENTAL
1700 ROBERT ROAD, STE. 100
MANSFIELD, TEXAS 76063
817–563–1144
TBPE FIRM NO. F–256
TBPG FIRM NO. 50222

DRAWING
D1.5

CHISHOLM TRAIL DISPOSAL LANDFILL
WISE COUNTY, TEXAS
TCEQ PERMIT NO. MSW 2421

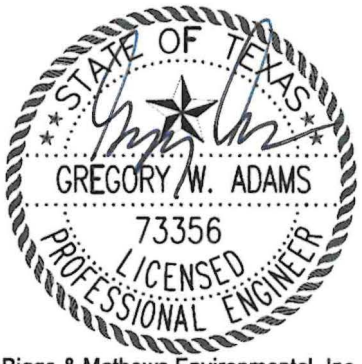
TYPE IV PERMIT APPLICATION

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

Prepared for

Chisholm Trail Disposal, LLC

December 2024
Revised April 2025



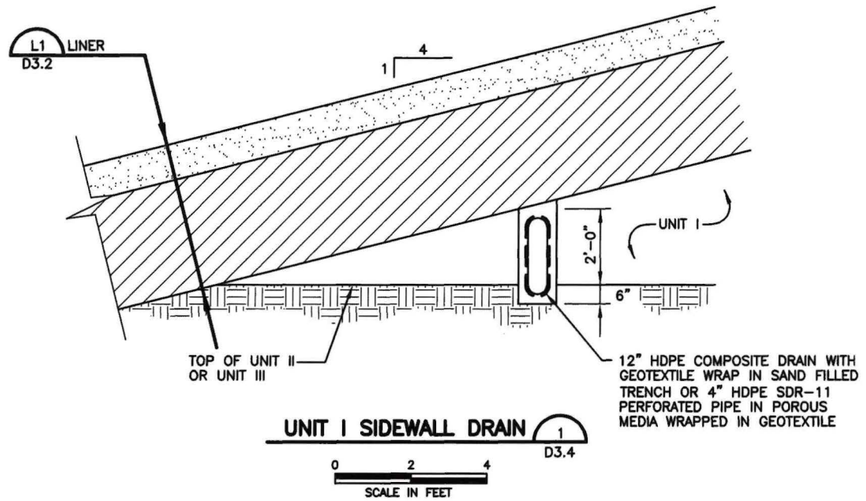
Biggs & Mathews Environmental, Inc.
Firm Registration No. F-256
4/29/2025

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



UNIT I SIDEWALL DRAIN 1 D3.4

0 2 4
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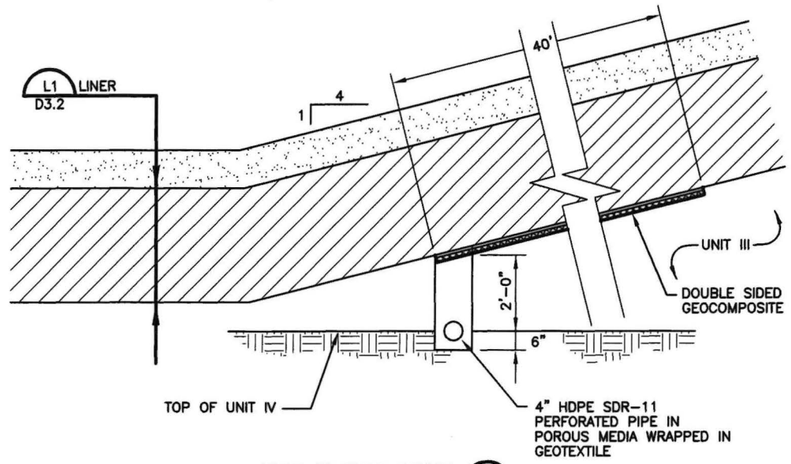
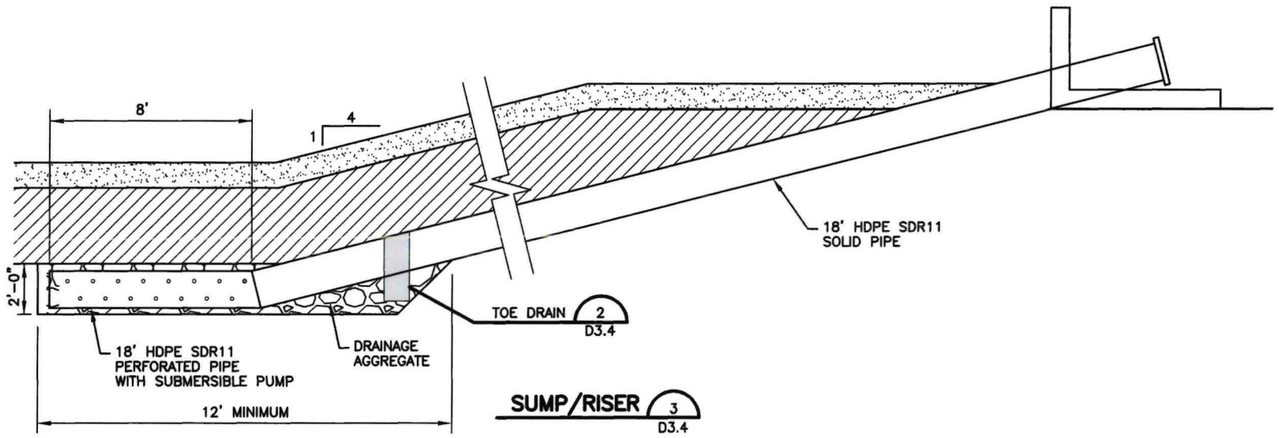


UNIT III TOE DRAIN 2 D3.4

0 2 4
SCALE IN FEET



SUMP/RISER 3 D3.4

0 3 6
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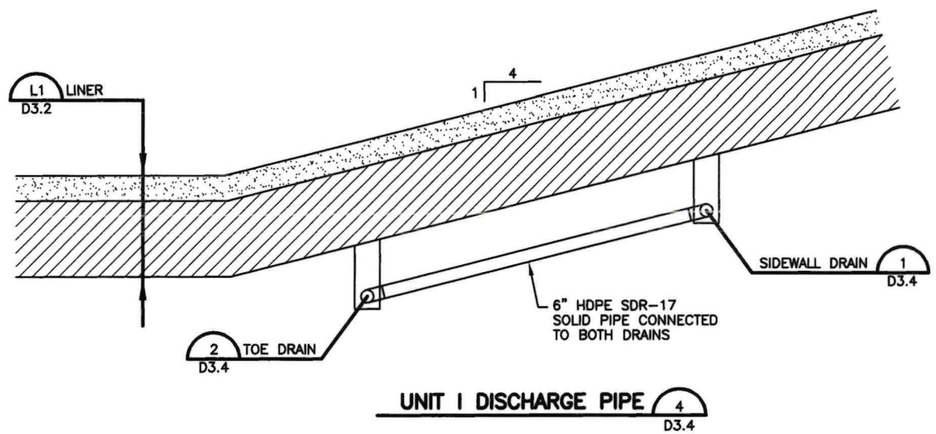


UNIT I DISCHARGE PIPE 4 D3.4

0 3 6
SCALE IN FEET

NOTE:
1. REFER TO ATTACHMENT D7 FOR DESIGN AND OPERATIONAL PROVISIONS OF THE TEMPORAY DEWATERING SYSTEM.

STATE OF TEXAS
GREGORY W. ADAMS
73356
LICENSED
PROFESSIONAL ENGINEER
3/24/2025

FOR PERMITTING PURPOSES

REVISIONS			
REV	DATE	DESCRIPTION	DWN BY

TEMPORARY DEWATERING SYSTEM DETAILS

CHISHOLM TRAIL DISPOSAL, LLC
CHISHOLM TRAIL DISPOSAL LANDFILL

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

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

DRAWING
D3.4

CHISHOLM TRAIL DISPOSAL LANDFILL
WISE COUNTY, TEXAS
TCEQ PERMIT NO. MSW 2421

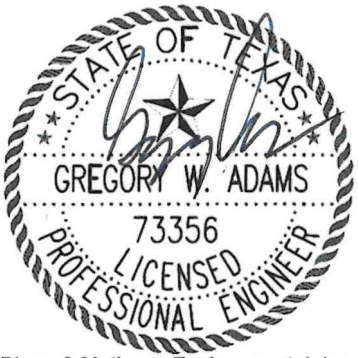
TYPE IV PERMIT APPLICATION

PART III – FACILITY INVESTIGATION AND DESIGN
ATTACHMENT D4
SITE LIFE

Prepared for

Chisholm Trail Disposal, LLC

December 2024
Revised April 2025



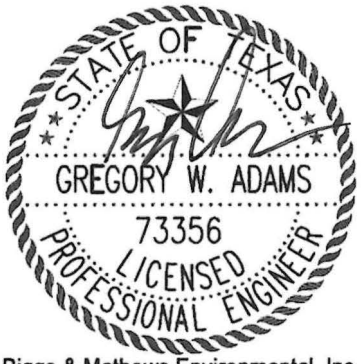
Biggs & Mathews Environmental, Inc.
Firm Registration No. F-256
4/29/2025

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



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

4/29/2025

CONTENTS

2 SOLID WASTE COMPACTION

An airspace utilization factor (ratio of tons of waste accepted to in-place cubic yard volume of waste disposed plus weekly and intermediate cover material) of 0.7 was used to calculate the projected site life based on the total landfill capacity.

CHISHOLM TRAIL DISPOSAL LANDFILL
WISE COUNTY, TEXAS
TCEQ PERMIT NO. MSW 2421

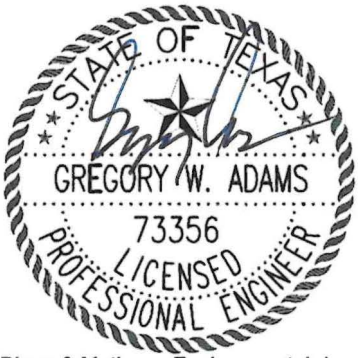
TYPE IV PERMIT APPLICATION

PART III – FACILITY INVESTIGATION AND DESIGN
ATTACHMENT D7
LINER QUALITY CONTROL PLAN

Prepared for

Chisholm Trail Disposal, LLC

December 2024
Revised April 2025



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

4/29/2025

Prepared by

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

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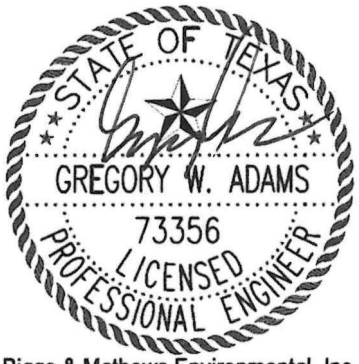
FIRM REGISTRATION NO. F-256 AND NO. 10194895

TEXAS BOARD OF PROFESSIONAL GEOSCIENTISTS
FIRM REGISTRATION NO. 50222



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

4/29/2025

CONTENTS

4 COMPACTED SOIL LINER

30 TAC §330.339

4.1 General

The compacted soil liner component of the Type IV liner system consists of a 36-inch-thick layer of compacted, relatively homogeneous, cohesive material. The CQA monitor shall provide continuous on-site observation during compacted soil liner placement, compaction, and testing in accordance with 30 TAC §330.339(a)(2). The GP shall make sufficient site visits during compacted soil liner construction to document the construction activities, testing, and thickness verification in the SLER, in accordance with Section 7.2.

4.2 Materials

Compacted soil liner material shall consist of soil that is free from debris, rubbish, frozen materials, foreign objects, and organic material. The required compacted soil liner material properties are summarized below.

Compacted Soil Liner 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 or Visual	100%
Coefficient of Permeability	ASTM D 5084 or COE EM 1110-2-1906 Appendix VII	1×10^{-7} cm/sec or less

Preconstruction testing procedures and frequencies for compacted soil liner materials are listed in Section 4.8.1.

4.3 Subgrade Preparation

Prior to placing soil liner 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 recompacted or undercut to firm material, then backfilled with compacted general fill. The GP will observe the subgrade for groundwater seepage and take appropriate actions when necessary.

Earthfill beneath the liner subgrade should be placed in maximum 9-inch loose lifts to produce compacted lift thickness of approximately 6 inches. If additional water is necessary to adjust the moisture content, it should be applied after initial processing, but prior to compaction. Water should be applied evenly across the lift and worked into the material. The earthfill shall be compacted with a pad/tamping-foot or prong-foot roller. The

earthfill should be compacted to a minimum of 95 percent of the maximum dry density determined by standard Proctor (ASTM D 698) at a moisture content of 2 percent below to 3 percent above optimum moisture.

The subgrade elevations shall be verified in accordance with the requirements of Section 4.8.3 prior to the placement of compacted soil liner.

4.4 Placement and Processing

The compacted soil subgrade and surface of each lift should be roughened prior to placement of the next lift of compacted soil liner. The soil liner material should be placed in maximum 8-inch loose lifts to produce compacted lift thickness of approximately 6 inches. The material should be processed to generally achieve a maximum particle size of 1 inch or less before water is added.

If additional water is necessary to adjust the moisture content, it should be applied after initial processing, but prior to compaction. Water should be applied evenly across the lift and worked into the material. Water used for the soil liner compaction must not be contaminated by waste or any objectionable material.

4.5 Compaction

The soil liner shall be compacted with a pad/tamping-foot or prong-foot roller. A footed roller is necessary to bond the lifts, to distribute the water, and to blend the soil matrix through kneading action. Soil liner shall not be compacted with a bulldozer, rubber-tired roller, flat-wheel roller, scraper, truck, or any track equipment unless it is used to pull a footed roller. The compactor should weigh at least 40,000 pounds. The lift thickness shall be controlled to achieve penetration into the top of the previously compacted lift; therefore, the lift thickness should not be greater than the pad or prong length. Cleaning devices on the roller must be in place and maintained to prevent the prongs or pad feet from becoming clogged to the point that they cannot achieve full penetration.

The compactor should make approximately four passes across the area being compacted. A pass is defined as one pass of the compactor, front and rear drums. The material should be compacted to a minimum of 95 percent of the maximum dry density determined by standard Proctor (ASTM D 698) at a moisture content at or above optimum moisture. Areas with failing tests shall be reworked and recompacted, and then retested, and passing tests must be achieved before another lift is added.

After a lift is compacted, it must be watered to prevent drying and desiccation until the next lift can be placed. If desiccation occurs, the GP must determine if the lift can be rehydrated by surface application of water or if the lift must be scarified, watered, and recompacted. Following compaction and fine grading of the final lift, the surface of the compacted soil liner shall be smooth drum rolled.

4.6 Protection

The completed compacted soil liner must be protected from drying, desiccation, rutting, erosion, and ponded water until the protective cover is installed. Areas that undergo excessive desiccation or damage shall be reworked, recompacted, and retested as directed by the GP.

4.7 Tie in to Existing Liners

The edge of existing compacted soil liners shall be cut back on either a slope or steps to prevent the formation of a vertical joint. Details of the existing liner tie-in are shown in Attachment D3.

4.8 Testing and Verification

4.8.1 Preconstruction Testing

The minimum testing required for material proposed for use as compacted soil liner are listed below.

Compacted Soil Liner Material Preconstruction Tests

Test	Standard	Frequency
Unified Soil Classification	ASTM D 2487	1 per material type
Atterberg Limits	ASTM D 4318	1 per material type
Percent Passing No. 200 Mesh Sieve	ASTM D 1140	1 per material type
Percent Passing 1-inch Sieve	ASTM D 422 or Visual	1 per material type
Standard Proctor Test	ASTM D 698	1 per material type
Coefficient of Permeability	ASTM D 5084 or COE EM 1110-2-1906 Appendix VII	1 per material type

After the moisture density relationship has been determined for a material type, a soil sample should be remolded to about 95 percent of the maximum dry density at the optimum moisture content. This sample will be tested to determine if the soil can be compacted to achieve the required coefficient of permeability. Either falling head or constant head permeability tests may be performed to determine the coefficient of permeability. The permeant fluid for testing must be as required in ASTM D 5084. Distilled or deionized water shall not be used as the permeant fluid.

4.8.2 Construction Testing

All quality control testing will be performed during construction of the liner, except for testing which is required after individual lifts are constructed. The minimum testing required for material used as compacted soil liner is listed below.

Compacted Soil Liner Material Construction Tests

Test	Standard	Frequency[1]
Field Density	ASTM D 2922	1/8,000 sf per 6-inch lift
Atterberg Limits	ASTM D 4318	1/100,000 sf per 6-inch lift
Percent Passing No. 200 Sieve	ASTM D 1140	1/100,000 sf per 6-inch lift
Percent Passing 1-inch Sieve	ASTM D 422 or Visual	1/100,000 sf per 6-inch lift
Standard Proctor Test	ASTM D 698	1 per material type
Coefficient of Permeability	ASTM D 5084 or COE EM 1110-2-1906 Appendix VII	1/100,000 sf per 6-inch lift
Moisture Content	ASTM D 2216	1/100,000 sf per 6-inch lift

[1] A minimum of one test must be performed for each lift regardless of surface area.

The Atterberg limits of the compacted soil liner must be compared to the Atterberg limits of the Proctor curve sample to assure that the Proctor curve represents the in-place material. Typically, a variance of more than 10 points between the liquid limit or plasticity index of the in-place soil and those of the Proctor curve sample will require that a new Proctor curve be developed. Permeability testing will be performed on undisturbed samples from the compacted soil liner as described in Section 4.8 and all test data will be reported.

4.8.3 Thickness Verification

The as-built thickness of the compacted soil liner shall be determined by standard survey methods. Prior to the placement of liner material, the subgrade elevations will be determined at a minimum rate of one survey point per 5,000 sf of lined area. After the compacted soil liner is completed, the top of the liner elevations will be determined at the same locations as the subgrade elevations.

CHISHOLM TRAIL DISPOSAL LANDFILL
WISE COUNTY, TEXAS
TCEQ PERMIT NO. MSW 2421

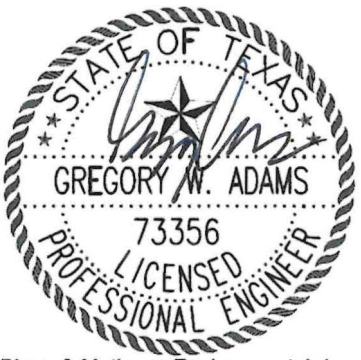
TYPE IV PERMIT APPLICATION

VOLUME 3 OF 3

Prepared for

Chisholm Trail Disposal, LLC

December 2024
Revised April 2025



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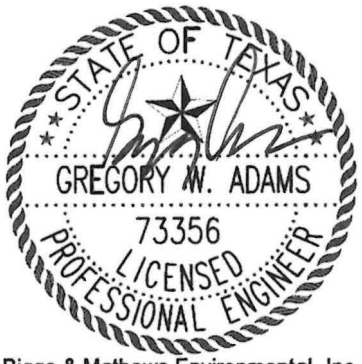

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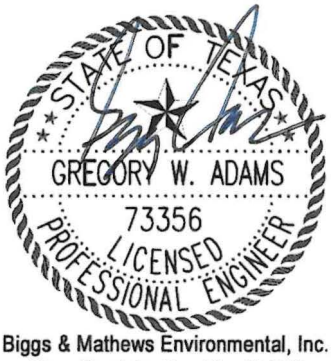
TYPE IV PERMIT ~~AMENDMENT~~ APPLICATION

PART III – ~~SITE DEVELOPMENT PLAN~~FACILITY INVESTIGATION AND DESIGN
ATTACHMENT E
GEOLOGY REPORT

Prepared for:

Chisholm Trail Disposal, LLC

December 2024
Revised April 2025



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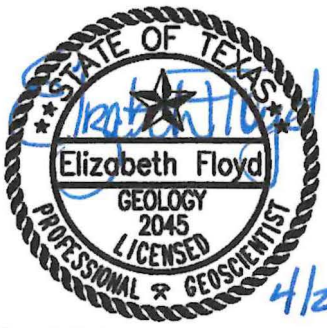

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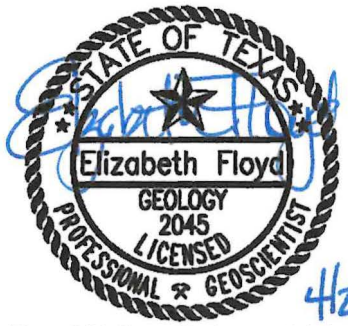

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CONTENTS

3 REGIONAL AQUIFERS

30 TAC §330.63(e)(3)

3.1 Paluxy Aquifer

The Paluxy Aquifer is the upper member of the Trinity Group south of the Glen Rose pinchout. It crops out in Hood, Parker, Tarrant, and Wise Counties. The dip is easterly at an average rate of 30 feet per mile, increasing to 80 feet per mile near the downdip limit of fresh to slightly saline water (Beak & Mravik, 2015). The Paluxy is composed of predominately fine to coarse-grained, friable, homogeneous, white quartz sand interbedded with sandy, silty, calcareous clay or shale. In general, coarse-grained sand is in the lower part of the formation. The Paluxy grades upward into fine-grained sand with variable amounts of shale and clay. The sands are usually well sorted, poorly cemented, and cross-bedded.

The primary source of recharge to the Paluxy is precipitation on the outcrop. Secondary sources include recharge from streams flowing across the outcrop and surface-water seepage from lakes. The Brazos and Trinity River systems, Eagle Mountain Reservoir, and Lake Worth are examples (Nordstrom, 1982). Only a small fraction of the amount of precipitation is available as effective recharge due to runoff and evapotranspiration. Thickness of the Paluxy varies considerably from a maximum of 400 feet in the northern areas to less than 40 feet in the south and southeast extent.

Water in the outcrop area is under water-table conditions. In downdip areas, water is under artesian conditions and is confined under hydrostatic pressure from overlying formations. The average rate of movement of water in the Paluxy amounts to less than 2 feet per year in an easterly direction. Hydraulic conductivity of the Paluxy averages 78 gal/day/ft^2 (Nordstrom, 1982). Drawing E1.4 is a regional potentiometric surface map of the Paluxy Aquifer. Discharge from the Paluxy occurs naturally through springs and evapotranspiration and artificially through pumping. ~~Transmissibility~~ Transmissivity of the Paluxy averages 3,700 gal/day/ft (Nordstrom, 1982). Permeabilities likely increase from the outcrop in a downdip direction and from south to north.

The Paluxy yields small to moderate amounts of fresh to slightly saline water to public, industrial, domestic, and livestock wells. Wells completed in the Paluxy have water with chemical quality that is generally better than water from other Cretaceous aquifers (Nordstrom, 1982). The Paluxy generally exhibits chemical signatures of slightly high $CaCO_3$ with fluoride levels increasing in the downdip part of the aquifer; total dissolved solids are approximately 600 mg/L in the groundwater (Nordstrom, 1982). The hydraulic properties of the Paluxy Aquifer are summarized in Table 2.

3.2 Antlers Aquifer

The Antlers Aquifer combines groundwater availability of both the Paluxy and Twin Mountains Aquifers. The Antlers crops out mainly in Cooke, Montague, and Wise Counties. The Antlers dips to the southeast at an average rate of 20 feet per mile near its outcrop to 70 feet per mile near its southeastern limit (Beak & Mravik, 2015). A typical section of the Antlers consists of a basal conglomerate and gravel overlain by a fine white to gray poorly consolidated sand in massive cross-bedded layers interbedded with layers of red, purple, or gray clay in discontinuous lenses scattered throughout the formation. A middle section of Antlers contains considerably more clay beds than the upper or lower

Table 5
Generalized Site Stratigraphy

Geologic Unit	Lithology	Average Depth to top of Unit (ft)	Average Thickness of Unit (ft)	Hydrogeologic Unit
Unit I	Alluvium	Surface	30.8	Perched Water Zone
Unit II	Limestone	28.2	5.0	Confining Unit (where present)
Unit III	Sandstone, Sandstone with Silt, Siltstone, Sandy Shale	33.0	18.2	Upper Groundwater Zone
Unit IV	Limestone and Shale	51.1	14.3	Upper Confining Unit to the Uppermost Aquifer (Base of landfill founded in this Unit).
Unit V	Sand, Sandstone, Sand with Silt, Sandy Shale	64.7	12.4	Uppermost Aquifer
Unit VI	Limestone, Shale, Shale with Silt	76.7	14.0*	Lower Confining Unit (Aquiclude) to Uppermost Aquifer
Unit VII	Sandstone, Siltstone, Sand with Silt, and Sand with Clay	88.3	11.8*	Lower Groundwater Zone

* Unit VI and Unit VII were not fully penetrated throughout the site.
** There is a Unit VIII that was encountered in 5 borings composed of Limestone and Shale with Sand.

4.2.1 Unit I – Alluvium

The site is currently used for an active soil mining operation. Most of the site had been excavated to varying depths within Unit I at the time of drilling. Lithologies observed in Unit I have been disturbed as part of the excavation process. After soil excavation, the over burden was returned back into the excavation, as such this Unit is primarily considered fill material. Material encountered in Unit I include the following: silty clay, sand with clay, sand, and gravel. Unit I was encountered from the surface to a maximum depth of 43 feet. The average thickness of this unit is approximately 30 feet.

4.2.2 Unit II – Limestone and Shale

Unit II is a hard massive bed of limestone and shale. The limestone layer was absent in ten borings BME-1, 2, 5, 6, 9, 14, 15, 18, 19, and 26. This Unit, where present, was encountered from 15 to 43 feet below ground surface (bgs). The thickness of Unit II ranges from 1 foot to 13 feet thick. A structural contour map of the top of Unit II is shown in Drawing E3.11.

4.2.3 Unit III – Sandstone, Sandstone with Silt, Siltstone, Sandy Shale

Unit III is composed of individual layers of sandy shale, sandstone, sandstone with silt, siltstone, silt, sand, and some interbeds of sandy shale. Unit III ranges from 2 to 56 feet

thick with an approximate average thickness of 18 feet. Unit III is found on average at 33 feet bgs. This layer is present and correlatable across the site. A structural contour map is shown on Drawing E3.12.

4.2.4 Unit IV – Limestone and Shale

Unit IV is composed of individual layers of limestone and shale. Unit IV is present and correlatable across the site. Unit IV ranges from 5 to 27 feet thick with an average approximate thickness of 14 feet. The depth to Unit IV ranges between 23 and 72 feet deep with an average depth of approximately 51 feet bgs. A structural contour map of the top of Unit IV is provided as Drawing E3.13. The base of the landfill excavation will be primarily founded in this layer.

4.2.5 Unit V – Sand, Sandstone, Sand with Silt, Sandy Shale

Unit V is composed of individual layers of sand, sandstone, sand with silt, and with some interbeds of sandy shale. Unit V is present and correlatable across the site. Unit V ranges from 1 to 36 feet in thickness with an average thickness of 12.4 feet. Unit V is encountered at depths ranging between 37 and 85 feet deep. On average, Unit V can be found at approximately 64 feet bgs. A structural contour map on Unit V is provided as Drawing E3.14

4.2.6 Unit VI – Limestone, Shale with Sand, Shale with Silt

Unit VI is composed of individual layers of limestone, shale with sand, and shale with silt. Unit VI is correlatable across the site. Unit VI was not penetrated in all borings. The depth of the top of Unit VI ranges from 50 to 105 feet bgs, with an approximate average depth of the layer at 76 feet bgs. Where Unit VI was fully penetrated, the thickness ranges from 3.5 to 20 feet, with an approximate average thickness of 14 feet. A structural contour map of the top of Unit VI is shown in Drawing E3.15.

4.2.7 Unit VII – Sandstone, Siltstone, Sand with Silt, and Sand with Clay

Unit VII is composed of individual layers of sandstone, siltstone, sand with silt, and sand with clay. The average thickness is approximately 11.8 feet where this Unit was fully penetrated. Unit VII was present in borings in thickness that ranged between 5 and 19 feet. Unit VII is found at depths ranging from 90 to 108 feet deep, with an approximate average depth of 99 feet. There is a deeper Unit VIII encountered in five borings (BME-6, 8, 13, 14, and 17). where layers composed of limestone and shale with sand were encountered during drilling.

5 GEOTECHNICAL AND HYDROGEOLOGIC DATA

30 TAC §330.63(e)(5)(A)-(F)

5.1 Geotechnical Data

Laboratory tests were performed to determine the geotechnical properties of the subsurface materials that will be encountered in the excavation and to evaluate the suitability of the materials for the proposed waste management unit design. Samples of cohesive materials from each unit that will form the bottom and sides of the excavation and from the units at least 30 feet below the lowest excavation were tested to determine the soil characteristics and to provide a typical profile. Permeability tests were performed on undisturbed samples in accordance with 330.63(e)(5)(B)(i). Falling head permeability tests were performed on all of the samples because undisturbed samples could only be obtained from the low permeability materials such as shale and limestone but not from the coarser sands and gravels. The summary of material characteristics and the standard test methods are provided in Appendix E6.

Soils will be required for construction of the compacted soil liner and protective cover components of the liner system, and for the infiltration layer and erosion layer components of the final cover system. Soils will also be required for operational cover (weekly and intermediate) and general earthfill. Typical material requirements for the various landfill components are listed below.

Table 6
Typical Material Requirements for Landfill Construction

Landfill Component	Classification	LL	PI	% - 200	Hydraulic Conductivity cm/sec
Soil Liner	SC, CL, CH, MH	30 min	15 min	30 min	1×10^{-7} max
Infiltration Layer	SC, CL, CH, MH	30 min	15 min	30 min	1×10^{-7} max
General Fill, Protective Cover, Operational Cover	SC, CL, CH, ML, CL-ML, MH	No large rocks, not mixed with waste			
Erosion Layer	SC, CL, CH, SM, ML, CL-ML	Suitable to support plant growth			

The soil liner and final cover infiltration layer must be constructed from soils that can be compacted to form a low hydraulic conductivity barrier. The test results indicate that suitable materials are available in Units I and III. General fill, protective cover, operational cover and erosion layer soils should not contain large rocks or be mixed with waste. Erosion layer material must be capable of sustaining vegetation. The test results and boring logs indicate that any of the soil material excavated from the site will be suitable for use as general earthfill, operational and protective cover and that the surficial soils will be suitable for use as the final cover system erosion layer.

5.2 Groundwater Observation Points – Piezometers

Data from the 20 piezometers were used to characterize site hydrogeology. Details of the piezometers are provided in Table 7. Groundwater elevation levels for the site's piezometers are summarized in Table 8, included in Appendix E5.

Piezometer locations are shown on Drawing E2.2 of this attachment. Proposed monitoring well details are provided in Attachment 5.

Table 7
Piezometer Details

Piezometer No.	Date Installed	Total Depth (ft)	Surface Elevation (ft/msl)	Top of Casing Elevation (ft/msl)	Filter Pack Elevations (ft/msl)	Screened Elevations (ft/msl)	Unit Screened
BME 2024 Piezometers							
P-3S	8/02/2024	27.5	682.47	685.02	667.47 - 654.97	665.47 - 655.97	I
P-3M	8/10/2024	70.0	682.25	684.83	626.25 - 612.25	623.25 - 613.25	III
P-3D	8/10/2024	90.5	681.61	684.34	598.61 - 591.11	596.61 - 591.61	V
P-4D	8/11/2024	90.5	681.18	683.69	598.18 - 590.68	596.18 - 591.18	V
P-5D	8/09/2024	66.0	681.46	684.02	628.46 - 615.46	626.46 - 616.46	V
P-6VII	8/13/2024	91.0	679.98	682.48	596.98 - 588.98	594.98 - 589.98	VII
P-11S	8/02/2024	24.0	677.23	679.68	666.23 - 653.23	664.23 - 654.23	I
P-11M	8/08/2024	42.0	677.22	679.64	642.22 - 635.22	641.22 - 636.22	III
P-11D	8/07/2024	71.0	677.04	679.43	619.04 - 606.04	617.04 - 607.04	V
P-24S	8/02/2024	31.0	682.86	685.49	665.36 - 651.86	663.36 - 653.36	I
P-24D	8/10/2024	75.5	682.47	685.20	613.97 - 606.97	612.47 - 607.47	V
P-24VII	8/11/2024	105.0	682.33	684.77	585.33 - 577.33	583.33 - 578.33	VII
P-31S	8/01/2024	37.5	684.14	686.85	659.14 - 646.64	657.14 - 647.14	I
P-32S	8/01/2024	37.5	681.79	684.32	656.79 - 644.29	654.79 - 644.79	I
P-32M	8/11/2024	71.0	682.10	684.57	624.10 - 611.10	622.10 - 612.10	III
P-32D	8/11/2024	89.5	682.63	685.47	600.63 - 593.13	599.63 - 594.63	V
P-33S	7/30/2024	31.0	682.55	685.02	665.05 - 651.55	662.55 - 652.55	I
P-34S	7/30/2024	34.5	682.83	685.37	661.83 - 648.33	658.83 - 648.83	I
P-34M	8/09/2024	50.0	682.98	685.47	639.98 - 632.98	638.98 - 633.98	III
P-34D	8/09/2024	88.0	683.08	685.38	602.58 - 595.08	600.58 - 595.58	V

5.2.1 Water Level Measurements

Water levels at the site have been measured from August 2024 to present in site piezometers. This data is compiled in Table 8 and are included in Appendix E5. Measurements of water levels were made to 0.01 foot using an electronic water level indicator. Water level elevations were calculated using measured water levels and surveyed well elevations (top of casing).

The cross sections in Appendix E3 are annotated to document the level at which stabilized groundwater levels were obtained from site piezometers. Borehole water level data are noted on the logs when present. Borehole fluid level data were not used in engineering calculations because the piezometers were properly constructed and screened to provide water level data on individual strata; these data are much more reliable than borehole data.

5.3 Groundwater Monitoring Historical Analytical Data

This site is not permitted and thus does not have any existing groundwater monitoring wells. Therefore, there is no existing analytical data.

5.4 Hydrogeologic Units

5.4.1 Unit I – Perched Water Zone – Alluvium

Groundwater is contained in the Unit I alluvium. Groundwater enters Unit I as meteoric water infiltration from the surface. Current excavation activities have altered the natural flow of groundwater at the site.

Water levels in piezometers screened in Unit I range from 658.77 to 663.18 ft/msl. Groundwater present in this unit is under water table conditions. Groundwater flows toward the north-northwest in the northern portion of the site. Groundwater also flows toward the south-southwest in the southwest portion of the site. Potentiometric surface maps of Unit I are included in Appendix E5 as Drawings E5.2a through E5.2d. Slug tests were conducted in Unit I piezometers. The geometric mean of hydraulic conductivity values (K) calculated from the Unit I slug tests is 1.87×10^{-4} centimeters per second (cm/sec). The estimated flow velocity in Unit I is 1.17 feet per year (ft/yr).

5.4.2 Unit II – Confining Unit – Limestone and Shale

Unit II consists of hard beds of limestone and shale and ranges from 1 to 13 feet thick. This layer was missing from ten borings (BME-1, 2, 5, 6, 9, 14, 15, 18, 19, and 26). When present, the lithologic and hydrogeological characteristics of this unit act as a lower confining unit to Unit I and an upper confining unit to Unit III. A laboratory permeability test was run on an undisturbed sample of Unit II (BME-3). The hydraulic conductivity was calculated to be 2.8×10^{-8} cm/sec. The hydraulic conductivity worksheet is included in Appendix E6 as Drawing E6.2.

Where Unit II is absent, Unit I and Unit III are in direct communication.

5.4.3 Unit III – Upper Groundwater Zone – Sandstone, Sandstone with Silt, Siltstone, and Sandy Shale

Groundwater is contained in Unit III strata which is comprised of sandstone, sandstone with silt, sand, and some sandy shale interbeds. Groundwater enters Unit III on the outcrop of the Paluxy Sand Formation. Water levels in piezometers screened in Unit III range from 652.34 to 662.42 ft/msl. Groundwater present in this unit is under confined conditions where Unit II is present. Groundwater flow in Unit III flows toward the northwest. Potentiometric surface maps of Unit III are included in Appendix E5 as Drawings E5.3a through E5.3d. Slug tests conducted in Unit III had a geometric mean of hydraulic conductivity values (K) of 1.56×10^{-4} cm/sec. The estimated flow velocity in Unit III is 3.26 ft/yr.

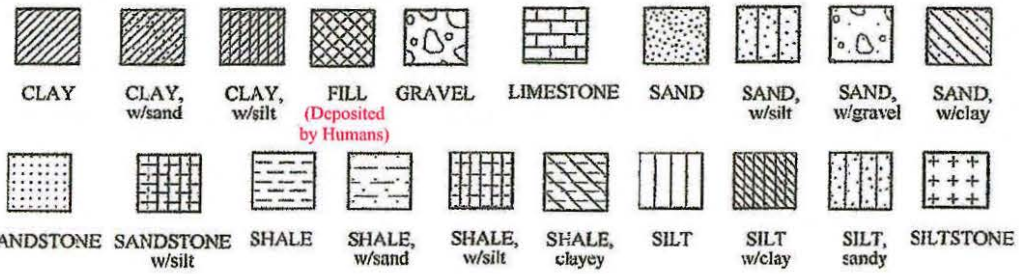
Unit II acts as a lower confining unit to Unit I and an upper confining unit to Unit III. As previously discussed, Unit II is absent in borings BME-1, 2, 5, 6, 9, 14, 15, 18, 19, and 26. Units I and III are in direct communication with one another where Unit II is absent. Groundwater in these areas flows to the northwest.

APPENDIX E2

GEOLOGIC PROCESSES

KEY TO SOIL CLASSIFICATION TERMS AND SYMBOLS

SOIL OR ROCK TYPES (shown in symbols column)



SUBSURFACE CONDITIONS:

Soil and rock descriptions on the boring logs are a compilation of field data as well as from laboratory testing of samples on those strata for which laboratory classification test results are presented on the boring logs. These classifications are based only on the actual samples tested, and the classification is then assigned to the remainder of the stratum interval based on visual classification. If laboratory classification test results are not presented on the boring log for a particular stratum, then that stratum was classified by visual-manual procedures only. The stratification lines represent the approximate boundary between materials and the transition can be gradual.

Classification of soils based upon visual-manual procedures was performed in general accordance with ASTM Standard D 2488. Classification of soils based upon laboratory test results was performed in general accordance with ASTM Standard D 2487.

Water-level observations have been made in the borings at the times indicated. It must be noted that fluctuations in the groundwater level may occur due to variations in rainfall, hydraulic conductivity of soil strata, construction activity, and other factors.

ELEVATIONS:

Elevation of contact or bottom of borings/piezometers is shown on the right side of the material description column.

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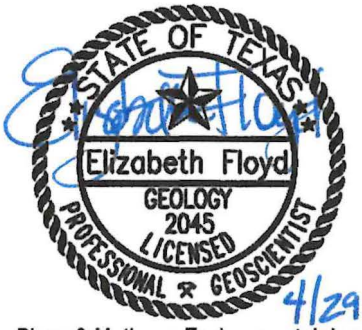
TYPE IV PERMIT APPLICATION

PART III – FACILITY INVESTIGATION AND DESIGN
ATTACHMENT F
GROUNDWATER MONITORING PLAN

Prepared for

Chisholm Trail Disposal, LLC

December 2024
Revised April 2025



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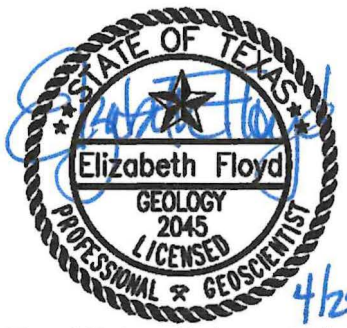

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CONTENTS

1 GROUNDWATER MONITORING PROGRAM

1.1 Site Hydrogeology

Site stratigraphy is discussed in detail in Section 4.2 of Attachment E. A discussion of the hydrogeologic interpretation of the site is in Section 5.3 of Attachment E.

1.1.1 Unit I – Alluvium - Perched Water Zone

Groundwater is contained in the Unit I alluvium. Groundwater enters Unit I as meteoric water filtration from the surface. Current excavation activities have altered the natural flow of groundwater at the site. A large open excavation in the northeast quadrant of the site acts as a sink for groundwater in Unit I.

Water levels in piezometers screened in Unit I range from 658.77 to 663.18 ft/msl. Groundwater present in this unit is under water table conditions. Groundwater flows toward the north-northwest in the northern portion of the site. Groundwater also flows toward the south in the southwest portion of the site. Potentiometric surface maps of Unit I are included in Appendix E5 as Drawings E5.2a to E5.2d. Slug tests were conducted in Unit I piezometers. The geometric mean of hydraulic conductivity values (K) calculated from the Unit I slug tests is 1.87×10^{-4} centimeters per second (cm/sec). The estimated flow velocity in Unit I is 1.17 feet per year (ft/yr).

1.1.2 Unit II – Confining Unit – Limestone and Shale

Unit II consists of hard beds of limestone and shale and ranges from 1 to 13 feet thick. This layer was missing from the borings (BME-1, 2, 5, 6, 9, 14, 15, 18, 19, and 26). When present, the lithologic and hydrogeological characteristics of this unit act as a lower confining unit to Unit I and an upper confining unit to Unit III. A laboratory permeability test was run on an undisturbed sample of Unit II (BME-3). The hydraulic conductivity was calculated to be 2.8×10^{-8} cm/sec. The hydraulic conductivity worksheet is included in Appendix E6 as Drawing E6.2.

Where Unit II is absent, Unit I and Unit III are in direct communication.

1.1.3 Unit III – Sandstone, Sandstone with Silt, Siltstone, Sandy Shale – Upper Groundwater Zone

Groundwater is contained in Unit III strata which is comprised of sandstone, sandstone with silt, siltstone, and with some interbeds of sandy shale. Groundwater enters Unit III on the outcrop of the Paluxy Sand Formation. Water levels in piezometers screened in Unit III range from 652.34 to 662.42 ft/msl. Groundwater present in this unit is under confined conditions where Unit II is present. Groundwater flow in Unit III flows toward the northwest. Potentiometric surface maps of Unit III are included in Appendix E5 as Drawings E5.3a through E5.4c. Slug tests conducted in Unit III had a geometric mean of

hydraulic conductivity values (K) of 1.56 x 10^{-4} cm/sec. The estimated flow velocity in Unit III is 3.26 ft/yr.

Unit II acts as a lower confining unit to Unit I and an upper confining unit to Unit III. As previously discussed, Unit II is absent in borings BME-1, 2, 5, 6, 9, 14, 15, 18, 19, and 26. Units I and III are in direct communication with one another where Unit II is absent. Groundwater in these areas would follow the flow regime for Unit III and flow to the northwest.

1.1.4 Unit IV – Confining Unit – Limestone and Shale

Unit IV consists of layers of limestone and shale. This unit ranges from 5 to 27 feet thick across the site. The lithological and hydrogeological characteristics of this unit indicate that it serves as the lower confining unit for Unit III and an upper confining unit for the underlying Unit V.

Two undisturbed samples were submitted for laboratory permeability testing on the Unit IV strata (BME-18, BME-28). Results for hydraulic conductivity calculated were less than 4.3 x 10^{-9} and 1.00 x 10^{-9} cm/sec, respectively. The hydraulic conductivity worksheets are included in Appendix E6 as Drawings E6.10 and E6.14.

1.1.5 Unit V – Uppermost Aquifer – Sand, Sandstone, Sand with Silt, Sandy Shale

Groundwater enters Unit V strata at its outcrop east of the site. Water levels in piezometers screened in Unit V range from 628.25 to 659.14 ft/msl. Groundwater present in this unit is under confined conditions. Groundwater is confined in Unit V by the overlying limestone of Unit IV and by the underlying limestone, shale with sand, and shale with silt of Unit VI. Potentiometric surface maps of Unit V are included in Appendix E5 as Drawings E5.4a through E5.4d. Groundwater flow is generally toward the west toward piezometers P-3 and P-4. In this area, groundwater is directed to its localized area in Unit V because of a depression in Unit III through VI, as shown on Cross Sections B-B' and E-E' (see Drawings E3.3 and E3.6). The geometric mean of the hydraulic conductivity values (K) calculated from the Unit V slug tests is 4.60 x 10^{-5} cm/sec. The estimated groundwater flow velocity in Unit V is approximately 6.32 ft/yr.

1.1.6 Unit VI – Lower Confining Unit – Limestone, Shale with Sand, Shale with Silt

Unit VI consists of layers of limestone, shale with sand, and shale with silt. An average of approximately 14 feet and a maximum of 20 feet of this layer was penetrated by site borings. Two undisturbed samples were submitted for laboratory permeability testing on the Unit VI strata (BME-8 and BME-17). The hydraulic conductivity was calculated as 4.5 x 10^{-9} and less than 1.00 x 10^{-9} cm/sec, respectively. The laboratory hydraulic conductivity worksheets are included in Appendix E6 as Drawings E6.6 and E6.9. The lithological and hydrogeologic characteristics of this unit indicate that Unit VI serves as the lower confining unit to Unit V, the uppermost aquifer. This layer serves as the aquiclude to Unit V, the uppermost aquifer.

3 SUBTITLE D GROUNDWATER MONITORING SYSTEM

A groundwater monitoring system has been designed for the facility in accordance with the requirements for 30 TAC §330.403 based on site specific technical information including the identification of the uppermost aquifer and other groundwater bearing zones and the lower confining unit beneath the uppermost aquifer that also includes a thorough characterization of the aquifer thickness and groundwater flow rate and direction. The design also considered the thickness, stratigraphy, lithology, and hydraulic characteristics of the geologic units above the groundwater, the materials of the uppermost aquifer, and the materials and characteristics of the lower confining unit beneath the uppermost aquifer.

Groundwater will be monitored in three subsurface units: the uppermost aquifer, Unit V; the uppermost groundwater zone, Unit I; and Unit III.

After monitoring well installation and prior to waste acceptance at the new landfill, the owner or operator will submit a certification in accordance with 30 TAC §330.403, §330.405, §330.407, §330.409, and §330.417.

3.1 Groundwater Monitoring Well Locations

Monitoring well locations in each of the three units are based on the geometry of the transmissive zones within each unit, groundwater flow directions, and aspects of landfill design as discussed in Section 2.

In the uppermost aquifer (Unit V), groundwater monitoring well screens are to be placed in the upper saturated part of Unit V. As discussed in Section 2.1 of this attachment, the excavation bottom of the proposed landfill remains entirely above the top of Unit V, mostly in the limestone and shale of Unit IV. As such the upper part of the saturated portion of Unit V is the first place a potential release of contaminant could arrive in the groundwater of Unit V, and thus it is the appropriate place to monitor groundwater in the uppermost aquifer. The point of compliance (POC) has been determined at the downgradient portion of the western side of the site as shown in Appendix F1 on Drawing F1.1.

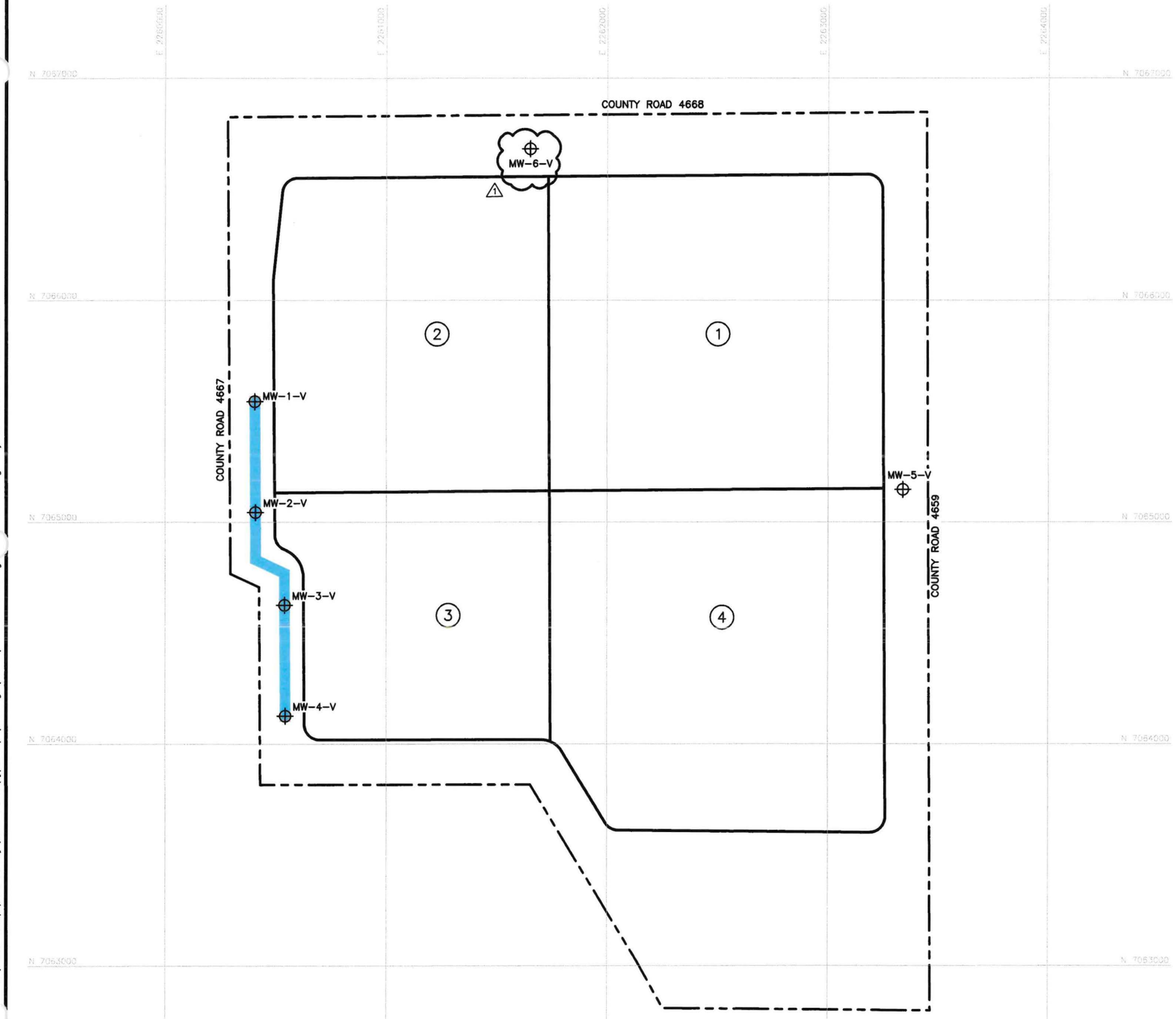
There will be a total of ~~five~~ six monitoring wells in Unit V; ~~one~~ two upgradient wells and four downgradient wells. Unit V monitoring wells are depicted on Drawing F1.1. Monitoring well details are provided on Drawing F1.5.

There will be a total of 14 monitoring wells in Unit I; one upgradient well and 13 downgradient wells. The monitoring wells in Unit I are designed to be screened directly above Unit II. Unit I monitoring wells are depicted on Drawing F1.2. Monitoring well details are provided on Drawing F1.5. The POC for Unit I was determined by the groundwater flow direction from the potentiometric surface maps included in Appendix E5 of Attachment E. Groundwater in Unit I flows to the northwest, west, and south-southeast.

CHISHOLM TRAIL DISPOSAL LANDFILL

APPENDIX F1

GROUNDWATER MONITORING SYSTEM



0 250 500
SCALE IN FEET

LEGEND

- PERMIT BOUNDARY
- WASTE MANAGEMENT UNIT
- N 7062000 STATE PLANE COORDINATES
- MW-1 PROPOSED GROUNDWATER MONITORING WELL
- POINT OF COMPLIANCE
- (1) SECTOR NUMBER

NOTE(S):

1. PERMIT BOUNDARY INFORMATION FROM SURVEYING AND MAPPING, LLC.

STATE OF TEXAS
Elizabeth Floyd
GEOLOGY
2045
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PROFESSIONAL GEOSCIENTIST

4/29/2025

FOR PERMITTING PURPOSES

REVISIONS			
1	3/19/25	ADDED MONITORING WELL LOCATION MW-6-V.	AW
REV	DATE	DESCRIPTION	DWN BY

GROUNDWATER MONITORING NETWORK – UNIT V

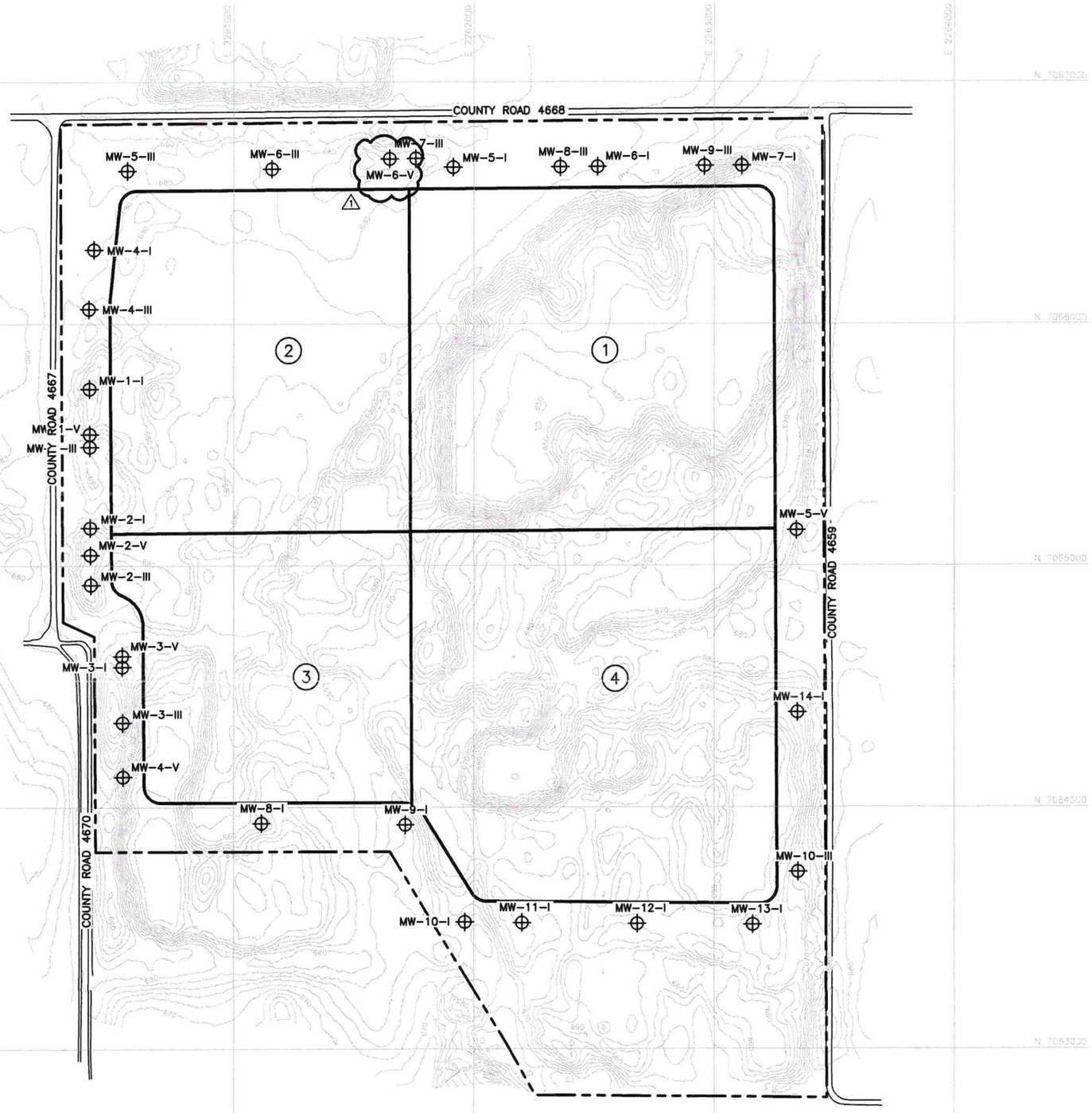
CHISHOLM TRAIL DISPOSAL, LLC
CHISHOLM TRAIL DISPOSAL LANDFILL

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

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

DRAWING
F1.1

O:\Green Group\Wise County\Solid Waste\Type IV\P\Drawings\ATT F\F1.1-GWMonitoringNetwork-Unit V.dwg Layout: LAYOUT 1 User: awhite



0 250 500
SCALE IN FEET

LEGEND

- PERMIT BOUNDARY
- WASTE MANAGEMENT UNIT
- 10' CONTOUR
- STATE PLANE COORDINATES
- MW-10-I — PROPOSED GROUNDWATER MONITORING WELL
- (1) — SECTOR NUMBER

NOTES:

1. EXISTING CONTOURS TAKEN FROM DRONE SURVEY PROVIDED BY BIGGS AND MATHEWS ENVIRONMENTAL DATED APRIL 5, 2024.
2. PERMIT BOUNDARY INFORMATION FROM SURVEYING AND MAPPING, LLC.

STATE OF TEXAS
Elizabeth Floyd
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PROFESSIONAL GEOSCIENTIST

4/29/2025

FOR PERMITTING PURPOSES

REVISIONS			
1	3/19/25	ADDED MONITORING WELL LOCATION MW-6-V.	AW
REV	DATE	DESCRIPTION	DWN BY

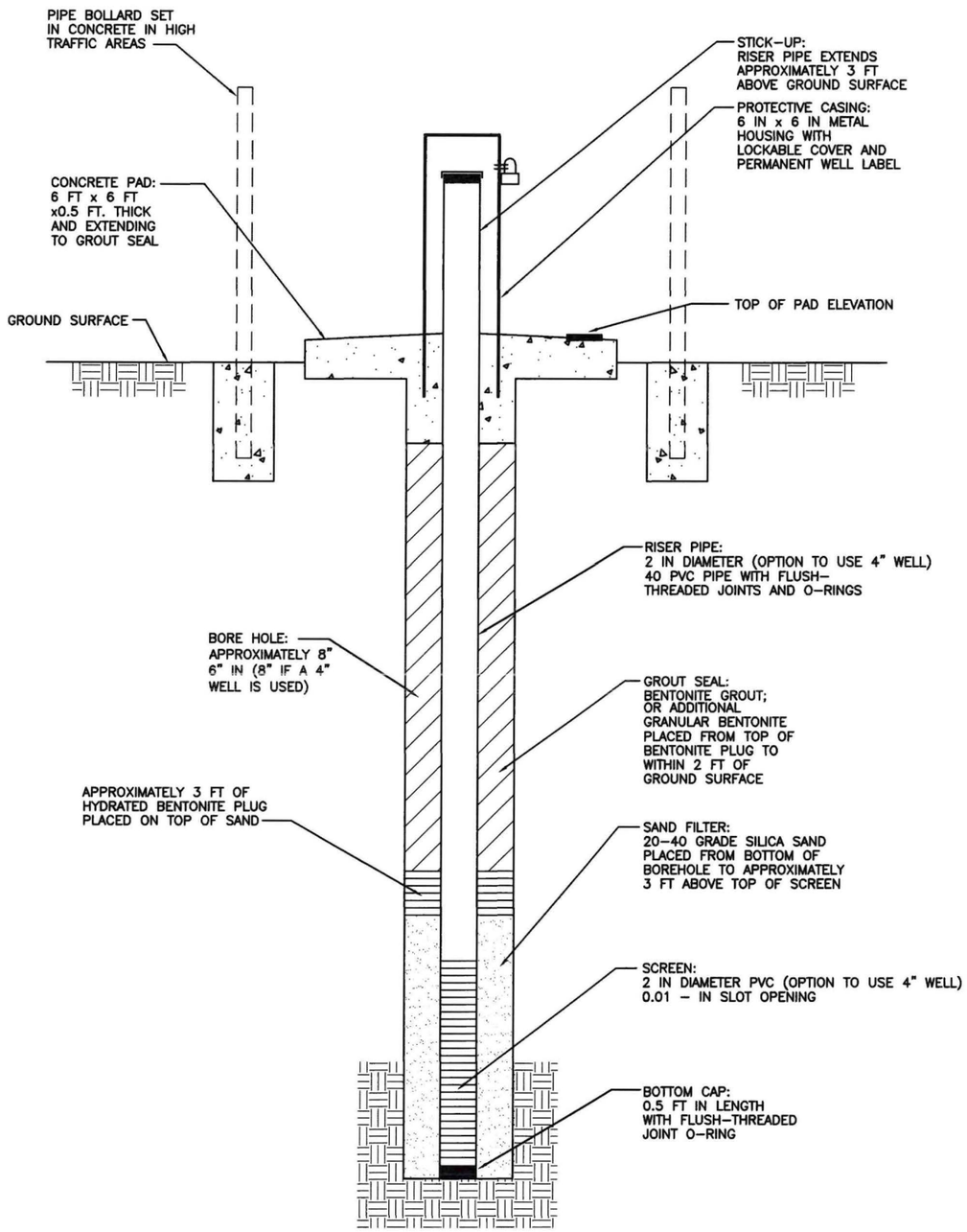
GROUNDWATER MONITORING NETWORK ALL HYDROGEOLOGIC UNITS

CHISHOLM TRAIL DISPOSAL, LLC CHISHOLM TRAIL DISPOSAL LANDFILL

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

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

DRAWING
F1.4



Monitoring Well No.	Layer	Designation	Northing	Easting	Exisitng Ground Elevation (ft/msl)	Design Elevation (ft/msl) (See Note 2)	Total Depth (ft/bgs)	Top of Casing Elevation (ft/msl)	Screened Interval (ft/bgs)	Top of Filter Pack (ft/bgs)
MW-1-V	V	D	7065544	2260403	683	692.00	100	694.5	90.0-100.0	87.0
MW-2-V	V	D	7065044	2260406	676	691.00	106	693.5	96.0-106.0	93.0
MW-3-V	V	D	7064627	2260538	688	689.00	89	691.5	79.0-89.0	76.0
MW-4-V	V	D	7064127	2260541	681	688.00	93	690.5	83.0-93.0	80.0
MW-5-V	V	U	7065146	2260340	679	687.00	102	689.5	92.0-102.0	89.0
MW-6-V	V	U	7066650	2261655	676.2	695.90	85	689.4	75 - 85	72.0
MW-1-I	I	D	7065732	2260402	674	693.00	53	696.5	43.0-53.0	40.0
MW-2-I	I	D	7065157	2260405	678	691.00	51	693.5	41.0-51.0	38.0
MW-3-I	I	D	7064582	2260538	690	689.00	49	691.5	39.0-49.0	36.0
MW-4-I	I	D	7066307	2260421	683	694.00	54	696.5	44.0-54.0	41.0
MW-5-I	I	D	7066647	2261914	680	695.00	50	697.5	40.0-50.0	37.0
MW-6-I	I	D	7066649	2262514	682	694.00	41	696.5	31.0-41.0	28.0
MW-7-I	I	D	7066653	2263114	670	692.00	50	694.5	40.0-50.0	37.0
MW-8-I	I	D	7066343	2263335	666	691.00	46	693.5	36.0-46.0	33.0
MW-9-I	I	D	7065742	2263337	669	689.00	44	691.5	34.0-44.0	31.0
MW-10-I	I	D	7065317	2263340	673	688.00	43	690.5	33.0-43.0	30.0
MW-11-I	I	D	7063932	2261116	678	686.00	31	688.5	21.0-31.0	18.0
MW-12-I	I	D	7063927	2261715	678	684.00	29	686.5	28.0-29.0	25.0
MW-13-I	I	D	7063525	2261963	674	683.00	28	685.5	18.0-28.0	15.0
MW-14-I	I	D	7063522	2262200	664	683.00	28	685.5	18.0-28.0	15.0
MW-15-I	I	D	7063518	2262680	665	684.00	35	686.5	25.0-35.0	22.0
MW-16-I	I	D	7063554	2262646	668	683.00	44	685.5	34.0-44.0	31.0
MW-17-I	I	U	7064392	2263345	672	685.00	37	687.5	27.0-37.0	24.0
MW-1-III	III	D	7065491	2260403	687	692.00	65	694.5	55.0-65.0	52.0
MW-2-III	III	D	7064921	2260408	676	690.00	68	692.5	58.0-68.0	55.0
MW-3-III	III	D	7064351	2260539	695	688.00	55	690.5	45.0-55.0	42.0
MW-4-III	III	D	7066061	2260400	684	694.00	64	696.5	54.0-64.0	51.0
MW-5-III	III	D	7066631	2260558	681	695.00	67	697.5	62.0-67.0	59.0
MW-6-III	III	D	7066640	2261158	679	696.00	60	698.5	50.0-60.0	47.0
MW-7-III	III	D	7066683	2261758	676	697.00	61	699.5	56.0-61.0	53.0
MW-8-III	III	D	7066648	2262358	682	694.00	52	696.5	42.0-52.0	49.0
MW-9-III	III	D	7066652	2262958	681	692.00	57	694.5	52.0-57.0	54.0
MW-10-III	III	U	7063733	7063733	673	683.00	69	685.5	59.0-69.0	56.0

1

NOTE(S):

1. SCREEN DEPTHS AND FILTER PACK DEPTHS SHOWN FOR THE PROPOSED MONITORING WELLS ARE ESTIMATES. ACTUAL DEPTHS WILL BE DETERMINED BY DEPTHS OF UNITS AT EACH PROPOSED LOCATION AS OBSERVED DURING INSTALLATION. WELL CONSTRUCTION MAY VARY IN ORDER TO MEET LOCAL CONDITION; INCLUDING USING A 5 FOOT SCREEN IN LAYER V INSTEAD OF A 10 FOOT SCREEN.
2. GROUNDWATER MONITORING WELL DEPTHS ARE MEASURED FROM PROPOSED FINAL GRADE ELEVATIONS AS SHOWN ON DRAWING D1.6, IN ATTACHMENT D. WELL SCREEN INTERVALS AND TOTAL DEPTHS ARE ADJUSTED ACCORDINGLY TO MAINTAIN REQUIRED MONITORING ZONES RELATIVE TO FINAL GRADE.
3. MONITORING WELLS WILL BE INSTALLED IN A PHASED APPROACH AS DISCUSSED IN SECTION 3.1 OF THIS ATTACHMENT.

STATE OF TEXAS
Elizabeth Floyd
GEOLOGY
2045
LICENSED
PROFESSIONAL GEOSCIENTIST
4/29/2025

FOR PERMITTING PURPOSES

REVISIONS			
1	3/19/25	ADDED MONITORING WELL LOCATION MW-6-V.	AW
REV	DATE	DESCRIPTION	DWN BY

MONITORING WELL DETAIL

CHISHOLM TRAIL DISPOSAL, LLC
CHISHOLM TRAIL DISPOSAL 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

DRAWING
F1.5

CHISHOLM TRAIL DISPOSAL LANDFILL
LANDFILL COUNTY, TEXAS
TCEQ PERMIT APPLICATION NO. MSW

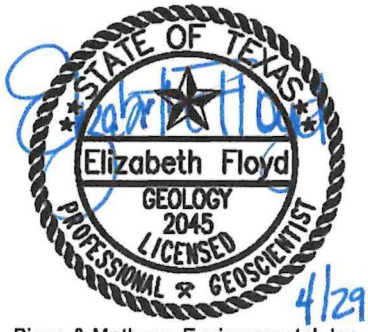
TYPE IV PERMIT APPLICATION

PART III – FACILITY INVESTIGATION AND DESIGN
APPENDIX F2
GROUNDWATER SAMPLING AND ANALYSIS PLAN

Prepared for

CHISHOLM TRAIL DISPOSAL, LLC

December 2024
Revised April 2025



4/29/2025

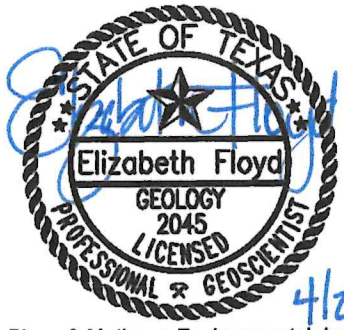
Biggs & Mathews Environmental, Inc.
Firm Registration No. 50222

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

TEXAS BOARD OF PROFESSIONAL GEOSCIENTISTS
FIRM REGISTRATION NO. 50222



4/29/2025

Biggs & Mathews Environmental, Inc.
Firm Registration No. 50222

CONTENTS

3 GROUNDWATER MONITORING REQUIREMENTS

Groundwater monitoring for the proposed monitoring well system is to follow the TCEQ requirements in 30 TAC §330.417.

Groundwater monitoring will be conducted during both the operational phase and the post-closure care period of the landfill, as required for solid waste management units in accordance with §330.401(f).

3.1 Monitoring Parameters and Frequency

All monitoring wells at the site are to be sampled and analyzed annually for the parameters listed in Table 3. An effort will be made to sample consistently in the same month each year.

EPA methods are listed for each constituent in Table 3. Equivalent or better methods may be substituted.

For any new or replacement wells that may be required, four quarterly background samples for the monitoring parameters listed in Table 3 will be collected and analyzed. Background groundwater samples from a new or replacement monitoring well will be obtained after completion of the monitoring well. Background levels will be established from samples collected from each new or replacement well at least once during each of the four calendar quarters. New or replacement wells will enter into the annual detection monitoring program once they have completed four sets of background analysis.

Following each background monitoring event, the analytical results will be reviewed and compared with the results of other site wells to determine whether there is any indication of facility impact. On completion of background monitoring and during background updates, the facility will evaluate the background data to ensure that the data are representative of background groundwater constituent concentrations unaffected by waste disposal activities or other sources of contamination. The background data evaluation will be documented in a report and submitted to the TCEQ.

Methods of data evaluation may include anion-cation balance techniques or Piper plots and Stiff diagrams to evaluate the groundwater geochemical signature compared to previous events. Trends will be evaluated using graphing software, statistical software, or other appropriate methods. Should the concentrations of a constituent with an MCL exhibit results that are naturally above the MCL, a risk based concentration will be used for evaluation of that constituent and described in the annual report.

3.2 Reporting Requirements

The results of analyses of groundwater samples will be submitted to the TCEQ in accordance with TCEQ rules. The results will be submitted on forms specified by the TCEQ.

All submittals will be made in triplicate to the central office of the TCEQ, unless otherwise specified by the TCEQ. Copies of all submittals will be maintained in the operating record for the site.

In accordance with 30 TAC §330.417, not later than 60 days after each sampling event, the owner or operator shall determine whether the landfill has released contaminants to the uppermost aquifer.

The executive director may require additional sampling, analyses of additional constituents, installation of additional monitoring wells or other sampling points, and/or other hydrogeological investigations if the facility appears to be contaminating the uppermost aquifer.

If the owner or operator finds the facility to have contaminated or be contaminating the uppermost aquifer, the executive director may order corrective action appropriate to protect human health and the environment up to and including that in §§330.411, 330.413, and 330.415 of this title (relating to Assessment of Corrective Measures; Selection of Remedy; and Implementation of the Corrective Action Program).

3.3 Annual Reports

The owner or operator shall provide an annual detection monitoring report within 60 days after the facility's annual groundwater monitoring event that includes the following information determined since the previously submitted report:

A. The results of all monitoring, testing, and analytical work obtained or prepared in accordance with the requirements of this permit, including a summary of background groundwater quality values, groundwater monitoring analyses, any statistical calculations, graphs, and drawings.

B. The groundwater flow rate and direction in the uppermost aquifer. The groundwater flow rate and direction of groundwater flow shall be established using the data collected during the preceding calendar year's sampling events from the monitoring wells of the Detection Monitoring Program. The owner or operator shall also include in the report all documentation used to determine the groundwater flow rate and direction of groundwater flow.

C. A contour map of piezometric water levels in the uppermost aquifer based at a minimum upon concurrent measurement in all monitoring wells. All data or documentation used to establish the contour map should be included in the report.

D. Recommendation for any changes.

E. Any other items requested by the executive director.

CHISHOLM TRAIL DISPOSAL LANDFILL
WISE COUNTY, TEXAS
TCEQ PERMIT NO. MSW 2421

TYPE IV PERMIT APPLICATION

PART III – FACILITY INVESTIGATION AND DESIGN
ATTACHMENT G
LANDFILL GAS MANAGEMENT PLAN

Prepared for

Chisholm Trail Disposal, LLC

December 2024
Revised April 2025

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

4/29/25

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

TEXAS BOARD OF PROFESSIONAL GEOSCIENTISTS
FIRM REGISTRATION NO. 50222

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

J Heath Parker 4/29/25

CONTENTS

or easement be established across the permit boundary, utility vents will be installed in accordance with the detail shown on Drawing G1.2.

3.1.4 Monitoring Procedures

Monitoring will be conducted by a qualified landfill representative or a qualified consultant. To avoid artificially impacting the probe static pressure during the induction of the gas sample into the instrument, the static pressure will be measured and recorded prior to measuring gas composition.

During each monitoring event, the probes will be monitored for the following parameters:

- Static pressure, as measured in inches of water column, gauge
- Methane concentration, as measured in percent by volume
- Oxygen concentration (optional), as measured in percent by volume
- Depth to groundwater, as measured in feet

Monitoring for gas composition and gas pressure will be performed using a portable Landtec® GEM-2000, or equivalent instrument, capable of measuring the required parameters. The monitoring equipment will be calibrated and maintained in accordance with the manufacturer's recommended procedures. Manufacturer's maintenance and calibration requirements for the monitoring instruments will be maintained on site with the LFG monitoring records described in Section 3.3.

The monitoring device will have a suction sampling line equipped with a quick-disconnect fitting. This fitting will match up with a corresponding quick-disconnect fitting on the top of each probe to enable gas samples to be drawn directly into the monitoring instrument without diluting the sample. The indicator will give a direct reading of the methane concentration in one of two scales, percent of the lower explosive limit (LEL) or percent by volume.

After these parameters are measured, the probe of a liquid level indicator will be lowered into the LFG probe through an opening located on the top of the LFG probe to measure water level (if any) inside the LFG probe. If no water is present, the level indicator will be used to verify and report total depth of the probe to assure that the probe is not obstructed.

In addition, sampling for specified trace gases may be required if directed by the executive director.

3.1.5 Maintenance Procedures

Each time LFG monitoring is conducted, the sampler will inspect the integrity of the LFG monitoring probes. The sampler will record pertinent information on the Quarterly Landfill Gas Monitoring Report (see Appendix G2) or similar forms. The Quarterly

Landfill Gas Monitoring Report will be kept in the site operating record. The sampler will perform the following at each monitoring event:

- Verify that the LFG monitoring probe is clearly labeled on the outer casing or lid.
- Verify that the protective casing is intact and is not bent or excessively corroded.
- Verify that the concrete pad is intact (no evidence of cracking or heaving).
- Verify that the padlock is functional.
- Verify that the inner casing is intact.

If damage to the LFG monitoring probe is observed, it will be reported to the landfill manager. If it is not possible to repair the LFG monitoring probe and the damage can potentially affect the accuracy of future monitoring results, the LFG monitoring probe will be decommissioned and replaced with a new LFG monitoring probe in accordance with Sections 3.1.2 and 3.4 of this attachment.

3.2 Facility Structures Monitoring

3.2.1 Monitoring Procedures

On-site buildings and structures designed for human occupation will be monitored with a continuous LFG monitor/alarm that will provide an audible alarm if methane concentrations exceed 1.25 percent methane by volume.

If allowable methane concentration limits are exceeded within structures, the building will be immediately evacuated and ventilated by opening doors and windows. Notification consistent with procedures in Section 4.2 of this attachment will be implemented immediately.

3.2.2 Maintenance Procedures

Continuous LFG monitors/alarms will be calibrated and maintained in accordance with the manufacturer's recommendations. Continuous LFG monitors/alarms will be tested in accordance with the manufacturer's testing specifications.

3.3 Recordkeeping/Reporting

Field monitoring data records will be maintained for the methane monitoring and kept in the site operating record. Field data will be recorded on the Quarterly Landfill Gas Monitoring Report form (or similar form) as shown in Appendix G2.

CHISHOLM TRAIL DISPOSAL LANDFILL
WISE COUNTY, TEXAS
TCEQ PERMIT NO. MSW 2421

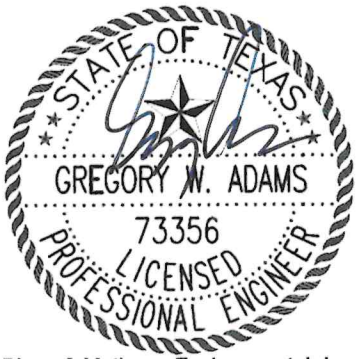
TYPE IV PERMIT APPLICATION

PART III - FACILITY INVESTIGATION AND DESIGN
ATTACHMENT I
POSTCLOSURE PLAN

Prepared for

Chisholm Trail Disposal, LLC

December 2024
Revised April 2025



Biggs & Mathews Environmental, Inc.
Firm Registration No. F-256
4/29/2025

Prepared by

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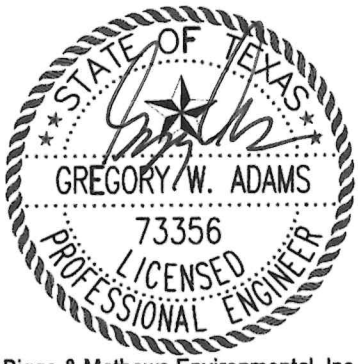
TEXAS BOARD OF PROFESSIONAL ENGINEERS AND LAND SURVEYORS
FIRM REGISTRATION NO. F-256 AND NO. 10194895

TEXAS BOARD OF PROFESSIONAL GEOSCIENTISTS
FIRM REGISTRATION NO. 50222



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

4/29/2025

CONTENTS

1 INTRODUCTION

30 TAC §§330.63(i) 330.453(f), 330.463(a), and 330.465

This facility postclosure care plan provides the information required by 30 TAC §330.63(i), 330.453(f), §330.463(a), and §330.465. The postclosure care plan includes the provisions for continued groundwater monitoring, landfill gas monitoring, and maintenance of the constructed final cover and drainage facilities for the duration of the 5-year postclosure period. The postclosure care plan also provides procedures to decrease or increase the postclosure care period, identifies the person responsible for postclosure care, and includes the provisions for certification at the completion of the postclosure care period. A copy of the postclosure plan will be placed in the operating record prior to the initial receipt of waste.

3 PERSON RESPONSIBLE FOR CONDUCTING POSTCLOSURE CARE ACTIVITIES

30 TAC §330.463(b)

At the time of the development of this document, the following person is responsible for the management of this landfill:

Thad Owings, Vice President
Chisholm Trail Disposal, LLC
~~134 Riverstone Terrace~~225 Reformation Parkway, Suite 20~~03~~
Canton, GA 30114
770-720-2717

Daily operational activities are directed by:

Landfill Manager
Chisholm Trail Disposal Landfill
291 P.R. 4674
Aurora, TX 76078
770-720-2717

The person responsible for conducting postclosure activities is subject to change. However, as part of the closure notification to the TCEQ, as required by 30 TAC §330.463(b), Chisholm Trail Disopsal, LLC, will notify the TCEQ regarding the responsible person.

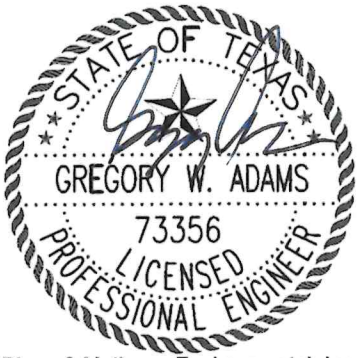
CHISHOLM TRAIL DISPOSAL LANDFILL
WISE COUNTY, TEXAS
TCEQ PERMIT NO. MSW 2421

PART IV – SITE OPERATING PLAN

Prepared for

CHISHOLM TRAIL DISPOSAL, LLC

December 2024
Revised April 2025



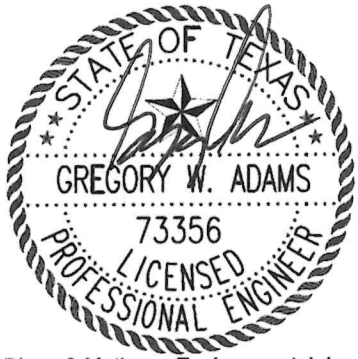
Biggs & Mathews Environmental, Inc.
Firm Registration No. F-256
4/29/2025

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



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

4/29/2025

CONTENTS

erosion control features placed as part of the intermediate cover will be maintained. Runoff from areas that have received intermediate cover are considered to have not come into contact with the active working face or leachate, and are considered uncontaminated stormwater runoff.

The landfill manager will document, on a daily basis, when intermediate cover is being placed, the intermediate cover placement area, the thickness and condition in the Cover Inspection Record as discussed in Section 8.18.8.

Areas with twelve inches of intermediate cover must be inspected weekly for erosion, ponded water, seeps, protruding waste, or other detrimental conditions that may cause contaminated runoff from the intermediate cover. Once the area becomes active again, the intermediate cover may be stripped off prior to additional waste placement and used as intermediate cover in other areas.

8.18.4 Alternative Daily Cover

The CTD Landfill is not currently authorized to use alternative daily (weekly) cover. Should the landfill decide to request authorization to use alternative daily (weekly) cover, the landfill will request authorization in accordance with §330.165(d).

8.18.5 Temporary Waiver

The CTD Landfill may request a waiver from cover requirements due to extreme seasonal climatic conditions in accordance with §330.165(e).

8.18.6 Final Cover

Final cover placement over individual areas will be in accordance with Part III, Attachment H and §330.453 and will permit ongoing landfilling operations to continue until the time of final closure. Surface water will be managed throughout the active life of the site to minimize infiltration into the filled areas and to minimize contact with solid waste. Erosion of final or intermediate cover will be repaired promptly by restoring the cover material, grading, compacting, and seeding it as necessary. Periodic inspections and restorations are required during the entire operational life and for the postclosure maintenance period. Refer to Section 8.27 for a site inspection and maintenance schedule.

In general, final cover placement over completed portions of the site will consist of the following steps:

- Survey controls will be implemented to control the filling of solid waste to the bottom level of the weekly/intermediate cover layer elevation.

- The final cover system layers will be constructed. Testing of the various components of the final cover system will be performed in accordance with Part III, Appendix H2.

UNMARKED REVISED PAGES

CHISHOLM TRAIL DISPOSAL LANDFILL
WISE COUNTY, TEXAS
TCEQ PERMIT NO. MSW 2421

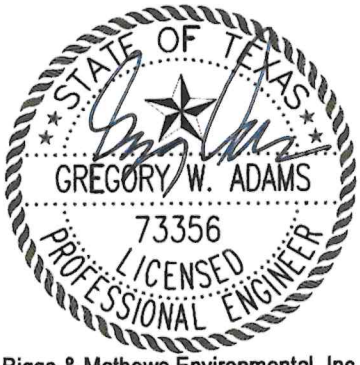
TYPE IV PERMIT APPLICATION

VOLUME 1 OF 3

Prepared for

Chisholm Trail Disposal, LLC

December 2024
Revised April 2025



Biggs & Mathews Environmental, Inc.
Firm Registration No. F-256
4/29/2025

Prepared by

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CHISHOLM TRAIL DISPOSAL LANDFILL
WISE COUNTY, TEXAS
TCEQ PERMIT NO. MSW 2421

TYPE IV PERMIT APPLICATION

VOLUME 1 OF 3

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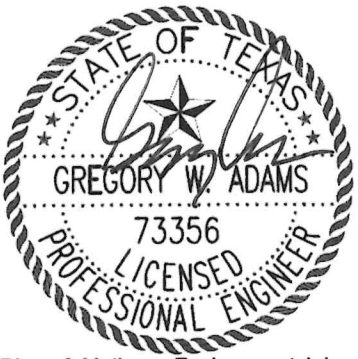

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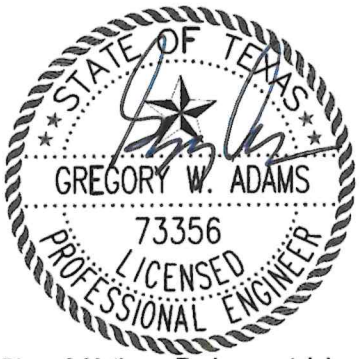

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WISE COUNTY, TEXAS
TCEQ PERMIT NO. MSW 2421

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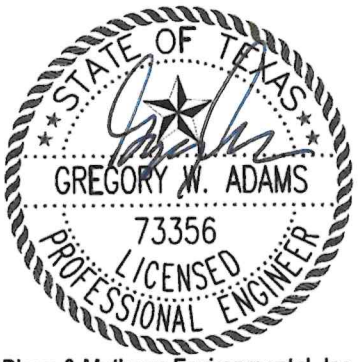


Biggs & Mathews Environmental, Inc.
Firm Registration No. F-256

4/29/2025

CONTENTS

TCEQ Use Only

TCEQ Core Data Form

For detailed instructions on completing this form, please read the Core Data Form Instructions or call 512-239-5175.

SECTION I: General Information

1. Reason for Submission (*If other is checked please describe in space provided.*)

☒ New Permit, Registration or Authorization (*Core Data Form should be submitted with the program application.*)

☐ Renewal (*Core Data Form should be submitted with the renewal form*) ☐ Other

2. Customer Reference Number (if issued)	Follow this link to search for CN or RN numbers in Central Registry**	3. Regulated Entity Reference Number (if issued)
CN 606237394		RN 111930335

SECTION II: Customer Information

4. General Customer Information	5. Effective Date for Customer Information Updates (mm/dd/yyyy)	03/24/2025

☐ New Customer ☒ Update to Customer Information ☐ Change in Regulated Entity Ownership
☐ Change in Legal Name (Verifiable with the Texas Secretary of State or Texas Comptroller of Public Accounts)

The Customer Name submitted here may be updated automatically based on what is current and active with the Texas Secretary of State (SOS) or Texas Comptroller of Public Accounts (CPA).

6. Customer Legal Name (If an individual, print last name first: eg: Doe, John)	If new Customer, enter previous Customer below:
Chisholm Trail Disposal, LLC	

7. TX SOS/CPA Filing Number	8. TX State Tax ID (11 digits)	9. Federal Tax ID (9 digits)	10. DUNS Number (if applicable)
0804977428	32088911816		

11. Type of Customer: ☒ Corporation ☐ Individual Partnership: ☐ General ☐ Limited
Government: ☐ City ☐ County ☐ Federal ☐ Local ☐ State ☐ Other ☐ Sole Proprietorship ☐ Other:

12. Number of Employees
☒ 0-20 ☐ 21-100 ☐ 101-250 ☐ 251-500 ☐ 501 and higher

13. Independently Owned and Operated?
☐ Yes ☒ No

14. Customer Role (Proposed or Actual) – *as it relates to the Regulated Entity listed on this form. Please check one of the following*

☐ Owner ☐ Operator ☒ Owner & Operator ☐ Other:
☐ Occupational Licensee ☐ Responsible Party ☐ VCP/BSA Applicant

15. Mailing Address:	225 Reformation Parkway						
	Ste. 200						
	City	Canton	State	GA	ZIP	30114	ZIP + 4	1705

16. Country Mailing Information (if outside USA)	17. E-Mail Address (if applicable)
	[redacted]

18. Telephone Number	19. Extension or Code	20. Fax Number *(if applicable)*
(770) 720-2717		( ) -

SECTION III: Regulated Entity Information

21. General Regulated Entity Information *(If 'New Regulated Entity" is selected, a new permit application is also required.)*

☐ New Regulated Entity ☐ Update to Regulated Entity Name ☒ Update to Regulated Entity Information

The Regulated Entity Name submitted may be updated, in order to meet TCEQ Core Data Standards (removal of organizational endings such as Inc, LP, or LLC).

22. Regulated Entity Name *(Enter name of the site where the regulated action is taking place.)*

Chisholm Trail Disposal Landfill

23. Street Address of the Regulated Entity: ***(No PO Boxes)***	291 P.R. 4674							
	City	Aurora	**State**	TX	**ZIP**	76078	**ZIP + 4**	
24. County	Wise							

If no Street Address is provided, fields 25-28 are required.

25. Description to Physical Location:					
26. Nearest City			**State**		**Nearest ZIP Code**

Latitude/Longitude are required and may be added/updated to meet TCEQ Core Data Standards. (Geocoding of the Physical Address may be used to supply coordinates where none have been provided or to gain accuracy).

27. Latitude (N) In Decimal:	33.05116		**28. Longitude (W) In Decimal:**	-97.5398	
Degrees	Minutes	Seconds	Degrees	Minutes	Seconds
33	03	04.1760	-97	32	23.2800

29. Primary SIC Code (4 digits)	**30. Secondary SIC Code** (4 digits)	**31. Primary NAICS Code** (5 or 6 digits)	**32. Secondary NAICS Code** (5 or 6 digits)
4953		562212	

33. What is the Primary Business of this entity? *(Do not repeat the SIC or NAICS description.)*

Disposal of municipal solid waste.

34. Mailing Address:	**225 Reformation Parkway**							
	Ste. 200							
	City	**Canton**	**State**	**GA**	**ZIP**	**30114**	**ZIP + 4**	**1705**
35. E-Mail Address:	**towings@gghcorp.com**							

36. Telephone Number	**37. Extension or Code**	**38. Fax Number** *(if applicable)*
(770) 720-2717		( ) -

39. TCEQ Programs and ID Numbers Check all Programs and write in the permits/registration numbers that will be affected by the updates submitted on this form. See the Core Data Form instructions for additional guidance.

☐ Dam Safety	☐ Districts	☐ Edwards Aquifer	☐ Emissions Inventory Air	☐ Industrial Hazardous Waste
☒ Municipal Solid Waste	☐ New Source Review Air	☐ OSSF	☐ Petroleum Storage Tank	☐ PWS
2421				
☐ Sludge	☐ Storm Water	☐ Title V Air	☐ Tires	☐ Used Oil
☐ Voluntary Cleanup	☐ Wastewater	☐ Wastewater Agriculture	☐ Water Rights	☐ Other:

SECTION IV: Preparer Information

40. Name:	Gregory W. Adams, P.E.	**41. Title:**	Principal Engineer

42. Telephone Number	**43. Ext./Code**	**44. Fax Number**	**45. E-Mail Address**
(817) 563-1144		( ) -	[redacted]

SECTION V: Authorized Signature

46. By my signature below, I certify, to the best of my knowledge, that the information provided in this form is true and complete, and that I have signature authority to submit this form on behalf of the entity specified in Section II, Field 6 and/or as required for the updates to the ID numbers identified in field 39.

Company:	Chisholm Trail Disposal, LLC	**Job Title:**	Vice President
Name *(In Print):*	Thad Owings	**Phone:**	(770) 720- 2717
Signature:	Thad Owings	**Date:**	4/24/2025

Administrative and Technical Review Checklist for Municipal Solid Waste (MSW) Permits, Registrations and Amendments

This checklist is designed to provide guidance for the Municipal Solid Waste (MSW) rules found in Title 30 Texas Administrative Code (30 TAC) Chapter 330, for Type I, IV and V registration, permit, and permit amendment applications. Areas of the checklist that are shaded in gray are for information purposes only.

Please fill out application information before selecting and filling out a checklist.

Applicant Information

Company:	Chisholm Trail Disposal, LLC		
First name:	Thad	Last name	Owings
Applicant Title:	Vice President	Prefix:	Mr
Street Address:	225 Reformation Parkway, Suite 200		
City:	Canton	State: GA	Zip code: 30114
Applicant E-Mail:	[redacted]		

Consultant Information

First name:	Gregory	Last name:	Adams
Consultant Title:	Principal	Prefix:	Mr
Consultant Firm:	Biggs and Mathews Environmental, Inc.		
Consultant Address:	1700 Robert Road		
City:	Mansfield	State: TX	Zip code: 76063
Consultant E-Mail:	[redacted]		

Application Information

Facility Name:	Chisholm Trail Disposal Landfill		
Application Date	12/16/2024		
CN:	606237394	MSW ID:	2421
RN:	111930335	Authorization Type:	Permit
County:	Wise	Application Type:	New Permit

Texas Commission on Environmental Quality

Part I Application Form for New Permit, Permit Amendment, or Registration for a Municipal Solid Waste Facility

Instructions for completing this Part I Application Form are provided in TCEQ 00650-instr[1]. Include a Core Data Form (TCEQ 10400)[2] with the application for the facility owner, and Core Data Forms for the operator and property owner if different from the facility owner. If you have questions, contact the Municipal Solid Waste (MSW) Permits Section by email to mswper@tceq.texas.gov, or by phone at 512-239-2335. Rules cited on this form are in Title 30 Texas Administrative Code (30 TAC) and may be viewed online at www.tceq.texas.gov/goto/view-30tac.

Application Tracking Information

Facility Regulated Entity Name[3]:
Chisholm Trail Disposal Landfill

Site Operator (Permittee or Registrant Name)[4]:
Chisholm Trail Disposal, LLC

MSW Authorization Number: 2421

Initial Submission Date: 02/26/2024

Revision Date: 04/30/2025

Application Data

1. Submission Type

☐ Initial Submission ☒ Notice of Deficiency (NOD) Response

2. Authorization Type

☒ Permit ☐ Registration

3. Application Type

☒ New Permit

☐ Permit Major Amendment ☐ Permit Limited Scope Major Amendment

☐ New Registration

[1] www.tceq.texas.gov/downloads/permitting/waste-permits/msw/forms/00650-instr.pdf
[2] www.tceq.texas.gov/goto/coredata
[3] Facility Regulated Entity Name must match the Regulated Entity Name indicated on the TCEQ Core Data Form.
[4] Site Operator is defined in 30 TAC 330.3(148) as the holder of, or the applicant for, an authorization (or license) for a municipal solid waste facility.

PAGE REVISION DATE: 04/30/2025

17. Facility Contact Information

Site Operator (Permittee or Registrant)

Name: Chisholm Trail Disposal, LLC

Customer Reference Number: **CN** 606237394

Contact Name: Thad Owings Title: Vice President

Mailing Address: 225 Reformation Parkway, Suite 200

City: Canton County: Cherokee State: GA Zip Code: 30114

Phone Number: 770-720-2717

Email Address: [redacted]

Operator (if different from *Site Operator*)

Name: _____

Customer Reference Number: **CN** _____

Contact Name: _____ Title: _____

Mailing Address: _____

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

Phone Number: _____

Email Address: _____

Consultant (if applicable)

Firm Name: Biggs and Mathews Environmental, Inc.

Consultant Name: Gregory W. Adams, P.E.

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

Contact Name: Gregory W. Adams, P.E. Title: Principal

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: Corporation Service Company d/b/a CSC

Mailing Address: 211 E. 7th Street, Suite 620

City: Austin County: Travis State: TX Zip Code: 78701

Phone Number: 512-397-1550

Email Address: [redacted]

PAGE REVISION DATE: 04/30/2025

Applicant Signature Page

Site Operator (Permittee or Registrant Name) 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: Thad Owings Title: Vice President

Email Address: [redacted]

Signature: Thad Owings Date: 4-30-25

Authorization by Facility Owner for Operator to Submit Application

To be completed by the facility owner if the application is submitted by an operator who is not the facility owner.

I am the owner of the facility that is the subject of this application, and authorize the operator, _____ to submit this application pursuant to 30 TAC 305.43(c).

Name: _____ Title: _____

Email Address: _____

Signature: _____ Date: _____

Notary

SUBSCRIBED AND SWORN to before me by the said Thad Owings

On this 30th day of April, 2025

My commission expires on the 27th day of Jan., 2029

Cherokee County, GA

Notary Public in and for

Joy Hammonds (notary's jurisdiction, including county and state)

Note: Application Must Bear Signature & Seal of Notary Public

JOY HAMMONDS NOTARY PUBLIC CHEROKEE COUNTY, GEORGIA MY COMMISSION EXPIRES JANUARY 07, 2029

CHISHOLM TRAIL DISPOSAL LANDFILL
WISE COUNTY, TEXAS
TCEQ PERMIT NO. MSW 2421

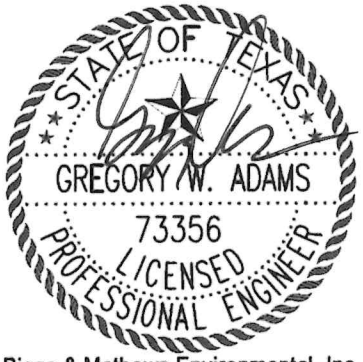
TYPE IV PERMIT APPLICATION

VOLUME 2 OF 3

Prepared for

Chisholm Trail Disposal, LLC

December 2024
Revised April 2025



Biggs & Mathews Environmental, Inc.
Firm Registration No. F-256
4/29/2025

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

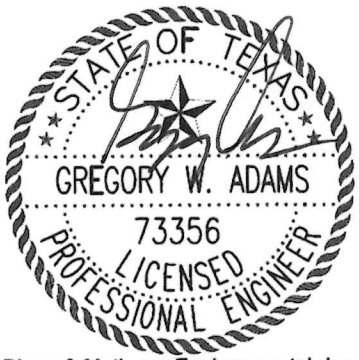
CHISHOLM TRAIL DISPOSAL LANDFILL
WISE COUNTY, TEXAS
TCEQ PERMIT NO. MSW 2421

TYPE IV PERMIT APPLICATION

VOLUME 2 OF 3

CONTENTS

PART III FACILITY INVESTIGATION AND DESIGN



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WISE COUNTY, TEXAS
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TYPE IV PERMIT APPLICATION

PART III
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CHISHOLM TRAIL DISPOSAL, LLC

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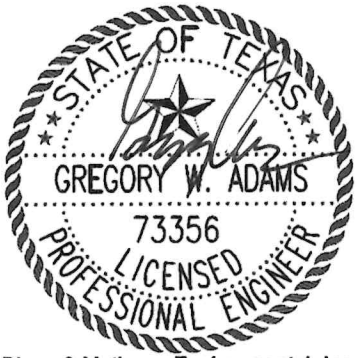

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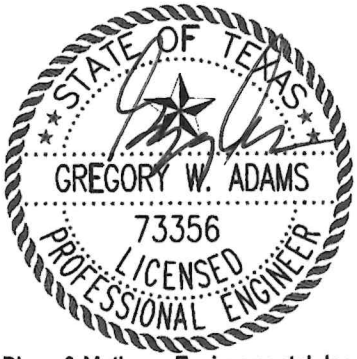

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CHISHOLM TRAIL DISPOSAL LANDFILL
WISE COUNTY, TEXAS
TCEQ PERMIT NO. MSW 2421

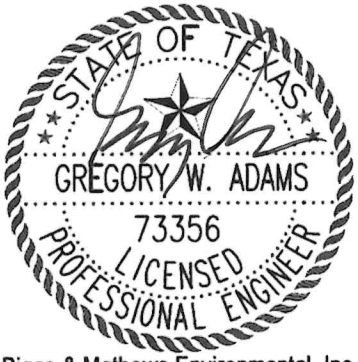
TYPE IV PERMIT APPLICATION

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

Prepared for

Chisholm Trail Disposal, LLC

December 2024
Revised April 2025



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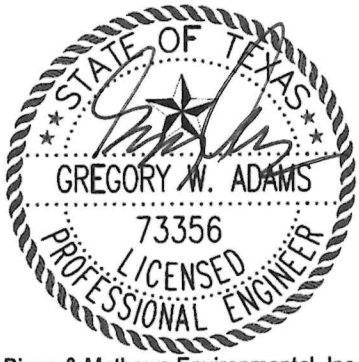

Biggs & Mathews Environmental, Inc.
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1 FACILITY ACCESS

30 TAC 330.63(b)(1)

Access to the Chisholm Trail Disposal (CTD) Landfill will be provided by an entrance road from CR 4668 approximately 600 feet west of the intersection of CR 4668 and CR 4659. Access to the facility will be controlled by a perimeter fence along the permit boundary and locking gate at the site entrance. The fence and gate will prevent the entry of livestock, protect the public from exposure to potential health and safety hazards, and discourage unauthorized entry or uncontrolled disposal of solid waste or prohibited materials.

Entry to the active portion of the site will be restricted to designated personnel, approved waste haulers, properly identified persons whose entry is authorized by site management, and TCEQ personnel. Visitors may be allowed on the active area only when accompanied by a site representative. Signs will be located along the entrance road directing traffic to the gatehouse. The gate attendant will restrict site access to authorized vehicles and direct these vehicles appropriately. Waste hauling vehicles will be directed to appropriate fill areas by signs located along the landfill haul road and access road. These vehicles will deposit their loads and depart the site. Private, commercial, or public solid waste vehicles will not be allowed access to any areas other than the active portion of the landfill. Site personnel will provide traffic directions as necessary to facilitate safe movement of vehicles. Within the site, signs will be placed along the landfill haul road and access road at a frequency adequate for users to be able to determine where the disposal area locations are, and which roads are to be used. Roads not being used for access to disposal areas will be blocked or otherwise marked for no entry.

2 WASTE MOVEMENT

30 TAC 330.63(b)(2)

The CTD Landfill will dispose of municipal solid waste and Class 2 and Class 3 industrial solid wastes consisting of construction or demolition waste, brush, and rubbish as defined by §330.3. The landfill will not accept for disposal putrescible wastes, conditionally exempt small-quantity generator waste, household wastes, grease or trap wastes, sludges, septage, or other liquid wastes, lead acid storage batteries, used motor vehicle oil, used oil filters whole used or scrap tires, refrigerators, freezers, air conditioners or other items containing chlorinated fluorocarbons (CFC), bulk or noncontainerized liquid waste from non-household sources, regulated hazardous waste, polychlorinated biphenyls (PCB) waste, radioactive materials, or other wastes prohibited by TCEQ regulations. Procedures for waste acceptance, handling, processing, and disposal are provided in Part IV.

Waste disposal facilities include a waste disposal area, large item staging area, reusable materials staging area, citizen's convenience area, and wood waste mulching area. Appendix B1 includes a waste flow diagram, schematic drawings, and details that depict disposal and materials staging activities.

Waste movement through the facility is depicted on Drawing B.1 and a waste disposal material staging plan is provided on Drawing B.2. As waste enters the facility via the entrance road, the attendant will observe the incoming waste, conduct waste screening and weighing, and document incoming waste. The attendant will be familiar with the rules and regulations governing the various types of waste that can or cannot be accepted into this facility and will direct the waste hauler to the appropriate waste disposal or material staging area. The site personnel will also have the authority to reject prohibited wastes and have the rejected waste removed by the waste haul vehicle or transporter immediately upon discovery. Trained personnel will observe waste unloading at the active working face and large item staging area and will have the authority and responsibility to reject loads which contain prohibited wastes. The working face personnel will also have the authority to have unauthorized and prohibited waste removed by the waste haul vehicle or transporter immediately upon discovery.

The waste disposal area will have a constructed liner system as described in Attachment D. A staging area for large items and white goods and a wood waste mulching area may be provided over lined areas near the active working face. The large item staging area is shown on Drawing B.3. Large items and white goods include items such as ovens, dishwashers, freezers, air conditioners, and other large items. Runon or runoff from the area will be contained within the active area and handled as contaminated water, as discussed in Part IV. These items will be disposed of after CFCs have been removed in accordance with all applicable regulatory requirements and within 10 days of acceptance at the facility. The wood waste mulching area will include source-separated yard trimmings, brush, and clean wood materials. Materials will be chipped and mulched in small piles and will be managed to prevent fire, safety, or health hazards in accordance 30 TAC §330.209(a). Periodically, a third party contractor will be called to the site to grind and transport the wood waste material off-site for re-use. Wood waste mulch will be

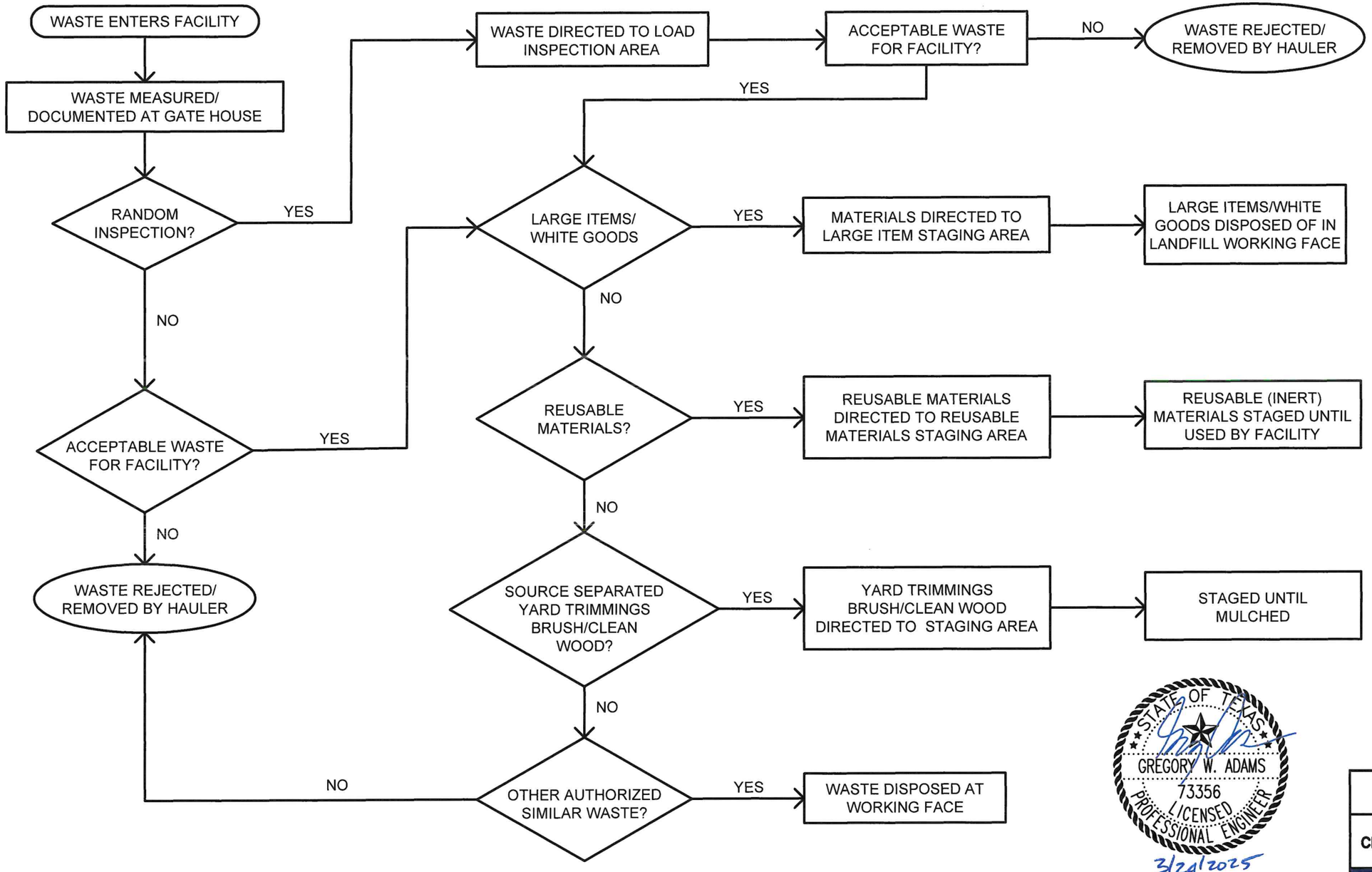
re-used within the facility or transported for off-site re-use within 90 days of acceptance at the facility.

Source-separated inert materials such as brick, concrete, rubble, aggregate, and reclaimed asphalt pavement may be staged at the facility for use on facility access roads, staging areas, and drainage structures. The reusable materials staging area will be located above existing lined areas and will be relocated periodically as the active working face moves. The size of the stockpiles will vary depending on the amount of materials received. Since brick, concrete, rubble, aggregate materials, and reclaimed asphalt pavement are inert, their staging will not create a public health hazard or nuisance, and separate management of runon and runoff from rainfall in this area will not be required. Since these inert materials will continuously be reused for site operations, there is no time limit on the staging of these materials. Reclaimed asphalt pavement that contains asbestos will not be used and will not be accepted.

The Citizen's Convenience Area will be located within limits of the waste management unit beside the access road. The Citizen's Convenience Area will consist of 30 cy roll off boxes as depicted on Drawing B.4. The roll off boxes will be emptied at the working face.

CHISHOLM TRAIL DISPOSAL LANDFILL

APPENDIX B1
DRAWINGS



STATE OF TEXAS
GREGORY W. ADAMS
73356
LICENSED
PROFESSIONAL ENGINEER
3/24/2025

FOR PERMITTING PURPOSES

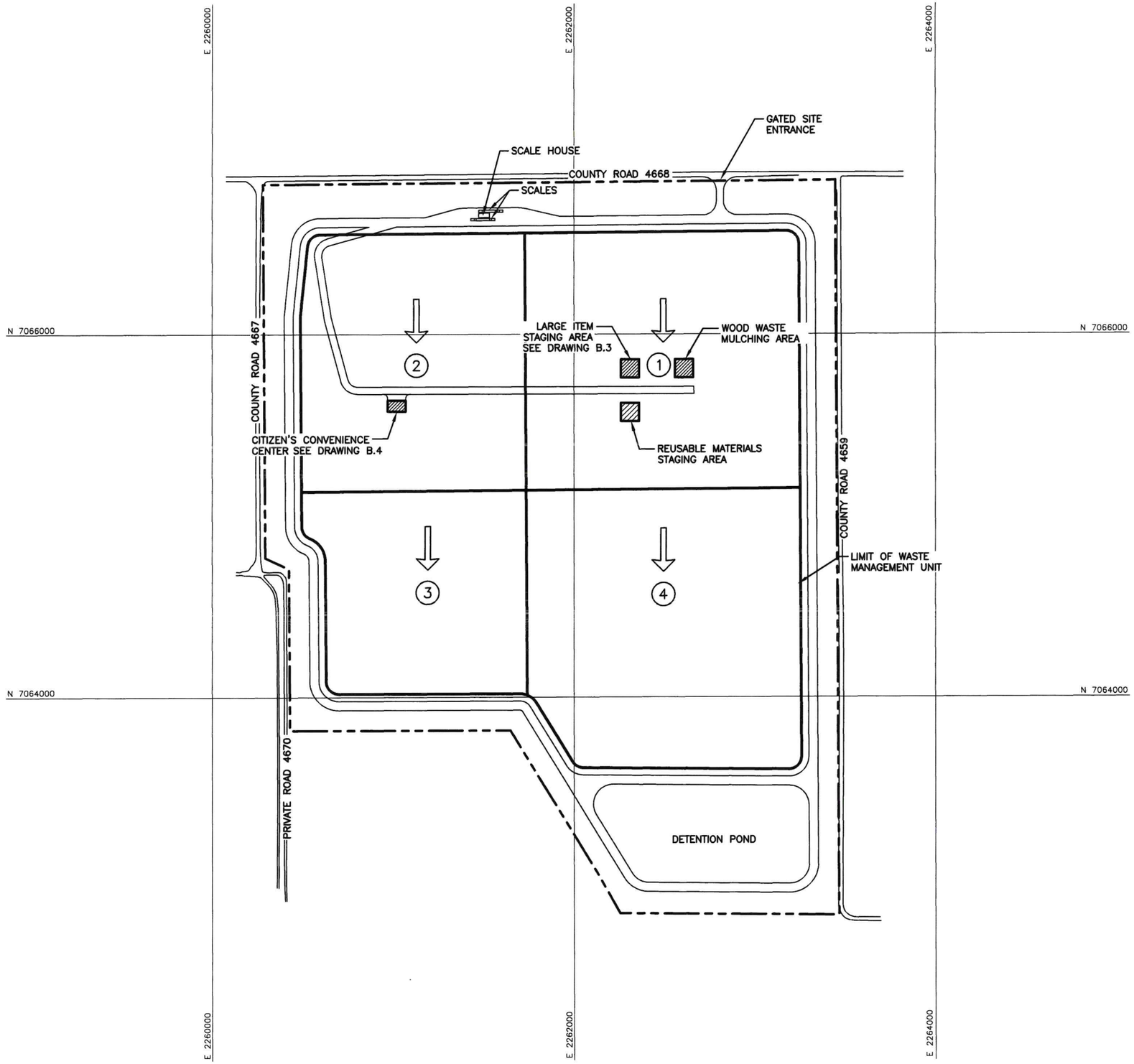
REVISIONS		
REV	DATE	DESCRIPTION

WASTE MOVEMENT FLOW DIAGRAM

CHISHOLM TRAIL DISPOSAL, LLC
CHISHOLM TRAIL DISPOSAL 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

DRAWING
B.1



0 300 600
SCALE IN FEET

LEGEND

- PERMIT BOUNDARY
- WASTE MANAGEMENT UNIT
- N 7062000 — STATE PLANE COORDINATES
- (1) — SECTOR NUMBER
- DEVELOPMENT DIRECTION

NOTE(S):

1. SECTOR 1, 2, 3 AND 4 WILL BE DEVELOPED IN SEQUENTIAL ORDER.
2. THE LARGE ITEM STAGING AREA WILL BE LOCATED OVER LINED AREAS AND WILL BE RELOCATED PERIODICALLY AS THE SITE IS DEVELOPED.
3. THE REUSABLE MATERIALS STAGING AREA WILL BE LOCATED OVER LINED AREAS AND WILL BE RELOCATED PERIODICALLY AS THE SITE IS DEVELOPED.
4. THE WOOD WASTE MULCHING AREA WILL BE LOCATED WITHIN THE LIMITS OF WASTE MANAGEMENT LIMITS AND WILL BE RELOCATED PERIODICALLY AS THE SITE IS DEVELOPED. REFER TO PART IV FOR OPERATIONAL PROVISIONS.
5. THE CITIZEN'S CONVENIENCE CENTER WILL BE LOCATED WITHIN THE LIMITS OF THE WASTE MANAGEMENT UNIT AND WILL BE RELOCATED AS THE SITE IS DEVELOPED. REFER TO PART IV FOR OPERATIONAL PROVISIONS.

STATE OF TEXAS
GREGORY W. ADAMS
73356
LICENSED
PROFESSIONAL ENGINEER
3/24/2025

FOR PERMITTING PURPOSES

REVISIONS			
REV	DATE	DESCRIPTION	DWN BY

WASTE DISPOSAL AND MATERIAL STAGING SCHEMATIC PLAN

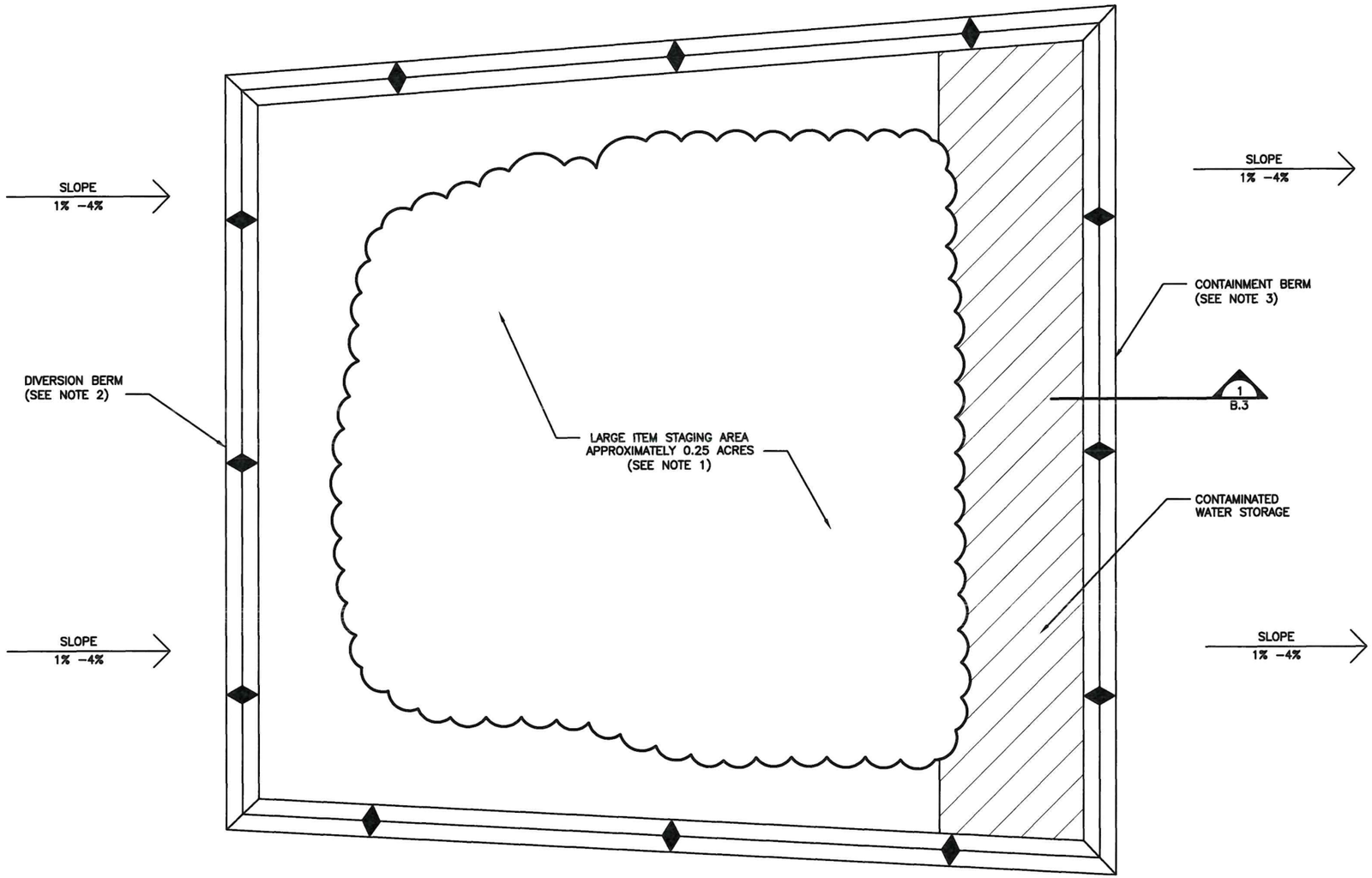
CHISHOLM TRAIL DISPOSAL, LLC
CHISHOLM TRAIL DISPOSAL LANDFILL

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

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

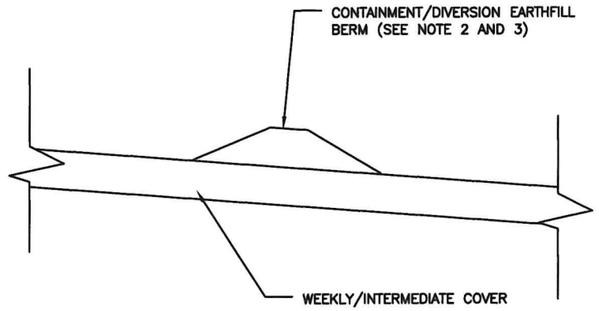
DRAWING
B.2

O:\Green Group\Wise County\Solid Waste\Type IV\P\Drawings\AIT B\B.2-WasteSchematic...dwg Layout: Layout 1 User: gwhite



LARGE ITEM STAGING AREA

NOT TO SCALE



CONTAINMENT BERM SECTION 1 B.3

NTS

NOTES:

1. LARGE ITEMS MAY BE STAGED OVER EXISTING LINED AREAS PRIOR TO RECYCLING OR DISPOSAL. MATERIALS WILL BE PROVIDED WITH RUN ON AND RUN OFF CONTROLS FOR THE 25 YEAR 24 HOUR RAINFALL EVENT.
2. WHEN PRACTICAL, MATERIALS WILL BE STORED IN AREAS WITH POSITIVE DRAINAGE. WHEN NECESSARY DIVERSION BERMS WILL BE PROVIDED TO DIVERT SURFACE WATER. REFER TO PART III, ATTACHMENT D6, FOR DIVERSION BERM SIZING.
3. REFER TO PART III, ATTACHMENT D6, FOR CONTAINMENT BERM SIZING.
4. REFER TO PART IV SECTION 8.26.1 FOR THE DESIGN AND OPERATION PROVISIONS.

STATE OF TEXAS
GREGORY W. ADAMS
73356
LICENSED
PROFESSIONAL ENGINEER
3/24/2025

FOR PERMITTING PURPOSES

REVISIONS		
REV	DATE	DESCRIPTION

LARGE ITEM STAGING AREA

CHISHOLM TRAIL DISPOSAL, LLC
CHISHOLM TRAIL DISPOSAL LANDFILL

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

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

DRAWING
B.3

CHISHOLM TRAIL DISPOSAL LANDFILL
WISE COUNTY, TEXAS
TCEQ PERMIT NO. MSW 2421

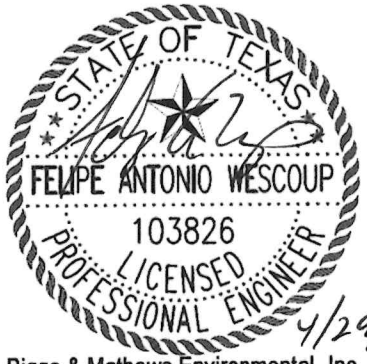
TYPE IV PERMIT APPLICATION

PART III – FACILITY INVESTIGATION AND DESIGN
ATTACHMENT C
FACILITY SURFACE WATER DRAINAGE REPORT

Prepared for

Chisholm Trail Disposal, LLC

December 2024
Revised April 2025



4/29/2025

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

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

4/29/2025

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

CONTENTS

1 FACILITY SURFACE WATER DRAINAGE REPORT

30 TAC §330.63(c) and §§330.301-330.307

The facility surface water drainage report has been prepared consistent with the requirements of §330.63(c) and §330.301 through 330.307. The facility design complies with the requirements of §330.303(a)-(b) concerning the management of runon and runoff during peak discharge of a 25-year rainfall event, the prevention of off-site discharge of waste and feedstock materials, and the control of surface water discharge in and around the facility.

1.1 Drainage Analysis and Design

The drainage analysis and design of the facility includes calculations and demonstrations consistent with the requirements of §330.63(c), and §330.301-330.305. The attachment includes a comparison of surface water runoff from the existing condition to the postdevelopment condition at each location where surface water enters or exits the permit boundary for the 25-year, 24-hour rainfall event. The existing condition for this evaluation is defined as the current existing site conditions. The postdevelopment condition for this evaluation is defined as the landfill completion plan. The comparison between the existing condition and the postdevelopment condition, included in Attachment C1, Section 7, demonstrates that the proposed landfill will not adversely alter the existing drainage patterns. In addition, this attachment includes the drainage design for the final cover system, drainage swales, chutes, perimeter channels, and detention ponds. The drainage analysis is provided in Attachment C1.

1.2 Flood Control Analysis

A flood control analysis consistent with the requirements of §330.63(c)(2) and §§330.301-330.307 demonstrates that the proposed landfill will not adversely impact the flooding conditions of the receiving channel and that the landfill footprint will not be located within the 100-year floodplain. Since the waste management unit will not be located within the 100-year floodplain, the levees referenced in §330.307 are not necessary to protect the facility from a 100-year frequency flood or otherwise prevent the washout of solid waste from the facility. The flood control analysis is provided in Attachment C2.

1.3 Drainage System Plans and Details

Attachment C3 provides the plans and details for the proposed drainage system consistent with §330.63(c) and §§330.301-330.305.

CHISHOLM TRAIL DISPOSAL LANDFILL
WISE COUNTY, TEXAS
TCEQ PERMIT NO. MSW 2421

TYPE IV PERMIT APPLICATION

PART III – FACILITY INVESTIGATION AND DESIGN
ATTACHMENT C1
DRAINAGE ANALYSIS AND DESIGN

Prepared for

Chisholm Trail Disposal, LLC

December 2024
Revised April 2025

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

Prepared by

BIGGS & MATHEWS ENVIRONMENTAL
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FIRM REGISTRATION NO. F-256 AND NO. 10194895

TEXAS BOARD OF PROFESSIONAL GEOSCIENTISTS
FIRM REGISTRATION NO. 50222

4/29/2025

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

CONTENTS

3 EXISTING CONDITION

The permit boundary, as shown in Appendix C1A on Drawing C1A.1, was used to evaluate the existing condition and postdevelopment runoff conditions. The postdevelopment condition runoff summary is shown on Drawing C1A.2. The existing condition hydrology calculations are provided in Appendix C1B. Discharge values at the comparison points along the permit boundary, as shown on Drawing C1A.1, were determined for the existing condition. Under existing conditions, only drainage area CA1 contributes surface runoff to the permit boundary at CP1. Stormwater from drainage area CA2 is retained in onsite ponds and depressions. The industrial stormwater permit for the soil mining operation allows pumping water to the West Fork Trinity River at CP2. The industrial stormwater permit does not specify a maximum discharge flow rate at CP2.

Discharge points CP1 and CP2 are located outside of the 100-year floodplain as shown on Drawings C1A.1 and C1B.1. The facility permit boundary was intentionally established outside of the FEMA-designated 100-year floodplain. Since both discharge points are outside of the 100-year floodplain, site surface discharges will not be hindered by the 100-year flood.

Comparison point CP3 is a cross-section location on the West Fork Trinity River. A regional analysis of the West Fork Trinity River was performed at a section immediately south of the site. This analysis establishes a baseline for evaluating the relative contribution of postdevelopment stormwater discharges to the river.

7 EXISTING CONDITION /POSTDEVELOPMENT COMPARISON

30 TAC §330.63(c)(1)(D)(iii) and §330.305(a)

Consistent with 30 TAC §330.63(c)(1)(D)(iii) and §330.305(a), the proposed landfill development will not adversely alter existing drainage patterns. A comparison of the existing and postdevelopment drainage conditions is included in Appendix C1A. Supporting calculations are presented in Appendix C1B and C1C.

For the postdevelopment site configuration shown on Drawing C1C.1, the stormwater outfall locations along the proposed permit boundary CP1 and CP2 remain consistent with the existing locations shown on Drawing C1B.1. The existing condition and postdevelopment surface water runoff has been evaluated for the peak flow rate, volume of runoff, and peak velocity at each of these comparison points. A comparison table is included in Appendix C1A. The table also includes a summary of a regional drainage analysis of the West Fork Trinity River at a cross-section located immediately south of the site, shown and identified as CP3.

The existing site is currently being mined for construction materials. While there is evidence of historical discharges from the site at comparison point CP2, for purposes of this evaluation and to demonstrate the proposed landfill will not adversely alter existing drainage patterns, the existing condition discharge at CP2 was assumed to be zero, with all stormwater from a 25-year, 24-hour storm collected on-site in existing ponds and depressions. This represents a conservative approach for this analysis; although, some discharges will continue to occur at this location prior to landfill development, as authorized by the industrial stormwater discharge permit for the mining operation.

Discharges from CP1 maintain the existing overland flow characteristic into the floodplain of the West Fork Trinity River just south of the site in both the existing and postdevelopment conditions. The peak flow rate and volume will increase slightly at CP1. However, this change will not result in adverse alterations because the postdevelopment velocity is maintained at a low, non-erodible velocity, well below the typical erosive threshold of 5 feet per second, and the change in volume is released at a rate that will not adversely alter existing drainage patterns.

In the postdevelopment condition, discharges will occur from CP2 during a 25-year, 24-hour storm event. Such discharges will be routed from CP2 to the floodplain of the West Fork Trinity River in a channel. The velocity in the channel will remain well below an erodible velocity of 5 fps. The channel will be sized to contain the peak flow from a 25 year, 24-hour storm and will be located entirely within property to be owned by Chisholm Trail Disposal, LLC. To further evaluate the impact of postdevelopment condition discharges from the site, a regional hydrologic analysis of the West Fork Trinity River was conducted at cross-section CP3. The analysis shows that the additional postdevelopment discharges from the site will increase the river's 25-year, 24-hour peak flow rate by less than 0.025% and its volume by less than 0.06%. These changes will not adversely alter drainage patterns of the West Fork Trinity River.

Given that the proposed landfill development (1) will not change existing drainage discharge locations and (2) will not significantly increase the peak flow rate or volume in the West Fork Trinity River, and that (3) the postdevelopment discharges from CP1 will continue to flow overland into the floodplain of the West Fork Trinity River and (4) the discharges from CP2 will flow in a channel on property to be owned by Chisholm Trail Disposal, LLC prior to entering the West Fork Trinity River floodplain, it is concluded that the proposed landfill development will not adversely alter existing drainage patterns consistent with §330.305(a).

CHISHOLM TRAIL DISPOSAL LANDFILL

APPENDIX C1A
EXISTING CONDITION/POSTDEVELOPMENT COMPARISON

EXISTING CONDITION/POSTDEVELOPMENT BOUNDARY ANALYSIS SUMMARY TABLE

Discharge Point	Total Contributing Drainage Area (ac)			25-Year Peak Flow Rate (cfs)			25-Year Volume (Ac-ft)			25-Year Peak Velocity (fps)		
	Existing	Post-Development	Difference	Existing	Post-Development	Difference	Existing	Post-Development	Difference	Existing	Post-Development	Difference
CP1	10.4	23.0	12.5	27.6	33.6	6.0	4.0	7.8	3.8	1.4	1.5	0.1
CP2	241.2	228.6	-12.6	0.0	46.1	46.1	0.0	57.5	57.5	0.0	1.8	1.8

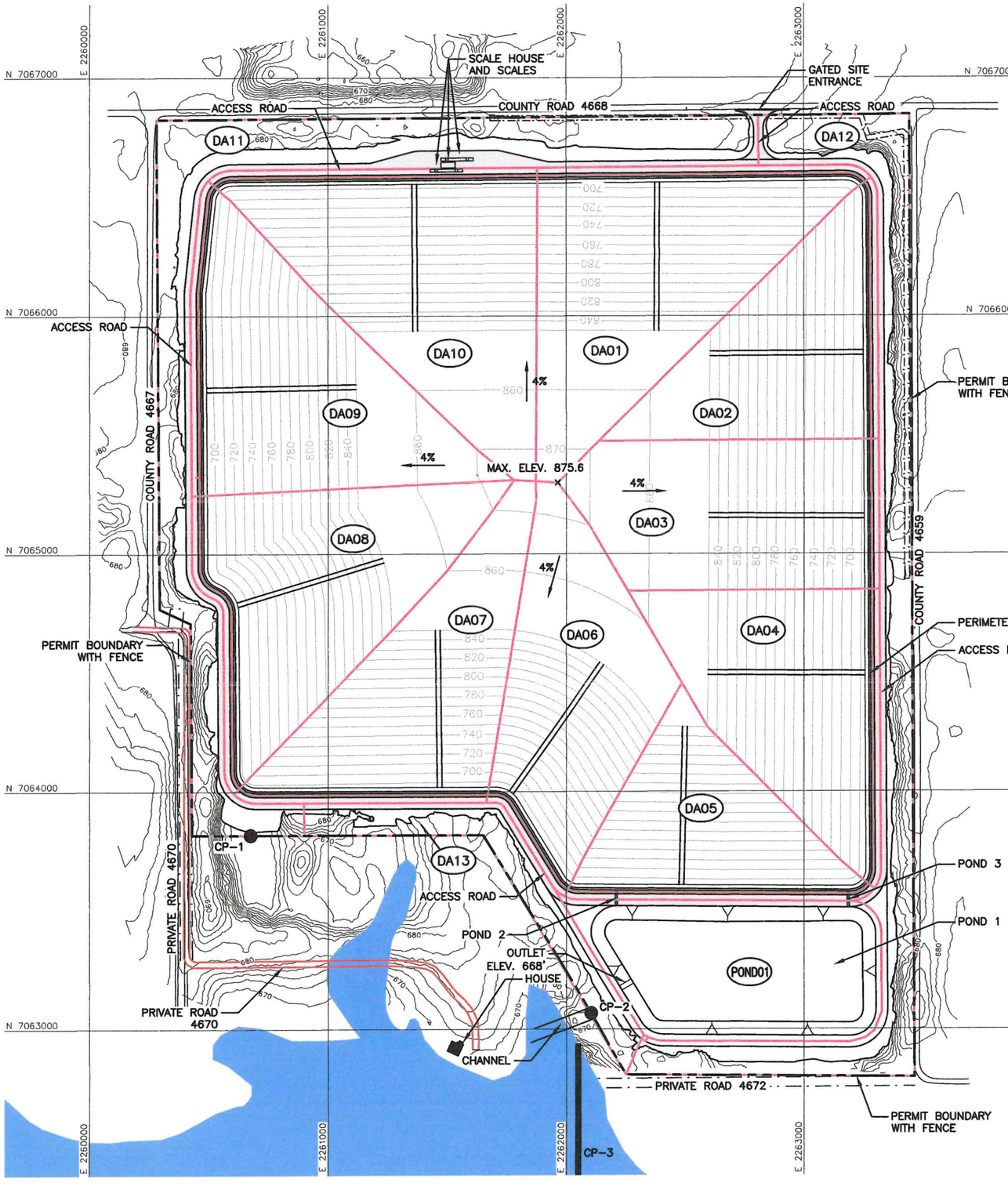
Note: The postdevelopment drainage design redirects 12.6 acres from CP2's contributing area to CP1, resulting in a corresponding 12.5 acre increase to CP1's drainage area while maintaining overall hydrologic balance between the discharge points.

REGIONAL DRAINAGE ANALYSIS WEST FORK TRINITY RIVER

Discharge Point	Total Contributing Drainage Area (ac)			25-Year Peak Flow Rate (cfs)			25-Year Volume (Ac-ft)		
	Existing	Post-Development	Difference	Existing	Post-Development	Difference	Existing	Post-Development	Difference
CP3	283583.4	283824.6	241.2	129142.9	129175.0	32.1	103585.3	103646.5	61.2

CHISHOLM TRAIL DISPOSAL LANDFILL

APPENDIX C1C
POSTDEVELOPMENT HYDROLOGIC CALCULATIONS



Postdevelopment Flow Summary

Watershed Name	Drainage Area (Ac)	Drainage Area (mi2)	25-Year Peak Flow (cfs)	25-Year Volume (Ac-ft)
DA1	23.2	0.0362	86.8	10.6
DA2	15.5	0.0242	61.6	7.1
DA3	17.6	0.0275	66.7	8.1
DA4	17.7	0.0277	72.1	8.1
DA5	13.5	0.0210	58.2	6.2
DA6	17.9	0.0279	69.4	8.2
DA7	17.6	0.0275	68.4	8.1
DA8	20.5	0.0321	78.4	9.4
DA9	20.9	0.0326	79.6	9.6
DA10	23.3	0.0364	87.3	10.7
DA11*	23.0	0.0359	33.6	7.8
DA12	19.0	0.0298	26.2	6.5
DA13	6.3	0.0098	18.3	2.1
PA01	15.7	0.0245	30.5	8.9
WFTR-DA	283573.0	443.0828	129140.4	103581.3

Postdevelopment Boundary Analysis Summary

Comparison Point	"Total Contributing Drainage Area (mi2)"	"25-Year Peak Flow Rate (cfs)"	"25-Year Volume (ac-ft)"	"25-Year Peak Velocity (fps)"
CP1	0.0359	33.6	7.8	1.49
CP2	0.3572	46.1	57.5	1.75
CP3**	443.5	129175.0	103646.5	

* DA11 IS THE ONLY DRAINAGE AREA THAT CONTRIBUTES TO CP1 IN THE POSTDEVELOPMENT CONDITION

** COMPARISON POINT 3 (CP3) IS A CROSS SECTION LOCATED ON THE WEST FORK TRINITY RIVER

0 250 500

SCALE IN FEET

LEGEND

- PERMIT BOUNDARY
- 10' CONTOUR
- N 7066000 STATE PLANE COORDINATES
- 900 LANDFILL 10' CONTOUR
- DRAINAGE AREA BOUNDARY
- DA02 DRAINAGE AREA DESIGNATION
- CHUTE
- COMPARISON POINT
- 100-YEAR FLOOD PLAIN

NOTE(S):

1. EXISTING CONTOURS TAKEN FROM DRONE SURVEY PROVIDED BY BIGGS AND MATHEWS ENVIRONMENTAL DATED APRIL 5, 2024.
2. PERMIT BOUNDARY INFORMATION FROM SURVEYING AND MAPPING, LLC.

STATE OF TEXAS
FELIPE ANTONIO WESCOUP
103826
LICENSED PROFESSIONAL ENGINEER

4/22/2025

FOR PERMITTING PURPOSES

REV	DATE	DESCRIPTION
		REVISIONS

POSTDEVELOPMENT DRAINAGE AREA SUMMARY

CHISHOLM TRAIL DISPOSAL, LLC
CHISHOLM TRAIL DISPOSAL LANDFILL

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

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

DRAWING C1C.1

CHISHOLM TRAIL DISPOSAL LANDFILL

APPENDIX C1D
PERIMETER DRAINAGE SYSTEM DESIGN

NARRATIVE

30 TAC §§330.303 and 330.305

This appendix presents the design of the Chisholm Trail Disposal Landfill perimeter drainage channels and detention ponds in accordance with §330.305(a)-(d).

PERIMETER DRAINAGE PLAN

Drawing C1D.1 depicts the perimeter drainage system and detention pond location for the Chisholm Trail Disposal Landfill. The plan reflects the perimeter channel design and stationing. The perimeter channel hydraulic analysis is included for the 25-year rainfall event.

PERIMETER CHANNEL DESIGN

The perimeter channels are designed for peak discharge resulting from the 25-year storm event. The perimeter channel depths and calculated normal depths are summarized in the table below. In several locations along the perimeter channel, the depths are much greater than necessary to convey the predicted stormwater flow rates; however, minimum channel slopes were maintained to help prevent excessive velocity and erosion. The perimeter channel design calculations are shown on page C1D.5. Perimeter channel profiles are included in Attachment C3.

DETENTION POND ANALYSIS

Detention Pond 1 was designed to provide the necessary storage and outlet control to mitigate impacts to the receiving channels downstream of the Chisholm Trail Disposal Landfill. Ponds 2 and 3 function as intermediate stormwater collection and conveyance structures that capture runoff from their respective drainage areas and transfer it via culverts to Pond 1, which serves as the primary detention basin for mitigating downstream impacts. The hydraulic design parameters for the detention pond is provided on page C1C.10. Pond 1 is designed as a wet-bottom detention pond with its bottom elevation at approximately 660 feet, as illustrated on drawing C3.2 in Attachment C3. For conservative modeling purposes, the hydrologic and hydraulic analysis used an initial water surface elevation of 668 feet, which corresponds to the inlet elevation of the pond's outlet structure. This approach effectively excludes the bottom 8 feet of storage volume from the detention calculations. Detention pond design information is included in Attachment C3. The following table provides storage volume and surface elevation for the 25-year storm event.

25-Year, 24-Hour Storm Events Analysis

Detention Pond	Maximum Water Surface Elevation	Perimeter Pond Berm Elevation	Freeboard (feet)	Access Road Elevation
Pond 1	675.3	682	6.7	682

EROSION PROTECTION

Pond 1 will be inspected annually to assess sediment accumulation and overall condition. Maintenance excavation will be performed when sediment buildup reduces the operational storage capacity below design specifications. This proactive maintenance schedule ensures the pond maintains its designed detention volume and continues to effectively mitigate downstream impacts as required by permit conditions.

Concrete will be used at all pond inlets and outlets to prevent scour and maintain structural integrity of the spillways and culverts as shown on Detail 8 on page C3.11 of Attachment C3. The concrete aprons shall extend sufficiently beyond the inlet/outlet structures to adequately dissipate flow energy and prevent undermining of the pond embankments. The grass-lined outlet channel at CP2, located downstream of Pond 1, has a width of 100-feet and 0.7% slope specifically designed to maintain low flow velocities. Due to these design parameters, additional erosion protection measures are not required for this channel.

CHISHOLM TRAIL DISPOSAL LANDFILL

APPENDIX C1E
FINAL COVER DRAINAGE STRUCTURE DESIGN

EROSION LAYER EVALUATION

This appendix presents the supporting documentation for evaluation of the thickness of the erosion layer for the final cover system at the Chisholm Trail Disposal Landfill. The evaluation is based on the premise of adding excess soil to increase the time required before maintenance is needed as recommended in the EPA Solid Waste Disposal Facility Criteria Technical Manual (EPA 530-R-93-017, November 1993).

The design procedure is as follows:

1. The minimum thickness of the erosion layer is based on the depth of frost penetration, or 10 inches, whichever is greater. For Wise County, the approximate depth of frost penetration is less than 10 inches.

2. Soil loss is calculated using the Universal Soil Loss Equation (USLE) by following SCS procedures. Based on 85% vegetative cover, the calculated soil loss from final cover will not exceed 3 tons per acre per year. Soil loss thickness is calculated by multiplying the soil loss by the postclosure year period (30 years), multiplying by a safety factor of 2, and then converting the soil loss to a thickness. The USLE, with a safety factor of 2, calculates the soil loss of the 4 percent top slopes to be 0.05 inches and the side slopes to be 0.64 inches. These thicknesses are then compared to the actual soil thickness of the erosion layer, which is 12 inches. These calculations begin on page C1E.8.

	4% slope	25% slope
Maximum Sheet Flow Length	820 ft	120 ft
Soil Loss	0.05 tons/acre/year	0.64 tons/acre/year

3. Sheet flow velocities for a 25-year storm event are calculated to be less than permissible nonerodible velocities. The supporting calculations are presented on page C1E.15.

4. Vegetation for the site will be native and introduced grasses with root depths of 6 inches to 8 inches.

5. Native and introduced grasses will be hydroseeded with fertilizer on the disked (parallel to contours) erosion layer upon final grading. Temporary cold weather vegetation will be established if needed. Irrigation may be employed for 6 to 8 weeks or until vegetation is well 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 after hydroseeding will be reseeded until vegetation is established.

6. Slope stability information is included in Attachment D5 – Geotechnical Design.

CHISHOLM TRAIL DISPOSAL LANDFILL
WISE COUNTY, TEXAS
TCEQ PERMIT NO. MSW 2421

TYPE IV PERMIT APPLICATION

PART III – FACILITY INVESTIGATION AND DESIGN
ATTACHMENT C3
DRAINAGE SYSTEM PLANS AND DETAILS

Prepared for

Chisholm Trail Disposal, LLC

December 2024
Revised April 2025

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

Prepared by

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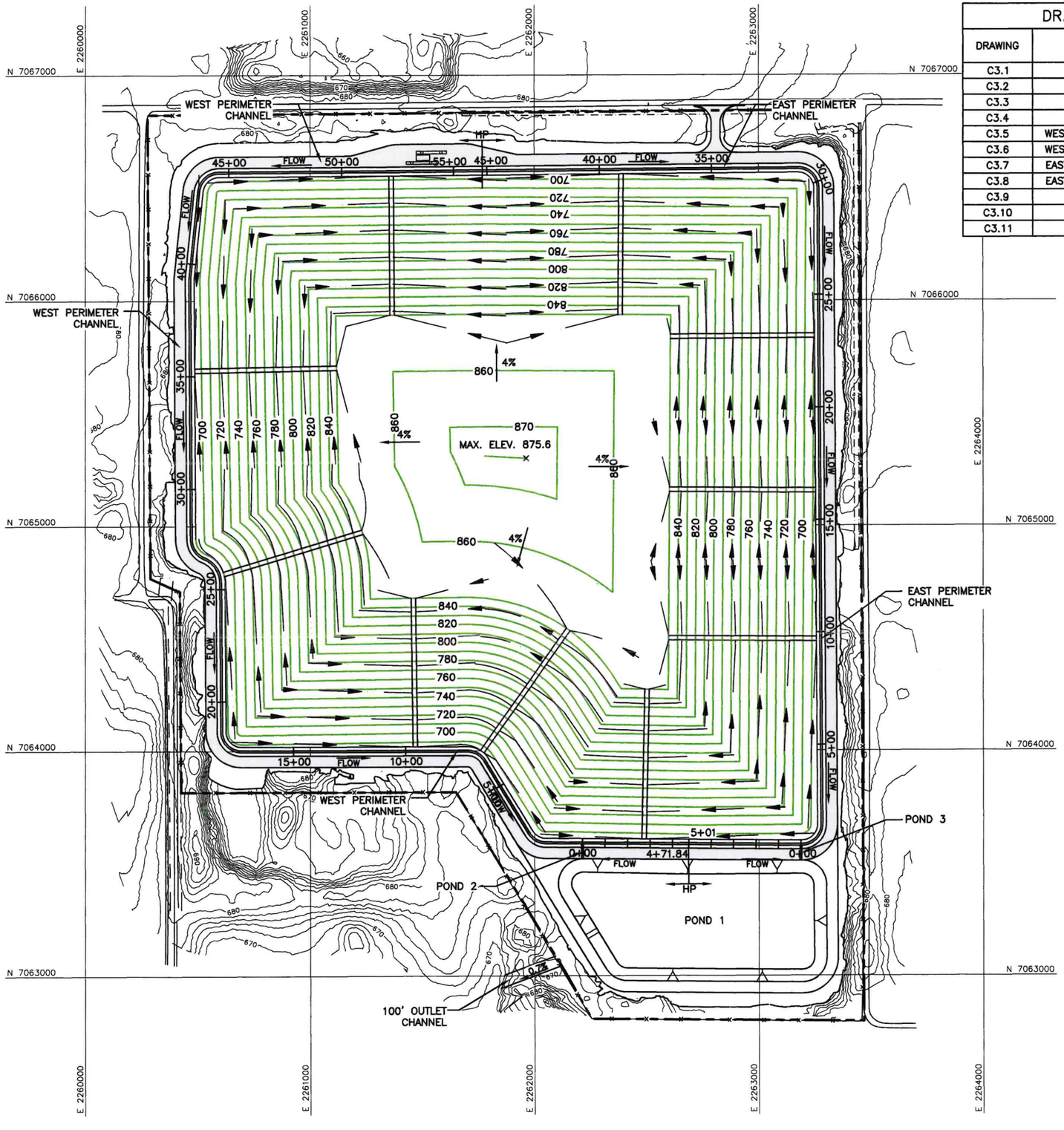
TEXAS BOARD OF PROFESSIONAL GEOSCIENTISTS
FIRM REGISTRATION NO. 50222



DRAWING INDEX	
DRAWING	DESCRIPTION
C3.1	DRAINAGE PLAN
C3.2	POND 1
C3.3	POND 2
C3.4	POND 3
C3.5	WEST PERIMETER CHANNEL PROFILE
C3.6	WEST PERIMETER CHANNEL PROFILE
C3.7	EAST PERIMETER CHANNEL PROFILE
C3.8	EAST PERIMETER CHANNEL PROFILE
C3.9	CHUTE & PROFILES
C3.10	DRAINAGE DETAILS
C3.11	DRAINAGE DETAILS

0 250 500
SCALE IN FEET

LEGEND

- PERMIT BOUNDARY
- 700 — 10' CONTOUR
- N 7062000 — STATE PLANE COORDINATES
- — x — x — FENCE
- 800 — FINAL COVER CONTOUR
- FLOW — CHANNEL FLOW DIRECTION
- HP — HIGH POINT

NOTES:

1. EXISTING CONTOURS TAKEN FROM DRONE SURVEY PROVIDED BY BIGGS AND MATHEWS ENVIRONMENTAL DATED APRIL 5, 2024.
2. PERMIT BOUNDARY INFORMATION FROM SURVEYING AND MAPPING, LLC.

STATE OF TEXAS
FELIPE ANTONIO WESCOUP
103826
LICENSED
PROFESSIONAL ENGINEER

4/22/2025

FOR PERMITTING PURPOSES

REVISIONS			
REV1	REV1 DATE	REV1 DESC	REV1 DWN
REV	DATE	DESCRIPTION	DWN BY

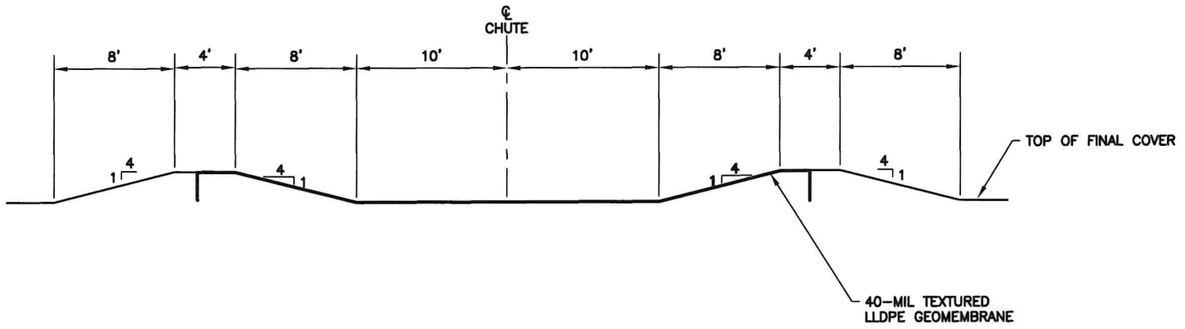
DRAINAGE PLAN

CHISHOLM TRAIL DISPOSAL, LLC
CHISHOLM TRAIL DISPOSAL LANDFILL

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

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

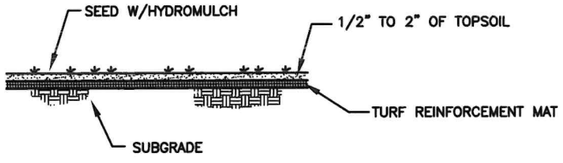
DRAWING
C3.1



SIDESLOPE CHUTE (D1) C3.10

0 5 10

SCALE IN FEET

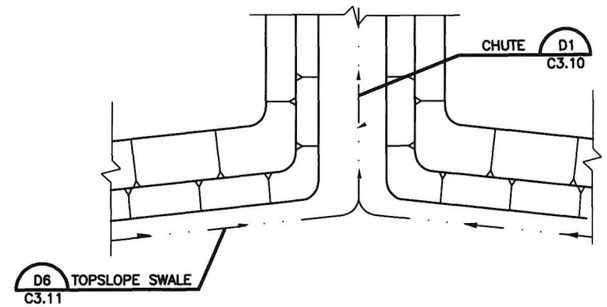


TURF REINFORCEMENT MATTING (TYP) (D2) C3.10

NTS

NOTES:

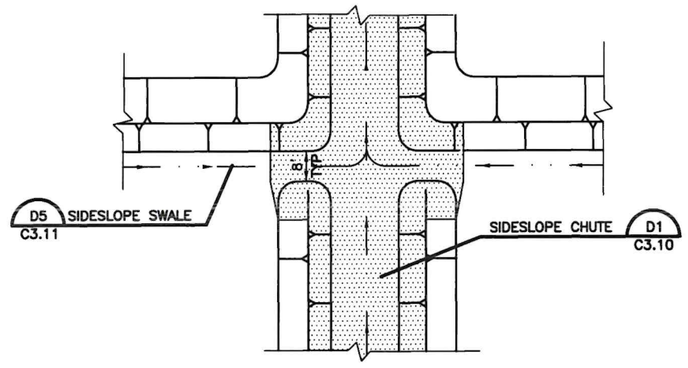
TURF REINFORCEMENT MATTING SHALL BE INSTALLED IN AREAS SUSCEPTIBLE TO EXPERIENCING EROSION AS FIELD CONDITIONS WARRANT.



SWALE/CHUTE TOPSLOPE CONFLUENCE (D3) C3.10

0 5 10

SCALE IN FEET



SWALE/CHUTE SIDESLOPE CONFLUENCE (D4) C3.10

0 5 10

SCALE IN FEET

STATE OF TEXAS
FELIPE ANTONIO WESCOUP
103826
LICENSED
PROFESSIONAL ENGINEER

4/22/2025

FOR PERMITTING PURPOSES

REVISIONS			
REV	DATE	DESCRIPTION	DWN BY

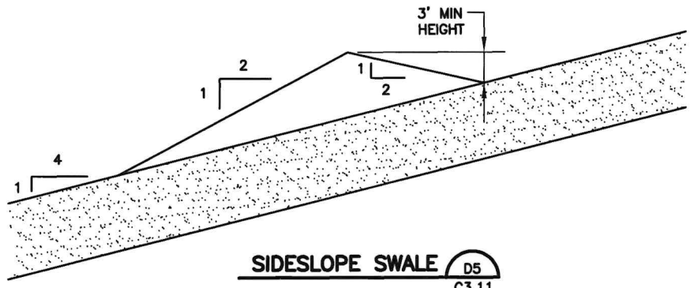
DRAINAGE DETAILS

CHISHOLM TRAIL DISPOSAL, LLC
CHISHOLM TRAIL DISPOSAL LANDFILL

BME
BIGGS & MATHEWS ENVIRONMENTAL
CONSULTING ENGINEERS
MANSFIELD • WICHITA FALLS
817-563-1144

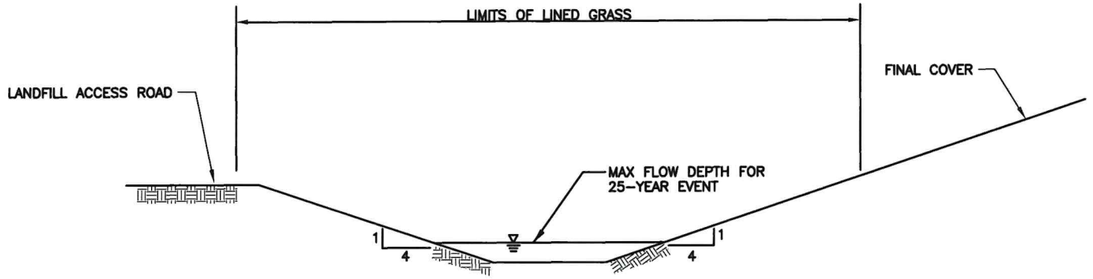
TBPE FIRM NO. F-256
TBPG FIRM NO. 50222

C3.10



SIDESLOPE SWALE D5 C3.11

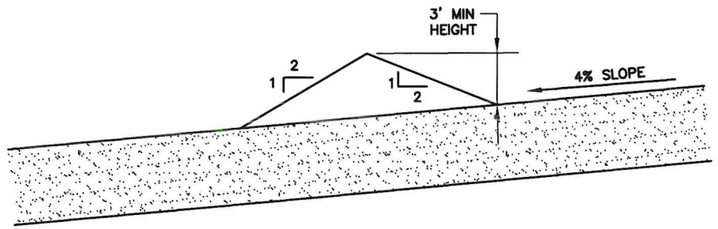
NTS



GRASS LINED

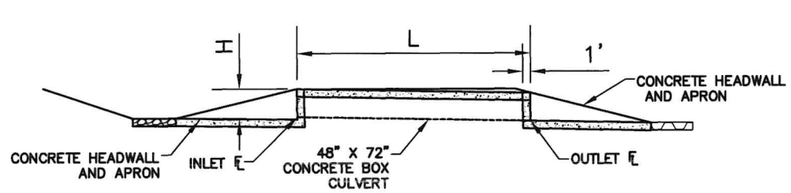
TRAPEZOIDAL DITCH D7 C3.11

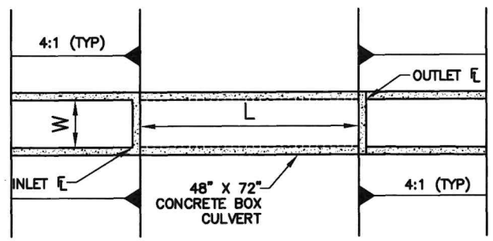
NTS



TOPSLOPE SWALE D6 C3.11

NTS





CULVERT DIMENSIONS					
POND	LENGTH (FT.)	HEIGHT (FT.)	WIDTH (FT.)	INLET ELEV. (FT.)	OUTLET ELEV. (FT.)
1	150	1.5	1.5	668.0	667.0
2	90	4	6	678.6	677.0
3	90	4	6	678.6	677.0

CULVERT DETAIL D8 C3.11

NTS

STATE OF TEXAS
FELIPE ANTONIO WESCOUP
103826
LICENSED
PROFESSIONAL ENGINEER

4/22/2025

FOR PERMITTING PURPOSES

REVISIONS			
REV	DATE	DESCRIPTION	DWN BY

DRAINAGE DETAILS

CHISHOLM TRAIL DISPOSAL, LLC
CHISHOLM TRAIL DISPOSAL LANDFILL

BME

BIGGS & MATHEWS ENVIRONMENTAL
CONSULTING ENGINEERS
MANSFIELD • WICHITA FALLS
817-563-1144

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

C3.11

CHISHOLM TRAIL DISPOSAL LANDFILL
WISE COUNTY, TEXAS
TCEQ PERMIT NO. MSW 2421

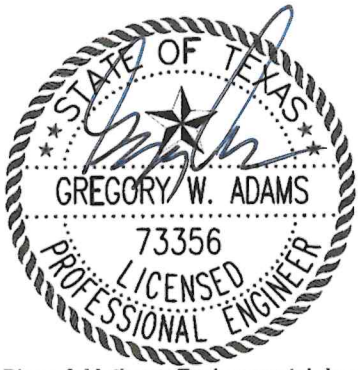
TYPE IV PERMIT APPLICATION

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

Prepared for

Chisholm Trail Disposal, LLC

December 2024
Revised April 2025



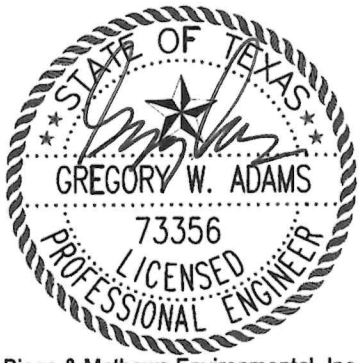
Biggs & Mathews Environmental, Inc.
Firm Registration No. F-256
4/29/2025

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



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

4/29/2025

CONTENTS

3 LANDFILL UNITS

30 TAC §§330.63(d)(4) and 330.453

3.1 All Weather Operation

A permanent all-weather entrance road will be constructed from County Road 4668 to the scale facility and a permanent all-weather perimeter road will be constructed around the landfill units as shown in Attachment D1 on Drawing D1.2. The entrance road will be constructed prior to opening the facility and the perimeter road will be constructed as the facility is developed. The entrance road will be constructed of asphalt or reinforced concrete and the perimeter road will be constructed of aggregate as shown in Attachment D1 on Drawing D1.4. The entrance road surface will limit the tracking of mud onto the public access road.

Temporary all-weather access roads will be constructed as needed to provide access from the scale facility to the various staging areas and active waste disposal areas. The access roads will be moved as the facility is developed. The access roads will be constructed of aggregate, concrete rubble, masonry rubble, recycled asphalt, or other similar material to provide access to the active areas during all weather conditions as shown in Attachment D1 and Drawing D1.4.

Stockpiles of aggregate, concrete rubble, masonry rubble, recycled asphalt or other similar material will be available for use in maintaining access roads. Grading equipment will be used to control or remove mud accumulations on the landfill access roads around the landfill and entrance road. In addition, a disposal area near the access road will be available for use during wet weather operations.

3.2 Landfilling Methods

The development method for the landfill is a combination of area-excavation fill followed by aerial fill to the proposed landfill completion heights. Final cover placement will generally follow the sequence of development as shown in Part II, Appendix IIA, and may be ongoing as the site is developed. The landfill will be closed according to the closure plan provided in Attachment H.

3.3 Landfill Design Parameters

The 251 permitted acres will include a total of 167 acres for waste disposal and 84 acres of buffer and other non-waste fill areas. The deepest excavation elevation will be 619.6 feet msl at the south toe of slope, the maximum waste elevation will be 872.1 feet msl, and the maximum final cover elevation will be 875.6 feet msl. Excavation side slopes and waste side slopes will be 4H:1V or flatter. Waste topslopes will have a 4 percent slope. Excavation and final completion plans are presented in Attachment D1 on Drawings D1.5 and D1.6.

3.4 Site Life Projection

The total disposal capacity will be 39,481,000 cubic yards (waste and weekly cover), which will provide an estimated 78 years of site life. Calculations for the disposal capacity and site life estimate are provided in Attachment D4.

CHISHOLM TRAIL DISPOSAL LANDFILL
WISE COUNTY, TEXAS
TCEQ PERMIT NO. MSW 2421

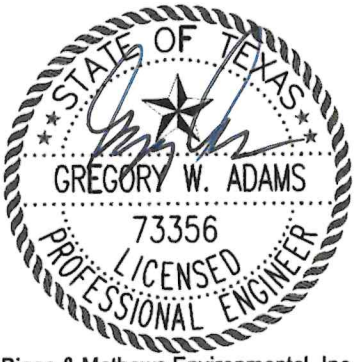
TYPE IV PERMIT APPLICATION

PART III – FACILITY INVESTIGATION AND DESIGN
ATTACHMENT D1
SITE LAYOUT PLANS

Prepared for

Chisholm Trail Disposal, LLC

December 2024
Revised April 2025



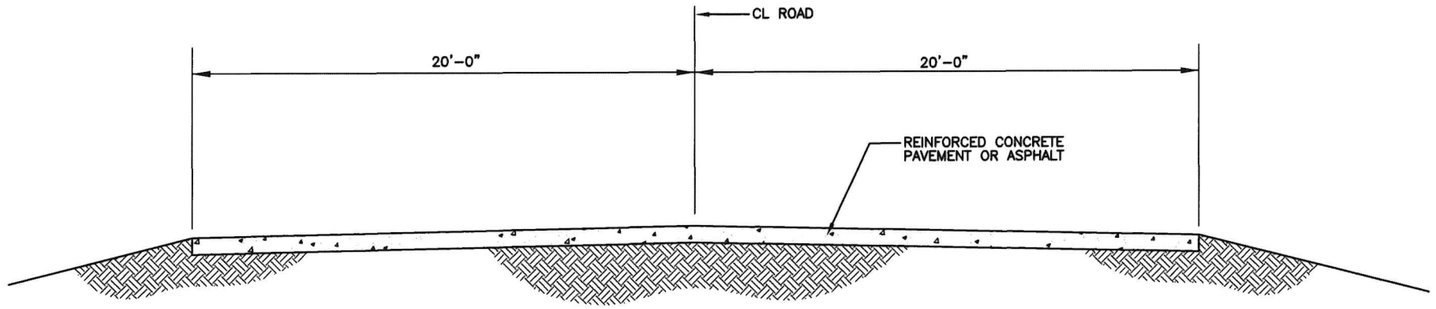
Biggs & Mathews Environmental, Inc.
Firm Registration No. F-256
4/29/2025

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

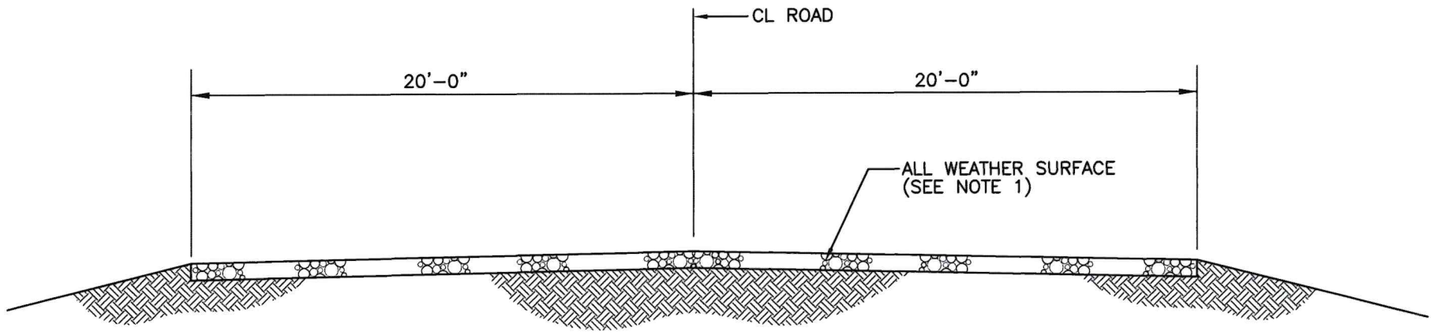
TEXAS BOARD OF PROFESSIONAL GEOSCIENTISTS
FIRM REGISTRATION NO. 50222



SITE ENTRANCE ROAD R1 D1.4

0 3 6

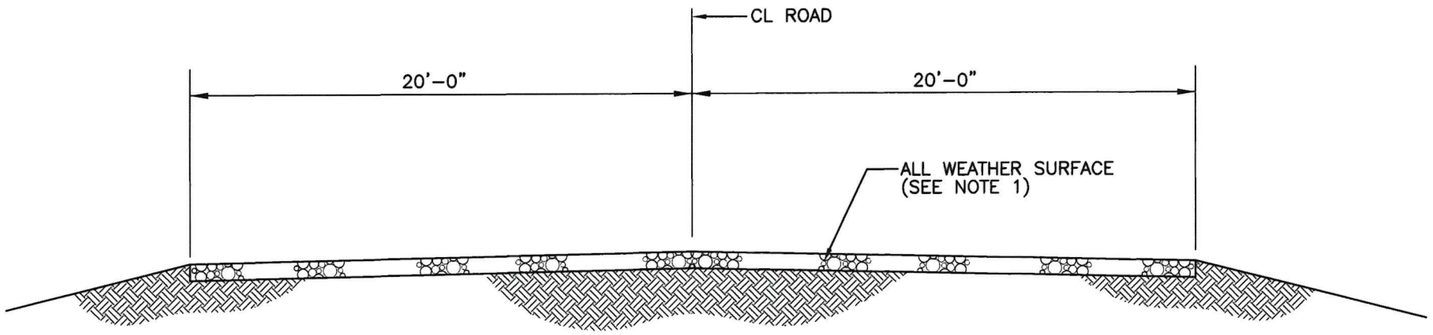
SCALE IN FEET



LANDFILL ACCESS ROAD R2 D1.4

0 3 6

SCALE IN FEET



PERIMETER ROAD 3 D1.4

0 3 6

SCALE IN FEET

NOTE(S):

1. LANDFILL ACCESS ROAD SHALL BE MAINTAINED WITH ALL WEATHER SURFACE (CRUSHED STONE, GRAVEL, CONCRETE RUBBLE, MASONRY DEMOLITION DEBRIS, WOOD CHIPS, OR OTHER SIMILAR MATERIALS) WHERE USED AS ACCESS TO WORKING FACE BY WASTE HAUL VEHICLES.

STATE OF TEXAS
GREGORY W. ADAMS
73356
LICENSED
PROFESSIONAL ENGINEER
3/24/2025

FOR PERMITTING PURPOSES

REVISIONS		
REV	DATE	DESCRIPTION

ENTRANCE FACILITIES DETAILS

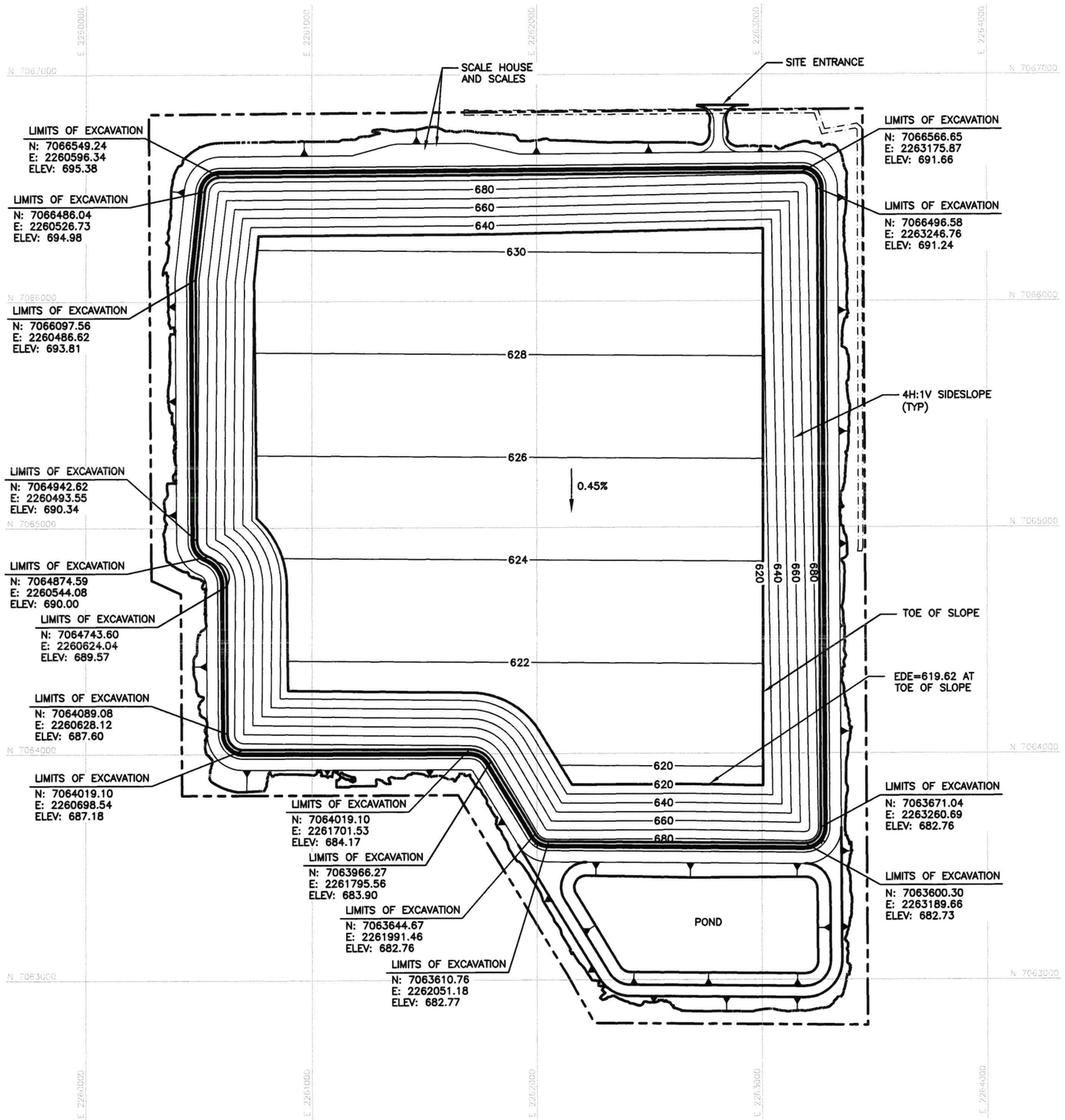
CHISHOLM TRAIL DISPOSAL, LLC
CHISHOLM TRAIL DISPOSAL LANDFILL

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

TBPE FIRM NO. F-256

TBPG FIRM NO. 50222

DRAWING
D1.4



0 250 500
SCALE IN FEET

LEGEND

- PERMIT BOUNDARY
- N 7052000 STATE PLANE COORDINATES
- 620 EXCAVATION CONTOUR

NOTE(S):

1. PERMIT BOUNDARY INFORMATION FROM SURVEYING AND MAPPING, LLC.
2. PROPOSED CONTOURS DEPICT EXCAVATION GRADES.
3. ELEVATION OF DEEPEST EXCAVATION IS 619.62 FT-MSL.

STATE OF TEXAS
GREGORY W. ADAMS
73356
LICENSED
PROFESSIONAL ENGINEER
3/24/2025

FOR PERMITTING PURPOSES

REVISIONS			
REV	DATE	DESCRIPTION	DWN BY

EXCAVATION PLAN

CHISHOLM TRAIL DISPOSAL, LLC
CHISHOLM TRAIL DISPOSAL LANDFILL

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

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

DRAWING
D1.5

CHISHOLM TRAIL DISPOSAL LANDFILL
WISE COUNTY, TEXAS
TCEQ PERMIT NO. MSW 2421

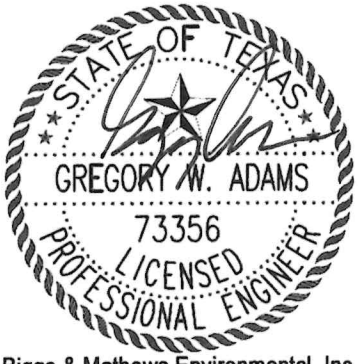
TYPE IV PERMIT APPLICATION

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

Prepared for

Chisholm Trail Disposal, LLC

December 2024
Revised April 2025



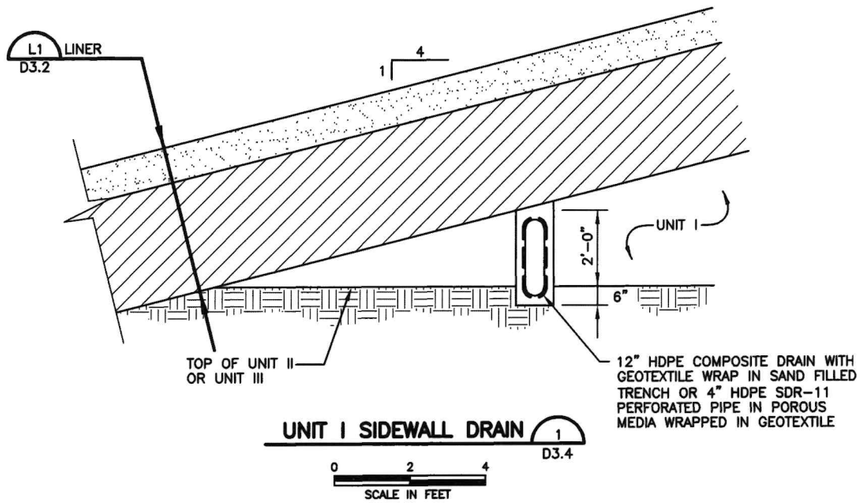
Biggs & Mathews Environmental, Inc.
Firm Registration No. F-256
4/29/2025

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

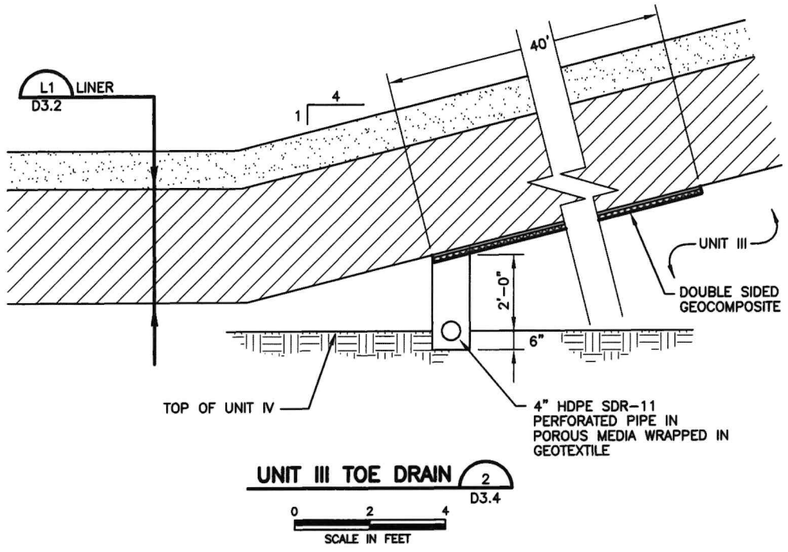
TEXAS BOARD OF PROFESSIONAL GEOSCIENTISTS
FIRM REGISTRATION NO. 50222



UNIT I SIDEWALL DRAIN 1 D3.4

0 2 4

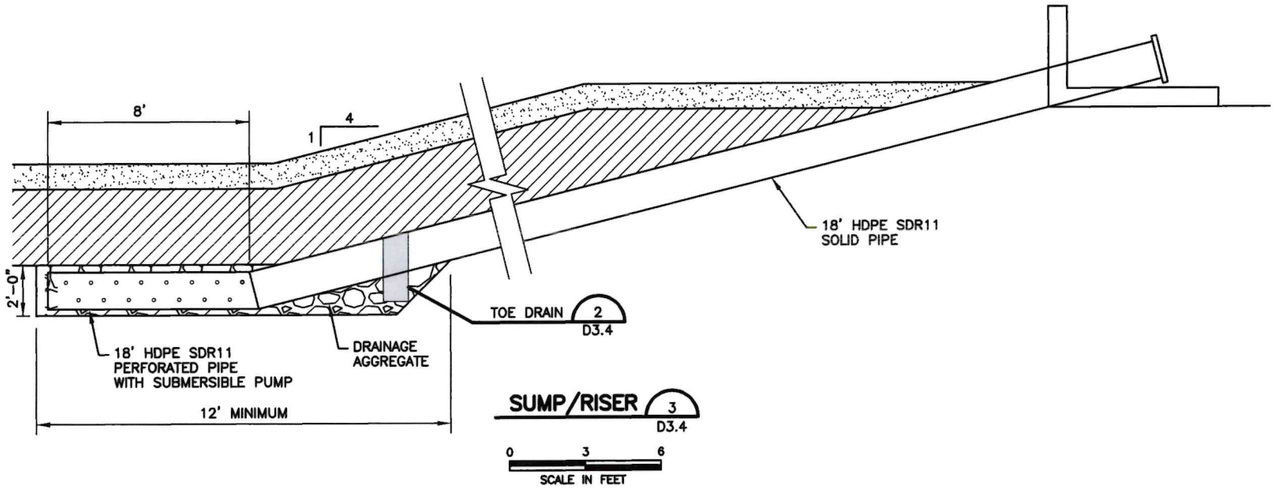
SCALE IN FEET



UNIT III TOE DRAIN 2 D3.4

0 2 4

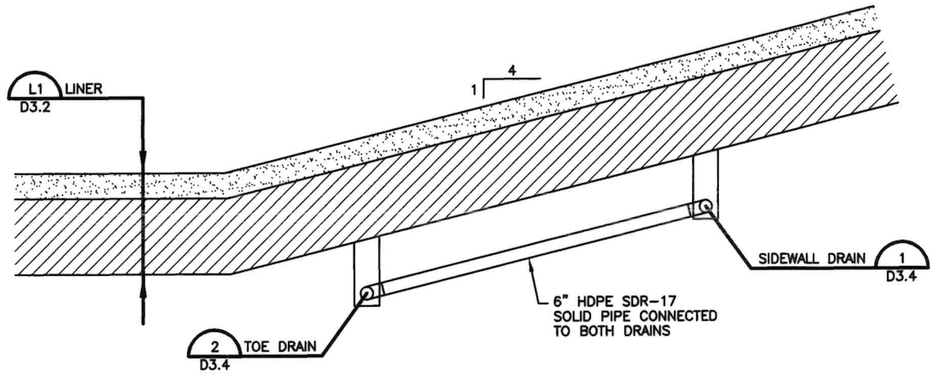
SCALE IN FEET



SUMP/RISER 3 D3.4

0 3 6

SCALE IN FEET



UNIT I DISCHARGE PIPE 4 D3.4

0 3 6

SCALE IN FEET

NOTE:
1. REFER TO ATTACHMENT D7 FOR DESIGN AND OPERATIONAL PROVISIONS OF THE TEMPORAY DEWATERING SYSTEM.

STATE OF TEXAS
GREGORY W. ADAMS
73356
LICENSED
PROFESSIONAL ENGINEER
3/24/2025

FOR PERMITTING PURPOSES

REVISIONS			
REV	DATE	DESCRIPTION	DWN BY

TEMPORARY DEWATERING SYSTEM DETAILS

CHISHOLM TRAIL DISPOSAL, LLC
CHISHOLM TRAIL DISPOSAL 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

DRAWING
D3.4

CHISHOLM TRAIL DISPOSAL LANDFILL
WISE COUNTY, TEXAS
TCEQ PERMIT NO. MSW 2421

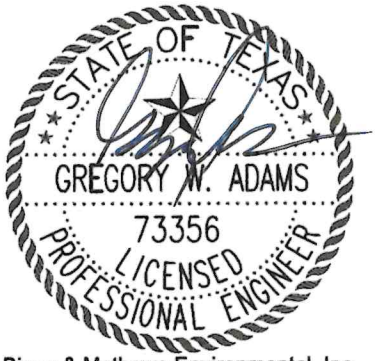
TYPE IV PERMIT APPLICATION

PART III – FACILITY INVESTIGATION AND DESIGN
ATTACHMENT D4
SITE LIFE

Prepared for

Chisholm Trail Disposal, LLC

December 2024
Revised April 2025



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

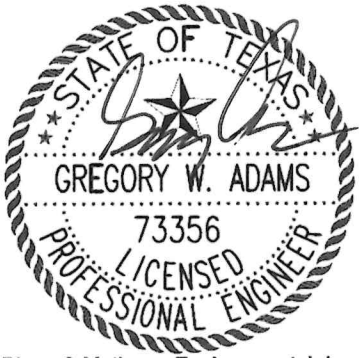
4/29/2025

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



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

4/29/2025

CONTENTS

2 SOLID WASTE COMPACTION

An airspace utilization factor (ratio of tons of waste accepted to in-place cubic yard volume of waste disposed plus weekly and intermediate cover material) of 0.7 was used to calculate the projected site life based on the total landfill capacity.

CHISHOLM TRAIL DISPOSAL LANDFILL
WISE COUNTY, TEXAS
TCEQ PERMIT NO. MSW 2421

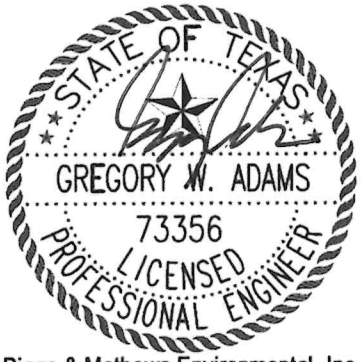
TYPE IV PERMIT APPLICATION

PART III – FACILITY INVESTIGATION AND DESIGN
ATTACHMENT D7
LINER QUALITY CONTROL PLAN

Prepared for

Chisholm Trail Disposal, LLC

December 2024
Revised April 2025



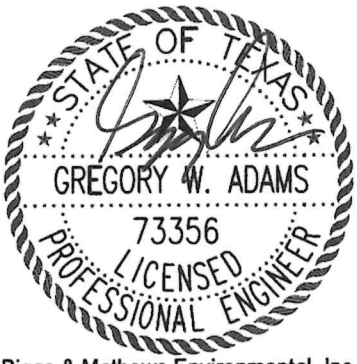
Biggs & Mathews Environmental, Inc.
Firm Registration No. F-256
4/29/2025

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



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

4/29/2025

CONTENTS

4 COMPACTED SOIL LINER

30 TAC §330.339

4.1 General

The compacted soil liner component of the Type IV liner system consists of a 36-inch-thick layer of compacted, relatively homogeneous, cohesive material. The CQA monitor shall provide continuous on-site observation during compacted soil liner placement, compaction, and testing in accordance with 30 TAC §330.339(a)(2). The GP shall make sufficient site visits during compacted soil liner construction to document the construction activities, testing, and thickness verification in the SLER, in accordance with Section 7.2.

4.2 Materials

Compacted soil liner material shall consist of soil that is free from debris, rubbish, frozen materials, foreign objects, and organic material. The required compacted soil liner material properties are summarized below.

Compacted Soil Liner 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 or Visual	100%
Coefficient of Permeability	ASTM D 5084 or COE EM 1110-2-1906 Appendix VII	1×10^{-7} cm/sec or less

Preconstruction testing procedures and frequencies for compacted soil liner materials are listed in Section 4.8.1.

4.3 Subgrade Preparation

Prior to placing soil liner 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 recompacted or undercut to firm material, then backfilled with compacted general fill. The GP will observe the subgrade for groundwater seepage and take appropriate actions when necessary.

Earthfill beneath the liner subgrade should be placed in maximum 9-inch loose lifts to produce compacted lift thickness of approximately 6 inches. If additional water is necessary to adjust the moisture content, it should be applied after initial processing, but prior to compaction. Water should be applied evenly across the lift and worked into the material. The earthfill shall be compacted with a pad/tamping-foot or prong-foot roller. The

earthfill should be compacted to a minimum of 95 percent of the maximum dry density determined by standard Proctor (ASTM D 698) at a moisture content of 2 percent below to 3 percent above optimum moisture.

The subgrade elevations shall be verified in accordance with the requirements of Section 4.8.3 prior to the placement of compacted soil liner.

4.4 Placement and Processing

The compacted soil subgrade and surface of each lift should be roughened prior to placement of the next lift of compacted soil liner. The soil liner material should be placed in maximum 8-inch loose lifts to produce compacted lift thickness of approximately 6 inches. The material should be processed to generally achieve a maximum particle size of 1 inch or less before water is added.

If additional water is necessary to adjust the moisture content, it should be applied after initial processing, but prior to compaction. Water should be applied evenly across the lift and worked into the material. Water used for the soil liner compaction must not be contaminated by waste or any objectionable material.

4.5 Compaction

The soil liner shall be compacted with a pad/tamping-foot or prong-foot roller. A footed roller is necessary to bond the lifts, to distribute the water, and to blend the soil matrix through kneading action. Soil liner shall not be compacted with a bulldozer, rubber-tired roller, flat-wheel roller, scraper, truck, or any track equipment unless it is used to pull a footed roller. The compactor should weigh at least 40,000 pounds. The lift thickness shall be controlled to achieve penetration into the top of the previously compacted lift; therefore, the lift thickness should not be greater than the pad or prong length. Cleaning devices on the roller must be in place and maintained to prevent the prongs or pad feet from becoming clogged to the point that they cannot achieve full penetration.

The compactor should make approximately four passes across the area being compacted. A pass is defined as one pass of the compactor, front and rear drums. The material should be compacted to a minimum of 95 percent of the maximum dry density determined by standard Proctor (ASTM D 698) at a moisture content at or above optimum moisture. Areas with failing tests shall be reworked and recompacted, and then retested, and passing tests must be achieved before another lift is added.

After a lift is compacted, it must be watered to prevent drying and desiccation until the next lift can be placed. If desiccation occurs, the GP must determine if the lift can be rehydrated by surface application of water or if the lift must be scarified, watered, and recompacted. Following compaction and fine grading of the final lift, the surface of the compacted soil liner shall be smooth drum rolled.

4.6 Protection

The completed compacted soil liner must be protected from drying, desiccation, rutting, erosion, and ponded water until the protective cover is installed. Areas that undergo excessive desiccation or damage shall be reworked, recompacted, and retested as directed by the GP.

4.7 Tie in to Existing Liners

The edge of existing compacted soil liners shall be cut back on either a slope or steps to prevent the formation of a vertical joint. Details of the existing liner tie-in are shown in Attachment D3.

4.8 Testing and Verification

4.8.1 Preconstruction Testing

The minimum testing required for material proposed for use as compacted soil liner are listed below.

Compacted Soil Liner Material Preconstruction Tests

Test	Standard	Frequency
Unified Soil Classification	ASTM D 2487	1 per material type
Atterberg Limits	ASTM D 4318	1 per material type
Percent Passing No. 200 Mesh Sieve	ASTM D 1140	1 per material type
Percent Passing 1-inch Sieve	ASTM D 422 or Visual	1 per material type
Standard Proctor Test	ASTM D 698	1 per material type
Coefficient of Permeability	ASTM D 5084 or COE EM 1110-2-1906 Appendix VII	1 per material type

After the moisture density relationship has been determined for a material type, a soil sample should be remolded to about 95 percent of the maximum dry density at the optimum moisture content. This sample will be tested to determine if the soil can be compacted to achieve the required coefficient of permeability. Either falling head or constant head permeability tests may be performed to determine the coefficient of permeability. The permeant fluid for testing must be as required in ASTM D 5084. Distilled or deionized water shall not be used as the permeant fluid.

4.8.2 Construction Testing

All quality control testing will be performed during construction of the liner, except for testing which is required after individual lifts are constructed. The minimum testing required for material used as compacted soil liner is listed below.

Compacted Soil Liner Material Construction Tests

Test	Standard	Frequency[1]
Field Density	ASTM D 2922	1/8,000 sf per 6-inch lift
Atterberg Limits	ASTM D 4318	1/100,000 sf per 6-inch lift
Percent Passing No. 200 Sieve	ASTM D 1140	1/100,000 sf per 6-inch lift
Percent Passing 1-inch Sieve	ASTM D 422 or Visual	1/100,000 sf per 6-inch lift
Standard Proctor Test	ASTM D 698	1 per material type
Coefficient of Permeability	ASTM D 5084 or COE EM 1110-2-1906 Appendix VII	1/100,000 sf per 6-inch lift
Moisture Content	ASTM D 2216	1/100,000 sf per 6-inch lift

[1] A minimum of one test must be performed for each lift regardless of surface area.

The Atterberg limits of the compacted soil liner must be compared to the Atterberg limits of the Proctor curve sample to assure that the Proctor curve represents the in-place material. Typically, a variance of more than 10 points between the liquid limit or plasticity index of the in-place soil and those of the Proctor curve sample will require that a new Proctor curve be developed. Permeability testing will be performed on undisturbed samples from the compacted soil liner as described in Section 4.8 and all test data will be reported.

4.8.3 Thickness Verification

The as-built thickness of the compacted soil liner shall be determined by standard survey methods. Prior to the placement of liner material, the subgrade elevations will be determined at a minimum rate of one survey point per 5,000 sf of lined area. After the compacted soil liner is completed, the top of the liner elevations will be determined at the same locations as the subgrade elevations.

CHISHOLM TRAIL DISPOSAL LANDFILL
WISE COUNTY, TEXAS
TCEQ PERMIT NO. MSW 2421

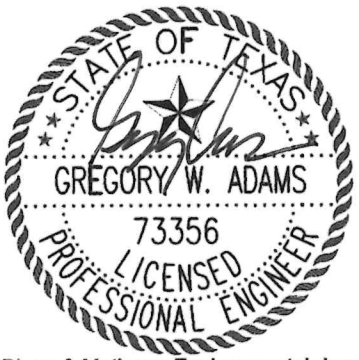
TYPE IV PERMIT APPLICATION

VOLUME 3 OF 3

Prepared for

Chisholm Trail Disposal, LLC

December 2024
Revised April 2025



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Firm Registration No. F-256
4/29/2025

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WISE COUNTY, TEXAS
TCEQ PERMIT NO. MSW 2421

TYPE IV PERMIT APPLICATION

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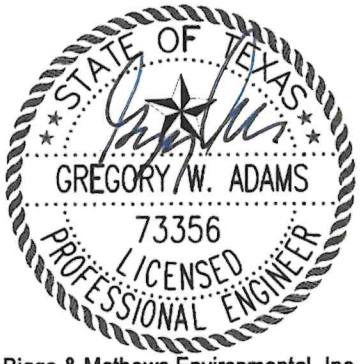

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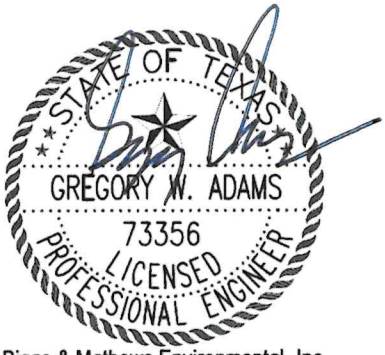
TYPE IV PERMIT APPLICATION

PART III – FACILITY INVESTIGATION AND DESIGN
ATTACHMENT E
GEOLOGY REPORT

Prepared for:

Chisholm Trail Disposal, LLC

December 2024
Revised April 2025



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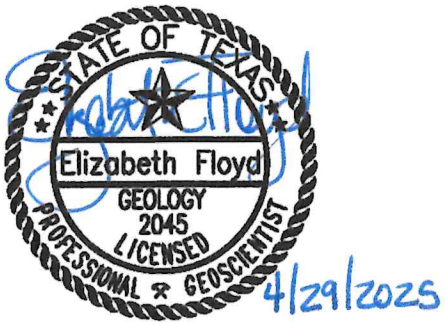

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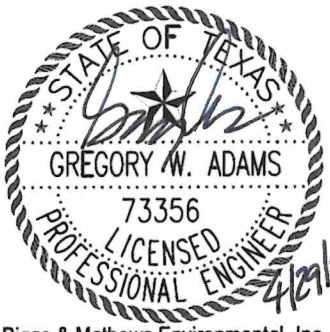

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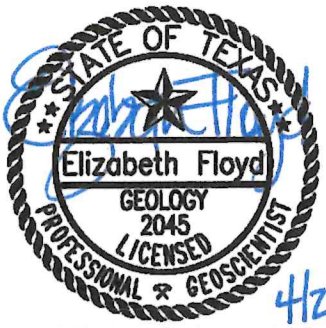

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CONTENTS

3 REGIONAL AQUIFERS

30 TAC §330.63(e)(3)

3.1 Paluxy Aquifer

The Paluxy Aquifer is the upper member of the Trinity Group south of the Glen Rose pinchout. It crops out in Hood, Parker, Tarrant, and Wise Counties. The dip is easterly at an average rate of 30 feet per mile, increasing to 80 feet per mile near the downdip limit of fresh to slightly saline water (Beak & Mravik, 2015). The Paluxy is composed of predominately fine to coarse-grained, friable, homogeneous, white quartz sand interbedded with sandy, silty, calcareous clay or shale. In general, coarse-grained sand is in the lower part of the formation. The Paluxy grades upward into fine-grained sand with variable amounts of shale and clay. The sands are usually well sorted, poorly cemented, and cross-bedded.

The primary source of recharge to the Paluxy is precipitation on the outcrop. Secondary sources include recharge from streams flowing across the outcrop and surface-water seepage from lakes. The Brazos and Trinity River systems, Eagle Mountain Reservoir, and Lake Worth are examples (Nordstrom, 1982). Only a small fraction of the amount of precipitation is available as effective recharge due to runoff and evapotranspiration. Thickness of the Paluxy varies considerably from a maximum of 400 feet in the northern areas to less than 40 feet in the south and southeast extent.

Water in the outcrop area is under water-table conditions. In downdip areas, water is under artesian conditions and is confined under hydrostatic pressure from overlying formations. The average rate of movement of water in the Paluxy amounts to less than 2 feet per year in an easterly direction. Hydraulic conductivity of the Paluxy averages 78 gal/day/ft^2 (Nordstrom, 1982). Drawing E1.4 is a regional potentiometric surface map of the Paluxy Aquifer. Discharge from the Paluxy occurs naturally through springs and evapotranspiration and artificially through pumping. Transmissivity of the Paluxy averages 3,700 gal/day/ft (Nordstrom, 1982). Permeabilities likely increase from the outcrop in a downdip direction and from south to north.

The Paluxy yields small to moderate amounts of fresh to slightly saline water to public, industrial, domestic, and livestock wells. Wells completed in the Paluxy have water with chemical quality that is generally better than water from other Cretaceous aquifers (Nordstrom, 1982). The Paluxy generally exhibits chemical signatures of slightly high $CaCO_3$ with fluoride levels increasing in the downdip part of the aquifer; total dissolved solids are approximately 600 mg/L in the groundwater (Nordstrom, 1982). The hydraulic properties of the Paluxy Aquifer are summarized in Table 2.

3.2 Antlers Aquifer

The Antlers Aquifer combines groundwater availability of both the Paluxy and Twin Mountains Aquifers. The Antlers crops out mainly in Cooke, Montague, and Wise Counties. The Antlers dips to the southeast at an average rate of 20 feet per mile near its outcrop to 70 feet per mile near its southeastern limit (Beak & Mravik, 2015). A typical section of the Antlers consists of a basal conglomerate and gravel overlain by a fine white to gray poorly consolidated sand in massive cross-bedded layers interbedded with layers of red, purple, or gray clay in discontinuous lenses scattered throughout the formation. A middle section of Antlers contains considerably more clay beds than the upper or lower

Table 5
Generalized Site Stratigraphy

Geologic Unit	Lithology	Average Depth to top of Unit (ft)	Average Thickness of Unit (ft)	Hydrogeologic Unit
Unit I	Alluvium	Surface	30.8	Perched Water Zone
Unit II	Limestone	28.2	5.0	Confining Unit (where present)
Unit III	Sandstone, Sandstone with Silt, Siltstone, Sandy Shale	33.0	18.2	Upper Groundwater Zone
Unit IV	Limestone and Shale	51.1	14.3	Upper Confining Unit to the Uppermost Aquifer (Base of landfill founded in this Unit).
Unit V	Sand, Sandstone, Sand with Silt, Sandy Shale	64.7	12.4	Uppermost Aquifer
Unit VI	Limestone, Shale, Shale with Silt	76.7	14.0*	Lower Confining Unit (Aquiclude) to Uppermost Aquifer
Unit VII	Sandstone, Siltstone, Sand with Silt, and Sand with Clay	88.3	11.8*	Lower Groundwater Zone

* Unit VI and Unit VII were not fully penetrated throughout the site.
** There is a Unit VIII that was encountered in 5 borings composed of Limestone and Shale with Sand.

4.2.1 Unit I – Alluvium

The site is currently used for an active soil mining operation. Most of the site had been excavated to varying depths within Unit I at the time of drilling. Lithologies observed in Unit I have been disturbed as part of the excavation process. After soil excavation, the over burden was returned back into the excavation, as such this Unit is primarily considered fill material. Material encountered in Unit I include the following: silty clay, sand with clay, sand, and gravel. Unit I was encountered from the surface to a maximum depth of 43 feet. The average thickness of this unit is approximately 30 feet.

4.2.2 Unit II – Limestone and Shale

Unit II is a hard massive bed of limestone and shale. The limestone layer was absent in ten borings BME-1, 2, 5, 6, 9, 14, 15, 18, 19, and 26. This Unit, where present, was encountered from 15 to 43 feet below ground surface (bgs). The thickness of Unit II ranges from 1 foot to 13 feet thick. A structural contour map of the top of Unit II is shown in Drawing E3.11.

4.2.3 Unit III – Sandstone, Sandstone with Silt, Siltstone, Sandy Shale

Unit III is composed of individual layers of sandy shale, sandstone, sandstone with silt, siltstone, silt, sand, and some interbeds of sandy shale. Unit III ranges from 2 to 56 feet

thick with an approximate average thickness of 18 feet. Unit III is found on average at 33 feet bgs. This layer is present and correlatable across the site. A structural contour map is shown on Drawing E3.12.

4.2.4 Unit IV – Limestone and Shale

Unit IV is composed of individual layers of limestone and shale. Unit IV is present and correlatable across the site. Unit IV ranges from 5 to 27 feet thick with an average approximate thickness of 14 feet. The depth to Unit IV ranges between 23 and 72 feet deep with an average depth of approximately 51 feet bgs. A structural contour map of the top of Unit IV is provided as Drawing E3.13. The base of the landfill excavation will be primarily founded in this layer.

4.2.5 Unit V – Sand, Sandstone, Sand with Silt, Sandy Shale

Unit V is composed of individual layers of sand, sandstone, sand with silt, and with some interbeds of sandy shale. Unit V is present and correlatable across the site. Unit V ranges from 1 to 36 feet in thickness with an average thickness of 12.4 feet. Unit V is encountered at depths ranging between 37 and 85 feet deep. On average, Unit V can be found at approximately 64 feet bgs. A structural contour map on Unit V is provided as Drawing E3.14

4.2.6 Unit VI – Limestone, Shale with Sand, Shale with Silt

Unit VI is composed of individual layers of limestone, shale with sand, and shale with silt. Unit VI is correlatable across the site. Unit VI was not penetrated in all borings. The depth of the top of Unit VI ranges from 50 to 105 feet bgs, with an approximate average depth of the layer at 76 feet bgs. Where Unit VI was fully penetrated, the thickness ranges from 3.5 to 20 feet, with an approximate average thickness of 14 feet. A structural contour map of the top of Unit VI is shown in Drawing E3.15.

4.2.7 Unit VII – Sandstone, Siltstone, Sand with Silt, and Sand with Clay

Unit VII is composed of individual layers of sandstone, siltstone, sand with silt, and sand with clay. The average thickness is approximately 11.8 feet where this Unit was fully penetrated. Unit VII was present in borings in thickness that ranged between 5 and 19 feet. Unit VII is found at depths ranging from 90 to 108 feet deep, with an approximate average depth of 99 feet. There is a deeper Unit VIII encountered in five borings (BME-6, 8, 13, 14, and 17). where layers composed of limestone and shale with sand were encountered during drilling.

5 GEOTECHNICAL AND HYDROGEOLOGIC DATA

30 TAC §330.63(e)(5)(A)-(F)

5.1 Geotechnical Data

Laboratory tests were performed to determine the geotechnical properties of the subsurface materials that will be encountered in the excavation and to evaluate the suitability of the materials for the proposed waste management unit design. Samples of cohesive materials from each unit that will form the bottom and sides of the excavation and from the units at least 30 feet below the lowest excavation were tested to determine the soil characteristics and to provide a typical profile. Permeability tests were performed on undisturbed samples in accordance with 330.63(e)(5)(B)(i). Falling head permeability tests were performed on all of the samples because undisturbed samples could only be obtained from the low permeability materials such as shale and limestone but not from the coarser sands and gravels. The summary of material characteristics and the standard test methods are provided in Appendix E6.

Soils will be required for construction of the compacted soil liner and protective cover components of the liner system, and for the infiltration layer and erosion layer components of the final cover system. Soils will also be required for operational cover (weekly and intermediate) and general earthfill. Typical material requirements for the various landfill components are listed below.

Table 6
Typical Material Requirements for Landfill Construction

Landfill Component	Classification	LL	PI	% - 200	Hydraulic Conductivity cm/sec
Soil Liner	SC, CL, CH, MH	30 min	15 min	30 min	1×10^{-7} max
Infiltration Layer	SC, CL, CH, MH	30 min	15 min	30 min	1×10^{-7} max
General Fill, Protective Cover, Operational Cover	SC, CL, CH, ML, CL-ML, MH	No large rocks, not mixed with waste			
Erosion Layer	SC, CL, CH, SM, ML, CL-ML	Suitable to support plant growth			

The soil liner and final cover infiltration layer must be constructed from soils that can be compacted to form a low hydraulic conductivity barrier. The test results indicate that suitable materials are available in Units I and III. General fill, protective cover, operational cover and erosion layer soils should not contain large rocks or be mixed with waste. Erosion layer material must be capable of sustaining vegetation. The test results and boring logs indicate that any of the soil material excavated from the site will be suitable for use as general earthfill, operational and protective cover and that the surficial soils will be suitable for use as the final cover system erosion layer.

5.2 Groundwater Observation Points – Piezometers

Data from the 20 piezometers were used to characterize site hydrogeology. Details of the piezometers are provided in Table 7. Groundwater elevation levels for the site's piezometers are summarized in Table 8, included in Appendix E5.

Piezometer locations are shown on Drawing E2.2 of this attachment. Proposed monitoring well details are provided in Attachment 5.

Table 7
Piezometer Details

Piezometer No.	Date Installed	Total Depth (ft)	Surface Elevation (ft/msl)	Top of Casing Elevation (ft/msl)	Filter Pack Elevations (ft/msl)	Screened Elevations (ft/msl)	Unit Screened
BME 2024 Piezometers							
P-3S	8/02/2024	27.5	682.47	685.02	667.47 - 654.97	665.47 - 655.97	I
P-3M	8/10/2024	70.0	682.25	684.83	626.25 - 612.25	623.25 - 613.25	III
P-3D	8/10/2024	90.5	681.61	684.34	598.61 - 591.11	596.61 - 591.61	V
P-4D	8/11/2024	90.5	681.18	683.69	598.18 - 590.68	596.18 - 591.18	V
P-5D	8/09/2024	66.0	681.46	684.02	628.46 - 615.46	626.46 - 616.46	V
P-6VII	8/13/2024	91.0	679.98	682.48	596.98 - 588.98	594.98 - 589.98	VII
P-11S	8/02/2024	24.0	677.23	679.68	666.23 - 653.23	664.23 - 654.23	I
P-11M	8/08/2024	42.0	677.22	679.64	642.22 - 635.22	641.22 - 636.22	III
P-11D	8/07/2024	71.0	677.04	679.43	619.04 - 606.04	617.04 - 607.04	V
P-24S	8/02/2024	31.0	682.86	685.49	665.36 - 651.86	663.36 - 653.36	I
P-24D	8/10/2024	75.5	682.47	685.20	613.97 - 606.97	612.47 - 607.47	V
P-24VII	8/11/2024	105.0	682.33	684.77	585.33 - 577.33	583.33 - 578.33	VII
P-31S	8/01/2024	37.5	684.14	686.85	659.14 - 646.64	657.14 - 647.14	I
P-32S	8/01/2024	37.5	681.79	684.32	656.79 - 644.29	654.79 - 644.79	I
P-32M	8/11/2024	71.0	682.10	684.57	624.10 - 611.10	622.10 - 612.10	III
P-32D	8/11/2024	89.5	682.63	685.47	600.63 - 593.13	599.63 - 594.63	V
P-33S	7/30/2024	31.0	682.55	685.02	665.05 - 651.55	662.55 - 652.55	I
P-34S	7/30/2024	34.5	682.83	685.37	661.83 - 648.33	658.83 - 648.83	I
P-34M	8/09/2024	50.0	682.98	685.47	639.98 - 632.98	638.98 - 633.98	III
P-34D	8/09/2024	88.0	683.08	685.38	602.58 - 595.08	600.58 - 595.58	V

5.2.1 Water Level Measurements

Water levels at the site have been measured from August 2024 to present in site piezometers. This data is compiled in Table 8 and are included in Appendix E5. Measurements of water levels were made to 0.01 foot using an electronic water level indicator. Water level elevations were calculated using measured water levels and surveyed well elevations (top of casing).

The cross sections in Appendix E3 are annotated to document the level at which stabilized groundwater levels were obtained from site piezometers. Borehole water level data are noted on the logs when present. Borehole fluid level data were not used in engineering calculations because the piezometers were properly constructed and screened to provide water level data on individual strata; these data are much more reliable than borehole data.

5.3 Groundwater Monitoring Historical Analytical Data

This site is not permitted and thus does not have any existing groundwater monitoring wells. Therefore, there is no existing analytical data.

5.4 Hydrogeologic Units

5.4.1 Unit I – Perched Water Zone – Alluvium

Groundwater is contained in the Unit I alluvium. Groundwater enters Unit I as meteoric water infiltration from the surface. Current excavation activities have altered the natural flow of groundwater at the site.

Water levels in piezometers screened in Unit I range from 658.77 to 663.18 ft/msl. Groundwater present in this unit is under water table conditions. Groundwater flows toward the north-northwest in the northern portion of the site. Groundwater also flows toward the south-southwest in the southwest portion of the site. Potentiometric surface maps of Unit I are included in Appendix E5 as Drawings E5.2a through E5.2d. Slug tests were conducted in Unit I piezometers. The geometric mean of hydraulic conductivity values (K) calculated from the Unit I slug tests is 1.87 $x10^{-4}$ centimeters per second (cm/sec). The estimated flow velocity in Unit I is 1.17 feet per year (ft/yr).

5.4.2 Unit II – Confining Unit – Limestone and Shale

Unit II consists of hard beds of limestone and shale and ranges from 1 to 13 feet thick. This layer was missing from ten borings (BME-1, 2, 5, 6, 9, 14, 15, 18, 19, and 26). When present, the lithologic and hydrogeological characteristics of this unit act as a lower confining unit to Unit I and an upper confining unit to Unit III. A laboratory permeability test was run on an undisturbed sample of Unit II (BME-3). The hydraulic conductivity was calculated to be 2.8 x 10^{-8} cm/sec. The hydraulic conductivity worksheet is included in Appendix E6 as Drawing E6.2.

Where Unit II is absent, Unit I and Unit III are in direct communication.

5.4.3 Unit III – Upper Groundwater Zone – Sandstone, Sandstone with Silt, Siltstone, and Sandy Shale

Groundwater is contained in Unit III strata which is comprised of sandstone, sandstone with silt, sand, and some sandy shale interbeds. Groundwater enters Unit III on the outcrop of the Paluxy Sand Formation. Water levels in piezometers screened in Unit III range from 652.34 to 662.42 ft/msl. Groundwater present in this unit is under confined conditions where Unit II is present. Groundwater flow in Unit III flows toward the northwest. Potentiometric surface maps of Unit III are included in Appendix E5 as Drawings E5.3a through E5.3d. Slug tests conducted in Unit III had a geometric mean of hydraulic conductivity values (K) of 1.56 x 10^{-4} cm/sec. The estimated flow velocity in Unit III is 3.26 ft/yr.

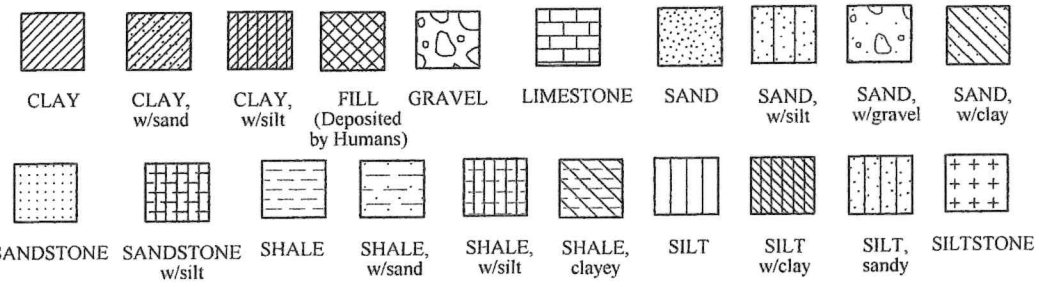
Unit II acts as a lower confining unit to Unit I and an upper confining unit to Unit III. As previously discussed, Unit II is absent in borings BME-1, 2, 5, 6, 9, 14, 15, 18, 19, and 26. Units I and III are in direct communication with one another where Unit II is absent. Groundwater in these areas flows to the northwest.

APPENDIX E2

GEOLOGIC PROCESSES

KEY TO SOIL CLASSIFICATION TERMS AND SYMBOLS

SOIL OR ROCK TYPES (shown in symbols column)



SUBSURFACE CONDITIONS:

Soil and rock descriptions on the boring logs are a compilation of field data as well as from laboratory testing of samples on those strata for which laboratory classification test results are presented on the boring logs. These classifications are based only on the actual samples tested, and the classification is then assigned to the remainder of the stratum interval based on visual classification. If laboratory classification test results are not presented on the boring log for a particular stratum, then that stratum was classified by visual-manual procedures only. The stratification lines represent the approximate boundary between materials and the transition can be gradual.

Classification of soils based upon visual-manual procedures was performed in general accordance with ASTM Standard D 2488. Classification of soils based upon laboratory test results was performed in general accordance with ASTM Standard D 2487.

Water-level observations have been made in the borings at the times indicated. It must be noted that fluctuations in the groundwater level may occur due to variations in rainfall, hydraulic conductivity of soil strata, construction activity, and other factors.

ELEVATIONS:

Elevation of contact or bottom of borings/piezometers is shown on the right side of the material description column.

CHISHOLM TRAIL DISPOSAL LANDFILL
WISE COUNTY, TEXAS
TCEQ PERMIT NO. MSW 2421

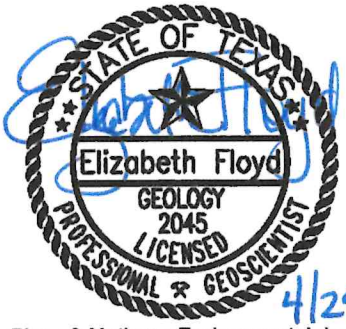
TYPE IV PERMIT APPLICATION

PART III – FACILITY INVESTIGATION AND DESIGN
ATTACHMENT F
GROUNDWATER MONITORING PLAN

Prepared for

Chisholm Trail Disposal, LLC

December 2024
Revised April 2025



4/29/2025

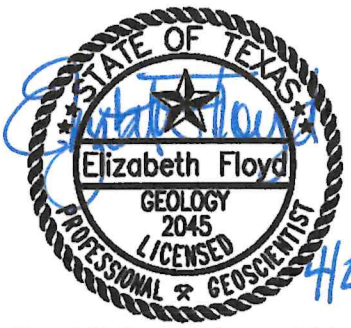
Biggs & Mathews Environmental, Inc.
Firm Registration No. 50222

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



4/29/2025

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Firm Registration No. 50222

CONTENTS

1 GROUNDWATER MONITORING PROGRAM

1.1 Site Hydrogeology

Site stratigraphy is discussed in detail in Section 4.2 of Attachment E. A discussion of the hydrogeologic interpretation of the site is in Section 5.3 of Attachment E.

1.1.1 Unit I – Alluvium - Perched Water Zone

Groundwater is contained in the Unit I alluvium. Groundwater enters Unit I as meteoric water filtration from the surface. Current excavation activities have altered the natural flow of groundwater at the site. A large open excavation in the northeast quadrant of the site acts as a sink for groundwater in Unit I.

Water levels in piezometers screened in Unit I range from 658.77 to 663.18 ft/msl. Groundwater present in this unit is under water table conditions. Groundwater flows toward the north-northwest in the northern portion of the site. Groundwater also flows toward the south in the southwest portion of the site. Potentiometric surface maps of Unit I are included in Appendix E5 as Drawings E5.2a to E5.2d. Slug tests were conducted in Unit I piezometers. The geometric mean of hydraulic conductivity values (K) calculated from the Unit I slug tests is 1.87×10^{-4} centimeters per second (cm/sec). The estimated flow velocity in Unit I is 1.17 feet per year (ft/yr).

1.1.2 Unit II – Confining Unit – Limestone and Shale

Unit II consists of hard beds of limestone and shale and ranges from 1 to 13 feet thick. This layer was missing from the borings (BME-1, 2, 5, 6, 9, 14, 15, 18, 19, and 26). When present, the lithologic and hydrogeological characteristics of this unit act as a lower confining unit to Unit I and an upper confining unit to Unit III. A laboratory permeability test was run on an undisturbed sample of Unit II (BME-3). The hydraulic conductivity was calculated to be 2.8×10^{-8} cm/sec. The hydraulic conductivity worksheet is included in Appendix E6 as Drawing E6.2.

Where Unit II is absent, Unit I and Unit III are in direct communication.

1.1.3 Unit III – Sandstone, Sandstone with Silt, Siltstone, Sandy Shale – Upper Groundwater Zone

Groundwater is contained in Unit III strata which is comprised of sandstone, sandstone with silt, siltstone, and with some interbeds of sandy shale. Groundwater enters Unit III on the outcrop of the Paluxy Sand Formation. Water levels in piezometers screened in Unit III range from 652.34 to 662.42 ft/msl. Groundwater present in this unit is under confined conditions where Unit II is present. Groundwater flow in Unit III flows toward the northwest. Potentiometric surface maps of Unit III are included in Appendix E5 as Drawings E5.3a through E5.4c. Slug tests conducted in Unit III had a geometric mean of

hydraulic conductivity values (K) of 1.56 x 10^{-4} cm/sec. The estimated flow velocity in Unit III is 3.26 ft/yr.

Unit II acts as a lower confining unit to Unit I and an upper confining unit to Unit III. As previously discussed, Unit II is absent in borings BME-1, 2, 5, 6, 9, 14, 15, 18, 19, and 26. Units I and III are in direct communication with one another where Unit II is absent. Groundwater in these areas would follow the flow regime for Unit III and flow to the northwest.

1.1.4 Unit IV – Confining Unit – Limestone and Shale

Unit IV consists of layers of limestone and shale. This unit ranges from 5 to 27 feet thick across the site. The lithological and hydrogeological characteristics of this unit indicate that it serves as the lower confining unit for Unit III and an upper confining unit for the underlying Unit V.

Two undisturbed samples were submitted for laboratory permeability testing on the Unit IV strata (BME-18, BME-28). Results for hydraulic conductivity calculated were less than 4.3 x 10^{-9} and 1.00 x 10^{-9} cm/sec, respectively. The hydraulic conductivity worksheets are included in Appendix E6 as Drawings E6.10 and E6.14.

1.1.5 Unit V – Uppermost Aquifer – Sand, Sandstone, Sand with Silt, Sandy Shale

Groundwater enters Unit V strata at its outcrop east of the site. Water levels in piezometers screened in Unit V range from 628.25 to 659.14 ft/msl. Groundwater present in this unit is under confined conditions. Groundwater is confined in Unit V by the overlying limestone of Unit IV and by the underlying limestone, shale with sand, and shale with silt of Unit VI. Potentiometric surface maps of Unit V are included in Appendix E5 as Drawings E5.4a through E5.4d. Groundwater flow is generally toward the west toward piezometers P-3 and P-4. In this area, groundwater is directed to its localized area in Unit V because of a depression in Unit III through VI, as shown on Cross Sections B-B' and E-E' (see Drawings E3.3 and E3.6). The geometric mean of the hydraulic conductivity values (K) calculated from the Unit V slug tests is 4.60 x 10^{-5} cm/sec. The estimated groundwater flow velocity in Unit V is approximately 6.32 ft/yr.

1.1.6 Unit VI – Lower Confining Unit – Limestone, Shale with Sand, Shale with Silt

Unit VI consists of layers of limestone, shale with sand, and shale with silt. An average of approximately 14 feet and a maximum of 20 feet of this layer was penetrated by site borings. Two undisturbed samples were submitted for laboratory permeability testing on the Unit VI strata (BME-8 and BME-17). The hydraulic conductivity was calculated as 4.5 x 10^{-9} and less than 1.00 x 10^{-9} cm/sec, respectively. The laboratory hydraulic conductivity worksheets are included in Appendix E6 as Drawings E6.6 and E6.9. The lithological and hydrogeologic characteristics of this unit indicate that Unit VI serves as the lower confining unit to Unit V, the uppermost aquifer. This layer serves as the aquiclude to Unit V, the uppermost aquifer.

3 SUBTITLE D GROUNDWATER MONITORING SYSTEM

A groundwater monitoring system has been designed for the facility in accordance with the requirements for 30 TAC §330.403 based on site specific technical information including the identification of the uppermost aquifer and other groundwater bearing zones and the lower confining unit beneath the uppermost aquifer that also includes a thorough characterization of the aquifer thickness and groundwater flow rate and direction. The design also considered the thickness, stratigraphy, lithology, and hydraulic characteristics of the geologic units above the groundwater, the materials of the uppermost aquifer, and the materials and characteristics of the lower confining unit beneath the uppermost aquifer.

Groundwater will be monitored in three subsurface units: the uppermost aquifer, Unit V; the uppermost groundwater zone, Unit I; and Unit III.

After monitoring well installation and prior to waste acceptance at the new landfill, the owner or operator will submit a certification in accordance with 30 TAC §330.403, §330.405, §330.407, §330.409, and §330.417.

3.1 Groundwater Monitoring Well Locations

Monitoring well locations in each of the three units are based on the geometry of the transmissive zones within each unit, groundwater flow directions, and aspects of landfill design as discussed in Section 2.

In the uppermost aquifer (Unit V), groundwater monitoring well screens are to be placed in the upper saturated part of Unit V. As discussed in Section 2.1 of this attachment, the excavation bottom of the proposed landfill remains entirely above the top of Unit V, mostly in the limestone and shale of Unit IV. As such the upper part of the saturated portion of Unit V is the first place a potential release of contaminant could arrive in the groundwater of Unit V, and thus it is the appropriate place to monitor groundwater in the uppermost aquifer. The point of compliance (POC) has been determined at the downgradient portion of the western side of the site as shown in Appendix F1 on Drawing F1.1.

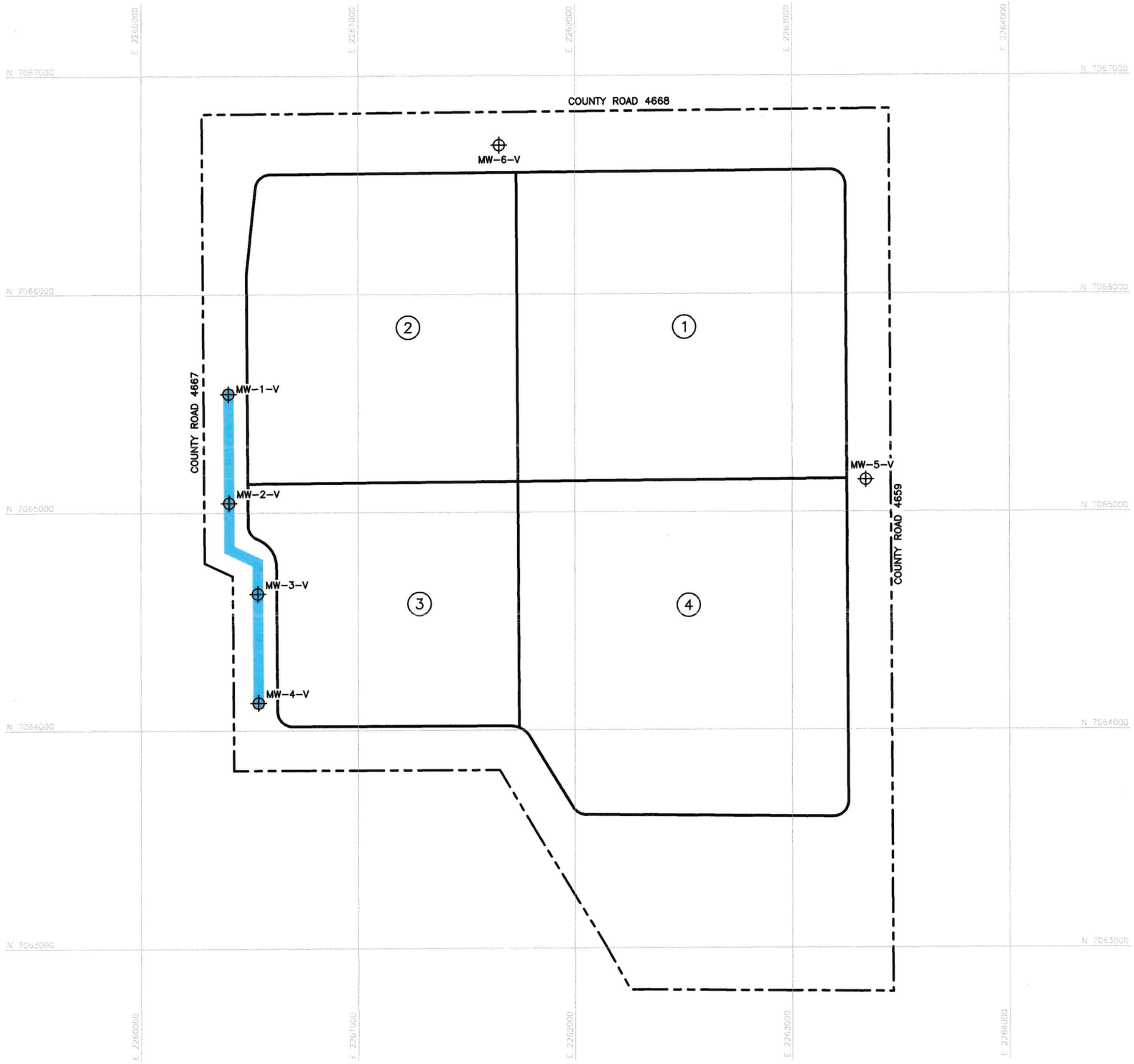
There will be a total of six monitoring wells in Unit V; two upgradient wells and four downgradient wells. Unit V monitoring wells are depicted on Drawing F1.1. Monitoring well details are provided on Drawing F1.5.

There will be a total of 14 monitoring wells in Unit I; one upgradient well and 13 downgradient wells. The monitoring wells in Unit I are designed to be screened directly above Unit II. Unit I monitoring wells are depicted on Drawing F1.2. Monitoring well details are provided on Drawing F1.5. The POC for Unit I was determined by the groundwater flow direction from the potentiometric surface maps included in Appendix E5 of Attachment E. Groundwater in Unit I flows to the northwest, west, and south-southeast.

CHISHOLM TRAIL DISPOSAL LANDFILL

APPENDIX F1

GROUNDWATER MONITORING SYSTEM



0 250 500

SCALE IN FEET

LEGEND

- PERMIT BOUNDARY
- WASTE MANAGEMENT UNIT
- N 7062000 STATE PLANE COORDINATES
- MW-1 PROPOSED GROUNDWATER MONITORING WELL
- POINT OF COMPLIANCE
- (1) SECTOR NUMBER

NOTE(S):

1. PERMIT BOUNDARY INFORMATION FROM SURVEYING AND MAPPING, LLC.

4/29/2025

FOR PERMITTING PURPOSES

GROUNDWATER MONITORING NETWORK – UNIT V

CHISHOLM TRAIL DISPOSAL, LLC
CHISHOLM TRAIL DISPOSAL LANDFILL

BME
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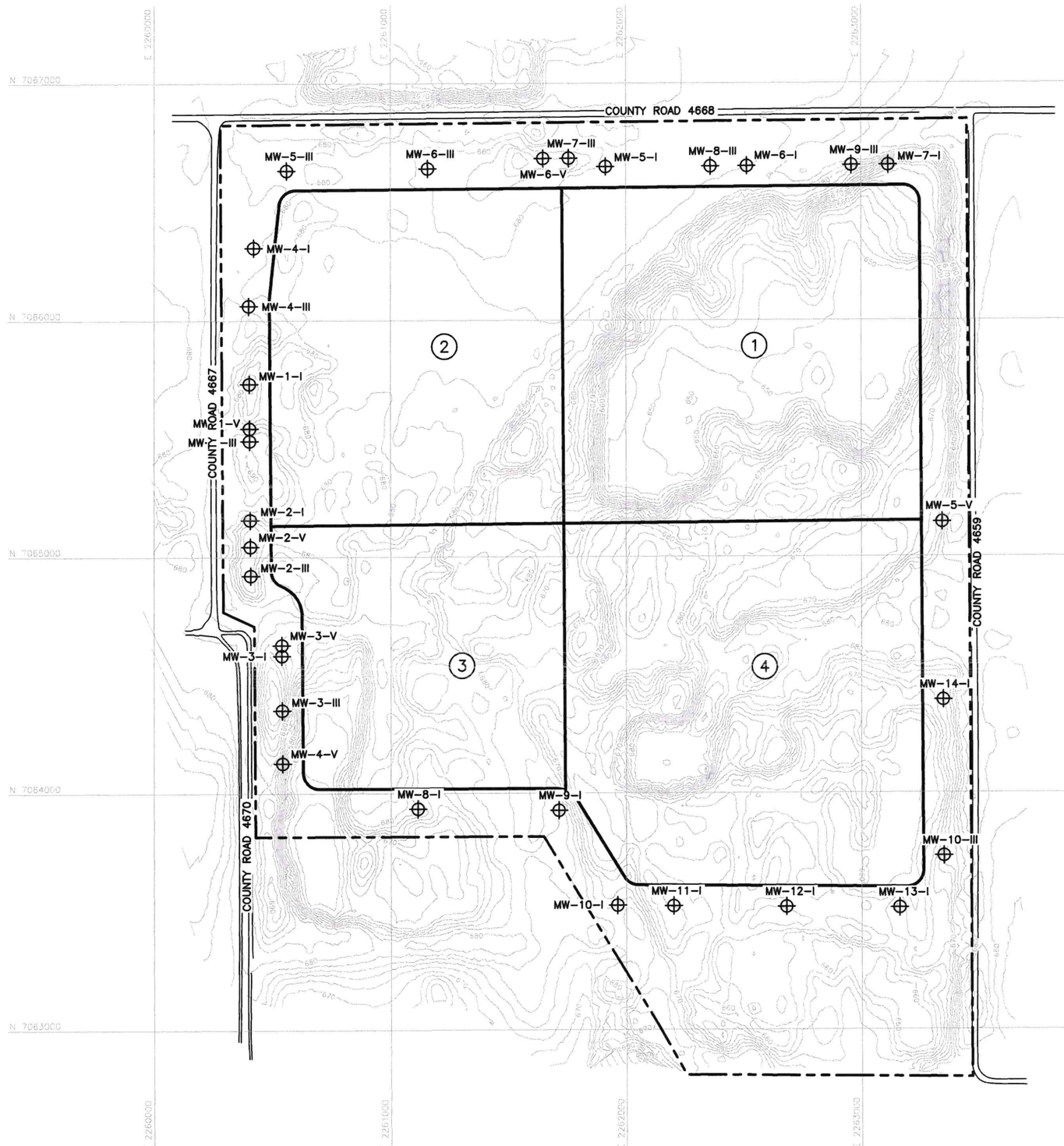
817-563-1144
TBPE FIRM NO. F-256
TBPG FIRM NO. 50222

DRAWING F1.1



0 250 500

SCALE IN FEET

LEGEND

- PERMIT BOUNDARY
- WASTE MANAGEMENT UNIT
- 700 10' CONTOUR
- N 7062000 STATE PLANE COORDINATES
- MW-10-I PROPOSED GROUNDWATER MONITORING WELL
- (1) SECTOR NUMBER

NOTES:

1. EXISTING CONTOURS TAKEN FROM DRONE SURVEY PROVIDED BY BIGGS AND MATHEWS ENVIRONMENTAL DATED APRIL 5, 2024.
2. PERMIT BOUNDARY INFORMATION FROM SURVEYING AND MAPPING, LLC.

STATE OF TEXAS
Elizabeth Floyd
GEOLOGY
2045
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PROFESSIONAL GEOSCIENTIST

4/29/2025

FOR PERMITTING PURPOSES

GROUNDWATER MONITORING NETWORK ALL HYDROGEOLOGIC UNITS

CHISHOLM TRAIL DISPOSAL, LLC CHISHOLM TRAIL DISPOSAL LANDFILL

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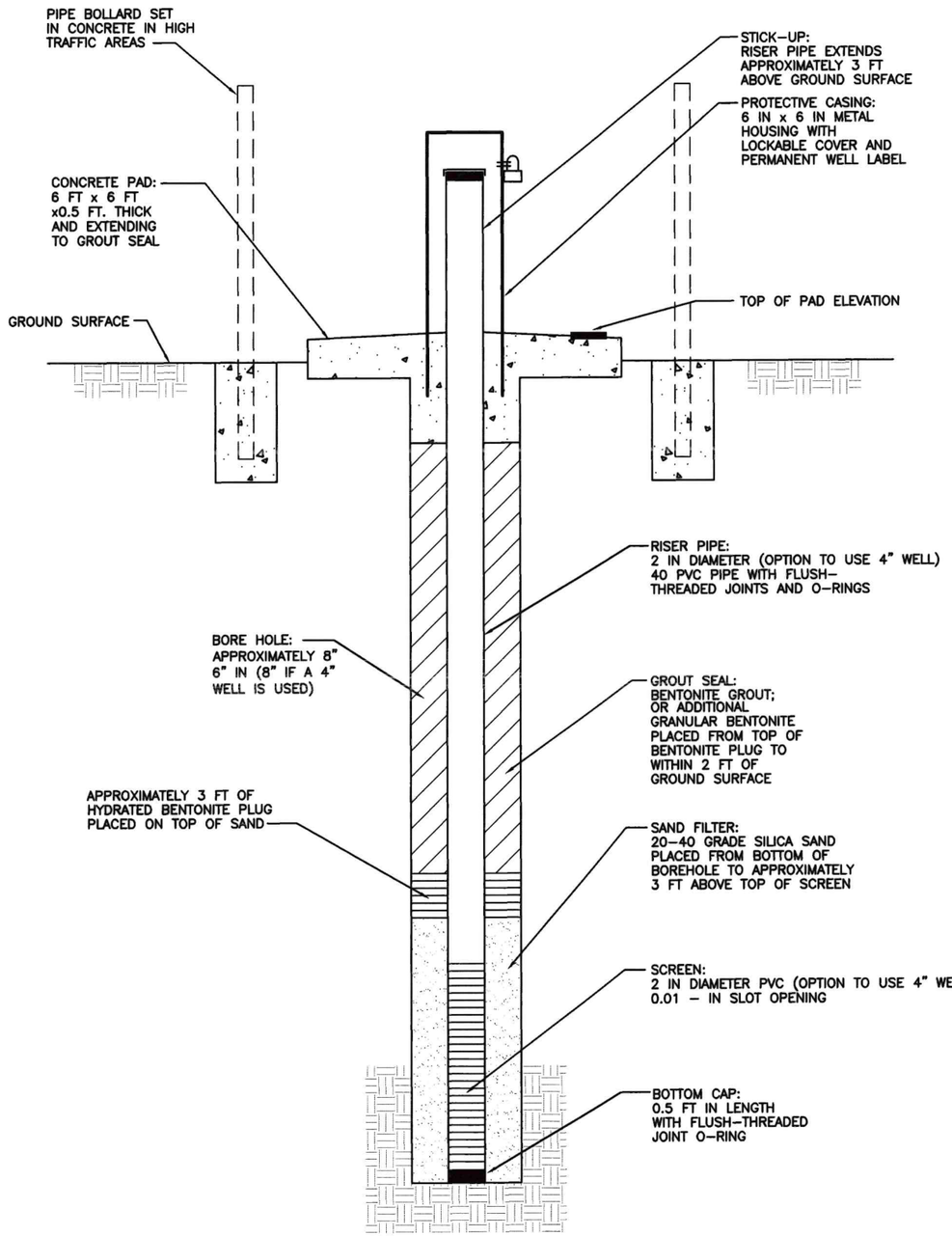
817-563-1144

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

DRAWING
F1.4



Monitoring Well No.	Layer	Designation	Northing	Easting	Exisitng Ground Elevation (ft/msl)	Design Elevation (ft/msl) (See Note 2)	Total Depth (ft/bgs)	Top of Casing Elevation (ft/msl)	Screened Interval (ft/bgs)	Top of Filter Pack (ft/bgs)
MW-1-V	V	D	7065544	2260403	683	692.00	100	694.5	90.0-100.0	87.0
MW-2-V	V	D	7065044	2260406	676	691.00	106	693.5	96.0-106.0	93.0
MW-3-V	V	D	7064627	2260538	688	689.00	89	691.5	79.0-89.0	76.0
MW-4-V	V	D	7064127	2260541	681	688.00	93	690.5	83.0-93.0	80.0
MW-5-V	V	U	7065146	2263340	679	687.00	102	689.5	92.0-102.0	89.0
MW-6-V	V	U	7066650	2261655	676.2	695.90	85	689.4	75 - 85	72.0
MW-1-I	I	D	7065732	2260402	674	693.00	53	695.5	43.0-53.0	40.0
MW-2-I	I	D	7065157	2260405	678	691.00	51	693.5	41.0-51.0	38.0
MW-3-I	I	D	7064582	2260538	690	689.00	49	691.5	39.0-49.0	36.0
MW-4-I	I	D	7066307	2260421	683	694.00	54	696.5	44.0-54.0	41.0
MW-5-I	I	D	7066647	2261914	680	695.00	50	697.5	40.0-50.0	37.0
MW-6-I	I	D	7066649	2262514	682	694.00	41	696.5	31.0-41.0	28.0
MW-7-I	I	D	7066653	2263114	670	692.00	50	694.5	40.0-50.0	37.0
MW-8-I	I	D	7066343	2263335	666	691.00	46	693.5	36.0-46.0	33.0
MW-9-I	I	D	7065742	2263337	669	689.00	44	691.5	34.0-44.0	31.0
MW-10-I	I	D	7065317	2263340	673	688.00	43	690.5	33.0-43.0	30.0
MW-11-I	I	D	7063932	2261116	678	686.00	31	688.5	21.0-31.0	18.0
MW-12-I	I	D	7063927	2261715	678	684.00	29	686.5	28.0-29.0	25.0
MW-13-I	I	D	7063525	2261963	674	683.00	28	685.5	18.0-28.0	15.0
MW-14-I	I	D	7063522	2262200	664	683.00	28	685.5	18.0-28.0	15.0
MW-15-I	I	D	7063518	2262680	665	684.00	35	686.5	25.0-35.0	22.0
MW-16-I	I	D	7063554	2262646	668	683.00	44	685.5	34.0-44.0	31.0
MW-17-I	I	U	7064392	2263345	672	685.00	37	687.5	27.0-37.0	24.0
MW-1-III	III	D	7065491	2260403	687	692.00	65	694.5	55.0-65.0	52.0
MW-2-III	III	D	7064921	2260408	676	690.00	68	692.5	58.0-68.0	55.0
MW-3-III	III	D	7064351	2260539	695	688.00	55	690.5	45.0-55.0	42.0
MW-4-III	III	D	7066061	2260400	684	694.00	64	696.5	54.0-64.0	51.0
MW-5-III	III	D	7066631	2260558	681	695.00	67	697.5	62.0-67.0	59.0
MW-6-III	III	D	7066640	2261158	679	696.00	60	698.5	50.0-60.0	47.0
MW-7-III	III	D	7066683	2261758	676	697.00	61	699.5	56.0-61.0	53.0
MW-8-III	III	D	7066648	2262358	682	694.00	52	696.5	42.0-52.0	49.0
MW-9-III	III	D	7066652	2262958	681	692.00	57	694.5	52.0-57.0	54.0
MW-10-III	III	U	7063733	7063733	673	683.00	69	685.5	59.0-69.0	56.0

NOTE(S):

1. SCREEN DEPTHS AND FILTER PACK DEPTHS SHOWN FOR THE PROPOSED MONITORING WELLS ARE ESTIMATES. ACTUAL DEPTHS WILL BE DETERMINED BY DEPTHS OF UNITS AT EACH PROPOSED LOCATION AS OBSERVED DURING INSTALLATION. WELL CONSTRUCTION MAY VARY IN ORDER TO MEET LOCAL CONDITION; INCLUDING USING A 5 FOOT SCREEN IN LAYER V INSTEAD OF A 10 FOOT SCREEN.
2. GROUNDWATER MONITORING WELL DEPTHS ARE MEASURED FROM PROPOSED FINAL GRADE ELEVATIONS AS SHOWN ON DRAWING D1.6, IN ATTACHMENT D. WELL SCREEN INTERVALS AND TOTAL DEPTHS ARE ADJUSTED ACCORDINGLY TO MAINTAIN REQUIRED MONITORING ZONES RELATIVE TO FINAL GRADE.
3. MONITORING WELLS WILL BE INSTALLED IN A PHASED APPROACH AS DISCUSSED IN SECTION 3.1 OF THIS ATTACHMENT.

STATE OF TEXAS
Elizabeth Floyd
GEOLOGY
2045
LICENSED
PROFESSIONAL GEOSCIENTIST

4/29/2025

ISSUED FOR PERMITTING PURPOSES ONLY

MONITORING WELL DETAIL

CHISHOLM TRAIL DISPOSAL, LLC
CHISHOLM TRAIL DISPOSAL LANDFILL

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TBPG FIRM NO. 50222

DRAWING
F1.5

CHISHOLM TRAIL DISPOSAL LANDFILL
LANDFILL COUNTY, TEXAS
TCEQ PERMIT APPLICATION NO. MSW

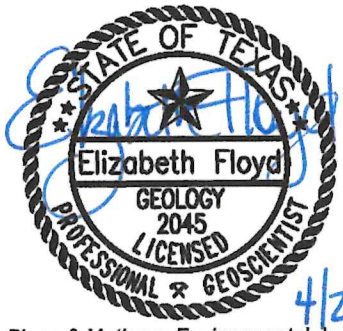
TYPE IV PERMIT APPLICATION

PART III – FACILITY INVESTIGATION AND DESIGN
APPENDIX F2
GROUNDWATER SAMPLING AND ANALYSIS PLAN

Prepared for

CHISHOLM TRAIL DISPOSAL, LLC

December 2024
Revised April 2025



4/29/2025

Biggs & Mathews Environmental, Inc.
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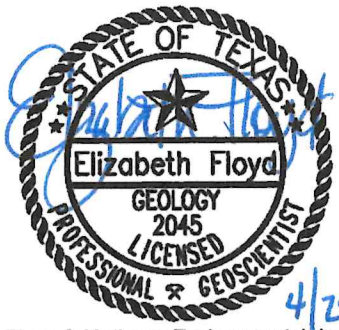
FIRM REGISTRATION NO. 50222



4/29/2025

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Firm Registration No. 50222

CONTENTS

3 GROUNDWATER MONITORING REQUIREMENTS

Groundwater monitoring for the proposed monitoring well system is to follow the TCEQ requirements in 30 TAC §330.417.

Groundwater monitoring will be conducted during both the operational phase and the post-closure care period of the landfill, as required for solid waste management units in accordance with §330.401(f).

3.1 Monitoring Parameters and Frequency

All monitoring wells at the site are to be sampled and analyzed annually for the parameters listed in Table 3. An effort will be made to sample consistently in the same month each year.

EPA methods are listed for each constituent in Table 3. Equivalent or better methods may be substituted.

For any new or replacement wells that may be required, four quarterly background samples for the monitoring parameters listed in Table 3 will be collected and analyzed. Background groundwater samples from a new or replacement monitoring well will be obtained after completion of the monitoring well. Background levels will be established from samples collected from each new or replacement well at least once during each of the four calendar quarters. New or replacement wells will enter into the annual detection monitoring program once they have completed four sets of background analysis.

Following each background monitoring event, the analytical results will be reviewed and compared with the results of other site wells to determine whether there is any indication of facility impact. On completion of background monitoring and during background updates, the facility will evaluate the background data to ensure that the data are representative of background groundwater constituent concentrations unaffected by waste disposal activities or other sources of contamination. The background data evaluation will be documented in a report and submitted to the TCEQ.

Methods of data evaluation may include anion-cation balance techniques or Piper plots and Stiff diagrams to evaluate the groundwater geochemical signature compared to previous events. Trends will be evaluated using graphing software, statistical software, or other appropriate methods. Should the concentrations of a constituent with an MCL exhibit results that are naturally above the MCL, a risk based concentration will be used for evaluation of that constituent and described in the annual report.

3.2 Reporting Requirements

The results of analyses of groundwater samples will be submitted to the TCEQ in accordance with TCEQ rules. The results will be submitted on forms specified by the TCEQ.

All submittals will be made in triplicate to the central office of the TCEQ, unless otherwise specified by the TCEQ. Copies of all submittals will be maintained in the operating record for the site.

In accordance with 30 TAC §330.417, not later than 60 days after each sampling event, the owner or operator shall determine whether the landfill has released contaminants to the uppermost aquifer.

The executive director may require additional sampling, analyses of additional constituents, installation of additional monitoring wells or other sampling points, and/or other hydrogeological investigations if the facility appears to be contaminating the uppermost aquifer.

If the owner or operator finds the facility to have contaminated or be contaminating the uppermost aquifer, the executive director may order corrective action appropriate to protect human health and the environment up to and including that in §§330.411, 330.413, and 330.415 of this title (relating to Assessment of Corrective Measures; Selection of Remedy; and Implementation of the Corrective Action Program).

3.3 Annual Reports

The owner or operator shall provide an annual detection monitoring report within 60 days after the facility's annual groundwater monitoring event that includes the following information determined since the previously submitted report:

A. The results of all monitoring, testing, and analytical work obtained or prepared in accordance with the requirements of this permit, including a summary of background groundwater quality values, groundwater monitoring analyses, any statistical calculations, graphs, and drawings.

B. The groundwater flow rate and direction in the uppermost aquifer. The groundwater flow rate and direction of groundwater flow shall be established using the data collected during the preceding calendar year's sampling events from the monitoring wells of the Detection Monitoring Program. The owner or operator shall also include in the report all documentation used to determine the groundwater flow rate and direction of groundwater flow.

C. A contour map of piezometric water levels in the uppermost aquifer based at a minimum upon concurrent measurement in all monitoring wells. All data or documentation used to establish the contour map should be included in the report.

D. Recommendation for any changes.

E. Any other items requested by the executive director.

CHISHOLM TRAIL DISPOSAL LANDFILL
WISE COUNTY, TEXAS
TCEQ PERMIT NO. MSW 2421

TYPE IV PERMIT APPLICATION

PART III – FACILITY INVESTIGATION AND DESIGN
ATTACHMENT G
LANDFILL GAS MANAGEMENT PLAN

Prepared for

Chisholm Trail Disposal, LLC

December 2024
Revised April 2025

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

Prepared by

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FIRM REGISTRATION NO. 50222

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4/29/25

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

CONTENTS

or easement be established across the permit boundary, utility vents will be installed in accordance with the detail shown on Drawing G1.2.

3.1.4 Monitoring Procedures

Monitoring will be conducted by a qualified landfill representative or a qualified consultant. To avoid artificially impacting the probe static pressure during the induction of the gas sample into the instrument, the static pressure will be measured and recorded prior to measuring gas composition.

During each monitoring event, the probes will be monitored for the following parameters:

- Static pressure, as measured in inches of water column, gauge
- Methane concentration, as measured in percent by volume
- Oxygen concentration (optional), as measured in percent by volume
- Depth to groundwater, as measured in feet

Monitoring for gas composition and gas pressure will be performed using a portable Landtec® GEM-2000, or equivalent instrument, capable of measuring the required parameters. The monitoring equipment will be calibrated and maintained in accordance with the manufacturer's recommended procedures. Manufacturer's maintenance and calibration requirements for the monitoring instruments will be maintained on site with the LFG monitoring records described in Section 3.3.

The monitoring device will have a suction sampling line equipped with a quick-disconnect fitting. This fitting will match up with a corresponding quick-disconnect fitting on the top of each probe to enable gas samples to be drawn directly into the monitoring instrument without diluting the sample. The indicator will give a direct reading of the methane concentration in one of two scales, percent of the lower explosive limit (LEL) or percent by volume.

After these parameters are measured, the probe of a liquid level indicator will be lowered into the LFG probe through an opening located on the top of the LFG probe to measure water level (if any) inside the LFG probe. If no water is present, the level indicator will be used to verify and report total depth of the probe to assure that the probe is not obstructed.

In addition, sampling for specified trace gases may be required if directed by the executive director.

3.1.5 Maintenance Procedures

Each time LFG monitoring is conducted, the sampler will inspect the integrity of the LFG monitoring probes. The sampler will record pertinent information on the Quarterly Landfill Gas Monitoring Report (see Appendix G2) or similar forms. The Quarterly

Landfill Gas Monitoring Report will be kept in the site operating record. The sampler will perform the following at each monitoring event:

- Verify that the LFG monitoring probe is clearly labeled on the outer casing or lid.
- Verify that the protective casing is intact and is not bent or excessively corroded.
- Verify that the concrete pad is intact (no evidence of cracking or heaving).
- Verify that the padlock is functional.
- Verify that the inner casing is intact.

If damage to the LFG monitoring probe is observed, it will be reported to the landfill manager. If it is not possible to repair the LFG monitoring probe and the damage can potentially affect the accuracy of future monitoring results, the LFG monitoring probe will be decommissioned and replaced with a new LFG monitoring probe in accordance with Sections 3.1.2 and 3.4 of this attachment.

3.2 Facility Structures Monitoring

3.2.1 Monitoring Procedures

On-site buildings and structures designed for human occupation will be monitored with a continuous LFG monitor/alarm that will provide an audible alarm if methane concentrations exceed 1.25 percent methane by volume.

If allowable methane concentration limits are exceeded within structures, the building will be immediately evacuated and ventilated by opening doors and windows. Notification consistent with procedures in Section 4.2 of this attachment will be implemented immediately.

3.2.2 Maintenance Procedures

Continuous LFG monitors/alarms will be calibrated and maintained in accordance with the manufacturer's recommendations. Continuous LFG monitors/alarms will be tested in accordance with the manufacturer's testing specifications.

3.3 Recordkeeping/Reporting

Field monitoring data records will be maintained for the methane monitoring and kept in the site operating record. Field data will be recorded on the Quarterly Landfill Gas Monitoring Report form (or similar form) as shown in Appendix G2.

CHISHOLM TRAIL DISPOSAL LANDFILL
WISE COUNTY, TEXAS
TCEQ PERMIT NO. MSW 2421

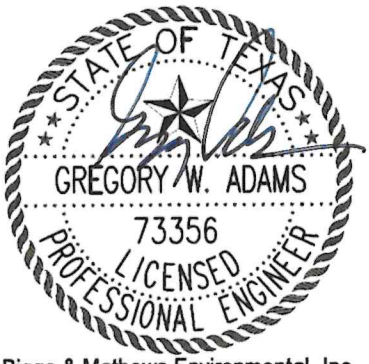
TYPE IV PERMIT APPLICATION

PART III - FACILITY INVESTIGATION AND DESIGN
ATTACHMENT I
POSTCLOSURE PLAN

Prepared for

Chisholm Trail Disposal, LLC

December 2024
Revised April 2025



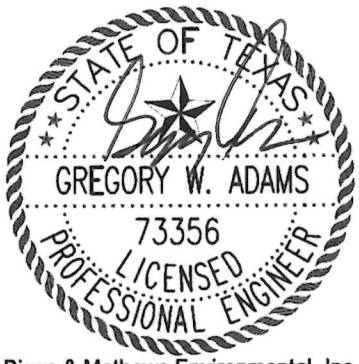
Biggs & Mathews Environmental, Inc.
Firm Registration No. F-256
4/29/2025

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



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CONTENTS

1 INTRODUCTION

30 TAC §§330.63(i) 330.453(f), 330.463(a), and 330.465

This facility postclosure care plan provides the information required by 30 TAC §330.63(i), 330.453(f), §330.463(a), and §330.465. The postclosure care plan includes the provisions for continued groundwater monitoring, landfill gas monitoring, and maintenance of the constructed final cover and drainage facilities for the duration of the 5-year postclosure period. The postclosure care plan also provides procedures to decrease or increase the postclosure care period, identifies the person responsible for postclosure care, and includes the provisions for certification at the completion of the postclosure care period. A copy of the postclosure plan will be placed in the operating record prior to the initial receipt of waste.

3 PERSON RESPONSIBLE FOR CONDUCTING POSTCLOSURE CARE ACTIVITIES

30 TAC §330.463(b)

At the time of the development of this document, the following person is responsible for the management of this landfill:

Thad Owings, Vice President
Chisholm Trail Disposal, LLC
225 Reformation Parkway, Suite 200
Canton, GA 30114
770-720-2717

Daily operational activities are directed by:

Landfill Manager
Chisholm Trail Disposal Landfill
291 P.R. 4674
Aurora, TX 76078
770-720-2717

The person responsible for conducting postclosure activities is subject to change. However, as part of the closure notification to the TCEQ, as required by 30 TAC §330.463(b), Chisholm Trail Disopsal, LLC, will notify the TCEQ regarding the responsible person.

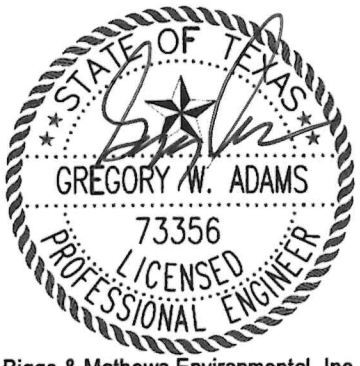
CHISHOLM TRAIL DISPOSAL LANDFILL
WISE COUNTY, TEXAS
TCEQ PERMIT NO. MSW 2421

PART IV – SITE OPERATING PLAN

Prepared for

CHISHOLM TRAIL DISPOSAL, LLC

December 2024
Revised April 2025



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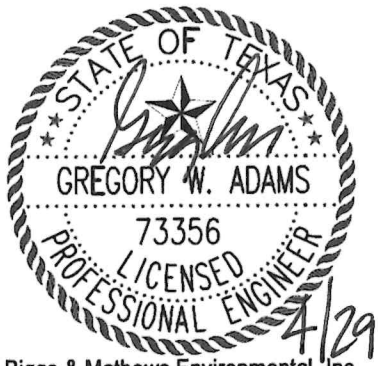

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CONTENTS

erosion control features placed as part of the intermediate cover will be maintained. Runoff from areas that have received intermediate cover are considered to have not come into contact with the active working face or leachate, and are considered uncontaminated stormwater runoff.

The landfill manager will document, on a daily basis, when intermediate cover is being placed, the intermediate cover placement area, the thickness and condition in the Cover Inspection Record as discussed in Section 8.18.8.

Areas with twelve inches of intermediate cover must be inspected weekly for erosion, ponded water, seeps, protruding waste, or other detrimental conditions that may cause contaminated runoff from the intermediate cover. Once the area becomes active again, the intermediate cover may be stripped off prior to additional waste placement and used as intermediate cover in other areas.

8.18.4 Alternative Daily Cover

The CTD Landfill is not currently authorized to use alternative daily (weekly) cover. Should the landfill decide to request authorization to use alternative daily (weekly) cover, the landfill will request authorization in accordance with §330.165(d).

8.18.5 Temporary Waiver

The CTD Landfill may request a waiver from cover requirements due to extreme seasonal climatic conditions in accordance with §330.165(e).

8.18.6 Final Cover

Final cover placement over individual areas will be in accordance with Part III, Attachment H and §330.453 and will permit ongoing landfilling operations to continue until the time of final closure. Surface water will be managed throughout the active life of the site to minimize infiltration into the filled areas and to minimize contact with solid waste. Erosion of final or intermediate cover will be repaired promptly by restoring the cover material, grading, compacting, and seeding it as necessary. Periodic inspections and restorations are required during the entire operational life and for the postclosure maintenance period. Refer to Section 8.27 for a site inspection and maintenance schedule.

In general, final cover placement over completed portions of the site will consist of the following steps:

- Survey controls will be implemented to control the filling of solid waste to the bottom level of the weekly/intermediate cover layer elevation.

- The final cover system layers will be constructed. Testing of the various components of the final cover system will be performed in accordance with Part III, Appendix H2.